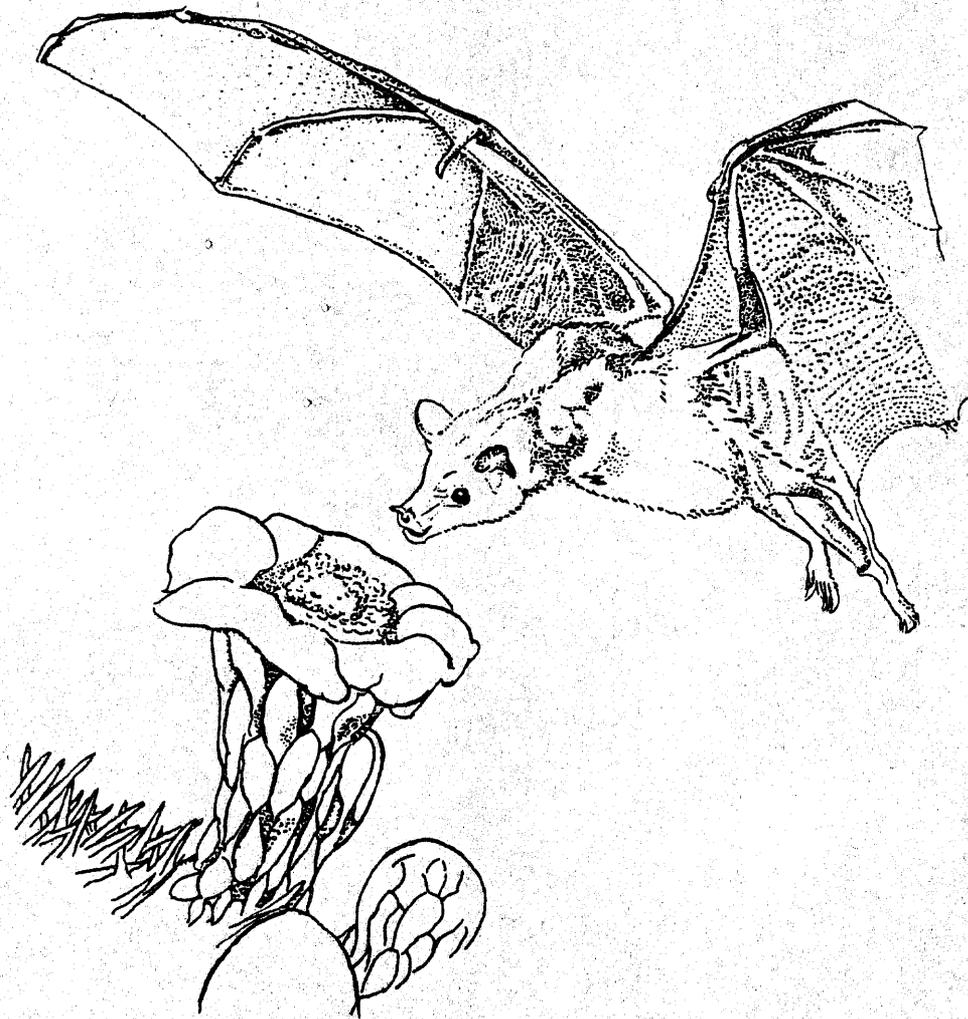


ENDANGERED AND THREATENED

SPECIES OF ARIZONA

SUMMER 1991



Ecological Services Field Office
U.S. Fish and Wildlife Service
3616 W. Thomas Road
Phoenix, Arizona 85019
(602) 379-4720
FTS 261-4720

U.S. Fish and Wildlife Service, Ecological Services Field Office. 1991.
Endangered and threatened species of Arizona, summer 1991.

562
E56a

1991

ENDANGERED AND THREATENED

SPECIES OF ARIZONA

SUMMER 1991



Ecological Services Field Office
U.S. Fish and Wildlife Service
3616 W. Thomas Road
Phoenix, Arizona 85019
(602) 379-4720
FTS 261-4720

U.S. Fish and Wildlife Service, Ecological Services Field Office. 1991.
Endangered and threatened species of Arizona, summer 1991.

562
E56a

1991

PREFACE

The Endangered Species Act was passed in 1973 to check the precipitous decline of native animals and plants in the United States. The United States Fish and Wildlife Service is charged with determining those species that face extinction through man's alteration of their habitat, protecting them from further decline, and providing for their continued survival and recovery. All Federal agencies are charged with using their authorities to carry out programs for the conservation of endangered and threatened species. They must insure that any action authorized, funded, or carried out by them does not jeopardize the continued existence of any endangered or threatened species or result in the adverse modification of critical habitat of such species.

This summary of federally listed endangered and threatened species in Arizona was compiled by the Phoenix Ecological Services Field Office of the United States Fish and Wildlife Service. The information provided is for general knowledge only. Additional information can be obtained from:

Ecological Services Field Office
U. S. Fish and Wildlife Service
3616 W. Thomas Road, Suite 6
Phoenix, Arizona 85019
(602) 379-4720

Only those plants and animals of Arizona that have been listed or proposed as threatened or endangered in the Federal Register have been included in this summary. In addition to these federally listed species, the State of Arizona provides protection for rare species within its boundaries. Information about State-listed species can be obtained from:

Animals: Arizona Game and Fish Department
2222 West Greenway Road
Phoenix, Arizona 85023
(602) 942-3000

Plants: Arizona Department of Agriculture
1688 West Adams
Phoenix, Arizona 85007
(602) 542-4373

Cover drawing by: Ronnie Sidner

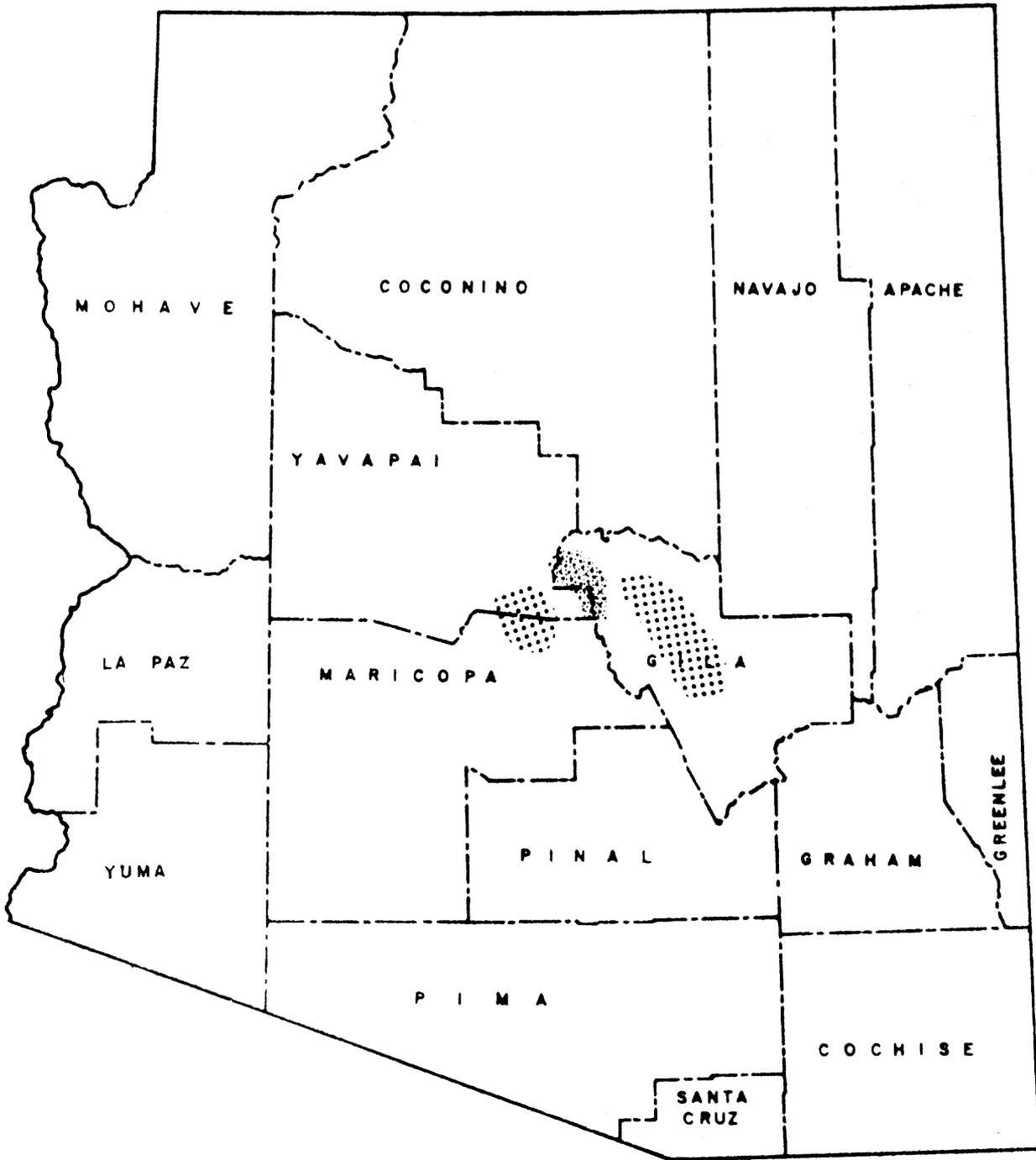
The Asclepias welshii and Cycladenia humilis var. jonesii drawings are reprinted by permission from Intermountain Flora, Volume 4, pages 31 and 45, A. Cronquist, A.H. Holmgren, N.H. Holmgren, J.L. Reveal, and P.K. Holmgren, Copyright 1984, The New York Botanical Society.

TABLE OF CONTENTS

Plants	Page
Arizona agave.....	2
Arizona cliffrose.....	4
Arizona hedgehog cactus.....	6
Brady pincushion cactus.....	8
Cochise pincushion cactus.....	10
Jones cycladenia.....	12
Kearney's blue-star.....	14
Navajo sedge.....	16
Nichol's Turk's head cactus.....	18
Peebles Navajo cactus.....	20
San Francisco Peaks groundsel.....	22
Sentry milk vetch.....	24
Siler pincushion cactus.....	26
Tumamoc globeberry.....	28
Welsh's milkweed.....	30
Fish	
Apache trout.....	32
Beautiful shiner.....	34
Bonytail chub.....	36
Colorado squawfish.....	38
Desert pupfish.....	40
Gila topminnow.....	42
Gila trout.....	44
Humpback chub.....	46
Little Colorado spinedace.....	48
Loach minnow.....	50
Razorback sucker.....	52
Sonora chub.....	54
Spikedace.....	56
Virgin River chub.....	58
Woundfin.....	60
Yaqui catfish.....	62
Yaqui chub.....	64
Yaqui topminnow.....	66
Reptiles	
Desert tortoise.....	68
New Mexican ridge-nosed rattlesnake.....	70

TABLE OF CONTENTS

Birds	Page
American peregrine falcon.....	72
Bald eagle.....	74
California brown pelican.....	76
Masked bobwhite.....	78
Mexican spotted owl.....	80
Northern aplomado falcon.....	82
Whooping crane.....	84
Yuma clapper rail.....	86
 Mammals	
Black-footed ferret.....	88
Hualapai Mexican vole.....	90
Mexican gray wolf.....	92
Mount Graham red squirrel.....	94
Sanborn's long-nosed (lesser long-nosed) bat.....	96
Sonoran pronghorn.....	98
 Index of common names	99
 Index of scientific names	101



ARIZONA AGAVE

LEGEND

Current Range

Potential Range



ARIZONA AGAVE
(Agave arizonica)

STATUS: Endangered (49 FR 21055; May 18, 1984) without critical habitat.

SPECIES DESCRIPTION: A member of the agave family, Arizona agave has attractive rosettes of bright green leaves with dark mahogany margins. The yellow flowers are born on sub-umbellate inflorescences.

HABITAT: Arizona agave occurs in the transition zone between oak-juniper woodland and mountain mahogany-oak scrub at 3,000-6,000 feet elevation. Known habitats are characterized by steep rocky slopes, but Arizona agave can occur on drainage bottoms or relatively gentle slopes or saddles.

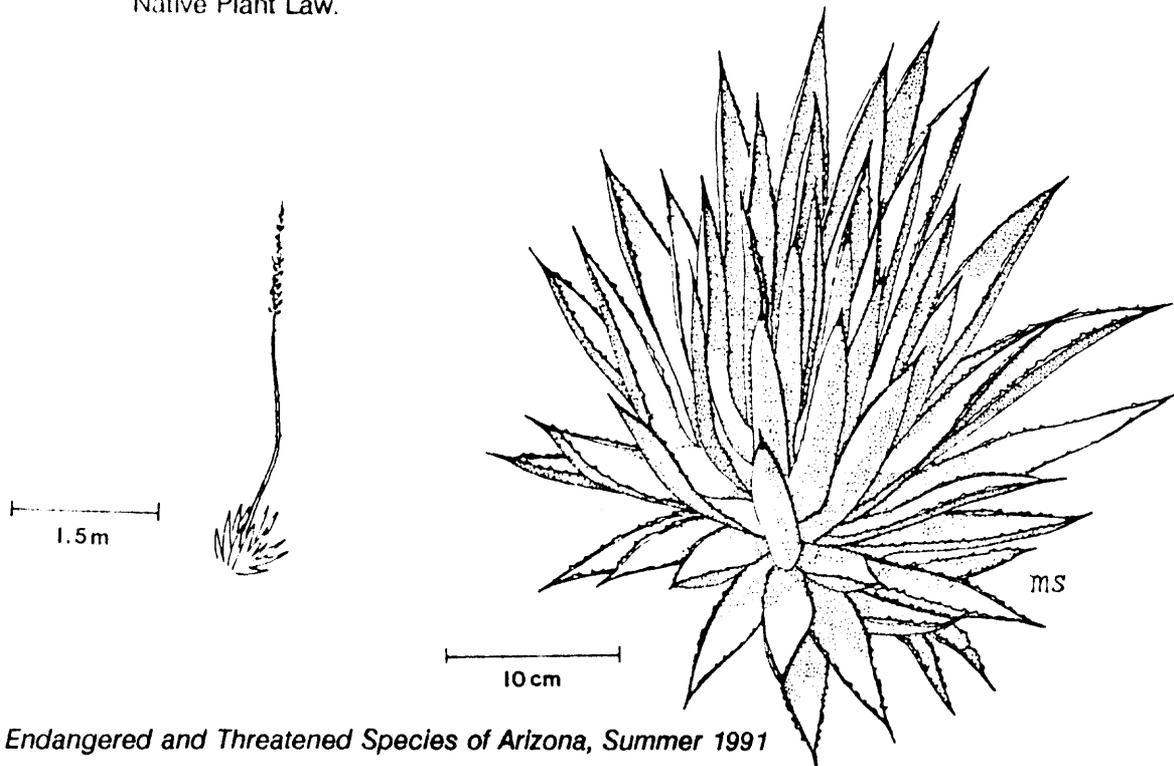
RANGE: Current: Scattered clones are known from the New River Mountains (Maricopa and Yavapai Counties) and Sierra Ancha (Gila County).
Potential: Potential habitat in the Mazatzal Mountains (Gila and Maricopa counties) exists but has not been thoroughly searched. Arizona agave should be looked for wherever the ranges of Agave toumeyana var. bella and Agave chrysantha overlap.

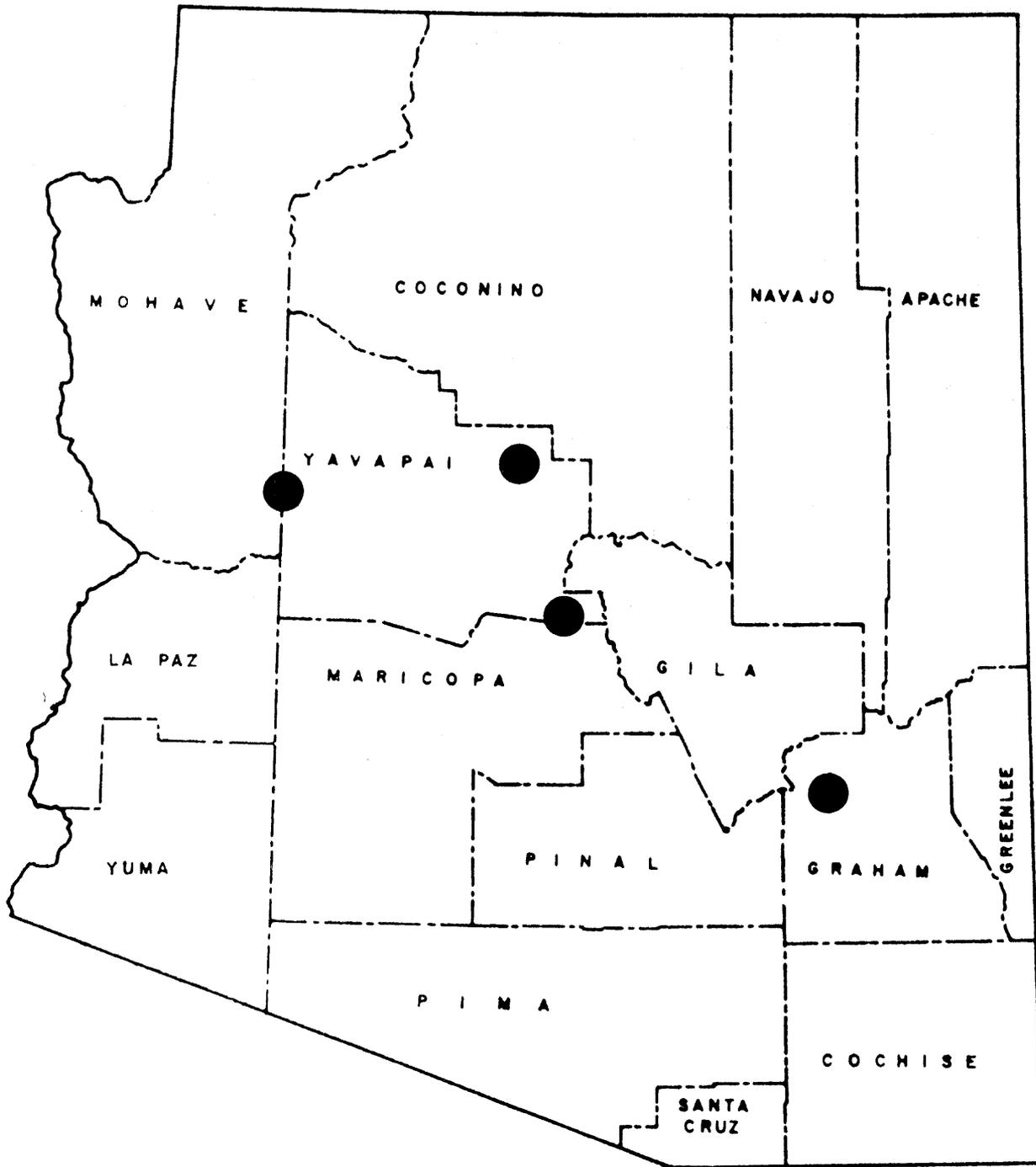
REASONS FOR DECLINE/VULNERABILITY: Vulnerable due to low plant numbers and limited distribution. Threats to the species include habitat decline due to historic overuse by livestock, feral burro, and wildlife browsing, and illegal collection.

LAND MANAGEMENT/OWNERSHIP: Tonto National Forest and private.

NOTES: Some botanists believe that Agave arizonica is a species that originated through hybridization (possibly a cross between A. chrysantha and A. toumeyana ssp. bella) or that it represents a continually occurring hybrid. Insufficient data is available to support either conclusion, but research conducted by the Desert Botanical Garden in Phoenix is ongoing. For a summary of these taxonomic questions, see Hodgson and Delamater's 1988 "Summary of Status and Report on Recent Studies," available through the Fish and Wildlife Service, Phoenix Office.

Protected from illegal international trade by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Also protected by the Arizona Native Plant Law.





ARIZONA CLIFFROSE

LEGEND

Known Localities ●

ARIZONA CLIFFROSE
(Purshia subintegra)

STATUS: Endangered (49 FR 22326; May 29, 1984) without critical habitat.

SPECIES DESCRIPTION: This member of the rose family is an evergreen shrub that has the potential to reach 5-6 feet tall. The bark is pale gray and shreddy. Young twigs are usually covered with dense, soft, white hairs and are glandless. Leaves are also glandless and are usually simple but can have 1-5 lobes. The leaf margins are entire (smooth) and revolute (curled under). Flowers have 5 white or yellow petals about 0.4 inch long.

HABITAT: This species grows only on Tertiary limestone lakebed deposits. The distinctive white soil color can be seen from a distance.

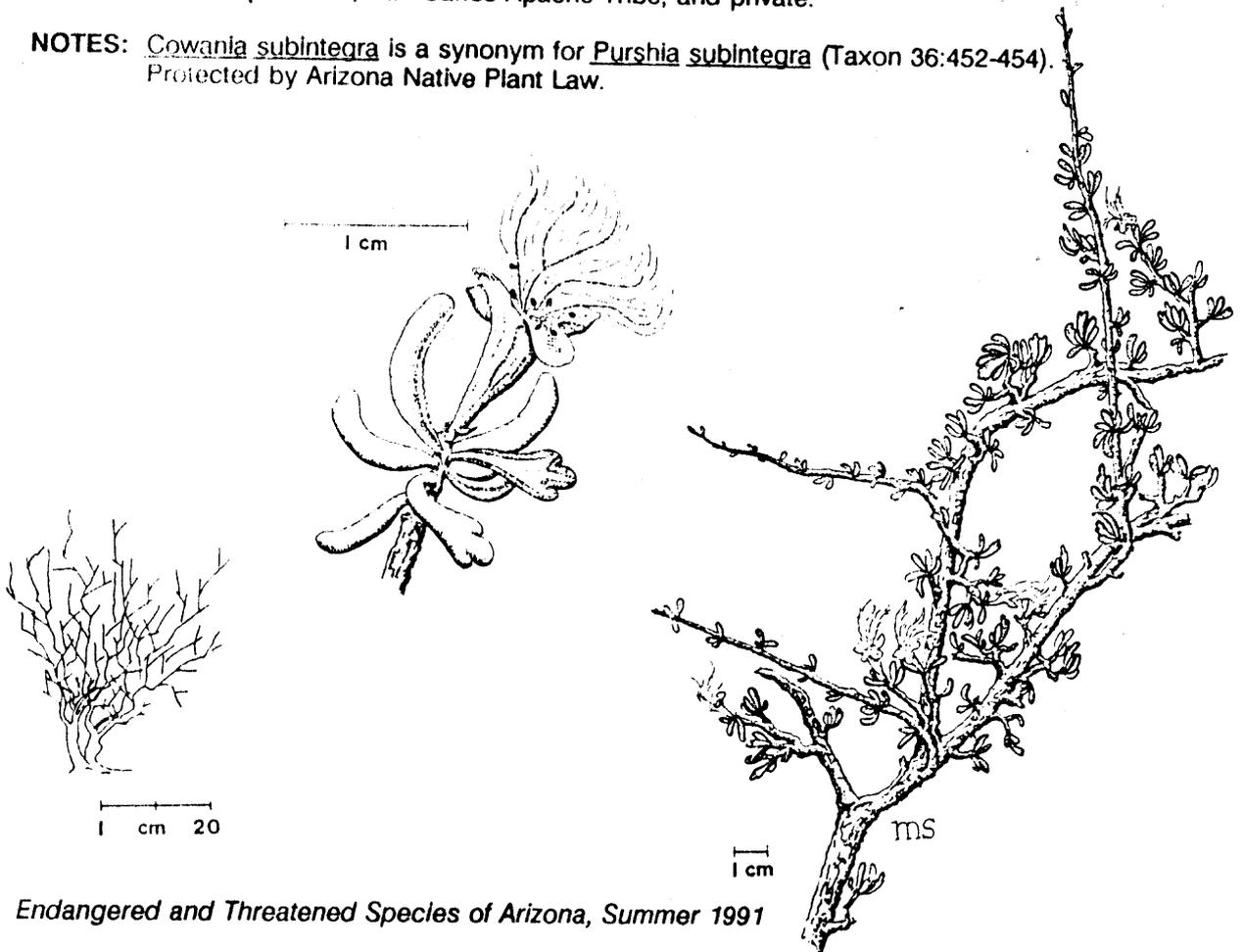
RANGE: Current: All four localities of this species are in central Arizona below the Mogollon Rim. These known sites include the Burro Creek drainage (Mohave County), Horseshoe Lake area (Maricopa County), Verde Valley (Yavapai County), and the San Carlos Indian Reservation (Graham County).

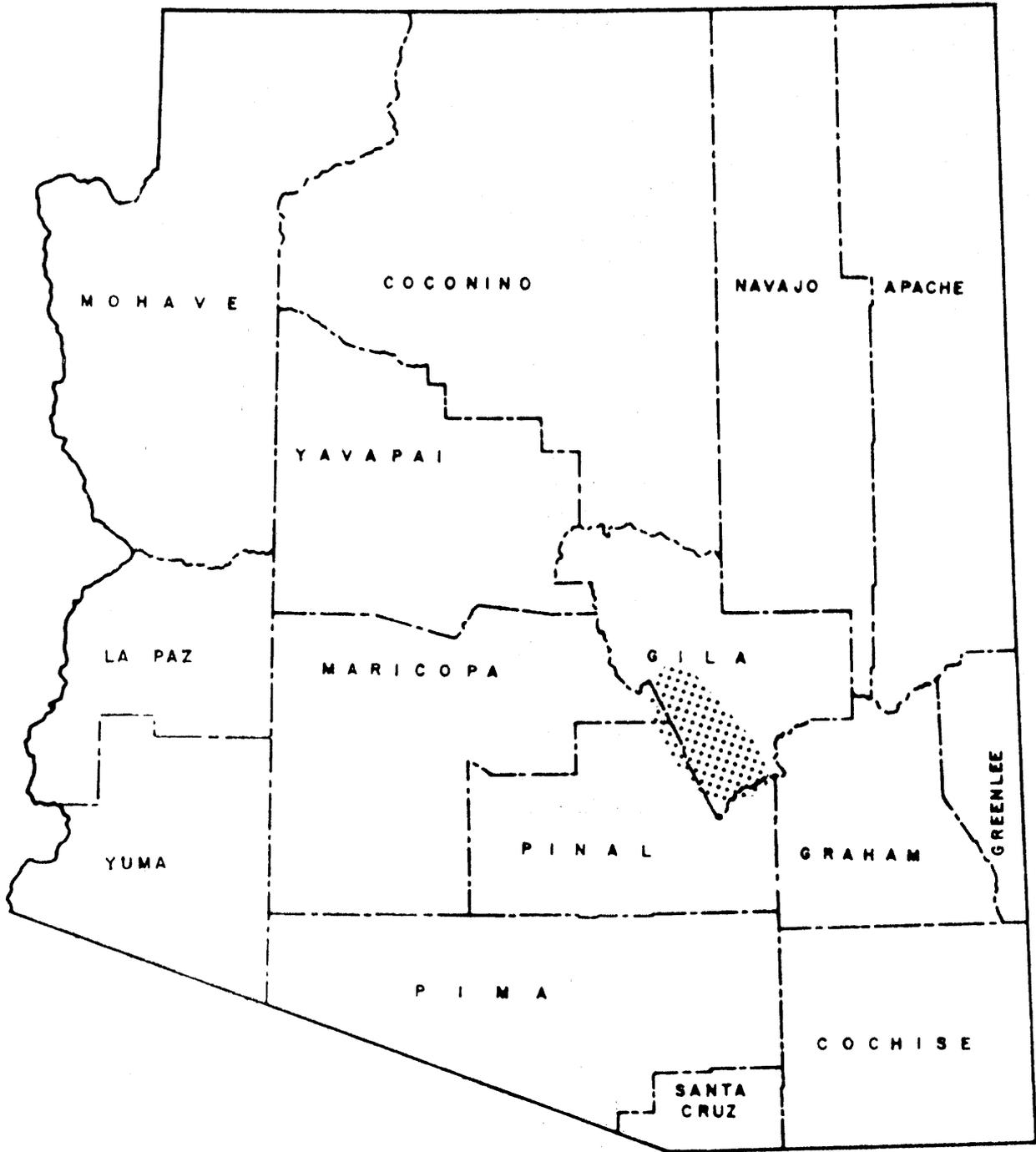
Potential: In central Arizona below the Mogollon Rim where Tertiary limestone lakebed deposits occur.

REASONS FOR DECLINE/VULNERABILITY: Vulnerable due to localized habitat and limited number of populations. Threats include mining, habitat decline due to overuse by cattle and burros, browsing of the plants by burros and cattle, road construction, pesticide applications, and off-road vehicle traffic.

LAND MANAGEMENT/OWNERSHIP: Tonto National Forest, Coconino National Forest, State Land Department, San Carlos Apache Tribe, and private.

NOTES: Cowania subintegra is a synonym for Purshia subintegra (Taxon 36:452-454). Protected by Arizona Native Plant Law.





ARIZONA HEDGEHOG CACTUS

LEGEND

**Current and
Potential Range**



ARIZONA HEDGEHOG CACTUS
(*Echinocereus triglochidiatus* var. *arizonicus*)

STATUS: Endangered (44 FR 61556; October 15, 1979) without critical habitat.

SPECIES DESCRIPTION: This cactus has a dark green cylindroid stem, 2.5-12 inches tall and 2-10 inches in diameter. Stems occur singly or (usually) in clusters. There are 1-3 gray or pinkish central spines, the largest deflexed, and 5-11 shorter radial spines. Flowers are brilliant red, are produced along the side of the stem, and appear in late April to mid-May.

HABITAT: Plants are found on open slopes, in narrow cracks between boulders, and in the understory of shrubs in the ecotone between Madrean Evergreen Woodland and Interior Chaparral. Elevation ranges from about 3400-5300 feet.

RANGE: Current: In Maricopa, Gila, and Pinal counties, central Arizona. Exact localities are not provided because illegal collecting threatens the species.

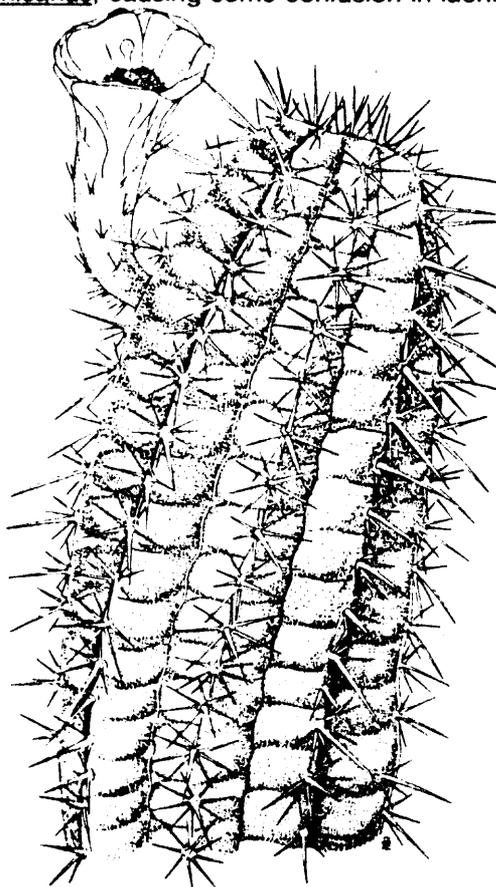
Potential: To be looked for wherever the habitat description is met.

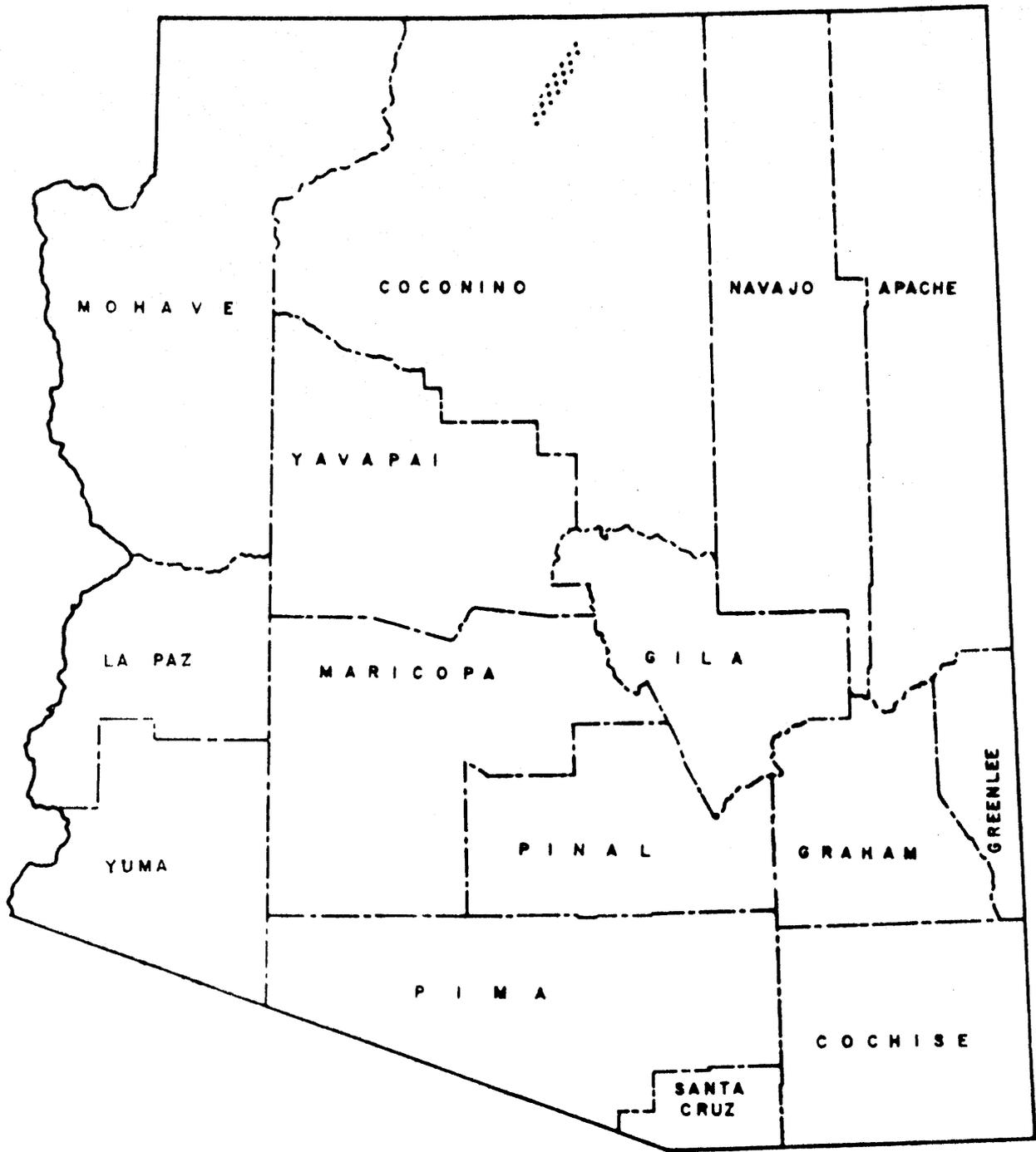
REASONS FOR DECLINE/VULNERABILITY: The limited distribution of this plant increases its vulnerability to threats from mining, off-road vehicle use, illegal collecting, and road and utility line construction.

LAND MANAGEMENT/OWNERSHIP: Tonto National Forest and potentially private.

NOTES: Protected from international trade by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Protected by the Arizona Native Plant Law.

This variety is believed to intergrade at the edges of its distribution with varieties *melanacanthus* and *neomexicanus*, causing some confusion in identification.





BRADY PINCUSHION CACTUS

LEGEND

Current Range 

BRADY PINCUSHION CACTUS
(*Pedlocactus bradyi*)

STATUS: Endangered (44 FR 61784; October 26, 1979) without critical habitat.

SPECIES DESCRIPTION: This is a small, semi-globose cactus with one (occasionally more) stems up to 2.4 inches tall and 2 inches in diameter. Spines are white or yellowish-tan. The spine clusters consist of 1-2 central spines and 14-15 spreading radial spines. Flowers are straw-yellow, are produced at the top of the stem and appear in the spring. During the dry seasons, the plants retract and are flush with the soil surface.

HABITAT: Grows on benches and terraces at 3850-4500 feet elevation in the Navajoan Desert near Marble Gorge. The substrate is composed of Kaibab limestone chips overlying soil derived from Moenkopi shale and sandstone outcrops. Dominant plant species in the community are shadscale (*Atriplex confertifolia*), snakeweed (*Gutierrezia sarothrae*), Mormon tea (*Ephedra viridis*), and desert trumpet (*Eriogonum inflatum*).

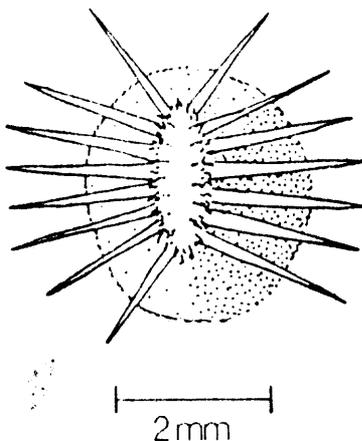
RANGE: **Current:** The several known localities are all located near Marble Gorge. **Potential:** In suitable habitat near Marble Gorge. The species' Recovery Plan states that although large areas of potential habitat have been surveyed, plants have been located in about 10-20% of the surveyed area.

REASONS FOR DECLINE/VULNERABILITY: The limited distribution and small number of populations make this species vulnerable to extinction. Off-road vehicle traffic, pesticide application, illegal collecting and herbivory by native animals are current threats. Uranium mining and exploration could potentially cause the loss of habitat.

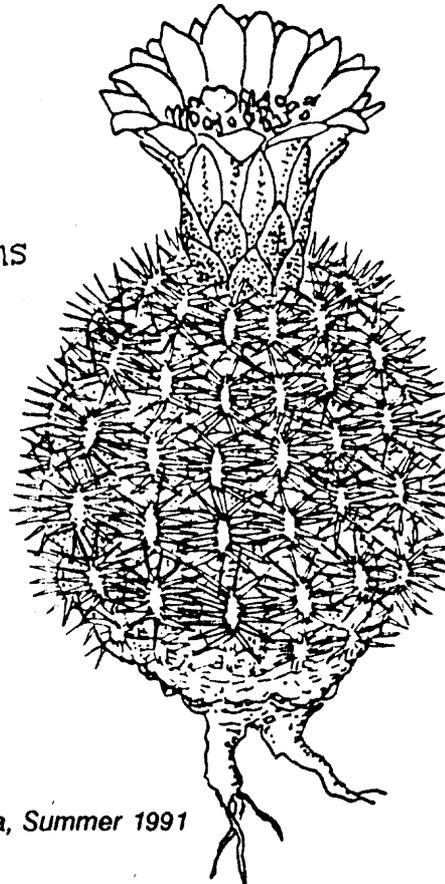
LAND MANAGEMENT/OWNERSHIP: Bureau of Land Management, the Navajo Tribe, Glen Canyon National Recreation Area, and State Highways right-of-ways.

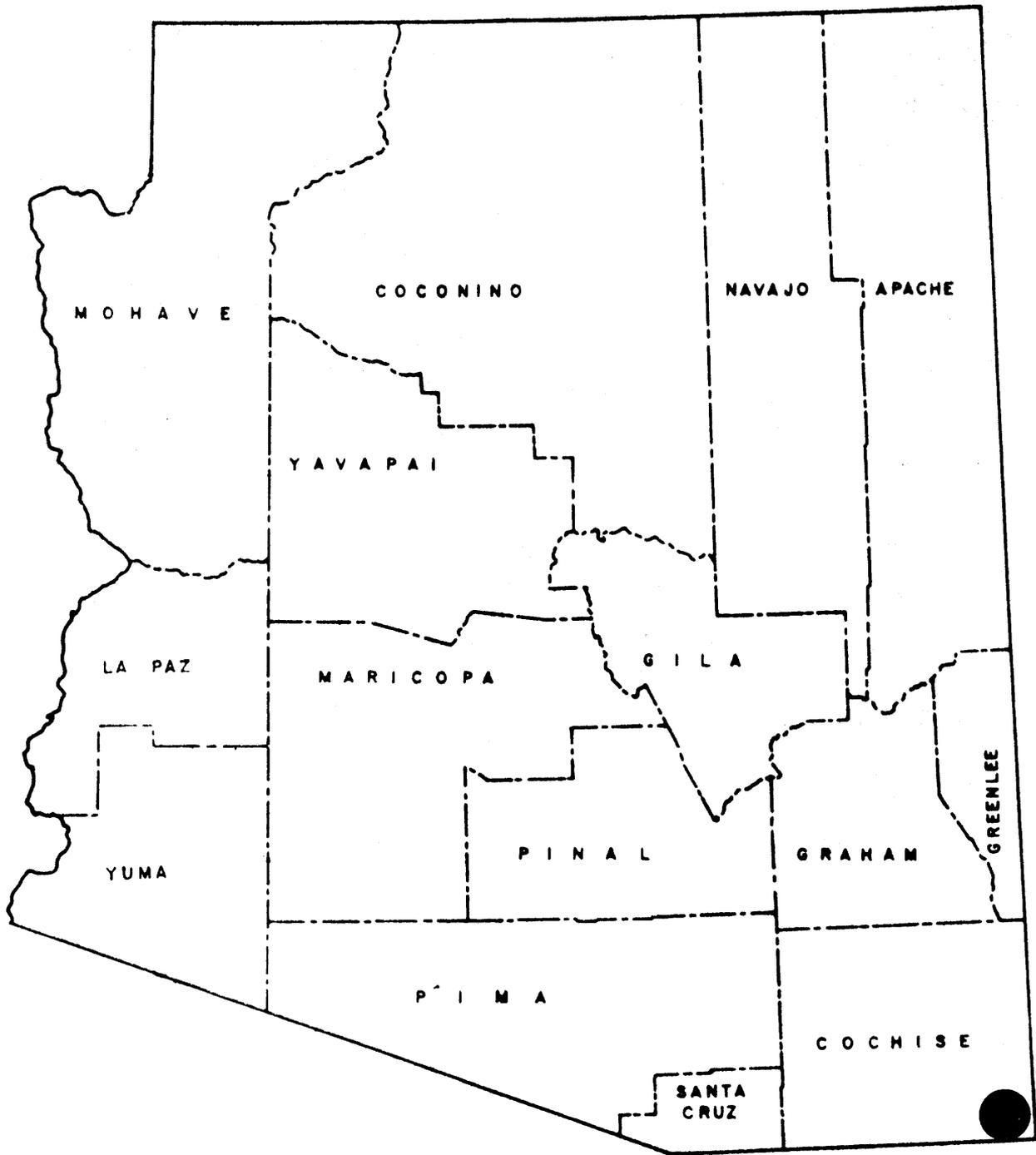
NOTES: Protected from international trade by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Also protected by the Arizona Native Plant Law.

Recovery Plan signed 1985.



MS





COCHISE PINCUSHION CACTUS

LEGEND

Current Range ●

COCHISE PINCUSHION CACTUS
(*Coryphantha robbinsorum*)

STATUS: Threatened (51 FR 952; January 9, 1986) without critical habitat.

SPECIES DESCRIPTION: A small, unbranched cactus with no central spines and 11-17 white radial spines. The spine clusters are born on the ends of tubercles (protrusions). The bell-shaped flowers are pale yellow-green with a slight bronze cast. Fruits are orange-red when ripe, but quickly turn dull red.

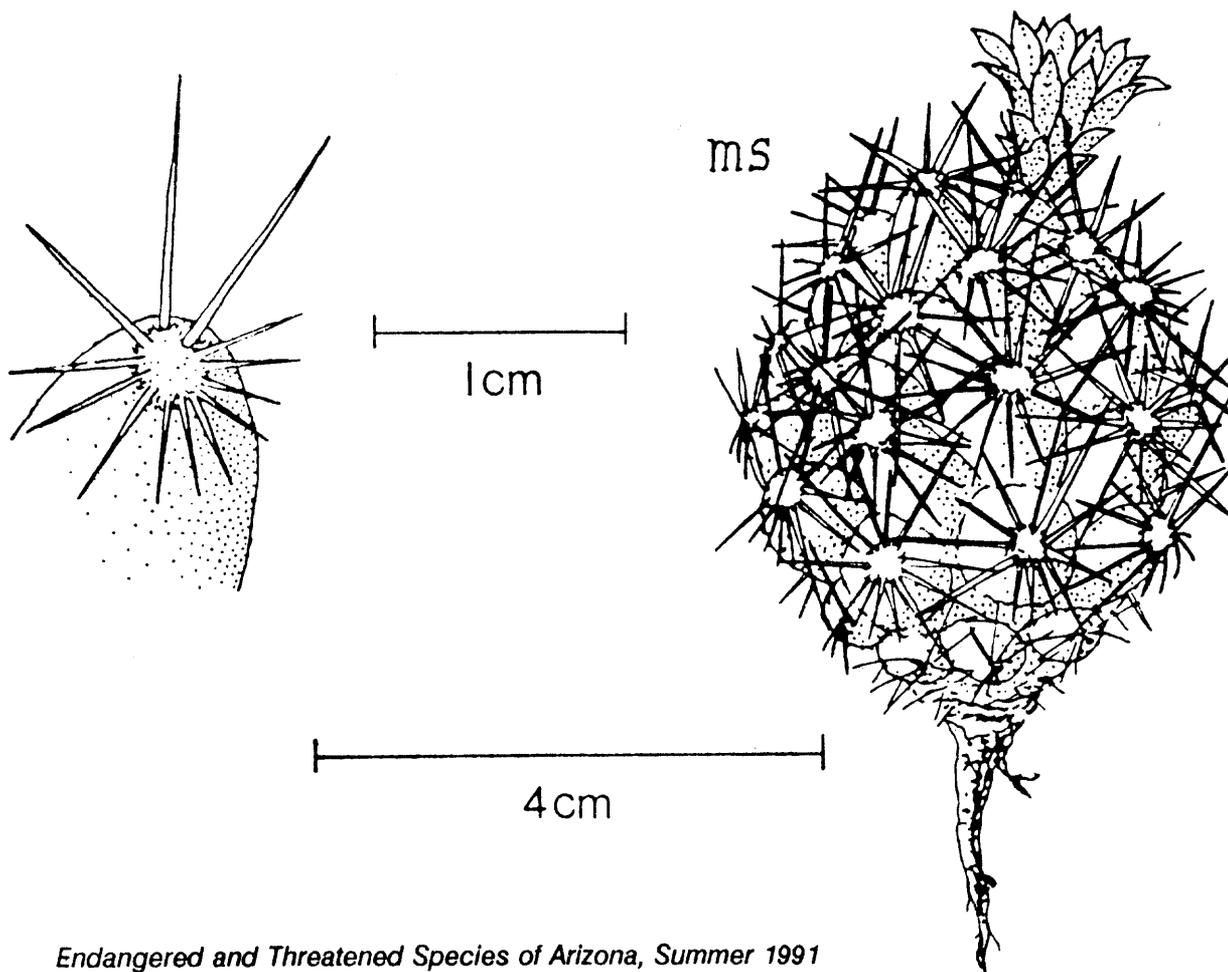
HABITAT: This species grows on grey limestone within the Semidesert Grassland with small shrubs, succulents such as Agave and other cacti, and grama grasses at an elevation of 4,200 feet.

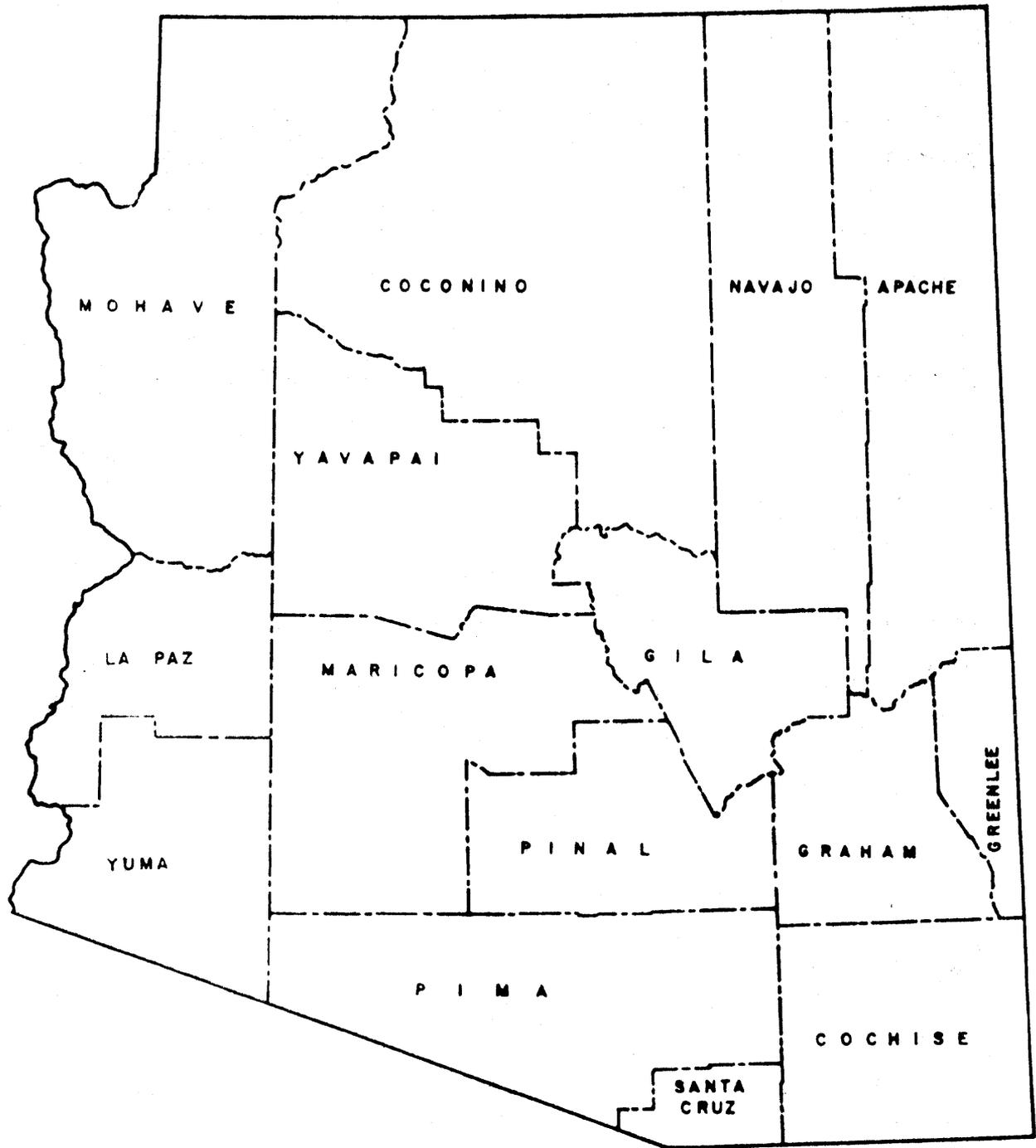
RANGE: Current: Clusters of plants are distributed sporadically on grey limestone hills in Cochise County, Arizona, and adjacent State of Sonora, Mexico.
Potential: The likelihood of undocumented localities of this species is small. Populations might occur where grey limestone exists in the same geographic area.

REASONS FOR DECLINE/VULNERABILITY: The limited geographic distribution and specialized habitat make this a threatened species. Threats include habitat degradation due to livestock grazing, pesticide applications, and illegal collection. Mining is a potential threat.

LAND MANAGEMENT/OWNERSHIP: Private and State.

NOTES: Protected from international trade by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Also protected by the Arizona Native Plant Law.





JONES CYCLADENIA

**Exact location of historic
collection is unknown.**

JONES CYCLADENIA
(*Cycladenia humilis* var. *Jonesii*)

STATUS: Threatened (51 FR 16530; May 5, 1986) without critical habitat.

SPECIES DESCRIPTION: A long-lived perennial herb in the Dogbane family (Apocynaceae) with pinkish-rose flowers. Plants reach 4-6 inches tall, and have orbicular, wide-oval or elliptical leaves. Plants overwinter as subterranean rhizomes (roots).

HABITAT: This species occurs between 4,390-6,000 feet elevation in plant communities of mixed desertscrub, juniper, or wild buckwheat-Mormon tea. It is found on gypsiferous, saline soils of the Cutler, Summerville, and Chinle Formations.

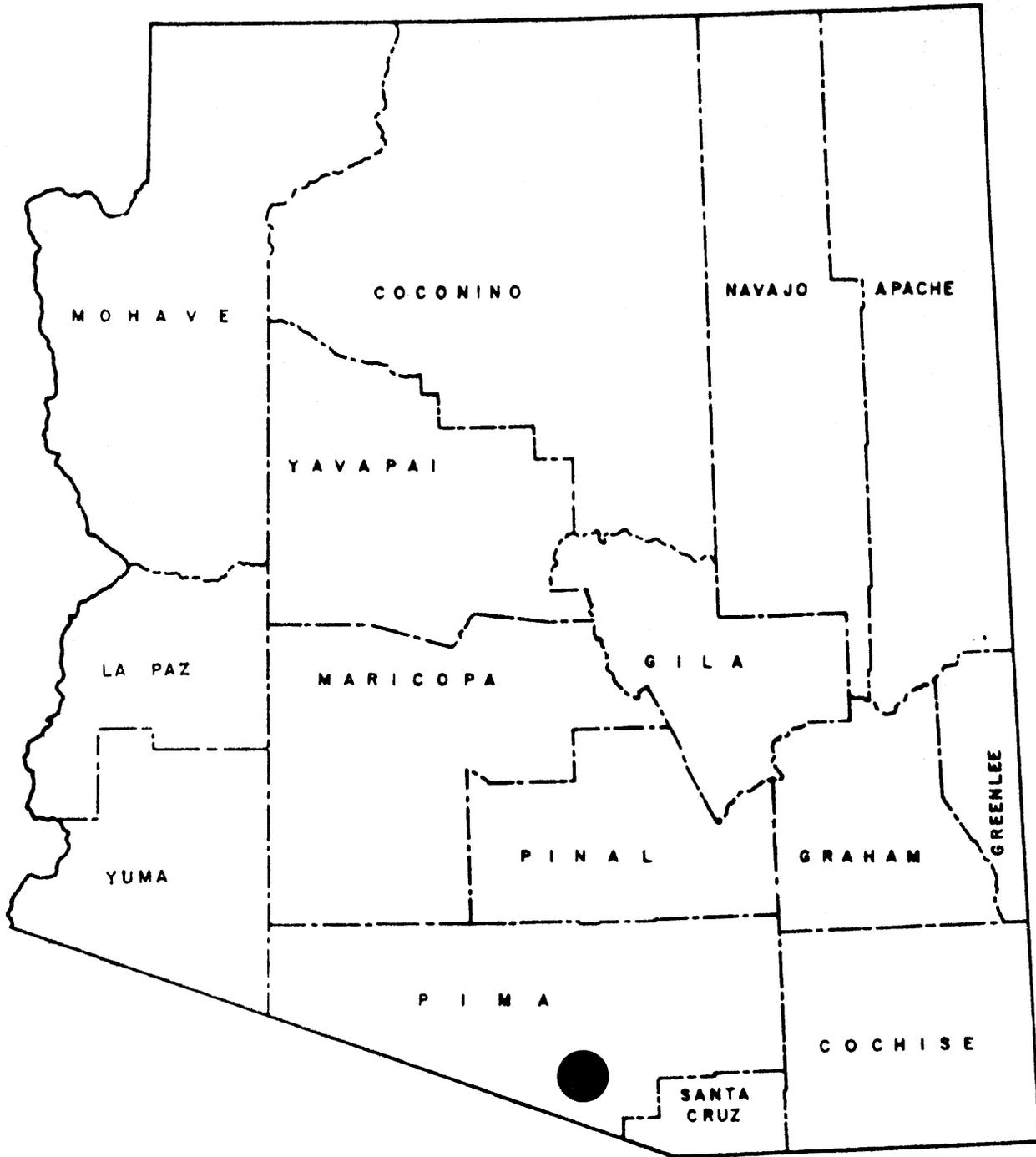
RANGE: **Historic:** Several populations are known from Emery, Garfield and Grand Counties, Utah. An 1882 specimen was collected at "Pipe Springs" in Mohave County, Arizona or Kane County, Utah, but has not been seen since that time.
Potential: Southeastern and south-central Utah and northwestern Arizona where habitat conditions are met.

REASONS FOR DECLINE/VULNERABILITY: This species is vulnerable to man-caused threats because of the relatively small number of populations and because the arid climate and harsh soils make this ecosystem a fragile one, slow to recover from surface disturbance. Threats include off-road vehicle traffic, exploration for uranium, oil and gas, and actions necessary to maintain mining claims.

LAND MANAGEMENT/OWNERSHIP: Bureau of Land Management, private, Utah State Lands, Glen Canyon National Recreation area, Capitol Reef National Park, and possibly Pipe Springs National Monument.

NOTES: Protected by the Arizona Native Plant Law.





KEARNEY'S BLUE-STAR

LEGEND

Current Range ●

KEARNEY'S BLUE-STAR
(*Amsonia kearneyana*)

STATUS: Endangered (54 FR 2131; January 19, 1989) without critical habitat.

SPECIES DESCRIPTION: An herbaceous perennial in the Dogbane family (Apocynaceae). It is a sub-shrub with a thickened woody root and many pubescent (hairy) stems that rarely branch. The stems are erect to ascending with alternate, oblong-lanceolate to lanceolate leaves. The leaves are 1.5-2.7 inches long, 0.6 inches broad and are soft and bright green with short petioles. White flowers form a terminal inflorescence in late April and May. The flowers show characteristics of moth pollination. The fruit is a follicle born singly or in pairs at the end of stems and develop in June-August.

HABITAT: Plants grow in the stable, partially shaded, coarse alluvium along a dry wash at 3600-3800 feet elevation. The wash is lined with desert riparian trees and shrubs such as Arizona walnut (*Juglans major*), Mexican blue oak (*Quercus oblongifolia*), and velvet mesquite (*Prosopis velutina*). The vegetation surrounding the wash is Sonoran desertscrub or desertscrub-grassland transition zone.

RANGE: Current: Known from a west-facing drainage in the Baboquivari Mountains, Pima County.

Potential: Other west-facing drainages in the Baboquivari Mountains.

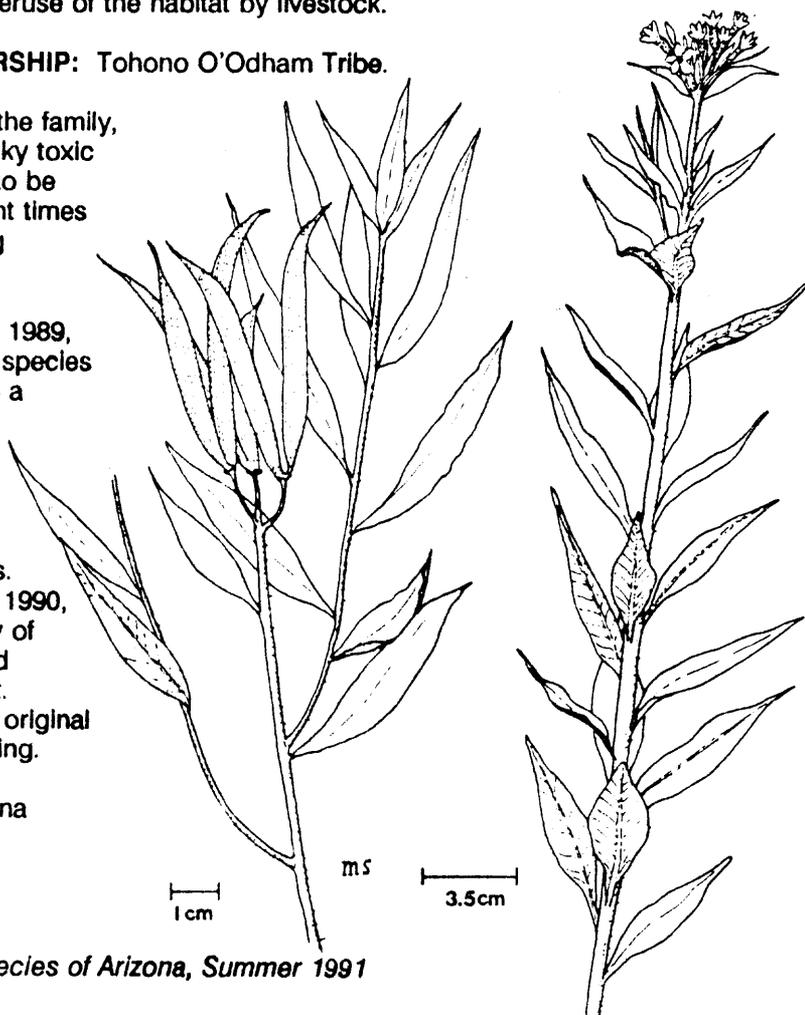
REASONS FOR DECLINE/VULNERABILITY: This species is vulnerable to extinction because of the small number of plants in a single locality and perhaps insufficient reproduction. Because the plants occur along the margins of a steep wash that floods periodically, the population is susceptible to destruction from major flood events. The species is also threatened by overuse of the habitat by livestock.

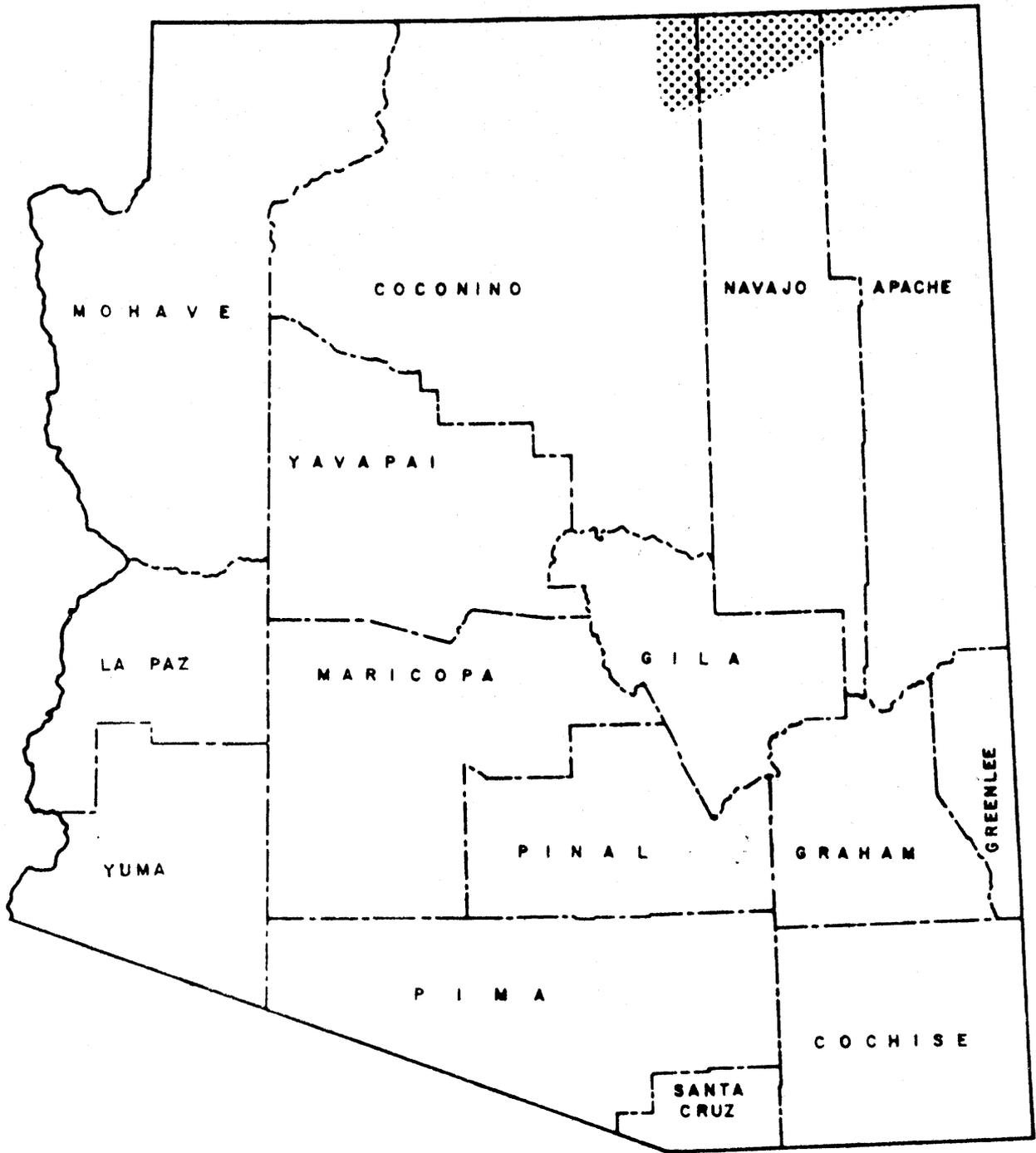
LAND MANAGEMENT/OWNERSHIP: Tohono O'Odham Tribe.

NOTES: Like many species in the family, *A. kearneyana* has milky toxic sap and appears not to be grazed even in drought times and when surrounding vegetation is grazed.

In fall 1988 and winter 1989, 181 individuals of this species were transplanted into a canyon on the east side of the Baboquivari Mountains to create a living biological reserve for the species. During the summer of 1990, a flood removed many of the individuals that had survived the transplant. In mid 1990, 33 of the original 181 plants were surviving.

Protected by the Arizona Native Plant Law.





NAVAJO SEDGE

LEGEND

Current Range



NAVAJO SEDGE
(*Carex speculicola*)

STATUS: Threatened (50 FR 19370; May 8, 1985) with critical habitat.

SPECIES DESCRIPTION: A member of the sedge family (Cyperaceae), this grass-like plant reaches a height of 10-16 inches. Numerous stems grow from a rhizome (underground stem), giving each plant a clumped form. Each plant has both male and female flowers, the male flowers occurring only on the ends of stems and the female flowers occurring below the male flowers or in spikes on the sides of stems.

HABITAT: Seep-springs on vertical cliffs of pink-red Navajo sandstone at 5,700-6,000 feet elevation. These drainages are spectacular examples of the deep, sheer-walled canyons of the Colorado Plateau geographic region. The plant community inhabiting the vertical seeps includes *Mimulus eastwoodiae* (monkey flower) and *Epipactis gigantea* (weed orchid).

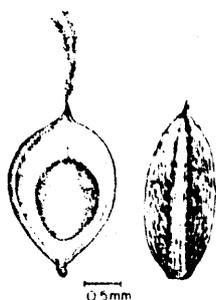
RANGE: **Current:** Formerly known from only a few localities in the Navajo Creek drainage (Coconino County), recent surveys have documented Navajo sedge in other drainage systems in Apache and Navajo Counties. Navajos living in the Navajo Creek area recall the presence of the Navajo sedge in areas where it is not found today. Recently, a population was found in San Juan County, Utah. **Potential:** Surveys for this species are incomplete. Navajo sedge might be located in the general regional area of Arizona and Utah, in seep-springs on canyon walls of Navajo sandstone or other similar eolian sandstone formations.

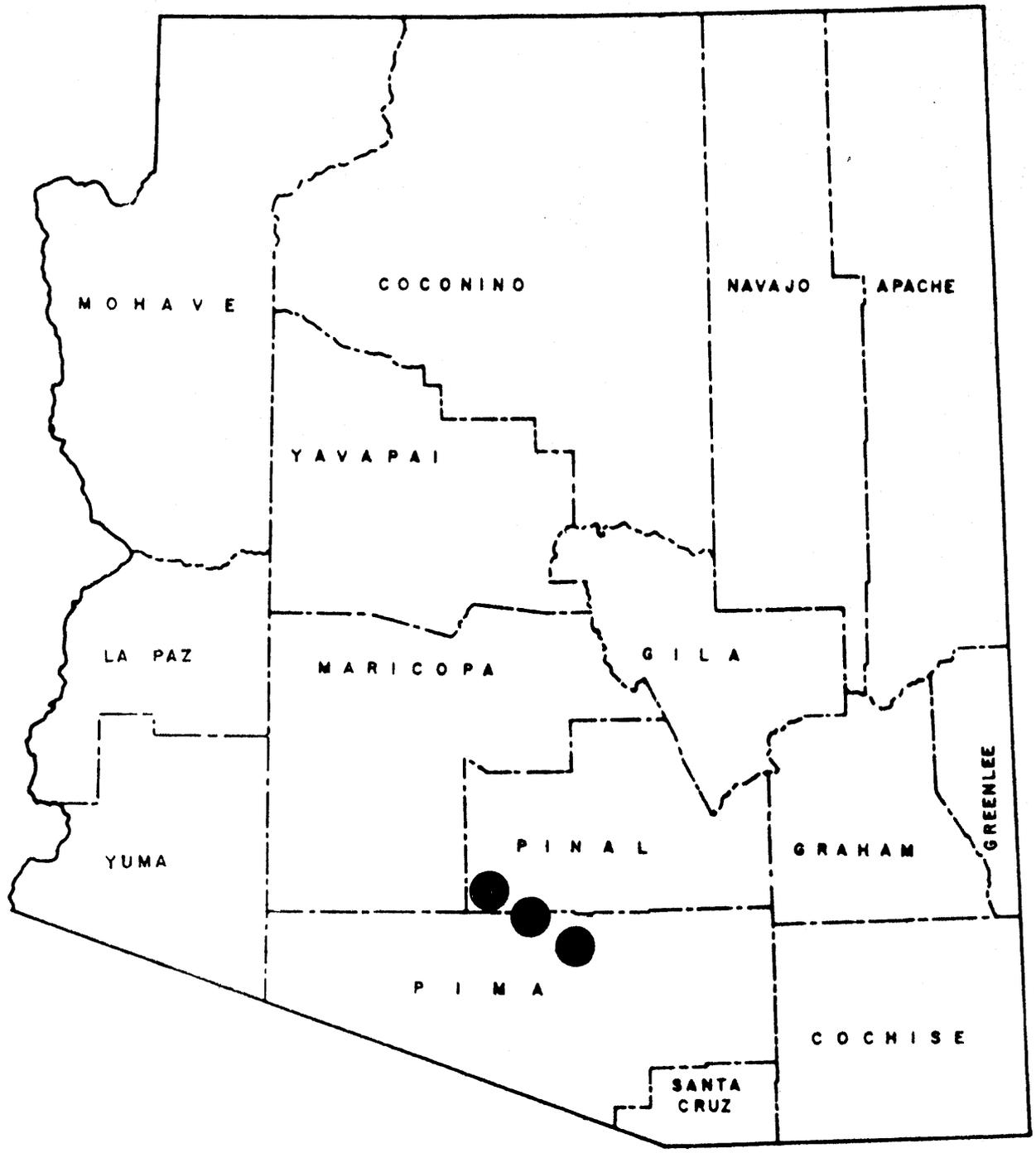
REASONS FOR DECLINE/VULNERABILITY: The specialized and limited available habitat make this species vulnerable to man-caused threats. Threats to the species include livestock grazing and trampling (at accessible sites) and the potential for habitat loss due to underground water pumping.

LAND MANAGEMENT/OWNERSHIP: Navajo Nation.

NOTES: Recovery Plan approved 1987. Critical habitat is on the Navajo Nation in Coconino County and contains three groups of springs near Inscription House Ruins (see 50 FR 19370 for details).

Protected by the Arizona Native Plant Law and the Navajo Nation.





NICHOL'S TURK'S HEAD CACTUS

LEGEND

Current Range ●

NICHOL'S TURK'S HEAD CACTUS
(*Echinocactus horizonthalonius* var. *nicholii*)

STATUS: Endangered (44 FR 61927; October 26, 1979) without critical habitat.

SPECIES DESCRIPTION: Stems are blue-green to yellowish-green, columnar, usually single, and about 18 inches tall and 8 inches in diameter. Spines are born on vertical, spiralling ridges along the stem. Each spine cluster has 3 central spines; one curves downward and is much shorter than the others, and the other 2 are red or basally pale gray and curve upward. There are 5 radial spines per spine cluster. Flowers are pink-magenta and bloom from April to mid-May. Fruits are covered with woolly, white hairs.

HABITAT: Occurs in unshaded microsites within Sonoran desertscrub on dissected alluvial fans at the foot of limestone mountains and on inclined terraces and saddles on limestone mountainsides. Elevation ranges from 2,400 to 4,100 feet.

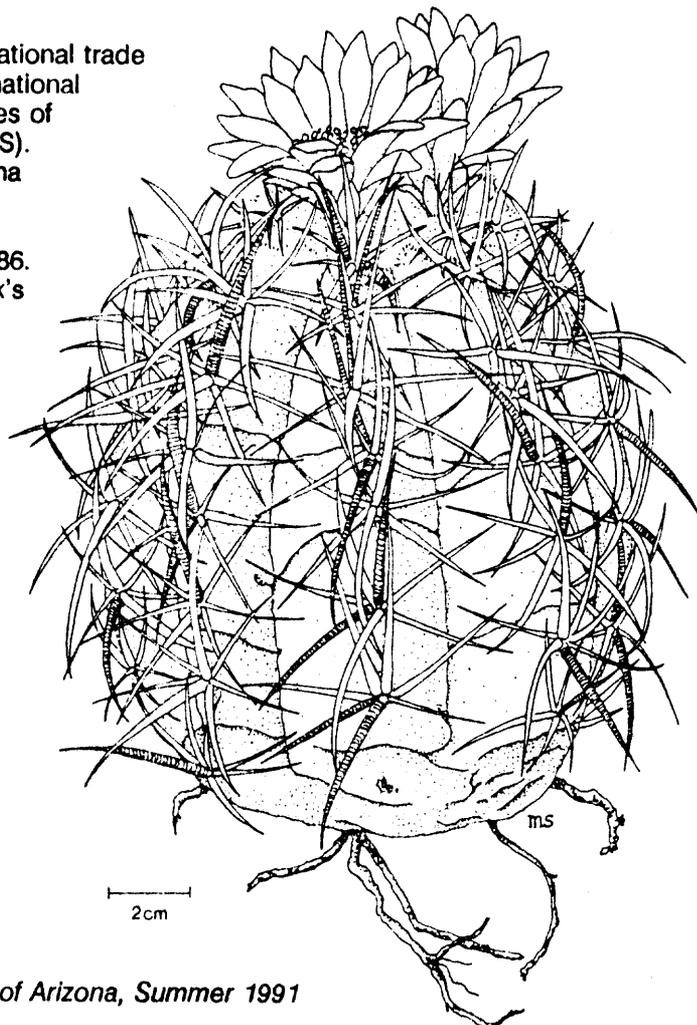
RANGE: Current: Southwestern Pinal and north-central Pima counties. More precise locality information is not given here due to the threat of illegal collection.
Potential: May occur on limestone in areas near the known populations.

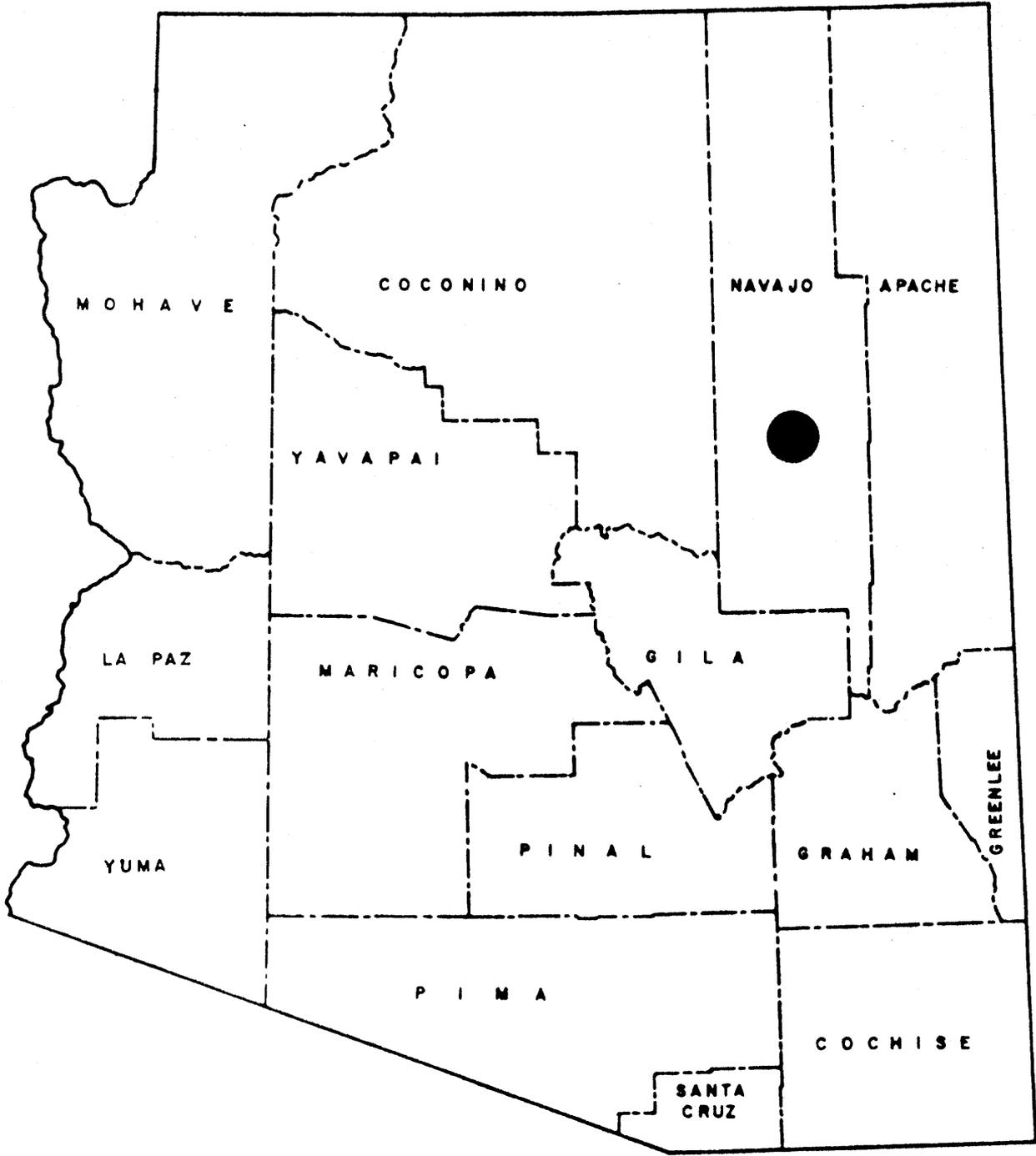
REASONS FOR DECLINE/VULNERABILITY: The specialized habitat requirements, limited habitat and abundance make this species vulnerable to threats. Threats include off-road vehicle use, other recreational uses of the habitat, mining and road construction.

LAND MANAGEMENT/OWNERSHIP: Bureau of Land Management, Tohono O'Odham Tribe, and private.

NOTES: Protected from illegal international trade by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Also protected by the Arizona Native Plant Law.

Recovery Plan approved 1986.
 BLM approved Nichol's Turk's Head Cactus Management Plan in 1986.





PEEBLES NAVAJO CACTUS

LEGEND

Current Range ●

PEEBLES NAVAJO CACTUS
(Pediocactus peeblesianus var. peeblesianus)

STATUS: Endangered (44 FR 61922; October 26, 1979) without critical habitat.

SPECIES DESCRIPTION: This cactus is very difficult to find because the plants are very small and during dry weather plants retract into the soil. Stems are solitary or rarely clustered, globose, and up to 1 inch tall and about 0.74 inch in diameter. The 4 (3-5) radial spines are arranged in a twisted cross and central spines are absent. Flowers are yellow to yellow-green, are up to 1 inch in diameter, and appear in the spring.

HABITAT: Occurs on gravelly soils of the Shinarump conglomerate of the Chinle Formation at elevations ranging from 5,400-5,600 feet. Associated species are sparsely scattered, low shrubs and grasses of the Navajoan Desert.

RANGE: Current: Central Navajo County, near Holbrook, Arizona.
Potential: Sites in the general geographic area that meet the habitat requirements.

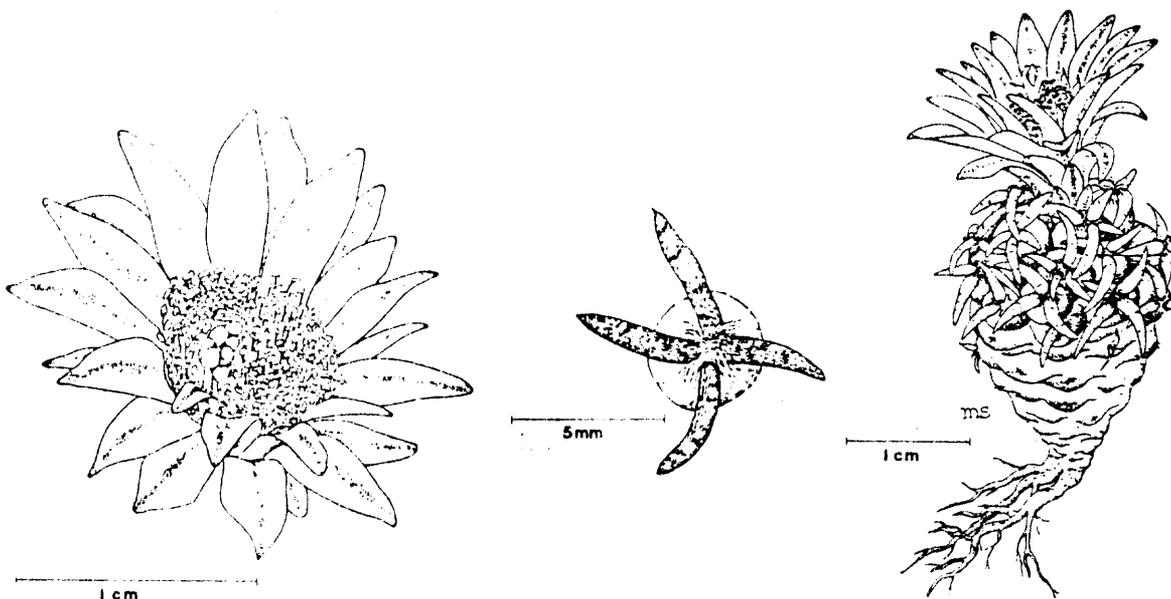
REASONS FOR DECLINE/VULNERABILITY: The specific habitat requirements, limited geographic range, and small number of individuals make this species vulnerable to extinction. Threats to the species include gravel mining, off-road vehicle traffic, urban development, road construction, and pesticide application. Reproduction may be insufficient to maintain populations over the long term.

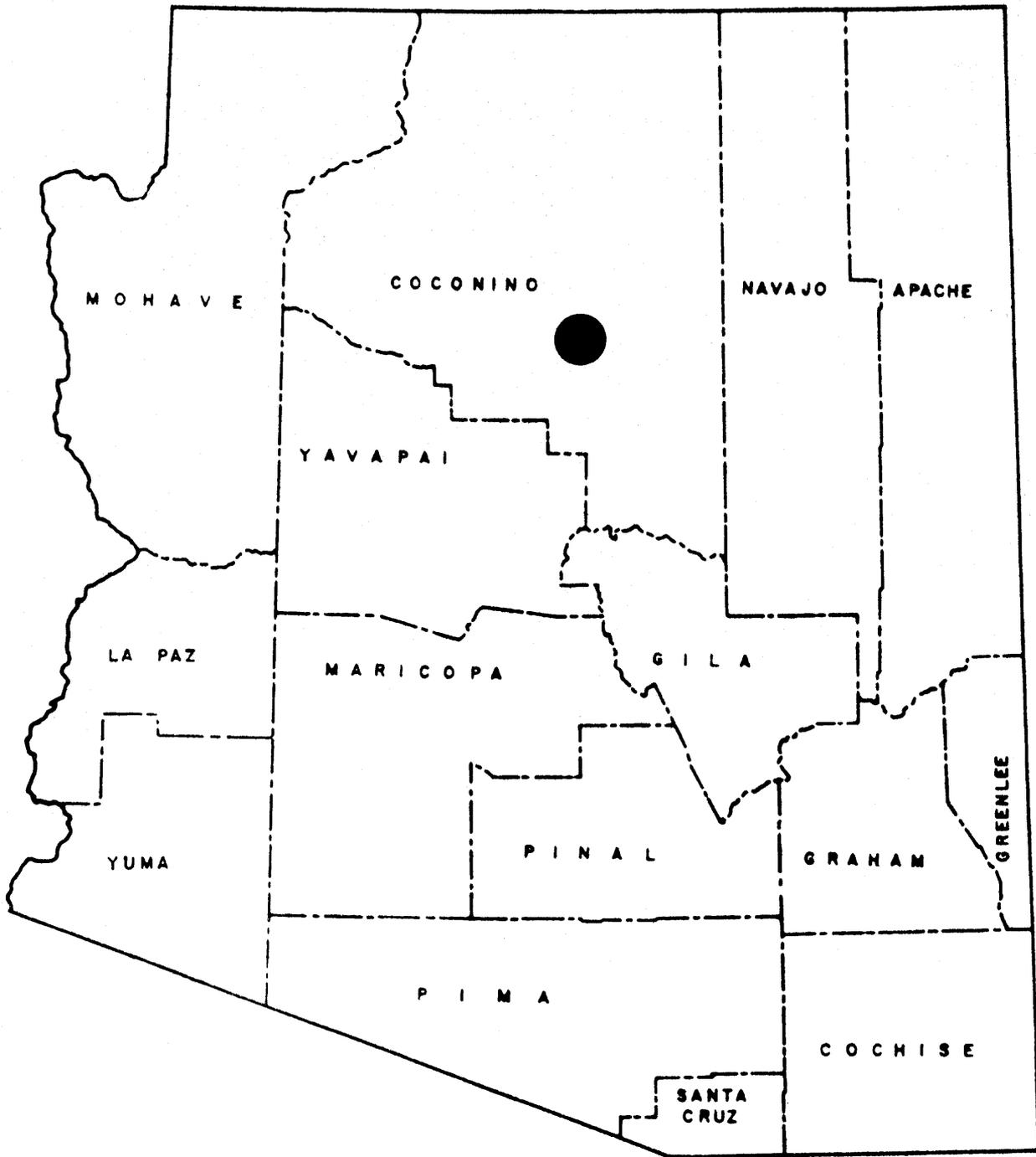
LAND MANAGEMENT/OWNERSHIP: Bureau of Land Management and private.

NOTES: Recovery Plan approved 1984. Peebles Navajo Cactus Habitat Management Plan approved by Bureau of Land Management 1985. Demographic studies have been occurring since 1980.

Protected from illegal international trade by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Also protected by the Arizona Native Plant Law.

Pediocacti are some of the most difficult cacti to grow in cultivation.





SAN FRANCISCO PEAKS GROUNDSEL

LEGEND

Current Range



SAN FRANCISCO PEAKS GROUNDSEL
(Senecio franciscanus)

STATUS: Threatened (48 FR 52743; November 22, 1983) with critical habitat.

SPECIES DESCRIPTION: This member of the sunflower family is a dwarf alpine species 1.2-4.0 inches tall. Leaves are deeply lobed, with upper leaves smaller than lower leaves. Flower heads (clusters) are 0.35-0.5 inch wide, and are composed of 1-6 yellow-gold flowers.

HABITAT: Alpine tundra above southwestern spruce-fir or bristlecone pine forests on talus slopes above 10,900 feet elevation.

RANGE: Current: San Francisco Peaks, Coconino County. Critical habitat includes three alpine areas of Coconino National Forest.

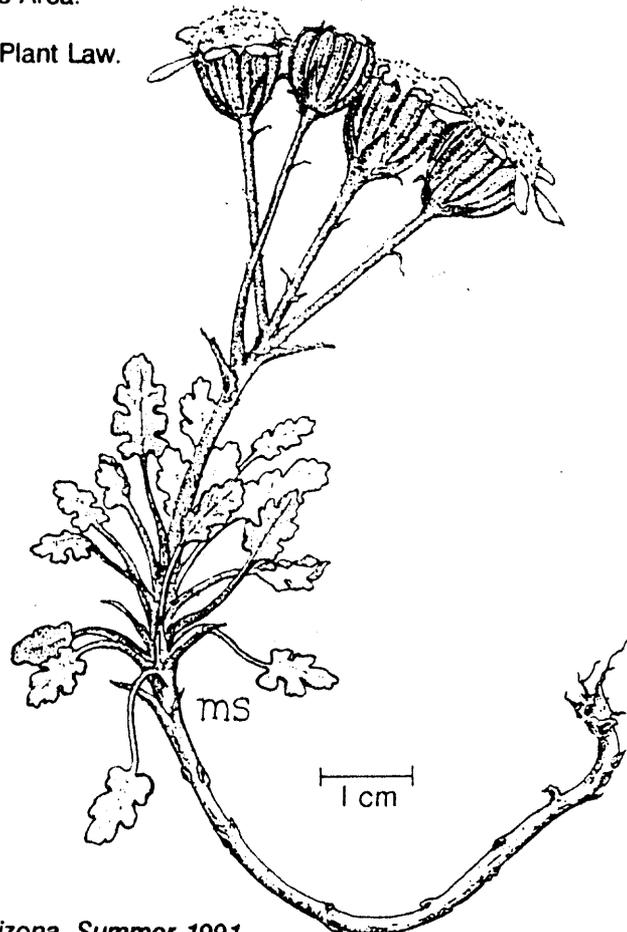
Potential: No other localities for this species are expected to occur.

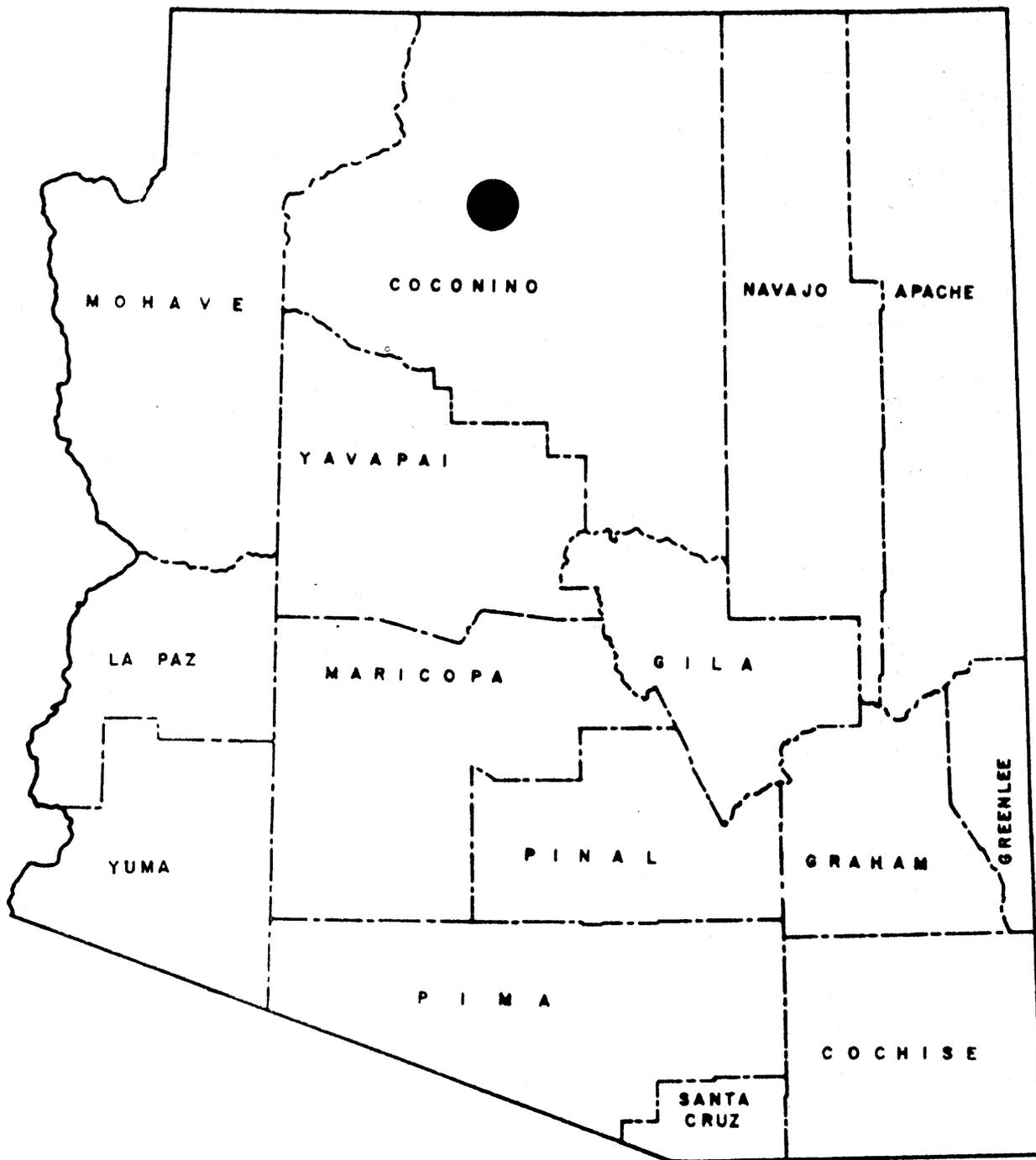
REASONS FOR DECLINE/VULNERABILITY: This species is vulnerable to man-caused threats due to its very restricted habitat. Threats include trampling by hikers, trail building, and ski area developments.

LAND MANAGEMENT/OWNERSHIP: Coconino National Forest.

NOTES: The management of this groundsel has been addressed in the following planning documents: San Francisco Peaks Groundsel Recovery Plan (FWS- 1987), Alpine Tundra Management Plan (Coconino National Forest- 1984), Monitoring Plan for Senecio franciscanus (Coconino National Forest- 1984), and in the Coconino National Forest Plan (1987). The Coconino National Forest is preparing a Management Plan for the Kachina Peaks Wilderness Area.

Protected by the Arizona Native Plant Law.





SENTRY MILK VETCH

LEGEND

Current Range



SENTRY MILK-VETCH
(*Astragalus cremnophylax* var. *cremnophylax*)

STATUS: Endangered (55 FR 50184; December 5, 1990) without critical habitat.

SPECIES DESCRIPTION: A member of the pea family (Fabaceae), sentry milk vetch is usually less than one inch high and forms a mat 1-10 inches in diameter. The short, creeping stems have compound leaves less than 0.4 inches long and composed of 5-9 tiny leaflets. The fruit is obliquely egg-shaped and densely hairy. Pale purple flowers are 0.2 inch long and appear from late April to early May. Seeds are set in late May-early June. The plants appear to be long lived and have a thick tap root that penetrates the limestone surface to reach a more constant source of moisture.

HABITAT: Sentry milk vetch grows on a white layer of Kaibab limestone with little (less than 0.50 inches) or no soil in an unshaded opening in the pinyon-juniper-cliffrose plant community. In the opening, sentry milk vetch is the co-dominant plant with rock mat (*Petrophytum caespitosum*).

RANGE: Current: The two known extant populations of this variety occur on the South Rim of the Grand Canyon. An historic record indicates the variety may have occurred where the El Tovar hotel is presently located.

Potential: Open areas of limestone pavement within the pinyon pine-juniper-cliffrose plant community along the South Rim of the Grand Canyon or the east rim of Marble Gorge.

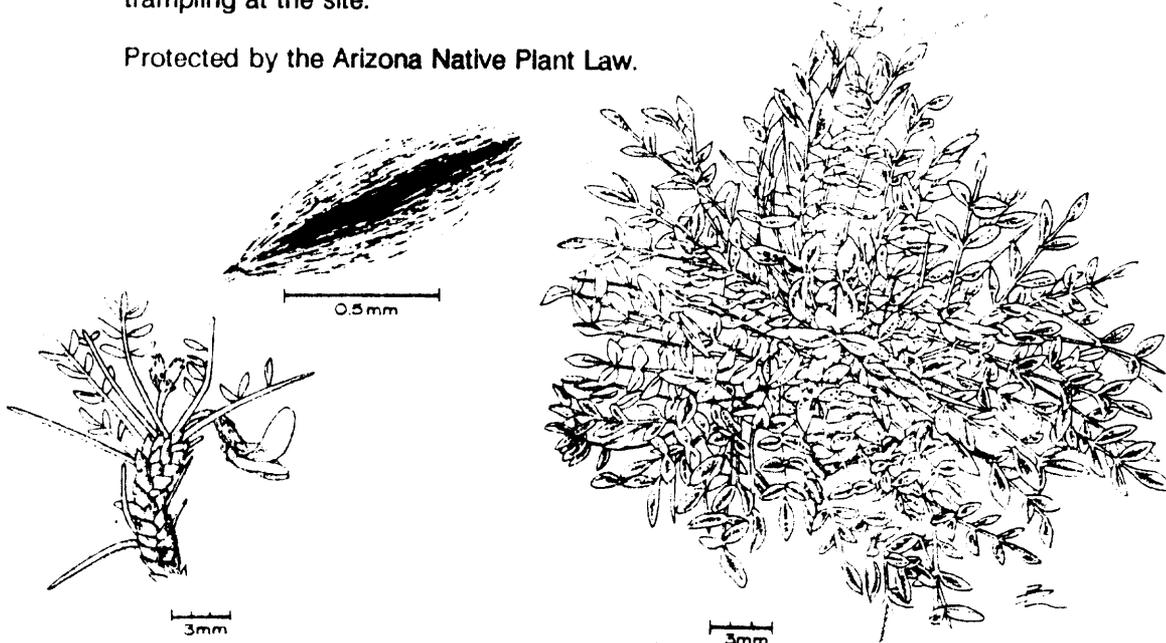
REASONS FOR DECLINE/VULNERABILITY: The largest population of this variety is vulnerable to threats because fewer than five hundred individuals occupy an area less than one acre. The variety is threatened by trampling from park visitors. General habitat degradation (including soil erosion) is occurring in the largest population due to the heavy foot traffic which occurred in the past.

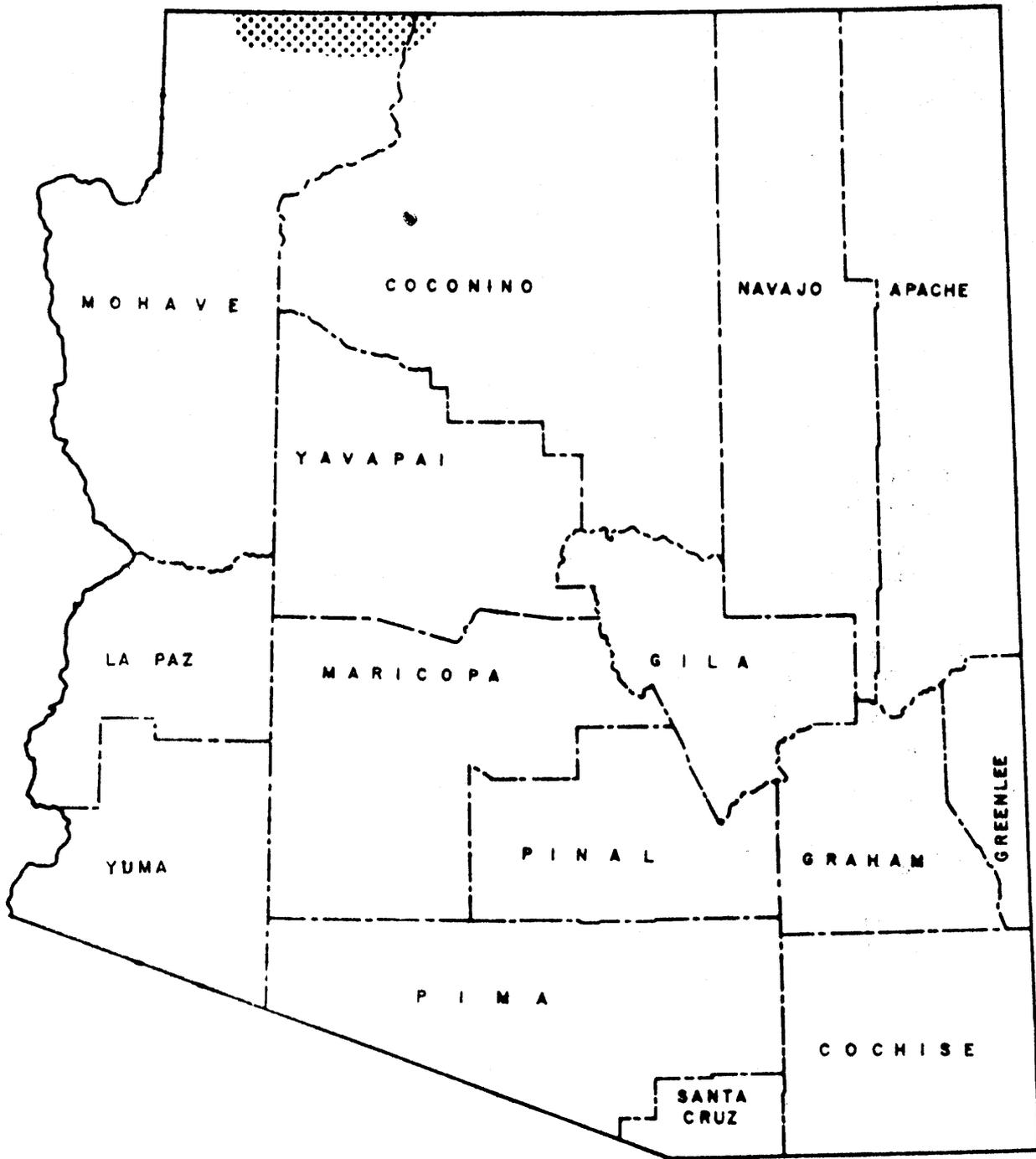
LAND MANAGEMENT/OWNERSHIP: National Park Service and possibly the Navajo Nation.

NOTES: The National Park Service and Fish and Wildlife Service are studying the demography of this population.

In spring 1990, the Grand Canyon National Park constructed a wooden fence to exclude visitors from the site. The fence has effectively removed most of the trampling at the site.

Protected by the Arizona Native Plant Law.





SILVER CHOLLA CACTUS

LEGEND

Current Range



SILER PINCUSHION CACTUS
(Pediocactus sileri)

STATUS: Endangered (44 FR 61786; November 26, 1979) without critical habitat.

SPECIES DESCRIPTION: This cactus is a small, solitary or occasionally clustered, globose cactus about 5 inches tall (with exceptional specimens reaching 18 inches) and 3-4 inches in diameter (occasionally larger). Spines are brownish-black, becoming gray to white with age. Flowers are yellowish with maroon veins, 0.75-1 inch in diameter and bloom in the spring.

HABITAT: Grows on gypsiferous clay and sandy soils of the Moenkopi Formation. The rounded hills often support a sparser vegetation than adjacent areas of different substrate. Habitat is characterized by desert scrub vegetation, in transitional areas between the Navajoan Desert, Sagebrush Desert and the Mohavean Desert. Found at elevations between 2,800-5,400 feet, on all aspects of the hills and on slopes varying from 0-80 degrees.

RANGE: Current: Only several locations are known where relatively dense population clusters occur. Individual plants are widely separated in other areas of the Moenkopi that are marginally suitable for this species. All known localities occur in Kane and Washington counties, Utah, and in northern Mohave and northwestern Coconino Counties, Arizona.

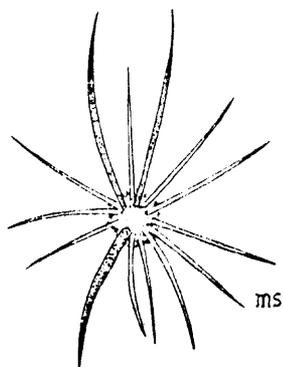
Potential: Surveys for this species are incomplete. Plants may be found wherever habitat conditions are met.

REASONS FOR DECLINE/VULNERABILITY: This species is vulnerable to man-caused threats because of its specific habitat requirements. Threats include illegal collection, herbivory by unknown animal (rodent?), uranium mining and exploration, off-road vehicle disturbance, and pesticide application.

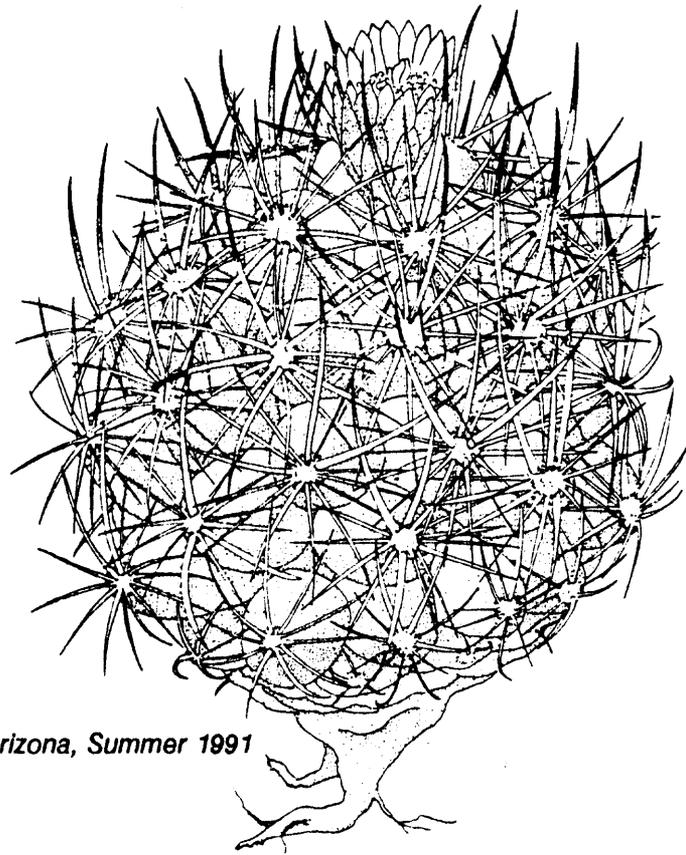
LAND MANAGEMENT/OWNERSHIP: Bureau of Land Management, Kaibab-Paiute Indian Reservation.

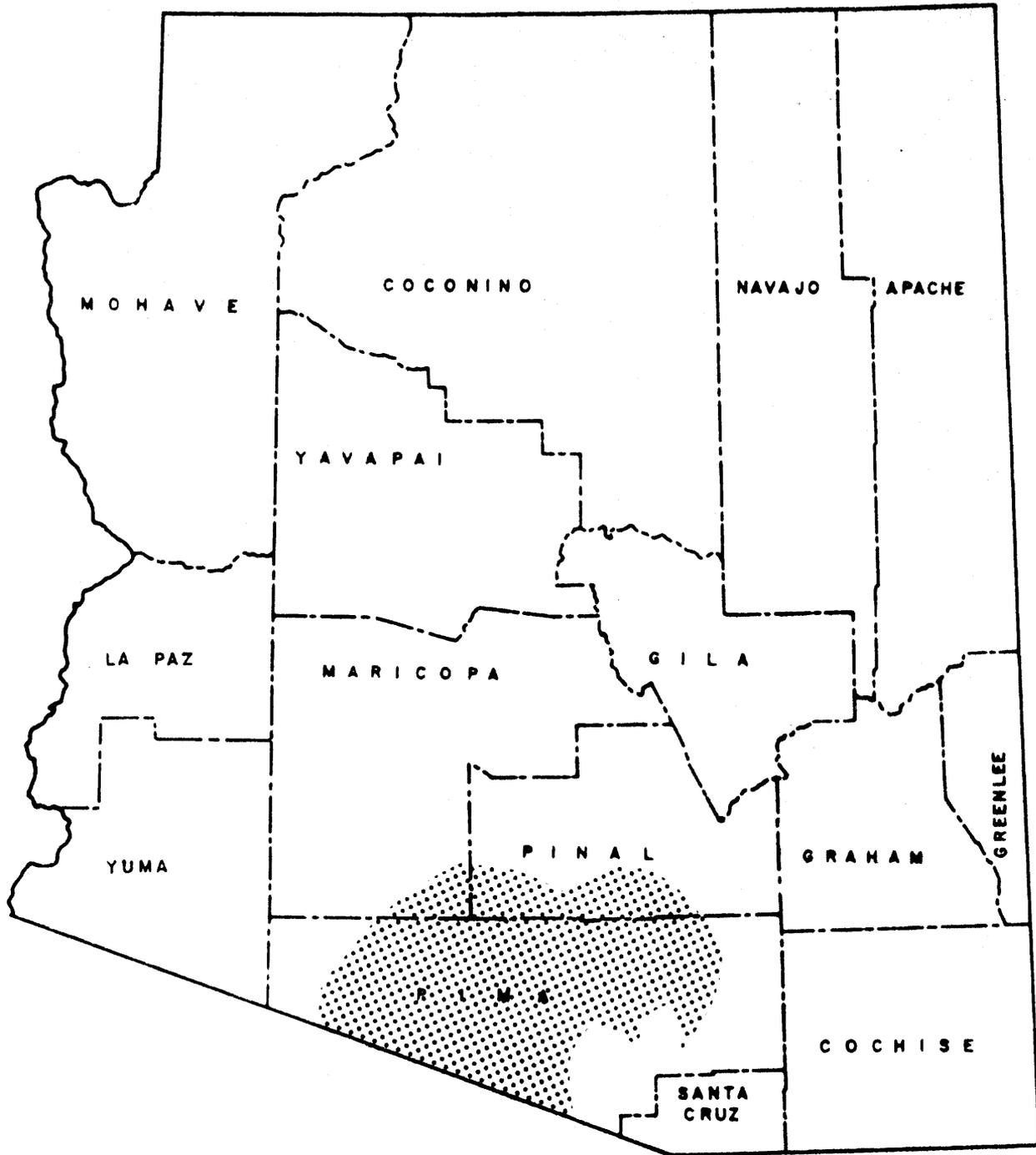
NOTES: Protected from international trade by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Also protected by the Arizona Native Plant Law.

Recovery Plan approved 1986.



1 cm





TUMAMOC GLOBEBERRY

LEGEND

Current Range



TUMAMOC GLOBEBERRY
(*Tumamoca macdougalii*)

STATUS: Endangered (51 FR 15906; April 29, 1986) without critical habitat.

SPECIES DESCRIPTION: This species is a delicate perennial vine in the gourd family (Cucurbitaceae). These plants are found under trees and shrubs, which act as nurse plants and provide physical support for the vines. The vines, which arise from a large underground tuber, begin annual growth during the late summer in response to summer rains and continue growing until the onset of cool weather and short days in November. The thin leaves have three main lobes, each divided into narrow segments. The plant bears small, yellow, male and female flowers and produces small, red, watermelon-like fruits. Male flowers open before the summer rains, while female flowers open after the onset of summer rains. Fruits ripen in August and September.

HABITAT: The species grows in a variety of desert habitats and vegetation types, ranging from rocky slopes to sandy loam flats and in paloverde-mixed cacti, creosote-bursage, grassland and saltbush/mesquite. The species has not been found on bedrock-dominated soils, major river floodplains or in "forests" (i.e. mesquite bosques or deciduous tree, closed-canopy riparian areas).

RANGE: Current: The species occurs from south of the Rio Yaqui in southern Sonora, Mexico, north nearly to the Gila River in southern Arizona below 3,000 feet elevation. In Pima County, globeberries occur in isolated, discrete populations separated by large areas of apparently suitable but unoccupied habitat. It also is known from Maricopa County near the Pima County border.

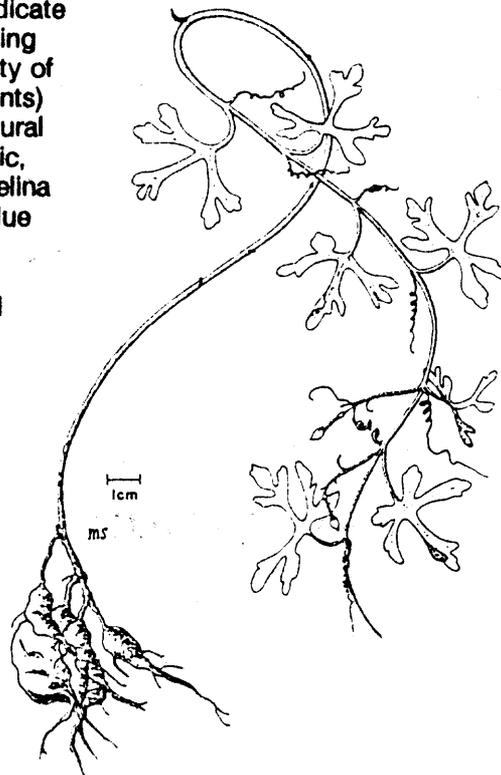
Potential: Areas within the range of the species that meet the general habitat requirements.

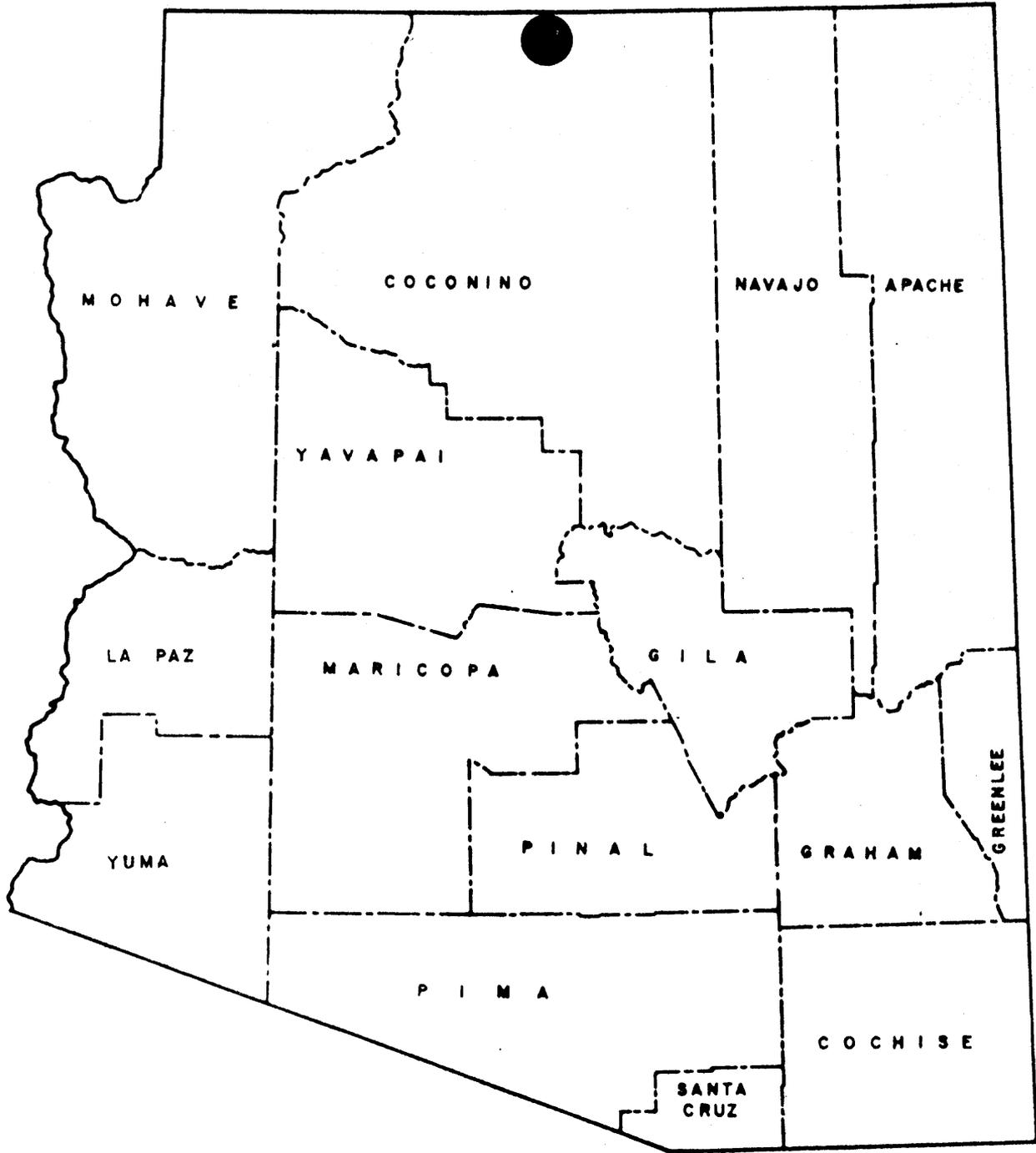
REASONS FOR DECLINE/VULNERABILITY: This species' desert habitat is slow to recover from surface disturbances because of its hot, dry climate. The populations are generally small in numbers of plants and in area, making each population susceptible to localized disturbance. Preliminary data indicate that although plants have the potential for being long-lived, population "turnover" time (mortality of mature plants and replacement by young plants) is short. Man-caused threats include agricultural and urban development, off-road vehicle traffic, recreation, predation by unnaturally large javelina populations, and degradation of the habitat due to livestock grazing.

LAND MANAGEMENT/OWNERSHIP: Bureau of Land Management, State Land Department, U.S. Forest Service (Coronado National Forest), Tohono O'Odham Nation, National Park Service (Organ Pipe Cactus National Monument, Saguaro National Monument), and private.

NOTES: The survey period for this species is limited to the period between August 15 and November 1. Outside of the survey period, plants are difficult or impossible to locate because the above-ground parts are dead.

Protected by the Arizona Native Plant Law.





WELSH'S MILKWEED

LEGEND

Known Localities



WELSH'S MILKWEED
(*Asclepias welshii*)

STATUS: Threatened (October 28, 1987; 52 FR 41435) with critical habitat.

SPECIES DESCRIPTION: This member of the milkweed family (Asclepiadaceae) is a rhizomatous, herbaceous perennial, 10-40 inches tall, with large oval leaves. The cream colored flowers are rose-tinged in the center.

HABITAT: Open, sparsely vegetated semi-stabilized sand dunes and on the lee of actively drifting sand dunes.

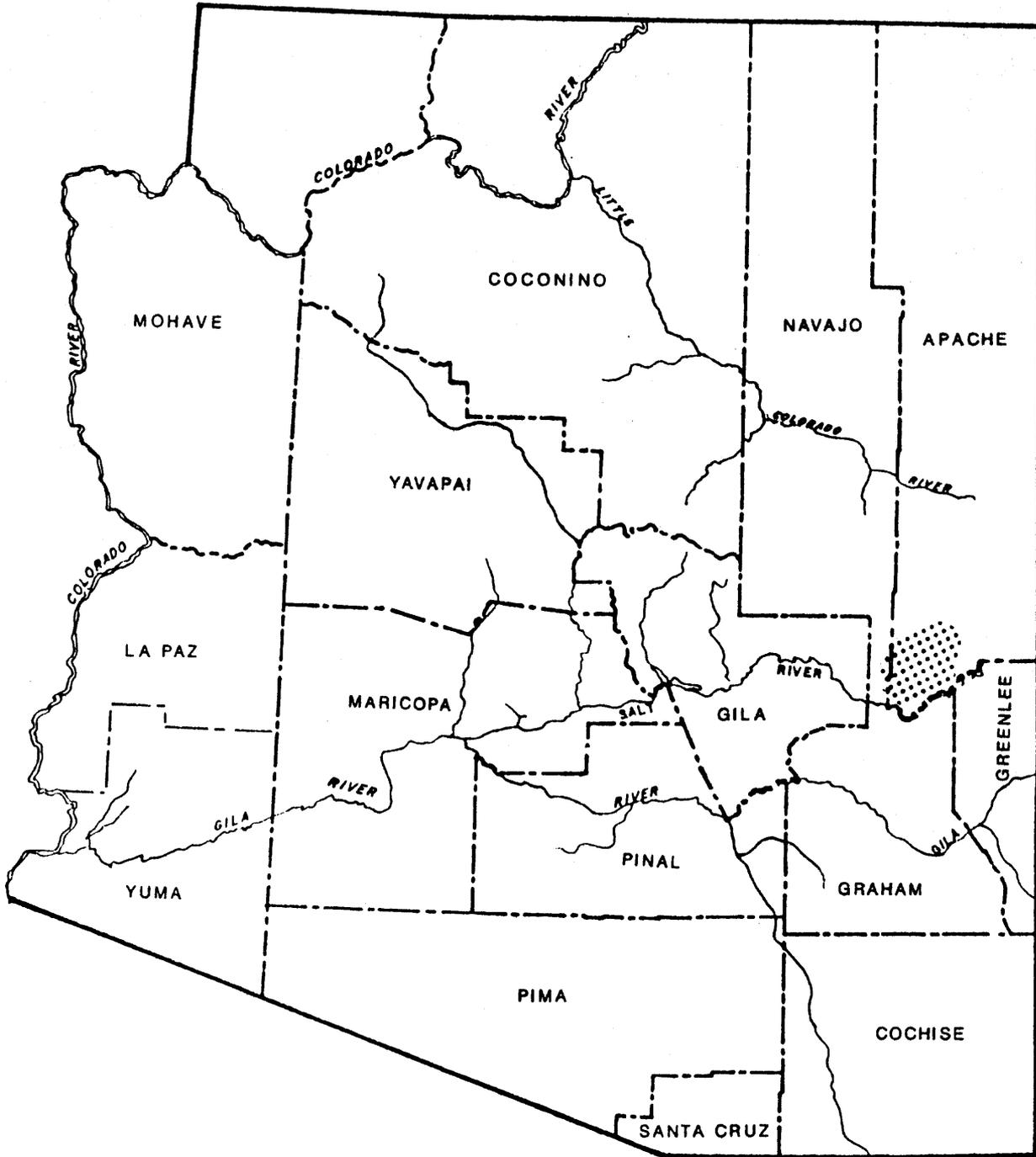
RANGE: **Current:** Several thousand individuals are known from a few concentrated areas on the Coral Pink Sand Dunes and the Sand Hills area of Kane County, Utah. Small populations are known from the Paria-Vermillion Cliffs Wilderness area near the Utah/Arizona border in Kane County, Utah and Coconino County, Arizona. **Potential:** Southern Utah and northern Arizona where naturally occurring drifting sand dunes derived from Navajo sandstone occur.

REASONS FOR DECLINE/VULNERABILITY: Limited habitat and small number of populations make this species vulnerable to human-caused threats. Recreational use of off-road vehicles is damaging habitat and destroying plants. Livestock use the species for forage.

LAND MANAGEMENT/OWNERSHIP: Bureau of Land Management and Utah State Parks.

NOTES: For location of critical habitat, see 52 FR 41435. All critical habitat occurs in Utah.





APACHE TROUT

LEGEND

Current Range 

APACHE TROUT
(Oncorhynchus apache)

STATUS: Threatened (40 FR 29864; July 19, 1975) without critical habitat. Originally listed as endangered in 1967.

SPECIES DESCRIPTION: This yellow or yellow-olive cutthroat-like trout has large dark spots on body. Its dorsal, anal, and caudal fins edged with white. It has no red lateral band.

HABITAT: Occurs in small, cold, high-gradient streams. These streams have substrates consisting of boulders, rocks and gravel with some sand or silt and flow through mixed conifer forests.

RANGE: Historic: Headwater streams of the Black, White, San Francisco, and Little Colorado Rivers in the White Mountains of eastern Arizona.

Current: Approximately thirty sites are presently known to support native or reintroduced populations of Apache trout on the Fort Apache Indian Reservation and the Apache-Sitgreaves National Forests. Genetic purity of some of those populations is in question and is under investigation. Populations introduced outside of historic range exist on the Coronado and the northern portion of the Kaibab National Forests.

REASONS FOR DECLINE/VULNERABILITY: Hybridization with introduced rainbow and cutthroat trouts, predation and competition by introduced fishes, and habitat degradation.

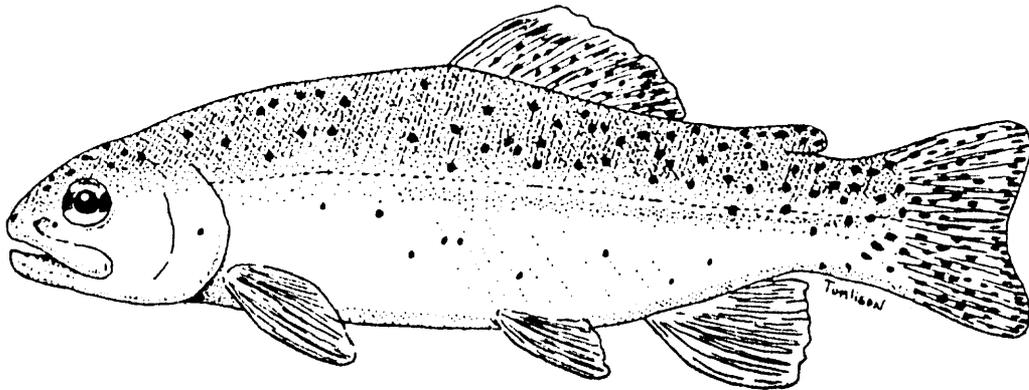
LAND MANAGEMENT/OWNERSHIP: United States Forest Service and Fort Apache Indian Reservation.

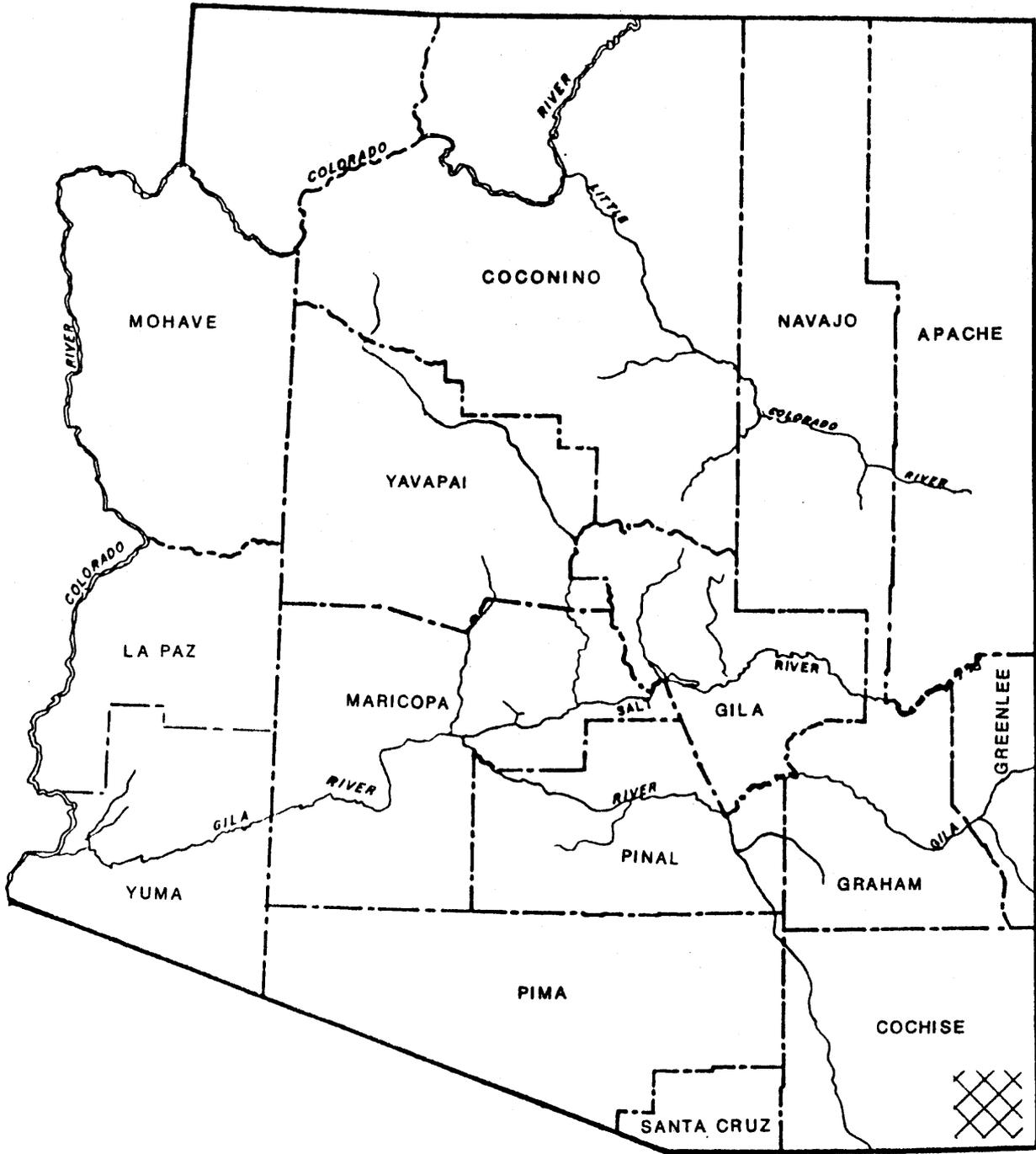
NOTES: Recovery Plan revised in 1983.

Special regulations allow Arizona to manage this species as a sport fish.

Two hundred and fifty thousand or more are produced annually for reintroduction.

Breeding stock maintained at Williams Creek National Fish Hatchery.





BEAUTIFUL SHINER

LEGEND

Historic Range



BEAUTIFUL SHINER
(*Cyprinella* {=*Notropis*} *formosa*)

STATUS: Threatened (49 FR 34490; August 31, 1984) with critical habitat.

SPECIES DESCRIPTION: This fish is a small (2.5 inches), shiny minnow and very similar to the common red shiner in appearance. Males are very colorful when exhibiting breeding color (yellow-orange or orange on caudal and lower fins, and bluish body).

HABITAT: This species occurs mainly in small to medium streams with sand, gravel, and rock bottoms. It is also found in man-made ponds.

RANGE: Historic: It occurred in the Rios Yaqui, Casas Grandes, Santa Maria, and Santa Clara drainages in Sonora and Chihuahua, Mexico; Rio Yaqui (San Bernardino Creek) in Arizona; Mimbres River in New Mexico.

Current: Extirpated from the United States in 1968, but is still found in most of historic range in Mexico. It was reintroduced to San Bernardino National Wildlife Refuge in the United States in 1989.

Potential: The extent of the Mexican populations is poorly documented. Populations may also be found in the Bustillos and Bavicora basins in Chihuahua, Mexico.

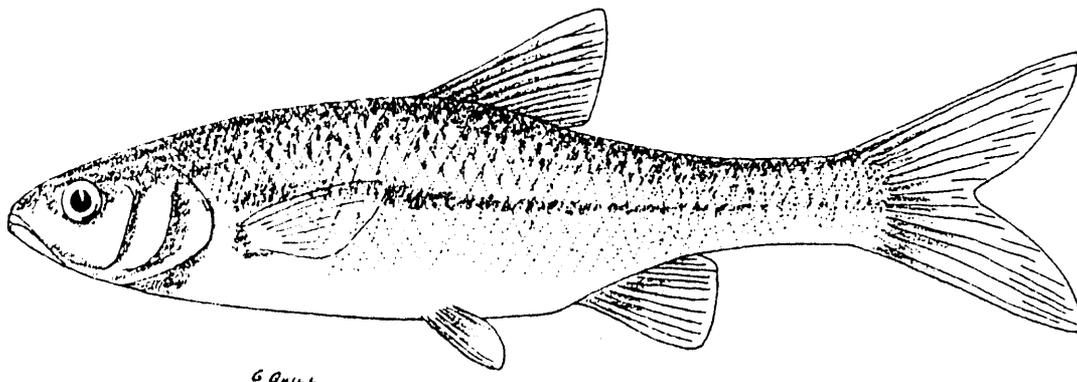
REASONS FOR DECLINE/VULNERABILITY: This shiner is threatened by habitat destruction and modification.

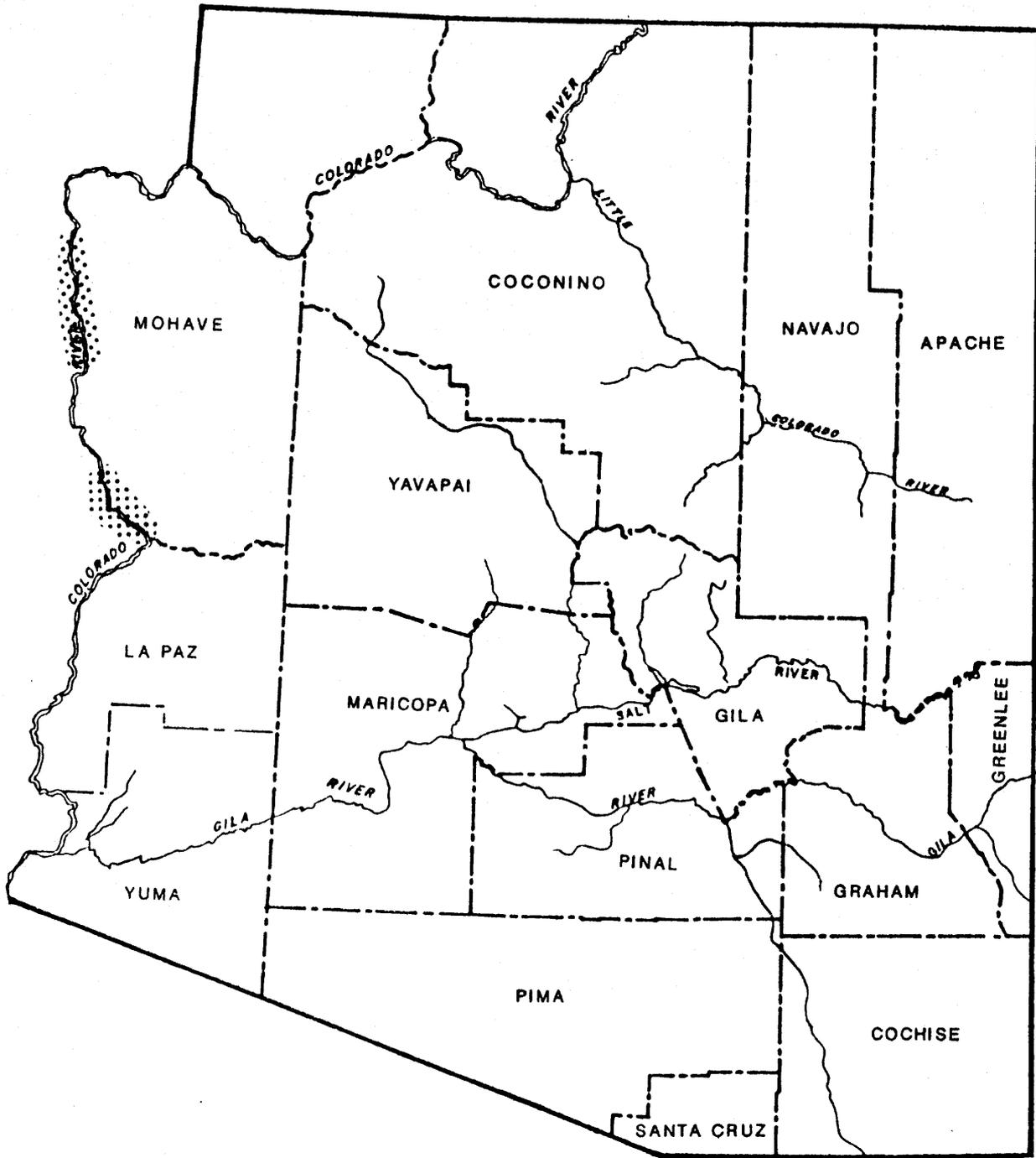
LAND MANAGEMENT/OWNERSHIP: Sole reintroduced United States population is on San Bernardino National Wildlife Refuge from Mexican stock collected in the fall of 1989.

NOTES: Critical habitat includes all aquatic habitats (except Leslie Creek) of San Bernardino National Wildlife Refuge, Cochise County, Arizona (south 1/2 of Section 11; south 1/2 and northeast 1/4 of Section 15, Township 24 South, Range 30 East).

A Rio Yaqui fishes recovery plan is in preparation.

Listed as endangered by the State of Arizona.





BONYTAIL CHUB

LEGEND

Current Range



BONYTAIL CHUB
(*Gila elegans*)

STATUS: Endangered (45 FR 27710; April 23, 1980) without critical habitat.

SPECIES DESCRIPTION: This large (averaging 12-14 and achieving 24 inches) minnow is characterized by a small head, large fins, humped back, and a long, thin caudal peduncle.

HABITAT: Occurs in warm, swift, turbid mainstem rivers.

RANGE: Historic: Endemic to the Colorado River basin and found throughout the mainstem rivers of the upper and lower basins.

Current: Rarest of the Colorado River fishes - close to extinction. Since the late 1970's a few very old (40 years +) specimens have recently been taken from Lake Mohave (Mohave County), individual fish are occasionally taken at Lake Havasu; there is minimal reproduction in the wild. Populations may exist in Desolation Canyon on the Green River and the mouth of the Yampa River in Utah. Several suspected bonytail chub have been recently captured in Cataract Canyon, Colorado River, Utah. Fingerling bonytail chub from the Dexter National Fish Hatchery were stocked in Lake Mohave in 1981-1990.

REASONS FOR DECLINE/VULNERABILITY: Modification of original river conditions by dam construction, flow depletion from irrigation and other uses, hybridization with other *Gila* species, and introduction of non-native fishes. Individuals may persist in reservoirs for several years but survival of young does not appear adequate to sustain the population.

LAND MANAGEMENT/OWNERSHIP: In Arizona: National Park Service (Lake Mead National Recreation Area), Bureau of Reclamation, U.S. Fish and Wildlife Service (Havasu National Wildlife Refuge), Arizona State University, and private.

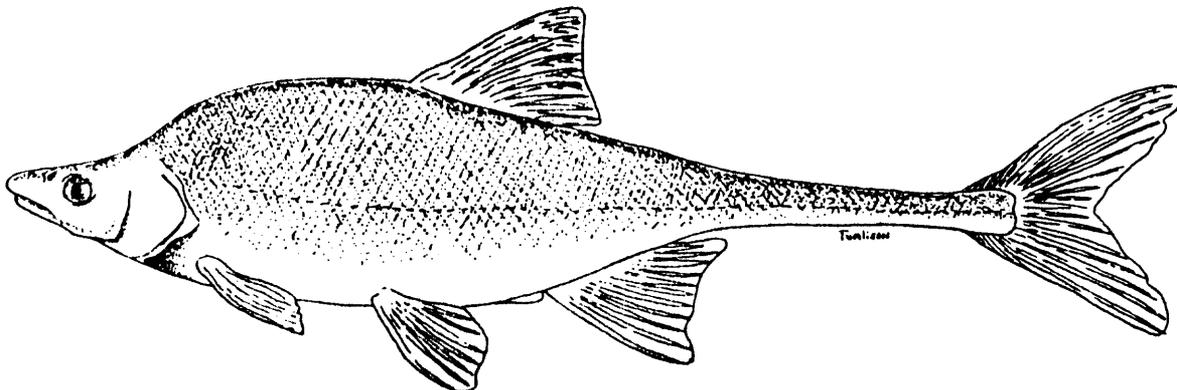
NOTES: There is much confusion about the taxonomy of the three *Gila* species (and possibly hybrids) in the Upper Basin.

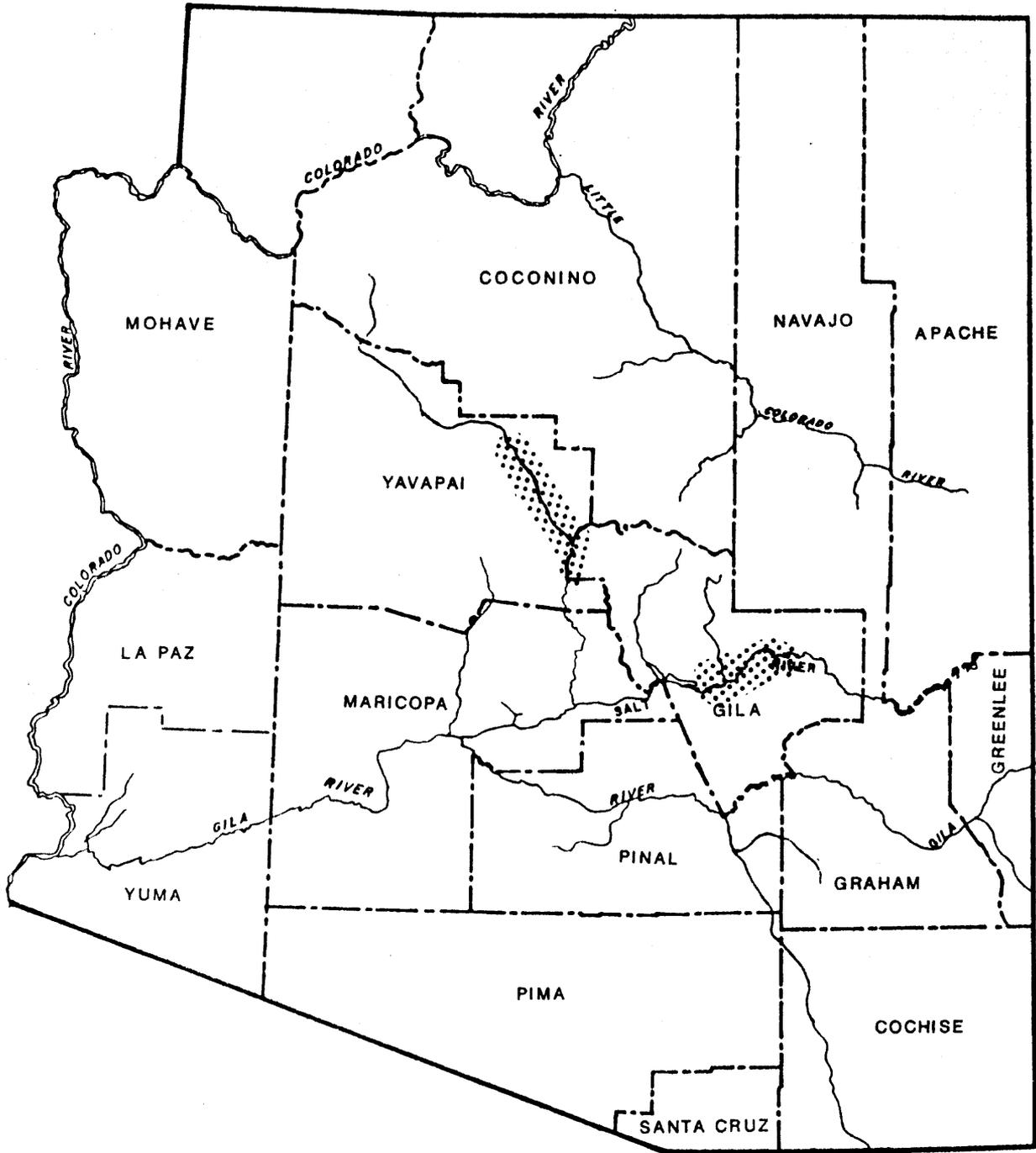
Listed as endangered by the State of Arizona.

Presently F1 generation fish from Lake Mohave wild fish are being held at Dexter National Fish Hatchery (New Mexico) and two refugia in Maricopa County (Arizona State University, Tempe, and Hassayampa River Preserve, near Wickenburg).

Recovery Plan approved May 16, 1984; revised September 4, 1990.

Stocked into Lake Mohave in 1982, 1983, 1985, 1987, 1988, 1989 and 1990.





COLORADO SQUAWFISH

LEGEND

Current Range



COLORADO SQUAWFISH
(Ptychocheilus lucius)

STATUS: Endangered (32 FR 4001; March 11, 1967) without critical habitat.

SPECIES DESCRIPTION: This is the largest American minnow (up to 6 feet long and 80 pounds). Its dusky-greenish, slender body has gold flecks on the dorsal (upper) surface. Its head is long and slender and the mouth is large.

HABITAT: This fish occurs in the warm, swift, turbid waters of the big rivers of the Colorado Basin. Adults are migratory and inhabit pools and eddies just outside main current. Young are found in backwater areas.

RANGE: Historic: Endemic to the Colorado River Basin and once found throughout the Colorado River and major tributaries in Arizona, New Mexico, Utah, Colorado, and Wyoming.

Current: Extirpated from the lower basin with the last known naturally occurring specimen from Arizona collected in 1969. Several individuals, adults and fingerlings, have been found in the San Juan River since 1987. Populations also exist in the Colorado, Green, Yampa, and Gunnison Rivers of Utah and Colorado. Experimental nonessential populations of Colorado squawfish have been reintroduced in the Verde and Salt River basins in Arizona (50 CFR Part 17.84b).

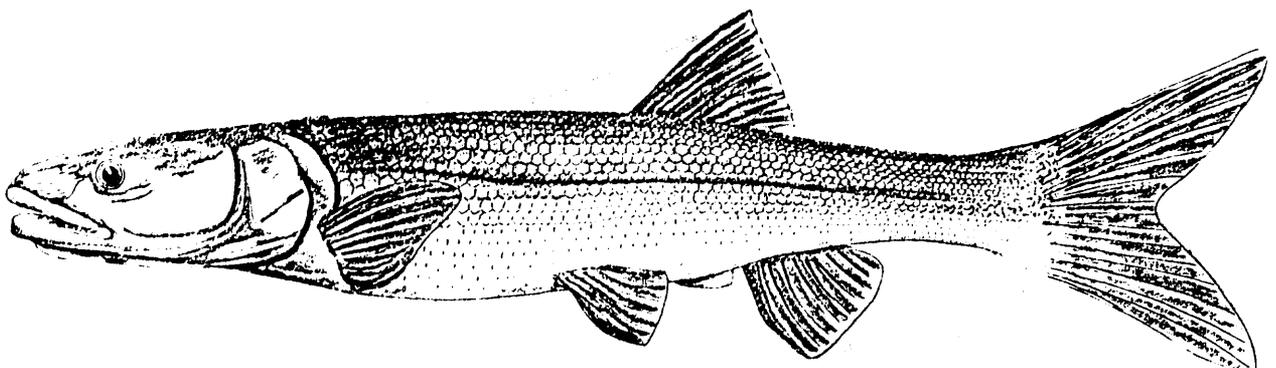
REASONS FOR DECLINE/VULNERABILITY: Stream alteration and habitat fragmentation caused by dam construction, irrigation dewatering, channelization, and introduction of competitive and predatory non-native fishes.

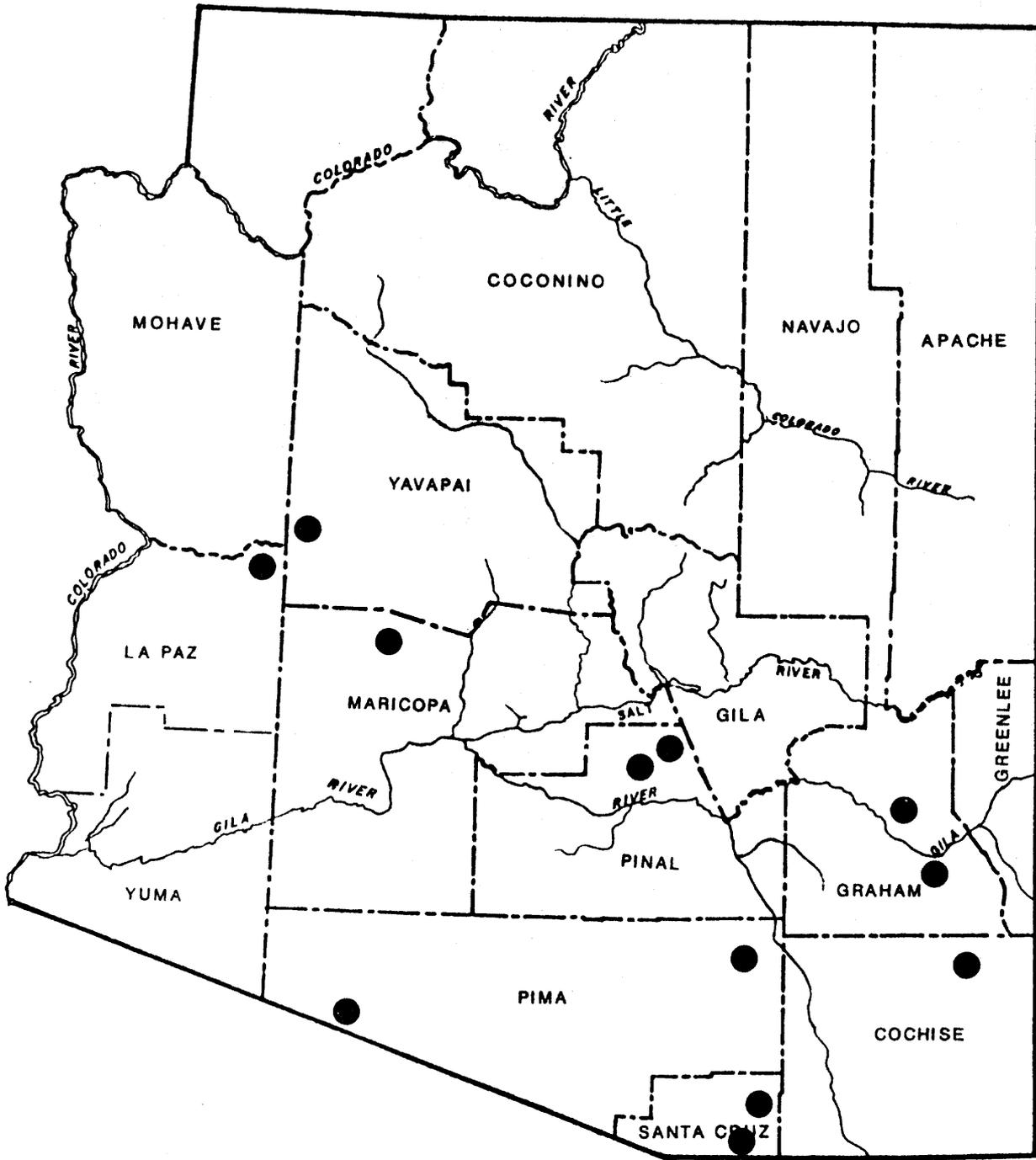
LAND MANAGEMENT/OWNERSHIP: In Arizona: U.S. Forest Service (Tonto, Prescott, and Coconino National Forests), State of Arizona, and private.

NOTES: A Recovery Plan was approved March 16, 1978 and revised August 6, 1991.

Populations maintained in Dexter National Fish Hatchery and the Arizona Game and Fish Department Page Springs Hatchery. Fish are produced and stocked annually in historic habitat.

Listed as endangered by the State of Arizona.





DESERT PUPFISH

LEGEND

Current Range ●

DESERT PUFFISH
(Cyprinodon macularius)

STATUS: Endangered (51 FR 10842; March 31, 1986) with critical habitat.

SPECIES DESCRIPTION: This is a small fish (2 inches long) with a smoothly rounded body shape and with narrow, vertical, dark bars on the sides. Breeding males are blue on the top and sides and have yellow fins. Females and juveniles have tan to olive colored backs and silvery sides. Two subspecies are recognized: the desert pupfish (Cyprinodon macularius macularius) and the Quitobaquito pupfish (Cyprinodon macularius eremus).

HABITAT: This pupfish is found in shallow water of desert springs, small streams, and marshes below about 5,000 feet elevation. It tolerates high salinities and high water temperatures.

RANGE: Historic: It was once common in desert springs, marshes, backwaters and tributaries of the Rio Sonoyta, lower Gila River, and lower Colorado River drainages in Arizona, California, and Mexico.

Current: One population of Quitobaquito pupfish exists at Quitobaquito spring on Organ Pipe National Monument in Pima County, Arizona. Three natural populations of desert pupfish remain in the United States in Imperial and Riverside Counties, California, in the Salton Sea basin. No naturally occurring wild populations of desert pupfish remain in Arizona. Natural populations are known to survive in at least four locations in the Colorado River delta in Baja California, Mexico, and in the Rio Sonoyta in Sonora, Mexico. Introduced populations exist in small springs, streams, and ponds in Imperial, Riverside and Butte Counties, California; and Pima, Pinal, Maricopa, Graham, Cochise, La Paz and Yavapai Counties, Arizona. New introductions continue as part of the recovery effort.

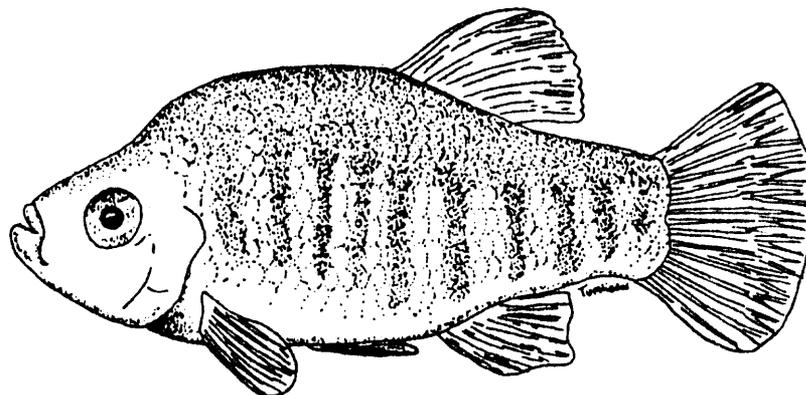
REASONS FOR DECLINE/VULNERABILITY: Impacts include the introduction and spread of exotic predatory and competitive fishes, water impoundment and diversion, water pollution, groundwater pumping, stream channelization, and habitat modification.

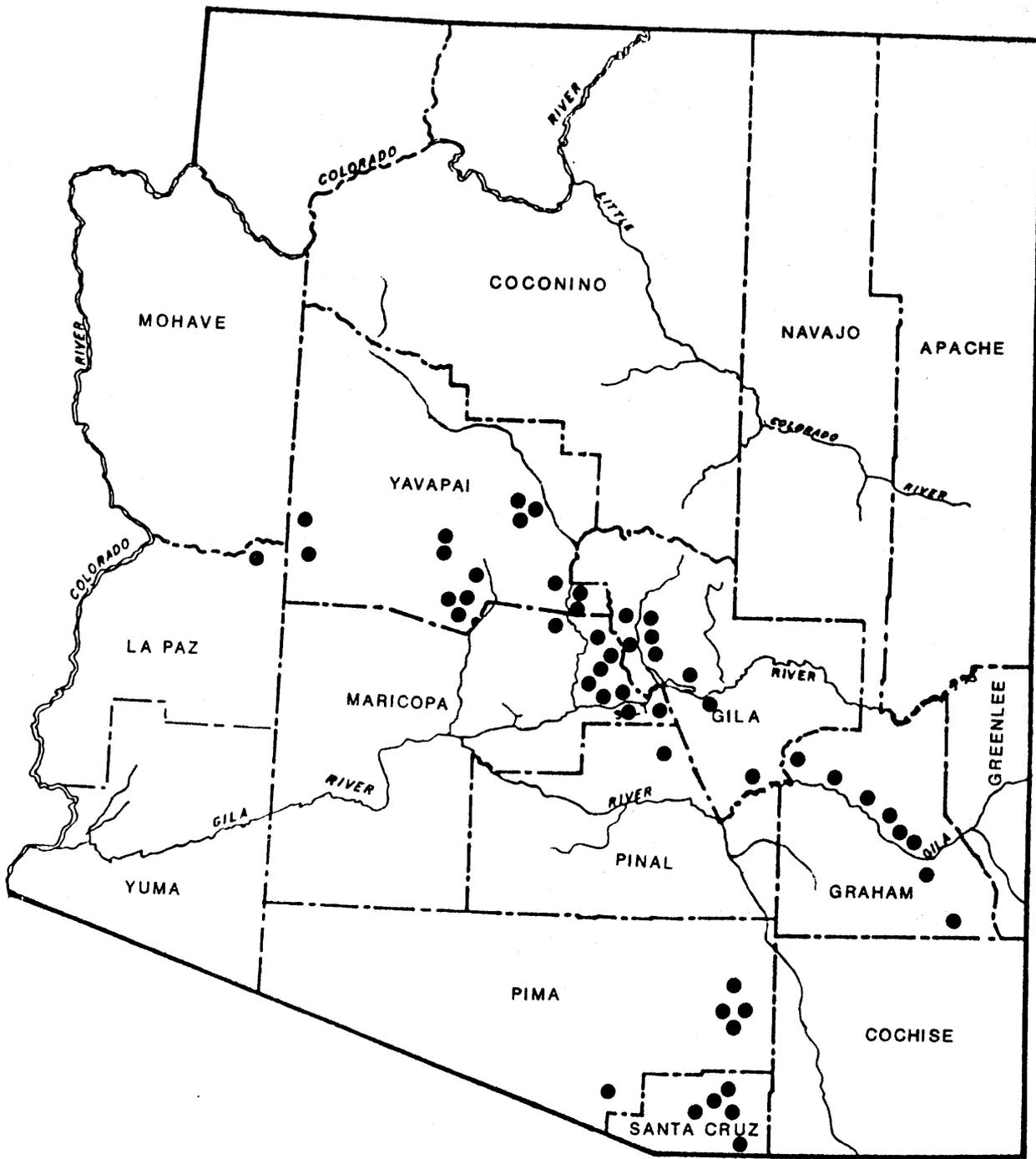
LAND MANAGEMENT/OWNERSHIP: Organ Pipe National Monument, States of Arizona and California, Bureau of Land Management (Safford and Phoenix Districts, Arizona; Riverside District, California), United States Forest Service (Coronado National Forest), private.

NOTES: Critical habitat includes Quitobaquito Spring, Pima County, Arizona, and portions of San Felipe Creek, Carrizo Wash, and Fish Creek Wash, Imperial County, California.

A Recovery Plan is in preparation.

Listed as endangered by the State of Arizona.





GILA TOPMINNOW

LEGEND

Current Range ●

GILA TOPMINNOW
(Poeciliopsis occidentalis occidentalis)

STATUS: Endangered (32 FR 4001; March 11, 1967) without critical habitat.

SPECIES DESCRIPTION: This is a small (2 inches), guppy-like, live-bearing fish which lacks dark spots on its fins. Breeding males are jet black with yellow fins.

HABITAT: It occurs in small streams, springs, and cienegas below about 4,500 feet elevation. It is found primarily in shallow areas with aquatic vegetation or debris. It can tolerate relatively high water temperatures and low dissolved oxygen.

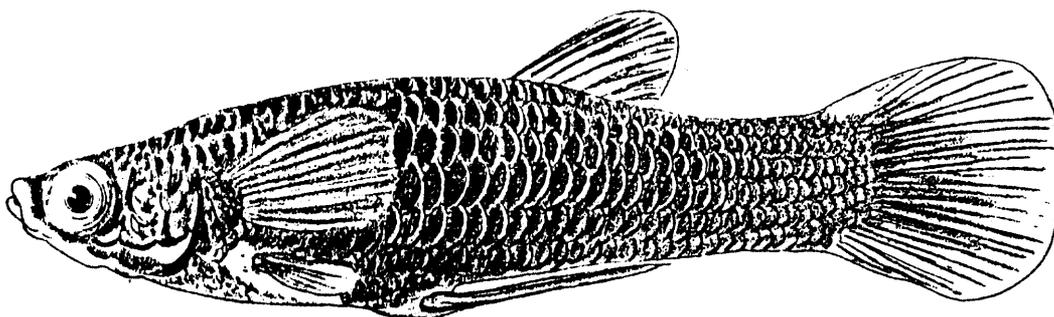
RANGE: Historic: This species occurred in the Gila, Sonora, and de la Concepcion River drainages in Arizona and Sonora, Mexico.
Current: Natural populations persist in the United States in Arizona in Redrock Canyon, Sharp, Monkey, and Cottonwood Springs, Sonoita Creek, and the Santa Cruz River in Santa Cruz County; in Ash Creek and two springs near Bylas, Graham County; and in Cienega Creek, Pima County. Introduced populations exist in small streams and ponds in Santa Cruz, Graham, Gila, Pinal, Pima, Maricopa, Yavapai, and La Paz Counties, Arizona. New introductions continue as part of the recovery effort. In Mexico, natural populations exist in the Sonora and de la Concepcion River drainages.

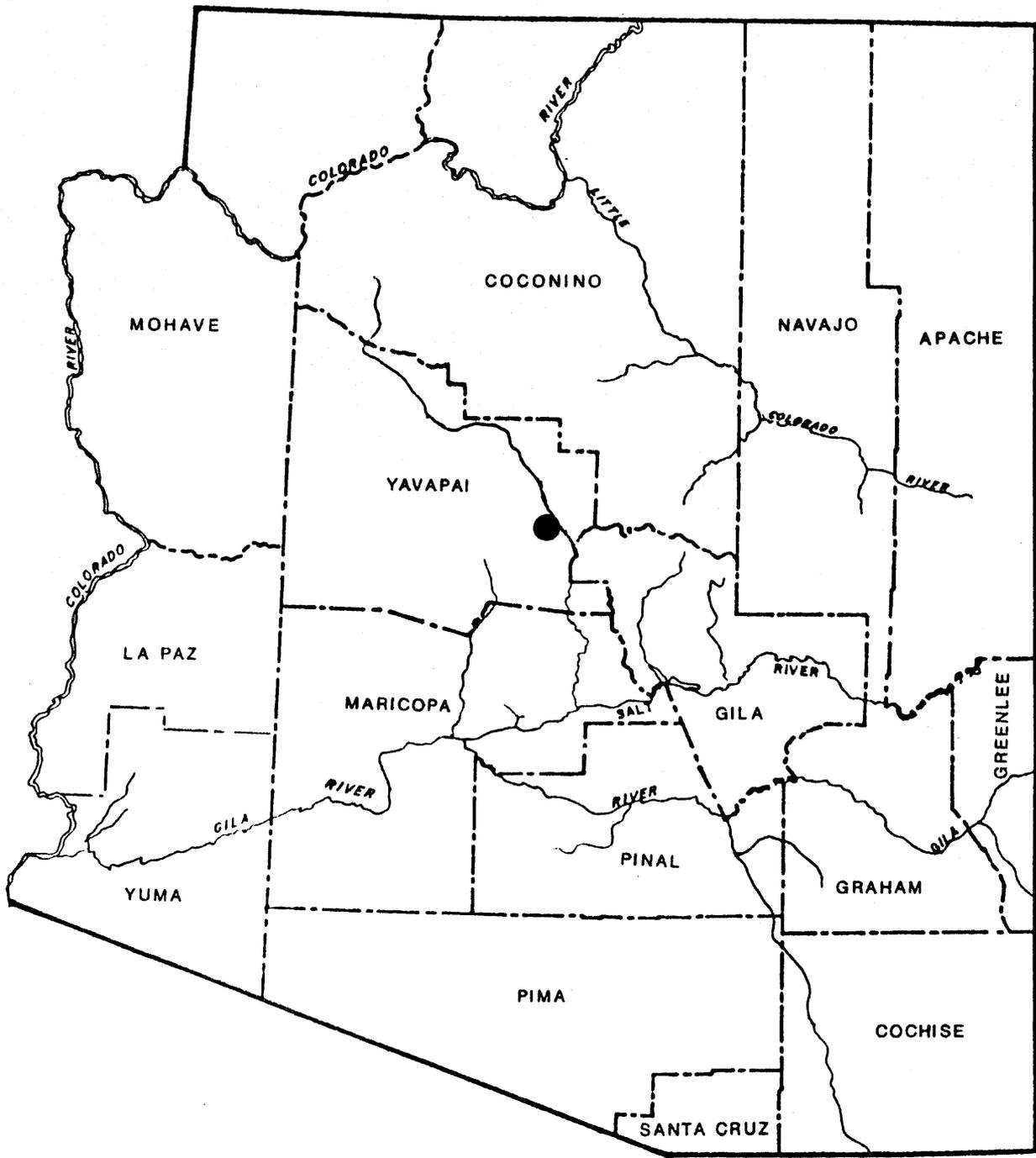
REASONS FOR DECLINE/VULNERABILITY: Impacts include the introduction and spread of exotic predatory and competitive fishes, water impoundment and diversion, water pollution, groundwater pumping, stream channelization, and habitat modification.

LAND MANAGEMENT/OWNERSHIP: United States Forest Service (Coronado, Tonto and Prescott National Forests), Bureau of Land Management (Safford and Phoenix Districts), the State of Arizona, San Carlos Apache Indian Reservation, private, the State of New Mexico.

NOTES: A Recovery Plan was approved March 15, 1984, and is now undergoing revision.

Listed as threatened by the State of Arizona.





GILA TROUT

LEGEND

Current Range ●

GILA TROUT
(*Oncorhynchus gilae*)

STATUS: Endangered (32 FR 4001; March 11, 1967) without critical habitat.

SPECIES DESCRIPTION: This trout is deep-bodied with fine, profuse spotting on the body, dorsal, and adipose fins. The dorsal, anal, and pelvic fins are edged in white.

HABITAT: This fish is found in small, high mountain streams.

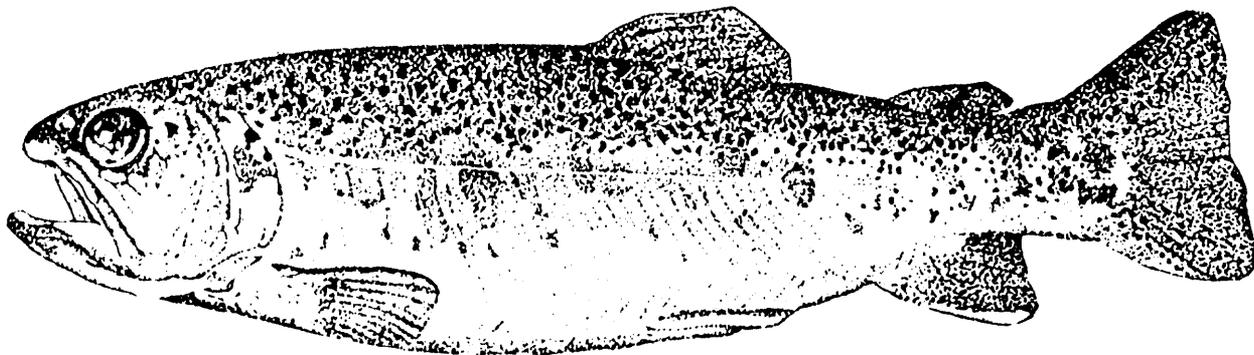
RANGE: Historic: This species occurred in the Verde River and its tributaries in Arizona, headwater streams of the Gila and San Francisco Rivers in New Mexico.
Current: In Arizona: Gap Creek (introduced) in Prescott National Forest. In New Mexico: Iron, Main Diamond, South Diamond, McKenna, and Spruce Creeks in Gila National Forest. It is introduced into McKnight, Little, Trail Canyon, Big Dry, Mogollon, Sacaton, and Sheep Corral Creeks. Further introductions are planned for the upper Gila River tributaries.

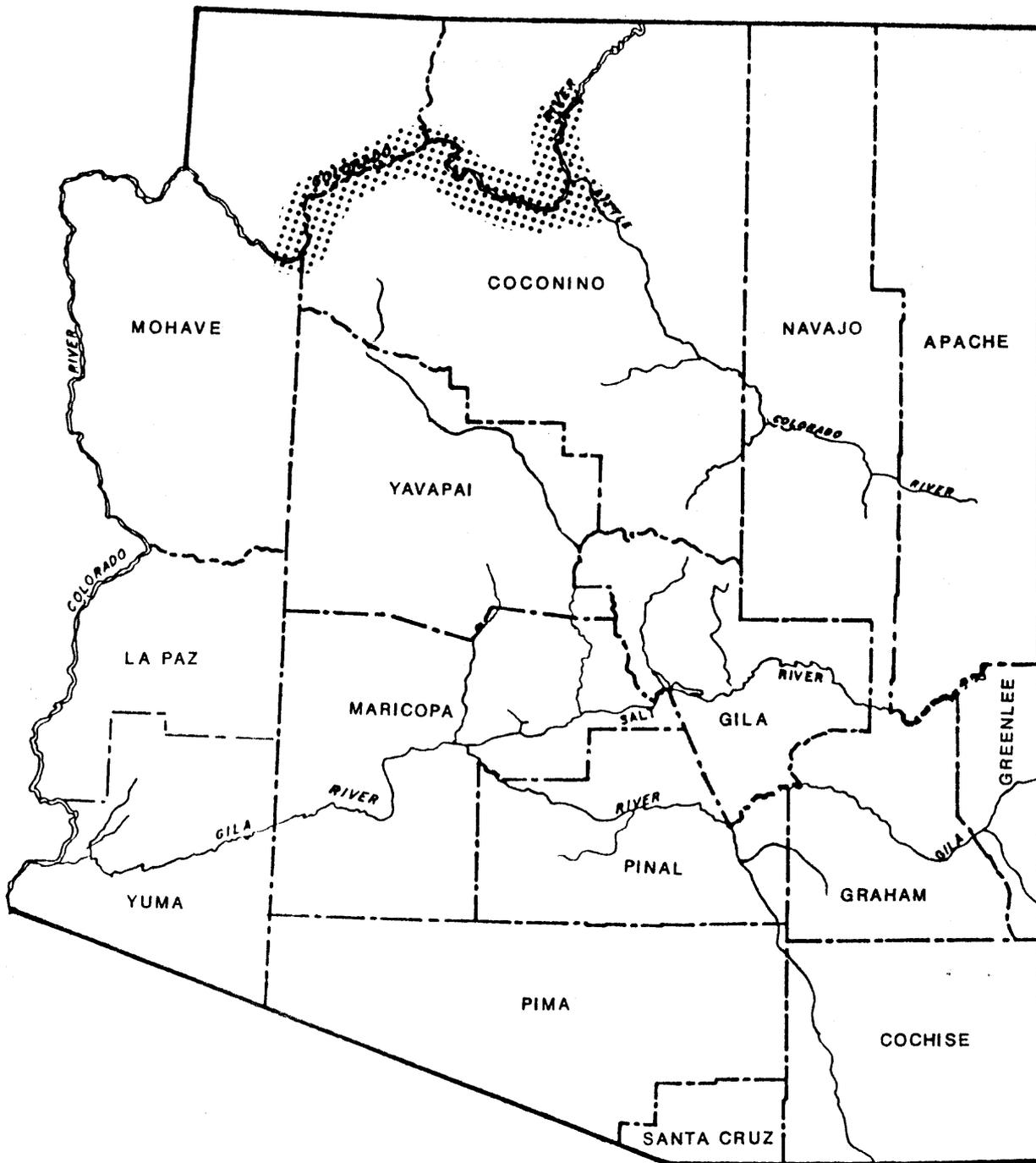
REASONS FOR DECLINE/VULNERABILITY: This trout is endangered due to loss of habitat, hybridization with introduced rainbow trout, and predation by exotic brown trout.

LAND MANAGEMENT/OWNERSHIP: United States Forest Service, Prescott (Arizona) and Gila (New Mexico) National Forests.

NOTES: A Recovery Plan was completed January 12, 1979. A revision was approved January 3, 1984, and the plan is now under additional revision.

Listed as endangered by the State of Arizona.





HUMPBACK CHUB

LEGEND

Current Range



HUMPBACK CHUB
(*Gila cypha*)

STATUS: Endangered (32 FR 4001; March 11, 1967) without critical habitat.

SPECIES DESCRIPTION: This fish is a fairly large (less than 20 inches) minnow characterized by a narrow flattened head and long fleshy snout, large fins, and a very large hump between the head and the dorsal fin.

HABITAT: It occurs in a variety of riverine habitats, especially canyon areas with fast current, deep pools, and boulder habitat.

RANGE: Historic: Endemic to the Colorado River Basin from below Lake Mead (Arizona/Nevada) to Flaming Gorge on the Green River, Wyoming, and Yampa River, Colorado.

Current: In Arizona this species occurs in the Little Colorado River, from its confluence with the Colorado River to eight miles upstream; and in the Colorado River in Grand and Marble Canyons (Coconino County). Populations are also found in Cataract and Westwater Canyons, Colorado River, and Desolation and Gray Canyons, Green River, Utah; Black Rocks, Colorado River, Colorado; Dinosaur National Monument, Green river, Colorado and Utah; and Dinosaur National Monument, Yampa River, Colorado.

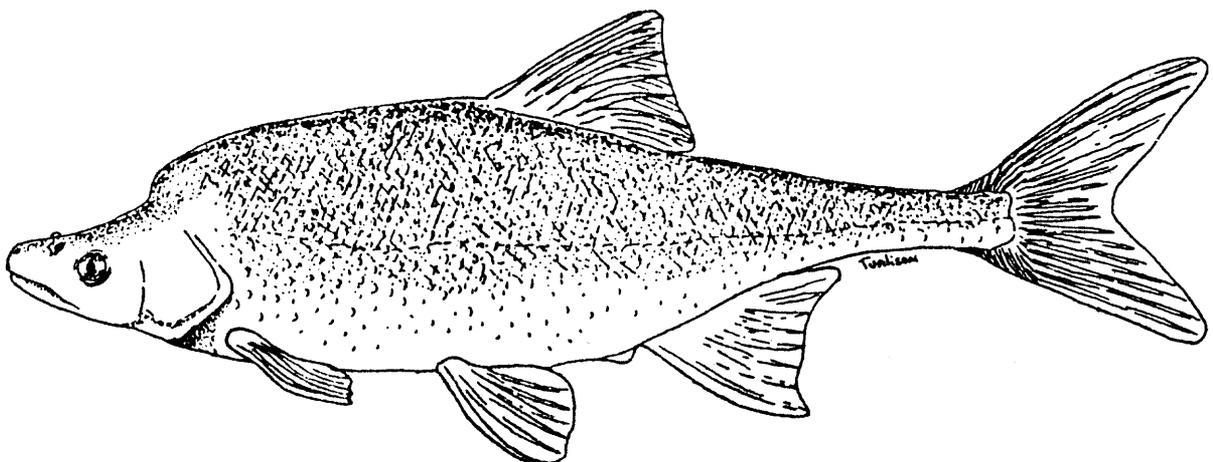
REASONS FOR DECLINE/VULNERABILITY: Alteration of historic habitat caused by dam construction, water diversion and channelization; competition with and predation by introduced, non-native fishes; and hybridization with other *Gila* species.

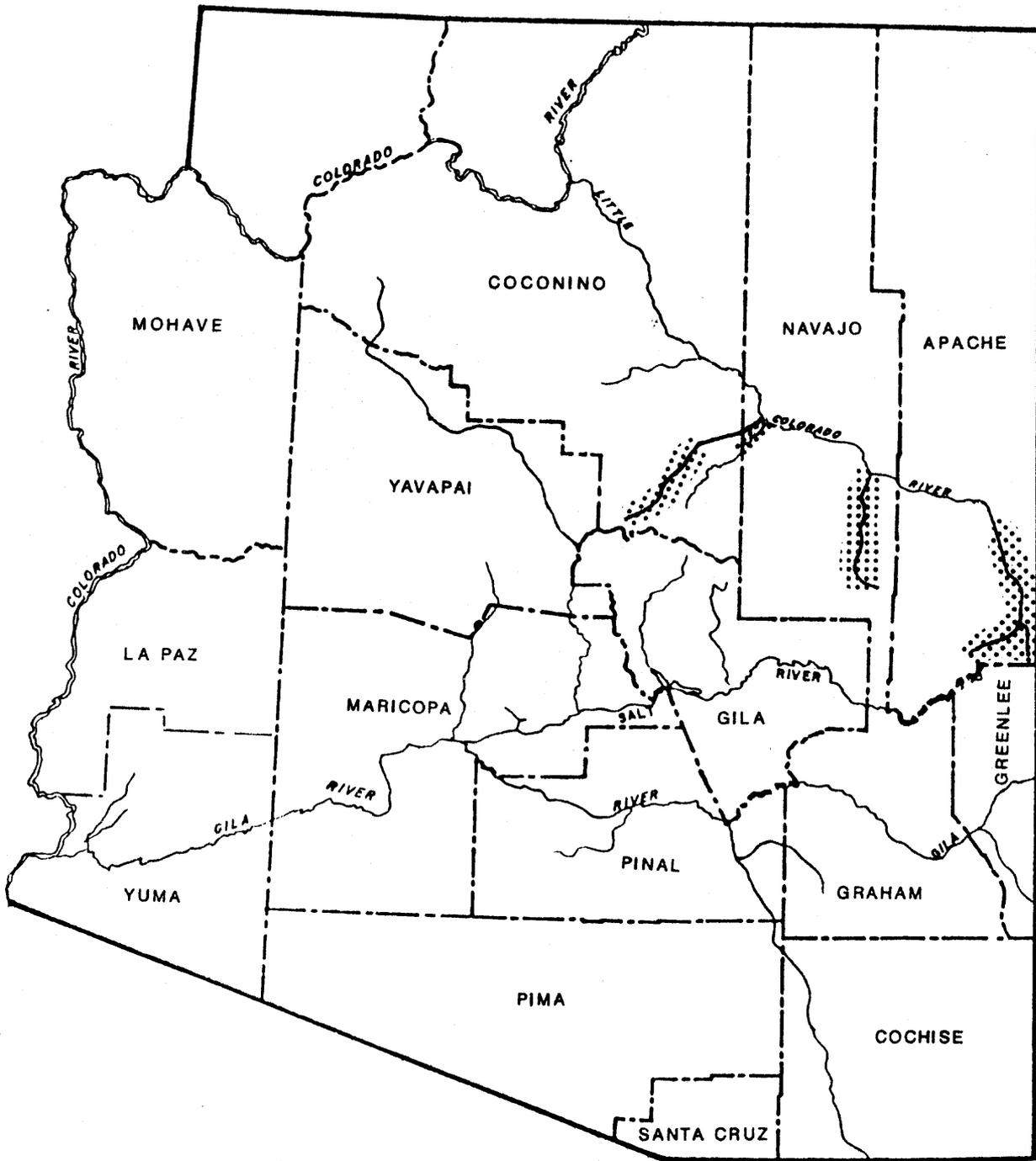
LAND MANAGEMENT/OWNERSHIP: In Arizona: National Park Service (Grand Canyon National Park), Navajo Indian Reservation.

NOTES: Recovery Plan approved August 22, 1979. It was revised May 15, 1984, and September 19, 1990.

Listed as endangered by the State of Arizona.

A small population of wild fish from the Little Colorado River is being held at the Arizona Game and Fish Department Page Springs Hatchery (Yavapai County).





LITTLE COLORADO SPINEDACE

LEGEND

Current Range



LITTLE COLORADO SPINEDACE
(*Lepidomeda vittata*)

STATUS: Threatened (52 FR 35054; September 16, 1987) with critical habitat.

SPECIES DESCRIPTION: This is a small (less than 4 inches long) silvery minnow which is darker on the back than the belly. It feeds on aquatic invertebrates.

HABITAT: Inhabits moderate to small streams and is characteristically found in pools with water flowing over fine gravel and silt-mud substrates. Many of the streams are seasonally intermittent at which times the Little Colorado spinedace persists in the deep pools and spring areas which retain water. During flooding the spinedace redistributes itself throughout the stream. Spawning primarily occurs in early summer, but some spawning continues until early fall.

RANGE: **Historic:** Endemic to the upper portions of the Little Colorado River and its north-flowing permanent tributaries on the Mogollon Rim and the northern slopes of the White Mountains in eastern Arizona.
Current: Portions of East Clear Creek and its tributaries, Coconino County; Chevelon Creek and Silver Creek, Navajo County; Little Colorado River and Nutrioso Creek, Apache County, Arizona.

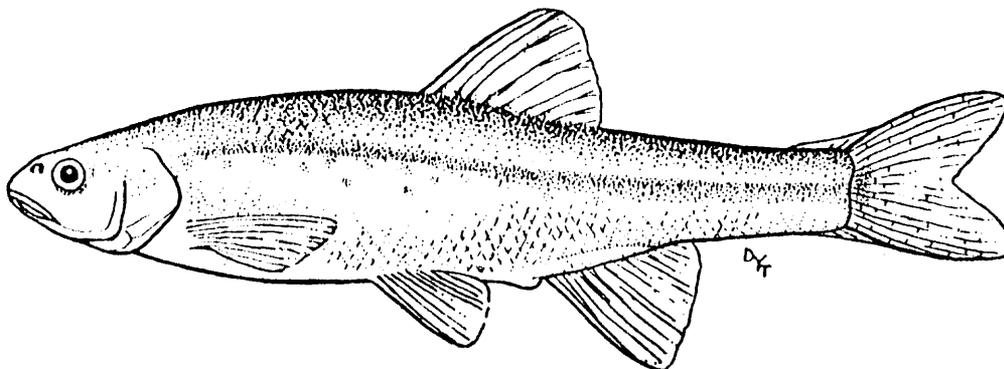
REASONS FOR DECLINE/VULNERABILITY: Habitat destruction from impoundment, dewatering, riparian destruction, and other watershed disturbances; use of fish toxicants; and the introduction and spread of exotic predatory and competitive fish species.

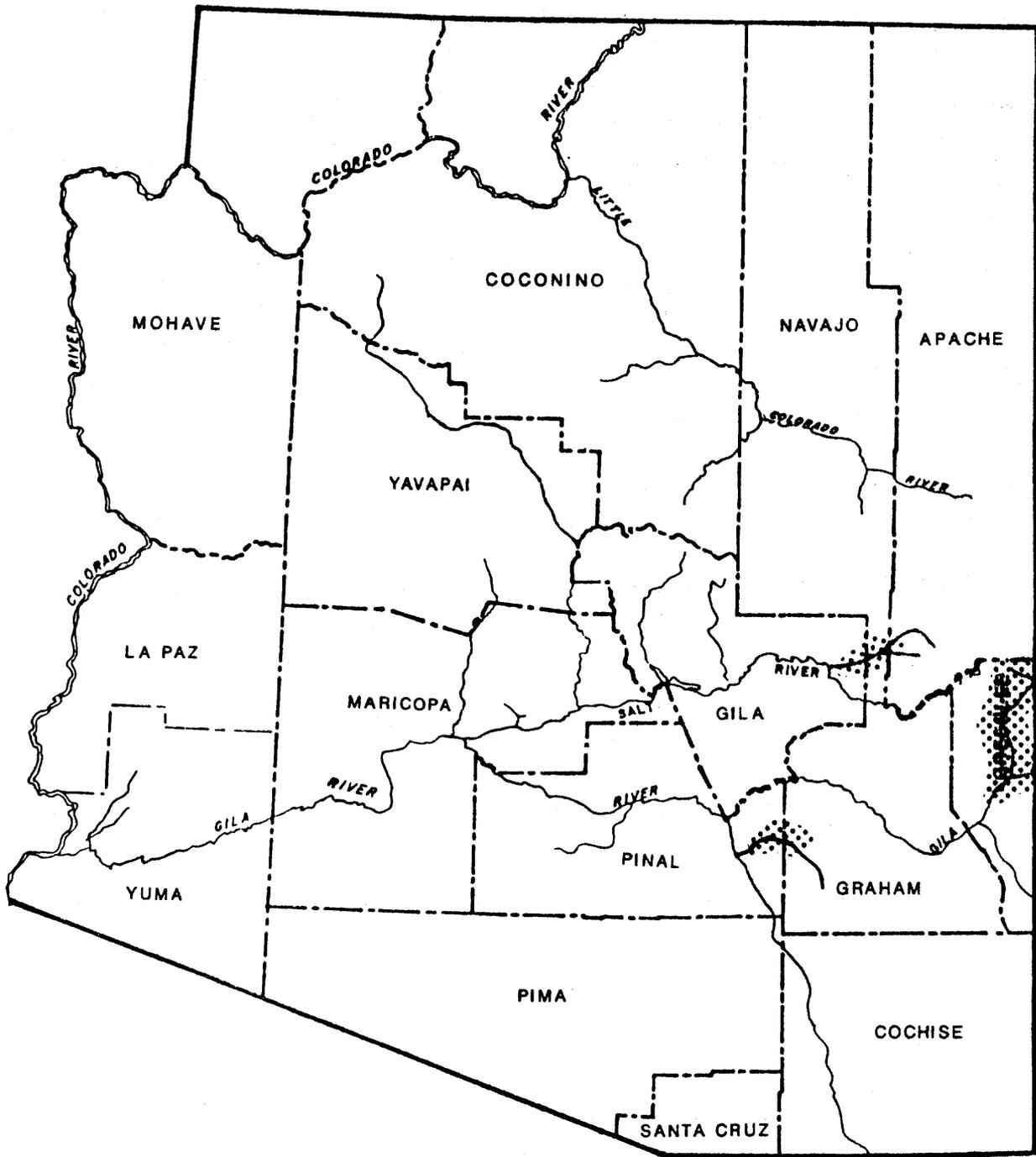
LAND MANAGEMENT/OWNERSHIP: Apache-Sitgreaves National Forests, Arizona Game and Fish Department, Bureau of Land Management (Phoenix District), State of Arizona (trust lands), and private.

NOTES: Critical habitat includes eighteen miles of East Clear Creek, Coconino County; eight miles of Chevelon Creek, Navajo County; and five miles of Nutrioso Creek, Apache County.

Listed as threatened by the State of Arizona.

A Recovery Plan is in preparation.





LOACH MINNOW

LEGEND

Current Range 

LOACH MINNOW
(*Tiaroga cobitis*)

STATUS: Threatened (51 FR 39468; October 28, 1986). Critical habitat proposed (50 FR 25380; June 18, 1985); finalization under review.

SPECIES DESCRIPTION: The loach minnow is a small (less than 3 inches), slender, elongated fish, olive colored with dirty white spots at the base of the dorsal and caudal fins. Breeding males develop vivid red-orange markings.

HABITAT: This fish is a bottom dweller of small to large perennial creeks and rivers, typically found in shallow turbulent riffles with cobble substrate, swift currents and filamentous algae. Recurrent flooding is instrumental in maintenance of quality habitat.

RANGE: Historic: This species was once common throughout much of the Gila River system above Phoenix, including the Gila, Blue, Tularosa, White, Verde, Salt, San Pedro, and San Francisco Rivers in Arizona and New Mexico.

Current: Aravaipa Creek, Graham and Pinal Counties, Arizona; upper Gila River, Grant and Catron Counties, New Mexico; Dry Blue Creek, Catron County, New Mexico; San Francisco and Tularosa Rivers, Catron County, New Mexico and Greenlee County, New Mexico; Blue River, and Campbell Blue Creek, Greenlee County, Arizona, and White River, Navajo and Gila Counties, Arizona.

Potential: Undiscovered populations of loach minnow may exist in unsampled Gila basin streams, particularly on the White Mountain Apache and San Carlos Apache Indian Reservations.

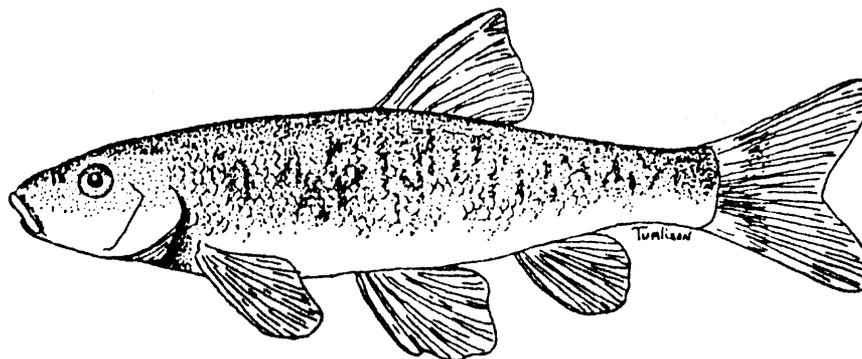
REASONS FOR DECLINE/VULNERABILITY: This minnow is threatened by habitat destruction due to impoundment, channel downcutting, substrate sedimentation, water diversion, ground water pumping, and the spread of exotic predatory and competitive fishes.

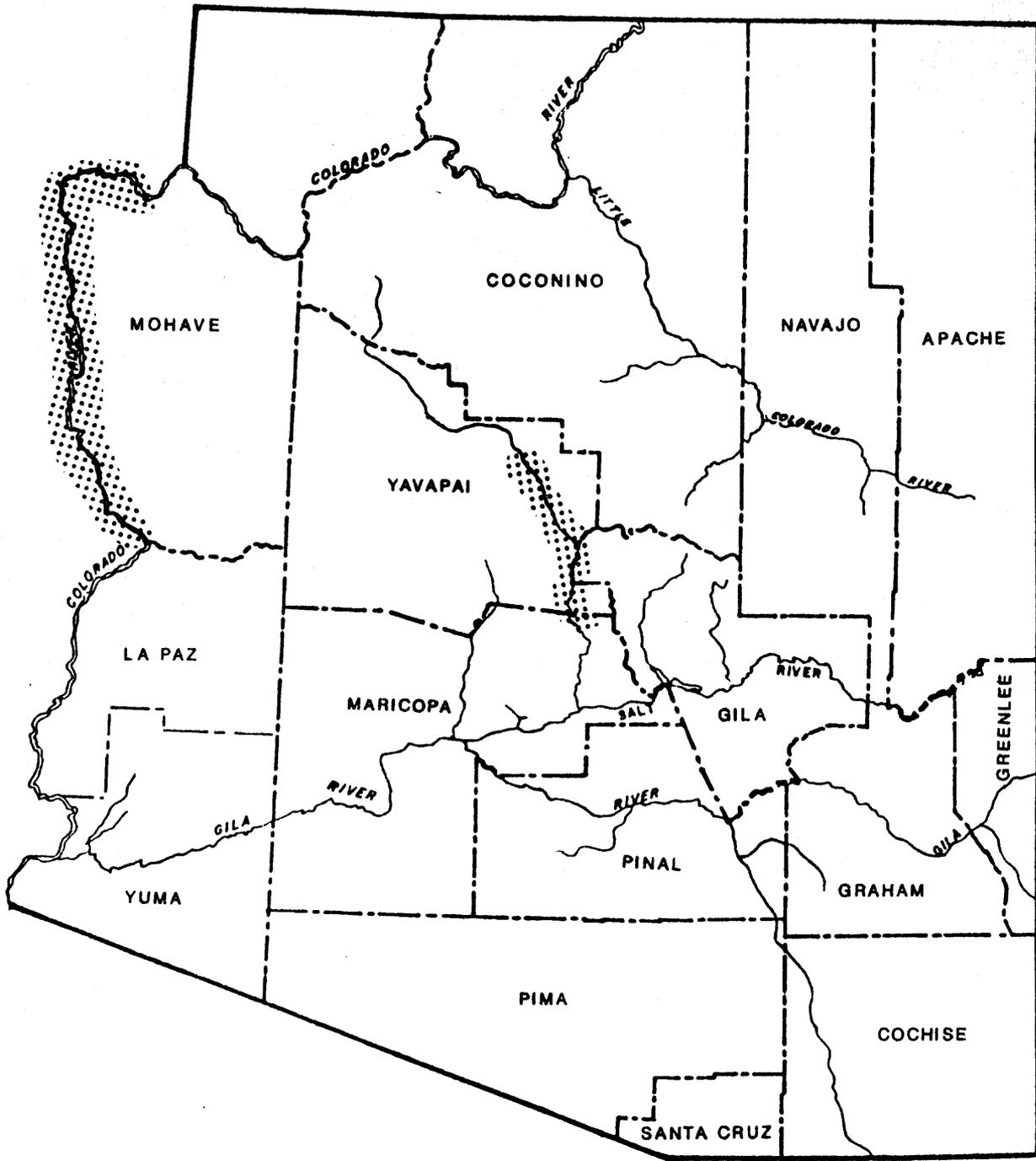
LAND MANAGEMENT/ OWNERSHIP: In Arizona: United States Forest Service (Apache-Sitgreaves National Forests), White Mountain Apache Indian Reservation, Bureau of Land Management (Safford District), The Nature Conservancy, private. In New Mexico: United States Forest Service (Gila National Forest), Bureau of Land Management (Las Cruces District), The Nature Conservancy, State of New Mexico, Gila Cliff Dwellings National Monument, private.

NOTES: Proposed critical habitat is located in portions of Aravaipa Creek, Blue River, Campbell Blue Creek, San Francisco River, Dry Blue Creek, Tularosa River, East, West, and Middle Forks of the Gila River, and the main stem upper Gila River. For the exact location of proposed critical habitat, see 50 FR 25386.

A Recovery Plan was approved September 30, 1991.

Listed by the States of Arizona (threatened) and New Mexico (endangered - group 1).





RAZORBACK SUCKER

LEGEND

Current Range



RAZORBACK SUCKER
(Xyrauchen texanus)

STATUS: Endangered (56 FR 54957; October 23, 1991; effective November 22, 1991) without critical habitat.

SPECIES DESCRIPTION: This species has a long, high, sharp-edged keel-like hump behind the head. The head is flattened on top. The body is stout with the coloration olive-brown above to yellowish on the belly. The head and keel are quite dark in breeding males. This sucker grows to a large size, often exceeding 24 inches and 6 pounds in weight.

HABITAT: This species occurs in Streams to large rivers with slow backwater areas where it feeds on benthic fauna and flora, detritus, and plankton. It is found in Colorado River reservoirs and adult populations persist until they die of old age. Survival of young in reservoirs is not sufficient to sustain the population.

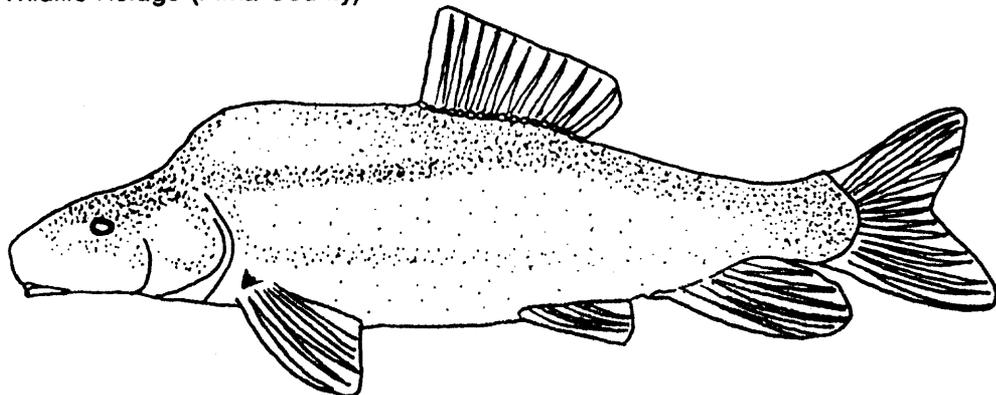
RANGE: Historic: Endemic to the Colorado River Basin, it formerly occurred in all major rivers and larger streams, and even irrigation ditches, in the Basin.
Current: In Arizona, natural populations have largely been reduced to a non-recruiting population of some 60,000 fish in Lake Mohave (Mohave County) which is the largest population in the Basin. A few adults have been recovered from Lakes Mead and Havasu, the Central Arizona Canal, and the lower Colorado River area apparently represent small, remnant natural populations. Although the old adults spawn, the young do not appear to survive to adulthood. In unimpounded waters, this species is limited to the Upper Colorado Basin rivers, especially the Green, Yampa and mainstream of the Colorado. A large population, estimated at 1,000 adults, lives in the Green River near Jensen, Utah. However, there is no documented proof of successfully reproducing fish in the Upper Basin.

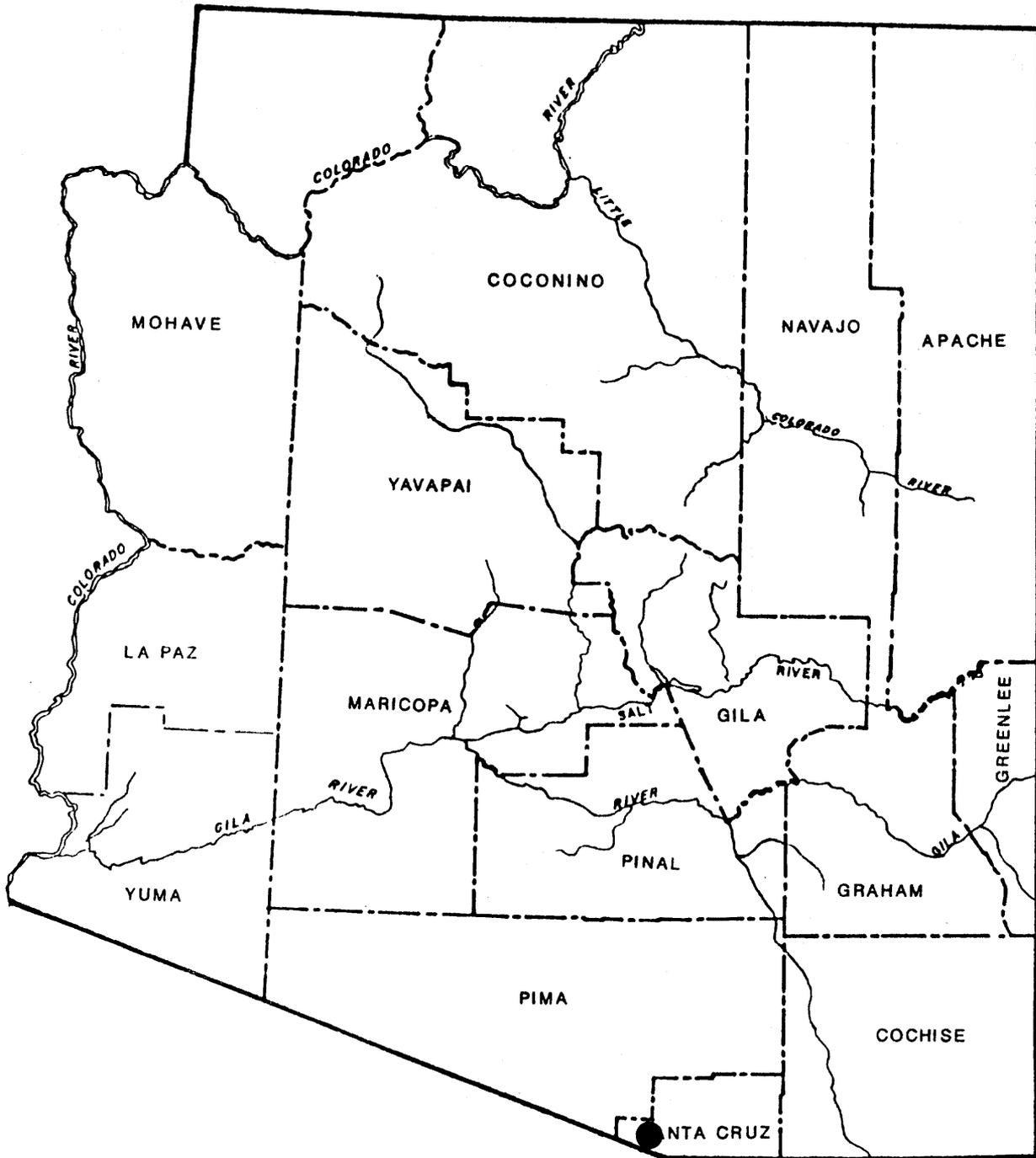
REASONS FOR DECLINE/VULNERABILITY: This species is threatened by habitat alterations, upstream impoundments, water withdrawals, and competition with and predation by non-native fishes.

LAND MANAGEMENT/OWNERSHIP: In Arizona: U.S. Forest Service (Prescott, Coconino, Tonto, and Apache-Sitgreaves National Forests), Bureau of Land Management (Safford District), U.S. Fish and Wildlife Service, State of Arizona, private.

NOTES: Currently listed in: California (endangered), Nevada (under legal protection), and Arizona (endangered).

Populations from Lake Mohave are being maintained in Dexter National Fish Hatchery (New Mexico), the Arizona Game and Fish Department Page Springs Hatchery (Yavapai County), two refugia in Maricopa County (Arizona State University, Tempe, and Hassayampa River Preserve, near Wickenburg), and Buenos Aires National Wildlife Refuge (Pima County).





SONORA CHUB

LEGEND

Current Range ●

SONORA CHUB
(*Gila dittaenia*)

STATUS: Threatened (51 FR 16042; April 30, 1986) with critical habitat.

SPECIES DESCRIPTION: This member of the minnow family (Cyprinidae) is less than 5 inches long. It is a moderately chubby, dark-colored fish, with two prominent black lateral bands on the sides and a dark oval spot at the base of the tail. Breeding males have red lower fins and a somewhat orange belly. It feeds on insects and algae.

HABITAT: This chub inhabits perennial and spatially intermittent small to moderate sized streams. It prefers pools near cliffs, boulders, or other cover in stream channels.

RANGE: Historic: Same as current.

Current: This species is found in Sycamore Canyon, Santa Cruz County, Arizona, and the Rios Altar and Magdalena, Sonora, Mexico.

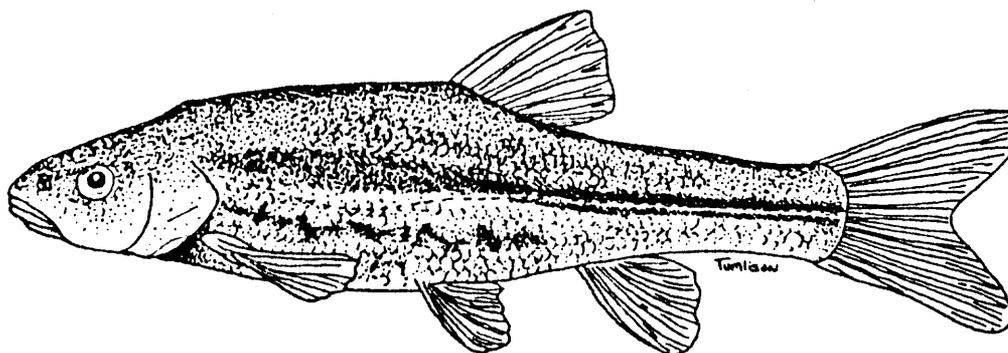
REASONS FOR DECLINE/VULNERABILITY: Loss and modification of habitat, and the introduction and spread of exotic predatory and competitive fishes are the threats to this species.

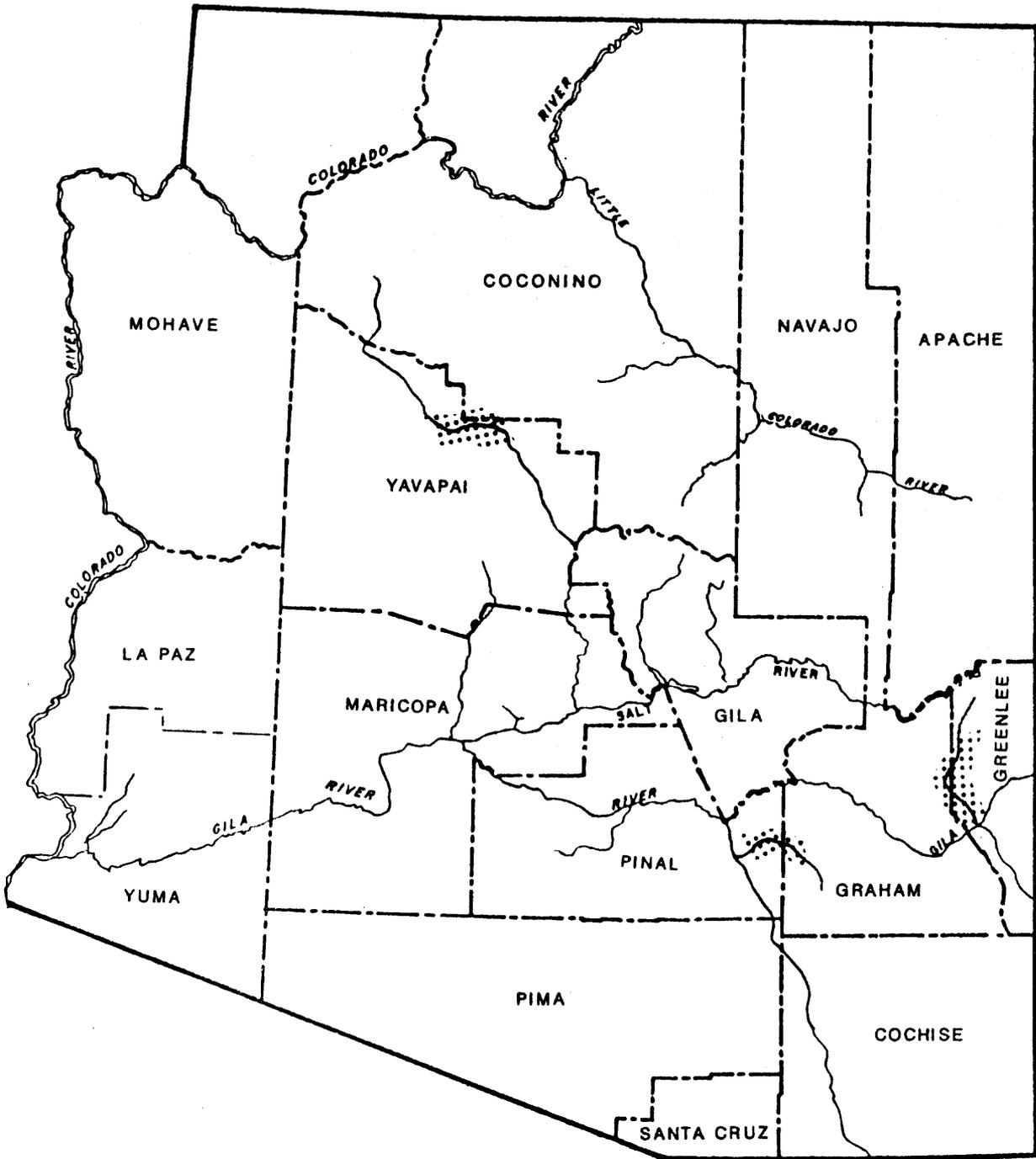
LAND MANAGEMENT/OWNERSHIP: U.S. Forest Service (Coronado National Forest).

NOTES: Critical habitat is located in Santa Cruz County, Arizona, and includes: Sycamore Creek and a 50 foot buffer from the United States-Mexico border approximately 5 miles upstream; Yanks (Hank and Yanks) Spring; the lowermost 1.25 miles of Penasco Creek with a 50 foot buffer; and the lowermost 0.25 miles of an unnamed Sycamore Creek tributary in Section 22, Township 23 South, Range 11 East.

A Recovery Plan is in preparation.

Listed as endangered by the State of Arizona.





SPIKEDACE

LEGEND

Current Range



SPIKEDACE
(*Meda fulgida*)

STATUS: Threatened (51 FR 23769; July 1, 1986). Critical habitat proposed (50 FR 25390; June 18, 1985); finalization under review.

SPECIES DESCRIPTION: The spikedace is a small (less than 3 inches), slim fish with very silvery sides and a "spine" on the dorsal fin. Breeding males are a brassy golden color.

HABITAT: This fish is found in moderate to large perennial streams, where it inhabits slow to moderate velocity waters over gravel and rubble substrates. Specific habitat consists of shear zones where rapid flow borders slower flow, areas of sheet flow at the upper ends of mid-channel sand/gravel bars, and eddies at downstream riffle edges. Recurrent flooding is very important in the life history of the spikedace and helps to maintain its competitive edge over invading exotic fish species.

RANGE: Historic: This species was once common throughout much of the Gila River drainage above Phoenix, including the Gila, Verde, Agua Fria, Salt, San Pedro, and San Francisco Rivers in Arizona.

Current: It is now found in Aravaipa Creek, Graham and Pinal Counties, Arizona; the upper Gila River, Grant and Catron Counties, New Mexico; the upper Verde River, Yavapai County, Arizona; and Eagle Creek, Greenlee County, Arizona.

Potential: Undiscovered populations of spikedace may exist in unsampled Gila basin streams, particularly on the White Mountain Apache and San Carlos Apache Indian Reservations.

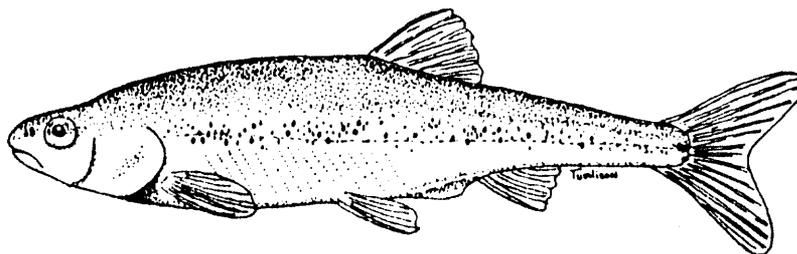
REASONS FOR DECLINE/VULNERABILITY: The spikedace is threatened by habitat destruction due to damming, channel alteration, riparian destruction, channel downcutting, water diversion and groundwater pumping. Introduction and spread of exotic predatory and competitive fish species are additional factors.

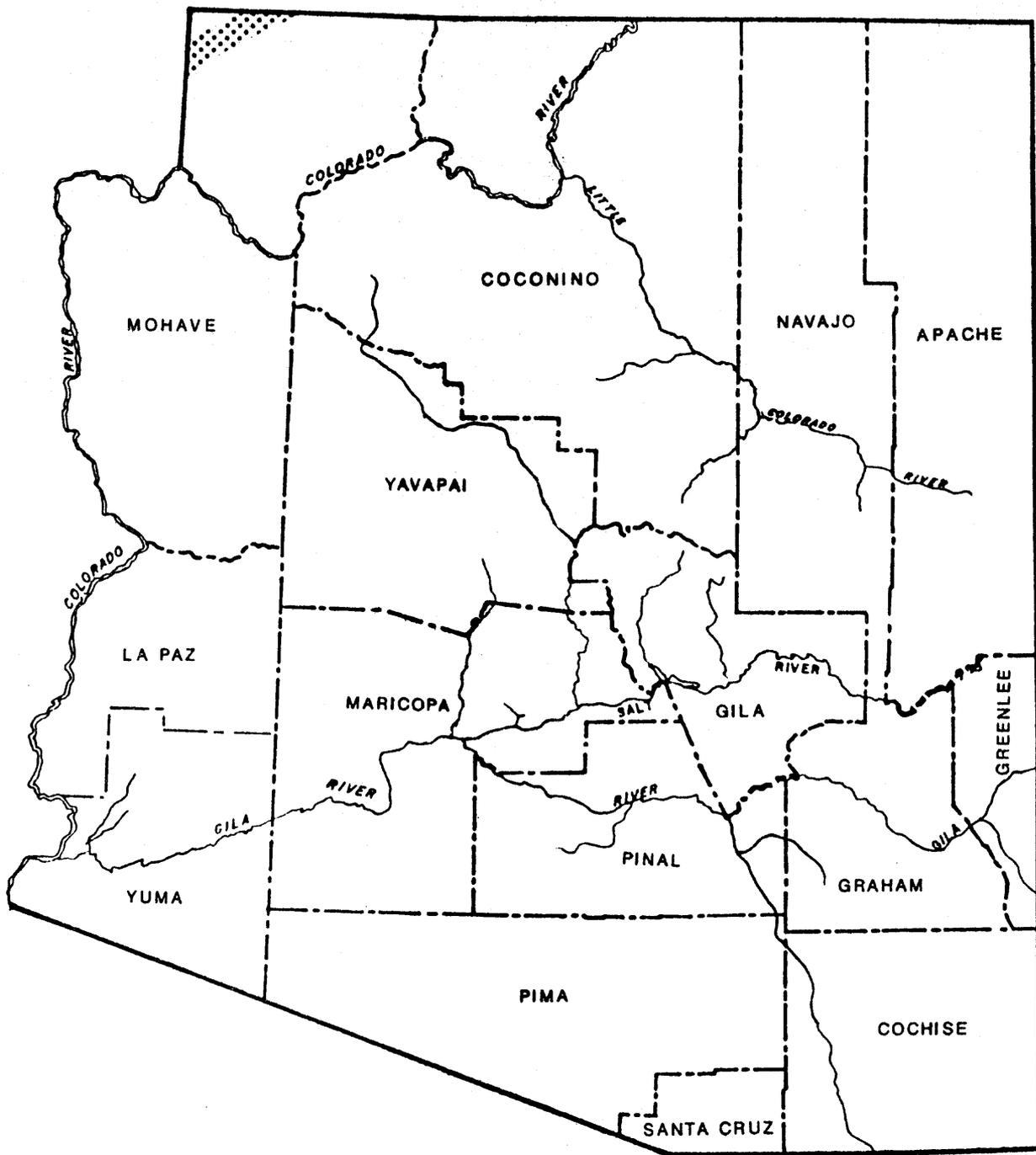
LAND MANAGEMENT/OWNERSHIP: In Arizona: United States Forest Service (Apache-Sitgreaves, Prescott, and Coconino National Forests); San Carlos Apache Indian Reservation; Bureau of Land Management (Safford District); The Nature Conservancy; the State of Arizona; private. In New Mexico: United States Forest Service (Gila National Forest); The Nature Conservancy, Bureau of Land Management (Las Cruces District); the State of New Mexico; Gila Cliff Dwellings National Monument; private.

NOTES: Proposed critical habitat includes all of the current distribution (see above) except Eagle Creek.

A Recovery Plan was approved September 30, 1991.

Listed by the States of Arizona (threatened) and New Mexico (endangered - group 2).





VIRGIN RIVER CHUB

LEGEND

Current Range



VIRGIN RIVER CHUB
(Gila robusta seminuda)

STATUS: Endangered (54 FR 35305; August 24, 1989); critical habitat proposed (51 FR 22949; June 24, 1986); finalization under review.

SPECIES DESCRIPTION: This fish is a very silvery medium sized minnow averaging 8 inches in length but growing to 18 inches. It is distinguished from other subspecies by the number of rays (9-10) in the dorsal, anal, and pelvic fins, and the number of gill rakers (24-31). The back, breast, and part of the belly have small, deeply imbedded scales that are difficult to see and may be absent in some individuals.

HABITAT: It is most common in deeper areas where waters are swift, but not turbulent, and is generally associated with boulders or other cover. It occurs over sand and gravel substrates in water less than 30 degrees Centigrade, and is very tolerant of high salinity and turbidity.

RANGE: Historic: This species is endemic to 134 miles of the Virgin River in extreme northwestern Arizona, Nevada and Utah.
Current: It now occurs in 50 miles of the mainstream Virgin River between Mesquite, Nevada, and La Verkin Creek near Hurricane, Utah.

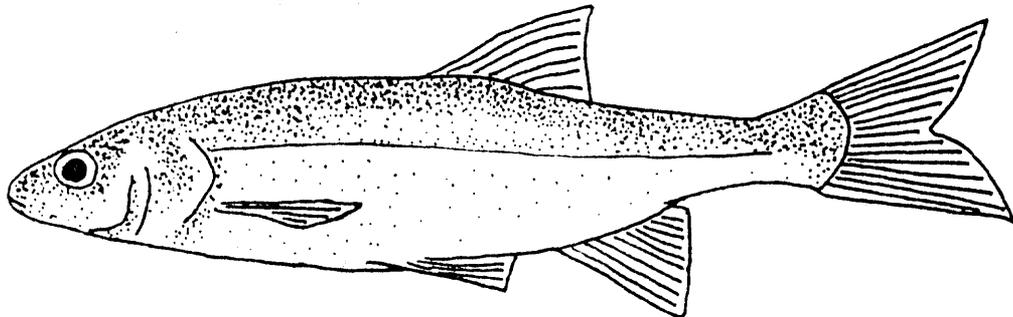
REASONS FOR DECLINE/VULNERABILITY: Threats include habitat changes (water impoundments and diversions), diseases (Asian fish tapeworm), floods, toxic spills, and competition with exotic fishes (e.g., red shiner). This chub is particularly vulnerable to these threats because of its very limited distribution.

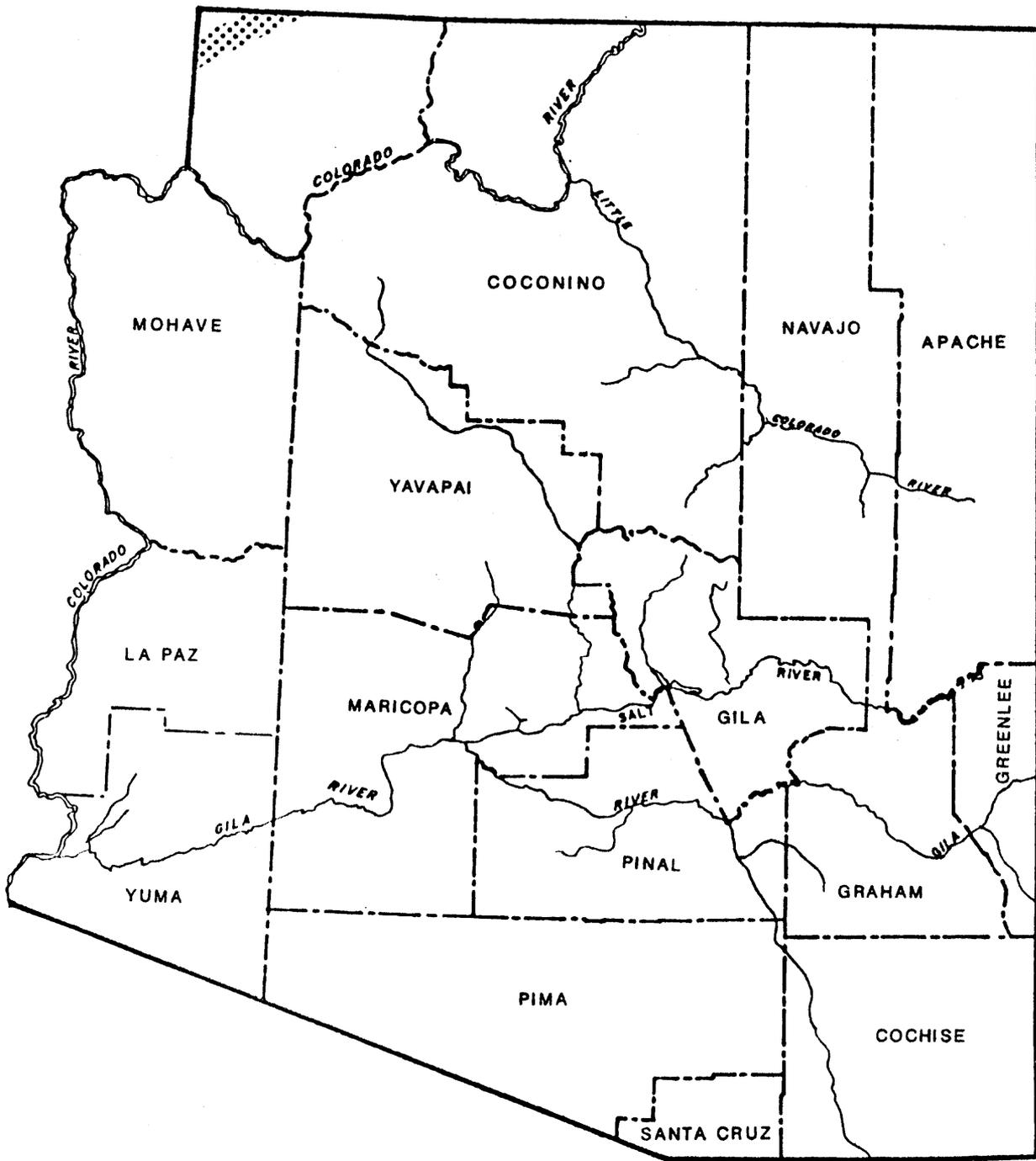
LAND MANAGEMENT/OWNERSHIP: Bureau of Land Management (owns 80-90% of lands along Virgin River in Arizona), the States of Utah and Arizona, and private landowners.

NOTES: Critical habitat is proposed for the main channel of the Virgin River from the Mesquite diversion, Clark County, Nevada, upstream to the east boundary of Section 31, Township 41 North, Range 14 West, Mohave County, Arizona; and from the Arizona-Utah stateline upstream to the State Highway 9 crossing near Hurricane, Washington County, Utah.

The Virgin River Fishes Recovery Plan is in preparation.

Listed as endangered by the State of Arizona.





WOUNDFIN

LEGEND
Current Range 

WOUNDFIN
(Plagopterus argentissimus)

STATUS: Endangered (35 FR 16047; October 13, 1970) without critical habitat. Experimental nonessential designation in portions of the Verde, Gila, San Francisco, and Hassayampa Rivers and Tonto Creek in Gila, Graham, Greenlee, and Yavapai Counties, Arizona (50 FR 30193; July 24, 1985).

SPECIES DESCRIPTION: This is a small (4 inches), silver minnow with fairly large fins and a sharp dorsal fin spine.

HABITAT: The woundfin inhabits shallow, warm, turbid, fast-flowing water. It tolerates high salinities and relatively warm water temperatures.

RANGE: Historic: This species occurred in the lower Colorado River basin below the Grand Canyon; the Virgin River of Utah, Arizona, and Nevada; the lower and middle Gila River drainages in Arizona.

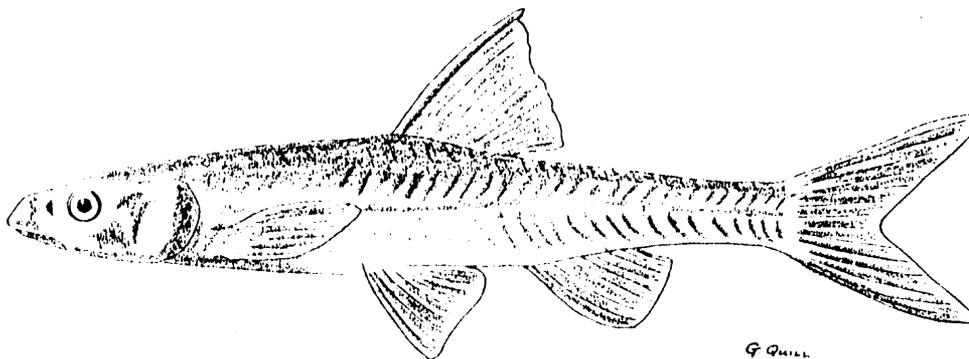
Current: It is now found only in the Virgin River from La Verkin Springs, Washington County, Utah, through Mohave County, Arizona, to Mesquite, Clark County, Nevada. Limited introduction attempts into designated experimental nonessential habitat have been unsuccessful.

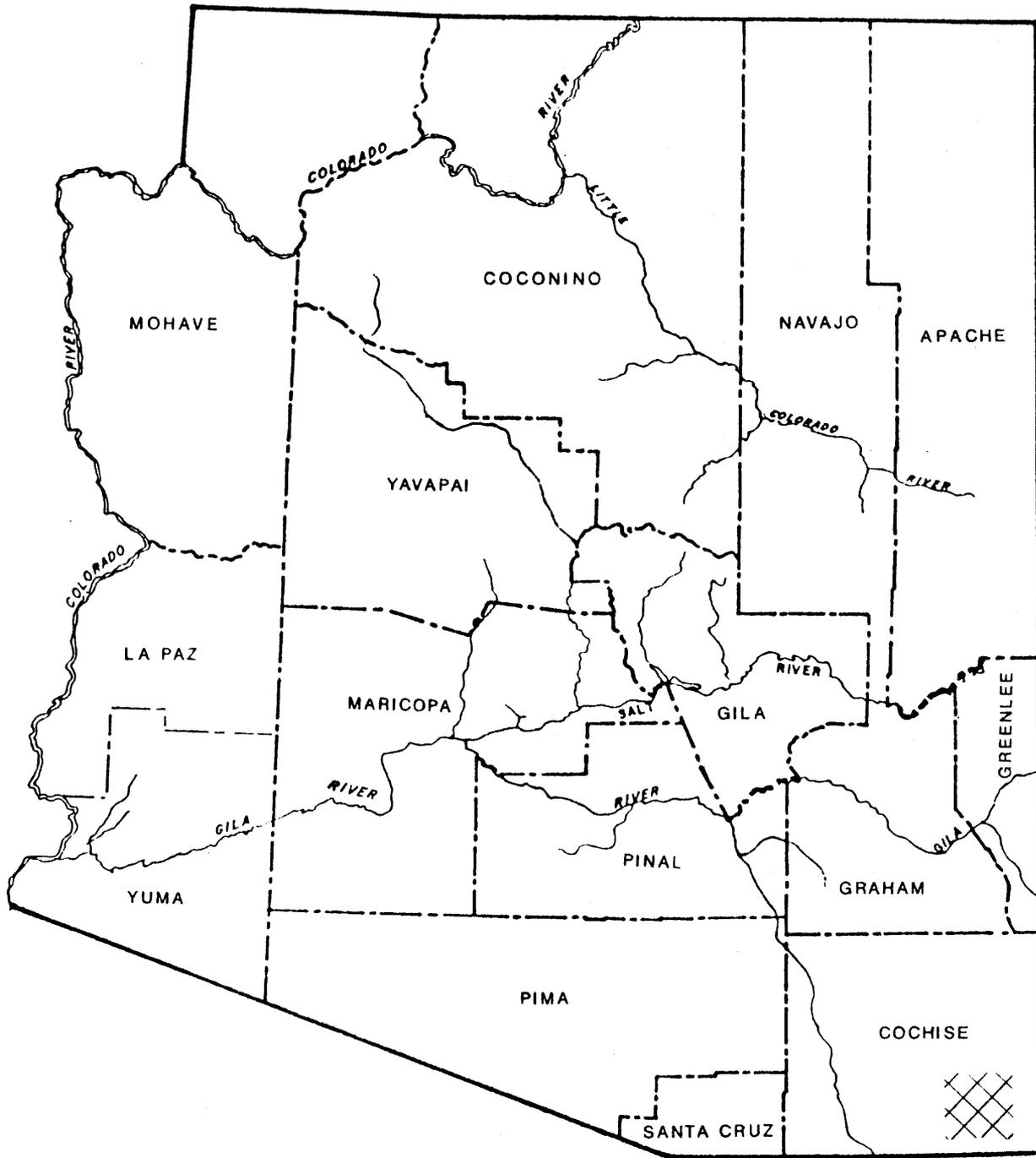
REASONS FOR DECLINE/VULNERABILITY: The woundfin is endangered due to habitat destruction and introduction of non-native fish.

LAND MANAGEMENT/OWNERSHIP: In Utah: Bureau of Land Management, the State of Utah, private. In Arizona: Bureau of Land Management (Arizona Strip District), the State of Arizona, private. In Nevada: private.

NOTES: A Recovery Plan was completed July, 1979, and revised March 1, 1985. It is now undergoing additional revision.

Listed as endangered by the State of Arizona.





YAQUI CATFISH

LEGEND

Historic Range



YAQUI CATFISH
(Ictalurus pricei)

STATUS: Threatened (49 FR 34490; August 31, 1984) with critical habitat.

SPECIES DESCRIPTION: This species is similar to the channel catfish (Ictalurus punctatus) in appearance except the anal fin base is shorter, and the distal margin of the anal fin is broadly rounded with 23 to 25 soft-rays. The body is usually profusely speckled.

HABITAT: This catfish inhabits moderate to large streams in areas of medium to slow current over sand/rock bottom.

RANGE: Historic: It occurred in the Rio Yaqui Drainage in Sonora, Mexico, including San Bernardino Creek (Blackwater Draw), Cochise County, Arizona.
Current: Now found in the Rio Yaqui Drainage, Sonora, Mexico. It is extirpated from the United States.

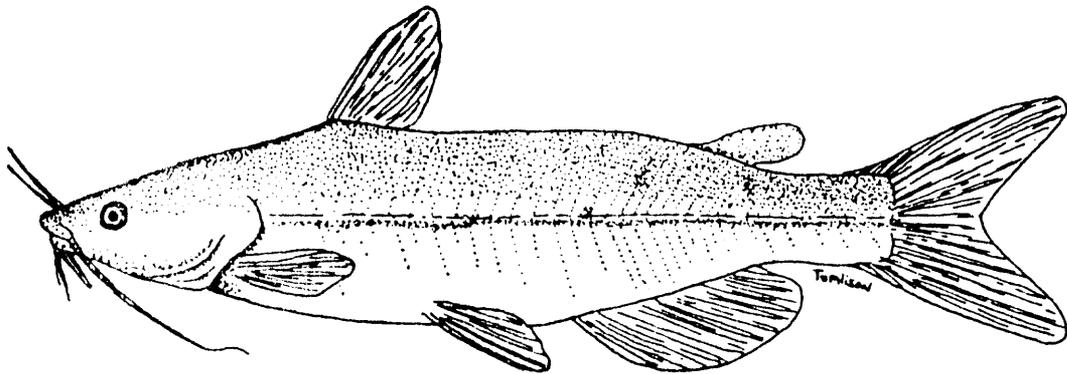
REASONS FOR DECLINE/VULNERABILITY: This species is threatened by habitat destruction and hybridization with channel catfish (Ictalurus punctatus).

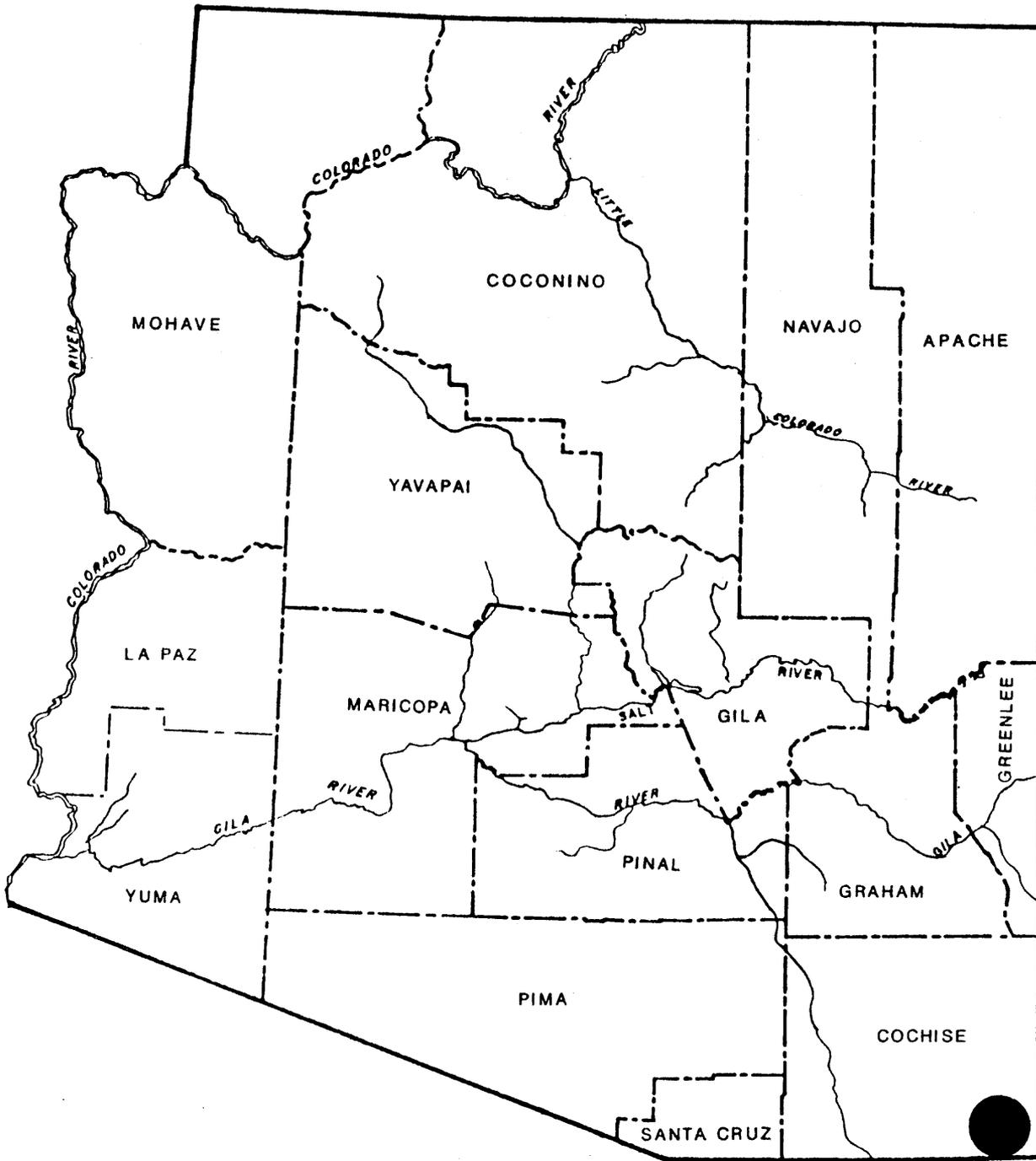
LAND MANAGEMENT/OWNERSHIP: The sole United States population is located at Dexter National Fish Hatchery in New Mexico for eventual reintroduction to native habitat in Arizona.

NOTES: Critical habitat includes all aquatic habitats of the main portion of San Bernardino National Wildlife Refuge, Cochise County, Arizona (south 1/2 Section 11 and south 1/2 and northeast 1/4 Section 15, Township 24 South, Range 30 East).

A Rio Yaqui Fishes Recovery Plan is in preparation.

Listed as endangered by the State of Arizona.





YAQUI CHUB

LEGEND

Current Range ●

YAQUI CHUB
(*Gila purpurea*)

STATUS: Endangered (49 FR 34490; August 31, 1984) with critical habitat.

SPECIES DESCRIPTION: This fish is a medium size minnow (adults rarely exceed 6 inches) and is darkly colored, but usually lighter below. Its most pronounced feature is a dark, triangular caudal spot.

HABITAT: Inhabiting deeper pools of small streams near undercut banks and debris, it is also found in pools associated with springheads.

RANGE: **Historic:** This chub was once found throughout the Rio Yaqui Drainage in Cochise County in extreme southeastern Arizona, including San Bernardino Creek (Blackwater Draw), Whitewater Creek, Black Wash (Astlin Wash), and the Morse Canyon portion of Willcox Playa. It was also found in San Bernardino Creek in Sonora, Mexico.
Current: It is found in various streams, springs, and ponds on the main portion of the San Bernardino National Wildlife Refuge, Cochise County, Arizona. Yaqui chub have also been introduced into Leslie Creek in the Swisshelm Mountains, Arizona, on a disjunct portion of the refuge, and into West Turkey Creek in the Chiricahua Mountains on the Coronado National Forest.

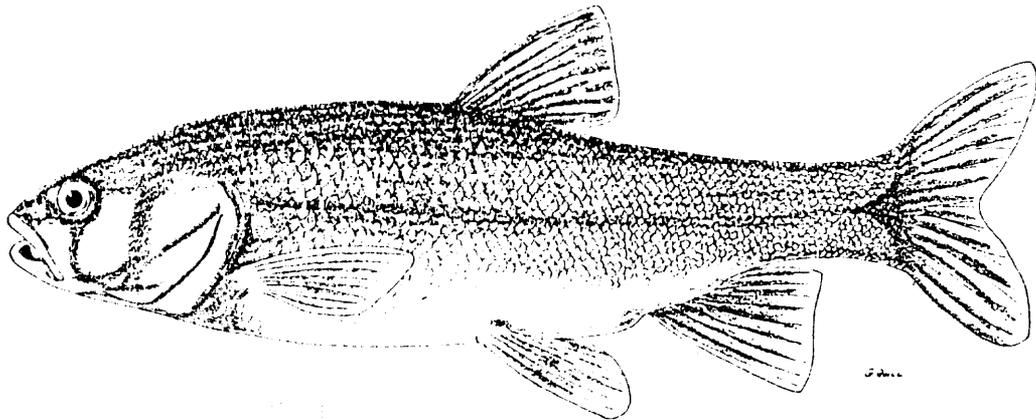
REASONS FOR DECLINE/VULNERABILITY: This species is endangered because of habitat destruction and modification and interactions with introduced fish species.

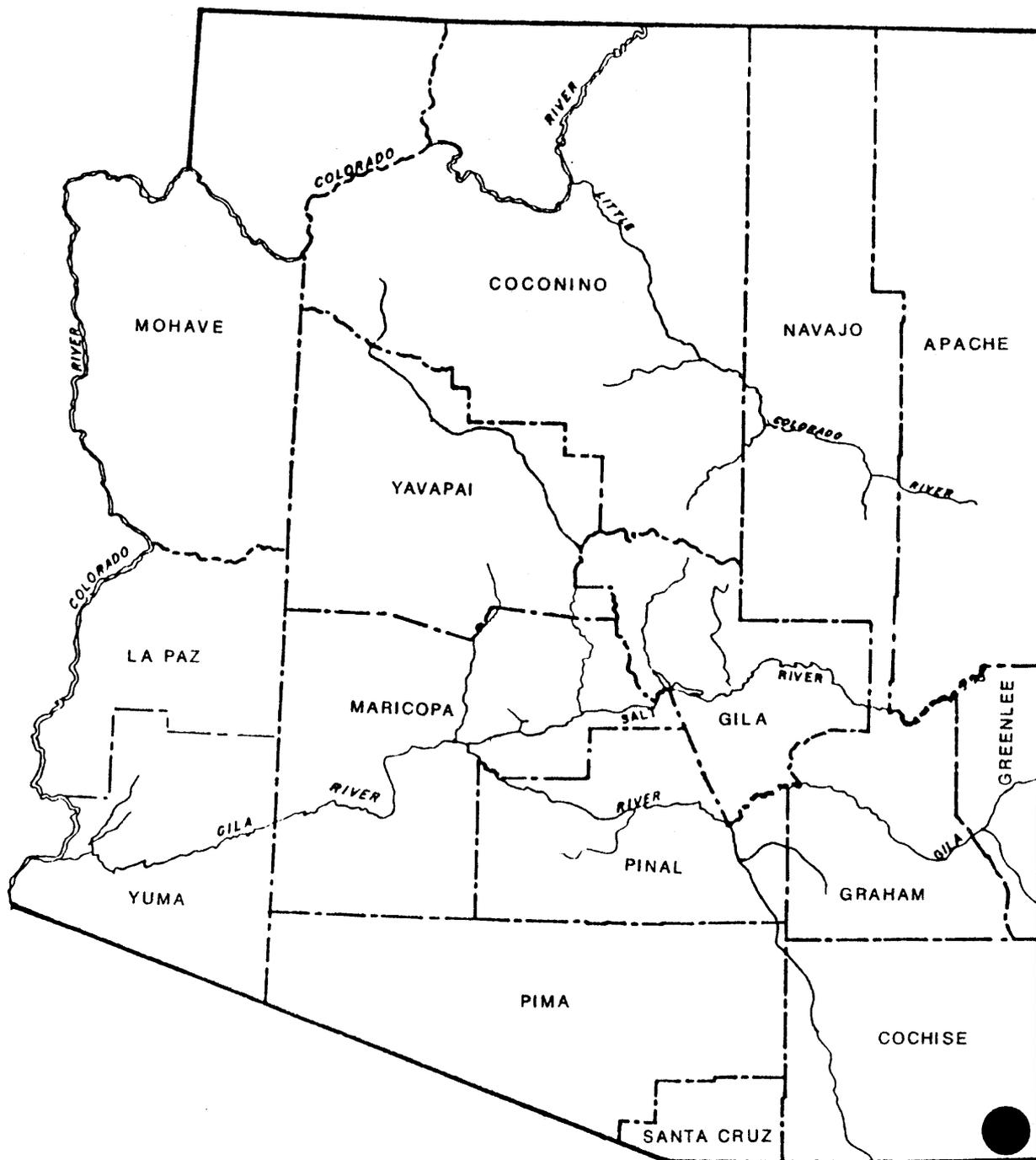
LAND MANAGEMENT/OWNERSHIP: United States Fish and Wildlife Service (San Bernardino National Wildlife Refuge), and United States Forest Service (Coronado National Forest).

NOTES: Critical habitat includes all aquatic habitats of the main portion of San Bernardino National Wildlife Refuge, Cochise County, Arizona (south 1/2 Section 11 and south 1/2 and northeast 1/4 Section 15, Township 24 South, Range 30 East).

A Rio Yaqui Fishes Recovery Plan is in preparation.

Listed as endangered by the State of Arizona.





YAQUI TOPMINNOW

LEGEND

Current Range ●

YAQUI TOPMINNOW
(Poeciliopsis occidentalis sonoriensis)

STATUS: Endangered (32 FR 4001,; March 11, 1967) without critical habitat.

SPECIES DESCRIPTION: This topminnow is a small (2 inches) guppy-like, live-bearing fish, lacking dark spots on fins. Breeding males are jet black with yellow fins.

HABITAT: It inhabits small to moderate sized streams, springs, and cienegas below 4500 feet elevation. It is found primarily in shallow areas with aquatic vegetation or debris. It can tolerate relatively high water temperatures and low dissolved oxygen.

RANGE: Historic: This species occurred in the Rios Yaqui, Matape, and Mayo in Sonora, Mexico, and Cochise County, Arizona.

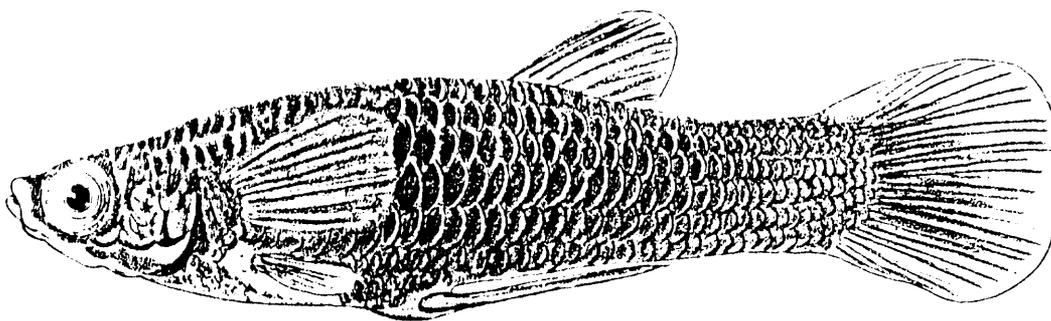
Current: P. o. sonoriensis is present in the United States in several natural or introduced populations on the main portion of the San Bernardino National Wildlife Refuge, Cochise County, Arizona. It is also found in Leslie Canyon in the Swisshelm Mountains on a disjunct portion of the refuge. Natural populations exist in Mexico in the Rios Yaqui, Mayo, and Matape.

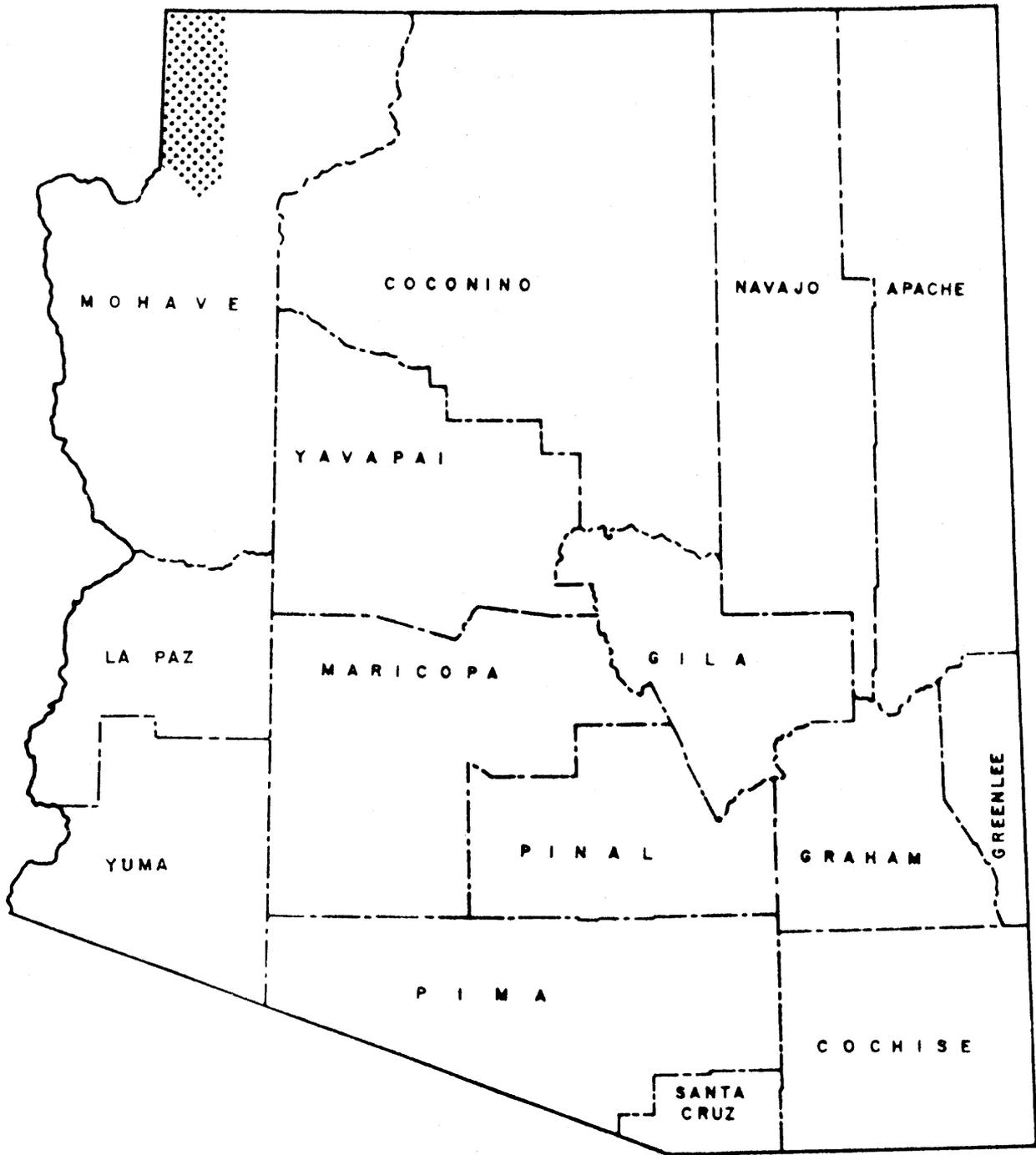
REASONS FOR DECLINE/VULNERABILITY: This topminnow is endangered as a result of the loss of springs, river backwaters, and small stream habitat. Competition with introduced mosquitofish (Gambusia affinis) in remaining habitats is also a major threat to the survival of this species.

LAND MANAGEMENT/OWNERSHIP: United States Fish and Wildlife Service (San Bernardino National Wildlife Refuge).

NOTES: A Recovery Plan for the Sonoran topminnow (Yaqui and Gila subspecies) was completed March 15, 1984. Yaqui topminnow will be included in the Yaqui Fishes Recovery Plan now in preparation.

Listed as endangered by the State of Arizona.





DESERT TORTOISE

LEGEND

Current Range



DESERT TORTOISE (Mohave population)
(Gopherus {=Xerobates, =Scaptochelys} agassizii)

STATUS: Threatened (55 FR 12178; April 2, 1990) without critical habitat.

SPECIES DESCRIPTION: This large (shell length up to 15 inches), herbivorous reptile has a domed shell and round, stumpy hind legs. This Mohave desert population is most active during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and after summer rain storms. They spend the remainder of the year in burrows.

HABITAT: Tortoises occur in creosote bush, cactus and shadscale habitats, and Joshua tree woodlands. The Mohave population generally occupies desertscrub communities in basins and bajadas. Habitat use gradually changes from creosote bush- dominated flatlands in the western Mohave desert to rocky slopes and bajadas in the northeastern Mohave. In Arizona, tortoises of the Mohave population are found at elevations of 500-5,100 feet.

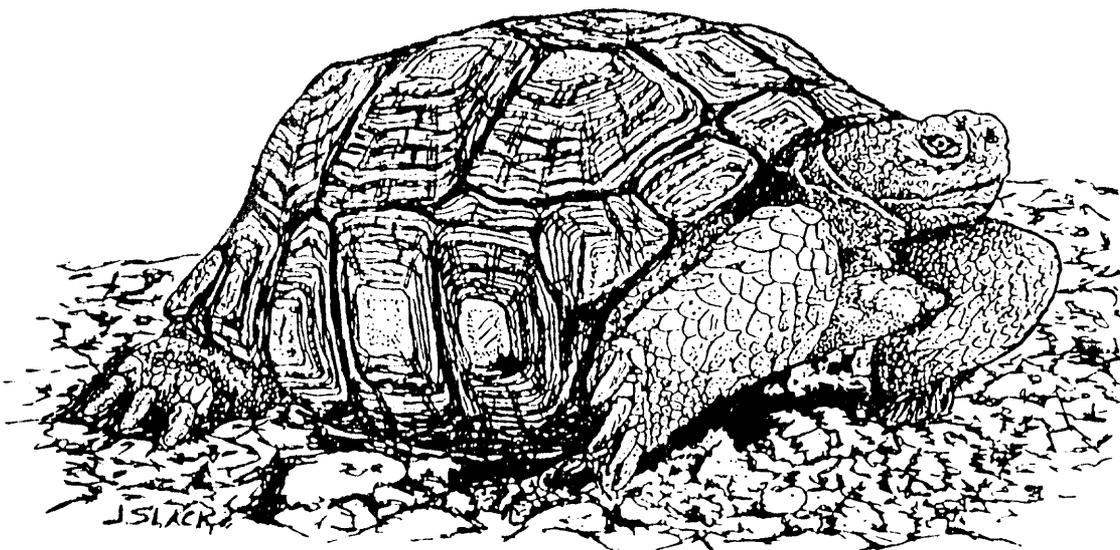
RANGE: Historic: This reptile occurred in a variety of desert communities in southeastern California, southern Nevada, northwestern Arizona and southwestern Utah.

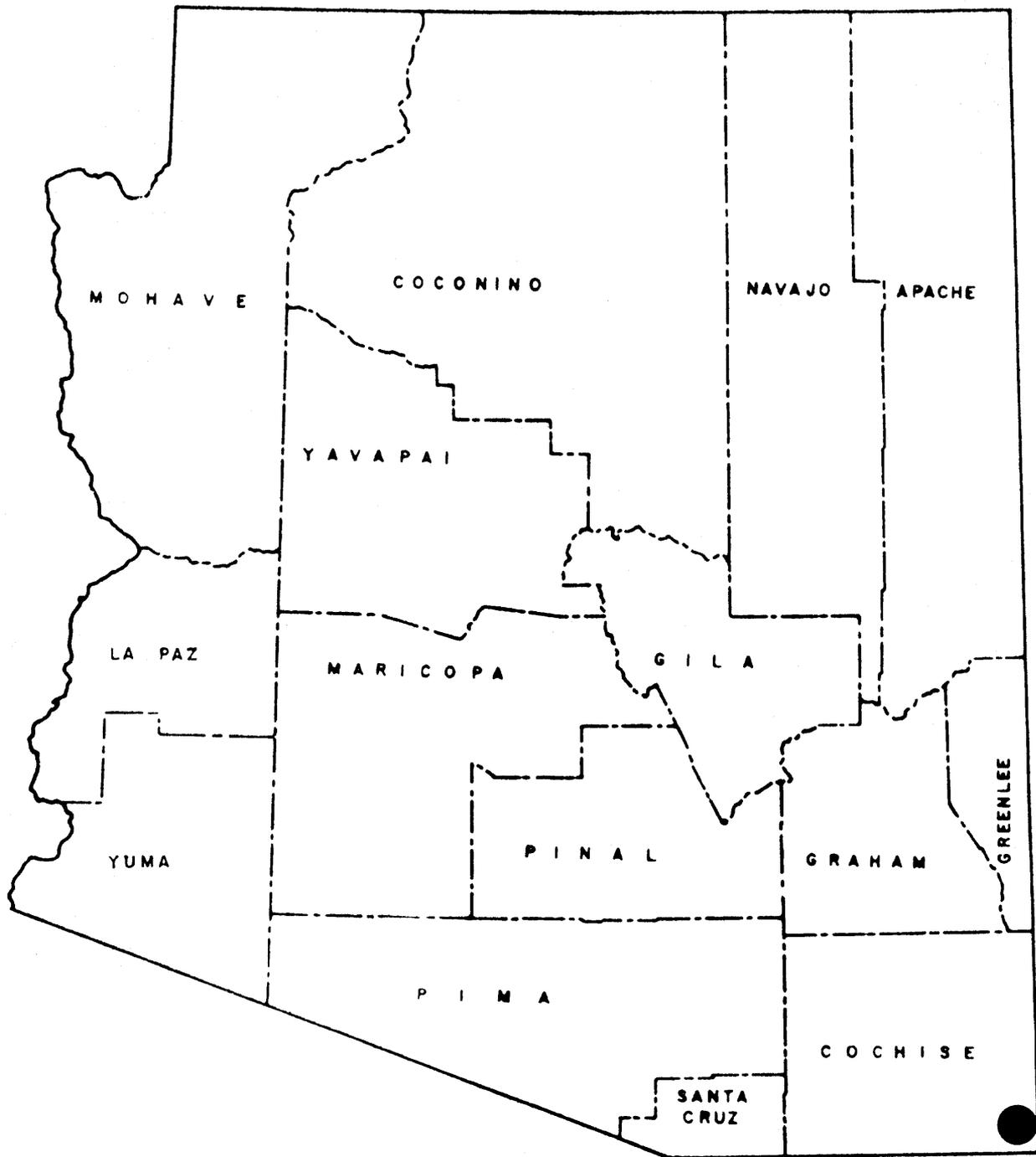
Current: It is still distributed throughout the historic range, but populations are fragmented and declining.

REASONS FOR DECLINE/VULNERABILITY: This species is threatened due to loss and degradation of habitat. Causes of the habitat loss include road, housing, and energy development; conversion of habitat to agriculture; grazing; and off-road vehicle use. These stressed populations are impacted further by illegal collection and vandalism, disease (Upper Respiratory Tract Disease), and predation of juveniles by common ravens.

LAND MANAGEMENT/OWNERSHIP: Bureau of Land Management, National Park Service, State, and private.

NOTES: The Sonoran desert population of this species is a Category 2 candidate.





**NEW MEXICAN
RIDGE-NOSED RATTLESNAKE**

LEGEND

Current Range ●

NEW MEXICAN RIDGE-NOSED RATTLESNAKE
(Crotalus willardi obscurus)

STATUS: Threatened (43 FR 34479; August 4, 1978) with critical habitat.

SPECIES DESCRIPTION: This is a small (12-24 inches), secretive grayish-brown rattlesnake with a distinct ridge on the end of the snout. The dorsal surface has obscure, irregularly spaced white crossbars edged with brown (not a bold pattern).

HABITAT: This species can be found in high mountain canyons in pine-oak and pine-fir associations at elevations of 5,600-9,000 feet. It occurs in canyon bottoms of alder, box elder, maple, and oak.

RANGE: **Historic:** This snake is found in limited areas of northern Mexico and extreme southwestern New Mexico.
Current: An individual was recently collected in the Peloncillo Mountains, Cochise County, Arizona.

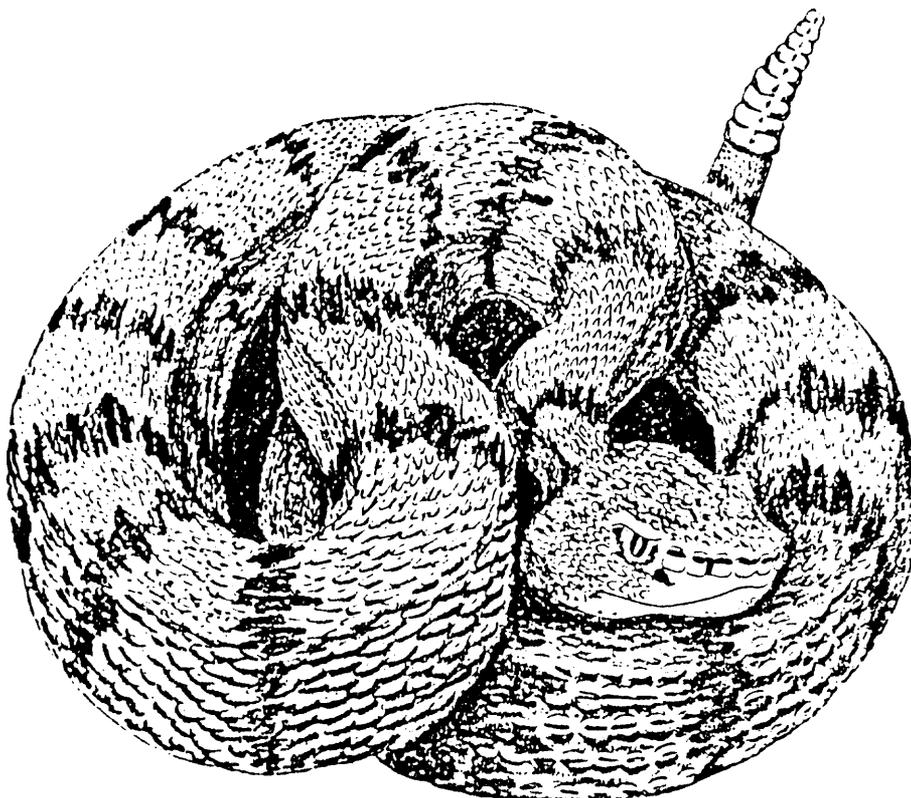
REASONS FOR DECLINE/VULNERABILITY: This species was never common. It is threatened by illegal collection and habitat alteration.

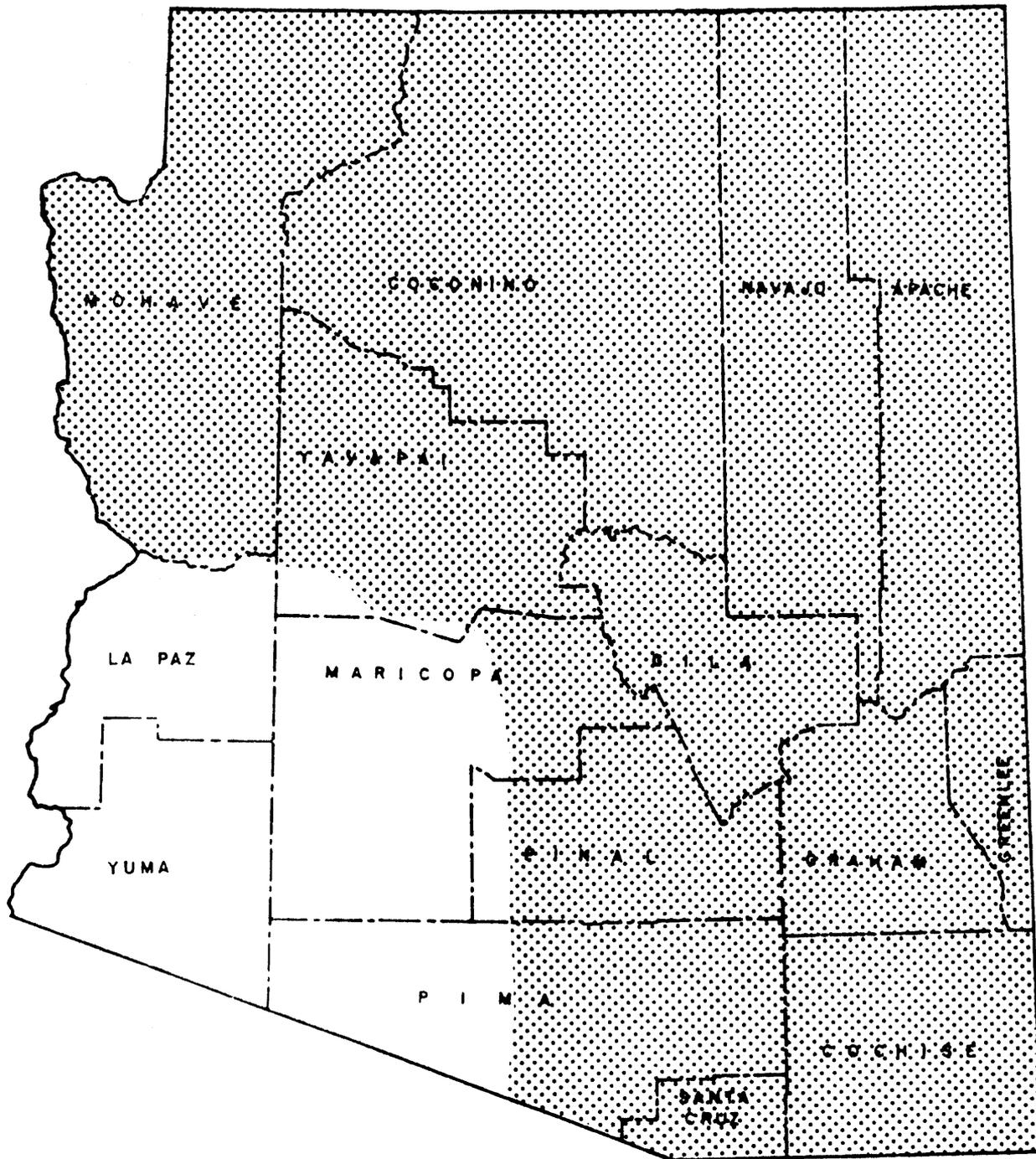
LAND MANAGEMENT/OWNERSHIP: United States Forest Service, Coronado National Forest.

NOTES: Recovery Plan completed 1985.

Listed as endangered by the State of New Mexico.

Another subspecies, the Arizona ridge-nosed rattlesnake (Crotalus willardi willardi), is listed as a candidate species by the State of Arizona.





AMERICAN PEREGRINE FALCON

Occurs statewide in appropriate habitat.

AMERICAN PEREGRINE FALCON
(Falco peregrinus anatum)

STATUS: Endangered (35 FR 16047, October 13, 1970; 35 FR 8495, June 2, 1970) without critical habitat.

SPECIES DESCRIPTION: A reclusive, crow-sized falcon which is slatey blue-gray above, whitish below with fine dark barring. The head is black with a masked or helmeted appearance. The wings are long and pointed. Loud wailing calls are given during breeding.

HABITAT: This falcon inhabits areas with cliffs and steep terrain, preferably near water or woodlands where bird (its primary prey) concentrations are high. In Arizona, it prefers elevations above 5,000 feet, but it may be found from 3,500-9,000 feet.

RANGE: Historic: Its breeding range stretched from Canada and Alaska south into Baja California, the central Mexican highlands, and northwest Mexico, including the continental United States. Northern birds probably winter in Mexico and Central and South America. In Arizona, birds were found over the entire state and included both resident and migrants.

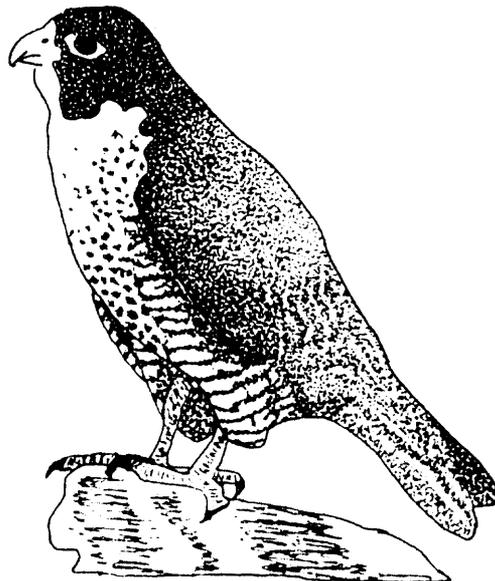
Current: Most breeding populations are confined to the mountainous areas of the western United States and Canada. In Arizona, breeding pairs are now well distributed throughout suitable habitat statewide, except the low elevation deserts of the southwestern quarter of the state. Migrant and wintering birds include both the anatum and tundrius subspecies. Arizona breeding pairs appear to be year-round residents.

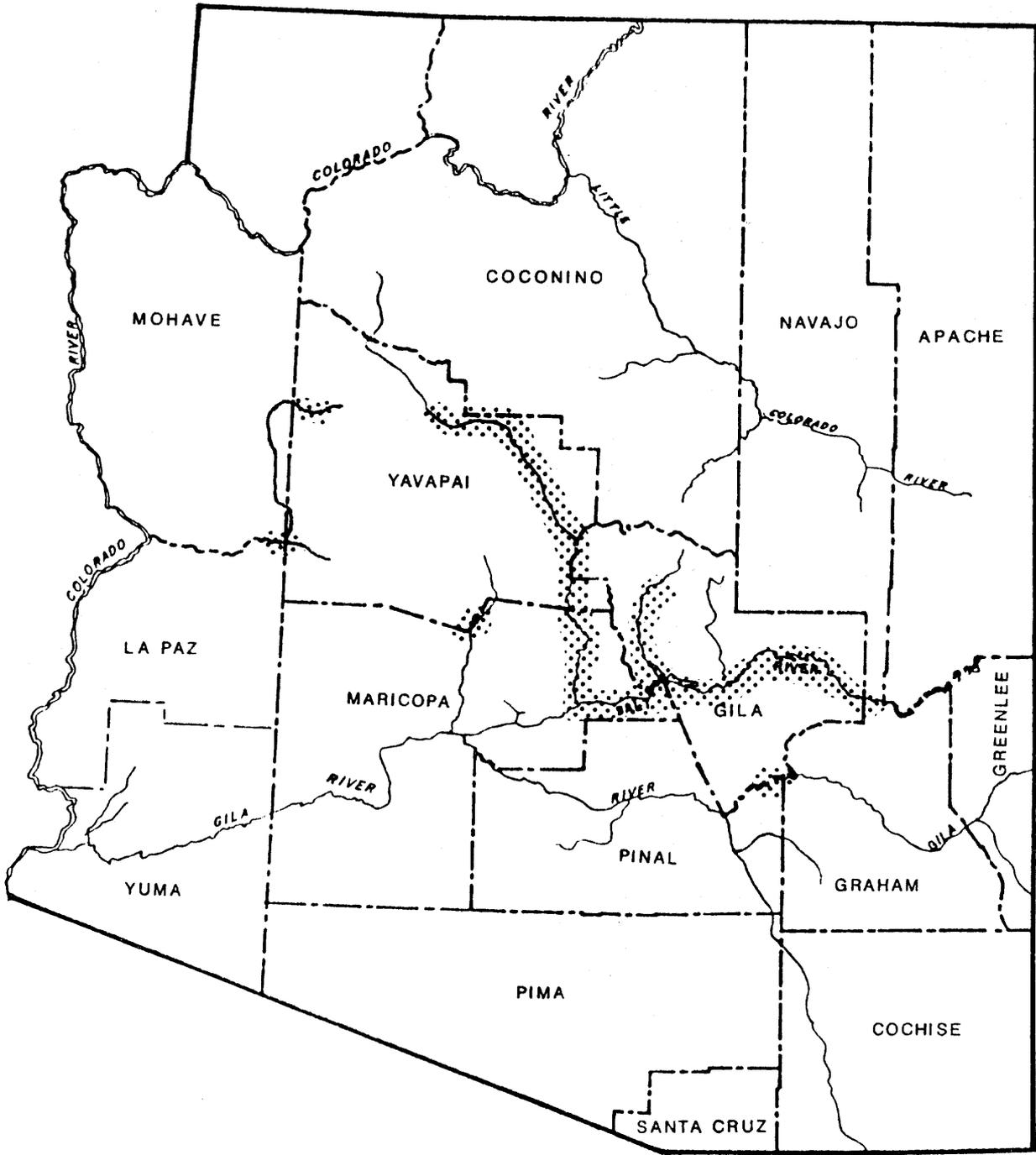
REASONS FOR DECLINE/VULNERABILITY: This falcon is endangered as a result of reproductive failure due to organochlorine pesticides.

NOTES: The Recovery Plan was revised in 1984. Pacific and Rocky Mountain Recovery Plans are currently being amended.

The Arctic Peregrine Falcon (Falco peregrinus tundrius) is listed as threatened (49 FR 10520; March 20, 1984). This subspecies is slightly smaller and paler than the American peregrine. It does not nest in Arizona, but may occasionally pass through on migration to and from wintering grounds in Central and South America.

Listed as a candidate species by the State of Arizona.





BALD EAGLE

LEGEND

Breeding Range 

BALD EAGLE
(Haliaeetus leucocephalus)

STATUS: Endangered (32 FR 4001, March 11, 1967; 43 FR 6233, February 14, 1978) without critical habitat.

SPECIES DESCRIPTION: This is a large eagle with white head and tail in the adults. Immature individuals are dark with varying degrees of light mottling. The feet are bare of feathers.

HABITAT: Bald eagles require large trees, snags or cliffs near water for nesting, with abundant fish and waterfowl for prey. They spend the winters along major rivers, reservoirs, or in areas where fish and/or carrion is available. Fish are the primary food source, but waterfowl, small mammals, and carrion are also important food items for breeding, wintering and transient eagles.

RANGE: Historic: Occurring throughout the U.S., Canada, and northern Mexico, this species is usually found near the seacoast, inland lakes, and rivers. The largest breeding populations are found in southern Alaska, along the west coast of Canada and Washington, around the Great Lakes, and in Florida. Resident eagles and wintering populations occur in Arizona.

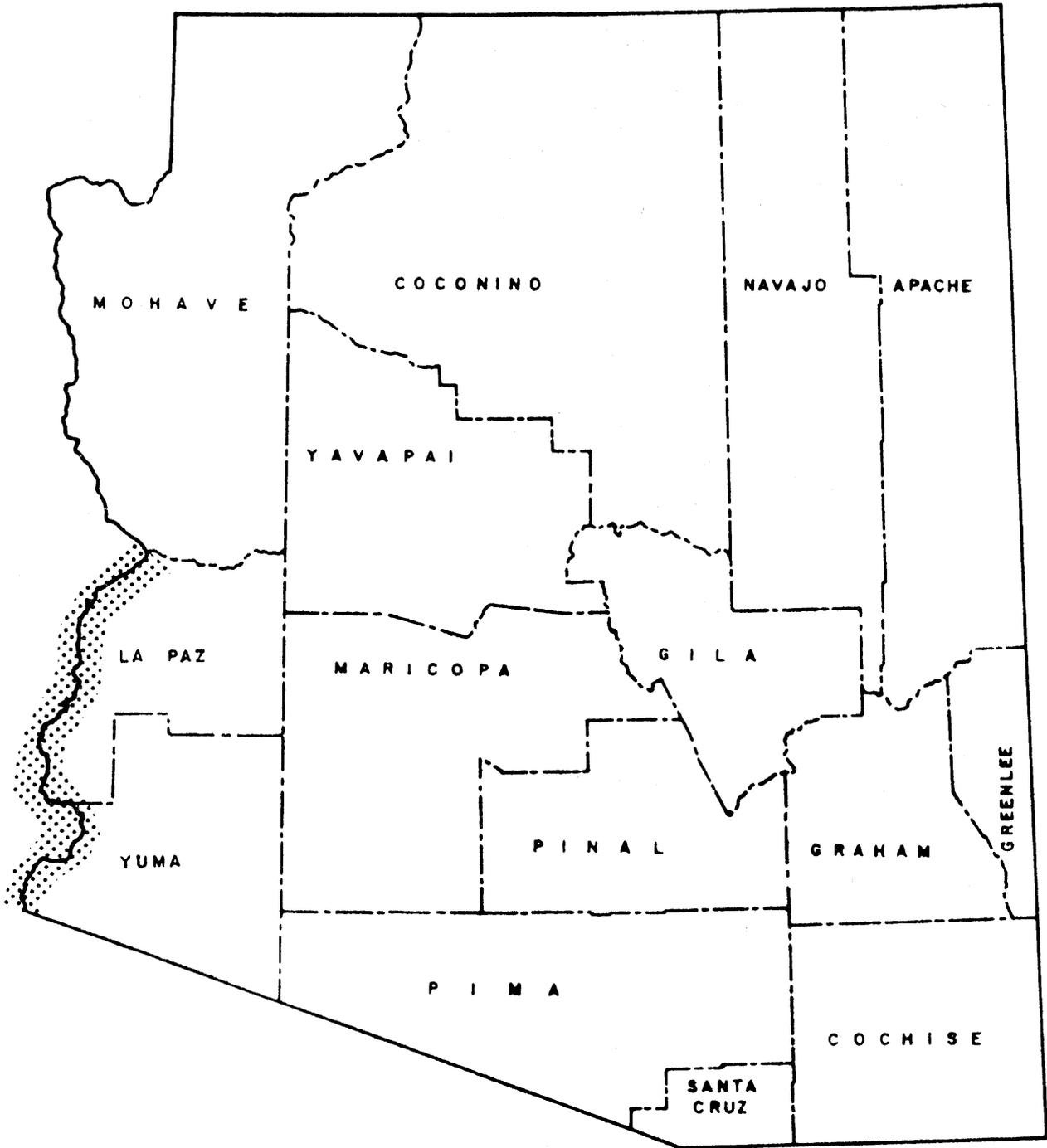
Current: Wintering eagles are found along rivers and major reservoirs in Arizona. Approximately 200 to 300 bald eagles winter in Arizona, with many in the White Mountains and along the Mogollon Rim. A small resident population nests primarily along the Salt and Verde rivers in Arizona. New nest sites along the Gila, Bill Williams, and Agua Fria drainages indicate that the population may be increasing. However, this increase may reflect increased search effort rather than population expansion.

REASONS FOR DECLINE/VULNERABILITY: Threats include degradation and loss of riparian habitat, pesticide-induced reproductive failure, ingestion of lead-poisoned waterfowl, shooting of individuals, timber harvest, loss of foraging perches, and human disturbance.

NOTES: A Recovery Plan was approved in 1982.

Listed as endangered by the State of Arizona.





CALIFORNIA BROWN PELICAN

LEGEND

Current Range 

CALIFORNIA BROWN PELICAN
(Pelecanus occidentalis californicus)

STATUS: Endangered (35 FR 16047, October 13, 1970; 35 FR 18320, December 2, 1970) without critical habitat.

SPECIES DESCRIPTION: This pelican is a large, dark gray-brown water bird with a pouch underneath a long bill and with webbed feet. Adults have a white head and neck, a brownish black breast and belly, and silver grayish upper parts.

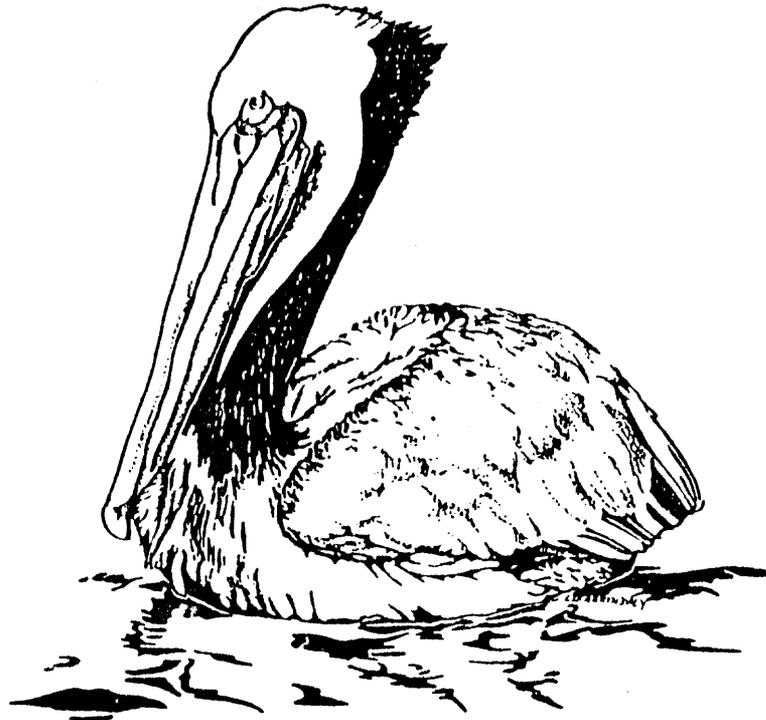
HABITAT: This bird lives in coastal areas and nests on islands.

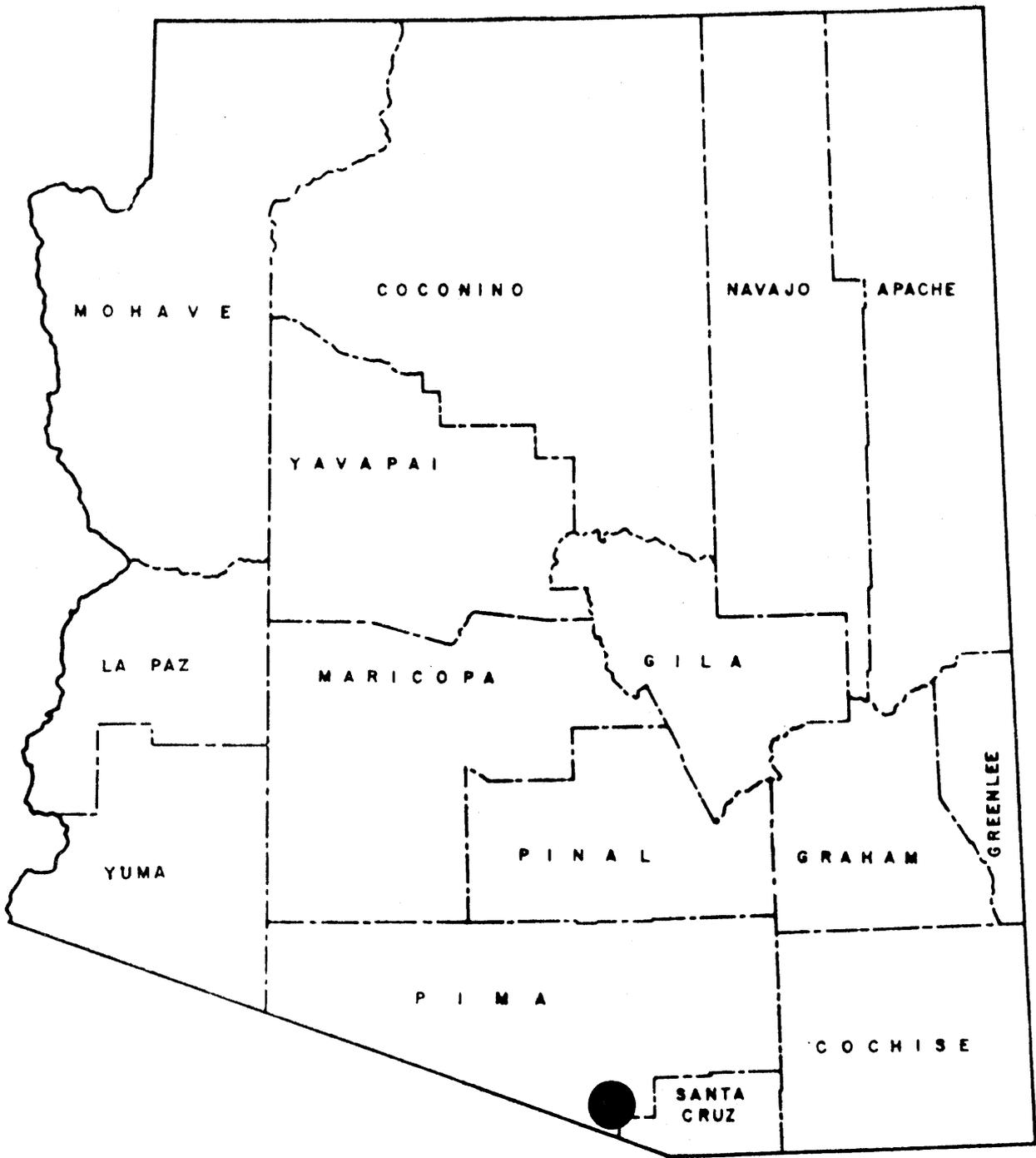
RANGE: Historic: This subspecies occurred on the Pacific coast from Canada through Mexico. It was found on the Lower Colorado River as a transient. It breeds only as far north as central California.

Current: It is still found as a transient in Arizona along the Colorado River and it is occasionally blown into central Arizona by storms. Populations exist along the California and Mexico coasts.

REASONS FOR DECLINE/VULNERABILITY: This subspecies is endangered as a result of reproductive failure due to pesticides.

NOTES: A Recovery Plan was completed in 1983.





MASKED BOBWHITE

LEGEND

Current Range ●

MASKED BOBWHITE
(Collinus virginianus ridgewayi)

STATUS: Endangered (35 FR 4001, March 11, 1967; 35 FR 8495, June 2, 1970) without critical habitat.

SPECIES DESCRIPTION: Males are characterized by a brick-red breast and a black head and throat. Females closely resemble other races of the species and are essentially indistinguishable from the Texas Bobwhite (Collinus virginianus texanum).

HABITAT: This bobwhite is found in desert grasslands at 1,000-4,000 feet elevation with a high diversity of moderately dense native grasses and forbs and adequate brush cover. This subspecies has been found to be closely associated with unarmed acacia (Acacia angustissima), apparently using the seeds as a major food in winter, fall and early spring.

RANGE: Historic: It occurred in grasslands throughout most of Sonora, Mexico, and the Altar and Santa Cruz Valleys (Pima and Santa Cruz Counties) of Arizona. It inhabited the Sonoran savanna grasslands, the Sonoran desertscrub and the Sinaloan thornscrub of extreme southcentral Arizona and adjacent central Sonora, Mexico, from Sasabe south to the Valle de Agua Caliente.

Current: One very small population persists in central Sonora, Mexico. In 1985, Buenos Aires National Wildlife Refuge was established in the southern Altar Valley (Pima County) of Arizona to restore and preserve habitat for this species. Captive-produced birds have been released at the refuge annually since then. Although drought conditions have hampered reintroduction efforts, it appears there has been limited reproduction occurring in the refuge population.

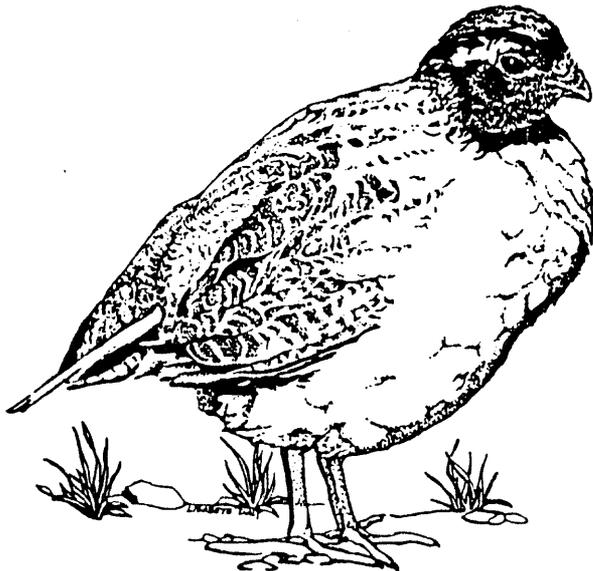
Potential: Habitat for the expansion of reintroduction is being surveyed in Arizona.

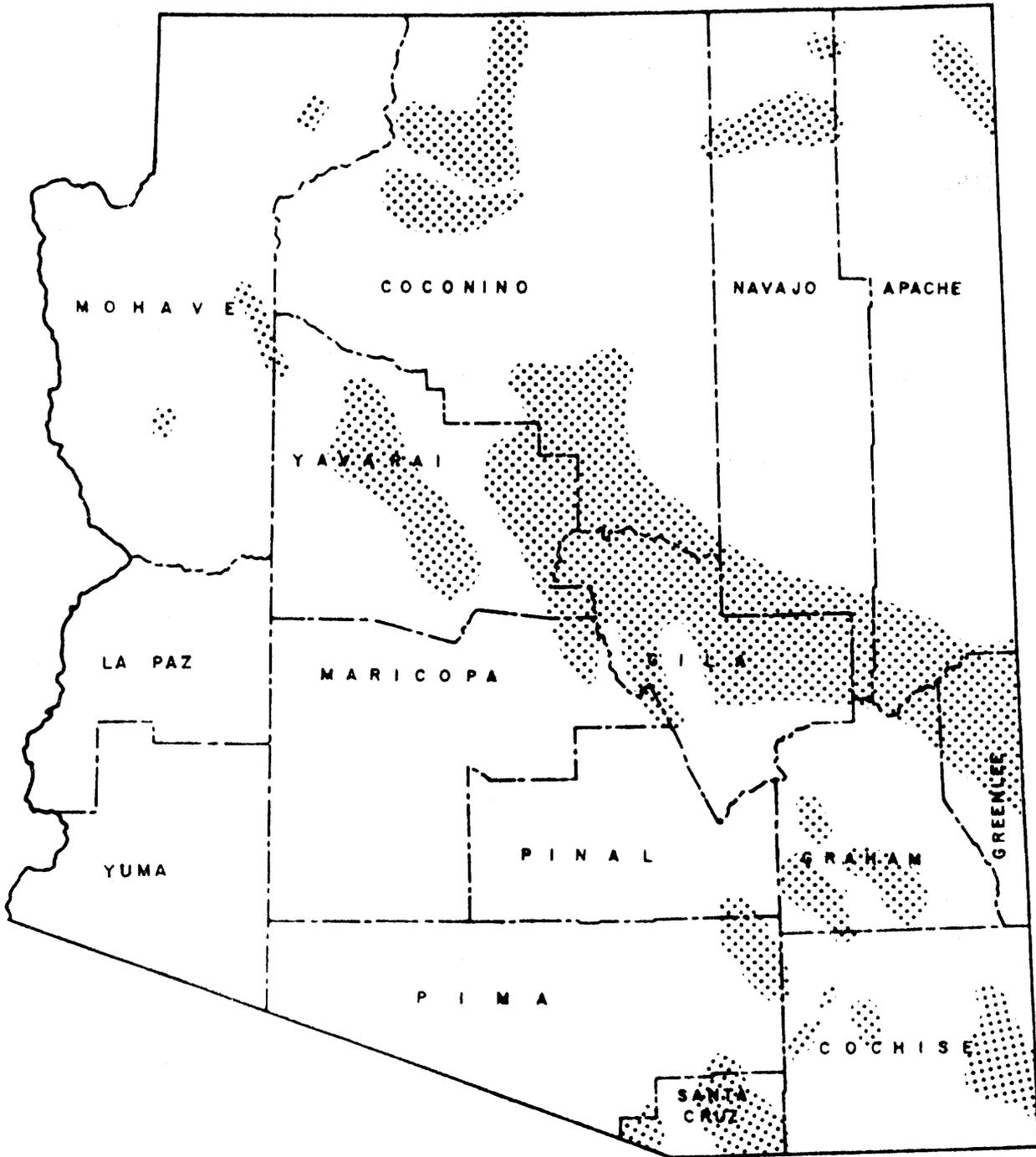
REASONS FOR DECLINE/VULNERABILITY: This bobwhite is endangered as a result of the loss and deterioration of habitat due to overgrazing. This subspecies tolerates only light grazing pressure on its arid grassland habitat.

LAND MANAGEMENT/OWNERSHIP: United States Fish and Wildlife Service.

NOTES: A Recovery Plan was completed in 1977 and updated in 1984.

Listed as endangered by the State of Arizona.





MEXICAN SPOTTED OWL

LEGEND

Current Range 

MEXICAN SPOTTED OWL
(Strix occidentalis lucida)

STATUS: Proposed threatened (56 FR 56344; November 4, 1991) without critical habitat.

SPECIES DESCRIPTION: The Mexican spotted owl is a medium-sized owl with dark eyes and no ear tufts. It is generally brownish and heavily spotted with white or beige.

HABITAT: Nests are generally found in dense forest with old growth characteristics, multi-layered foliage structure, and primarily in the mixed conifer community. Most nest sites are located in stands exhibiting old-growth characteristics at elevations of 4,100-9,000 feet. Foraging owls utilize a variety of habitats that have an abundance of prey (small mammals) and perches from which to hunt. Selection of roost sites depends on season and elevation, as the microclimate is important to these owls. Some owls are found in deep narrow canyons which also provide a cooler microclimate.

RANGE: Historic: This owl ranges from the southern Rocky Mountains in Colorado and the Colorado Plateau in Utah, southward through forested highlands of Arizona and New Mexico, then along the Sierra Madre Occidental and Oriental to the forested mountains at the southern end of the Mexican Plateau.

Current: It is widely, but patchily, distributed in Arizona in all but the arid southwestern portion of the state. It generally inhabits forested highlands at elevations ranging from 5,000 to 9,000 feet. The current range in Arizona coincides with the historical with the exception of lowland riparian habitat today, which apparently was once inhabited by the owl.

Potential: Wherever a sufficient amount of the essential habitat occurs.

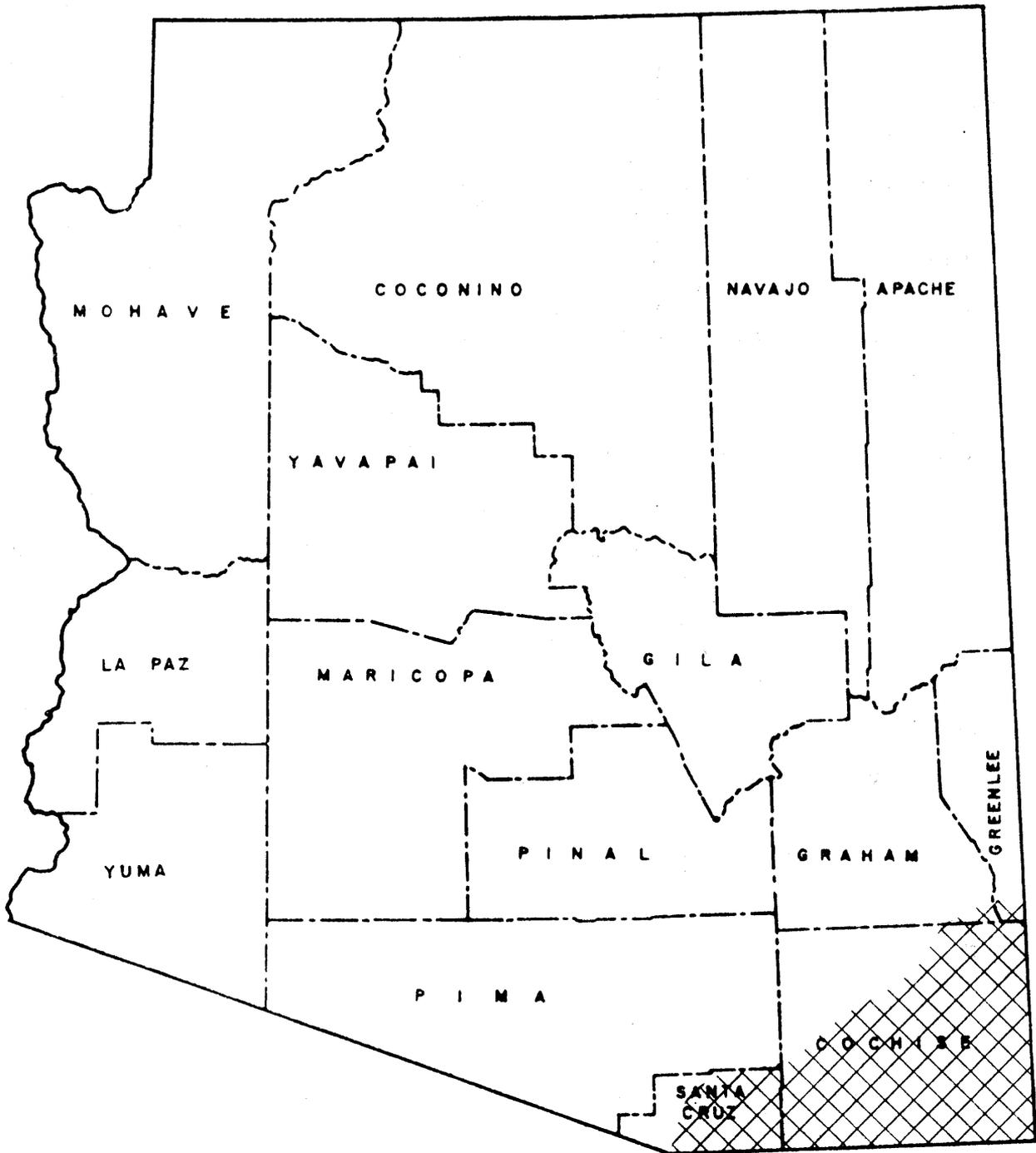
REASONS FOR DECLINE/VULNERABILITY: Recommended for listing because current population numbers are low, essential habitat is facing widespread past, present, and threatened destruction (by logging), and existing regulatory mechanisms for protection are inadequate.

LAND MANAGEMENT/OWNERSHIP: The percentage of owls found on: National Forests, 90%; Indian reservations, 5%; National Parks, 4%; Bureau of Land Management lands, 1%.

NOTES: This subspecies is listed as threatened by the State of Arizona.

The northern spotted owl
 (Strix occidentalis caurina)
 is listed as threatened
 (55 FR 26114; June 26, 1990).





NORTHERN APLOMADO FALCON

LEGEND

Historic Range



NORTHERN APLOMADO FALCON
(Falco femoralis septentrionalis)

STATUS: Endangered (51 FR 6686; January 25, 1986) without critical habitat.

SPECIES DESCRIPTION: Adults are characterized by rufous (rust) underparts, a gray back, a long and banded tail, and a distinctive black and white facial pattern. Aplomado falcons are smaller than peregrine falcons and larger than American kestrels. Small birds compose the majority of prey biomass; bats, insects, reptiles and rodents supplement the diet. They lay their eggs between March and June.

HABITAT: This falcon inhabits open grassland and tropical savanna with relatively low ground cover, an abundance of small- to medium-sized birds, and a supply of suitable nesting platforms. The most recent reported United States nesting occurred in yucca/mesquite grassland. In the United States, the species was found along yucca-covered sand ridges in coastal prairies, riparian woodlands in open grasslands, and in desert grasslands with scattered mesquite and yucca.

RANGE: Historic: It occurred, in the United States, in southeastern Arizona, southern New Mexico, and southern Texas. In Mexico, it was found in the states of Tamaulipas, Chiapas, Campeche, Tabasco, Chihuahua, Coahuila, Sinaloa, Jalisco, Guerrero, Veracruz, Yucatan, and San Luis Potosi. This species was also found on the western coast of Guatemala. It occurred in open grasslands of southeastern Arizona (Cochise County) prior to 1890.

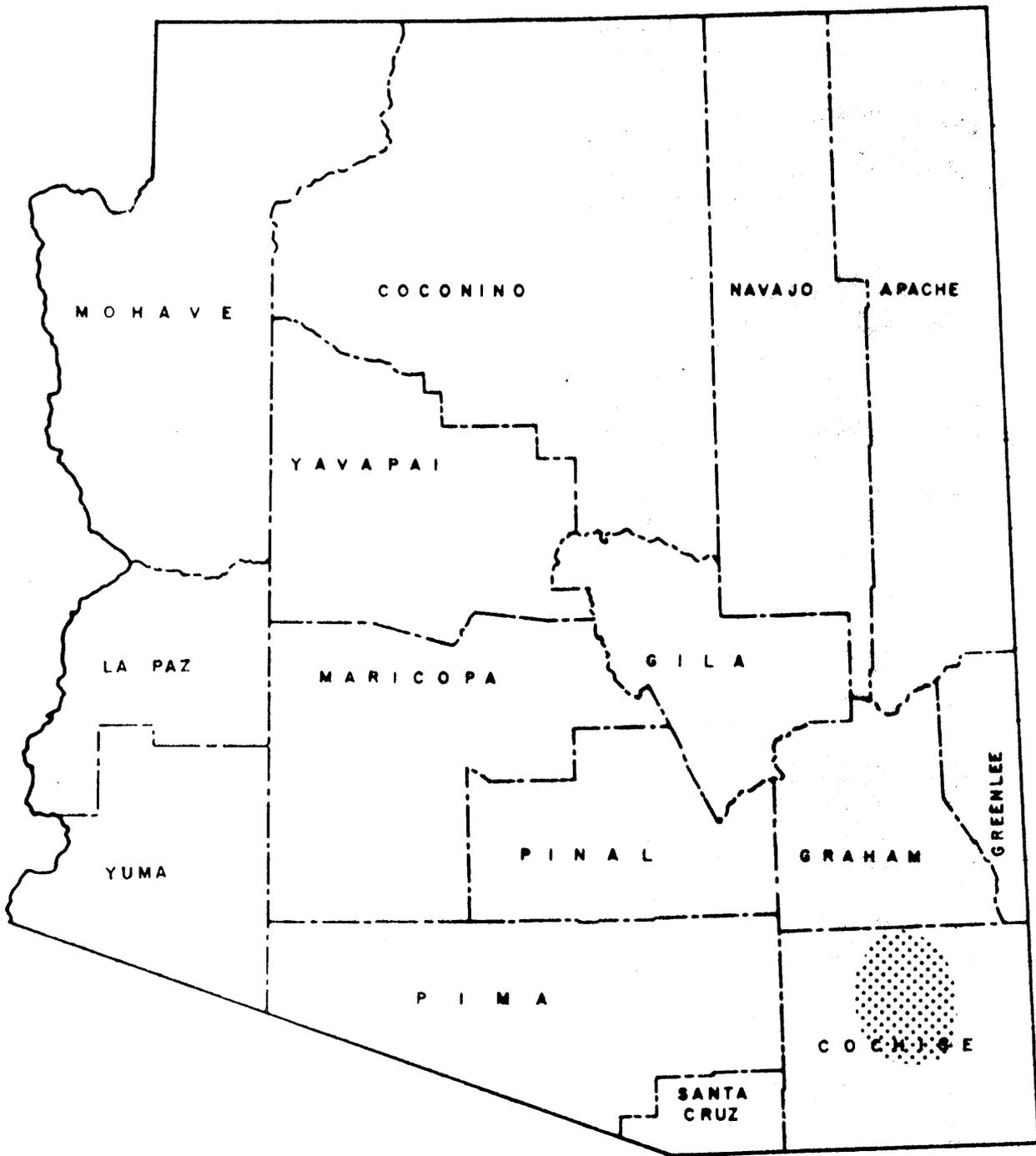
Current: No nests have been verified in the United States since 1952, when a nest was reported from near Deming, New Mexico. A few migrant birds may still pass through the United States. It is now known to nest only in the Mexican states of Veracruz, Chiapas, Campeche, and Tobasco.

REASONS FOR DECLINE/VULNERABILITY: This species is endangered as a result of habitat degradation due to brush encroachment fostered by overgrazing and suppression of range fires, overcollecting, and reproductive failure caused by continued use of organochlorine pesticides in Mexico.

NOTES: A Recovery Plan was approved in 1990.

Listed as endangered by the State of Arizona.





WHOOPING CRANE

LEGEND

Current Range



WHOOPING CRANE (Rocky Mountain population)
(*Grus americana*)

STATUS: Endangered (32 FR 4001, March 11, 1967; 35 FR 8495, June 2, 1970) with critical habitat (43 FR 20938, May 15, 1978).

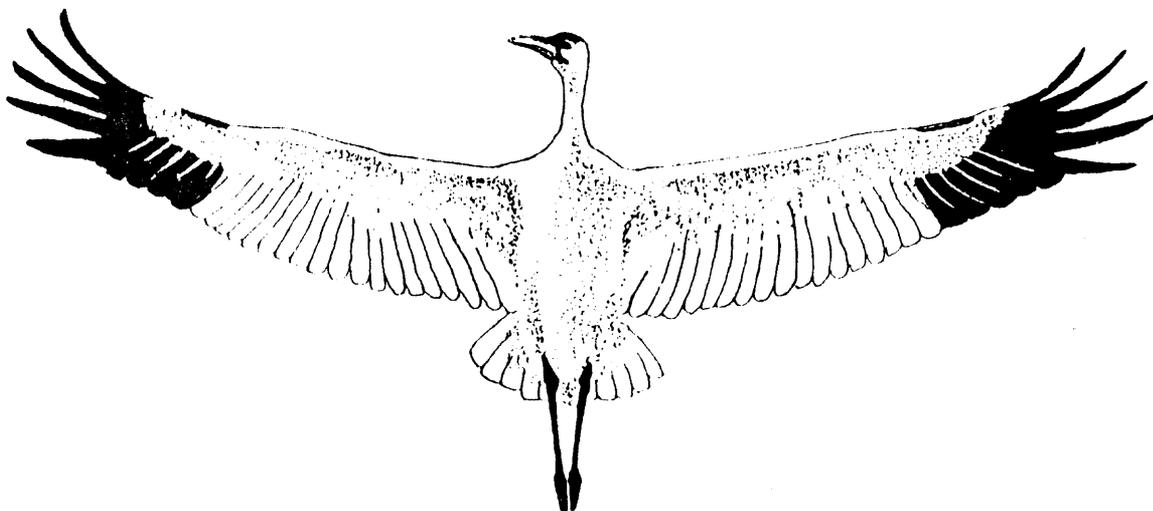
SPECIES DESCRIPTION: This crane is the tallest American bird; males approach 5 feet tall. It is a large, snowy white, long-necked bird with long legs that normally trail behind in flight. It also has black primary feathers, a red crown, and a wedge-shaped patch of black feathers behind the eye.

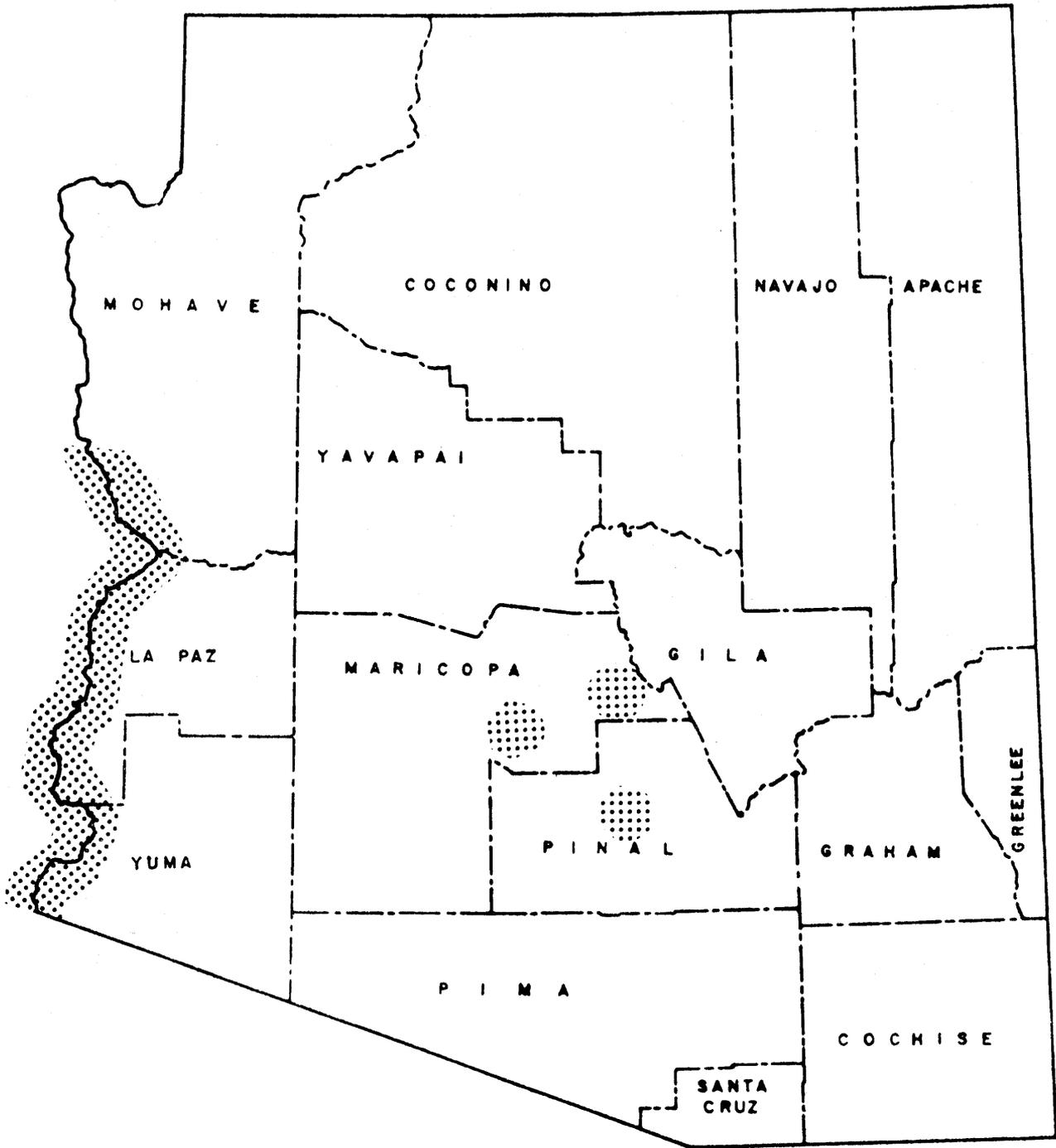
HABITAT: It is found in marshes, river bottoms, potholes, prairies, and cropland. Whooping cranes feed on small grains (corn, wheat, sorghum, barley) in agricultural fields, green forage (alfalfa, winter wheat), aquatic plants (tubers and leaves), insects, crustaceans, and small vertebrate animals.

RANGE: **Historic:** This species once ranged over most of North America. By the 19th century, only a few thousand survived. In the Southwest, birds that breed in the northern Rocky Mountain states and western Canada probably passed through New Mexico en route to and from their wintering areas in the Mexico highlands.
Current: The middle Rio Grande Valley, New Mexico, is the wintering area for the experimental Rocky Mountain population. Occasionally, individuals will be diverted from their migration route west to Arizona where they will appear, particularly at Willcox Playa in southeastern Arizona.

REASONS FOR DECLINE/VULNERABILITY: This species is endangered as a result of destruction of wintering and breeding habitat, hunting, collisions with powerlines and fences, specimen collecting, and human disturbance.

NOTES: The Recovery Plan was revised in 1986.





YUMA CLAPPER RAIL

LEGEND

Current Range 

YUMA CLAPPER RAIL
(Rallus longirostris yumanensis)

STATUS: Endangered (32 FR 4001, March 11, 1967; 48 FR 34182, July 27, 1983) without critical habitat.

SPECIES DESCRIPTION: This is one of the smaller subspecies. This water bird has long legs and a short tail. Its bill is long, slender, and decurved. Anteriorly, this animal's coloration is a mottled brown on a gray background. Its flanks and underside are dark gray with narrow vertical white stripes which produce a barred effect.

HABITAT: This rail inhabits freshwater or brackish stream-sides and marshlands. It is associated with heavy riparian and swamp vegetation. It requires a wet substrate, such as a mudflat, sandbar or slough bottom. The substrate must be covered rather densely, especially at ground level, with mostly mature herbaceous or woody vegetation that exceeds 15 inches in prevalent stand height.

RANGE: Historic: It occurred in the marshes of the lower Colorado River and its tributaries in Mexico and the United States.

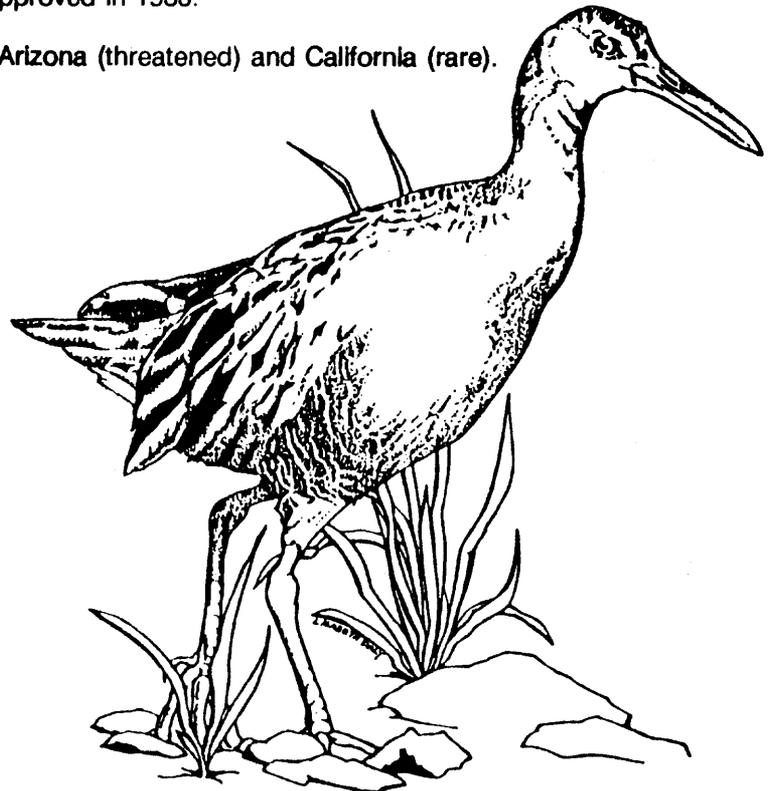
Current: In Arizona, it occurs along the Colorado River from Topock Marsh (Mohave County) to the Mexican border. It also is found on the Gila and Salt Rivers upstream to the area of the Verde confluence (Maricopa County) and at Picacho Reservoir (Pinal County). Populations exist on the Colorado River delta in Mexico and the Salton Sea in California.

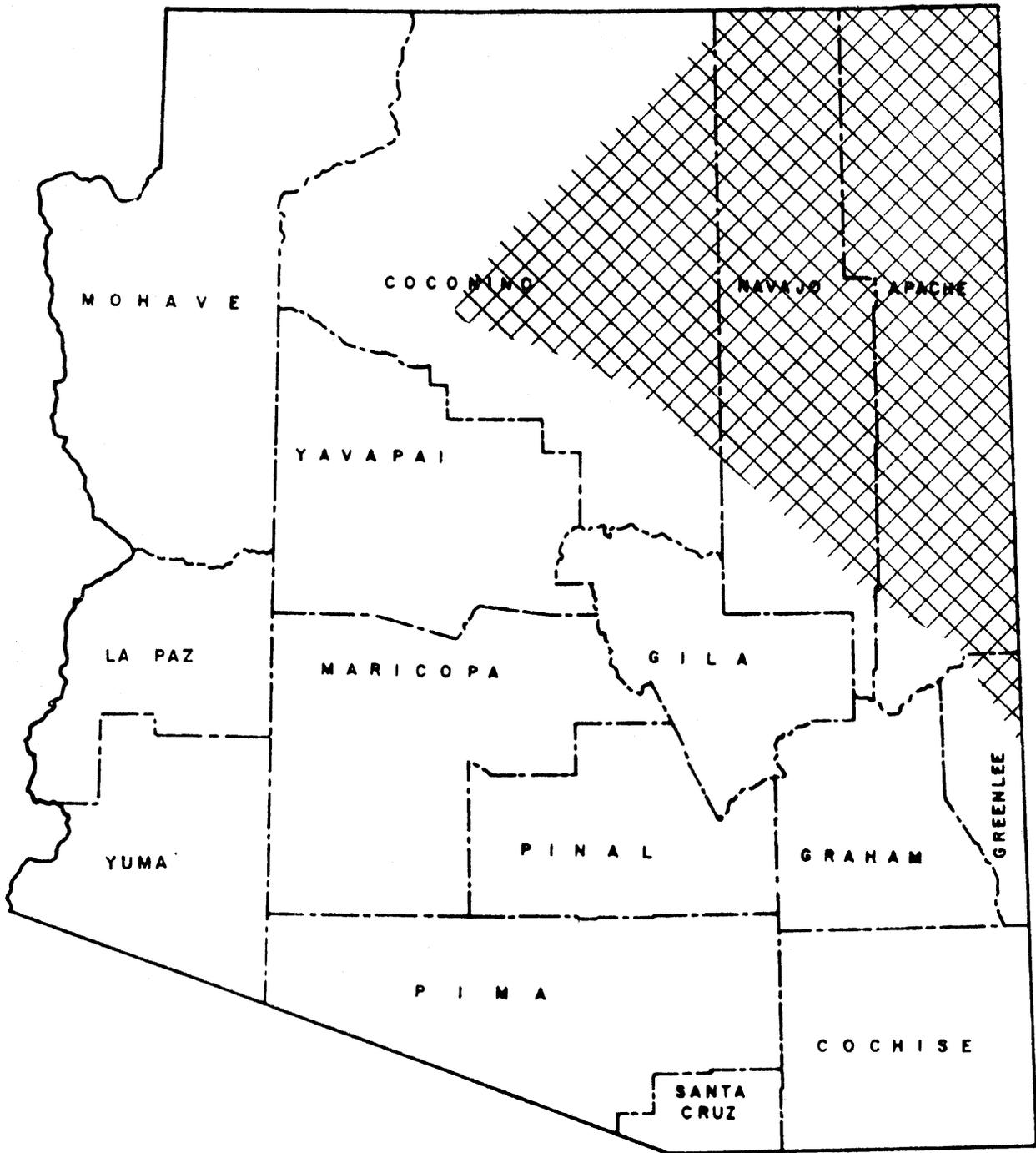
Potential: Possibly occurs in essential habitat found in other locales within the state of Arizona. However, these small, scattered areas are vulnerable to natural and man-caused scouring and destruction.

REASONS FOR DECLINE/VULNERABILITY: This rail is threatened by habitat destruction, primarily due to stream channelization and drying and flooding of marshes.

NOTES: A Recovery Plan was approved in 1983.

Listed by the States of Arizona (threatened) and California (rare).





BLACK-FOOTED FERRET

LEGEND

Historic Range 

BLACK-FOOTED FERRET
(*Mustela nigripes*)

STATUS: Endangered (32 FR 4001; March 11, 1967) without critical habitat.

SPECIES DESCRIPTION: This ferret is a weasel-like mammal that has yellow-buff coloration with black feet, tail tip, and eye mask. It has a blunt, light colored nose. Body length is 15-18 inches and the tail length is 5-6 inches.

HABITAT: It inhabits grassland plains and surrounding mountain basins to 10,500 feet elevation. This ferret is usually found in association with prairie dogs, which are their primary food source and which provide the ferrets with burrows.

RANGE: Historic: This ferret occurred in all or portions of the states of Colorado, Arizona, Utah, New Mexico, Kansas, Montana, Nebraska, Oklahoma, Texas, Wyoming, North Dakota, and South Dakota. It also occurred in the Canadian provinces of Alberta and Saskatchewan.

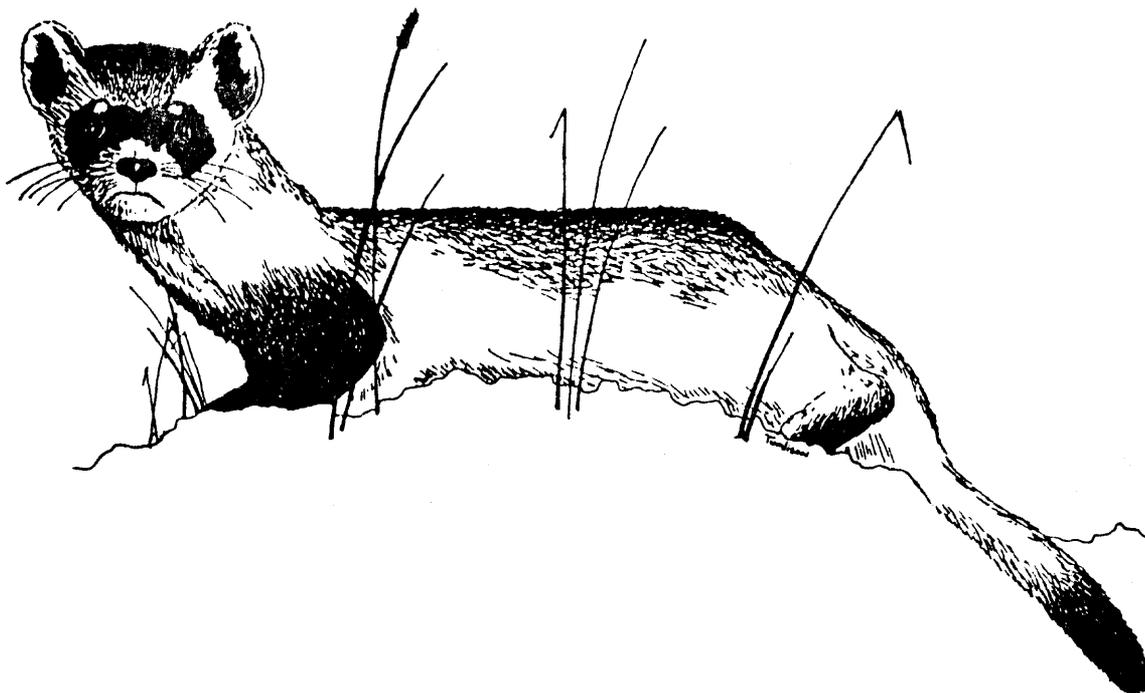
Current: No populations are known to exist in the wild, although some may still persist. In Arizona, the best possibilities for a persisting population appear to be in Navajo and Apache Counties.

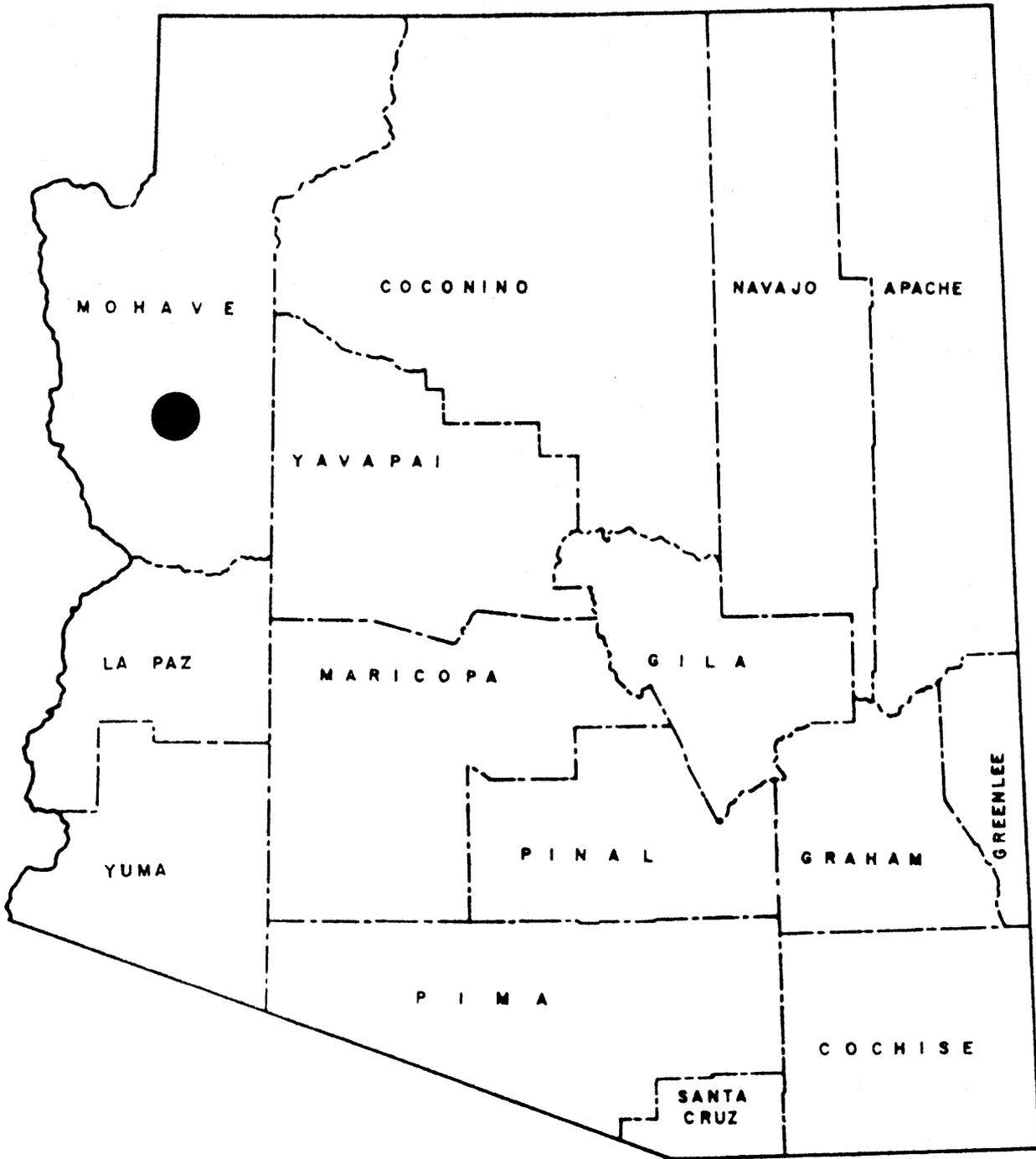
Potential: Suitable habitat is limited by the availability of grasslands with large prairie dog towns. The amount of suitable habitat is not quantified.

REASONS FOR DECLINE/VULNERABILITY: Loss of habitat due to destruction of original grasslands and prairie dog control programs have eliminated the ferret's main food source and shelter. Canine distemper, and possibly other diseases, may also have been a factor in their decline.

NOTES: A Recovery Plan is being revised. A captive breeding program is underway to provide animals for reintroduction. Potential habitat areas for reintroduction are being surveyed in several states including Arizona.

Listed as endangered by the State of Arizona.





HUALAPAI MEXICAN VOLE

LEGEND

Current Range



HUALAPAI MEXICAN VOLE
(Microtus mexicanus hualpalensis)

STATUS: Endangered (52 FR 36776; October 1, 1987) without critical habitat.

SPECIES DESCRIPTION: This species is a small, cinnamon-brown mouse-sized mammal with a short tail and long fur that nearly covers its small, round ears.

HABITAT: Mexican voles are primarily associated with dry grass/forb habitats in ponderosa pine dominated forest. The Hualapai Mexican vole subspecies is now found only in moist, grass/sedge habitats along permanent or semipermanent waters (such as springs and seeps), but may be capable of occupying drier areas when grass/forb habitats are available.

RANGE: Historic: This vole is documented from the Hualapai Mountains and possibly from the Prospect Valley and Music Mountains, Mohave County, Arizona.

Current: Four recently occupied sites in the Hualapai Mountains. Other occupied sites may exist.

Potential: Additional habitats could be restored in the Hualapai Mountains. Taxonomic questions exist for suspected Hualapai Mexican vole populations in Prospect Valley and the Music Mountains.

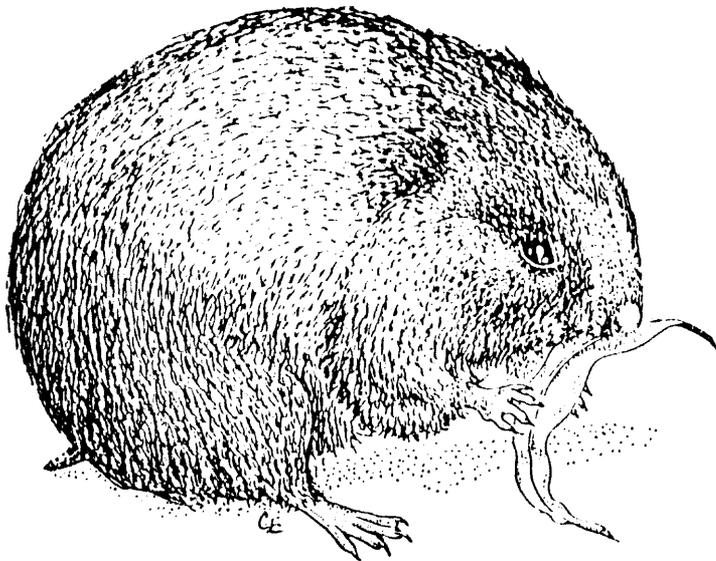
REASONS FOR DECLINE/VULNERABILITY: This vole is endangered as a result of habitat loss due to livestock grazing, human recreation, and other problems.

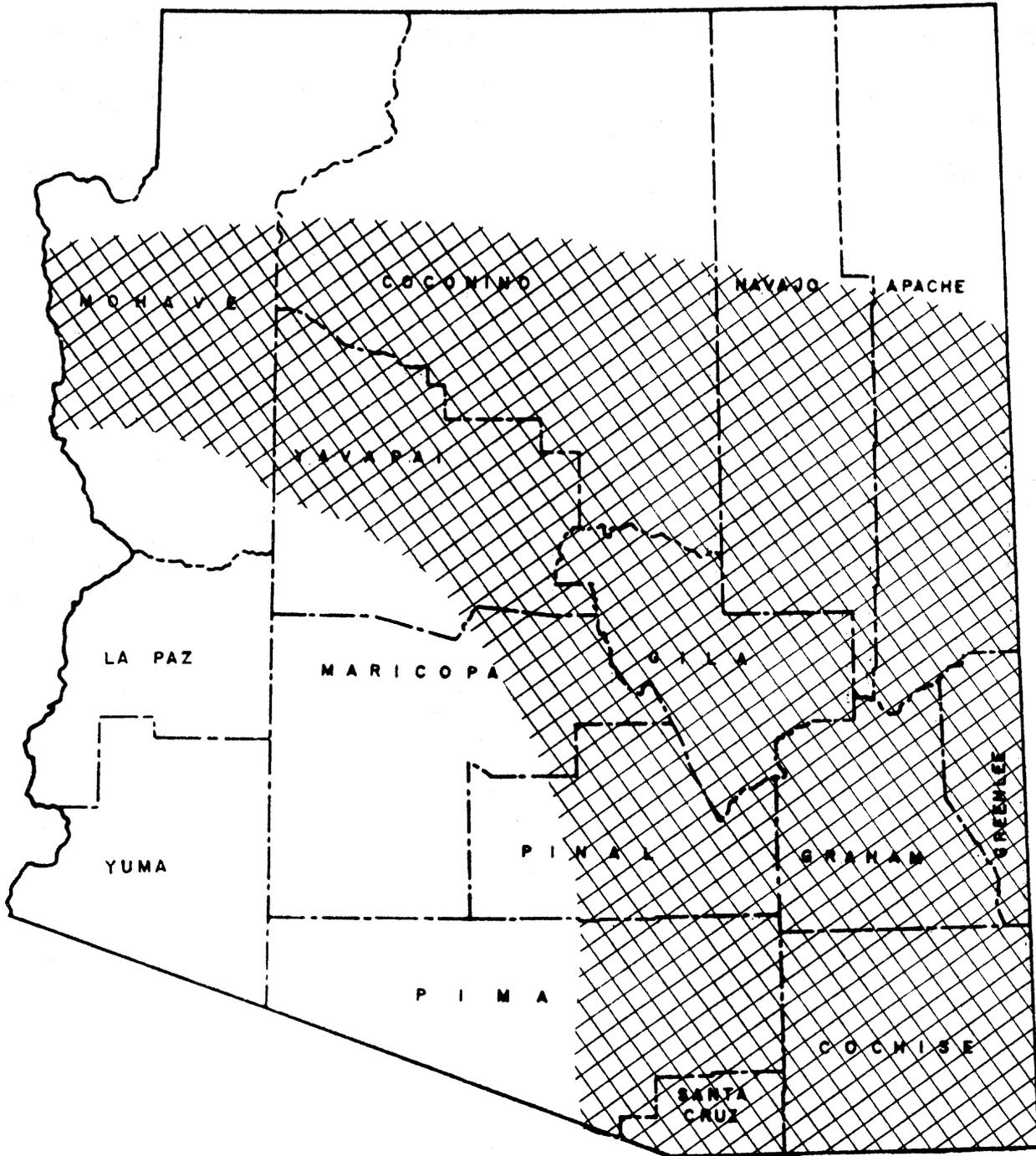
LAND MANAGEMENT/OWNERSHIP: Bureau of Land Management and private.

NOTES: A Recovery Plan was approved August 19, 1991.

Studies on vole taxonomy have been funded.

Listed as endangered by the State of Arizona.





MEXICAN GRAY WOLF

LEGEND

Historic Range



MEXICAN GRAY WOLF
(Canis lupus baileyi)

STATUS: Endangered (32 FR 4001, March 11, 1967; 43 FR 1912, March 9, 1978) without critical habitat.

SPECIES DESCRIPTION: This is a large, dog-like carnivore with its color varying, but usually as some shade of gray. It has a distinct white lip line around its mouth. Adults weigh between 60-90 pounds.

HABITAT: This subspecies inhabits chaparral, woodland and forested areas above approximately 4,000-12,000 feet elevation. This wolf will cross desert areas but will not remain there.

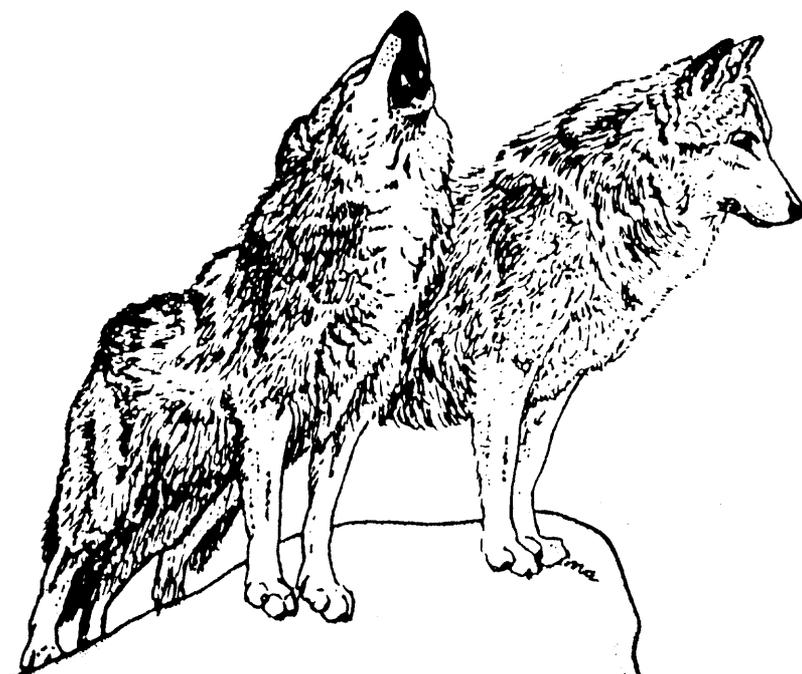
RANGE: Historic: This wolf occurred in southeastern Arizona, southwest New Mexico and Trans-Pecos region of Texas south through the Sierra Madre of Mexico. **Current:** It may persist in isolated pockets in the Sierra Madre. It was extirpated from the United States, although occasional undocumented sightings are reported from Arizona-New Mexico border.

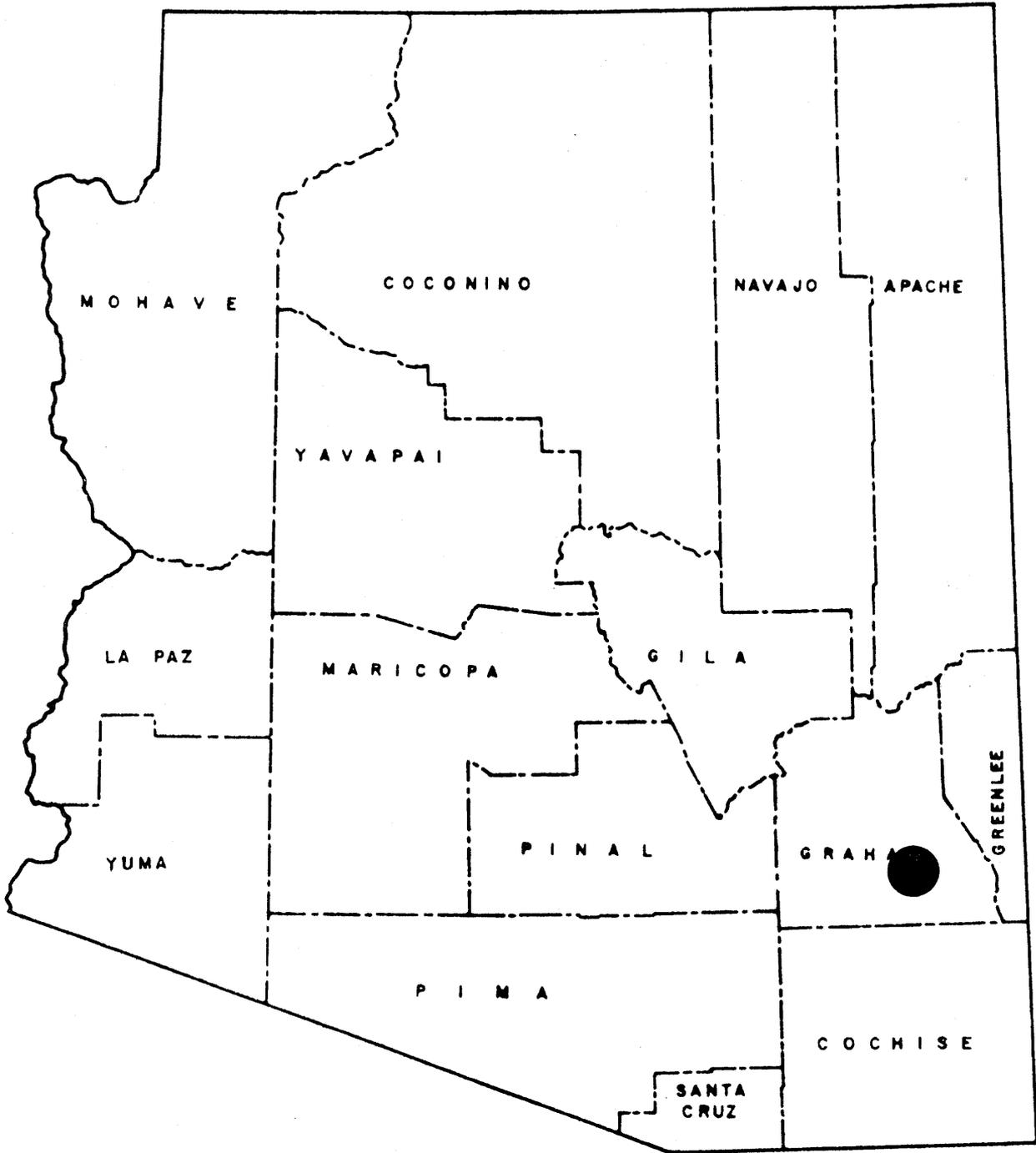
Potential: Unknown. Areas in Arizona and New Mexico are under preliminary evaluation for captive release sites.

REASONS FOR DECLINE/VULNERABILITY: Federal, State, and private predator control programs eliminated wolves from Arizona, Texas, and New Mexico by the 1920's. The same programs may have eliminated the wolf in Mexico in the 1980's.

NOTES: A Recovery Plan was approved September 15, 1982. A captive breeding program is underway in several United States and Mexican zoos.

Listed as endangered by the State of Arizona.





MOUNT GRAHAM RED SQUIRREL

LEGEND

Current Range ●

MOUNT GRAHAM RED SQUIRREL
(Tamiasciurus hudsonicus grahamensis)

STATUS: Endangered (52 FR 20994; June 3, 1987); critical habitat finalized (55 FR 425; February 5, 1990).

SPECIES DESCRIPTION: This species is a grayish-brown tree squirrel, tinged rusty or yellowish along the back. In summer, a dark lateral line separates the light colored underparts from the grayer or browner sides. The ears are slightly tufted in the winter, and the tail is bushy. Its diet consists largely of conifer seeds.

HABITAT: This tree squirrel inhabits montane conifer forests from spruce-fir to mixed conifer types. During the winter, this species depends on seed-bearing cones that it has stored at certain sites known as middens. These caches, usually associated with logs, snags, stumps, or a large live tree, are the focal points of individual territories. The number of middens offers an estimate of the number of resident squirrels in an area.

RANGE: **Historic:** Pinaleno Mountains, Graham County, Arizona.
Current: It is found in the Pinaleno Mountains. All of the squirrel's habitat is on the Coronado National Forest.

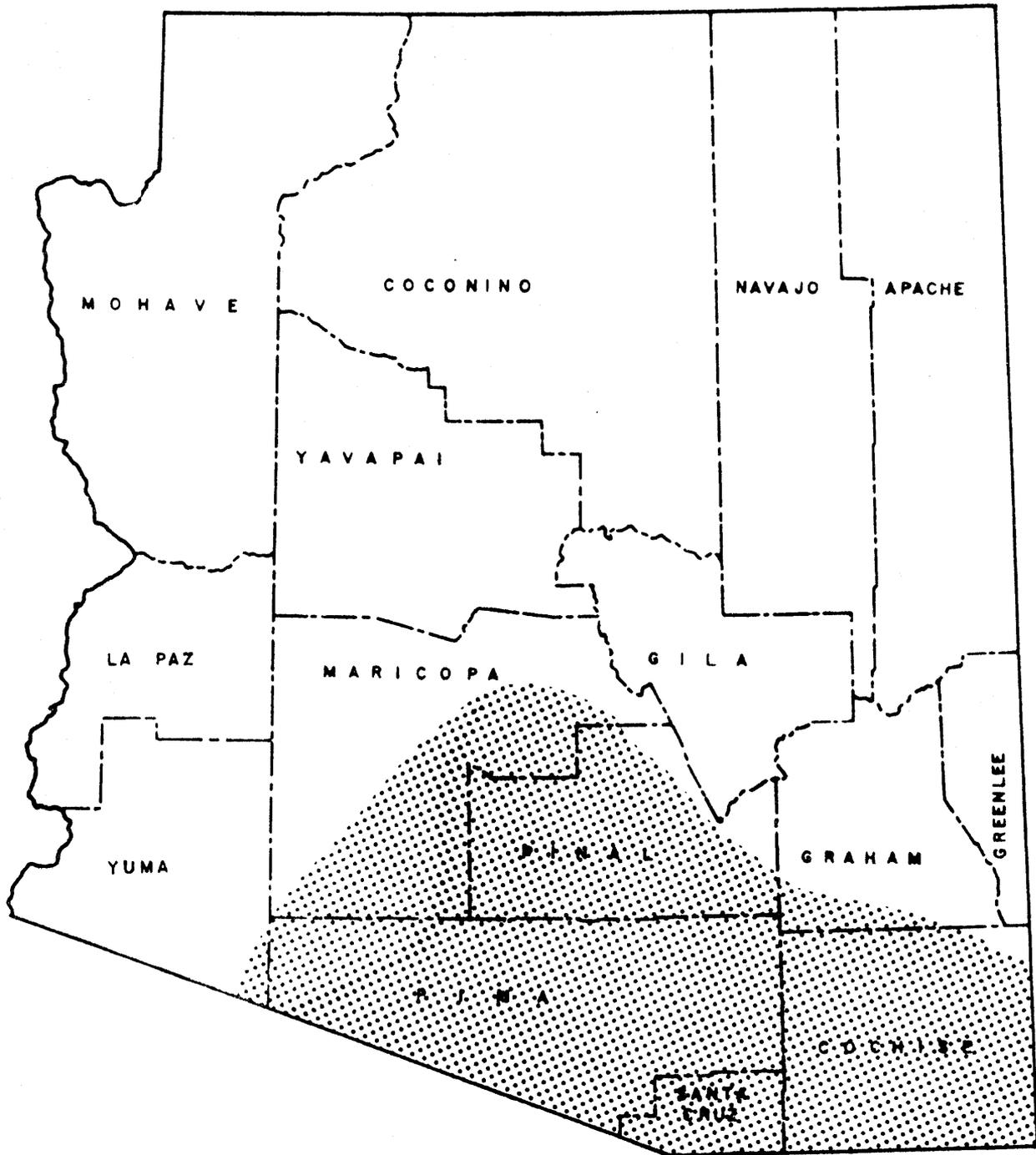
REASONS FOR DECLINE/VULNERABILITY: This squirrel is endangered as a result of habitat destruction from logging, road construction, and other developments. Red squirrel populations fluctuate in response to food availability. Successive failure of conifer cone crops result in significant population declines.

LAND MANAGEMENT/OWNERSHIP: United States Forest Service.

NOTES: A Recovery Plan is in preparation.

Listed as endangered by the State of Arizona.





SANBORN'S LONG-NOSED BAT

LEGEND

Current Range



SANBORN'S LONG-NOSED BAT
(Leptonycteris sanborni)

STATUS: Endangered (53 FR 38456; September 30, 1988) without critical habitat.

SPECIES DESCRIPTION: This bat has an elongated muzzle, a small leaf nose, and a long tongue. Its coloration is usually yellowish brown on grayish above and cinnamon brown below. Its tail is minute and appears to be lacking. This bat is easily disturbed.

HABITAT: This species is found mainly in desert scrub habitat that is dotted with agaves, mesquite, creosotebush and columnar cacti. For day roosting sites, the bats depend almost entirely on caves and abandoned mines and tunnels. Populations in the United States and northern Mexico migrate southward in the fall and return in the spring to occupy the same caves. This species is mutualistic with century plants and large cacti; they feed on the nectar and pollen of these plants.

RANGE: Historic: This bat occurred in southern Arizona and the extreme southwestern corner of New Mexico south through western Mexico to El Salvador.
Current: It now occurs throughout its historic range but in reduced numbers. In Arizona, it may be found in portions of Pima, Maricopa, Pinal, Santa Cruz, Graham, and Cochise Counties during the May to September period of residence. Pregnant females arrive in May and maternity colonies tend to occur in the western parts of the range where saguaro cacti provide abundant food resources. After the break-up of the maternity colonies, females, males, and juveniles move into agave dominated areas in the east.
Potential: Some caves and roost sites that have been lost may be restorable; an example is Colossal Cave. The situation in the rest of the species range is unclear.

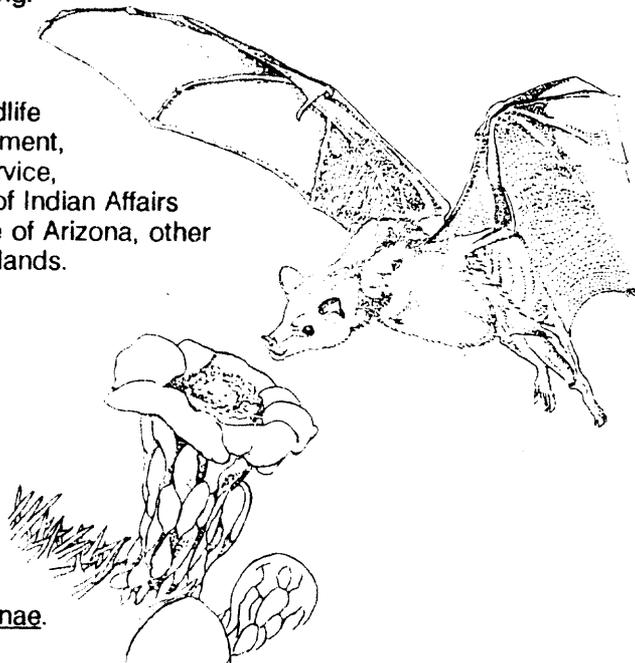
REASONS FOR DECLINE/VULNERABILITY: Following a decline in recent years, remaining populations are jeopardized by disturbance of roosting sites, loss of food resources, and direct killing by humans. The two most important aspects of habitat are roosting sites and food resources. Roosting sites are becoming increasingly subject to destruction and disturbance by humans. The survival of the food resources is in doubt because of exploitation (for food, fiber, and alcohol), the spread of agriculture, wood cutting and livestock grazing.

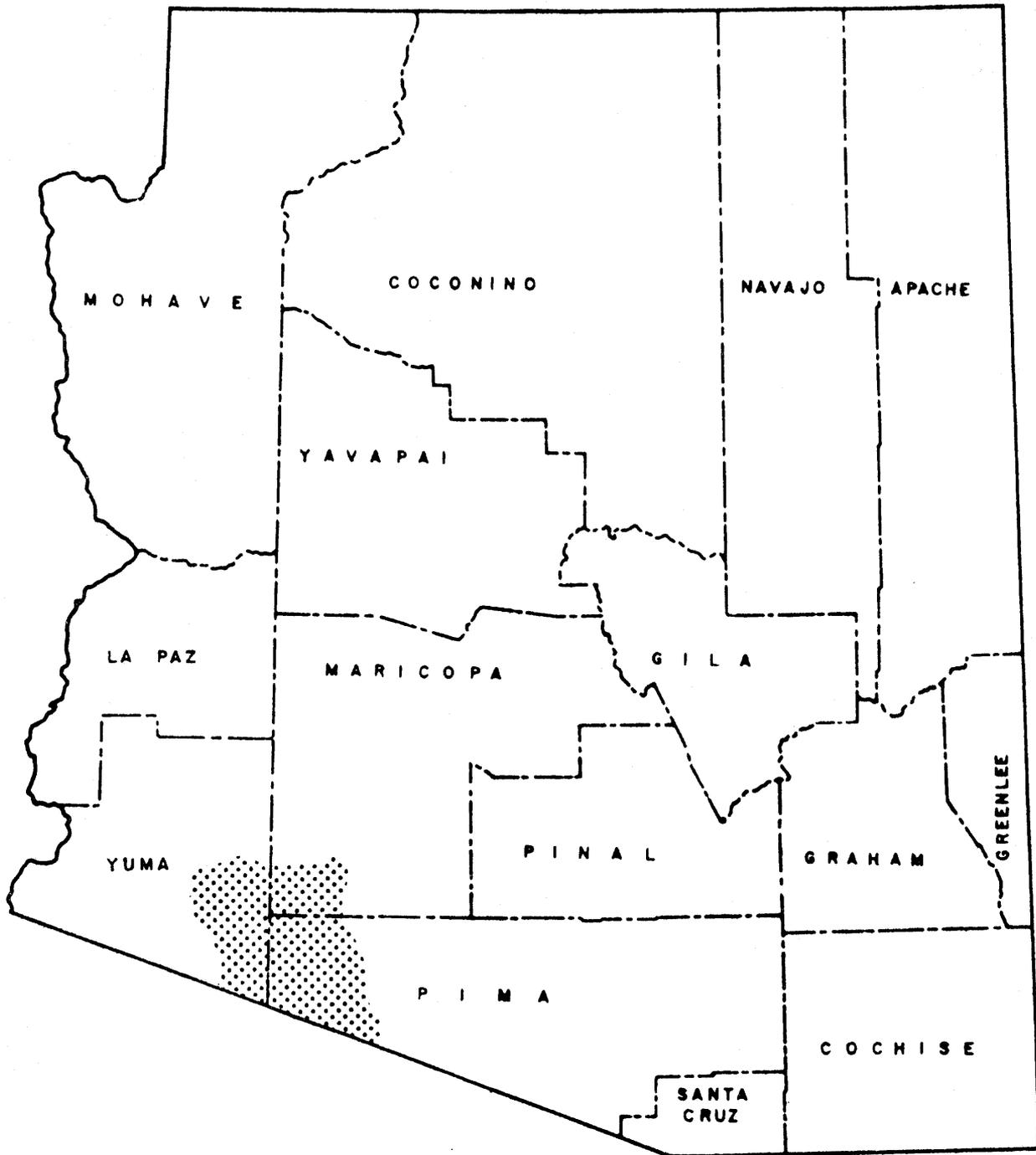
LAND MANAGEMENT/OWNERSHIP:

Various, including lands owned or managed by the Fish and Wildlife Service, Bureau of Land Management, National Park Service, Forest Service, Department of Defense, Bureau of Indian Affairs (Tohono O'Odham Nation), State of Arizona, other government entities, and private lands.

NOTES: Listed as endangered by the State of Arizona.

A name change has been proposed for this species in the official literature. If approved, the new common and scientific names for this species would be: lesser long-nosed bat, Leptonycteris curasoae verbaeuenae.





SONORAN PRONGHORN

LEGEND

Current Range



SONORAN PRONGHORN
(Antilocapra americana sonoriensis)

STATUS: Endangered (32 FR 4001; March 11, 1967) without critical habitat.

SPECIES DESCRIPTION: Buff-and-white, hooved mammal with slightly curved horns having a single prong. Smallest and palest of the pronghorn subspecies.

HABITAT: Wide alluvial basins with desert grassland vegetation in the Sonoran Desert climatic zone.

RANGE: **Historic:** Southwest Arizona, south of the Bill Williams River and east to the Santa Cruz River. In Mexico, the northern part of the State of Sonora.
Current: The Cabeza Prieta National Wildlife Refuge, Barry M. Goldwater Gunnery Range, and Organ Pipe Cactus National Monument and the Tohono O'odham Reservation (all in southwest Arizona). Some are found in northern Sonora, Pinacate area, and along the United States-Mexico border.

REASONS FOR DECLINE/VULNERABILITY: Destruction of desert grasslands and riparian areas, competition with introduced livestock, poaching in Mexico, and encroachment by towns (Ajo and Why) and highways (Highways 85 in Arizona and 2 in Mexico) all present possible barriers to expansion.

LAND MANAGEMENT/OWNERSHIP: U.S. Fish and Wildlife Service, U.S. Air Force, National Park Service, Tohono O'odham.

NOTES: Recovery Plan approved December 30, 1982.

Listed as endangered by the State of Arizona.

The 1991 core working group is working towards a United States-Mexico census to estimate the total population. It is also working towards revising the 1982 Recovery Plan and compiling an international Recovery Plan.



INDEX OF COMMON NAMES

Plants	Page
agave, Arizona.....	2
blue-star, Kearney's.....	14
cactus, Arizona hedgehog.....	6
cactus, Brady pincushion.....	8
cactus, Cochise pincushion.....	10
cactus, Nichol's Turk's head.....	18
cactus, Peebles Navajo.....	20
cactus, Siler pincushion.....	26
cliffrose, Arizona.....	4
Cycladenia, Jones.....	12
globeberry, Tumamoc.....	28
groundsel, San Francisco Peaks.....	22
milk vetch, sentry.....	24
milkweed, Welsh's.....	30
sedge, Navajo.....	16
 Fish	
catfish, Yaqui.....	62
chub, bonytail.....	36
chub, humpback.....	46
chub, Sonora.....	54
chub, Virgin River.....	58
chub, Yaqui.....	64
minnow, loach.....	50
pupfish, desert.....	40
shiner, beautiful.....	34
spikedace.....	56
spinedace, Little Colorado.....	48
squawfish, Colorado.....	38
sucker, razorback.....	52
topminnow, Gila.....	42
topminnow, Yaqui.....	66
trout, Apache.....	32
trout, Gila.....	44
woundfin.....	60
 Reptiles	
rattlesnake, New Mexican ridge-nosed.....	70
tortoise, desert.....	68

INDEX OF COMMON NAMES

Birds	Page
bobwhite, masked.....	78
crane, whooping.....	84
eagle, bald.....	74
falcon, American peregrine.....	72
falcon, northern aplomado.....	82
owl, Mexican spotted.....	80
pelican, California brown.....	76
rail, Yuma clapper.....	86
Mammals	
bat, Sanborn's long-nosed (lesser long-nosed).....	96
ferret, black-footed.....	88
pronghorn, Sonoran.....	98
squirrel, Mount Graham red.....	94
vole, Hualapai Mexican.....	90
wolf, Mexican gray.....	92

INDEX OF SCIENTIFIC NAMES

Plants	Page
<i>Agave arizonica</i>	2
<i>Amsonia kearneyana</i>	14
<i>Asclepias welshii</i>	30
<i>Astragalus cremnophylax</i> var. <i>cremnophylax</i>	24
<i>Carex specuicola</i>	16
<i>Coryphantha robbinsorum</i>	10
<i>Cycladenia humilis</i> var. <i>jonesii</i>	12
<i>Echinocactus horizontalonius</i> var. <i>nicholii</i>	18
<i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i>	6
<i>Pediocactus bradyl</i>	8
<i>Pediocactus peeblesianus</i> var. <i>peeblesianus</i>	20
<i>Pediocactus sileri</i>	26
<i>Purshia subintegra</i>	4
<i>Senecio franciscanus</i>	22
<i>Tumamoca maddougallii</i>	28
Fish	
<i>Cyprinella formosa</i>	34
<i>Cyprinodon macularius</i>	40
<i>Gila cypha</i>	46
<i>Gila ditaenia</i>	54
<i>Gila elegans</i>	36
<i>Gila pupurea</i>	64
<i>Gila robusta seminuda</i>	58
<i>Ictalurus pricei</i>	62
<i>Lepidomeda vittata</i>	48
<i>Meda fulgida</i>	56
<i>Oncorhynchus apache</i>	32
<i>Oncorhynchus gilae</i>	44
<i>Plagopterus argentissimus</i>	60
<i>Poeciliopsis occidentalis occidentalis</i>	42
<i>Poeciliopsis occidentalis sonoriensis</i>	66
<i>Ptychocheilus lucius</i>	38
<i>Tiaroga cobitis</i>	50
<i>Xyrauchen texanus</i>	52
Reptiles	
<i>Crotalus willardi obscurus</i>	70
<i>Gopherus agassizii</i>	68

INDEX OF SCIENTIFIC NAMES

Birds	Page
<i>Colinus virginianus ridgewayi</i>	78
<i>Falco femoralis septentrionalis</i>	82
<i>Falco peregrinus anatum</i>	72
<i>Grus americana</i>	84
<i>Haliaeetus leucocephalus</i>	74
<i>Pelecanus occidentalis californicus</i>	76
<i>Rallus longirostris yumanensis</i>	86
<i>Strix occidentalis lucida</i>	80
Mammals	
<i>Antilocapra americana sonoriensis</i>	98
<i>Canis lupus baileyi</i>	92
<i>Leptonycteris sanborni (L. curasoae yerbabuena)</i>	96
<i>Microtus mexicanus hualpalensis</i>	90
<i>Mustela nigripes</i>	88
<i>Tamiasciurus hudsonicus grahamensis</i>	94