

A FIELD GUIDE TO THE SPECIAL STATUS PLANTS OF GRAND CANYON NATIONAL PARK



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INTRODUCTION | More than 1,400 different species of vascular or higher plants are known from Grand Canyon National Park. This is due in large part to the unique geology, topography, elevation range of almost 8,000 feet, and varying temperature and moisture regimes. Also, the ranges of many biotic communities converge in the park, having followed migratory routes created by the Colorado River that incises the region. The park has about 9% of the approximately 290 Arizona plants that the U.S. Fish and Wildlife Service (FWS) has given special status designations.

The purpose of this publication is to provide a nontechnical, field guide for park staff, researchers, visitors, and river/trail guides. It serves as an introduction to the special status and rare plants known to occur in Grand Canyon National Park. Most of the park receives little visitation and the ranges of many plants are still undocumented. Not only are these plants of interest scientifically, but finding them adds to the enjoyment and appreciation of the Grand Canyon landscape and experience.

This guide includes 63 plant species that have Federal listing, candidate status, or are considered rare, endemic, or new to science. It is arranged in a 3-ring binder to make it easy to add or subtract pages as new information warrants changes. Single sheets can be removed for field use. If you know ahead of time that you will encounter a specific habitat, soil type, or feature described by a place name, those species listed alphabetically by these characteristics can be removed and taken into the field. The plants covered in this guide are arranged alphabetically by genus. A code written in the upper right hand corner of each sheet identifies whether the plants are Federally Protected Plants (Endangered Species and Species of Special Concern), Category 3b and 3c, or rare. Some plants have no illustration or photographs available at this time. When these items become available, replacement sheets can be inserted. At present, no threatened, Category I, or Category 3a plants are known to occur in Grand Canyon National Park. Definitions of these codes are given in "Codes, Definitions, and Abbreviations."

Gathering or collecting plants for study or identification in Grand Canyon National Park requires a collecting permit. Permits are issued through the Science Center's Research Administrator and approved by the Park Superintendent. However, it is often difficult to identify unknown plants without the plant in hand. Field identification can be uncertain. It may also require the use of several plant identification keys and magnifying or dissecting scopes. Rare plants may also be sensitive to human disturbance. This field guide provides illustrations, aids to identification, and photographs where available of the plant and its habitat to help field workers and visitors to identify rare plants. If a new locality is discovered in Grand Canyon National Park, please notify the park botanist through the Science Center at P.O. Box 129, Grand Canyon, AZ 86023 or phone 520-638-7751. A photograph or line drawing, accompanied by a description of the locality (i.e., elevation, mileage and direction from a known feature, habitat, abundance, etc.) would be helpful for verification. Editorial comments, submissions of information, illustrations, and photography for future revisions are also welcome.

HOW TO USE THIS GUIDE | Each of the plants described in this guide is listed by scientific name and a page number. The following format is followed throughout this field guide:

GENUS AND SPECIES NAME | CODE (SEE CODE LIST)

SCIENTIFIC NAME | The scientific name follows that listed by floral catalogues for the state of Arizona.¹

COMMON NAME | The common name(s) are those followed by the botanical manuals cited above. Common names are not capitalized unless it is a proper name. The translation or meaning of the scientific name is also given.

FAMILY (COMMON NAME) | Scientific and (Common name) for the plant family

SYNONYMS | Taxonomic names that are equivalent to or have been superseded by another designation.

DISTRIBUTION | Other states outside of and counties in Arizona where the species is found. Specific locations in Grand Canyon National Park (NP) are also listed.

HABITAT | Life (annual, perennial, or biennial) and form (grass, herb, shrub, or tree). Information on habitat, plant community, soil, geology, elevation in feet, and blooming months in the park are also listed.

LOOK-ALIKES | Any similar looking species both from inside and outside of Grand Canyon NP is compared or contrasted.

Simple field characteristics in English or metric units are identified on a line drawing. Color photographs of the plant and its habitat if available are presented on the reverse of the page.

Suggested references, manuals, and identification keys for further information include:

- Benson, L. 1969. The Cacti of Arizona. Third Edition. The University of Arizona Press, Tucson.
- Hickman, J.C. (Editor) 1993. The Jepson Manual: Higher Plants of California. University of California Press, Berkeley.
- Kearney, T.H., R.H. Peebles, and Collaborators. 1960. Arizona Flora, with supplement by J.T. Howell and E. McClintock, and Collaborators. University of California Press, Berkeley.
- Mickel, J.T. 1979. How to know the ferns and fern allies. Wm. C. Brown Company Publishers, Dubuque.
- McDougall, W.B. 1964. Grand Canyon Wildflowers. Museum of Northern Arizona, Flagstaff.
- McDougall, W.B. 1973. Seed Plants of Northern Arizona. Museum of Northern Arizona, Flagstaff.
- Phillips, A.M., III. 1979. Grand Canyon Wildflowers. Grand Canyon Natural History Association, Grand Canyon.
- Phillips, B.G., A.M. Phillips, III, and M.A. Schmidt Bernzott. 1987. Annotated Checklist of the Vascular Plants of Grand Canyon National Park. Monograph No. 7, Grand Canyon Natural History Association, Grand Canyon.

- Pohl, R.W. 1978. How to know the grasses. Third Edition. Wm. C. Brown Company Publishers, Dubuque.
- Welsh, S.L., N.D. Atwood, S. Hoodrich, and L.C. Higgins. (Editors) 1993. A Utah Flora. Brigham Young University Press, Provo.

For the location of place names used in this guide, please consult:

- Barnes, W.C. 1988. Arizona Place Names. The University of Arizona Press, Tucson.
- Belknap, B. and L. Belknap Evans. 1989. Grand Canyon River Guide. Westwater Books, Evergreen.
- Brian, N.J. 1992. River to Rim: A guide to place names along the Colorado River in Grand Canyon from Lake Powell to Lake Mead. Earthquest Press, Flagstaff.
- Stevens, L. 1983. The Colorado River in Grand Canyon: A Comprehensive Guide to its Natural and Human History. Red Lake Books, Flagstaff.

CODES, DEFINITIONS, AND ABBREVIATIONS

FEDERAL STATUS (from the Federal Register 6184, Feb. 21, 1990)

- E Endangered - Taxa formally listed as endangered
- T Threatened - Taxa formally listed as threatened
- CI Notice of Review, Category I - Substantial biological information on file to support the appropriateness of proposing to list as endangered or threatened.
- SSC Species of Special Concern - Formerly known as Category 2. Current information indicates that proposing to list as endangered or threatened is possible. Appropriate, but substantial biological information is not on file to support an immediate rulemaking.
- 3a Taxa for which the U.S. Fish and Wildlife Service has persuasive evidence of extinction.
- 3b Names that, on the basis of current taxonomic understanding, do not represent taxa meeting the Endangered Species Act's definition of 'species.'
- 3c Taxa that have proven to be more abundant or widespread than was previously believed, and/or those that are not subject to any identifiable threats.

NON-FEDERAL STATUS

- RARE New, endemic, sensitive, unusual, or single collections of plants in Grand Canyon National Park

ABBREVIATIONS USED IN THE FIELD GUIDE

- BLM Bureau of Land Management
- CRM Colorado River Mile as measured downstream from Lee's Ferry. "L" means left bank and "R" means right bank, when looking downstream.
- FWS Fish and Wildlife Service
- NP National Park
- SSP. Subspecies
- VAR. Variety

PLANT LIST BY HABITAT TYPE

Aquatic

Beckmannia syzigachne
Epipactis gigantea
Imperata brevifolia
Ranunculus uncinatus

Aspen - Spruce

Calypso bulbosa var. *americana*
Galium bifolium
Penstemon pseudoputis
Penstemon rydbergii

Bog-seeps

Calypso bulbosa var. *americana*

Breccia Pipes

Rosa stellata ssp. *abyssa*

Creosote Bush

Mortonia scabrella var. *utahensis*
Tricardia watsonii
Yucca whipplei

Desert Shrub or Scrub

Agave utahensis ssp. *kaibabensis*
Agave sp. *nova*
Allium bigelovii
Amsonia tomentosa var. *tomentosa*
Antirrhinum kingii
Anulocaulis leisolenus var. *leisolenus*
Arctomecon californica
Argemone arizonica
Camissonia confertiflora
Crossosoma parviflorum
Encelia frutescens var. *resinosa*
Erigeron lobatus
Eriogonum heermannii var. *subracemosum*
Euphorbia aaron-rossii
Hesperodoria scopulorum var. *scopulorum*
Opuntia basilaris var. *longiareolata*
Opuntia phaeacantha var. *mojavensis*
Rosa stellata ssp. *abyssa*
Tricardia watsonii
Yucca whipplei

Disturbed Areas

Castilleja kaibabensis

Hymenoxys subintegra
Penstemon pseudoputis

Great Basin Conifer Woodland

Rosa stellata ssp. *abyssa*

Douglas Fir

Draba asprella var. *kaibabensis*

Ephedra

Amsonia tomentosa var. *tomentosa*

Hanging Gardens

Boehmeria cylindrica
Carex scirpoidea var. *curatorum*
Epipactis gigantea
Flaveria mcdougallii
Hesperodoria scopulorum var. *scopulorum*
Ostrya knowltonii
Primula specuicola
Thelypteris puberula var. *sonorensis*

Juniper

Rosa stellata ssp. *abyssa*

Meadow

Castilleja kaibabensis
Galium bifolium
Hymenoxys subintegra
Machaeranthera mucronata
Penstemon rydbergii
Penstemon pseudoputis
Ranunculus uncinatus

Mountain Brush

Cryptantha capitata
Draba asprella var. *stelligera*
Galium bifolium
Hesperodoria scopulorum var. *scopulorum*
Paronychia sessiliflora
Selaginella watsonii

Pinyon-juniper

Aletes macdougalii
Arabis gracilipes
Astragalus cremnophylax var. *cremnophylax*
Cryptantha capitata

Eriogonum heermannii var. *subracemosum*
Eriogonum zionis var. *coccineum*
Haplopappus cervinus
Hesperodoria scopulorum var. *scopulorum*
Ostrya knowltonii
Paronychia sessiliflora
Pteryxia petraea
Sclerocactus parviflorus var. *intermedius*
Silene rectiramea
Talinum validulum

Ponderosa Pine

Arabis gracilipes
Asclepias viridiflora var. *lanceolata*
Calypto bulbosa var. *americana*
Draba asprella var. *kaibabensis*
Draba asprella var. *stelligera*
Galium bifolium
Haplopappus cervinus
Hesperodoria scopulorum var. *scopulorum*
Hymenoxys subintegra
Penstemon pseudoputis
Selaginella watsonii

Riparian

Beckmannia syzigachne
Calypto bulbosa var. *americana*
Erigeron lobatus

Rocks, Crevices, and Ledges

Amsonia tomentosa var. *tomentosa*
Astragalus cremnophylax var. *cremnophylax*
Camissonia specuicola ssp. *specuicola*
Cheilanthes villosa
Fraxinus cuspidata var. *macropetala*
Phacelia filiformis
Selaginella watsonii
Thelypodopsis purpusii

Sagebrush

Antirrhinum kingii
Cryptantha capitata
Galium bifolium
Penstemon rydbergii

Spruce-fir

Betula occidentalis
Calypto bulbosa var. *americana*
Galium bifolium
Hymenoxys subintegra
Machaeranthera mucronata
Penstemon rydbergii

Wash Areas

Antirrhinum kingii
Camissonia specuicola ssp. *hesperia*
Euphorbia aaron-rossii

PLANT LIST BY SOIL TYPE

Alluvium Substrates

Agave sp. nova
Allium bigelovii
Euphorbia aaron-rossii

Aquatic Substrates

Beckmannia syzigachne
Epipactis gigantea
Imperata brevifolia
Ranunculus uncinatus

Duff Substrates

Calypso bulbosa var. americana
Draba asprella var. kaibabensis
Draba asprella var. stelligera

Granitic Substrates

Yucca whipplei

Gravelly Loam

Arctomecon californica
Tricardia watsonii

Limestone Substrates

Agave utahensis ssp. kaibabensis
Arabis gracilipes
Astragalus cremnophylax var. cremnophylax
Arctomecon californica
Camissonia specuicola ssp. specuicola
Camissonia specuicola ssp. hesperia
Castilleja kaibabensis
Grossosoma parviflorum
Eriogonum heermannii var. subracemosum
Eriogonum zionis var. coccineum
Rosa stellata ssp. abyssa
Talinum validulum
Thelypodopsis purpusii

Loam

Cryptantha capitata
Machaeranthera mucronata
Penstemon rydbergii
Silene rectiramea

Rocky Talus

Anulocaulis leisolenus var. leisolenus
Encelia frutescens var. resinosa
Opuntia basilaris var. longiareolata
Opuntia phaeacantha var. mojaviensis
Phacelia filiformis
Yucca whipplei

Saline Substrates

Flaveria mcdougallii

Sandstone Substrates

Agave utahensis ssp. kaibabensis
Argemone arizonica
Camissonia specuicola ssp. specuicola
Eriogonum heermannii var. subracemosum
Eriogonum zionis var. coccineum
Hesperodoria scopulorum var. scopulorum
Sclerocactus parviflorus var. intermedius
Thelypodopsis purpusii
Yucca whipplei

Sandy Substrates

Amsonia tomentosa var. tomentosa
Cryptantha capitata
Euphorbia aaron-rossii
Rosa stellata ssp. abyssa
Sclerocactus parviflorus var. intermedius

Shale Substrates

Anulocaulis leisolenus var. leisolenus
Argemone arizonica
Flaveria mcdougallii

Volcanic Substrates

Antirrhinum kingii
Camissonia confertiflora
Encelia frutescens var. resinosa
Yucca whipplei

PLANT LIST BY PLACE NAME

Bass Canyon and Trail

Eriogonum zionis var. *coccineum*
Fraxinus cuspidata var. *macropetala*
Haplopappus salicinus
Hesperodoria scopulorum var. *scopulorum*
Rosa stellata ssp. *abyssa*
Sclerocactus parviflorus var. *intermedius*

Colorado River

Anulocaulis leisolenus var. *leisolenus*
Encelia frutescens var. *resinosa*
Epipactis gigantea
Erigeron lobatus
Euphorbia aaron-rossii
Flaveria mcdougallii
Haplopappus salicinus
Imperata brevifolia
Opuntia basilaris var. *longiareolata*
Opuntia phaeacantha var. *mojavensis*
Yucca whipplei

Grandview Trail

Aletes macdougallii ssp. *macdougallii*
Astragalus cremnophylax var. *cremnophylax*
Cryptantha capitata
Eriogonum heermannii var. *subracemosum*
Haplopappus cervinus
Haplopappus salicinus
Hesperodoria scopulorum var. *scopulorum*
Phacelia filiformis

Granite or Inner Gorge

Anulocaulis leisolenus var. *leisolenus*
Opuntia basilaris var. *longiareolata*
Opuntia phaeacantha var. *mojavensis*

Havas Canyon

Anulocaulis leisolenus var. *leisolenus*
Camissonia specuicola ssp. *hesperia*
Cheilanthes villosa
Epipactis gigantea
Fraxinus cuspidata var. *macropetala*
Imperata brevifolia
Mortonia scabrella var. *utahensis*
Opuntia phaeacantha var. *mojavensis*
Sclerocactus parviflorus var. *intermedius*

Hermit Canyon and Trail

Camissonia specuicola ssp. *specuicola*
Cryptantha capitata
Eriogonum zionis var. *coccineum*
Ostrya knowltonii
Pteryxia petraea
Silene rectiramea

Kaibab Plateau/North Rim

Calypto bulbosa var. *americana*
Castilleja kaibabensis
Hesperodoria scopulorum var. *scopulorum*
Hymenoxys subintegra
Machaeranthera mucronata
Penstemon pseudoputus
Penstemon rydbergii
Ranunculus uncinatus
Selaginella watsonii

Kanab Canyon

Eriogonum zionis var. *coccineum*
Fraxinus cuspidata var. *macropetala*
Haplopappus cervinus
Rosa stellata var. *abyssa*
Thelypteris puberula var. *sonorensis*

Lower (or Western) Grand Canyon and Rampart Cave

Amsonia tomentosa var. *tomentosa*
Arctomecon californica
Camissonia specuicola ssp. *hesperia*
Crossosoma parviflorum
Eriogonum heermannii var. *subracemosum*
Fraxinus cuspidata var. *macropetala*
Mortonia scabrella var. *utahensis*
Primula specuicola
Tricardia watsonii

Marble Canyon along the Colorado River

Anulocaulis leisolenus var. *leisolenus*
Encelia frutescens var. *resinosa*
Epipactis gigantea
Euphorbia aaron-rossii
Encelia frutescens var. *resinosa*
Haplopappus salicinus
Primula specuicola
Vanclevea stylosa

North Kaibab Trail and Roaring Springs

Aletes macdougallii ssp. *macdougallii*
Argemone arizonica
Betula occidentalis
Carex scirpoidea var. *curatorum*
Cryptantha capitata
Draba asprella var. *kaibabensis*
Epipactis gigantea
Phacelia filiformis
Pteryxia petraea

South Kaibab Trail

Aletes macdougallii
Allium bigelovii
Cryptantha capitata
Ostrya knowltonii
Pteryxia petraea
Phyllodoce empetrifolmis

South Rim

Asclepias viridiflora
Astragalus cremonophylax var. *cremonophylax*
Hesperodoria scopulorum var. *scopulorum*
Pteryxia petraea
Talinum validulum

Tuweep (or Toroweap)

Antirrhinum kingii
Camissonia confertiflora
Carex scirpoidea var. *curatorum*
Encelia frutescens var. *resinosa*
Epipactis gigantea
Galium bifolium
Ostrya knowltonii
Thelypodopsis purpusii
Yucca whipplei

Walhalla Plateau, North Rim

Arabis gracilipes
Astragalus cremonophylax var. *cremonophylax*
Beckmannia syzigachne
Draba asprella var. *kaibabensis*
Draba asprella var. *stelligera*
Galium bifolium
Paronychia sessiliflora
Penstemon pseudoputis



SCIENTIFIC NAME | *Agave sp. nova* (currently undescribed)

COMMON NAME | To be determined. *Agave* is from the Greek word meaning noble, for its imposing stature.

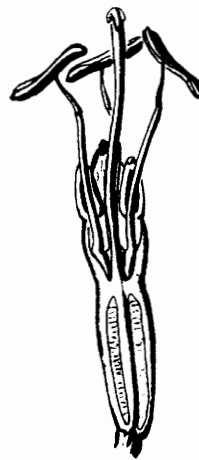
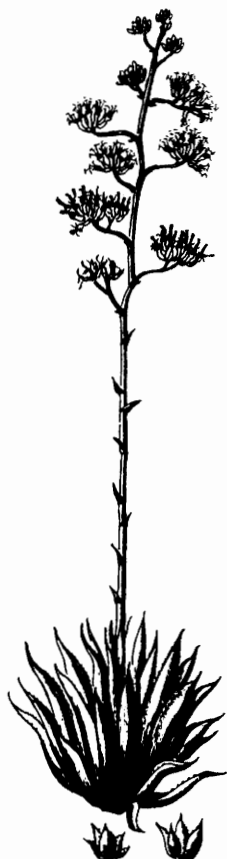
FAMILY (COMMON NAME) | Agavaceae (Agave Family)

SYNONYMS | None

DISTRIBUTION | Endemic to Grand Canyon NP, Coconino County, Arizona. In Grand Canyon NP it is known from upper Deer, Tapeats, and Clear Creeks.

HABITAT | Perennial succulent. Mixed desertscrub at the margin of riparian area and cottonwood gallery forest, found amongst or nearby pre-Columbian archaeological features, 2,400 to 3,400 feet, September. This may be the third documented agave cultivated north of Mexico.

LOOK-ALIKES | Similar in appearance to *A. palmeri* and *A. delamateri* (both known from outside the park), but differs in the later flowering period of September, lack of reddish tepals, larger flowers, and little odor. It is easily distinguished from non-flowering *A. utahensis*, including both of the varieties *utahensis* and *kaibabensis*, by weak, flexuous bayonette leaves that are wider above the middle and flowers in an open panicle, or "candelabra."



- Weak, flexuous leaves wider above the middle
- Flowers in open panicle, inflorescence narrowly paniculate
- Produces off-sets at base of parent plant
- Leaves gray-green
- Flowers large, to 81 mm long





Close up of *Agave* sp. *nova*.
— BY W. HODGSON

SCIENTIFIC NAME | *Agave utahensis* Engelm. ssp. *kaibabensis* (McKelvey) Breitung

COMMON NAME | None, but called the Kaibab century plant, in reference to the (incorrect) belief that it flowered after a hundred years. *Agave* is from the Greek word meaning noble, from the imposing stature, *utahensis* means of or from Utah, and *kaibabensis* meaning of or from the Kaibab Plateau.

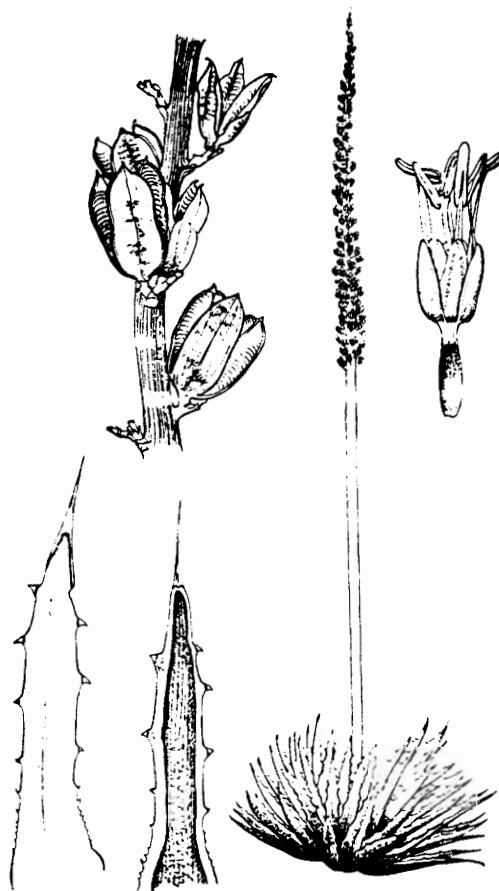
FAMILY (COMMON NAME) | Agavaceae (Agave Family)

SYNONYMS | *Agave kaibabensis* McKelvey

DISTRIBUTION | Endemic to Coconino and Mohave Counties, Arizona. In Grand Canyon NP it is known from eastern Grand Canyon to the Kanab Plateau.

HABITAT | Succulent perennial. Ledges, rims, and level to moderately sloping ledges of limestone and sandstone derived soils in Mohave desertscrub community, 1,200 to 7,200 feet, May to July.

LOOK-ALIKES | Similar to *A. utahensis* var. *utahensis*, but differs in having taller scapes 3-7.5 m, larger leaves 30-50 cm long, and general tendency to not having offsets. However, the populations of both varieties overlap and shared genes give plants shared characteristics.



- Flowering stalks unbranched, 4.5 to 7.5 m
- Flowers born on stalks 2.5 cm or more long
- Flowers yellow
- Large, robust leaves up to 35 cm long
- Plants generally solitary, but may have offsets
- Straight, not curved, leaves



Habitat and flowering stalk emerging from rosette — BY N. BRIAN



Flowering rosette and habitat — BY N. BRIAN



Closeup of *Agave utahensis* ssp. *kaibabensis* — BY N. BRIAN

SCIENTIFIC NAME | *Aletes macdougalii* Coult. & Rose ssp. *macdougalii* Coult. & Rose

COMMON NAME | None, but sometimes called vagabond parsnip or MacDougal's aletes. *Aletes* is a Greek word signifying wanderer, stroller, or vagabond and *macdougalii* honors Dr. Daniel Trembly MacDougal, 1865-1958, a noted American botanist and plant physiologist.

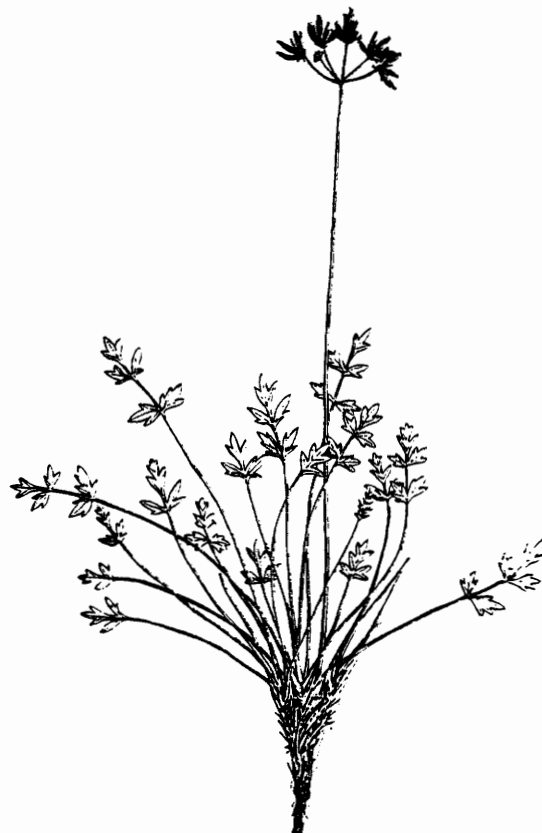
FAMILY (COMMON NAME) | Umbelliferae or Apiaceae (Parsley Family)

SYNONYMS | *Oreoxis macdougalii* (Coult. & Rose) Rydb. and *Cymopterus macdougalii* (Coult. & Rose) Tidestrom

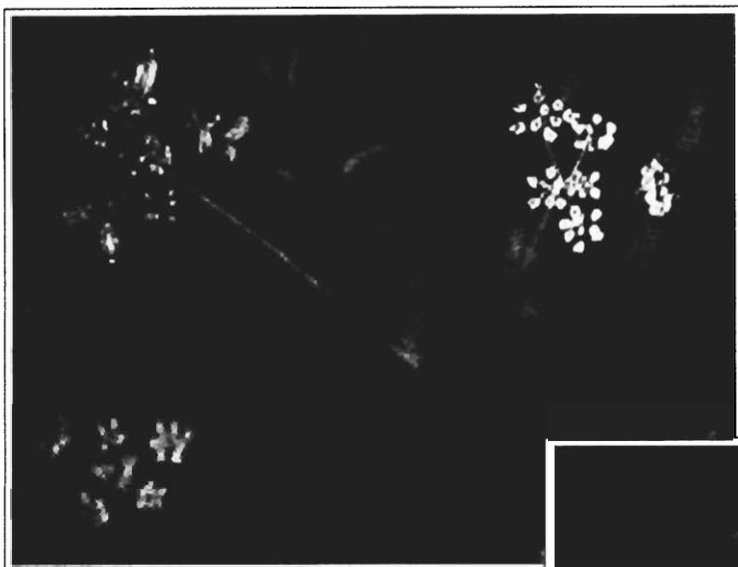
DISTRIBUTION | Subspecies *macdougalii* is endemic to Coconino County, Arizona. In Grand Canyon NP it is reported from North and South Kaibab Trails, and the Grandview Trail.

HABITAT | Perennial herb. Rocky ledges and crevices, rocky slopes, sometimes in dry margins of seeps, and sandy soil usually in pinyon-juniper woodland, but also found in Douglas fir and mixed-conifer forests between the Kaibab Limestone and Redwall/Muav contact, 5,200 to 7,500 feet, April to June.

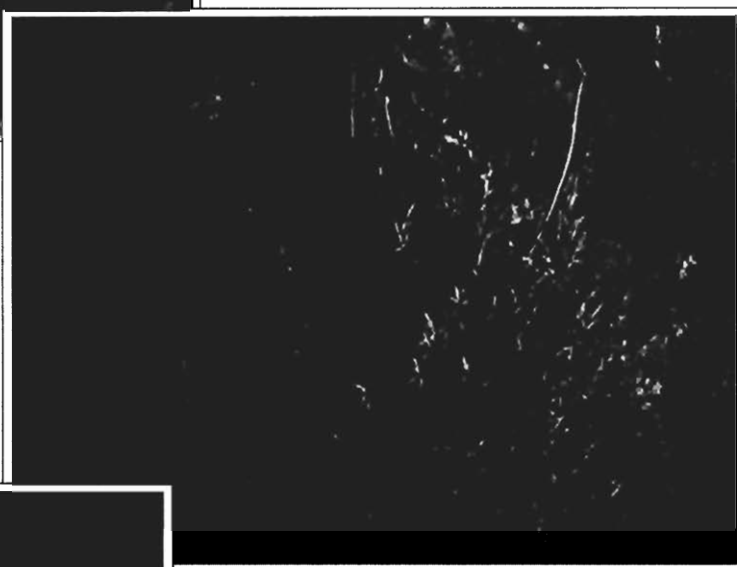
LOOK-ALIKES | Somewhat similar to other *Cymopterus* or *Lomatium* species, but differs by having leaves all basal or nearly so and leaf blades once or twice pinnately compound, i.e., divided into three parts, each part three times.



- Yellow flowers
- Plants 7-20 cm tall
- Leaves generally pinnate
- Some leaflets pinnatifid and nearly bipinnate
- Ultimate divisions of leaves ovate
- Fruits mostly less than 1/4 inch long and ribs corky-winged



Close up of *Aletes macdougallii* ssp. *macdougallii*
— BY K. WARREN



General view — BY K. WARREN



Habitat — BY K. WARREN

SCIENTIFIC NAME | *Allium bigelovi* Wats.

COMMON NAME | None, but sometimes called Bigelow's onion. *Allium* is from the Latin word for garlic and *bigelovii* honors John Milton Bigelow, 1804-1878, a botanist and surgeon with the Mexican Boundary Survey in 1853.

FAMILY (COMMON NAME) | Liliaceae (Lily Family)

SYNONYMS | None

DISTRIBUTION | Southwestern New Mexico, and Coconino, Mohave, Gila, Yavapai Counties, Arizona. In Grand Canyon NP it was collected once (Stockert in 1965) between Indian Garden and Pipe Spring in open dry soil. It is also reported from Mormon Flats, on the South Kaibab Trail.

HABITAT | Perennial herb. Open, dry soil in desertscrub community, 1,500 to 5,000 feet, April and May.

LOOK-ALIKES | Similar to *A. biseptum* var. *palmeri* and *A. nevadense*, but differs by having leaves two or more per stem, flat, and channeled, and flowering stems short, and flowers pink or white with a pink midrib (not purple). It might be confused with *Calochortus* species, but differs by the six perianth segments composed of calyx and corolla being nearly all alike, none bearing glands, and having the odor of an onion.

- Bulbs oval, outer bulb coat brown and netted, and inner bulb coat white and thin
- Leaves 1 or 2, often longer than flowering stalk
- Leaf blades 1-2 mm wide, flat or involute
- Flowers pink or white with pink midrib
- Seed capsule prominently crested



Plant sample from
herbarium sheet.

SCIENTIFIC NAME | *Amsonia tomentosa* Torr. & Frem. var. *tomentosa* Torr. & Frem.

COMMON NAME | None, but sometimes called narrowleaf blue star. *Amsonia* honors Charles Amson, an 18th century Virginian physician and *tomentosa* means densely pubescent with matted wool in reference to the hairiness of the leaves.

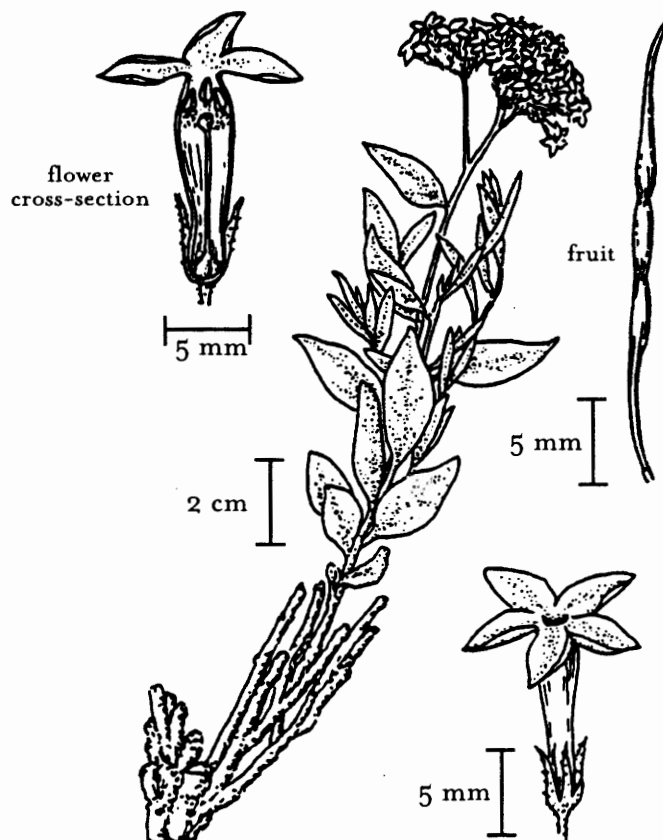
FAMILY (COMMON NAME) | Apocynaceae (Dogbane Family)

SYNONYMS | None

DISTRIBUTION | Utah, Nevada, California, New Mexico, Texas, Mexico, and Mohave, Yavapai, and Coconino Counties, Arizona. In Grand Canyon NP it is recorded from Vulture Canyon (CRM 274.5 L) and Thunder River Trail, but is probably more widely distributed.

HABITAT | Perennial herb. Dry slopes in saltbush, blackbrush, ephedra, and desert shrub communities, among shrubs, in the open, in crevices, or sandy soil, 1,500 to 2,500 feet, April.

LOOK-ALIKES | Similar to the more common *A. tomentosa* var. *stenophylla*, but differs by being densely pubescent with matted, wooly hairs. However, hairiness may be a simple, genetically recessive trait. Both varieties can be found together at the same site.



- Leaves alternate and lance-shaped
- Stems 20-40 cm tall
- Pale, lead-blue flowers
- Corolla a narrow, funnel-shaped tube with spreading lobes
- Fruits more or less cylindrical and constricted at intervals

RARE

AMSONIA TOMENTOSA VAR. TOMENTOSA

SCIENTIFIC NAME | *Antirrhinum kingii* Wats.

COMMON NAME | King snapdragon. *Antirrhinum* is from the Greek word meaning nose-like, from the snout-like shape of some of the flowers and also a plant name used by Pliny, while *kingii* honors Clarence Rivers King, 1842-1901, geologist and explorer, surveyor of the 40th parallel, and head of the U.S. Geological Survey in 1879.

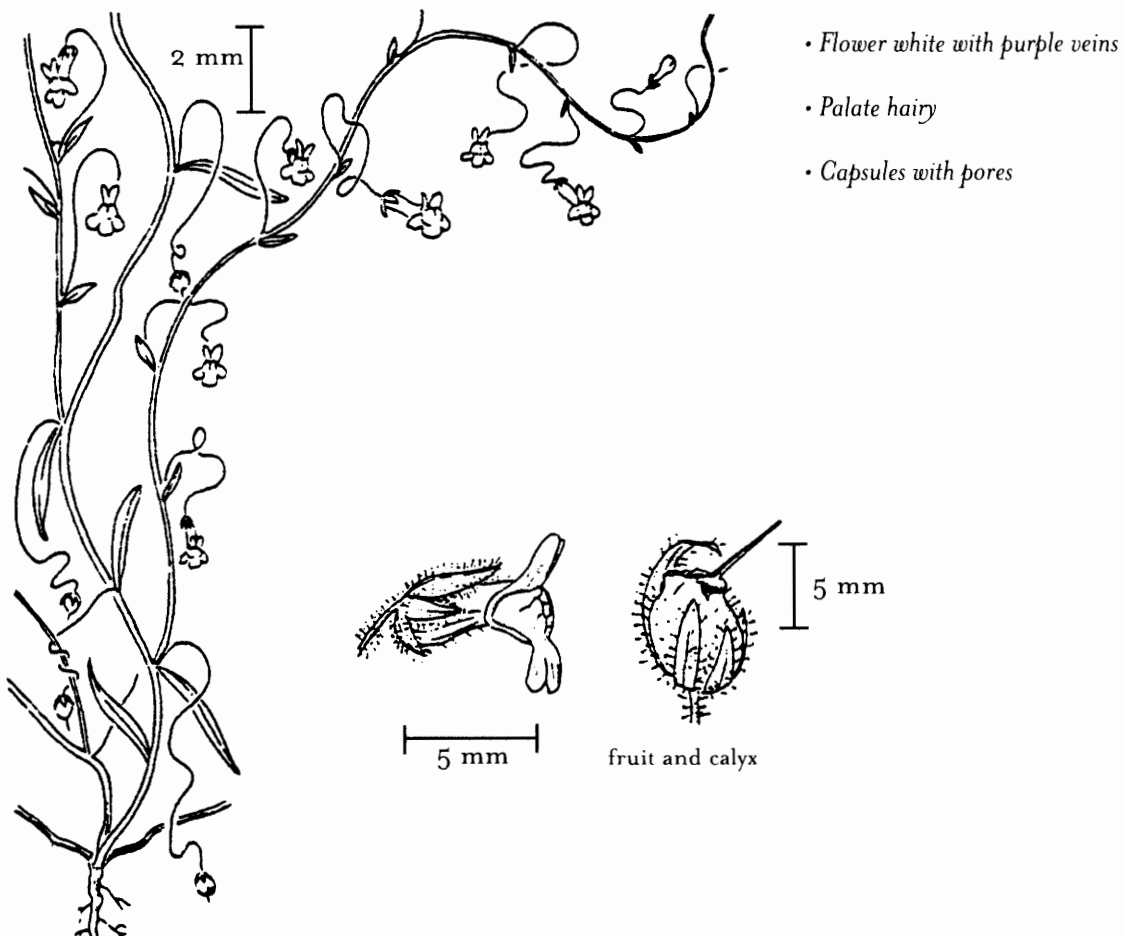
FAMILY (COMMON NAME) | Schrophulariaceae (Figwort Family)

SYNONYMS | None

DISTRIBUTION | Oregon, Nevada, California, Utah, and Mohave County, Arizona. In Grand Canyon NP it is known only from Vulcan's Throne at Tuweep.

HABITAT | Annual herb. Washes, wash banks, scree, gravelly slopes, and flats in creosote bush, Joshua tree, other warm desert shrub, sagebrush, and shadscale communities, 5,000 to 6,400 feet, April.

LOOK-ALIKES | Similar to *A. filipes*, but differs in pedicels not prehensile or clasping and not entangled in shrubbery, capsules with pores, and white flowers with purple veins.





Plant sample from
herbarium sheet.

SCIENTIFIC NAME | *Anulocaulis leisolenus* (Torr.) Standl. var. *leisolenus* (Torr.) Standl.

COMMON NAME | None, but sometimes called ringstem. *Anulocaulis* is from the Latin word meaning ring stem, in reference to the sticky internodal rings. The meaning of *leisolenus* is obscure, but *lei* means smooth.

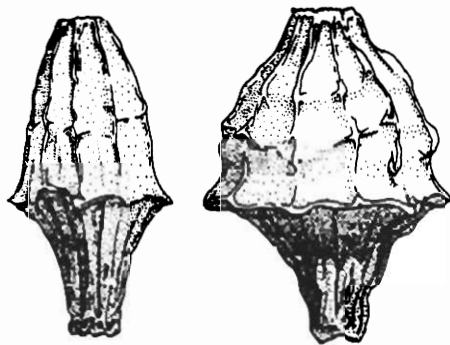
FAMILY (COMMON NAME) | Nyctaginaceae (Four O'Clock Family)

SYNONYMS | *Acleisanthes nummularia* M. E. Jones, *Boerhavia nummularia* (M. E. Jones) M. E. Jones

DISTRIBUTION | Nevada, New Mexico, Texas, Chihuahua, Mexico; and Coconino, Mohave, and Yavapai Counties, Arizona. In Grand Canyon NP it is reported from localities between CRM 18 and 175, and from Havasu Canyon on Supai Tribal lands.

HABITAT | Perennial herb. Calcareous shales and clays, alkaline clay bluffs, gypsum soils, and loose talus. In Grand Canyon NP it is found on soils within the Supai Sandstone, Muav Limestone, Bright Angel Shale, Hakatai Shale, and Vishnu Schist, 1,700 to 4,000 feet, June to October.

LOOK-ALIKES | None



- Gnarled woody root
- Broad, sticky band on each internode
- Leaves mostly basal, upper most much reduced and subtending branches
- Leaves dull green with irregularly crenulate margins
- Flowers greenish-bronze on tube, white or pale pink on limb
- Three stamens with purple filaments
- Seeds secrete mucilage when wetted
- Flowers open about sunset and close by mid-morning
- Flowers ephemeral and fragile



Plant sample from
herbarium sheet.

SCIENTIFIC NAME | *Arabis gracilipes* Greene

COMMON NAME | None, but sometimes called rock cress. *Arabis* is a Latin word meaning of Arabia, while *gracilipes* means slender.

FAMILY (COMMON NAME) | Cruciferae or Brassicaceae (Mustard Family)

SYNONYMS | *Arabis arcuata* (Nutt.) Gray var. *longipes* Wats.

DISTRIBUTION | Endemic to Coconino and Mohave Counties, Arizona. In Grand Canyon NP it is reported from Kanab Plateau, western North Rim; Grand Canyon Lodge, Tiyo Point, Cape Final on the Walhalla Plateau, and South Rim.

HABITAT | Perennial herb. Coniferous forests with ponderosa pine or pinyon-juniper woodland in limestone soil, 5,700 to 7,800 feet, April to June.

LOOK-ALIKES | Similar to *A. fendleri*, but differs by its more stout stem, larger and more numerous stem leaves, and longer fruits.

• 30 or more stem leaves

• Stout stems

• Fruits not hairy

• Flowers purple



Plant sample from
herbarium sheet.

SCIENTIFIC NAME | *Arctomecon californica* Torr. & Frem.

COMMON NAME | None, but called California bearclaw-poppy, bear poppy, golden bear poppy, and yellow-flowered desert poppy. *Arctomecon* is from either the Greek word *arktos* meaning bear or the Latin word *arcto* meaning close or tight and the Greek word *mecon* meaning poppy.

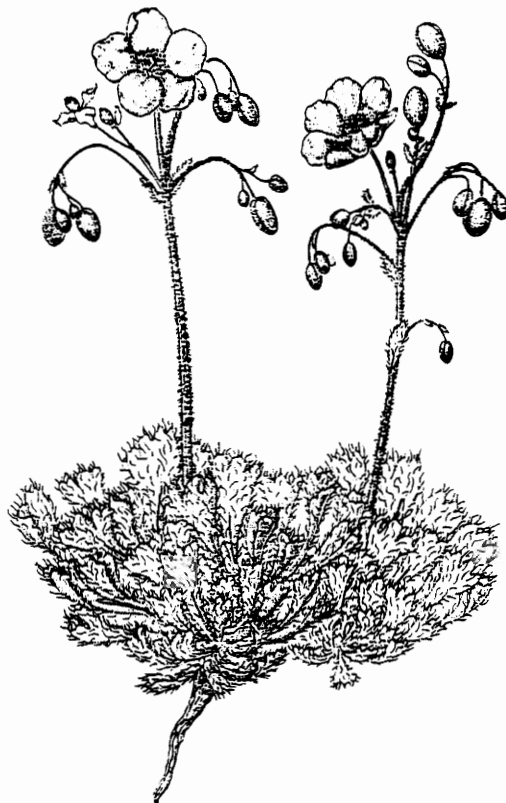
FAMILY (COMMON NAME) | Papaveraceae (Poppy Family)

SYNONYMS | None

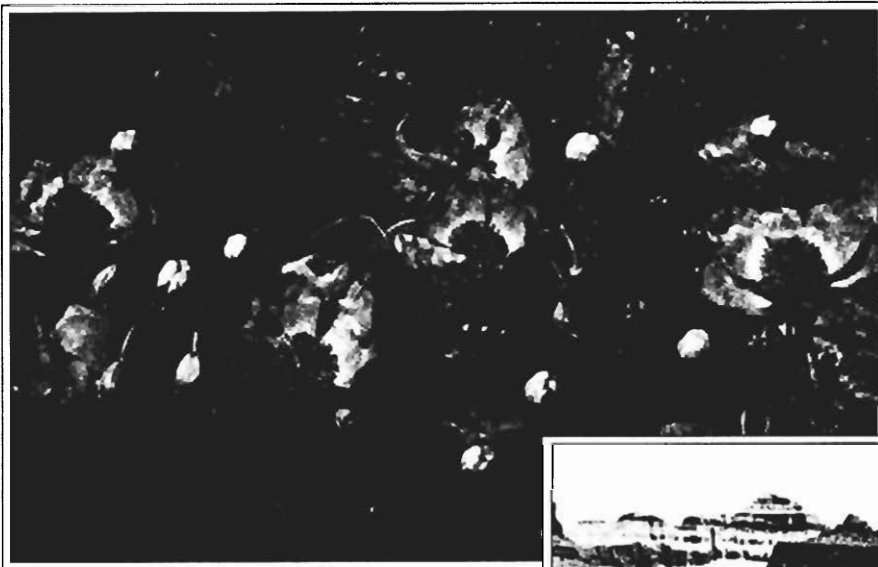
DISTRIBUTION | The typical variety (var. *californica*) is found in Nevada. This entity is endemic to Grand Canyon NP and may be described as a new variety. It is known from park lands near Rampart Cave (CRM 274.5 L), CRM 275 R, and on the Hualapai Tribal lands at CRM 272 to 272.5 L.

HABITAT | Perennial herb. The typical variety from Nevada grows in barren, gravelly desert flats, hummocks and slopes, often in gypsum deposits of the Muddy Creek Formation. The Grand Canyon entity is found in strongly calcareous, gravelly loam, and limestone chips on narrow gravelly shelves high on the slopes of side canyons on limestone substrates derived from an unnamed dolomitic member of the Muav Formation. Both are members of the Mohave desertscrub community, 1,600 to 2,200 feet, April to May.

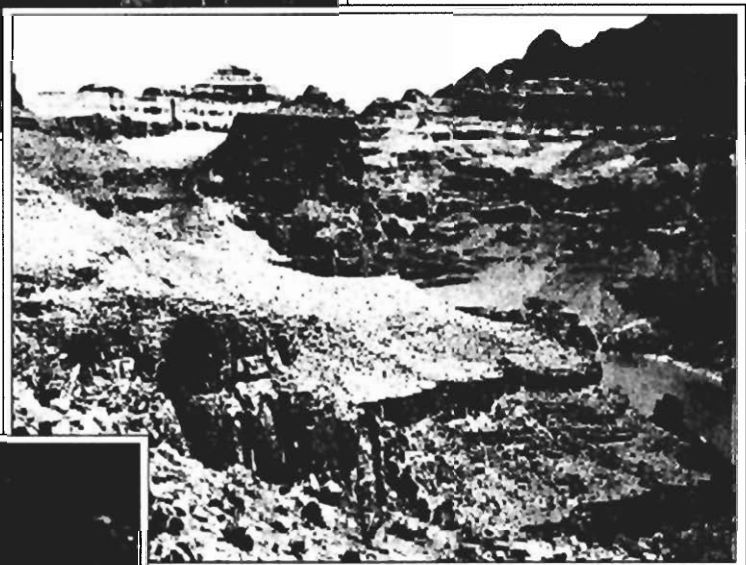
LOOK-ALIKES | Closely resembles *A. merriami* (from Nevada) and *A. humilis* (from Utah), but is easily separated by presence of yellow (not white) flowers that are clustered at the top of the flowering stalks.



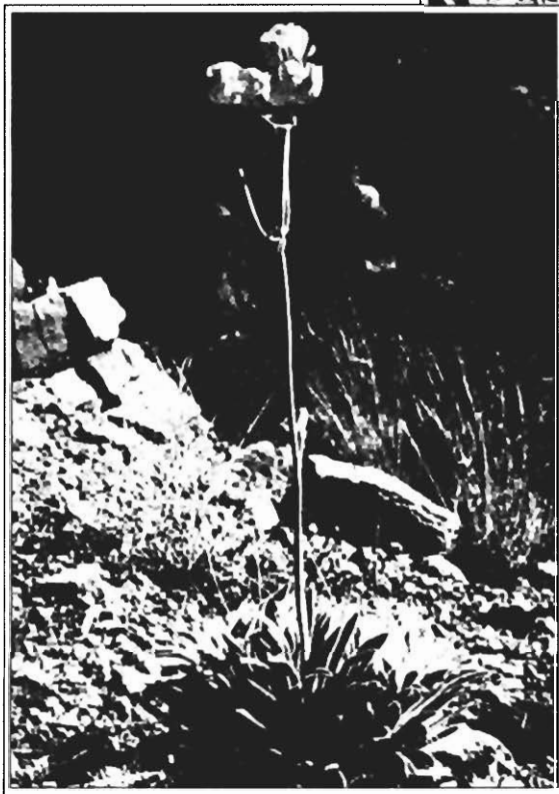
- Six, yellow petals
- Numerous, mostly basal leaves up to 60 cm tall
- Leaf blades wedge-shaped and shallowly 3-toothed
- Perennial with stout taproot



Closeup of *Arctomecon californica*
— BY A. M. PHILLIPS, III



Habitat — BY A. M. PHILLIPS, III



Arctomecon californica — BY A. M. PHILLIPS, III

SCIENTIFIC NAME | *Argemone arizonica* G.B. Ownbey

COMMON NAME | None, but called Roaring Spring prickly poppy. *Argemone* is from the Greek word for ocular cataract, supposedly remedied by sap of other plants with this name, and *arizonica* means of or from Arizona.

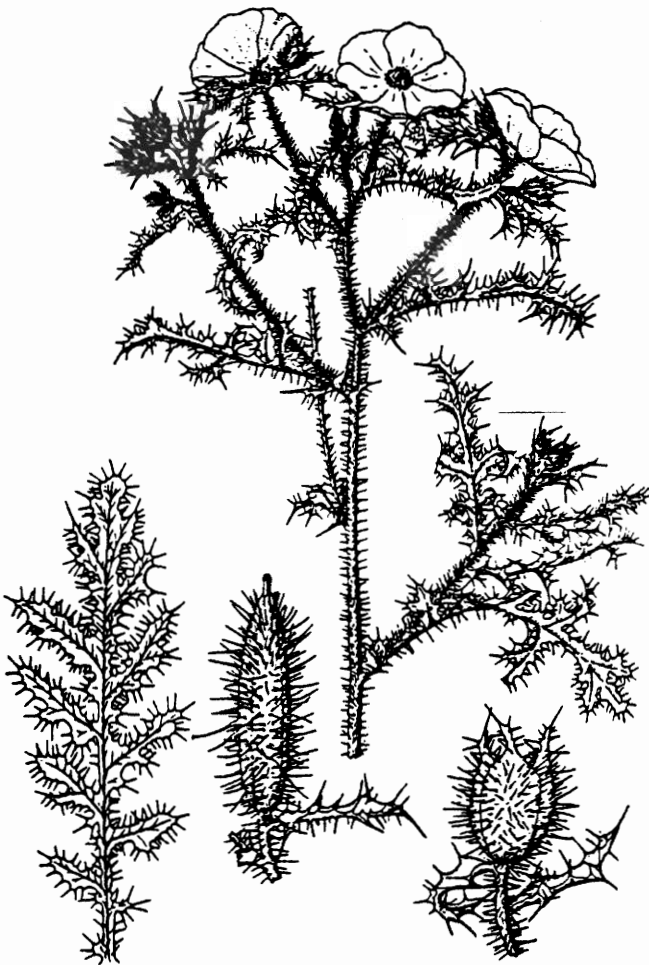
FAMILY (COMMON NAME) | Papaveraceae (Poppy Family)

SYNONYMS | *Argemone platyceras* Fedde (in part)

DISTRIBUTION | Endemic to North Kaibab Trail in Roaring Springs Canyon, North Rim, Grand Canyon NP.

HABITAT | Perennial herb. Precipitous slopes of unstable talus of the lower two members of the Supai Formation in pinyon-juniper habitat, 6,000 to 6,800 feet, April to August.

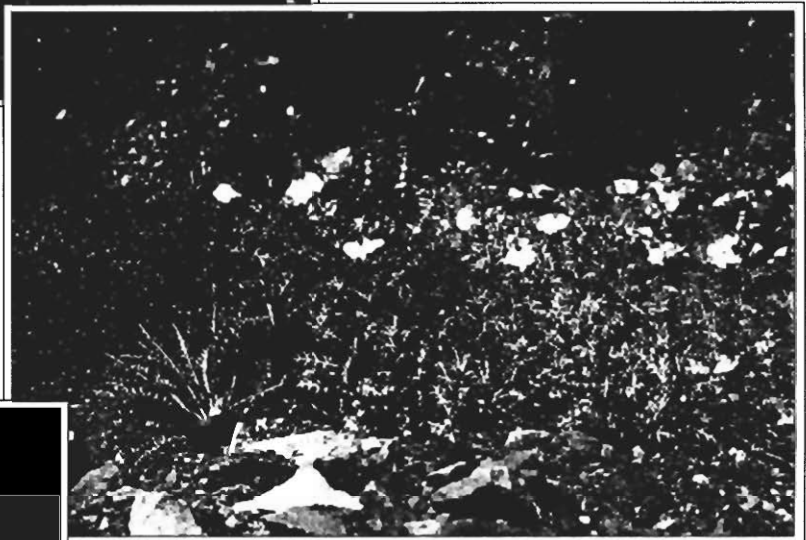
LOOK-ALIKES | Similar to *A. munita*, which has erect and sparingly prickly stems, leaf prickles on and between veins, half-clasping upper leaves, rounded tips to the leaf lobes, and yellow latex.



- Diffusely branched, often decumbent and very prickly
- 150 yellow stems and 6 white petals
- Latex reported to be very pale lemon-yellow, but observed to be clear
- Upper leaves not half-clasping
- Fruit a many-seeded spindle-shaped three-lobed capsule
- 3 subterminal horns on flower buds
- Angular shape to top or apex of leaf lobe
- Leaf prickles only on primary and secondary veins



Flowers and leaves of *Argemone arizonica*
— BY KAREN WARREN



Plant group — BY K. WARREN



Habitat — BY K. WARREN

SCIENTIFIC NAME	<i>Asclepias viridiflora</i> Raf. var. <i>lanceolata</i> (Ives) Torr.
COMMON NAME	None. <i>Asclepias</i> honors Asklepios, an ancient Greek physician and <i>viridiflora</i> means green flowered.
FAMILY (COMMON NAME)	Asclepiadaceae (Milkweed Family)
SYNONYMS	<i>Acerates viridiflora</i> Eaton
DISTRIBUTION	Saskatchewan, Massachusetts, Florida, Mexico, and Coconino and Yavapai Counties, Arizona. In Grand Canyon NP known from one collection (Whiting in 1941) taken two miles west of El Tovar on South Rim.
HABITAT	Perennial herb. Ponderosa pine community, 5,500 to 7,000 feet, June and July.
LOOK-ALIKES	None

- Plants erect, decumbent, or ascending
- Leaves mostly opposite, long, and narrow
- Hoods of flowers yellowish-green, often tinged with purple
- Hairy pods 5-10 cm long on deflexed pedicels

SCIENTIFIC NAME | *Astragalus cremnophylax* Barneby var. *cremnophylax* Barneby

COMMON NAME | Sentry milk-vetch. *Astragalus* is either from a Greek word meaning ankle-bone or dice, perhaps in reference to the rattling of the seeds within the fruit, or it may be derived from *astro* meaning *star* and *gala* meaning milk in reference to the belief that its use in pasture land improves livestock milk yield. The specific epithet *cremnophylax* is from the words *cremno* meaning gorge and *phylax* meaning watchman.

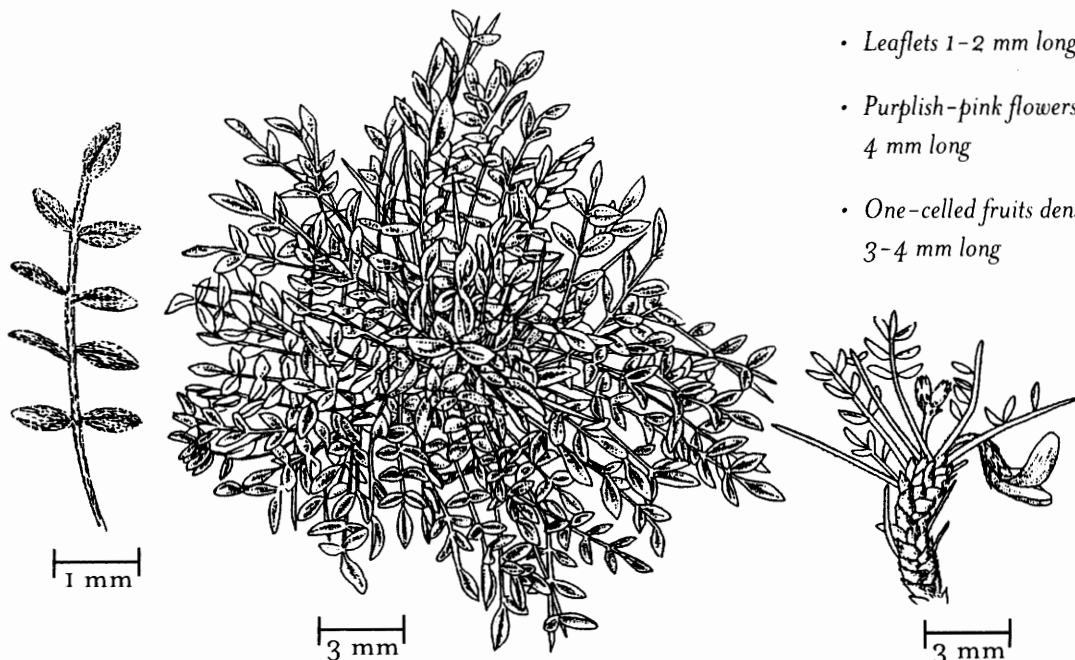
FAMILY (COMMON NAME) | Leguminosae or Fabaceae (Pea Family)

SYNONYMS | None

DISTRIBUTION | Endemic to Grand Canyon NP, Coconino County, Arizona. The locations for this variety are not included here. The variety was listed by FWS without critical habitat, meaning that site locations cannot be disclosed. It should be looked for on both North and South Rims.

HABITAT | Perennial, mat-forming herb. Crevices and rimrock, pinyon-juniper woodland in Kaibab Limestone at 7,000 to 7,900 feet, March to June.

LOOK-ALIKES | Variety *cremnophylax* superficially resembles *A. calycosus*, which has larger leaflets, two celled fruits, and stems exerted from the body of the plant. It is similar to the other two varieties of the species (var. *myriorrhaphis* and var. *heuronii*), known only from outside Grand Canyon, which have old leaf bases persisting, becoming stiff and upright, giving the plants a spiny look and feel, and larger, brighter flowers.



- Many creeping, leafy stems in cushion-like mound
- Leaflets 1-2 mm long
- Purplish-pink flowers about 4 mm long
- One-celled fruits densely hairy, 3-4 mm long



Flowers and leaves of *Astragalus cremnophylax*
var. *cremnophylax* — BY KAREN WARREN



Habitat — BY K. WARREN



Close-up of plant mat. — BY P. ROWLANDS

SCIENTIFIC NAME | *Beckmannia syzigachne* (Steud.) Fern.

COMMON NAME | American sloughgrass. *Beckmannia* honors Johann Beckmann, 1739-1811, a professor at Goettingen, Germany, while *syzigachne* means scissors-like in reference to the glumes or lowermost bracts of the grass flower.

FAMILY (COMMON NAME) | Gramineae (Grass Family)

SYNONYMS | *Panicum syzigachne* Steudel, *B. eruciformis* of American authors, not (L.) Host. ssp. *syzigachne* Breit.

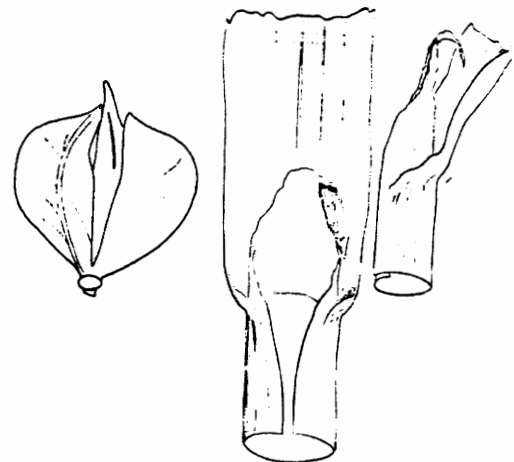
DISTRIBUTION | North America and Eurasia. In Arizona, known from Apache and Coconino counties. In Grand Canyon NP known only from Greenland Lake, on North Rim's Walhalla Plateau.

HABITAT | Annual grass. Wet, cool, marshes, ditches, streams, and edges of ponds and lakes, and rarely saline meadows, 7,500 to 8,500 feet, July and August.

LOOK-ALIKES | None



- Spikelets laterally compressed, closely overlapping in two rows along one side of a continuous rachis
- Spikelets detach below the glumes
- Glumes equal, inflated, and transversely wrinkled with a deep keel
- Leaf blades rough to the touch
- Robust, stout, often stoloniferous





Habitat of *Beckmannia syzigachne* — BY N. BRIAN

SCIENTIFIC NAME | *Betula occidentalis* Hook.

COMMON NAME | Water birch, also called abedul, and black, red, canyon, or Rocky Mountain birch. *Betula* is a Latin word for birch and *occidentalis* means of or from the West or western hemisphere.

FAMILY (COMMON NAME) | Betulaceae (Birch Family)

SYNONYMS | *Betula fontinalis* Sarg.

DISTRIBUTION | Saskatchewan, British Columbia, south to Nebraska, New Mexico, California, and Apache, Navajo and Coconino Counties, Arizona. In Grand Canyon NP recorded from North Rim at Big Spring Canyon, Bright Angel Spring (no longer in existence), and Roaring Springs.

HABITAT | Perennial, deciduous shrub to small tree. Moist canyons with pinyon pine, ponderosa pine, or spruce, 5,000 to 9,000 feet, June.

LOOK-ALIKES | Similar to *Ostrya knowltonii*, the Knowlton hop hornbeam but differs by floral parts, the calyx and corolla, present in the male flowers and absent in the female flowers, female catkins solitary, and winged nutlets not enclosed in a bladder-like bract.



- Leaf margins once or twice toothed
- Separate male and female flowers (catkins) on the same plant
- Bark generally smooth and dark copper-colored with large lenticels
- Nutlets winged
- Young twigs with resinous glands

RARE

BETULA OCCIDENTALIS

SCIENTIFIC NAME | *Boehmeria cylindrica* (L.) Swartz

COMMON NAME | Bog-hemp. *Boehmeria* is named for George Rudolph Boehmer, 1723-1803, a professor at Wittenberg, Saxony and *cylindrica* means cylindric.

FAMILY (COMMON NAME) | Urticaceae (Nettle Family)

SYNONYMS | Unknown.

DISTRIBUTION | Typically found east of the 100th meridian from Florida to Texas, north to Maine, Canada, with disjunct populations in the West Indies, but it is recorded from Utah, New Mexico, and Gila, Cochise, and Coconino Counties, Arizona. In Grand Canyon NP collected once (Stevens in 1993) at CRM 37.4 R.

HABITAT | Perennial herb. Moist or shady ground and seeps in riparian or marshy areas, August through September.

LOOK-ALIKES | Other stinging nettles like *Urtica*, but differs by not having stinging hairs.

- *Opposite leaves with serrate margins*
- *Leaves three-nerved*
- *Male and female flowers on separate plants*
- *Rootstalk or prostrate stem on or just below the ground surface*

RARE

BOEHMERIA CYLINDRICA

SCIENTIFIC NAME | *Calypso bulbosa* (L.) Oakes var. *americana* (R. Br.) Luer.

COMMON NAME | None, but commonly called Western fairy slipper. *Calypso* is from the Greek word Kalypso, sea nymph in Homer's Odyssey, in reference to her beauty and secretive behavior, *bulbosa* means with a bulb, and *americana* means of or from America.

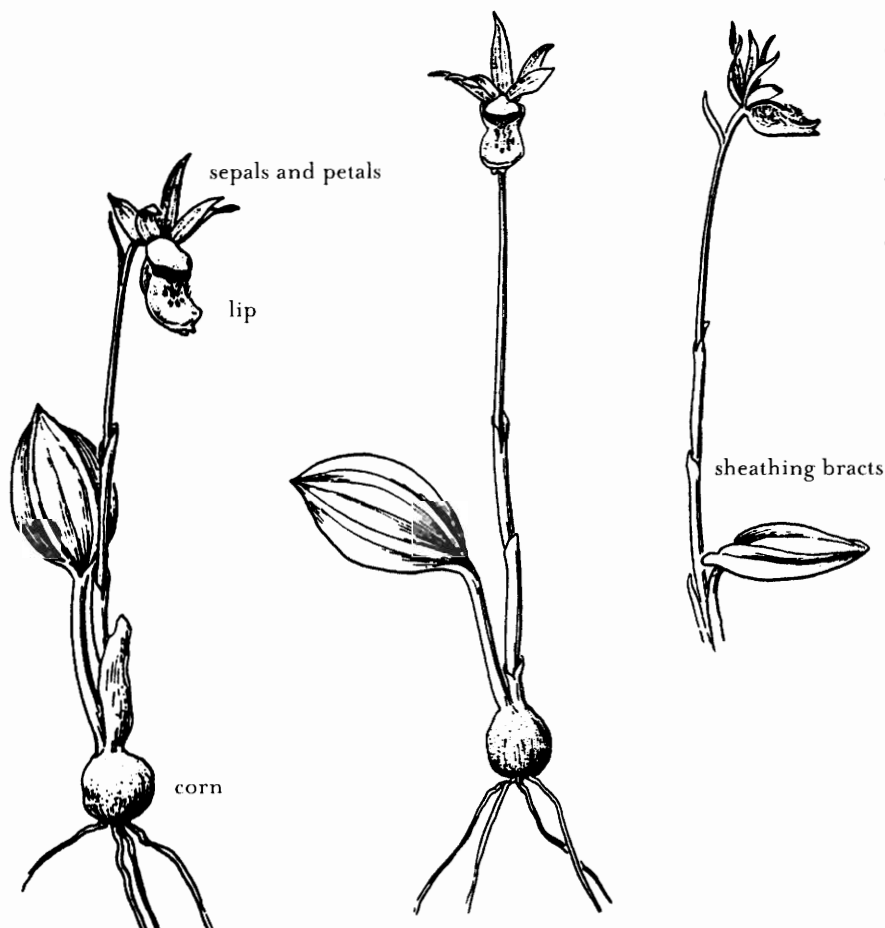
FAMILY (COMMON NAME) | Orchidaceae (Orchid Family)

SYNONYMS | *Calypso americana* R. Br.

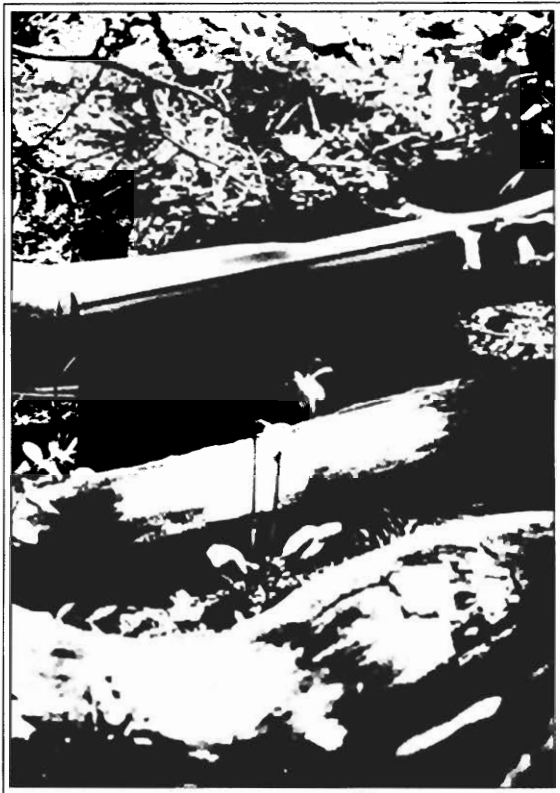
DISTRIBUTION | North America. In Arizona, known from Coconino, Apache, and Greenlee Counties. In Grand Canyon NP found on North Rim in Thompson Canyon, Robber's Roost, Point Sublime, Walhalla Plateau near Farview Point, and Fawn Spring.

HABITAT | Perennial herb. Mossy places in cool, moist to dry, shaded coniferous forests with ponderosa pine, aspen, or spruce-fir, bogs, and along streams, in rich organic soil, 7,400 to 10,000 feet, June to August.

LOOK-ALIKES | None. Could be confused with *Epipactis gigantea*, but differs by having only one leaf and one flower per flowering stem.



- Stem from a corm or bulb
- One leaved and one flowered
- Leaf broadly ovate
- Flower pinkish to lavender and mottled with darker color
- Petal bearded with bright yellow hairs



General view of *Calypso bulbosa* var. *americana*
— BY N. BRIAN

SCIENTIFIC NAME | *Camissonia confertiflora* (Raven) Raven

COMMON NAME | None. *Camissonia*, sometimes called sun cup or bunch flower evening primrose, is named for L. A. Von Chamisso, French-born German botanist, 1781-1838, while *confertiflora* literally means crowded flowers.

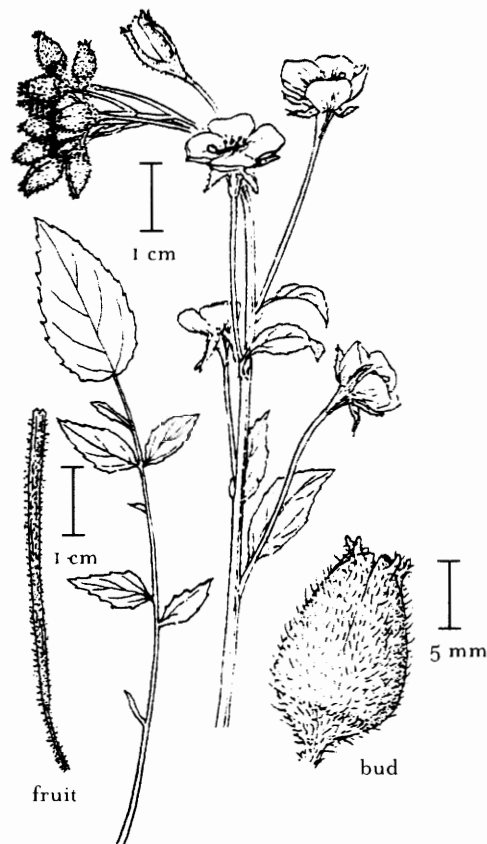
FAMILY (COMMON NAME) | Onagraceae (Evening Primrose Family)

SYNONYMS | *Oenothera confertiflora* Raven

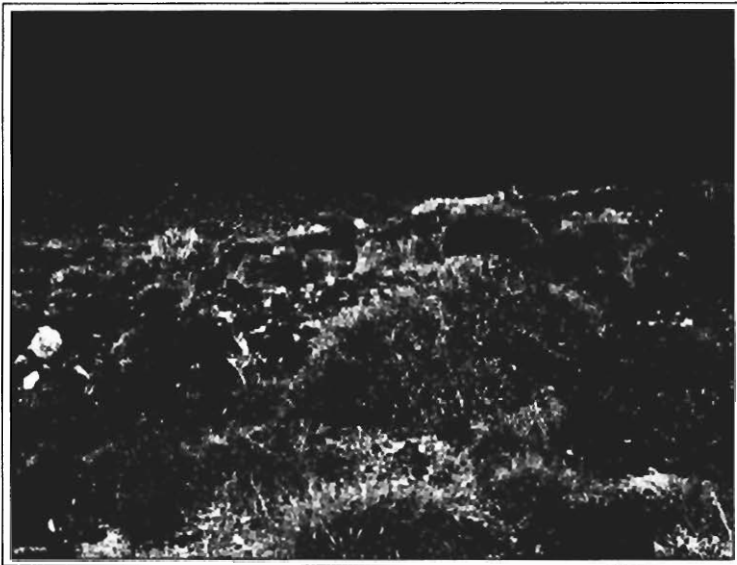
DISTRIBUTION | Endemic to Grand Canyon NP, Mohave County, Arizona. In Grand Canyon NP found at Vulcan's Throne in Toroweap Valley, Tuweep.

HABITAT | Annual herb. Slopes of volcanic cones in cinder soils, Mohave desertscrub, 4,200 feet, April.

LOOK-ALIKES | Similar to *C. multijuga* and *C. brevipes*, but differs in having glands on the sepals, nodding buds, and free tips at the ends of the sepals. Taxonomic revision may submerge *C. confertiflora* into *C. brevipes*, which has a range from Nevada, western Arizona, and southeastern California.



- Nodding buds
- Free tips at the end of the sepals
- Glands on sepals



Habitat — BY K. WARREN

SCIENTIFIC NAME | *Camissonia specuicola* (Raven) Raven ssp. *hesperia* Raven

COMMON NAME | None. *Camissonia*, sometimes called sun cup or Western cave dweller evening primrose, is named for L. A. Von Chamisso, French-born German botanist, 1781-1838. The species name *specuicola* means cave dwelling (from *specui* meaning covered watercourse ditch, drain, pit, mine, sewer, hollow cavity, or cavern and *cola* meaning dweller); and *hesperia* meaning western.

FAMILY (COMMON NAME) | Onagraceae (Evening Primrose Family)

SYNONYMS | *Oenothera specuicola* Raven ssp. *hesperia* Raven

DISTRIBUTION | Endemic to Coconino and Mohave Counties, Arizona. In Grand Canyon NP known from Havasu and Hualapai Canyons, Separation Canyon, Meriwhitica Canyon, and 2.5 miles below Spencer Canyon (CRM 242).

HABITAT | Perennial herb. Washes and dry stream beds, often in limestone derived soils, 2,300 to 3,500 feet, May.

LOOK-ALIKES | Similar to *C. multijuga* and *C. walkeri* ssp. *walkeri*, but differs in being less densely tufted and not woody, and pubescent leaves and style. *C. specuicola* ssp. *specuicola* grows elsewhere in the park on more stable limestone debris slides and crevices of the Redwall Limestone at higher elevations.

- *Leaves pubescent*
- *Style pubescent, 5-7 mm long*
- *Not woody*

SCIENTIFIC NAME | *Camissonia specuicola* (Raven) Raven var. *specuicola* Raven

COMMON NAME | None, but sometimes called cave dweller or ditch evening primrose. *Camissonia*, sometimes called sun cup or evening primrose, is named for L. A. Von Chamisso, French-born German botanist, 1781-1838, while *specuicola* means cave dweller or dwelling (from *specui* meaning covered watercourse ditch, drain, pit, mine, sewer, hollow cavity, or cavern, and *cola* meaning dweller). Evening primrose is the common name for *Oenothera*, an earlier name for the genus.

FAMILY (COMMON NAME) | Onagraceae (Evening Primrose Family)

SYNONYMS | *Oenothera specuicola* (Raven) Raven ssp. *specuicola* Raven

DISTRIBUTION | Endemic to Grand Canyon NP in Coconino and Mohave Counties, Arizona, where it is found in Saddle Horse Canyon at Tuweep, Kaibab Trail, and Hermit Camp.

HABITAT | Perennial herb. Debris slides and crevices of Redwall Limestone and the Toroweap Formation, 3,100 to 5,400 feet, April to June.

LOOK-ALIKES | Other species of *Camissonia*, but differs in glabrous leaves and stems.

- Large basal rosette
- Glabrous leaves and stems
- Dark green, shining bipinnate leaves
- Oil glands present on veins of underside of leaves
- Small, bright yellow flowers on erect, tall inflorescences

SCIENTIFIC NAME | *Carex scirpoidea* Michx. var. *curatorum* (Stacey) Cronq.

COMMON NAME | None, but sometimes called the Canyonland sedge. *Carex* is from the Latin word meaning cutter, from the sharp leaf and stem edges; *scirpoidea* means like *Scirpus*, another genus in the Sedge Family; and *curatorum*, honors Alice Eastwood, 1859-1953, and John Thomas Howell, 1903-1994, botanical curators at the herbarium of the California Academy of Sciences who first collected the variety.

FAMILY (COMMON NAME) | Cyperaceae (Sedge Family)

SYNONYMS | *Carex curatorum* Stacey

DISTRIBUTION | Utah and Coconino County, Arizona. In Grand Canyon NP it is found at Saddle Horse Springs, North Kaibab Trail above Roaring Springs, and hanging gardens or seeps at CRM 155.5 R and 166.5 R.

HABITAT | Perennial herb. Hanging gardens and seeps along the Colorado and San Juan Rivers, 3,770 to 4,400 feet, May to August.

LOOK-ALIKES | Similar in appearance to many sedges, but differs in having separate sexes (i.e., both male and female plants) and the pistillate scales shorter and narrower.



- Spikes 2.5 to 5 cm long
solitary, unisexual
- Separate sexes
- Plants densely caespitose
21-40 cm tall
- Rhizomes lacking, or if present,
stout and short



Habitat — BY N. BRIAN

SCIENTIFIC NAME | *Castilleja kaibabensis* N. Holmgren

COMMON NAME | None, but called the Kaibab paintbrush. *Castilleja* was dedicated in 1781 to honor Domingo Castillejo, a botanist of Cadiz, Spain, and *kaibabensis* means of or from the Kaibab Plateau.

FAMILY (COMMON NAME) | Schrophulariaceae (Figwort Family)

SYNONYMS | None

DISTRIBUTION | Endemic to 12 square miles on the Kaibab Plateau, Coconino County, Arizona. In Grand Canyon NP it is reported from Upper Little Park, North Rim.

HABITAT | Perennial herb. Fine silts and clays to rocky gravelly meadow soils derived from weathered Kaibab limestone, on low rounded ridgetops and small knolls, usually in the driest, most exposed sites in the open meadows, 8,200 to 9,000 feet, July to August. It readily colonizes disturbed sites and is considered an early to mid-successional species.

LOOK-ALIKES | Similar to *C. integra* and *C. lineariaefolia*, but differs in having bracts divided with fairly acute-tipped lobes and rounded tip, no white, wooly-hairs on stem, and more appressed leaves.



- Stems with bristly, reflexed hairs
- Flower bracts yellow to reddish-orange or salmon
- Calyx lobes cleft between outer lobes deeper than cleft between inner lobes





General view of *Castilleja kaibabensis*
— BY K. WARREN

SCIENTIFIC NAME | *Cheilanthes villosa* Davenp. ex Maxon.

COMMON NAME | Hairy lip fern. *Cheilanthes* is from a Greek word *cheilos* meaning lip and *anthos* meaning flower, in reference to the marginal location of the sporangia and *villosa* meaning bearing long and soft hairs which are not matted.

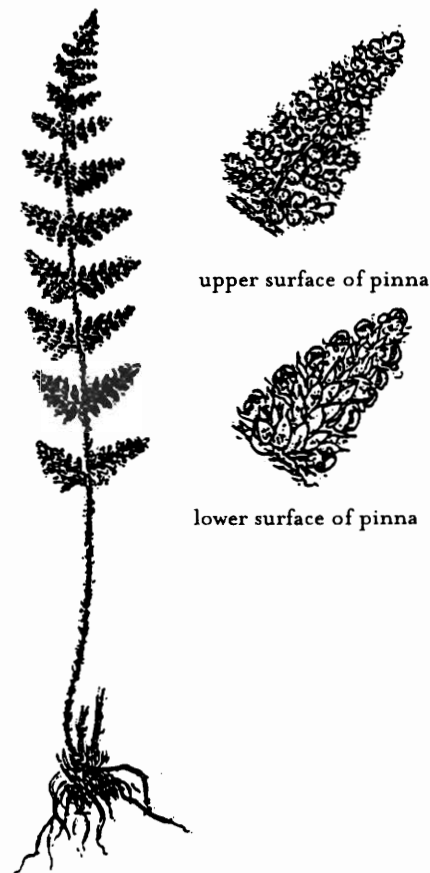
FAMILY (COMMON NAME) | Adiantaceae (Maidenhair Fern Family)

SYNONYMS | None

DISTRIBUTION | Western Texas to northern Mexico and southern Arizona. In Arizona, it is known from Coconino, Maricopa, Cochise, Pima, Santa Cruz and Yuma Counties. Although it is not known from Grand Canyon NP, it may be expected. It has been collected once from Mooney Falls (Blakely in 1952) in Havasu Canyon on Supai Tribal lands.

HABITAT | Perennial, evergreen fern. Mountains, granitic and limestone slopes and ledges, and dry, shaded limestone cliffs, and canyons, 2,000 to 4,000 feet.

LOOK-ALIKES | Other lip ferns of the genus *Cheilanthes*, but differs by the fronds coarsely, not finely, hairy on the top surface and triangular shaped scales on the bottom of the fronds.



- Several or numerous stems from a single taproot
- Narrowly oblong and clumped fronds
- Segments small, round, and bead-like
- Scales of lower side of leaves large, triangular, whitish, and ovate
- Scales conceal the segments
- Stalk of the frond, purplish-brown, shiny, and shorter than the blades

SCIENTIFIC NAME | *Crossosoma parviflorum* Robins & Fern.

COMMON NAME | None, but called ragged rock flower. *Crossosoma* is from a Greek word meaning fringe body in reference to the fringed, conspicuous aril, an appendage on the seed; and *parviflorum* literally means little, small, or puny flower.

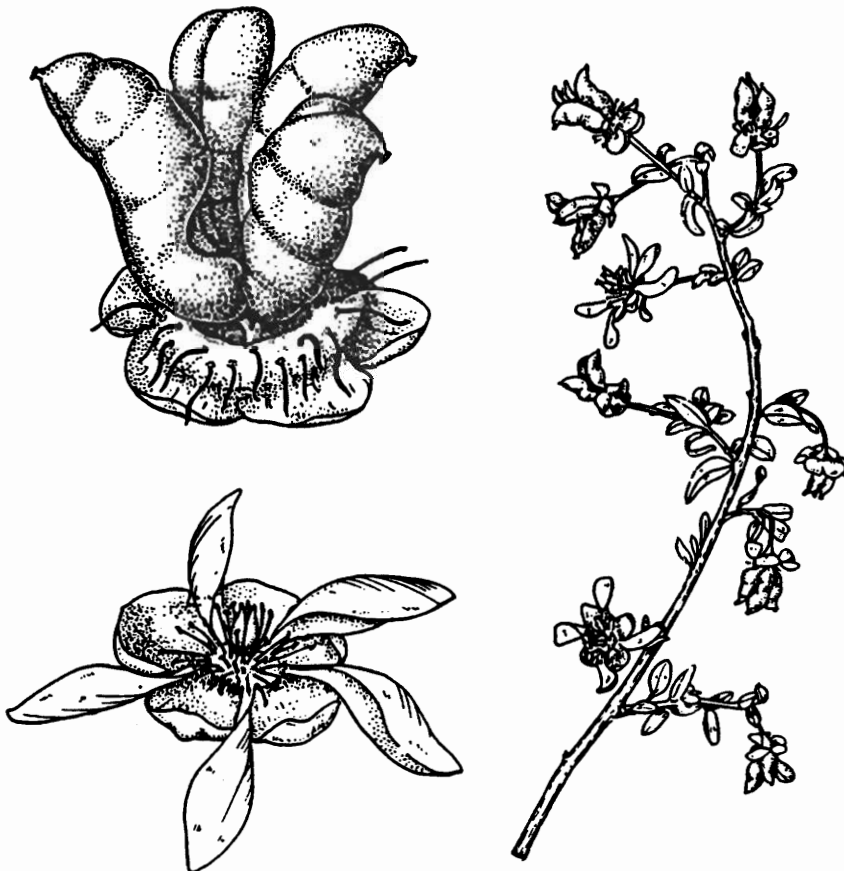
FAMILY (COMMON NAME) | Crossosomataceae (Crossosoma Family)

SYNONYMS | None

DISTRIBUTION | Mohave County, Arizona and Sonora, Mexico. In Grand Canyon NP it is recorded from CRM 275 R. It is also found outside the park boundaries at Whitmore Canyon, Quartermaster Canyon, and Snap Canyon.

HABITAT | Perennial shrub. Muav Limestone cliffs, ledges, and steep rock outcrops in desertscrub community, 5,000 feet, February to April.

LOOK-ALIKES | Similar to *C. bigelovii*, a more common species growing in western Grand Canyon but differs in having follicles about 6 mm long and abruptly short-beaked. Some taxonomists consider *C. parviflorum* a variety, calling it *C. bigelovii* var. *bigelovii*. The later entity is widespread in Yavapai, Mohave, Gila, Pinal, Maricopa, Pima, and Yuma Counties, Arizona, and California and Mexico.



- Fruits from each flower in group of 2 to 5
- Stalked petals 10 mm long
- Stamens 15-50 in number, spirally arranged on floral tube
- Flowers white and fragrant
Leaves smooth

SCIENTIFIC NAME | *Cryptantha capitata* (Eastw.) Johnst.

COMMON NAME | None, but sometimes called hermit catseye. *Cryptantha* is from the Greek word meaning hidden flowers, in reference to the cleistogamous, or self-fertilized without opening, nature of the flowers and *capitata* means head-shaped in reference to the flowers collected into a head-like cluster.

FAMILY (COMMON NAME) | Boraginaceae (Borage Family)

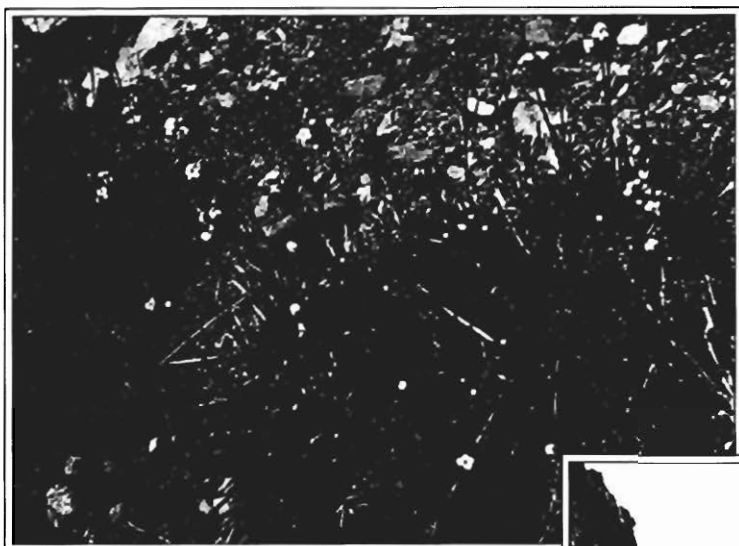
SYNONYMS | *Oreocarya capitata* Eastwood

DISTRIBUTION | Utah and Coconino County, Arizona. In Grand Canyon NP it is known from Hermit Canyon, Dripping Springs, Grandview, South Kaibab, and North Kaibab Trails, Nankoweap Canyon, and Deer Creek.

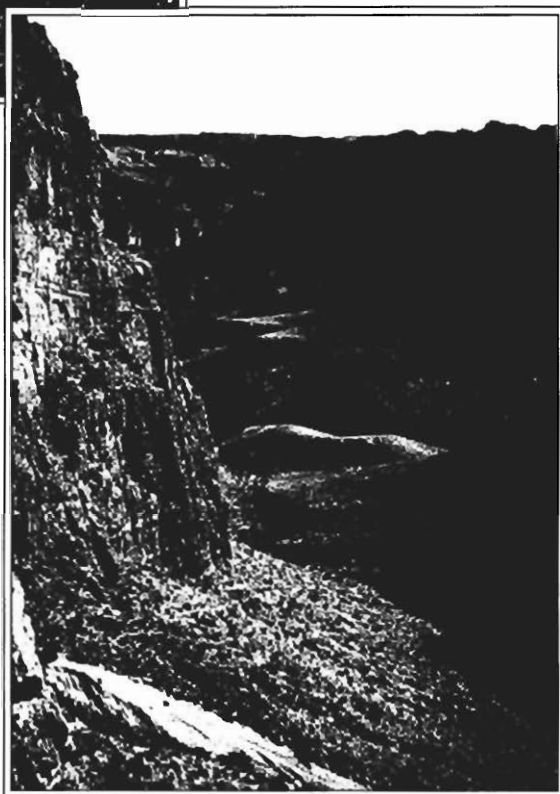
HABITAT | Perennial herb. Sandy to loamy soils in pinyon-juniper, sagebrush, and mountain brush communities, 5,600 to 8,300 feet, April to June.

LOOK-ALIKES | Related to *C. confertiflora*, but differs by small stature, white rather than yellow flowers, and more sparsely hairy, hence greener. *C. capitata* may be combined with *C. confertiflora* at some future date.

- White flowers
- 10–30 cm high
- Sparsely hairy
- Small, lateral flowers reduced or absent
- Flowers in a head-like cluster



Closeup of *cryptantha capitata*
— BY N. BRIAN



Habitat — BY N. BRIAN



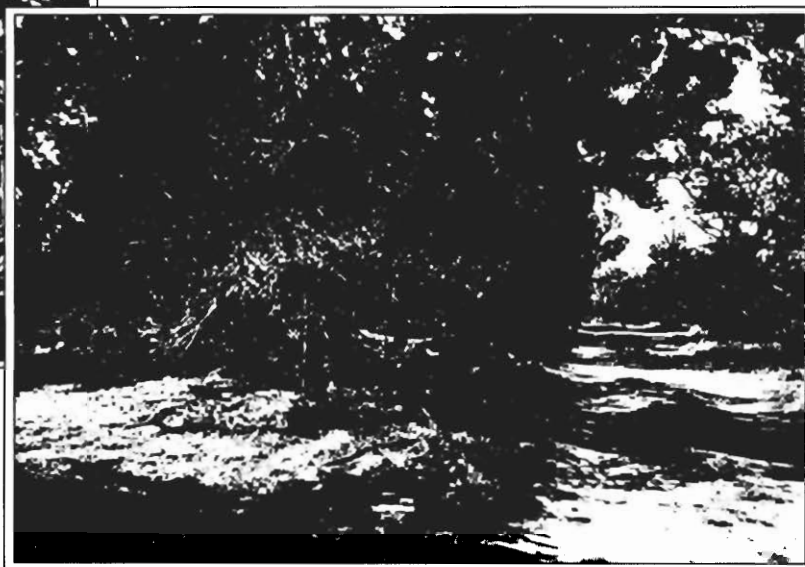
Plant sample from
herbarium sheet.

SCIENTIFIC NAME	<i>Draba asprella</i> Greene var. <i>kaibabensis</i> C. L. Hitchc.
COMMON NAME	None, but called Kaibab draba or sometimes called Kaibab whitlow-grass. <i>Draba</i> is from the Greek word for acrid, <i>asprella</i> means rough, uneven, harsh, or rugged, and <i>kaibabensis</i> means of or from the Kaibab Plateau.
FAMILY (COMMON NAME)	Cruciferae or Brassicaceae (Mustard Family)
SYNONYMS	This variety may be recombined or submerged into <i>D. asprella</i> Greene var. <i>asprella</i> Greene.
DISTRIBUTION	Endemic to Grand Canyon NP, Coconino County, Arizona. In Grand Canyon NP it is reported from the Walhalla Plateau, Tiyo Point, Kaibab Trail to Roaring Springs, and elsewhere on the North Rim.
HABITAT	Perennial herb. Coniferous forests with ponderosa pine and Douglas fir, in shade and pine duff, 7,000 to 8,350 feet, June.
LOOK-ALIKES	Similar to <i>D. asprella</i> var. <i>stelligera</i> , but differs in having soft, forked, star-shaped hairs on the leaves.

- *Yellow petals*
- *Herb, 10–15 cm tall*
- *Pubescence of petioles and lower scapes soft and very dense*
- *Pubescence with branched or star-shaped hairs*
- *Leaves in basal rosettes*



General view of *Draba asperella* var.
kaibabensis — BY K. WARREN



Habitat — BY K. WARREN



Plant sample from
herbarium sheet.

SCIENTIFIC NAME | *Draba asprella* Greene var. *stelligera* O. E. Schulz

COMMON NAME | None. *Draba* is from the Greek word for acrid, *asprella* means rough, uneven, harsh, or rugged, and *stelligera* means bearing stellately or star-shaped hairs.

FAMILY (COMMON NAME) | Cruciferae or Brassicaceae (Mustard Family)

SYNONYMS | None. This variety may be recombined or submerged into *D. asprella* Greene var. *asprella* Greene.

DISTRIBUTION | Endemic to Yavapai and Coconino Counties, Arizona. In Grand Canyon NP it is reported from North Rim at Neal Spring, Thompson Canyon, Powell Saddle, and Transept Trail.

HABITAT | Perennial herb. Sandy, wooded bluffs, pine forests, and chaparral hillsides, 5,300 to 8,000 feet, May.

LOOK-ALIKES | Similar to *D. asprella* var. *kaibabensis*, but differs in having coarse, long, and stiff hairs on the leaves.

- *Yellow petals*
- *Leaves in basal rosettes*
- *Herb, 10–15 cm tall*
- *Pubescence of leaf blades and lower stems coarse and stiff*



Plant sample from
herbarium sheet.

SCIENTIFIC NAME | *Encelia frutescens* Gray var. *resinosus* Jones

COMMON NAME | None. *Encelia* honors Christopher Encel, a writer on oak-galls in 1577, *frutescens* means becoming shrubby, and *resinosa* means resinous in reference to the sticky nature of the plant.

FAMILY (COMMON NAME) | Compositae or Asteraceae (Sunflower Family)

SYNONYMS | None

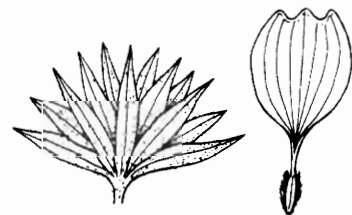
DISTRIBUTION | Navajo and Coconino Counties, Arizona. In Grand Canyon NP it is reported from Saltwater Wash (CRM 11.9 L), Marble Canyon Dam Site (CRM 40 R), National Canyon (CRM 166.5 L), near Lava Falls (CRM 179), and on cinder cones at Tuweep.

HABITAT | Perennial shrub. Rocky slopes and mesas, 1,200 to 5,500 feet, March to June.

LOOK-ALIKES | Similar to *E. frutescens*, but differs in having conspicuous yellow ray petals in addition to the disk flowers and densely glandular flower bracts and stalks.



- Heads solitary at the end of pubescent stalks
- Leaves green and rough-hairy
- Yellow ray and disk flowers present in flowers
- Rounded, much-branched, white-barked shrub





Example of one habitat — BY K. WARREN

SCIENTIFIC NAME | *Epipactis gigantea* Douglas ex Hook.

COMMON NAME | Giant helleborine. *Epipactis* is probably from the Greek word epipaktis, an ancient name for the Eurasian, poisonous hellebore plant, and *gigantea* means gigantic.

FAMILY (COMMON NAME) | Orchidaceae (Orchid Family)

SYNONYMS | *Limodorum giganteum* Kuntze, *Peramium giganteum* J.M. Coulter, *Serapias gigantea* A. A. Eat., *Helleborine gigantea* Druce, *Amesia gigantea* Nels. & Macbr.

DISTRIBUTION | North America. In Arizona, it is known from Coconino, Mohave, Cochise, and Pima Counties. In Grand Canyon NP it is not truly "rare" as it is commonly found from Vasey's Paradise (CRM 32) downstream to the Grand Wash Cliffs (CRM 277), and from North Kaibab Trail, Cliff Spring, Powell Spring, and Saddle Horse Spring. It is also found at Mooney Falls in Havasu Canyon, on Supai Tribal lands.

HABITAT | Perennial herb. Wet places and moist soil on seepage slopes, bases of cliffs, along rivers, also in hanging gardens and seeps in desert areas, 3,000 to 8,000 feet, April to July.

LOOK-ALIKES | None, but could be confused with other orchids, but differs by having leafy stems and 3-7 showy flowers usually placed on one side of the stem.



- Flowers brownish purple with raised purplish lines and lobes yellowish
- Sepals with a greenish sheen
- Leaves with parallel veins



General view of *Epipactis gigantea*
— BY N. BRIAN



Closeup of fruit — BY K. WARREN

SCIENTIFIC NAME | *Erigeron lobatus* A. Nels.

COMMON NAME | None, but the genus is often called fleabane, in reference to the supposed ability of some species to rid one of fleas. *Erigeron* is from Greek words *eri* meaning early and *geron* meaning old age, or old man. It was also the ancient name of an early-flowering plant with hoary down. *Lobatus* means lobed, in reference to the leaves.

FAMILY (COMMON NAME) | Compositae or Asteraceae (Sunflower Family)

SYNONYMS | None

DISTRIBUTION | Endemic to Coconino, Mohave, Graham, Pima, and Yuma Counties, Arizona. In Grand Canyon NP it is reported along the Colorado River from CRM 15 to 237.

HABITAT | Biennial or short-lived perennial herb. Plains, mesas, rocky slopes, side canyons, and beaches in sandy soils, generally 1,500 to 3,500 feet, but can be found to 7,000 feet, February to May or October to June.

LOOK-ALIKES | Similar to *E. divergens*, but differs by the pinnately lobed leaves and long pilose pubescence of the stem and leaves. Also, similar to *Aster subulatus* (= *A. exilis*) which has phyllaries or flower bracts in 3-4 series.

- Stout, somewhat woody, short prostrate stems on or below the ground which root at nodes and produce shoots
- Leaves hairy with white, spreading, glandular hairs
- Leaf blades pinnately lobed or dentate, 3-6 cm long
- Ray flowers purple or lavender on long, naked stalks
- Flower bracts green with a faint brown midvein
- Small disk flowers, 2-3 mm long



Plant sample from
herbarium sheet.



Plant sample from
herbarium sheet.

SCIENTIFIC NAME | *Eriogonum heermannii* Dur. & Hilg. var. *subracemosum* (S. Stokes) Reveal

COMMON NAME | None, but called Heermann wild buckwheat. *Eriogonum* is from a Greek word meaning wooly knees, from the hairy nodes on some species, *heermannii* honors Adolphus Lewis Heermann, 1827-1865, an ornithologist and surgeon-naturalist who collected plants in California; and *subracemosum* referst to the tendency of the flowers to be collected in an elongated cluster or raceme.

FAMILY (COMMON NAME) | Polygonaceae (Buckwheat Family)

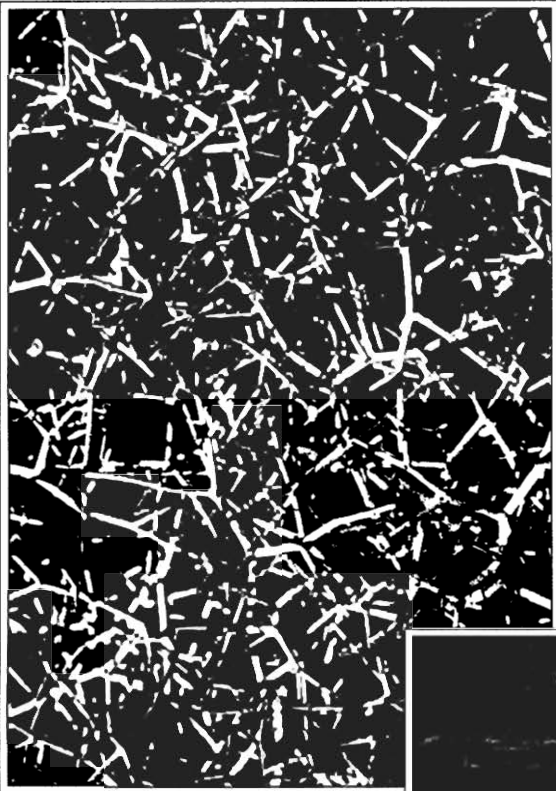
SYNONYMS | *Eriogonum howellii* Stokes var. *subracemosum* Stokes

DISTRIBUTION | Endemic to Coconino, Mohave, and Navajo Counties, Arizona. In Grand Canyon NP it is recorded from Horseshoe Mesa, near Rampart Cave, Grama Point, SB Point, Vasey's Paradise, and Little Colorado River confluence.

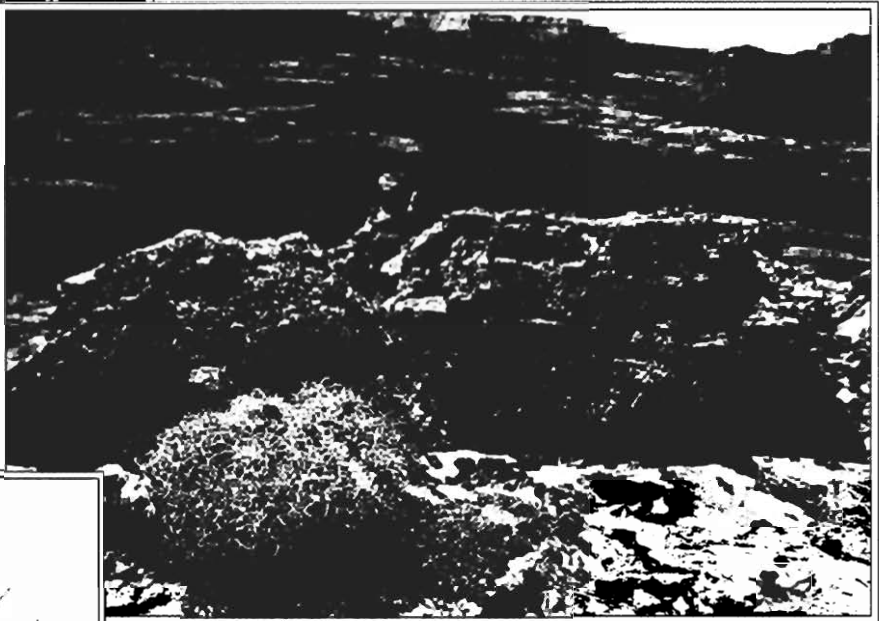
HABITAT | Perennial shrub. Limestone and sandstone ledges, steep dry slopes, and canyon rims in the Great Basin desertscrub and pinyon-juniper woodland, 2,000 to 8,400 feet, August to September.

LOOK-ALIKES | Similar to *E. heermannii* var. *sulcatum*, but differs by the stems not being deeply angled or grooved.

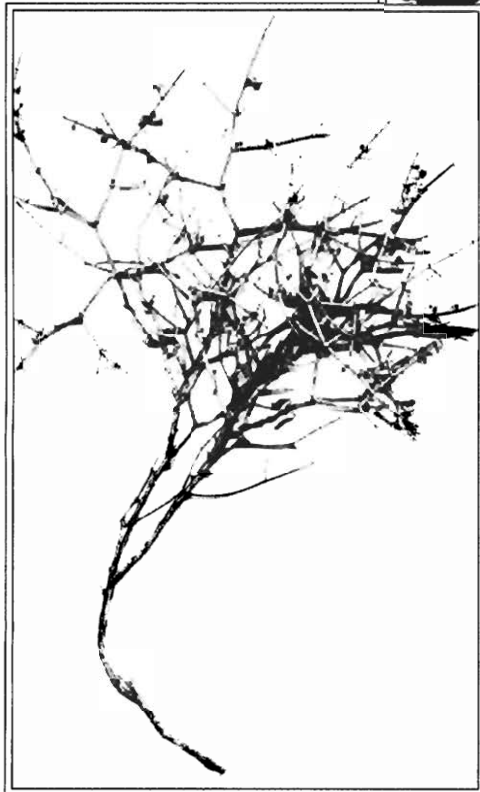
- Stout branches
- Yellowish flowers
- Lanceolate leaves with thick tomentum on underside of leaves
- Epidermis crusted and with nipple-shaped projections



Closeup of *Eriogonum heermannii*
var. *subracemosum* — BY K. WARREN



Habitat — BY K. WARREN



Plant sample from
herbarium sheet.

SCIENTIFIC NAME | *Eriogonum zionis* J. T. Howell var. *coccineum* J. T. Howell

COMMON NAME | None, but many Eriogonums are called wild-buckwheats. *Eriogonum* is from a Greek word meaning wooly knees, from the hairy nodes on some species, *zionis* means of or from Zion in reference to the plant first being collected in Zion National Park, and *coccineum* means red, in reference to the scarlet or crimson flowers.

FAMILY (COMMON NAME) | Polygonaceae (Buckwheat Family)

SYNONYMS | *Eriogonum racemosum* var. *coccineum* (J.T. Howell) Welsh

DISTRIBUTION | Endemic to Coconino and Mohave Counties, Arizona. In Grand Canyon NP it is reported from South Bass Trail, Darwin Plateau, Hermit Trail, Point Sublime, and the Kanab Canyon rim.

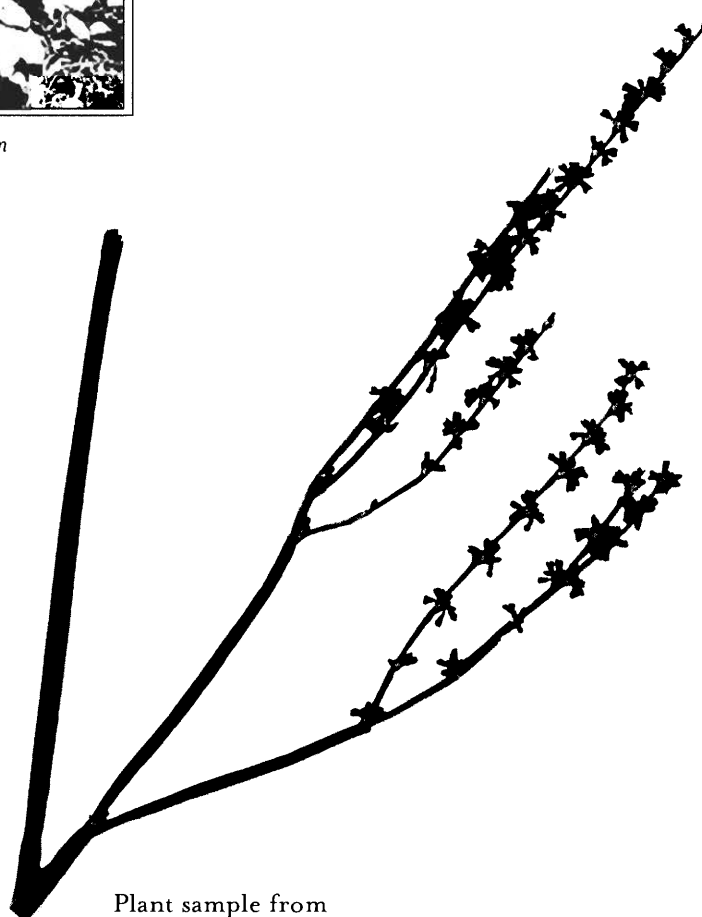
HABITAT | Perennial herb. Limestone and sandstone substrate on steep, north-facing slopes, often in the shade in the pinyon-juniper woodland, 4,600 to 7,400 feet, July to September.

LOOK-ALIKES | The red flower easily separates this variety from other perennial, scapose, wild-buckwheats.

- Small, bright red flowers
- Leaves are wooly-hairy underneath
- Basal leaves with rounded tip and wedge-shaped base



Closeup of *Eriogonum zionis* var. *coccineum*
— BY K. WARREN



Plant sample from
herbarium sheet.

SCIENTIFIC NAME | *Euphorbia aaron-rossii* A. & N. Holmgren

COMMON NAME | None. *Euphorbia* is a Latin word honoring Euphorbus, a physician to the King of Mauritania, an ancient northwest African kingdom during the 1st century. The species name, *aaron-rossii*, honors the plant's discoverer, Dr. Aaron B. Ross (1917-1973). Ross was a physician of Ogden, Utah, an avid boatman, and naturalist, who made many Colorado River boat trips.

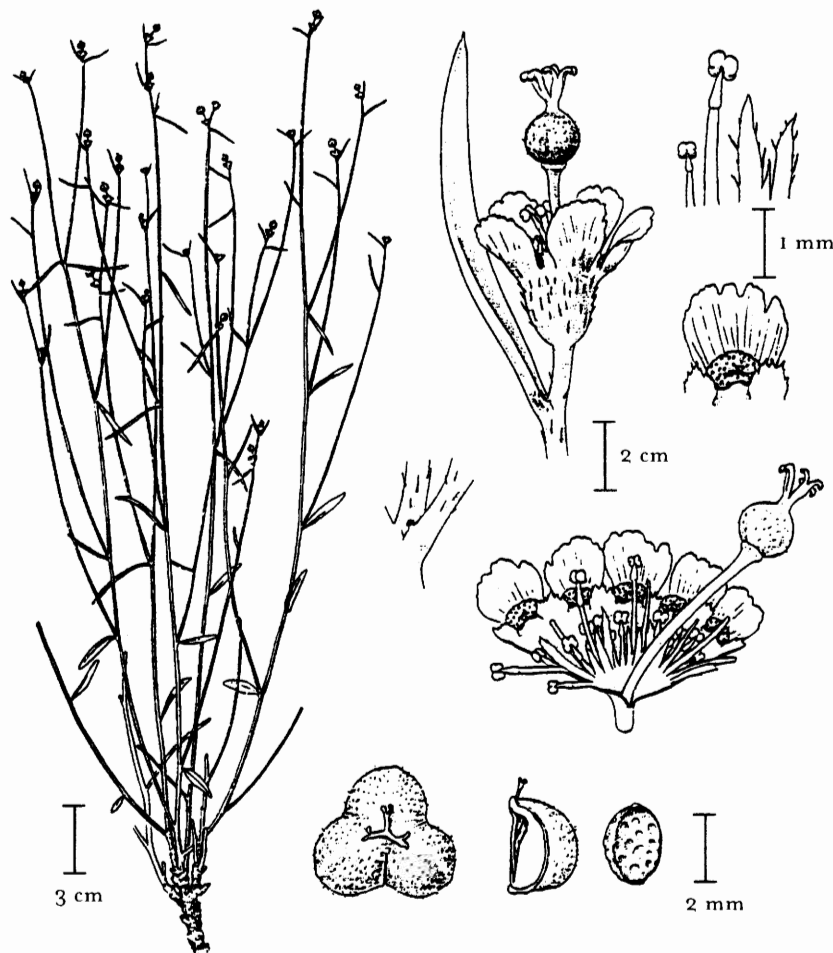
FAMILY (COMMON NAME) | Euphorbiaceae (Spurge Family)

SYNONYMS | None

DISTRIBUTION | Endemic to Coconino County, Arizona. In Grand Canyon NP it is known from CRM 4.5 to Nankoweap Canyon (CRM 53) and Forster Canyon (CRM 123).

HABITAT | Perennial sub-shrub, somewhat woody at the base. Loose sandy soils of old river bars and dunes, occasionally on rocky limestone and sandstone slopes, 2,075 to 3,300 feet, April to October.

LOOK-ALIKES | None



- Alternate lower and upper leaves
- Cut stems exude white latex
- Leaves ovate to lanceolate and margins entire
- Wiry stems include dead ones from past seasons
- Five appendaged glands per flower
- Flowers solitary at the tips of branches, whitish-green or with a reddish tinge



Closeup of *Euphorbia aaron-rossii*
— BY D. ROTH



Habitat — BY D. ROTH

SCIENTIFIC NAME | *Flaveria mcdougallii* Theroux, Pinkava & Keil

COMMON NAME | None, but called McDougall's flaveria. *Flaveria* is from the Latin word *flavus* meaning yellow, in reference to the yellow flowers, and *mcdougallii* honors Dr. Walter B. McDougall, 1883-1980, a forest ecologist who wrote many floral manuals for both Yellowstone and Grand Canyon National Parks and northern Arizona.

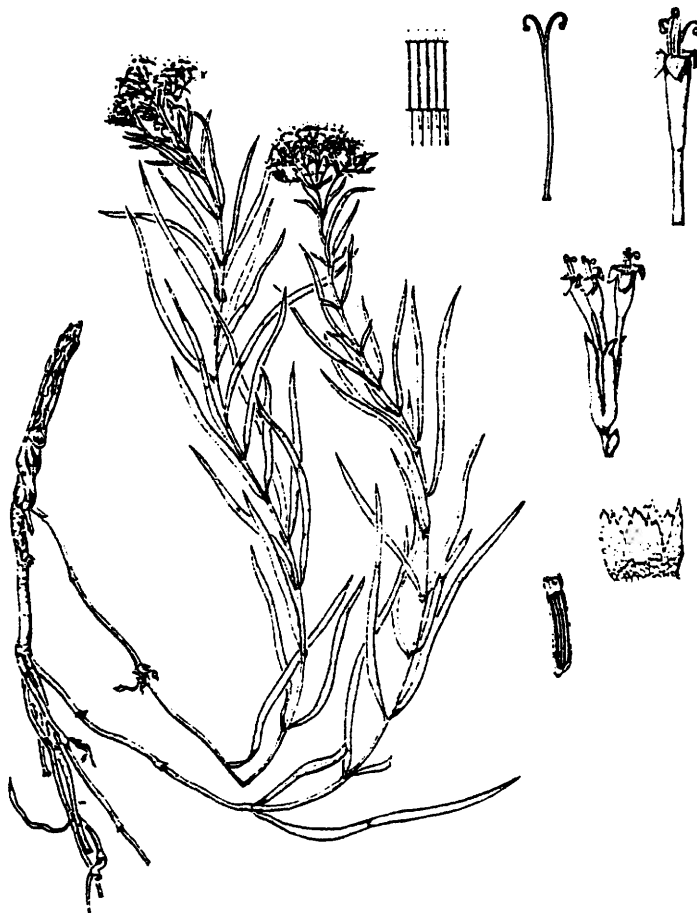
FAMILY (COMMON NAME) | Compositae or Asteraceae (Sunflower Family)

SYNONYMS | None

DISTRIBUTION | Endemic to Coconino and Mohave Counties, Arizona. In Grand Canyon NP it is reported from CRM 147.5R, Matkatamiba Canyon (CRM 148), Ledges Camp (CRM 152), CRM 155.5, Tuckup Canyon (CRM 164.5), CRM 166.5R, Fern Glen (CRM 168), and Cove Canyon (CRM 174). It is also found from CRM 160.5 to 178 in left bank seeps on Hualapai Tribal lands.

HABITAT | Perennial, clonal sub-shrub. Moist saline seeps and open slopes and benches above the Colorado River in the Muav Limestone and Bright Angel Shale, 1,800 to 1,670 feet, September to November.

LOOK-ALIKES | None



- Flat-topped to convex inflorescence
- Opposite, narrowly linear leaves with entire margins
- No ray flowers
- Yellow disk flowers number 3-6
- Woody, horizontal prostrate stems on or below the ground which root at nodes and produce shoots



Closeup of *Flaveria mcdougallii*
— BY K. WARREN

SCIENTIFIC NAME | *Fraxinus cuspidata* Torr. var. *macropetala* (Eastw.) Rehd.

COMMON NAME | Fragrant ash. *Fraxinus* is an ancient Latin word, *cuspidata* means cuspidate or tipped with a cusp or a sharp, short, rigid point, and *macropetala* means large petals, in reference to the presence of showy petals.

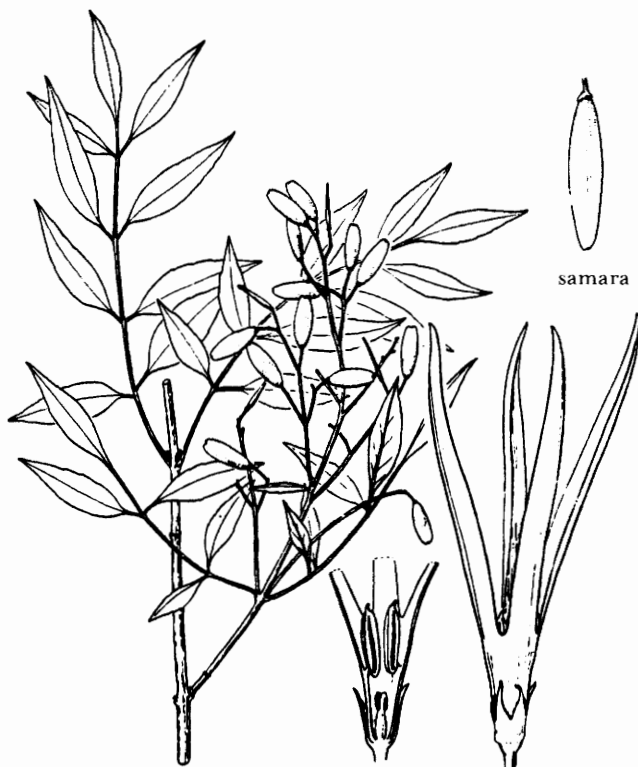
FAMILY (COMMON NAME) | Oleaceae (Olive Family)

SYNONYMS | None

DISTRIBUTION | Endemic to Navajo, Coconino, and Mohave Counties, Arizona. In Grand Canyon NP it is recorded from North Rim (no definite locality), Tuckup Canyon, rims above Kanab Canyon, Hack Canyon, Water Canyon Point, 150 Mile Canyon, Manakacha Point, Bright Angel Trail, Hermit Trail, Dripping Springs Trail, Huxley Terrace, Havasu Canyon, Parashant Canyon, Trail Canyon, Tuckup Canyon, and Upper Grand Wash Cliffs.

HABITAT | Perennial tree or small shrub. Steep, rocky slopes, ledges, crevices, and at cliff bases in canyons, often within Kaibab Limestone and Redwall Limestone outcrops (but also recorded on sandstone, basalt, and Chinle shale soils), often in shaded areas, 4,000 to 7,500 feet, April to June.

LOOK-ALIKES | None. The conspicuous, fragrant flowers are diagnostic. Without flowers, it could be confused with *F. pennsylvanica* ssp. *velutina* (velvet ash), but differs by not having toothed edges to the leaflets and not being found in riparian areas. *F. anomala* (single-leaf ash) has single, not pinnate, somewhat heart-shaped leaves. Fragrant ash can easily be distinguished from *Ptelea trifoliata* (hoptree), by not having odiferous leaves and bark.



- Flowers with four, white petals
- Blossom fragrant
- Leaflets fewer and broader than the typical species
- Shrub or small tree 1 to 7 m tall
- Leaves with 3-7 leaflets
- Stamens shorter than petals
- Fruit with wing (a samara) about 12 mm long



Closeup of *Fraxinus cuspidata* var. *macropetala*

SCIENTIFIC NAME | *Galium bifolium* Wats.

COMMON NAME | None, but often called bedstraw, as some species were used in the past to stuff mattresses. *Galium* is from a Greek word *gala* meaning milk, which is curdled by some species of the genus and *bifolium* meaning two or twinleaf, in reference to the leaves sometimes being reduced to one pair.

FAMILY (COMMON NAME) | Rubiaceae (Madder Family)

SYNONYMS | None

DISTRIBUTION | British Columbia, Montana, Colorado, California, and Coconino County, Arizona. In Grand Canyon NP it is known from Greenland Lake on the Walhalla Plateau and from Mt. Emma on the Uinkaret Plateau.

HABITAT | Annual herb. Mountain brush, sagebrush, ponderosa pine, meadow, lodgepole pine, aspen, and spruce-fir communities, 6,200 to 10,600 feet, May to June.

LOOK-ALIKES | None

- *Leaves not hairy and very unequal in whorl*
- *Leaves sometimes reduced to one pair*
- *Flowers white and solitary on stems arising from leaf axils*
- *Cotyledons persistent*



Plant sample from
herbarium sheet.

SCIENTIFIC NAME | *Haplopappus cervinus* Wats.

COMMON NAME | None, but sometimes called tawny turpentine bush or antelope goldenbush. *Haplopappus* means simple or single pappus, the apical tuft of hair or bristles on a the seeds of the sunflower family and *cervinus* is a Latin word meaning relating to, resembling, or typical of a deer or antelope, as per the common name.

FAMILY (COMMON NAME) | Compositae or Asteraceae (Sunflower Family)

SYNONYMS | *Ericameria cervina* (Wats.) Rydb., *Haplopappus nanus* (Nutt.) D. C. Eaton var. *cervinus* Gray, *Aplopappus cervinus* Wats.

DISTRIBUTION | Utah, Nevada, and Coconino and Mohave Counties, Arizona. In Grand Canyon NP it is recorded from Boysag Point, Grandview Trail, Kanab Canyon, and Bright Angel Trailhead.

HABITAT | Perennial subshrub. Rocky canyons in limestone, dolomite, less commonly on ash-flow or granitic soils, in the pinyon-juniper woodland and ponderosa pine forests (but also found in black sagebrush, shadscale, mountain brush, and Douglas fir-bristlecone pine communities in Utah), 5,000 to 7,500 feet, June to October.

LOOK-ALIKES | Could be confused with *H. scopulorum* and *H. watsonii*, but differs by lower stature, no stipitate glands on leaves, sticky-resinous flower heads, and ovate leaves with smooth margins.



- Low shrub, about 15 cm
- Involucre bracts about 25 in about 5 series
- No stalked glands on leaves
- Leaves with smooth margins or slightly uneven and wavy
- Sticky-resinous flower heads
- Few ray petals, mostly disk flowers

SCIENTIFIC NAME | *Haplopappus salicinus* Blake

COMMON NAME | None, but translates as salty goldenweed, sometimes called burroweed.
Haplopappus means simple or single pappus and *salicinus* means salty.

FAMILY (COMMON NAME) | Compositae or Asteraceae (Sunflower Family)

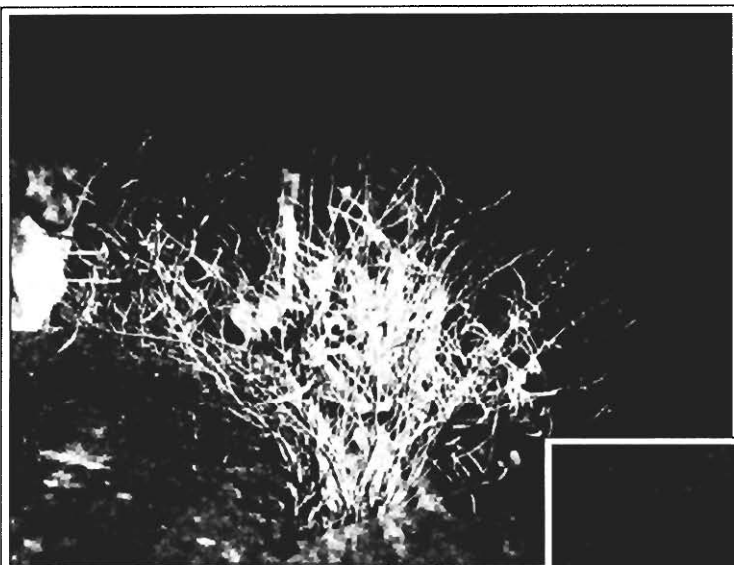
SYNONYMS | *Aplopappus salicinus* Blake

DISTRIBUTION | Endemic to Grand Canyon NP, in Coconino and Mohave Counties, Arizona. In Grand Canyon NP it is recorded from Kwagunt Canyon (CRM 26 R), Tatahatso Camp (RM 38 L), Marble Canyon Dam site (CRM 40 R), Grandview Trail, Clear Creek (CRM 84 R), Bright Angel Trail, South Bass Trail, Elves Chasm (CRM 116.5 L), Matkatamiba Canyon (CRM 148 L), 185 Mile Canyon, and above Columbine Falls (CRM 274 L).

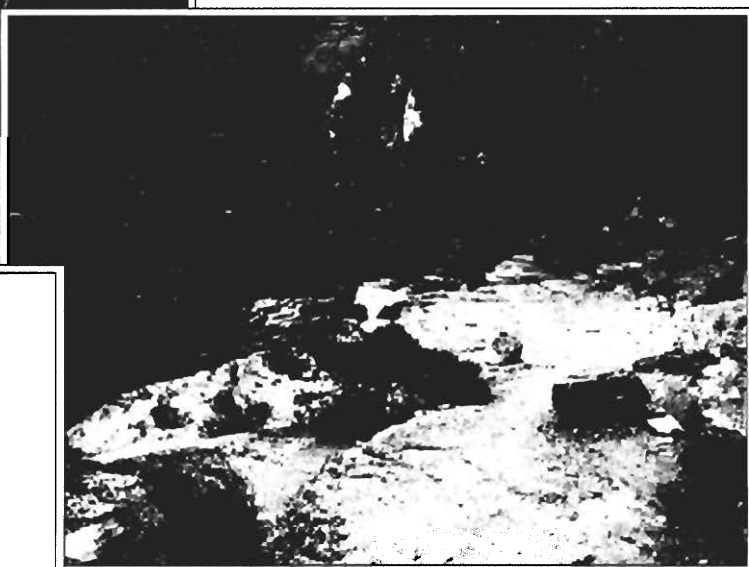
HABITAT | Perennial shrub. Shaded limestone (Muav and Redwall Limestones) walls, seeps, and boulders, 1,200 to 4,700 feet, September to November.

LOOK-ALIKES | Could be confused when using an identification key with *Hesperodoria scopulorum* (= *Haplopappus scopulorum*) or *H. heterophyllus*, but differs in having densely impressed-punctate leaves which are not resinous and heads not numerous in dense, terminal cymes.

- Leaves densely impressed-punctate
- Leaves linear-lanceolate and 3-ribbed
- Shrubby plants with woody base
- Small, disk flowers only



Closeup of *Haplopappus salicinus*
— BY K. WARREN



Habitat — BY K. WARREN



Plant sample from
herbarium sheet.

SCIENTIFIC NAME | *Hesperodoria scopulorum* (M.E. Jones) Greene var. *scopulorum* (M.E. Jones) Greene

COMMON NAME | None, but sometimes called spindly goldenbush, goldenweed, rock hesperodoria, and Grand Canyon evening daisy. The meaning of *Hesperodoria* is obscure. It may be derived from the Greek words meaning evening or relating to the west, or it may relate to the planet Venus (Hesperus) in its appearance as the evening star. Or it may be related to the Greek myth of the Hesperides, the nymphs who together with a dragon watch over a garden that produces golden apples. *Scopulorum* means of rocky places, cliffs, or crags.

FAMILY (COMMON NAME) | Compositae or Asteraceae (Sunflower Family)

SYNONYMS | *Haplopappus scopulorum* (Jones) Blake, *Bigelovia menziesii* M. E. Jones var. *scopulorum* M. E. Jones, *H. scopulorum* (M.E. Jones) Greene var. *hirtellus* Blake, *Isocoma scopulorum* (M. E. Jones) Rydberg

DISTRIBUTION | Utah and Coconino and Mohave Counties, Arizona. In Grand Canyon NP it is reported from North and South Rims without definite locality, and Grandview, Bright Angel, and South Bass Trails.

HABITAT | Perennial shrub. Rocky, sandy or loam soils in mixed desert shrub, hanging garden, mountain brush, ponderosa pine and pinyon-juniper woodlands in sandstone or limestone derived soils in the Coconino Sandstone and Muav Limestone, 3,700 to 6,700 feet, June to October.

LOOK-ALIKES | None, but could be confused with *Haplopappus salicinus*, but differs by not having impressed-punctate leaves and larger flower heads.



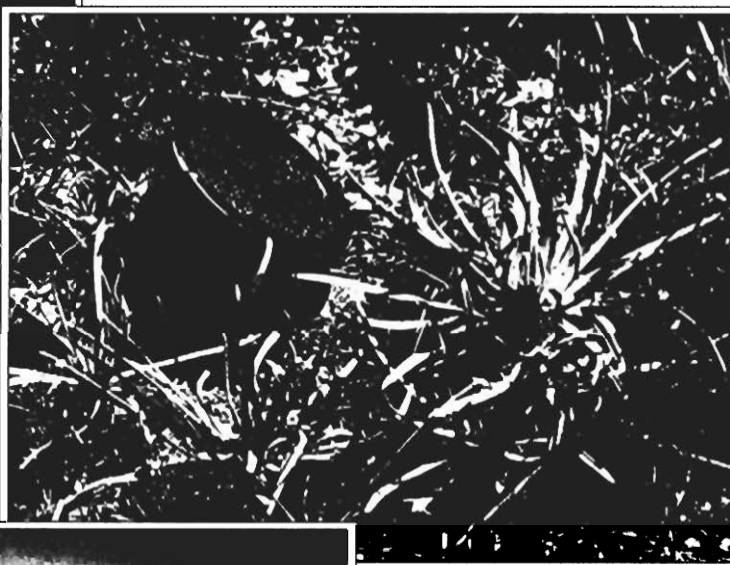
- Branches slender, willowy subshrub
- Bark smooth, white, and shining
- Principle leaves 3-nerved, linear-lanceolate to grass-like
- 10-20 yellow disk flowers (no ray flowers)
- Pappus hairs very fine, soft, and white
- Leaf margins fringed with very short hairs

SCIENTIFIC NAME	<i>Hymenoxys subintegra</i> Ckll.
COMMON NAME	None, but sometimes called bitterweed and perky Sue. <i>Hymenoxys</i> is from a Greek word meaning sharp membrane, in reference to the membranous, often awn-tipped scales of the pappus of the fruit, while <i>subintegra</i> means almost entire.
FAMILY (COMMON NAME)	Compositae or Asteraceae (Sunflower Family)
SYNONYMS	<i>Actinea subintegra</i> (Ckll.) Blake
DISTRIBUTION	tah and Coconino County, Arizona. In Grand Canyon NP it is reported from North Rim, Cape Royal, Point Sublime, Harvey Meadow, gravel pit north of Marble Flats, mouth of Big Spring Canyon, Kanabownits Spring, Fawn Spring, Swamp Lake, Upper Little Park, and below Neal Spring.
HABITAT	Perennial or biennial herb. Edge of ponderosa pine and spruce-fir forests in subalpine meadows, juniper-sagebrush community, and in disturbed soils bordering roadsides, full sun, 6,000 to 9,000 feet, July and August. It is considered an invader species which colonizes degraded or disturbed soils.
LOOK-ALIKES	Could be confused with <i>H. cooperi</i> , but differs by pale, gray pubescent leaves which are either broadly linear or divided into three linear lobes, each greater than two mm wide.

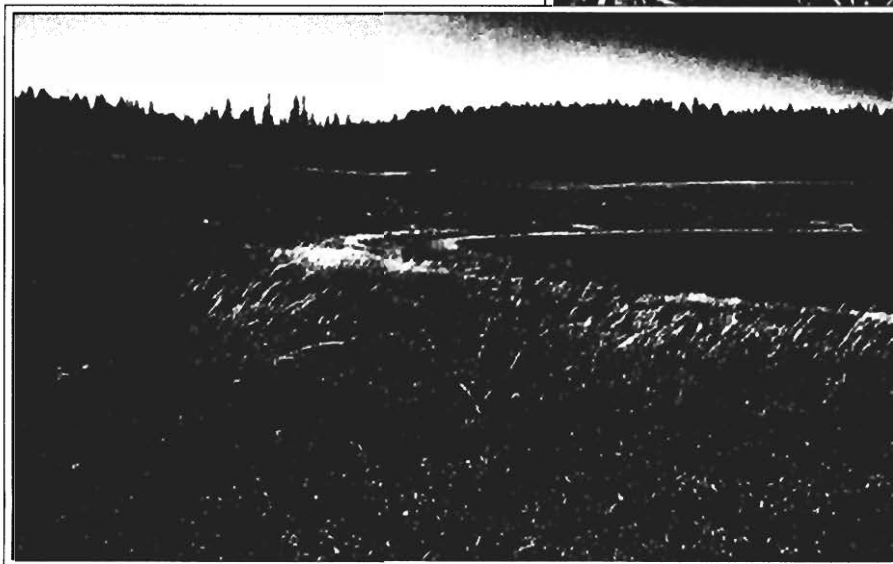
- Stout taproot
- Leaves basal, pale, and hoary with gray pubescence
- Leaves either broadly linear and entire or divided into 3 linear lobes
- Solitary stems branched above, 10-60 cm tall
- Yellow ray and disk flowers
- Basal rosette of wooly bracts subtend the flower



Closeup of *Hymenoxys subintegra*
— BY K. WARREN



General view — BY K. WARREN



Habitat — BY K. WARREN

SCIENTIFIC NAME | *Imperata brevifolia* Vasey

COMMON NAME | Satintail. *Imperata* honors Ferrante Imperato, an Italian naturalist of the 1500's and *brevifolia* means short leaf.

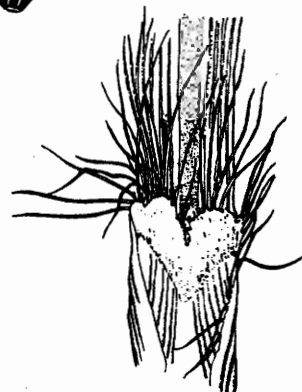
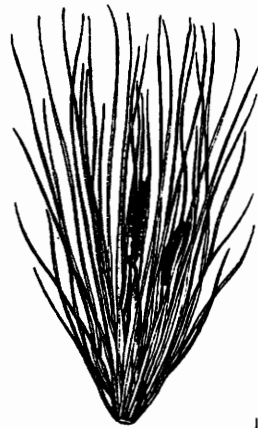
FAMILY (COMMON NAME) | Gramineae or Poaceae (Grass Family)

SYNONYMS | *Imperata hookeri* Rupr. ex Hack.

DISTRIBUTION | Texas to Utah, Nevada, California, Mexico, and Coconino, Mohave, Yavapai, Santa Cruz, and Pima Counties, Arizona. In Grand Canyon NP it is found along the Colorado River from Clear Creek (CRM 83.5) to Diamond Creek (CRM 225), Pipe Creek, Bright Angel Creek, Stone Creek, Thunder River, Tapeats Creek, and Havasu Canyon. It was once common in Glen Canyon, prior to Glen Canyon Dam creating Lake Powell.

HABITAT | Perennial grass. Rocky desert canyons and wet places, 1,200 to 6,000 feet, May to October.

LOOK-ALIKES | None



- Hard scaly prostrate stems on or below the ground surface or underground which root at the nodes and produce shoots
- Spikelets with soft, long, white or tawny hairs
- Spikelets fall from the rachis when ripe

RARE

IMPERATA BREVIFOLIA

SCIENTIFIC NAME | *Machaeranthera mucronata* Greene

COMMON NAME | None, but sometimes called Kaibab saber daisy. *Machaeranthera* is from the Greek word for sword-like anthers and *mucronata* means tipped with a short abrupt tip.

FAMILY (COMMON NAME) | Compositae or Asteraceae (Sunflower Family)

SYNONYMS | *Aster adenolepis* Blake

DISTRIBUTION | Endemic to Kaibab Plateau, Coconino County, Arizona. In Grand Canyon NP it is reported from Robber's Roost, Cape Royal, Fuller Canyon, and Thompson Canyon.

HABITAT | Perennial herb. Subalpine meadows and roadside, in spruce-fir forest, in loamy soil overlying Kaibab Limestone, 8,000 to 9,000 feet, July to September.

LOOK-ALIKES | Other *Aster* or *Macharanthera* species with purple flowers, but differs by presence of spreading phyllaries and glandular hairs on the phyllaries and stems.

- Perennial herb 10–40 cm tall
- Stems red-tinged
- Herbage hoary with gray pubescence
- Linear leaves 1–4 cm long, less than 5 mm wide
- Purple flowers solitary at ends of branches
- Phyllaries narrow with spreading tips



Closeup of *Machaeranthera mucronata*
— BY K. WARREN

SCIENTIFIC NAME | *Mortonia scabrella* Gray var. *utahensis* Coville

COMMON NAME | None, but commonly called sandpaper-bush or Utah sandpaper-bush. *Mortonia* honors S. G. Morton, a 19th century North American naturalist; *scabrella* means minutely rough, gritty, scurfy or scabrous in reference to the leaf surfaces; and *utahensis* means of or from Utah.

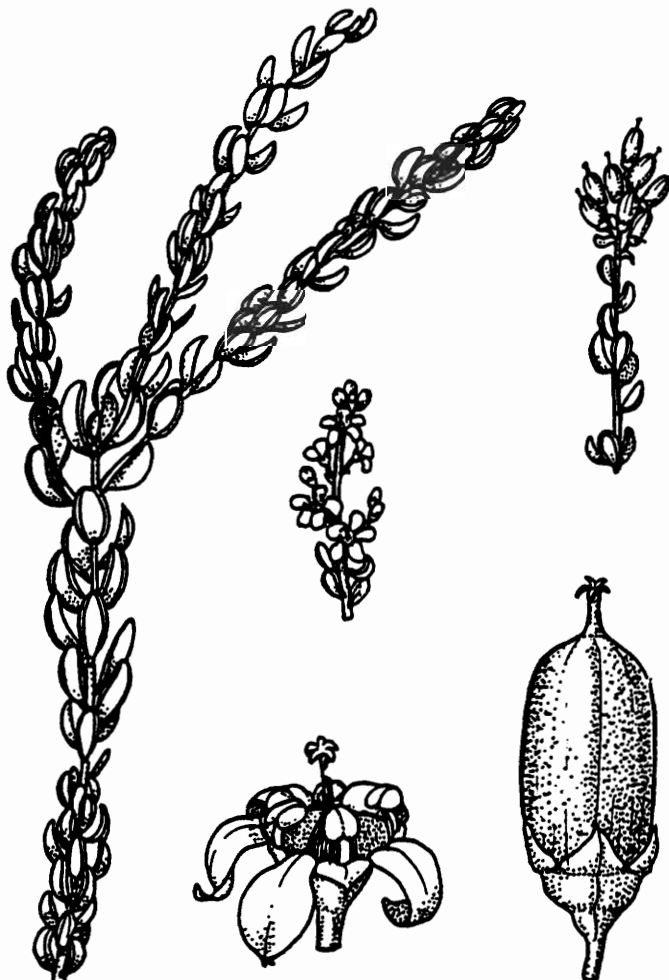
FAMILY (COMMON NAME) | Celastraceae (Bitter Sweet or Staff-Tree Family)

SYNONYMS | *Mortonia utahensis* A. Nelson

DISTRIBUTION | Utah, Nevada, California, and Coconino and Mohave Counties, Arizona. In Grand Canyon NP it is recorded from Havasu Canyon (CRM 156.6) downstream to Grand Wash Cliffs (CRM 277), upper Tuckup Canyon, and the Shivwitz Plateau.

HABITAT | Perennial, evergreen shrub. Dry plains, steep slopes, canyon bottoms, and mesas, often on limestone in the creosote bush or desertscrub community, 1,200 to 4,600 feet, March to September.

LOOK-ALIKES | None



- Plants yellowish-green with stiff, erect branches
- Leaves alternate, thick, stiff, curved, and leathery with thickened margins
- Minute and rough bristles on leaves
- Flowers with five white petals

RARE

MORTONIA SCABRELLA VAR. UTAHENSIS

SCIENTIFIC NAME | *Opuntia basilaris* Engelm. & Bigel. var. *longiareolata* (Clover & Jotter) L. Benson

COMMON NAME | Grand Canyon beavertail. *Opuntia* may be named for a spiny plant of Opus, Greece, or possibly from a Papago Indian word *opun* for this food plant; *basilaris* means basal or arising from the base, and *longiareolata* means elongated areole. An areole is a complex structure formed in the axil above the ephemeral leaves which give rise to clusters of tiny spines and or bristles, called glochids.

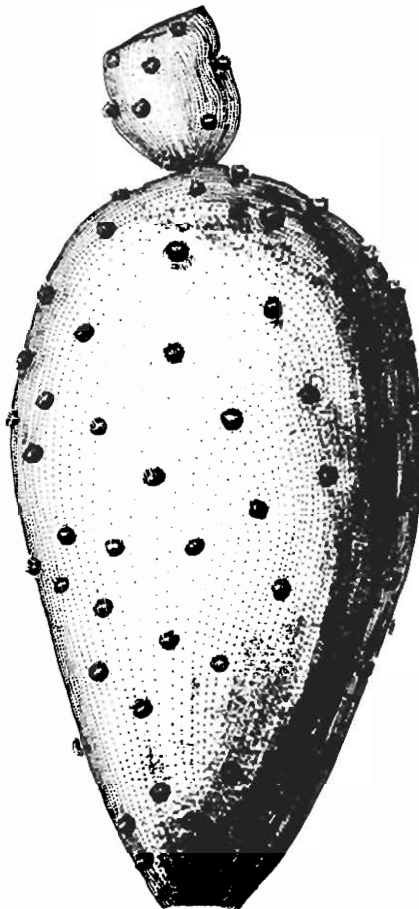
FAMILY (COMMON NAME) | Cactaceae (Cactus Family)

SYNONYMS | None

DISTRIBUTION | Variety is endemic to Grand Canyon NP, Coconino County, Arizona, where it is reported from Clear Creek and Bright Angel Canyon. It was originally collected from Granite Rapids at Monument Creek, but has yet to be re-documented at the type locality.

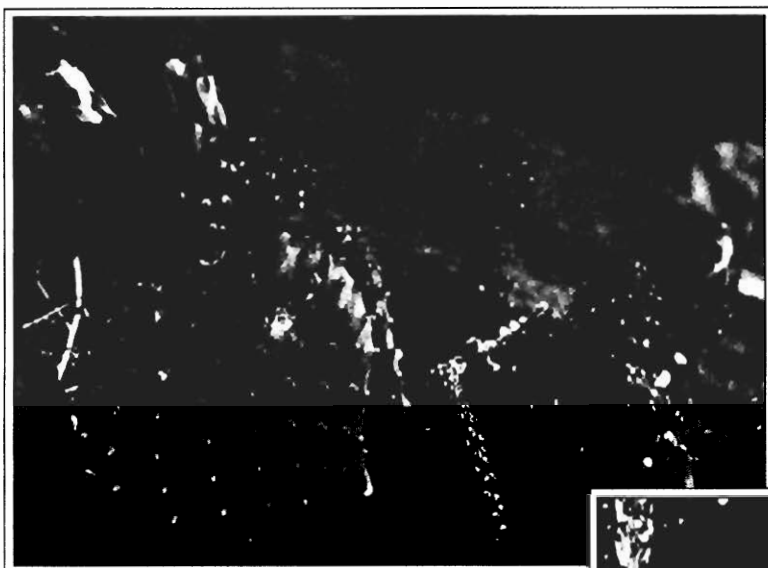
HABITAT | Succulent perennial cactus. Gravelly or rocky soils of talus slopes of the Granite Gorge, 2,350 to 4,000 feet, March to May.

LOOK-ALIKES | Similar to *Opuntia basilaris* var. *basilaris*, but differs in having spatulate joints, and elongated, not circular, areoles.



- Flowers light cerise to vivid purplish red
- Areoles elongate, 3mm long by 1 mm broad
- Joints spatulate
- No spines, only glochids

Drawing by Wendy Hodgson



General view of *Opuntia basilaris* var. *longiareolata*
— BY W. HODGSON



General view of *Opuntia basilaris* var. *longiareolata*
— BY W. HODGSON

SCIENTIFIC NAME | *Opuntia phaeacantha* Engelm. var. *mojavensis* Fosberg

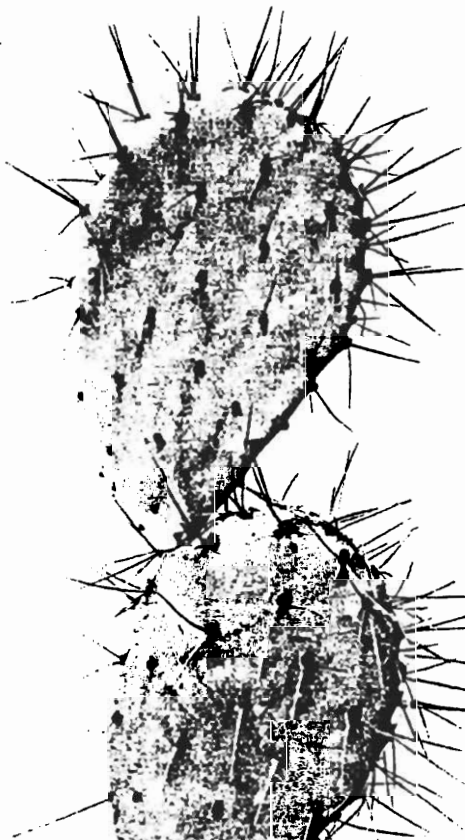
COMMON NAME | None, but sometimes called Mohave prickly pear. *Opuntia* may be named for a spiny plant of Opus, Greece, or possibly from a Papago Indian word opun for this food plant; *phaea-* *cantha* means dark, dusky, or dun-colored spines or thorns from *phaea* meaning dark and *cantho* meaning thorn; and *mojavensis* means of or from Mohave, meaning the Mohave Desert.

FAMILY (COMMON NAME) | Cactaceae (Cactus Family)

SYNONYMS | *O. phaeacantha* var. *major*, *O. engelmannii* var. *cyclodes*, *O. linderheimeri* var. *cyclodes*, *O. cyclodes*, *O. mojavensis*, *O. phaeacantha* var. *brunnea*, *O. arizonica*, *O. gilvescens*, *O. toumeyi*, *O. blakeana*, *O. gregoriana*, *O. confusa*, *O. expansa*, *O. curvospina*, *O. flavescens*, *O. engelmannii* var. *flavescens*. Most taxonomic treatments list this variety as being *O. phaeacantha* var. *major*.

DISTRIBUTION | California, southern Nevada, southern Utah, southern Colorado, southern New Mexico, South Dakota, western Kansas, western Oklahoma, Texas Panhandle, Sonora and Chihuahua, Mexico, and Mohave, Pima, and Yuma Counties, Arizona. In Grand Canyon NP it is reported from Inner Canyon at river level the length of the Colorado River, Havasu Canyon, Cape Royal, and Moran Point, 1,200 to 7,900 feet, April to June.

LOOK-ALIKES | Other species of *Opuntia* and varieties of *O. phaeacantha*, but differs by the spreading, moderately long, brown spines restricted largely to the upper portion of the joint. When present, those on the flat sides of the joints tend to be shorter, fewer, and lighter in color.



- 1-3 spines per areole
- Petals yellow often with red streaks
- Dark brown spines on upper portion of pads
- Joints broadly obovate or nearly orbiculate

SCIENTIFIC NAME | *Ostrya knowltonii* Coville.

COMMON NAME | Knowlton hop hornbeam, but sometimes called Western hornbeam and ironwood. *Ostrya* is from the Greek word *ostrua*, designating a tree with very hard wood and *knowltonii* honors Frank Hall Knowlton, 1860–1926, an American botanist, paleontologist, and ornithologist. The type specimen was collected (Toumey in 1894) in upper Hance Canyon along the former or Old Hance Trail.

FAMILY (COMMON NAME) | Betulaceae (Birch Family)

SYNONYMS | None, but sometimes listed under *O. baileyi* Rose

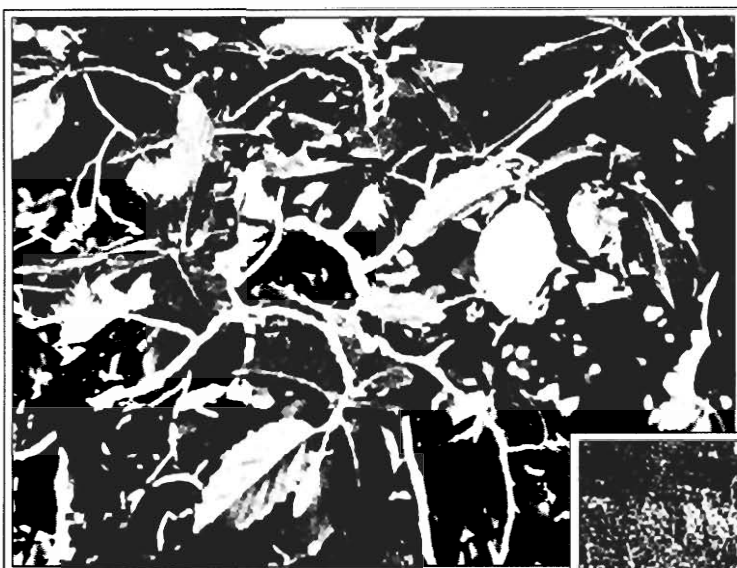
DISTRIBUTION | Texas, New Mexico, Utah, and Coconino and Yavapai Counties, Arizona. In Grand Canyon NP it is reported from Tuweep, Bright Angel Trail, South and North Kaibab Trails, Dripping Springs and Hermit Trails, Roaring Springs, Deva Temple, Sumner Butte, Hance Canyon, Red Canyon, Upper Nankoweap Canyon, and Saddle Canyon.

HABITAT | Perennial tree. Canyons in the pine belt, bases of monoliths, shaded defiles or narrow gorges, "window boxes," and hanging gardens in sandstone, desert areas, 4,900 to 8,900 feet, April to May.

LOOK-ALIKES | Similar to *Betula occidentalis* (water birch), but differs by nutlets wingless and covered by an enlarged, inflated involucre or sac.



- Tree to 8 m tall, but usually shrubby
- Bark ashy-gray
- Bracts of female flowers deciduous, resemble hops
- Male flowers (catkins) pendulous
- Leaves simple, alternate, and doubly toothed



Close up of *Ostrya knowltonii*
— BY N. BRIAN



Habitat — BY N. BRIAN

SCIENTIFIC NAME | *Paronychia sessiliflora* Nutt.

COMMON NAME | None, but the genus is sometimes called whitlow-wort or nailwort. *Paronychia* is from the Greek word for whitlow or felon, a disease of the nail in reference to the plants presumed ability to cure inflammations of the finger due to its whitish scaly parts, and *sessiliflora* meaning stalk-less flower, as stems are lacking.

FAMILY (COMMON NAME) | Caryophyllaceae (Pink Family)

SYNONYMS | None

DISTRIBUTION | Alberta, Saskatchewan, south to Nevada, Arizona, New Mexico and Texas. In Arizona, found in Coconino County. In Grand Canyon NP it is reported from Cape Solitude, Cape Final, Point Imperial, and east of Grandview Point.

HABITAT | Perennial mat-forming herb. Limestone bedrock (in Grand Canyon NP), growing in shadscale, pinyon-juniper, sagebrush, mountain brush, and fringed sagebrush communities, 5,500 to 9,700 feet, May.

LOOK-ALIKES | None

- Cushion-like plant from woody root
- Stems lacking
- Leaves gray-green, crowded, and short
- Leaf blades and stipules same length
- Flowers solitary (or in pairs), sessile, buried in the leaves
- Petals none
- Leaves minutely spine-tipped



Close up of *Paronychia sessiliflora*
— BY N. BRIAN



Habitat — BY N. BRIAN

SCIENTIFIC NAME | *Penstemon pseudoputus* (Crosswhite) N. Holmgren

COMMON NAME | None, but sometimes called dirty penstemon and Kaibab penstemon or beard-tonque. *Penstemon* is a Latin and Greek word, either meaning almost thread-like, or *pente* meaning five and *stemon* meaning *stamen*, in reference to the conspicuous and sterile fifth stamen or staminode, while *pseudo* means false and *putus* means pure or untainted, in reference to the flowers having no pure color.

FAMILY (COMMON NAME) | Scrophulariaceae (Figwort Family)

SYNONYMS | *Penstemon virgatus* Gray ssp. *pseudoputus* Crosswhite

DISTRIBUTION | Utah and Coconino County, Arizona. In Grand Canyon NP it is recorded from Bright Angel Point, west of junction of Cape Royal and Point Imperial Roads, Marble Flats, Cape Royal, Greenland Springs, Upper Little Park, upper Kanabownits Canyon, and Cape Final.

HABITAT | Short-lived perennial herb. In Utah's Markagunt Plateau it is found in loamy soil, rolling open sagebrush community. In Arizona, it is found in open ponderosa pine woods, sub-alpine meadows, openings in aspen-spruce forests, and disturbed areas on the Kaibab Plateau, where it was previously thought to be endemic, 8,000 to 9,000 feet, July and August. It adapts to disturbance and is considered an invader or increaser species.

LOOK-ALIKES | Very similar to *P. virgatus*, but differs by having and a hairless lower lip (palate) of the violet or purple flower, a non-hairy, white staminode, and hairy, linear leaves with edges rolled inward toward the upper side. It may be confused with *P. rydbergii*, which arises from a basal rosette of leaves at the end of a rhizome and has white and yellow hairs on the lower lip of the flower.



- Anthers dehisce from the distal end to the connective
- Slender, perennial herb
- Inflorescences one-sided, narrow, strict, and usually with 5 whorls
- Non-hairy, white staminode

SCIENTIFIC NAME | *Penstemon rydbergii* A. Nels.

COMMON NAME | None, but sometimes called Rydberg's penstemon or beardtongue. *Penstemon* is either a Latin and Greek word. It may mean "almost a thread," from the stamen-like staminode, or it may mean five stamens from *pente* meaning five and *stemon*, meaning stamen, as the fifth stamen is present, conspicuous with hairs, and sterile. The species name *rydbergii* honors Per Axel Rydberg, 1860-1931, a Swedish taxonomist who studied the plants of the Rocky Mountains.

FAMILY (COMMON NAME) | Schrophulariaceae (Figwort Family)

SYNONYMS | None

DISTRIBUTION | Wyoming, Idaho, to New Mexico, and Coconino County, Arizona. In Grand Canyon NP it is reported from the North Rim in The Basin and Upper Little Park.

HABITAT | Perennial herb. In oak-maple, service-berry, sagebrush, and aspen-fir-spruce parkland communities and meadows in moist soil, 7,400 to 11,400 feet, July to August.

LOOK-ALIKES | Similar to *P. pseudoputis* and *P. virgatus*, but differs by flowering stalks arising from a basal rosette of leaves at the end of a rhizome and by white and yellow hairs on the lower lip of the flower.



- White and yellow hairs on flower lip
- Stamens open the full length and across the connective
- Calyx usually without hairs
- Flowers dark violet-purple

SCIENTIFIC NAME | *Phacelia filiformis* Brand.

COMMON NAME | None. *Phacelia* is from a Greek word meaning cluster, from the dense flowers, and *filiformis* means having the form of a thread, hence delicate.

FAMILY (COMMON NAME) | Hydrophyllaceae (Waterleaf Family)

SYNONYMS | None

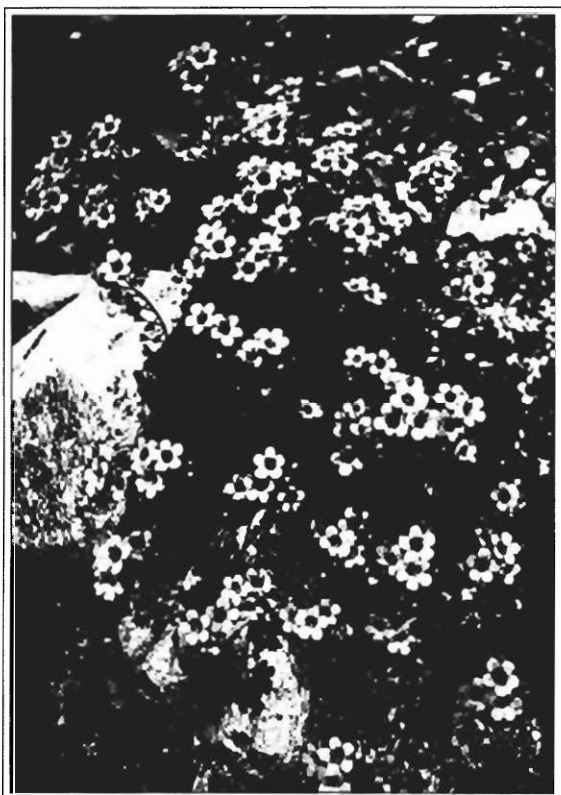
DISTRIBUTION | Endemic to Mohave and Coconino County, Arizona. In Grand Canyon NP it is recorded from North Kaibab Trail, Cliff Springs, Bright Angel Trail in Redwall and Supai Formations, Hermit Trail, east of South Rim village, Grandview Trail, President Harding Rapid (CRM 43 L), and Forster Canyon (CRM 123 L).

HABITAT | Annual herb. Canyon ledges and well-drained, rocky slopes, 1,450 to 8,000 feet, April to September.

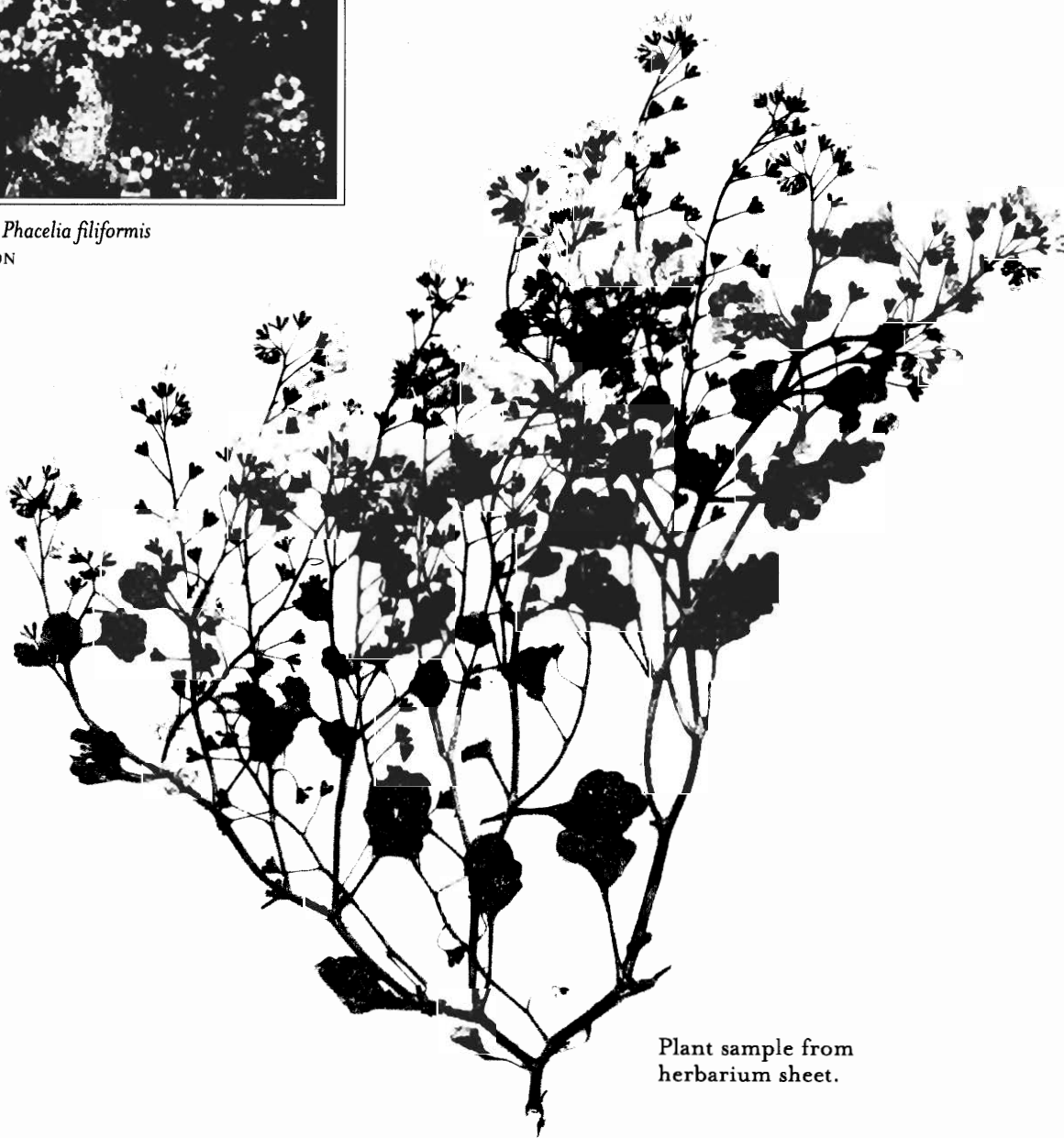
LOOK-ALIKES | Similar to *P. glechomaefolia*, but differs in smaller corolla and seeds fewer in number.



- Corolla 5-9 mm
- Seeds not more than 25
- Flower color blue, or blue and white



General view of *Phacelia filiformis*
— BY W. HODGSON



Plant sample from
herbarium sheet.

SCIENTIFIC NAME | *Phyllodoce empetriformis* (J. E. Smith) D. Don.

COMMON NAME | None, but the genus is called mountain heath or mountain heather. *Phyllodoce*, a Greek word, is the sea nymph mentioned by Virgil and *empetriformis* means formed within stone.

FAMILY (COMMON NAME) | Ericaceae (Heather Family)

SYNONYMS | *Menziesia empetriformis* J. E. Smith, *Bryanthus empetriformis* (Smith) Gray

DISTRIBUTION | Alaska, Pacific Northwest, Montana, Wyoming, and California and Coconino County, Arizona, where it is known from one collection in Grand Canyon NP (McKee in 1928) on the Yaki Trail. The occurrence of this montane plant so far south of the normal range of the species is very unusual. Attempts to relocate it have been unsuccessful. A 1991 verification of the fragmented specimen questioned the identification, stating that it could be *P. breweri*, typically known from the Sierra Nevada of California.

HABITAT | Perennial, matted, dwarf, evergreen shrub. It is found on moist slopes, mountainsides, subalpine timberline, and meadows with acidic soil in subalpine to alpine habitats, 4,800 to 7,800.

LOOK-ALIKES | Leaves similar to *Cercocarpus ledifolius* (mountain-mahogany), but differs by having needlelike, shiny, glabrous or sparsely glandular leaves; bell-shaped, purple flowers; and no feathery tails on the seeds.



- Evergreen shrub with alternate, crowded leaves
- Leaves, needle-like, leathery, margin strong rolled under
- Flowers cup- or bell-shaped, pink to rose-purple

RARE

PHYLLODOCE EMPETRIFORMIS

SCIENTIFIC NAME | *Primula specuicola* Rydb.

COMMON NAME | None, but sometimes called cave dweller primrose, cave primrose, and Easterflower. *Primula* is a Latin word meaning a diminutive of first, in reference to its early spring flowering and *specuicola* means cave dweller or dwelling from *specui* meaning covered watercourse ditch, drain, pit, mine, sewer, hollow cavity, or cavern, and *cola* meaning dweller.

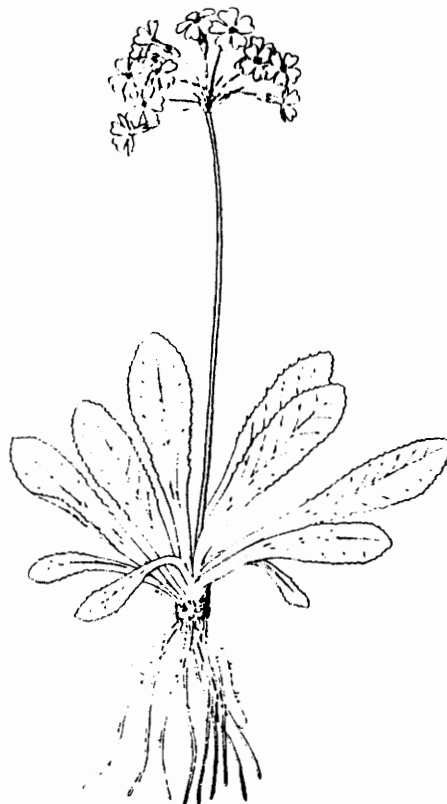
FAMILY (COMMON NAME) | Primulaceae (Primrose Family)

SYNONYMS | *Primula hunnewellii* Fernald has been combined within the species.

DISTRIBUTION | Endemic to the canyons of the Colorado River, Utah and Coconino and Mohave Counties, Arizona. In Grand Canyon NP it is recorded from Buck Farm Canyon (CRM 40.7 R), CRM 41.5 R, Saddle Canyon (CRM 47.1 R), North Kaibab Trail, Cliff Spring on the Walhalla Plateau, and Columbine Falls (CRM 274.5 L).

HABITAT | Perennial herb. Vertical sections of limestone, for example in Grand Canyon NP it is found in the Kaibab, Muav, and Redwall limestone sections, in hanging gardens and seeps, 1,250 to 7,600 feet, March to August.

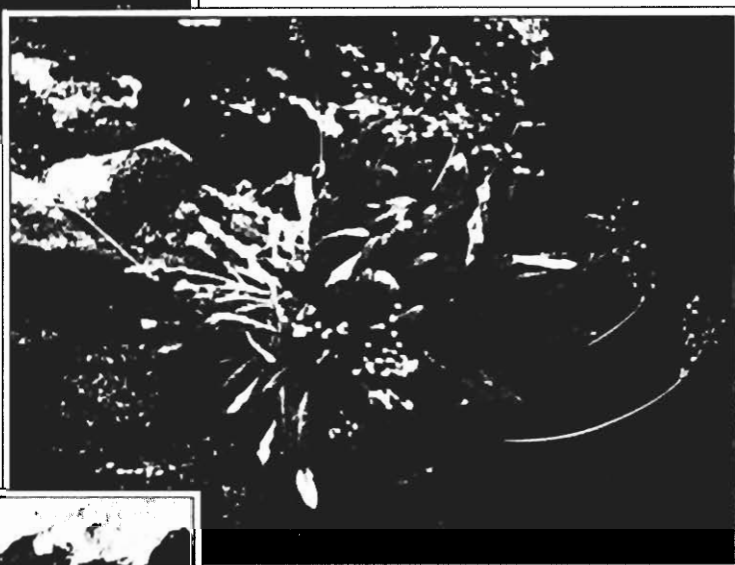
LOOK-ALIKES | None



- Stout, short prostrate stems on or below the ground which root at nodes and produce shoots
- Perennial herb 6-28 cm tall
- White mealy surface to bicolored leaves
- Flowers in umbels, 5-40 flowered
- Purple primrose flowers with yellow center
- Clings to vertical, wet, cliff faces



Closeup of *Primula specuicola*
— BY N. BRIAN



General view — BY K. WARREN



Habitat — BY K. WARREN

SCIENTIFIC NAME | *Pteryxia petraea* (Jones) Coult. & Rose

COMMON NAME | None, but called rock wing parsley. *Pteryxia* is from pteris meaning wing or alternately a fern, and *petraea* meaning growing among rocks.

FAMILY (COMMON NAME) | Umbelliferae or Apiaceae (Parsley Family)

SYNONYMS | *Cymopterus terebinthinus* (Hook.) M.E. Jones var. *petraeus* (M.E. Jones) Goodrich and *C. petraeus*

DISTRIBUTION | Idaho, Oregon, California, and Coconino County, Arizona. In Grand Canyon NP it is recorded from the Hermit and South Kaibab Trails, North Rim, and South Rim.

HABITAT | Perennial herb. In pinyon pine community, 4,600 to 7,000 feet, April and May.

LOOK-ALIKES | Similar to *Aletes macdougalii*, but differs by leaves usually not all basal and bracts subtending the flower (calyx) with teeth triangular to ovate.

- Plants more than 15 cm tall
- Herbage not hairy
- Leaves pale green or gray-green
- Slender taproot
- Leaf blades 2-3 times pinnate, yellow flowers



Plant sample from
herbarium sheet.

SCIENTIFIC NAME | *Ranunculus uncinatus* D. Don

COMMON NAME | None, but may sometimes be called barbed buttercup. *Ranunculus* is the diminutive form of a Latin word *rana* meaning little frog, in reference to the generally wet habitats in which it is found, while *uncinatus* means barbed or hooked at the tip.

FAMILY (COMMON NAME) | Ranunculaceae (Crowfoot Family)

SYNONYMS | *R. bongardi* Greene var. *tenellus* (Nutt.) Greene

DISTRIBUTION | Alaska, Montana, south to Colorado, California, Mexico, and Coconino County, Arizona. In Grand Canyon NP it is known from North Rim at Kanabownits Spring, Neal Spring, Robbers Roost, and Little Dutchman Meadow (ca. 1 mile southwest of Hades Lake).

HABITAT | Perennial herb. Springs and meadows, 8,000 to 9,000 feet, July to August.

LOOK-ALIKES | None

- Stems 8–50 cm tall
- Plants slender with long branches
- Leaf blades deeply 3-cleft with divisions toothed, lobed, or entire
- Small, yellowish flowers
- Greenish-yellow, reflexed sepals
- Numerous seeds in a globose head



Plant sample from
herbarium sheet.

SCIENTIFIC NAME | *Rosa stellata* Woot. ssp. *abyssa* A. Phillips

COMMON NAME | None, but called Grand Canyon rose. *Rosa* is an ancient Latin name, *stellata* means star-shaped in reference to the stellately-arranged pubescence, and *abyssa* means of the abyss or canyon.

FAMILY (COMMON NAME) | Rosaceae (Rose Family)

SYNONYMS | None

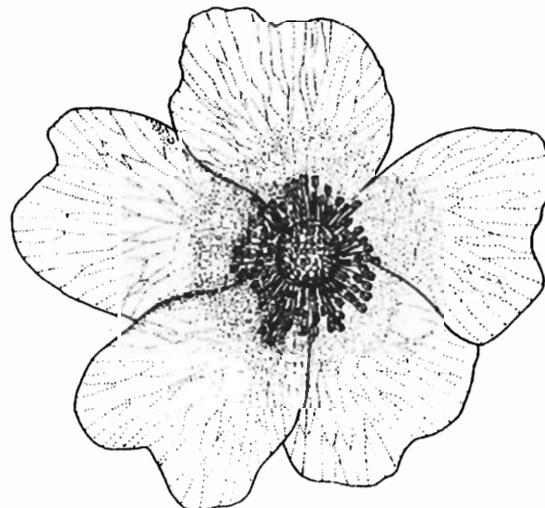
DISTRIBUTION | Endemic to Mohave and Coconino Counties, Arizona. In Grand Canyon NP it was collected once from Eremita Mesa (this location has not yet been rediscovered) and is known from Dutton Point, Havasupai Point, Fishtail Mesa and SB Point. Outside of Grand Canyon NP, it is known from the Arizona Strip District (BLM) and Navajo Nation lands along Marble Canyon.

HABITAT | Perennial, clonal subshrub. Shallow drainages, canyon rims, breccia pipes, and low limestone breaks of Kaibab Limestone in limestone and red clay soils in Great Basin conifer woodland and desertscrub, 4,500 to 7,500 feet, May and June.

LOOK-ALIKES | None

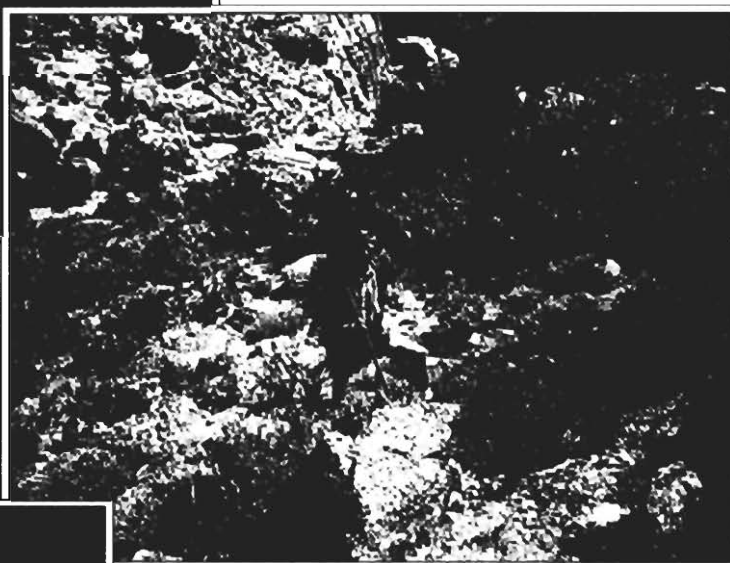


- Robust, dense bristles below the petals
- Dark pink petals
- Straight, white thorns
- Dense, stalked, glandular hairs on stem
- Leaves three-parted and wedge-shaped and turn bright red in the fall





Closeup of *Rosa stellata* ssp. *abyssa*
— BY H. HOLMGREN



Habitat — BY N. BRIAN



General view — BY H. HOLMGREN

SCIENTIFIC NAME | *Sclerocactus parviflorus* Clover & Jotter var. *intermedius* (Peebles) Woodruff & Benson

COMMON NAME | None, but may sometimes be called Glen Canyon cactus and pineapple cactus. *Sclerocactus* is from the Greek word *sclero* meaning hard or dry, while *parviflorus* means small-flowered, and *intermedius* means intermediate.

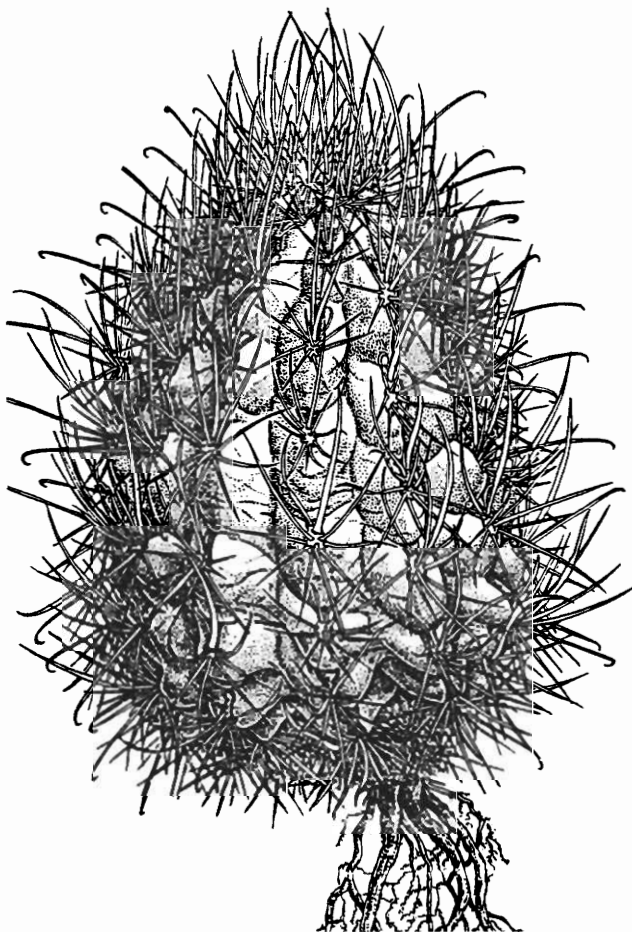
FAMILY (COMMON NAME) | Cactaceae (Cactus Family)

SYNONYMS | *Sclerocactus whipplei* (Engelm. & Bigel.) B. & R. var. *intermedius* (Peebles) L. Benson, *S. intermedius* Peebles, and *S. havasupaiensis* Clover

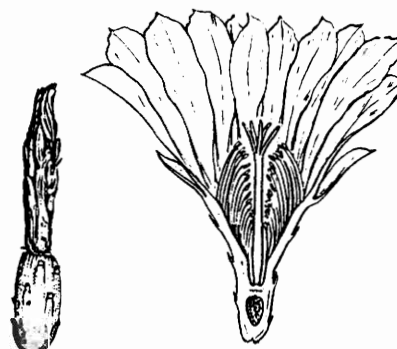
DISTRIBUTION | Variety is endemic to Mohave, Coconino, Navajo, and Apache Counties, Arizona, while the species is known from Colorado, Utah, and Arizona. In Grand Canyon NP it is reported from Little Colorado River, Havasu Canyon, Darwin Plateau below Mt. Huethwali, and the Esplanade west of Tuckup Canyon.

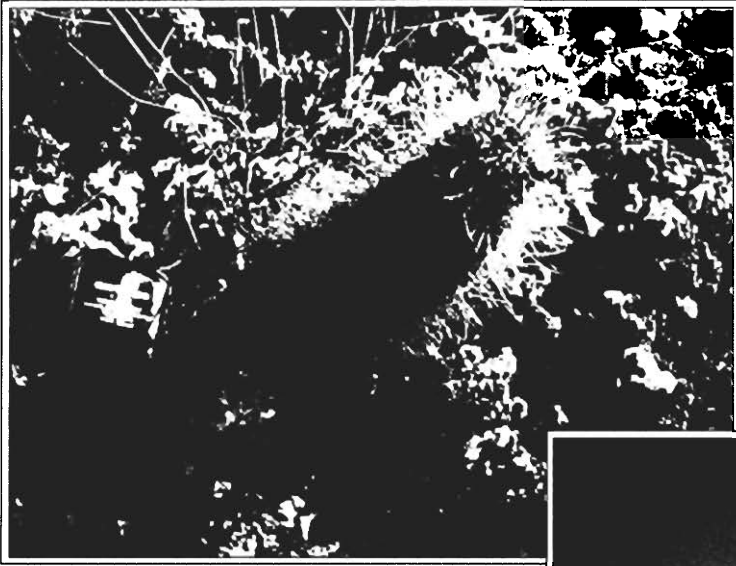
HABITAT | Succulent, perennial cactus. Sandy or gravelly soils in the desert or pinyon-juniper belt, often on red sandstone soils, 3,000 to 5,500 feet, May to June.

LOOK-ALIKES | None



- Stems 10–25 cm high and 7–15 cm in diameter
- Stems usually solitary, but may be branched or clustered
- Ribs 13–15, more or less nipped
- Spines borne on the nipples
- Central spine strongly hooked
- Flowers green, yellow, pink, white, or purple
- Red fruit covered with fringed scales





Closeup of *Sclerocactus parviflorus* var. *intermedius*
— BY N. BRIAN



Habitat — BY N. BRIAN

SCIENTIFIC NAME | *Selaginella watsonii* Underw.

COMMON NAME | Alpine selaginella and Watson's selaginella, but may sometimes be called Watson's spikemoss. *Selaginella* is the Latin diminutive of *Selago*, an ancient name for *Lycopodium*, another genera which the plants resemble. The species name *watsonii* honors Sereno Watson, 1826-1892, camp cook turned naturalist on the Clarence King 40th parallel geological survey in 1868-69. Watson later became a noted taxonomist.

FAMILY (COMMON NAME) | Selaginellaceae (Selaginella or Spike Moss Family)

SYNONYMS | None

DISTRIBUTION | California, Nevada, Oregon, Montana, Utah, and Coconino County, Arizona. In Grand Canyon NP it is reported from the North Rim locations of Kanabownits Valley, Kaibab Basin, and Robber's Roost.

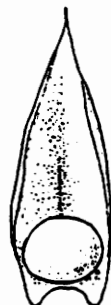
HABITAT | Perennial, mat-forming, evergreen herb. Ledges, talus slopes, rock crevices, and ravines of mountain brush, ponderosa pine, aspen, spruce-fir, lodgepole pine, krummholz, and alpine tundra communities, 7,600 to 8,300 feet.

LOOK-ALIKES | Other species of *Selaginella*, but differs by compact habit, congested leaves, and leaves with short, yellowish, smooth terminal bristles.



habit

fertile leaf



cone



sterile leaf



- Cushion-forming habit
- Moss-like plants
- Leaves minute, numerous, simple, spirally arranged in whorls
- Spore structures produced on specialized fertile leaves
- Spores of different sizes and shapes



SCIENTIFIC NAME | *Silene rectiramea* Robins.

COMMON NAME | Caryophyllaceae (Pink Family)

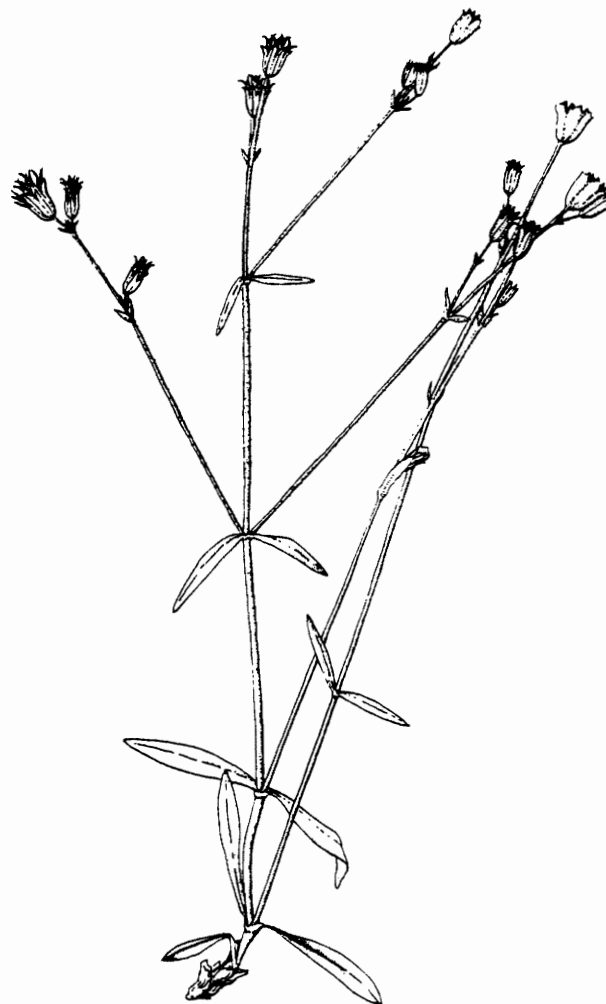
FAMILY (COMMON NAME) | None. *Silene* is often called catchfly or campion. The word may be from the mythological Silenus, intoxicated foster-father of Bacchus, who was covered with foam, in reference to the sticky secretions of many of the species, while *rectiramea* means straight branched (from *recti* meaning straight or upright and *rami* meaning pertaining to branches).

SYNONYMS | None

DISTRIBUTION | Endemic to Grand Canyon NP, Coconino County, Arizona. In Grand Canyon NP known from Waldron Basin in Hermit Canyon, Bright Angel Trail, and New Hance Trail.

HABITAT | Perennial herb. Pinyon-juniper woodland in loamy soils topped by sandstone cobbles, north facing slopes in the Toroweap Limestone and Supai Group, 5,600 to 6,800 feet, May.

LOOK-ALIKES | None, may be confused with other *Silene* species, but differs by perennial habit and petals shallowly lobed or entire.



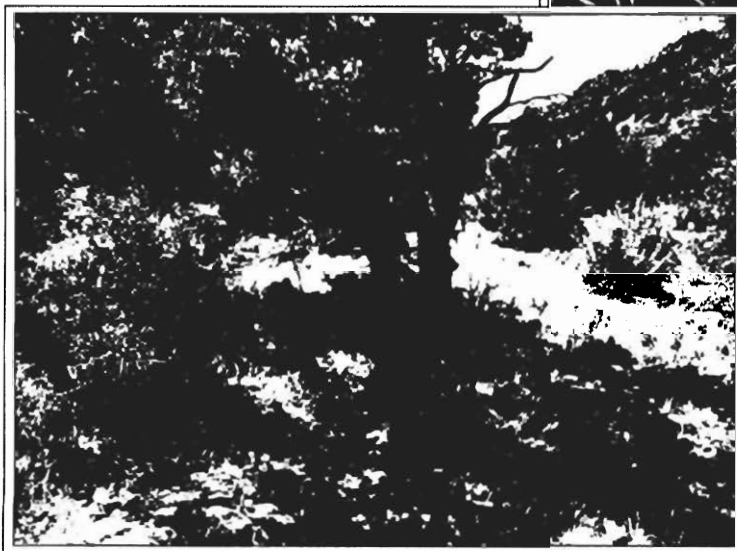
- Creamy white to lavender-pink, shallowly two-lobed petals
- Delicate, papery calyx
- Elongated, very straight branches
- Opposite, linear leaves



Closeup of *Silene rectiramea*
— BY K. WARREN



General view — BY K. WARREN



Habitat — BY K. WARREN

SCIENTIFIC NAME | *Talinum validulum* Greene.

COMMON NAME | None, but commonly called Tusayan flameflower. *Talinum* is often called fame-flower in the East and flameflower in the West. The derivation is obscure, possibly an African name for a similar plant, while *validulum* means strong, well-developed, or diminutively robust.

FAMILY (COMMON NAME) | Portulacaceae (Portulaca Family)

SYNONYMS | None

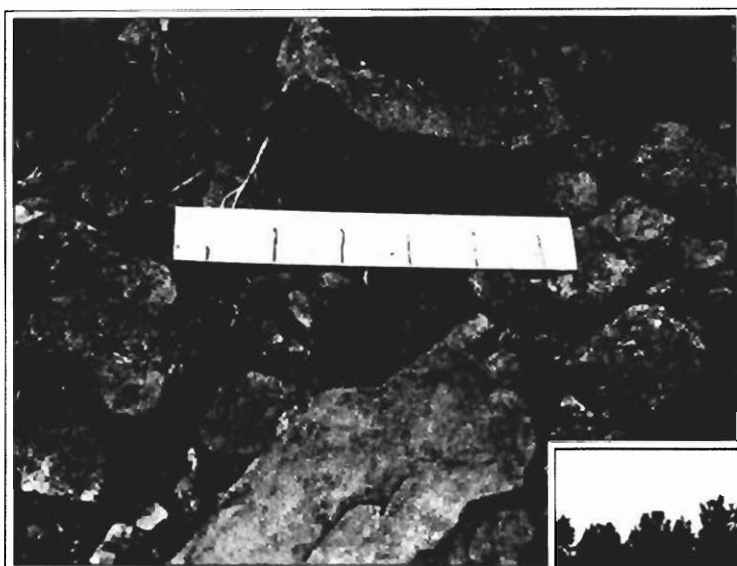
DISTRIBUTION | Endemic Coconino and Yavapai Counties, Arizona. In Grand Canyon NP it is found from Yaki Point west to Horsethief Tank on the Coconino Plateau, South Rim.

HABITAT | Perennial herb. Within Grand Canyon NP, it is known from rocky, limestone soils in shallow depression, rocky ridge tops, and bedrock outcrops in open, sunny areas within the pinyon-juniper woodland. Elsewhere it is found in flat, open meadows on heavy, rocky to clay soils of weathered basalts in ponderosa pine forests, 5,600 to 7,500 feet, June to July.

LOOK-ALIKES | Similar to *T. parviflorus*, but differs by having stamens generally numbering 10-18 and stems which die back to the root crown in late fall.



- Stamens typically 10-18
- Purplish-pink petals
- Fleshy, short leaves turn bright red in the fall
- Plant is small (less than 10 cm tall)
- Tuberous root



General view of *Talinum validulum*
— BY N. BRIAN



Habitat — BY N. BRIAN

SCIENTIFIC NAME | *Thelypodopsis purpusii* (Brandeggee) Rollins

COMMON NAME | None, but sometimes called Kearney's mustard. *Thelypodopsis* is from the Greek word meaning resembling *Thelypodium*, the Greek word for female foot, in reference to the stalk above the receptacle and *purpusii* is named for Joseph Anton Purpus, 1860-1932, an American botanist.

FAMILY (COMMON NAME) | Cruciferae or Brassicaceae (Mustard Family)

SYNONYMS | *Thelypodium vernale* Woot. & Standl., *T. purpusii* Brandeggee, *Sisymbrium kearneyi* Rollins

DISTRIBUTION | Texas, New Mexico, Mexico, and Mohave County, Arizona. In Grand Canyon NP it is known from west fork of 150 Mile (Upset) Canyon, and Saddlehorse Canyon. It is also found just north of the park boundary in the Tuweep or Toroweap region in Brady Canyon.

HABITAT | Annual herb. Shady areas at the base of cliffs, near large boulders, or in the shade of trees or shrubs, in sandstone or limestone soils, 4,000 to 5,000 feet, May.

LOOK-ALIKES | This is the only annual mustard of this group (*Thelypodopsis* and *Thelypodium*), but could be confused with two species of biennial *Thelypodium* (*T. integrifolium* and *T. wrightii*) which are found near seeps, springs, and along creeks.

- Strongly ear-shaped leaves clasp the stem
- Weakly developed and deeply lobed rosette of basal leaves
- Upper leaves entire
- Anthers of paired stamens exerted and relatively short, 1mm long
- Petals 4-6 mm long, white to light lavender
- Ascending fruits
- Fruiting plants 30-70 cm tall, single stemmed from base, but may be branched above

SCIENTIFIC NAME | *Thelypteris puberula* (Baker) Morton var. *sonorensis* A. Reid Smith

COMMON NAME | None, but sometimes called Aravaipa wood fern and Sonoran maiden fern. *Thelypteris* means female fern, from *thely* meaning female or maiden and *pteris* meaning fern, *puberula* means minutely pubescent with scarcely elongate hairs, and *sonorensis* means of or from Sonora, Mexico.

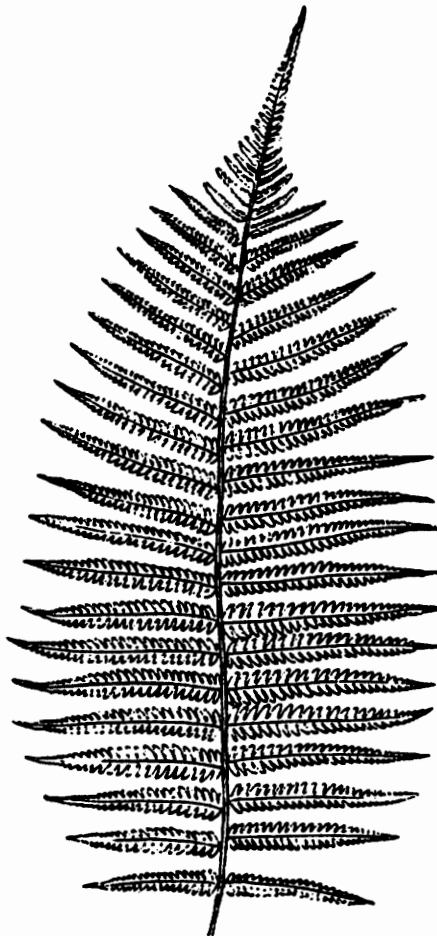
FAMILY (COMMON NAME) | Thelypteridaceae (Thelypteris or Wood Fern Family)

SYNONYMS | *Cyclosorus puberula*, *Dryopteris feei* C. Chr., and *Lastrea augescens* (Link) J. Smith misapplied.

DISTRIBUTION | Southern California, Mexico, and Yavapai, Graham, Pinal, Pima and Coconino Counties, Arizona. In Grand Canyon NP it is reported only from Showerbath Spring in Kanab Canyon (Jett in 1970) at 2,700 feet.

HABITAT | Perennial fern. Moist areas, streams, and cliffs with dripping springs, 2,500 to 3,000 feet.

LOOK-ALIKES | None



- Minutely hairy with tiny, needle-shaped hairs on top of blades
- Thick, long-creeping, scaly prostrate or underground roots which produce shoots
- Fronds light green, papery to leathery

RARE

THELYPTERIS PUBERULA VAR. SONORENSIS

SCIENTIFIC NAME | *Tricardia watsonii* Torr.

COMMON NAME | Three hearts. *Tricardia* is from the Greek words *tri* meaning three and *cardia* meaning heart, in reference to the calyx of three heart-shaped bracts. The species name *watsonii* honors Sereno Watson, 1826-1892, camp cook turned naturalist on the Clarence King 40th parallel geological survey in 1868-69. Watson later became a noted plant taxonomist.

FAMILY (COMMON NAME) | Hydrophyllaceae (Water Leaf Family)

SYNONYMS | None

DISTRIBUTION | Utah, Nevada, California, and Mohave County, Arizona. In Grand Canyon NP it is reported from SB Point and near Muav Caves (CRM 274).

HABITAT | Perennial, low herb. Joshua tree, creosote bush, and other warm and cool desert shrub communities, in shady east facing slopes, in rocky to gravelly loam, 1,400 to 1,500 feet, March to April.

LOOK-ALIKES | None

- Woody, branching prostrate or underground root which produces shoots
- Upper part of root with leaf bases from previous years
- Basal rosette of lance-shaped leaves
- Few, reduced, alternate leaves on stems
- Flower narrowly bell-shaped, white with purple ring around throat and onto the lobes
- Three heart-shaped outer bracts

RARE

TRICARDIA WATSONII

SCIENTIFIC NAME | *Vanclevea stylosa* (Eastw.) Greene.

COMMON NAME | None.

FAMILY (COMMON NAME) | Compositae or Asteraceae (Aster Family)

SYNONYMS | None

DISTRIBUTION | Utah and Apache, Navajo, and Coconino Counties, Arizona. The genus is monotypic, meaning there is only one species of the genus. It is a Colorado Plateau endemic. In Grand Canyon NP it is reported only from CRM 1.5 R in upper Marble Canyon just below the Paria River confluence.

HABITAT | Perennial shrub. Sandy areas in four-wing saltbush, Mormon tea, sand dropseed, Indian ricegrass, blackbrush, and juniper communities, around 3,800 feet, September.

LOOK-ALIKES | Similar to *Chrysothamnus* (rabbit brush) species, but differs by larger flowers, linear, and curved leaves. The hairs, or pappus, on top of the seed, or akene, are not bristle-like.

- *Sticky branches*
- *Bark tan to white or gray black in age*
- *Leaves linear and curved*
- *Yellow disk flowers*

RARE

VANCLEVEA STYLOSA

SCIENTIFIC NAME | *Yucca whipplei* Torr.

COMMON NAME | Our Lord's candle, but also called Whipple Yucca. *Yucca* may be from the Haitian word *yuca*, the root of a casava or manihot plant, from which tapioca is made, perhaps because the *Yucca* has similar large roots, and *whipplei* honors Lt. Amiel Wicks Whipple, 1818-1863, who commanded the Pacific Railroad Survey along the 35th parallel to Los Angeles in 1853-1854.

FAMILY (COMMON NAME) | Agavaceae (Agave Family)

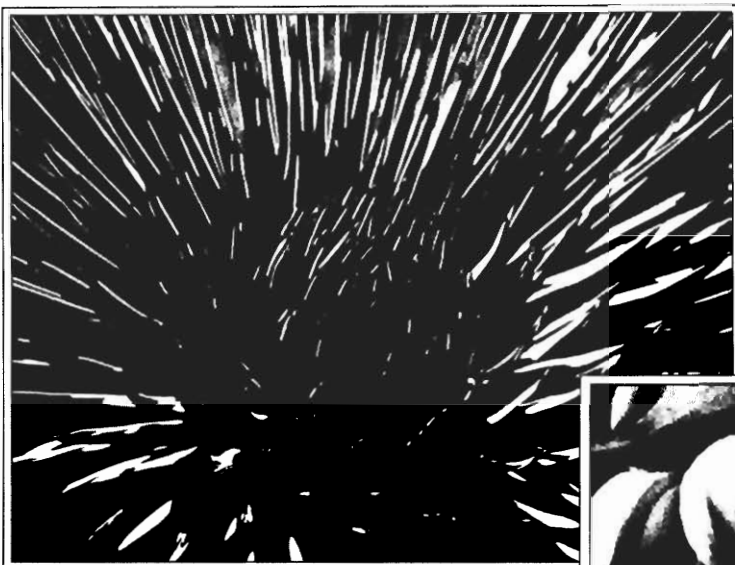
SYNONYMS | *Yucca newberryi* McKelvey

DISTRIBUTION | California and Mohave County, Arizona. In Grand Canyon NP it is reported from Stone Creek (CRM 132), the Colorado River between Fern Glen (CRM 168) downstream to Columbine Falls (CRM 274), Lava Falls Trail, and Tuckup Trail.

HABITAT | Perennial succulent. Shelves and steep desert talus slopes at lower elevations in the Inner Canyon, on granite, sandstone, and limestone derived soils, 1,500 to 4,000 feet, March to April.

LOOK-ALIKES | None, but may be confused with other *Yucca* species. It differs by having no free marginal fibers on the leaves, leaf margins finely serrate, delayed blooming until the plant is mature, and subsequent death after flowering once, much like similar appearing *Agave* species. It could also be mistaken for *Dasyllirion wheeleri* (desert spoon, sotol), a species not found in Grand Canyon NP, which has separate male and female plants and smaller flowers.

- Solitary rosettes, dying after flowering and fruiting
- Leaves in a dense, basal rosette
- Leaves sage-green to bluish in color, tip extremely sharp and margins finely serrate
- Flower stalk about 2.8 m in height
- Flowers cream colored with purple tips, pendant, and pleasingly fragrant



Closeup of *Yucca whipplei* — BY K. WARREN



Close-up of *Yucca whipplei* — BY K. WARREN



Habitat — BY K. WARREN

ACKNOWLEDGEMENTS | Grand Canyon National Park Foundation provided funds for the publication of this rare plant guide, through a grant from the 1999 Annual Grants Program. The Staff of the Fire and Aviation Division and Ralph Jones and Laura Douris from the Division of Interpretation, Grand Canyon NP, gave encouragement for the publication of this guide. Thanks is given to the many individuals who provided illustrations and photographs (see credits following). Jessica of Sullivan Santamaria Design (Flagstaff, Arizona) prepared the final version, making it a professional document.

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ALETES MACDOUGALII SSP. MACDOUGALII | Illustration from Theobald, W. L. C. C. Tseng, and M.E. Mathias, 1963. A revision of *Aletes* and *Neoparrya* (Umbelliferae). 16:307, photographs by Kathy Warren.

ALLIUM BIGELOVII | None.

AMSONIA TOMENTOSA VAR. TOMENTOSA | Illustration from Hickman, J.C. (editor). 1993. The Jepson manual of higher plants of California. University of California Press, Berkeley, p. 173.

ANTIRRHINUM KINGII | Illustration from Hickman, J.C. (editor). 1993. The Jepson manual of higher plants of California. University of California Press, Berkeley, p. 1019.

ANULOCAULIS LEISOLENUS VAR. LEISOLENUS | Illustrations from Spellenberg, R. 1993. Taxonomy of *Anulocaulis* (Nyctaginaceae). Sida 15(3): p. 375 and 377.

ARABIS GRACILIPES | None.

ARCTOMECON CALIFORNICA | Illustration by Margaret Kurzius, from Holland, J. S., W. E. Niles, and D. R. Schramm. 1980. A guide to the threatened and endangered vascular plants of the Lake Mead National Recreation Area. National Park Service, University of Nevada, Las Vegas, 20 pp, photographs by Arthur M. Phillips, III.

ARGEMONE ARIZONICA | Illustration from Ownby, G. B. 1958. Memoirs of the Torrey Botanical Club, p. 92, photographs by Kathy Warren.

ASCLEPIAS VIRIDIFLORA VAR. LANCEOLATA | None.

ASTRAGALUS CREMNOPHYLAX VAR. CREMNOPHYLAX | Illustration by Pamela Lunge, photographs by Kathy Warren and Peter Rowlands.

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BETULA OCCIDENTALIS | Illustrations from Lamb, S.H. 1982. Woody plants of the South West. The Sunstone Press, Santa Fe, pg. 20.

BOEHMERIA CYLINDRICA | None.

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CAMISSONIA CONFERTIFLORA | Illustration from Hickman, J.C. (editor). 1993. The Jepson manual of higher plants of California. University of California Press, Berkeley, p. 785, photographs by Kathy Warren.

CAMISSONIA SPECUIGOLA SSP. HESPERIA | None.

- GAMISSONIA SPECUGICOLA SSP. SPECUGICOLA | None.
- CAREX SCIRPOIDEA VAR. CURATORUM | Illustration by Kaye H. Thorne from Atwood, D. et al. 1991. Utah endangered, threatened and sensitive plant guide. U.S. Forest Service and others, photograph by Nancy Brian.
- CASTILLEJA KAIBABENSIS | Illustration from Holmgren, N. H. 1973. Five new species of *Castilleja* (Scrophulariaceae) from the Intermountain region. Bulletin of the Torrey Botanical Club 100:88, photograph by Kathy Warren.
- CHEILANTHES VILLOSA | Illustration from Mickel, J. T. 1979. How to know the ferns and fern allies. Wm. C. Brown Company, Dubuque, p. 91, photographs by Nancy Brian.
- CROSSOSOMA PARVIFLORUM | Illustration by Lucretia B. Hamilton from Benson, L. 1981. Trees and shrubs of the southwestern deserts. University of Arizona Press, Tucson, p. 268.
- CRYPTANTHA CAPITATA | None.
- DRABA ASPRELLA VAR. KAIBABENSIS | Photographs by Kathy Warren.
- DRABA ASPRELLA VAR. STELLIGERA | None.
- ENCELIA FRUTESCENS VAR. RESINOSA | Illustration from Congquist, A., et al. 1994, Intermountain Flora, Volume Five, pg 39., photographs by Kathy Warren.
- EPIPACTIS GIGANTEA | Illustration from Cronquist, A., et al. 1994. Intermountain Flora, Volume Six, pg. 551, photographs by Nancy Brian and Kathy Warren.
- ERIGERON LOBATUS | None.
- ERIOGONUM HEERMANNII VAR. SUBRACEMOSUM | Photographs by Kathy Warren.
- ERIOGONUM ZIONIS VAR. COCCINEUM | Photographs by Holger Hunger.
- EUPHORBIA AARON-ROSSII | Illustration by Bobbi Angell from Holmgren, A. and N. Holmgren. 1988. *euphorbia aaron-rossii* (Euphorbiaceae), a new species from Marble and Grand Canyons of the Colorado River, Arizona. Brittonia 40(4):358, photographs by Daniela Roth.
- FLAVERIA MCDUGALLII | Illustrations by Wendy Hodgson from Theroux, M., D. J. Pinkava, and D. J. Keil. 1977. A new species of *Flaveria* (Compositae: Flaveriinae) from Grand Canyon, Arizona. Madrono 24(1): 14, photographs by Kathy Warren.
- FRAXINUS CUSPIDATA VAR. MACROPETALA | Illustrations from Lamb, S.H. 1982. Woody plants of the South West. The Sunstone Press, Santa Fe, photograph from Phillips III, A. M. 1979. Grand Canyon wildflowers. Grand Canyon Natural History Association, Grand Canyon, p. 26.
- GALIUM BIFOLIUM | None.
- HAPLOPAPPUS CERVINUS | Illustration from Hall, H. M. 1928. The genus *Haplopappus*, a phylogenetic study in the Compositae. Carnegie Institute of Washington, p. 294.
- HAPLOPAPPUS SALICINUS | Photographs by Kathy Warren.
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- OSTRYA KNOWLTONII | Illustration by Kaye H. Thorne from Atwood, D. et al. 1991. Utah endangered, threatened and sensitive plant guide. U.S. Forest Service and others. Photographs by Nancy Brian.
- PARONYCHIA SESSILIFLORA | Photographs by Nancy Brian.
- PENSTEMON PSEUDOPUTUS | Illustration from Cronquist, A. et al. 1984. Intermountain Flora, Volume 4, pg. 429.
- PENSTEMON RYDBERGII | Illustration from Cronquist, A. et al. 1984. Intermountain Flora, Volume 4, pg. 391.
- PHACELIA FILIFORMIS | Photograph by Wendy Hodgson.
- PHYLLODOCE EMPETRIFORMIS | Illustration from Hulten, E. 1968. Flora of Alaska and neighboring territories, a manual of vascular plants. Stanford University Press, Stanford, p. 722.
- PRIMULA SPECUICOLA | Illustration from Kelso, S. 1991. Taxonomy of *Primula* sections *Aleritia* and *Armerina* in North America. *Rhodora* 93(873):88, photographs by Kathy Warren and Nancy Brian.
- PTERYXIA PETRAEA | None.
- RANUNCULUS UNCINATUS | None.
- ROSA STELLATA SSP. ABYSSA | Illustration by Pamela Lunge, photographs by H. Holmgren and Nancy Brian.
- SCLEROCACTUS PARVIFLORUS VAR. INTERMEDIUS | Illustration by Lucretia B. Hamilton, from Benson, L. 1982. The cacti of the United States and Canada. Stanford University Press, Stanford, photographs by Nancy Brian.
- SELAGINELLA WATSONII | Illustration from Mickel, J. T. 1979. How to know the ferns and fern allies. Wm. C. Brown Company, Dubuque, p. 194.
- SILENE RECTIRAMEA | Photographs by Kathy Warren, illustration from Arizona Game and Fish Department, Heritage Data Management System.
- TALINUM VALIDULUM | Illustration by unknown illustrator, photographs by Nancy Brian
- THELYPODIOPSIS PURPUSII | None.
- THELYPTERIS PUBERULA VAR. SONORENSIS | Illustration from Mickel, J. T. 1979. How to know the ferns and fern allies. Wm. C. Brown Company, Dubuque, p. 205.
- TRICARDIA WATSONII | None.
- VANCELEVEA STYLOSA | None.
- YUCCA WHIPPLEI | Photographs by Kathy Warren.

