

UTAH Master Naturalist

Desert Plants Field Book

Mark Larese-Casanova



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Revised 2014- Minor corrections and additions were made to this edition.

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How to Use this Field Book:

The Utah Master Naturalist Desert Plants Field Book is meant to provide you with an annotated look at some of the common, rare, and invasive plants of Utah's desert ecosystems. This book provides photographic examples of each species along with useful information on the species' life history and ecology. When used along side a detailed field guide, this book will help you learn about plants during your desert explorations. Have fun!

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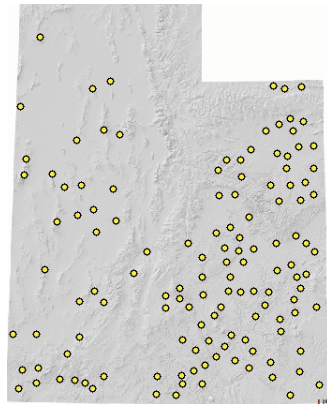
All photos are courtesy of Mark Larese-Casanova (Utah State University) and various public open sources, unless otherwise noted. All plant maps are courtesy of the Digital Atlas of the Vascular Plants of Utah authored by Beverly J. Albee, Leila M. Shultz, and Sherel Goodrich, published by the Utah Museum of Natural History, 1988.

Galleta grass

Pleuraphis (or *Hilaria*) *jamesii*



- Perennial shrub-like grass
- Grows in a wide variety of soils
- Grows quickly, long-lived, and highly drought tolerant
- Zigzag stem remains after spikelets fall
- Twisted and curled leaves rise from base
- Valuable forage crop and for erosion control



Galleta grass is a clumpy, native grass that is highly branched, giving it a shrub-like appearance. It produces shallow tillers, or rhizomes, that extend radially from the base of the plant causing its clumped growth. It grows fast (from 3 to 20 inches tall), taking advantage of periodic rains, is long lived, and is very drought tolerant. It occurs on dry, open, sandy and rocky flats, as well as on sand dunes.

Galleta grass produces curled leaves at the base of the plant and 3-inch spikelets that are arranged in groups of three on a zigzagged stem. These spikelet clusters fall off when mature, leaving a persistent zigzagging seed stalk.

Galleta grass is an important range grass in the foothills and deserts of Utah, ranging from 2,500 to 7,500 feet in elevation. It grows in a variety of soil types, but is most abundant on fine textured soils. It is a desirable forage plant for livestock, and is resistant to heavy grazing and trampling. Because of this, galleta grass is considered an excellent plant for erosion control.

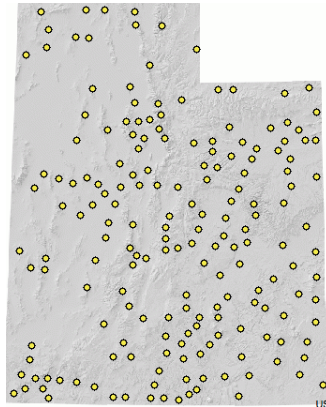
Indian rice grass

Achnatherum (or *Oryzopsis*) *hymenoides*



Indian rice grass, the State Grass of Utah, is a 1 to 2.5 foot tall erect bunchgrass that reproduces from seeds and tillers (shoots growing from the base of the stem). Indian rice grass grows at elevations between 3,000 and 10,000 feet and is drought tolerant, making it one of the most widely adapted native grasses in Utah. Indian rice grass grows in a variety of soils; however, it doesn't grow well in wet soils. The inflorescence (flowering structure) of Indian rice grass consists of a loose panicle with hair-like branches that contain spikelets with one floret at the end of the branch. This structuring allows the seeds to remain on the grass blades, providing excellent forage for upland game birds and livestock. Several Native American tribes ground the plump seeds into flour. Indian rice grass is dependent on early season moisture for the regulation of normal growth and food storage cycles.

- Perennial grass, 1-2.5 feet tall
- Distinct inflorescence
- Seeds remain on plant
- Dominant in large desert and semi-arid communities
- Important forage, seeds eaten by upland game birds
- High-protein grain source for Native Americans
- State grass of Utah



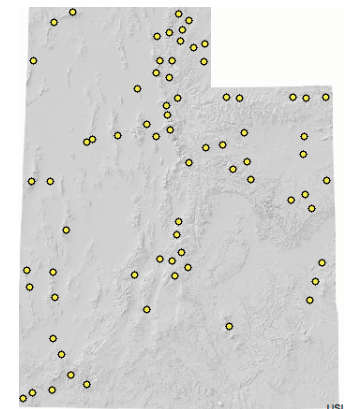
Great Basin wildrye

Elymus cinereus



Great Basin wildrye is a native perennial bunchgrass that grows up to 6 feet tall. The bunches are 1 to 3 feet in diameter and reproduce from seeds and thick tillers that can be up to 10 inches long. It has flat, coarse blades and stiff roots. Great Basin wildrye grows on moist or dry riverbanks, ravines, slopes, and plains between 4,500 and 10,000 feet in elevation. It prefers areas with extra moisture such as riparian areas or ephemeral ponds. It is also well adapted to a variety of soil types, including moderately saline soils. Great Basin wildrye is fire tolerant and recovers well from the effects of fire. It is also suitable habitat for small mammals and birds as well as a good source of forage for livestock and wildlife. However, it does not tolerate heavy grazing. It provides outstanding surface erosion control and soil stabilization due to its stiff comb-like roots. These roots were commonly used by Native Americans as hair brushes.

- Robust perennial green grass that grows to 6 feet
- Grows in a variety of moist or dry sites
- Prefers extra moisture near wetlands
- Good forage for cattle, but easily overgrazed
- Important winter forage for elk and deer, food and shelter for birds and small mammals
- Native Americans used the stiff roots as hair brushes

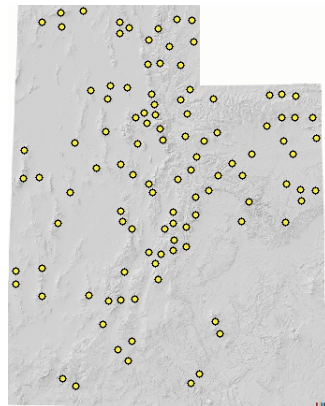


Bluebunch wheatgrass

Elymus spicatus



- 1-2 feet tall bunchgrass
- Bright green to blue green tufted foliage
- Most abundant in dry, coarse soils
- Once comprised more than half of the area between the Pacific NW and Utah foothills
- Important of forage plant
- Where grazed by livestock, abundance is an indicator of well-managed range



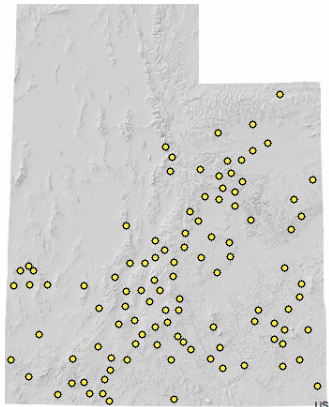
Bluebunch wheatgrass is a 1 to 2 foot tall native grass that stays green well into the summer. It has bright green to blue green tufted foliage that begins growing in April with each blade reaching up to 6 inches long. Bluebunch wheatgrass reproduces from seeds and tillers, and regrowth occurs after fall rain. Bluebunch wheatgrass grows between 4,000 and 9,000 feet in elevation and is found anywhere from mountain slopes to desert valleys. It grows in a wide variety of soils, but prefers well-drained coarse, textured soils. Bluebunch wheatgrass is one of the more useful and widely distributed grasses in Utah and once covered more than half of the area between the Pacific Northwest and the foothills of Utah. As a valuable forage for wildlife and livestock, an abundance of this grass is viewed as an indicator of healthy rangeland.

Blue grama grass

Bouteloua gracilis



- Densely tufted grass with curly leaves forming a sod
- Shade intolerant, and prefers summer rain to winter snow
- Seed stalks are 8-20 inches tall with curled comb-shaped seed heads
- Important as soil stabilizers
- Valuable summer forage for livestock and wildlife



Blue grama grass is a native, low-growing grass occurring from 3,500 to 8,000 feet in elevation. Found on open plains, mesas, and foothills in a wide variety of well-drained soils, it prefers abundant sun and summer rain for the 6 to 20 inch tall seed stalks to grow. The seed head is up to 2 inches long, curved, and comb-shaped at maturity. Its narrow, basal blades can sometimes be curled, forming a rough sod. It starts growing in May and reproduces from tillers. Blue grama grass is an important soil stabilizing species; particularly for reducing wind and water erosion. It is good summer forage for livestock and wildlife. It withstands relatively heavy grazing and is drought resistant.

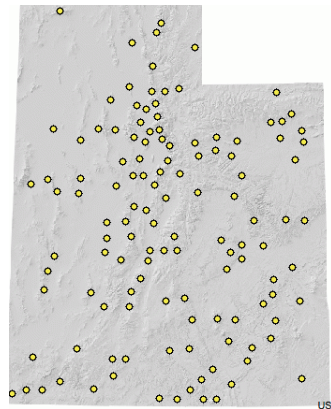
Cheatgrass

Bromus tectorum



Cheatgrass is a weedy winter annual that was introduced to America from Eurasia. It grows from 2 to 24 inches tall and is typically rusty-red to purple at maturity. It produces seeds that germinate in early spring or late fall and grow rapidly, making it an aggressive weed. Cheatgrass is found on all types of topography from 2,500 to 13,000 feet in elevation because of its wide adaptability. It grows in many soil types with the exception of extremely wet or saline soils, and grows rampantly where there is little competition from other native or non-native species. Cheatgrass is an early colonizer of disturbed sites, including overgrazed or burned areas. It produces soft green leaves that entice livestock to feed on it; however, the fruit produced by cheatgrass has tiny spikelets and awns that can injure an animal's mouth, ears, eyes, and feet. Alternatively, it provides food and shelter for some upland game birds and rodents.

- Old world introduced winter annual weed
- Abundant in any aspect and exposure
- Quickly invades disturbed and overgrazed sites
- Soft, vivid green leaves
- Flower stalks bear stiff fruit injurious to animal's mouth, ears, and eyes

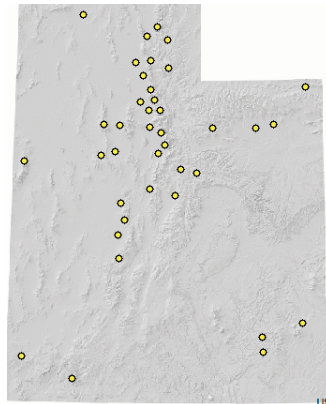


Bulbous bluegrass

Poa bulbosa



- Short-lived perennial weed
- Grows well in heavily disturbed areas
- Only member of the grass family arising from bulbs
- Introduced as potential forage but becoming a noxious weed
- Consumed by livestock, ungulates, birds, and small mammals



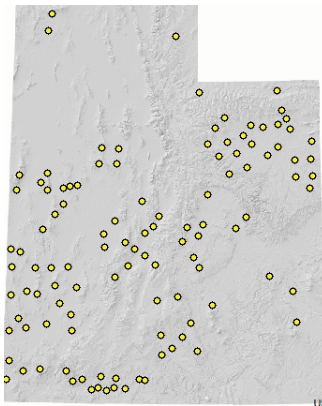
Bulbous bluegrass is an introduced species from Eurasia. This 2 foot tall perennial weed is the only member of the grass family that reproduces from bulblets at the stem of the plant. The bulbs require a significant dormant period in order for germination to occur. The leaves of bulbous bluegrass are basal and can sometimes be curled. It can grow on unproductive sites, along trails, roadsides, and other disturbed areas at elevations between 4,000 and 10,000 feet in a variety of soils. Bulbous bluegrass has been used in the seeding of eroded areas and as forage for livestock. It is consumed by livestock, wildlife, and birds.

Gilia

Gilia spp.



- Grows 6 to 12 inch tall on open hillsides
- Tolerant of saline soils
- White to scarlet blooms in a small cluster from late spring to summer
- Members of the phlox family are some of our showiest wildflowers
- Lighter colored Gilias attract moths, brighter colors attract hummingbirds



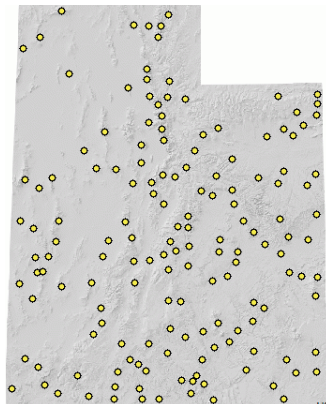
Gilia are native herbaceous plants growing 1 to 3 feet tall in sandy open areas. Gilia are members of the Polemoniaceae (phlox) family which are some of the showiest wildflowers in the desert. Gilia has a compact cluster of white to scarlet flowers at the top of the stems. These clusters are 2 to 3 inches wide and many species have blue pollen on the stamens. Flowers bloom during summer months with lighter colored flowers attracting moths, and brighter colored flowers attracting hummingbirds that pollinate them. Gilia is not shade tolerant, but is very drought tolerant.

Evening primrose

Oenothera spp.



- Grows on dry, sandy hillsides and washes in full sun
- Flowers at night, spring to summer
- Large white flowers are visited by night pollinators
- Used as an ornamental landscape plant



Evening primrose is a herbaceous plant that grows on dry sandy or gravelly hillsides. It can have a strong taproot and grow basal leaves. It produces large (up to 4 inches across) white flowers that bloom at night and are pollinated by moths and other nighttime pollinators. Each stemless flower has four petals and four sepals that are extended above the leaves on long floral tubes. Some of the flowers can be very fragrant. Evening primrose blossoms beginning in spring and continues throughout summer, as it requires full sun to produce flowers.

Sego lily

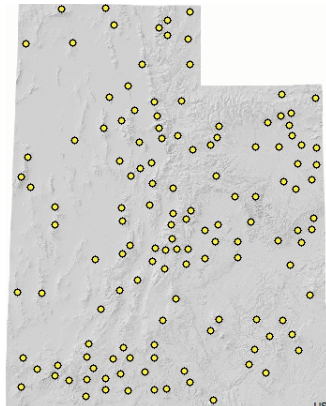
Calochortus nuttallii



Sego lily is native to Utah and is known as one of the most beautiful flowers of the semi-desert, though it dries up shortly after blossoming. It grows 8 to 16 inches tall and has a single white goblet-shaped flower that can be up to 3 inches across with red and yellow markings at the petal bases. This flower is supported by a thin, fragile stem and has a few grass-like basal leaves.

The sego lily thrives in dry, sandy soils on open sagebrush foothills and in valleys and ponderosa pine stands at mid elevations. The bulbs of this flower are gathered and eaten by rodents. Native Americans considered the bulb a delicacy and taught Mormon pioneers to harvest it as food, resulting in the Sego lily's designation as the Utah State Flower.

- Grows 8 to 16 inches tall, with few grass-like basal leaves
- White flowers in late spring
- Usually grows on foothills to higher elevations
- Edible bulb is gathered and eaten by rodents, and was considered a delicacy by Native Americans

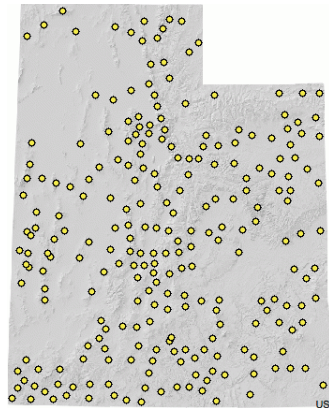


Indian paintbrush

Castilleja spp.



- Grows 8-16 inches tall
- Pale yellow, red, or purple leafy bracts that surround an inconspicuous flower
- Grows on dry gravelly foothills and canyon hillsides
- Usually a parasite on other plants, such as sagebrush



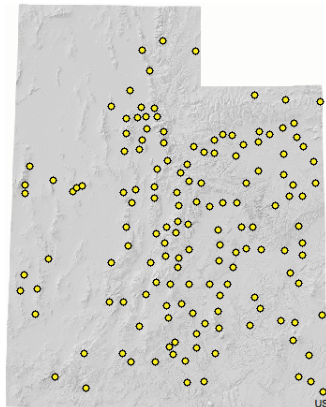
Indian paintbrush is a native forb growing 8 to 10 inches tall. It is widespread throughout Utah, found in the desert, in subalpine meadows, and anywhere in between. It grows in a variety of soils, but does especially well in dry, gravelly loams. Indian paintbrush flowers are unnoticeable and are surrounded by colorful, leafy bracts in a variety of colors from pale yellow, orange, or red, to deep purple. Some species of indian paintbrush are known to be a root-parasite for other plants (i.e. sagebrush). It is not a good forage for livestock, leaving its main importance as an aesthetic value.

Globemallow

Sphaeralcea spp.



- Grows on disturbed gravelly, rocky foothills and washes
- Yellow/orange flower spring and summer
- Highly drought tolerant, drops leaves
- Eaten by almost all herbivores
- Native Americans used it to treat burns



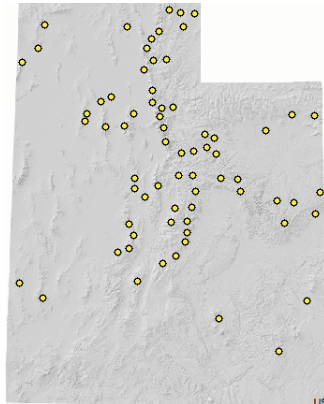
Globemallow is a native forb found at elevations from 3,500 to 9,000 feet. It grows in a broad range of soils on disturbed sites. Reaching up to 30 inches in height, globemallow's hairy erect stems support palmate (having three lobes) shaped leaves that are covered in star-shaped hairs, giving the leaves a sandpaper-like texture. Globemallow blossoms in summer months, producing orange, red, or pinkish flowers. It is quite drought resistant, losing its leaves during times of water stress, and may increase in size during drought and overgrazing. It is generally eaten by all herbivores and is an important part of the diet of domestic livestock. Native Americans chewed on globemallow turning it into a paste that was used on burns and external sores.

Hawksbeard

Crepis acuminata



- 8-28 inch perennial with a taproot
- Yellow flowers bloom spring to summer
- Grows on foothills to canyon hillsides
- Fruit a handsome salmon color
- Native Americans ate the leaves raw



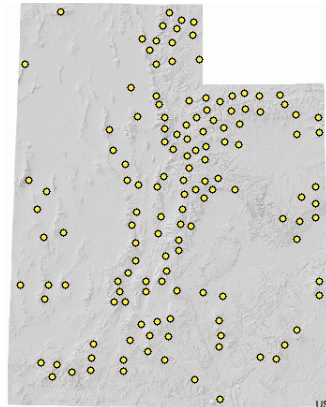
Hawksbeard is a widespread, native forb that grows up to a height of 28 inches. It occurs on dry sites in sagebrush communities and in coniferous forest areas that have well-drained soils. Hawksbeard has a taproot and one to three leafy stems covered with cottony hairs. It flowers in summer months, producing a loose, flat-topped cluster of 20 to 100 flower heads comprised of yellow rays. Its leaves are between 4 and 16 inches long and pinnately lobed (a leaf that has a central axis or stem with parts branching off it), and also covered in hair. Hawksbeard produces salmon colored fruits with slender white hairs at the tip. Native Americans ate the leaves of hawksbeard raw.

Yarrow

Achillea millefolium



- 1-3 ft.-tall forb that grows on plains and foothills to higher elevations
- Small, fern-like leaves
- White, flat-topped flower cluster in summer
- Heavily used for medicinal qualities throughout history



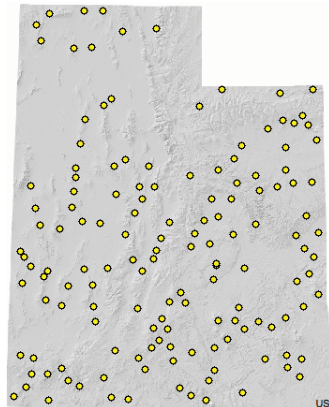
Yarrow is a native, 1 to 3 foot tall forb that grows in loose clusters. Yarrow occurs on sagebrush plains, pastures, roadsides, and disturbed sites in the semi-desert up to subalpine areas. Its stems are covered in dense wooly hairs and its leaves are fern-like. It blossoms in spring, producing flat-topped clusters of pinkish-white flowers. Yarrow reproduces from seeds and rhizomes, which grow best in sandy and gravelly loam soils. Yarrow has been used for many medicinal purposes throughout history to relieve earaches, toothaches, headaches, to reduce swelling and itching, and as an eyewash, cold remedy, tonic, and laxative.

Fleabane daisy

Erigeron spp.



- Common native perennial
- Grows up to 24 inches tall
- Flowers consist of a yellow disk with white to purple rays
- Similar in appearance to asters



Fleabane daisy is a native perennial that is heavily branched. It grows in open, sandy disturbed areas from 3,000 to 9,000 feet in elevation. Fleabane daisy grows up to 24 inches tall and flowers in summer months producing pink, white, or blue flowers. The 1-inch flower head is located at the tips of branches and is comprised of a yellow disk with colored rays expanding outward without overlapping. The stem and branches of fleabane daisy are covered in grayish hairs. Fleabane daisy is similar to species of aster; however, asters generally have reddish to violet rays on the flower head.

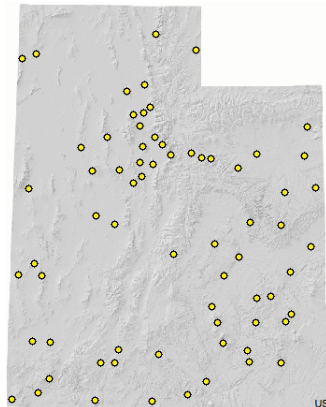
Russian thistle

Salsola spp.



Russian thistle, or tumbleweed, is a non-native plant from Eurasia that has become a noxious weed in the western United States. This winter annual is tolerant of highly alkaline soils and is very drought tolerant, making it successful in areas of Utah where many other plants cannot survive. Russian thistle grows between 1 to 3 feet tall and its branches grow round in shape. Reproducing by seeds, it is found in overgrazed pastures and disturbed sites. While young, this plant is green and succulent, as it matures it becomes ridged and spiny. Because of this, Russian thistle is useful as livestock forage when the plant is young, but can be harmful because of sharp pointed leaves that form as it matures. Russian thistle does well in dry places, but does not compete well with other plant species. When Russian thistle reaches full maturity, the autumn and winter winds break the base of the plants and blow them across the landscape; thus scattering seeds as they tumble along (giving it the name “tumbleweed”). During the Dust Bowl era, Russian thistle hay was the primary feed for livestock, as other crops failed, and is credited with saving the beef cattle industry.

- Annual or winter annual weeds
- Tolerant of highly alkaline soils and drought conditions
- Succulent at first, but then rigid and spiny
- Winds dislodge plants, which tumble and disperse seeds, creating tumbleweeds
- Useful forage for livestock when plants are young
- Seeds can be ground into meal

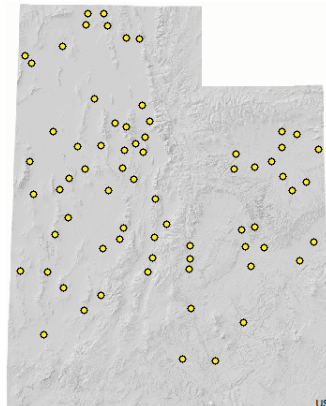


Halogeton

Halogeton glomeratus



- Short forb with red/white small, green succulent leaves
- Very salt tolerant
- Imported annual weed
- Seeds have varying rates of germination (immediately to 10 years)
- Poisonous to livestock
- Outcompeted by healthy range plants; abundance may indicate overgrazing



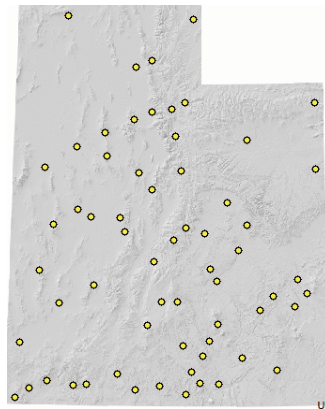
Halogeton is a non-native summer annual that grows from 3 to 12 inches tall. The stems of this forb are red when young and turn white/yellow as it matures. Halogeton stems branch from the base of the forb and grow vertically. Its flowers are small and unnoticeable, and its leaves are fleshy and succulent with a sharp point on the end. Halogeton reproduces from either a black seed that germinates quickly or a brown seed with a delayed germination (lasting for 10 years or more). Halogeton is very salt tolerant, making it common in dry deserts, overgrazed prairies, and other disturbed areas where the soils are alkaline or saline. Quickly after its introduction, halogeton became a serious weed on the rangelands of Utah. Forage value for livestock is poor, as it is poisonous, causing depression, weakness, drooling, coma, and death.

Prickly pear cactus

Opuntia spp.



- Diverse genus– approximately 200 species
- Grows in gravelly, rocky washes
- Forms large, clonal colony of flat, rounded stems (platyclades)
- Flowers in May and June, fruit is edible
- Stems may be used to treat diabetes and stomach ailments
- Used in the production of red cochineal dye



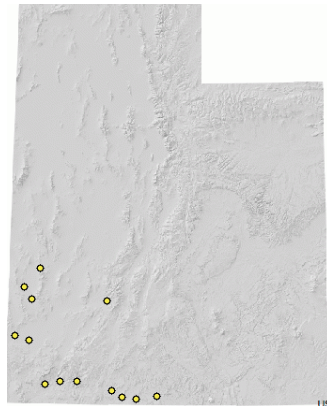
Prickly pear cactus is a desert plant of 200 diverse species. This cactus is found in all North American deserts. All species have modified branches that are thick, fleshy, succulent pads or cylindrical, jointed stems that serve to store water, photosynthesize, and produce flowers. These pads and cylinders vary in width, length, shape, and color. Some species have spines, while some do not, but all species have glochids (clusters of fine, tiny barbed spines). Prickly pear cactus produces red, yellow, or purple flowers in early summer, which results in a juicy fruit that is edible. Generally, prickly pear cactus species require well drained, coarse, rocky soils. Prickly pear species have adapted to a wide range of locations and elevations. Along with this desert plant, you will usually find a parasitic cochineal insect that if squished produces a deep red liquid that has been used as red dye for many items. Prickly pear cactus has been shown to help treat diabetes, lowering the need for insulin, as well as to treat stomach ailments.

Cholla

Opuntia spp.



- Grows in coarse, dry soil
- Cylindrical stems with segmented joints
- Photosynthetic, store water, and produce flowers
- Contain clusters of fine barbed spines called glochids
- Growth pattern and height varies between species



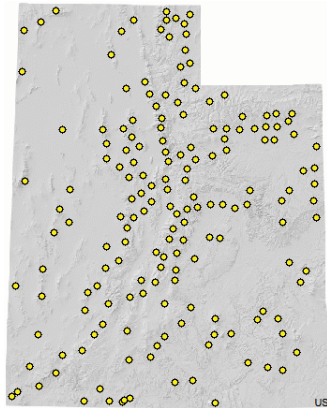
Cholla refers to various shrubby cacti of the *Opuntia* genus that have cylindrical stems with segmented joints. The stems are used for water storage, photosynthesis, and flower production. Cholla contain yellow or red glochids that make them unique from other cacti species. Cholla are also the only cacti species with sheaths covering their spines, which give the cactus a distinctive appearance. Cholla occurs in hot deserts at various elevations. They grow best in coarse, well-drained soils on rocky flats or slopes. Cholla blossom in spring months, producing flowers in a variety of colors depending on the species. Height and growing pattern also depend on the species, but some Cholla species can reach up to 15 feet in height.

Big sagebrush

Artemisia tridentata



- 1-16 feet tall
- Small inconspicuous yellow flowers, reproduces from seed
- Subspecies tridentata is most abundant in dry foothills and plains with well-drained soils
- Highly valuable as food and shelter for wildlife
- Used for fuel, dye, medication, and cosmetics



Big sagebrush is a native evergreen shrub that is highly branched with a rounded crown. Although it has a short trunk, it can grow up to 16 feet tall. Big sagebrush grows in valleys and on mountain slopes at elevations between 2,500 and 10,000 feet in well-drained, gravelly or rocky soils. It produces inconspicuous yellow clusters of flowers in late summer and reproduces from seeds. Its leaves are gray-green in color and covered in silvery hair. These leaves are produced twice each year, once in spring and then again in the fall. Big sagebrush provides good forage for livestock and wildlife. It also provides shelter for many types of wildlife, and is essential for some, such as sage grouse. Native Americans used big sagebrush tea as a general tonic, to wash hair, treat colds, and to clean wounds. It is still used today in medications, cosmetics, and dyes.

Rubber rabbitbrush

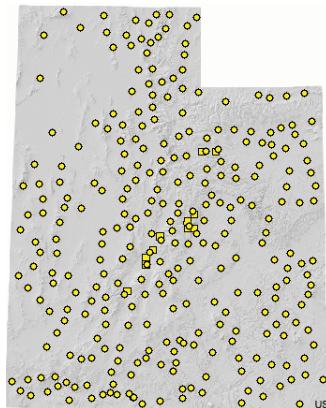
Chrysothamnus nauseosus



Rubber rabbitbrush is a 1 to 7 foot tall native shrub that grows well in a variety of dry environments. It commonly grows in open/sunny sites with dry, sandy/gravelly, or heavy clay soils. This desert plant is cold hardy and is fairly tolerant of salt. It blossoms in early fall, producing yellow flowers, and reproduces by seeds and rhizomes (underground horizontal stems that produce roots).

The stems of rubber rabbitbrush are erect, rubbery, and covered with trichomes (a dense felt-like covering) that insulate the plant and reduce transpiration. Its leaves are also covered in trichomes and its bark is fibrous and shredded. Rubber rabbitbrush is of little value as forage for livestock, and may be toxic for some. The presence of thick stands of this plant can indicate poor range management. Native Americans used rubber rabbitbrush for cough syrup, yellow dye, and to treat chest pains. It has also been used as a commercial source for small amounts of rubber extraction.

- 1-7 feet tall
- Bright yellow flowers appear in fall
- Reproduces via seeds and rhizomes
- Grows well in a variety of dry environments
- Tolerant of drought and saline soils
- Leaves and stems covered with trichomes to insulate and reduce water loss
- Limited value as browse
- Used for yellow dye, medicines, and some rubber extraction

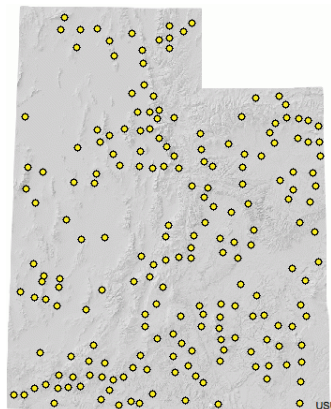


Broom snakeweed

Xanthocephalum sarothrae



- Low, bushy shrub (12 to 24 inches tall) with yellow flowers
- Grows on dry foothills and playas
- Reproduces by seed
- Toxic to livestock– abundance can be an indicator of overgrazing
- Native Americans used it as a broom and for indigestion



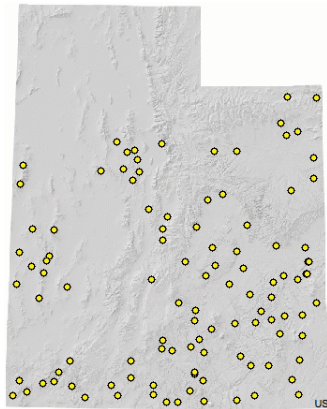
Broom snakeweed is a short shrub that grows 8 to 28 inches in height. This shrub has numerous flat-topped clusters of small yellow flowers. The leaves of the broom snakeweed produce a sticky resin and the stem and twigs are thin and flexible and die back in the winter giving the plant its broom-like appearance. It reproduces from seeds and has a maximum life span of 20 years. It grows in a wide range of soil types, but grows best in clay loams of alluvial slopes and dry shallow, rocky, or sandy soil along foothills. Broom snakeweed has a high water use efficiency and high degree of drought tolerance, which enables it to survive in arid climates. This shrub is toxic to livestock, causing poisoning or abortion. Native Americans and Mexicans used broom snakeweed as a broom, and boiled the leaves into a tea used to combat indigestion. Pieces of the shrub were chewed and placed on bee and wasp stings to help soothe them.

Mormon tea

Ephedra viridis



- Grows only in well-drained soils, up to 4 feet tall, but usually smaller
- Looks like grass when in pure stands, but closely related to pines
- Mostly photosynthetic stems, but has small scale-like leaves
- Medicinal uses—source for ephedrine
- Important browse for wild ungulates, but toxic to livestock



Mormon tea is an erect shrub that grows from 8 to 48 inches tall in well-drained, sandy or rocky, undeveloped soils; however, it is tolerant of wet, poorly drained soils. Growing in elevations from 3,000 to 7,500 feet, Mormon tea is closely related to the pine family in that it reproduces by nut-like seeds partly enclosed in bracts that form a cone structure. It also reproduces by sprouting from the roots and woody crown of the shrub. The stems of Mormon tea are parallel and point upward, resembling a broom. The leaves of this shrub are tiny, dark, and scale-like, and grow opposite the stem joints. Mormon tea is important forage for wildlife, but is highly toxic to domestic livestock causing diarrhea, vomiting, anorexia, and premature death. Native Americans brewed Mormon tea to treat backaches and used it for other medicinal purposes; they also made a coffee-like beverage from the seeds.

Creosote bush

Larrea tridentata



Creosote bush is a native evergreen that grows in calcareous sandy or gravelly soils on alluvial plains, hillsides, and lower desert areas. It is very drought tolerant and can live to be thousands of years old. Creosote bush produces numerous limbs near ground level and grows up to 13 feet tall, although it is generally shorter. It reproduces from rhizomes, cloning itself, and grows in clusters with little variation in size from tree to tree. Creosote bush produces bright yellow flowers from February to August as well as white, fuzzy seeds/fruit. Its leaves are glossy, resinous (or sticky), and strongly scented. They grow along branches, usually densely at the tips. Creosote bush provides food and shelter for jackrabbits, small rodents, birds, and desert reptiles. It is also home for insects that produce lac, a plastic used by desert peoples to seal lids on jars and for waterproofing baskets. Native Americans boiled the leaves of creosote bush and used the tea as an antiseptic, as well as pounded leaves and stems into a powder for medicinal purposes.

- Well-drained slopes and plains
- Grows well in caliche (cemented layers of calcium carbonate)
- Usually less than 4 feet high
- Evergreen with waxy, resinous leaves
- Flowers February to August
- Provides shelter for insects
- Used as antiseptics by Native Americans

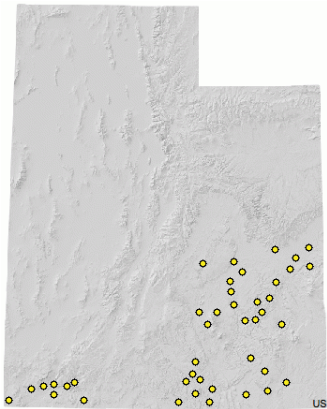


Blackbrush

Coleogyne ramosissima



- Found in the transition between Mojave and Central Basin & Range
- Drought-deciduous (loses older leaves and goes dormant under drought stress)
- Reproduces via seeds, only produced in years of adequate precipitation
- Spiny stems and chemicals protect it from being browsed
- Winter browse for ungulates, small mammals and birds eat the seeds



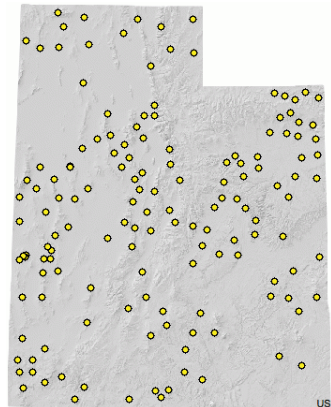
Blackbrush is a native aromatic shrub with short rigid branches. It grows in nearly pure stands in well-drained sandy or gravelly soils often over bedrock. It is found in the transition zone between the Mojave Basin and Range and the Central Basin and Range provinces, as well as on the Colorado Plateau at elevations between 2,500 and 7,000 feet. Blackbrush withstands great temperature fluctuations and is drought resistant. It is drought-deciduous, meaning it avoids water stress by shedding its older leaves during the dry season and becomes dormant. Blackbrush flowers during spring months and only produces seeds after two consecutive years of abundant precipitation. Its yellow-to-purple flowers lack petals, and are found on the ends of young branches. Blackbrush stems become black with age and are spiny and deeply furrowed. They also contain chemical compounds that protect it from being browsed, although it provides winter browse for ungulates.

Cushion buckwheat

Eriogonum ovalifolium



- Grey round basal leaves with pink, yellow, or creamy white pom-pom-like blossoms on a single stalk
- Reproduces via seeds and rhizomes
- Height varies depending on environment
- Flowers April to August
- Visited by diverse groups of pollinators, ants help disperse seeds



Cushion buckwheat is a highly diverse and widespread complex of distinct varieties. The overall characteristics of this species are unmistakable. Its height is limited by environmental factors such as sun and precipitation, but can reach 5 feet tall. Cushion buckwheat flowers during summer months, producing creamy white, pink, or yellow clusters of pom-pom-like blossoms at the end of each stem, attracting many types of pollinators. Its leaves are grey to green and oval, or elliptical, in shape and found at the base of the plant. Its stems are erect and slender, with each plant consisting of several distinct stems. Cushion buckwheat reproduces by seed and rhizomes. The small brown seeds are sometimes dispersed by ants. Cushion buckwheat grows in well-drained soils. Native Americans boiled the roots of cushion buckwheat into a tea to treat colds or as a wash to treat venereal diseases.



Shadscale

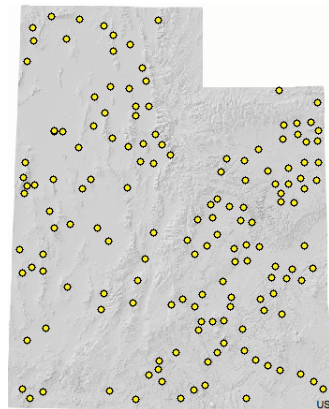
Atriplex confertifolia



Shadscale is a native shrub widely distributed throughout Utah's deserts. It grows in arid areas between 4,000 to 7,000 feet in elevation. This woody shrub has dense, evergreen leaves and branches that develop dry spiny ends that distinguish it from other shrubs. Its rounded crown can reach up to 60 inches tall and twice as wide in well-drained sandy soils that are moderately saline. Shadscale is more susceptible to disease if soils have a high moisture content. Its growth is greatly dependant on seasonal precipitation. Shadscale leaves are round, gray-green, and salty to the taste.

Shadscale blooms mid-March through June and its fruits remain on the plant through winter. Shadscale reproduces entirely by seeds, which are produced by its flowers after being wind pollinated. Shadscale seeds are a food source for birds, and historically, they were ground into flour by Native Americans. It is an important forage for wildlife, as well as livestock; however, it is resistant to overgrazing. Shadscale sheds some of its leaves in order to reduce water loss during droughts, which also prevents overgrazing by animals.

- Widely distributed, but prefers open sandy soils
- Reproduces by seed
- Some leaves are shed during periods of drought
- High soil moisture makes it susceptible to disease
- Valuable as browse to wildlife and livestock
- Seeds are eaten by birds, and were ground into flour

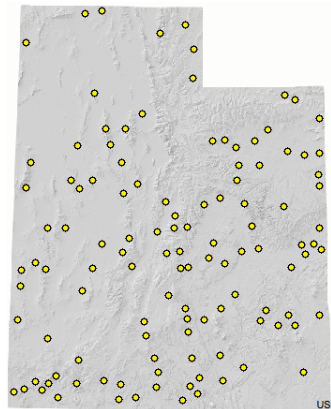


Winterfat

Ceratoides lanata



- Grows 1 to 3 feet tall
- Stems covered with dense white hairs
- Valuable forage for wildlife and livestock



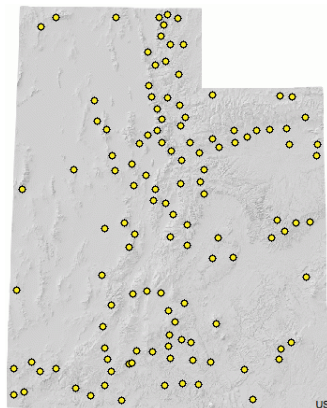
Winterfat is a low-growing, long-lived, native, woody shrub. It is found at elevations between 2,400 and 9,300 feet in valley bottoms and on hillsides in well-drained soils with moderate salt concentrations. Flowering during the summer, winterfat grows 1 to 3 feet tall. It has a silvery white appearance because the leaves and stems are covered with dense hairs (trichomes) that provide shade and reduce water loss. It reproduces from seed, with production dependent on precipitation, and also from sprouting, which occurs when the plant is browsed by animals. Its leaves are rolled under and remain on the plant during winter, only to be shed when new leaves grow in the spring. Winterfat is drought resistant and intolerant of flooding or acidic soils. It is a good forage for livestock and a variety of wildlife, and is most valued as winter forage. Some Native Americans soaked winterfat leaves in warm water to make a hair wash, while others used it as a tea to treat fevers.

Antelope bitterbrush

Purshia tridentata



- Grows 2 to 8 feet tall in a variety of dry, open areas
- Evergreen and deciduous
- Yellow flowers in spring
- Valuable forage for livestock, important winter forage for deer
- Name comes from dry, hard, bitter fruit small rodents seek



Antelope bitterbrush is a native deciduous plant that drops its leaves when under drought stress. This adaptation helps bitterbrush to have excellent drought tolerance, and it does not tolerate shade. It grows in well-drained sand or rocky soils up to 8 feet tall in areas from 3,000 to 10,000 feet in elevation. This shrub has many branches and a rounded crown. It flowers in spring months and produces seeds, by which it reproduces, at the age of 8 to 10 years. Bitterbrush is critical forage for deer in the winter, as well as for livestock when the ground is snow-covered.

Desert willow

Chilopsis linearis



- Found along washes and stream banks
- Deep-rooted shrub
- Grows to 25 feet
- Large, fragrant orchid-like flowers
- Dried flowers and seed pods used for making tea



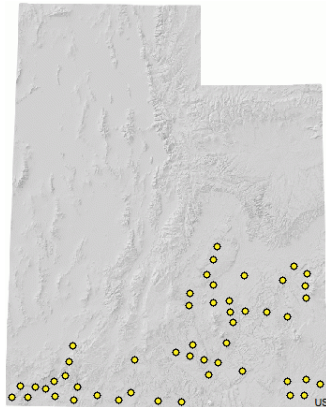
Desert willow occurs between 1,000 and 5,000 feet in elevation along desert washes, creeks, and drainages. It is an upright shrub that grows up to 25 feet tall. Its trunk can be up to 6 inches in diameter and it grows thick, deep roots. Desert willow is not a member of the willow family; however, this deciduous plant is an indicator that water is not too far below the surface during at least part of the year. Desert willow flowers during summer months, producing funnel-like, tubular flowers that are large, fragrant, and orchid-like. The fruits produced by this plant are long, brown, cigar-like pods up to 8 inches long. These pods contain many flat, tan seeds with dual hair wings. The leaves of the desert willow are slender, light green, and up to 6 inches long with pointed ends. The flowers and seed pods of the desert willow are dried for making tea.

Sand sagebrush

Artemisia filifolia



- Grows well in sandy soils
- Grows to 4 feet
- Reproduces via seeds
- Adequate, but not preferred, forage for wild ungulates and livestock
- Provides shelter for birds and small mammals
- Leaves are used to treat intestinal worms



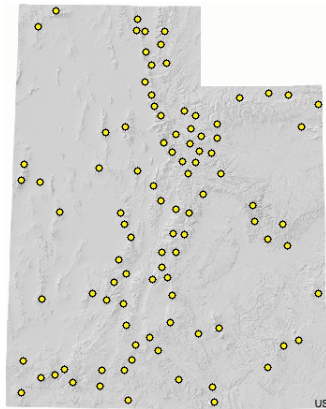
Sand sagebrush is an aromatic shrub found on sand dunes and other sandy soils. It grows well in the low fertility of these soils. Sand sagebrush grows at elevations between 3,000 and 5,000 feet. It is free-branching and has a rounded crown. It grows up to 4 feet tall, flowers from August to September, and reproduces by seeds. Its leaves are a bluish-green and are covered in hair. The bark of sand sagebrush eventually thins and sheds, falling to the ground. Sand sagebrush provides fair to good forage for livestock and wildlife, however it is not preferred if other forage is available. It does provide shelter for small birds and mammals, and helps to prevent wind erosion on light, sandy soils. In some areas, sand sagebrush leaves are boiled to help treat intestinal worms and other stomach problems.

Creeping Oregon grape

Mahonia repens



- Low growing evergreen ground cover
- Holly-shaped leaf
- Grows in well-drained soil, tolerant of shade
- Yellow flowers in spring, blue fruit in late summer is eaten by birds



Creeping Oregon grape is a native, low growing, evergreen ground cover. It occurs at elevations between 3,000 and 10,000 feet in well-drained soils. Creeping Oregon grape is shade tolerant; however, it seems to grow taller in full sun. It reaches up to 18 inches tall and spreads up to 36 inches.

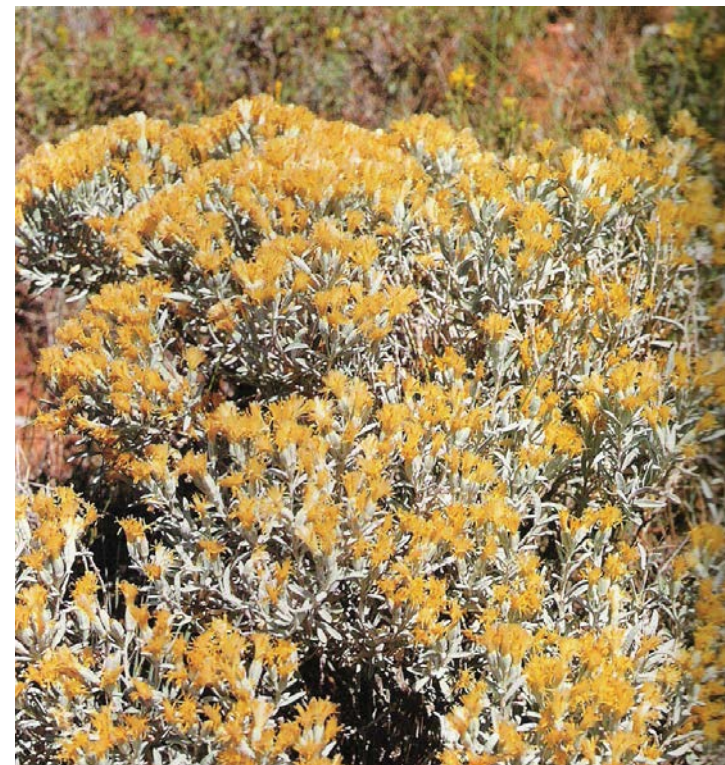
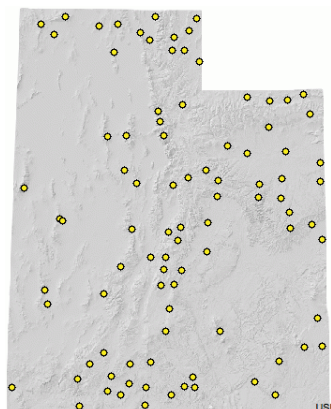
Blossoming in spring brings heavily scented yellow flowers that produce small clusters of blue to purple grape-like berries in the fall. These are a favorite food for birds. The berries are edible; however they have an astringent taste to them. Its leaves are holly-shaped, flat, have a dull finish, and turn purple or red in winter.

Spineless gray horsebrush

Tetradymia canescens



- Grows 8 to 24 inches tall on barren plains and foothills
- Yellow bloom in mid-summer, similar to rabbitbrush
- Drops some leaves during drought stress
- Native Americans made a tonic from leaves to treat uterine disorders



Spineless gray horsebrush is a many-branched, native shrub that grows up to 24 inches tall. It is common in deserts and on barren plains from 4,400 to 10,500 feet in elevation on sandy or rocky soils. It flowers during summer months, producing yellow flowers with long hairs surrounding them. The flowers are similar to those found on rabbitbrush. The leaves of spineless gray horsebrush are similar in appearance and color of sagebrush. Its stems are covered densely in hair as well, giving them a silvery appearance. Spineless gray horsebrush is drought tolerant and drops some of its leaves when water stressed. Fires greatly enhance the ability of this species to dominate a site. Spineless gray horsebrush is poisonous to livestock; however, Native Americans used the leaves to create a tonic for treating uterine disorders.

Joshua tree

Yucca brevifolia



Joshua tree is a native and endemic (found nowhere else in the world) species to the Mojave Basin and Range province. They grow at elevations from 2,000 to 6,000 feet on plains, slopes, and mesas. As the largest member of the yucca family, Joshua trees generally grow in groves with each tree reaching up to 40 feet in height and up to 3 feet in diameter. Small yellow-green flowers are produced at the end of needle-like leafed branches in clusters and bloom in the spring, although not every year. The flowers are only pollinated by the female yucca moth, which collects and distributes the pollen and lays her eggs in the flowers simultaneously. When the larvae hatch, they feed on the seeds. This symbiotic relationship provides the Joshua tree with the opportunity to reproduce, as it would not if it wasn't pollinated, and it provides food for young moths to survive. The fruit produced by the Joshua tree is a green-brown, fleshy elliptical fruit from 2 to 4 inches in length that falls from the tree soon after maturity, revealing many flat seeds. The seeds are then scattered by various means and produce new stands of Joshua trees.

- Dry soils of slopes, plains, and mesas
- Endemic to Mojave Basin & Range
- Largest yucca
- Symbiotic with the yucca moth
- Sole pollinator, lays eggs in flowers, larvae feed on seeds
- Reproduces via seeds and roots



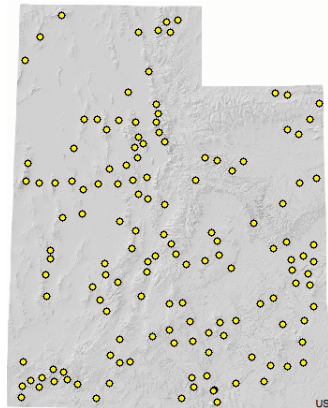
Utah juniper

Juniperus osteosperma



Utah juniper is the most abundant native evergreen in Utah's desert woodlands and can live up to 650 years. It occurs between 4,000 to 7,500 feet in elevation in shallow alkaline soils on alluvial fans or rocky hillsides. It prefers soils with a pH of 7.4 to 8.0 and is considered intolerant of saline soils. Utah juniper is bushy in appearance because of its rounded crown, usually less than 30 feet high, and its many-forked trunk. It also has an extensive root system allowing it to strongly compete for moisture. Utah juniper has scale-like leaves and berry-like, globe-shaped cones that mature in 2 years, each producing one seed. The stems/trunk of Utah juniper are very hearty, durable, and decay resistant; however, they are light in weight, and covered in a thick, shredded, fibrous bark. Nearly one-fifth of Utah's land area is covered by Utah juniper. This species has expanded its historical range due to overgrazing, fire suppression, and climatic change. Juniper berry-cones are eaten by small mammals and many bird species as fall and winter food. Germination rates are usually relatively low, but juniper seeds that have passed through the digestive tract of an animal are ten times more likely to germinate.

- The most abundant tree of Utah's desert woodlands
- Can live for up to 650 years
- Dense root system that is efficient at collecting water
- Dominates overgrazed and fire-suppressed areas
- Many birds and mammals eat the berries
- Wood is long lasting, naturally deter insects and bacteria

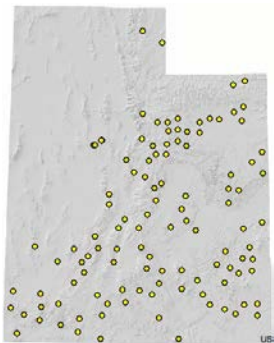


Pinyon pine

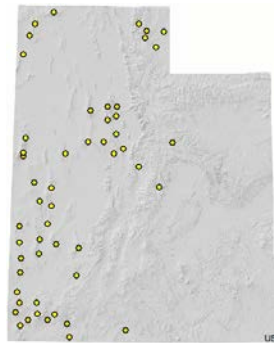
Pinus edulis & *Pinus monophylla*



- May live for up to 700 years
- Abundant S.E. and west of the Wasatch Range
- Thin-shelled nuts are an important crop for people throughout history; food for wildlife



P. edulis



P. monophylla



Pinyon pine is a native evergreen tree that grows in a pyramidal shape up to 30 feet tall between 4,500 and 7,500 feet in elevation in dry rocky soils. Two species of pinyon pine are found in Utah- *Pinus edulis*, occurring on the Colorado Plateau east of the Wasatch Mountains with two needles per fascicle (bundle or cluster of plant parts), and *Pinus monophylla*, occurring in the Central Basin and Range west of the Wasatch Mountains, with only one needle per fascicle. These trees often have a twisted trunk, and have 1 to 2 inch long needles arranged spirally as leaves. Pinyon pine can live up to 700 years and reproduces by seeds, which grow in the female cone. At maturity these appear as 'pine cones' with thick open scales. The thin-shelled seeds, or pine nuts, fall out of these cones and are collected by animals and by people for food (historically and still today); hence being scattered and able to germinate and grow.

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