

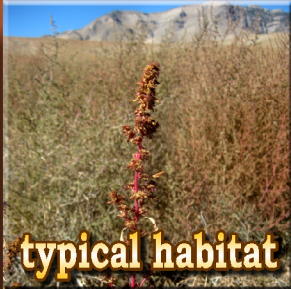
Goosefoots



The amaranth family **Amaranthaceae**, commonly called **goosefoots**, widespread and cosmopolitan in distribution, is the largest in the order--larger even than the cacti--with over 2,000 species. Plants in this family are very diverse from one another, often without conspicuous morphological characteristics that make identification readily apparent to the casual observer. For example, while some are trees, shrubs, and vines, most are herbaceous; leaves are simple, usually alternate; flowers can be solitary or clustered in inflorescences. In other words, hardly defining! Well represented in the Mojave region, member species are often best determined by habitat (e.g. dry, saline, etc.) and extensive experience.

Family **AMARANTHACEAE** (Amaranthus)

Fringed Amaranth (*Amaranthus fimbriatus*)



Goodsprings Valley; NV



October

Goodsprings Valley; Potosi Mountain; Clark Co.; NV



female flowers

fringed sepals



red stems

Goodsprings Valley; NV



linear leaves

Goodsprings Valley; NV

- Flowers:** unisexual; axillary/terminal clusters; no petals, 5 fringed tepals; greenish, white, pink; .25"
- Stems:** erect; singular; branched from main stem; glabrous; yellow green (young) to red (mature); 24"
- Leaves:** narrow linear to lanceolate; entire; alternate; petioled, glabrous; green; to 4"
- Blooms:** August to November
- Range:** southwestern US; northern Mexico
- Habitat:** sandy to gravelly; desert scrub, washes, disturbed areas; Lower Sonoran Life Zone

Notes:

uncommon; shrubby annual; grows to 2' in sw US deserts from TX west to CA, south to Baja and n MEX at elevations of 2,000 to 4,000'; subglobose to obovate utricle fruit bearing lenticular, smooth, dark red to black seeds; aka **Pigweed**, **Blite**; 2 subspecies; considered a weed in some locations; **monoecious** (male and female flowers on same plant) ; leaves edible when boiled, and seeds ground into flour by native peoples (provides 30% more protein than other grains, such as wheat or oats)

Mojave presence: native

Comments:

These plants only present themselves when sufficient precipitation is available. The mature specimen shown here in Goodsprings Valley along the east flank of Potosi Mountain near Las Vegas, NV, in October of 2016 was already in a withered state when I came across it, and is the only one I have photographed to date.

Family AMARANTHACEAE (Saltbushes)

Desert Holly (Atriplex hymenelytra)



arid habitat

Valley of Fire SP; NV



holly-like leaves

Death Valley NP; CA



December

Zabrisky Point; Death Valley NP; CA



deep red fruit

Red Rock Cyn NCA; NV



green inflorescence

Death Valley NP; CA

- Flowers:** unisexual; terminal spike inflor.; (m): exserted stamens, red anthers; (m): red; (f): yellowish; .2"
Stems: erect, spreading/ascending; singular; highly branched; shrubby, woody; whitish green; 48"
Leaves: round to oblong; dentate; alternate; holly-like, fleshy, scurfy, saliferous; whitish green; 1.5"
Blooms: January to April
Range: southwest US; Baja California and northwest Mexico
Habitat: arid, alkaline; sandy to gravelly; desert salt pans, washes, slopes, etc.; Lower Sonoran Life Zone

Notes:

common locally; perennial; grows to 4' in arid, saline habitats in the Mojave Desert and surrounding areas, south to Baja and nw MEX at elevations up to 4,500'; dioecious; paired, disk-shaped, deep red bracteole fruit bearing minute brown seeds; aka **Silver Holly**; once used as Christmas decoration; flowers once traditionally used to make shampoo

Mojave presence: native

Comments:

All saltbushes are **xero-halophytes**, salt tolerant plants that grow in dry or mostly dry environments, such as in **Death Valley NP** (left). One survival technique is to extract salt from groundwater, store it in their leaves, then discard the salt by eventually shedding the leaves. The salty leaves are actually quite delicious, and add a nice flavor to salads.



Family AMARANTHACEAE (Saltbushes)

Four-Winged Saltbrush (*Atriplex canescens*)



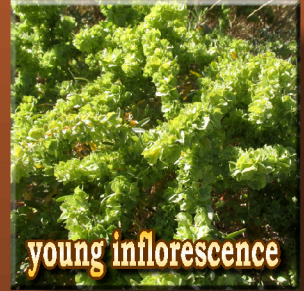
typical habitat

Corn Crk; Desert NWR; NV



October

Willow Spring; Red Rock Canyon NCA; NV



young inflorescence

Red Rock Cyn NCA; NV



4-winged fruit

Goodsprings Valley; NV



linear leaves

Salt Creek; DVNP; CA

- Flowers:** unisexual; panicle/spike inflorescence; inconspicuous; yellow to brownish; .12"
- Stems:** erect; singular; highly branched; thornless; woody, gray; 12 -120"
- Leaves:** linear to oblanceolate; entire; alternate; sessile, pubescent; whitish green; 2"
- Blooms:** April to October
- Range:** western US
- Habitat:** saline; sandy to gravelly; desertscrub to pinyon-juniper woodland; Lower to Upper Sonoran LZs

Notes:

common; evergreen perennial shrub; grows to 10' (usually much less) from west of the Mississippi River to CA, and Alberta, CAN, south to c MEX at elevations up to 6,500'; densely packed bracteole fruit composed of 4 papery wings set at 90-degrees (thus "4-winged"), each bearing .1" seed; aka Hoary Saltbush, etc.; 6 subspecies; unisexual flowers borne on separate plants (dioecious); traditionally used for food (seeds), making soap and yellow dye, and for various topical medical treatments (skin issues, emetic, etc.); browsed by livestock, deer, etc., and seeds eaten by birds, etc.

Mojave presence: native

Comments:

Despite its very variable appearance, attesting to numerous subspecies in a widespread range, this saltbush is nonetheless generally easy to identify in the field almost year-round by its densely packed inflorescences of papery fruit pods characterized by their "wings" made of fused bracts arranged in a 90-degree pattern (above, bottom left).

Family AMARANTHACEAE (Saltbushes)

Quailbush (Atriplex lentiformis)



typical habitat

HBVP; Henderson, NV



woody, mature stems

CCWP; LV, NV



June

Bird Viewing Preserve; Henderson, NV



triangular, salty leaves

HBVP; Henderson, NV



welcomed guest

HBVP; Henderson, NV

- Flowers:** unisexual; panicle inflorescence; (m): tannish yellow, (f): green; .2"
- Stems:** woody, spreading/ascending; numerous; highly branched; green (young), tan (mature); to 10'
- Leaves:** deltoid to elliptical; entire; alternate; petioled, pubescent, scurfy, saliferous; whitish green; 1.5"
- Blooms:** June to July (into fall in some parts of range)
- Range:** southwestern US; northern Mexico
- Habitat:** saline; sandy to gravelly; desert scrub, roadsides, riparian areas, etc.; Lower Sonoran Life Zone

Notes:

common; woody perennial; grows to 10' in desert environments mainly from the Mojave Desert south into n MEX at elevations up to 4,000'; .2" sessile, crenulate bracteole fruit producing minute brown seeds; aka **Big Saltbush**, **Lenscale**, **Orache**, etc.; 4 subspecies; usually dioecious (male and female flowers on separate plants), though some individuals are monocious; hybridizes with other *Atriplex* species; host to various insects, browsed by cattle; valuable as a restoration plant in riparian areas; traditionally important for food and medical treatments by native peoples

Mojave presence: native

Comments:

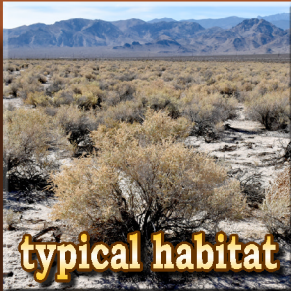
Most quailbush are dioecious. The flowers are tiny, but staminate (male) occur in yellowish clusters (left); pistillate (female) are far less conspicuous (right), as seen in these examples at the Henderson Bird Viewing Preserve in

June, 2023.



Family **AMARANTHACEAE** (Saltbushes)

Shadscale (*Atriplex confertifolia*)



Corn Creek; DNWR; NV



October

Ash Meadows National Wildlife Refuge; NV



Corn Creek; DNWR; NV



Corn Creek; DNWR; NV



Corn Creek; DNWR; NV

- Flowers:** unisexual; axial clusters or terminal spiked inflorescence; inconspicuous; **yellow**; .1"
- Stems:** shrubby; usually singular at base; highly branched; woody, **spinescent** (thorny); gray to tan; 12"
- Leaves:** ovate; entire; alternate; persistent, short petioles, fleshy, blunt tipped, scurfy; grayish green; 1"
- Blooms:** March to September
- Range:** western NA
- Habitat:** arid/saline; sandy to gravelly; desert scrub to woodlands; Lower Sonoran to Transition LZs

Notes:

common; perennial; grows to 3' in alkaline desert valleys to montane woodlands throughout western NA (especially NV and UT) from TX/ND west to CA/OR, CAN south to MEX, at elevations from 2,000 to 7,500'; dioecious (male and female flowers on separate plants); .5", sessile, pink to red **bracteole** fruit yielding minute seed; aka **Spiny Saltbush**; hybridizes with other **Atriplex** species; fruit and leaves browsed by wildlife; traditionally used for various medical treatments (epilepsy, muscle aches, etc.), arrow points fashioned from wood, seeds and leaves edible

Mojave presence: native

Comments:

Shadescale looks very similar to, and is easily confused with, **Four-Winged Saltbush** until one gains experience and develops an eye for the differences between the two species. The main characteristics to look for are the **shorter and wider leaves** of the shadscale, **less than four wings** on its bracteolate fruit, and **presence** of thorn-like spiny stems.

Family AMARANTHACEAE (Hopsages)

Spiny Hopsage (*Grayia spinosa*)



typical habitat

Green Water Valley; DVNP



small shrub

Death Valley NP; CA



bracteole fruit

April

Greenwater Valley; Death Valley NP; CA



white apex

fleshy leaves

Death Valley NP; CA



spiny stems

Dante's View; DVNP; CA

- Flowers:** unisexual; dense clusters; (m) with perianth, (f) with accrescent bracts; yellow; .25"
- Stems:** woody; one to several; multibranched; whitish ribs; reddish brown (young), gray (mature); 36"
- Leaves:** oval to oblanceolate; entire; alternate; fleshy; green with white apex; 1.5"
- Blooms:** March to June
- Range:** western US
- Habitat:** sandy to gravelly; desert scrub to pinyon-juniper woodland; Lower to Upper Sonoran Life Zones

Notes:

common; perennial; grows to 4' in arid to semi-arid, alkaline environments throughout the w US west of the Rockies at elevations up to 7,000'; aka Hop Sage; pink, sessile, elliptical, .5" bracteole fruit formed from 2 connate (fused to form single unit) bracts producing .08" brown utricle seeds; unisexual flowers borne on separate plants (dioecious) male flowers: 4-5 stamens enclosed in 4-lobed calyx (perianth), clustered on branch tips; female flowers: bi-lobed stigma exserted through fused cup-shaped bracts, clustered on leaf axils and branch tips

Mojave presence: native

Comments:

In the heat of summer, hopsage (like many Mojave flora) sheds its leaves, presenting a non-descript woody clump of vegetation that for all intents looks dead. However, the plant comes alive in the spring, becoming one of the showiest in its community, resplendent in its veneer of bright yellow and pink seed pods, such as the specimens shown here in Death Valley NP in April, 2019.

Family **AMARANTHACEAE** (Goosefoots)

Iodine Bush (*Allenrolfea occidentalis*)



Death Valley NP; CA



Death Valley NP; CA



Salt Creek; Death Valley National Park; CA



Death Valley NP; CA



Death Valley NP; CA

- Flowers:** bisexual; spiraled around spike inflorescence; no petals; inconspicuous; **yellow**; minute
- Stems:** matted to shrubby; woody at base then fleshy, alternate branching; knobby, jointed; **green**
- Leaves:** trianular; scale-like; entire; alternate; deciduous, sessile, glabrous, obscure; **green**; minute
- Blooms:** April to September
- Range:** southwestern US; northern Mexico
- Habitat:** moist, saline; sandy; riparian areas in desert flats, hummocks, etc.; Lower Sonoran Life Zone

Notes:

uncommon; succulent perennial; grows to 6' (usually much less) in the western US from CA/Or west to TX, south to n MEX at elevations up to 4,000'; salt is stored in terminal joints of stems that turn red and fall off at the end of summer; ovoid **utricle** fruit in perianth enclosing a tiny red-brown seed; aka **Pickleweed**; seeds traditionally used to make bread, teas, etc.

Mojave presence: native

Comments:

A saline, riparian environment is the ideal habitat for pickleweeds, such as provided at the appropriately named Salt Creek in **Death Valley National Park** where the specimens above were photographed in February and March of 2018.

Family AMARANTHACEAE (Goosefoots)

Russian Thistle (*Kali tragus*)



grove of young plants

Boss Mine; Goodsprings, NV



mature stems

Pierce Ferry Rd; Meadview, AZ



October

Red Rock Canyon National Conservation Area; NV



tiny yellow flowers

spiny leaves

Boss Mine; Goodsprings, NV



spike inflorescences

Red Rock Cyn NCA; NV

- Flowers:** singular; spike inflor.; no petals, disk of papery sepals, 5 exerted stamens; cream to green; .25"
- Stems:** erect, shrubby; singular at base; highly branched; green (young), yellowish or red (mature); 12"
- Leaves:** thin linear; cylindrical; alternate bundles; succulent, spiny tips; glabrous or hispid; green; 2"
- Blooms:** July to October
- Range:** throughout most of North America
- Habitat:** arid; sandy to gravelly; desert scrub to woodlands; Lower Sonoran to Canadian Life Zones

Notes:

common; annual; introduced from Eurasia, matures to 4' as a dry, thick, tangled shrub throughout most of w NA at elevations up to 8,500'; perianth of pinkish disk-shaped fruit bearing seed with 3 spines; aka **Prickly Russian Thistle**, **Common Saltwort**, **Wind Witch**, etc.; formerly in the genus **Salsola**; fresh young plants grazed by wildlife

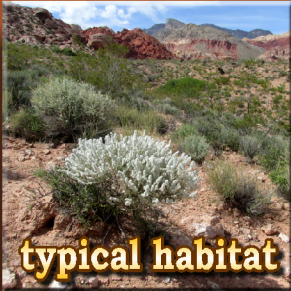
Mojave presence: invasive; naturalized

Comments:

Introduced from its native Eurasia, the plant is now invasive or naturalized throughout much of the world. The most unusual and familiar feature is its **diaspore** (seed dispersal unit), which is actually the **entire** matured plant that has detached from the root to be dispersed by the wind. This stage of the plant's life cycle is best known as a **tumbleweed**. Though numerous plants can form tumbleweeds, Russian thistle is by far the most common.

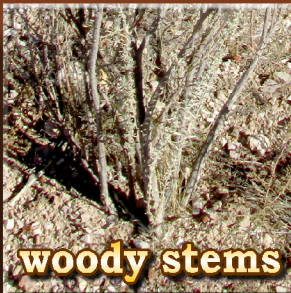
Family AMARANTHACEAE (Goosefoots)

Winter Fat (*Krascheninnikovia lanata*)



typical habitat

Red Spring; RRCNCA; NV



woody stems

West Rim; Grand Canyon; AZ



October

Valley of Fire State Park; Nevada



woolly fruit

Potosi Mtn; Clark Co.; NV



linear leaves

Valley of Fire SP; NV

- Flowers:** unisexual; axillary clusters (f), terminal spike panicles (m); no petals; cream yellow; .1"
Stems: erect; numerous; mostly unbranched; woody, tomentose; gray; 36"
Leaves: linear to lanceolate; strongly revolute; alternate bundles; sessile, pubescent; green; 2"
Blooms: March to August
Range: western North America
Habitat: alkaline; gravelly to rocky; deserts, grasslands, woodlands; Lower Sonoran to Transition LZs

Notes:

common; perennial; grows to 2.5' throughout w NA from Pacific coast east to OK/TX, and Yukon, CAN, south to n MEX at elevations up to 7,000'; usually monoecious (male and female flowers on same plant); staminate flowers (m) near branch terminus, have large woolly, leafy bracts; pistillate flowers (f) in axillary clusters below male flowers have smaller bracts and produce .25", flat, oval, pubescent white utricle fruit; 3 subspecies; important winter browse for grazing wildlife and livestock; traditionally used to treat a variety of medical ailments (fever, burns, sores, etc.)

Mojave presence: native

Comments:

Throughout most of the year winter fat is an inconspicuous plant that can be a challenge to recognize even by an experienced eye. However, when spring rolls around, the plant begins its transformation into the very conspicuous cottony shrub that wildlife rely on for nourishment to fatten up for the coming winter, thus inspiring its common name.

Family AMARANTHACEAE (Goosefoots)

Woolly Tidestromia (*Tidestromia lanuginosa*)



typical habitat

Dolan Springs; AZ



red, branched stem

Dolan Springs; AZ



June

First Creek; Red Rock Canyon NCA; NV



minute flowers

Dolan Springs; AZ



woolly leaves

Dolan Springs; AZ

- Flowers:** unisexual; divaricate panicle; no petals, perianths in clusters of 1-3; yellow; .15"
Stems: prostrate to ascending; singular; branched; woolly, spinescent, evergreen; greenish to red; 24"
Leaves: ovate to lanceolate; entire; alternate/opposite; fleshy, petioled, dense woolly (white); green; 2"
Blooms: June to October
Range: southwestern US; central Mexico
Habitat: dry, saline/alkaline; sandy to gravelly; deserts to woodlands; Lower to Upper Sonoran Life Zones

Notes:

common; herbaceous annual; grows to 2' in the sw US from the Great Plains west to CA, south to c MEX at elevations up to ~5,000'; .5", elliptical, utricle fruit bearing .1," round, brown seeds; aka Honeysweet, Honeymat; 3 subspecies; traditionally used for some medical treatments (pain relief, alleviate measles, etc.)

Mojave presence: native

Comments:

This is a very peculiar plant, as its leaves are usually heavily coated with woolly white hairs (such as seen above on the specimens from Dolan Springs, Arizona, in the fall of 2022) that disguise the actual green color underneath. Encountering the plant without this conspicuous trait makes identification elusive without prior experience. Note the "naked" leaves on the airy specimen at the Red Rock Canyon National Conservation Area (above central).