

## 4 Wing Saltbush



Fourwing saltbush is a nondescript shrubby member of the goosefoot family (Chenopodiaceae) that ranges across much of the southern Great Plains, Great Basin, and desert southwest. It is characterized by grayish, linear to spoon-shaped leaf blades, yellowish twigs, and small, yellowish, or brown wind-pollinated flowers clustered in slender inflorescences and lacking showy petals. Mature fruits can be eye-catching because of their relatively large size (1/2 to 1 inches long and broad) and four membranous wings (thus, the name “fourwing”). Fourwing saltbush is often abundant, especially in sandy areas, and easy to ignore.

When it comes to reproduction, fourwing saltbush is anything but ordinary. More than 90% of the saltbush plants in any population are dioecious, meaning that individual shrubs are either completely staminate (“male”) or pistillate (“female”). Staminate plants only produce flowers that have anthers and shed pollen, and usually occur in harsher microsites in the environment. By contrast, pistillate plants only produce seed and are not capable of self-fertilization. About 10% of plants in a population are monoecious and have separate male and female flowers on the same individual.

What makes fourwing saltbush unusual is that the sex of any given plant is not fixed genetically (as in most animals) but can change based on environmental cues. Researchers have discovered that over a 7-year period nearly 40% of the saltbush plants in a population switched sexes, with as many as 20% doing so each year. Pistillate plants were more likely to change sides than staminate plants, especially in years following an unusually cold winter, drought, or after an atypically heavy fruiting season. Male plants that became females were found to enjoy a reproductive advantage over other pistillate plants by being able to flower earlier in a good season. The result of all this switching is that sex ratios in saltbush populations can become skewed and sexes partially segregated along gradients of environmental quality, with females predominating in richer sites and able to become larger and produce more fruits.

Whether Native Americans paid attention to the sexual intrigue of fourwing saltbush is unknown, but tribes did make extensive use of saltbush. Before the advent of steel axes, many Indians used saltbush stems extensively as fuel. Yellow dyes were also made by boiling the leaves with raw alum. Saltbush seeds are edible (with a naturally mild, salty taste) and were parched by the Navajo to make flour.

Hardiness: Winter hardy to USDA Zone 4-9

Colorado Native

Cold Hardy: Good

Drought Tolerance: Excellent

Alkali Soil Tolerance: Excellent

Windbreak Suitability: Fair

Wildlife Benefit: Good

Mature Height: 3 ft

Mature Width: 5 ft

Growth Rate: Moderate

Highest Elevation: 8500 ft