

*Sarcobatus vermiculatus*

Greasewood

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Greasewood, *Sarcobatus vermiculatus*, was collected on July 20, 1806 by Captain Meriwether Lewis as his small party, separated from Captain Clark, explored the Marias River drainage south of present-day Shelby. Lewis previously described the species in his journal on May 11, 1805 as the explorers traveled up the Missouri River in what is now Valley County. He provided a detailed description of the plant, “there is another growth that begins now to make its appearance in the bottom lands and is becoming extremely troublesome; it is a shrub which rises to the height of from two to four feet, much branched, the bark of the trunk somewhat rough hard and of light grey colour; the wood is firm and stiff, the branches beset with a great number of long, sharp, strong, woody looking thorns; the leaf is about  $\frac{3}{4}$  or an inch long, and one  $\frac{1}{8}$  of an inch wide, it is obtuse, absolutely entire, veinless fleshy and gibbose; has no perceptible taste or smell, and no animal appears to eat it. by way of designating when I mention it hereafter I shall call it the *fleshy leafed thorn*.” It is possible that a collection of greasewood was made on May 11, 1805, but if that was the case the specimen was lost with all the others that were left near the Great Falls of the Missouri in the White Bear Island cache.

Greasewood is mentioned again in Lewis’s journal on August 5, 1805 when he talks about traveling “down the bottom through thick brush of the pulpy leafed thorn and prickly pears...” Undoubtedly, Captain Lewis saw greasewood in many settings before he collected the plant on July 20 in the Marias River bottom. Just days after collecting the greasewood specimen, Lewis’s party met Blackfoot warriors who encouraged them not to linger. The greasewood sample must have been safely stowed to survive the marathon run back to the Missouri River.

The greasewood specimen collected by Lewis can be seen today in the Lewis & Clark Herbarium in Philadelphia. It contains a label written by Frederick Pursh, a respected botanist of the day, that reads, “A Small branchy Shrub from the plains of Missouri-Jul 20th 1806.”

Greasewood grows on dry, sunny, flat valley bottoms, at the base of eroded hills, in ephemeral stream channels and in the flood plains of large rivers. It seems to prefer alkaline or saline soils. In areas with a high salt concentration, greasewood often grows in nearly pure stands, although on less saline sites it commonly grows with a number of other shrubs and a grass understory. Greasewood is often considered an indicator of saline or relatively moist soils. Although greasewood most commonly develops on finely textured saline or alkaline soils, it occasionally grows on coarsely textured non-saline soils. Greasewood tolerates many climates but likes hot, dry summers. It’s typically found where groundwater is fairly near the surface and average annual precipitation ranges from five to 10 inches. The long taproot can reach down over 50 feet and the plant may be lush and green when others are wilted and fading. Greasewood is a dominant plant of the Great Basin and can be found from about 3,000 to 7,000 feet in elevation. The eastern edge of its range extends from North Dakota to New Mexico. The southern edge is Mexico’s Sonoran Desert, the western edge follows the Cascades and

Sierra Nevada mountain ranges, and the northern extent is Saskatchewan and Alberta in Canada.

Greasewood is a native, long-lived, perennial shrub that can grow from three to eight feet in height. The branches, some of which end in the spines that Lewis noted in his journal, are rigid and numerous. The bark is smooth and whitish, and turns gray with age. The leaves of greasewood are simple, linear, alternate, and fleshy, with entire margins and are shed in winter. The male and female flowers are separate on the stems. From June to August, the male flowers appear as fleshy, cone-like spikes at the end of the stems. The female flowers are green, tinged with red, and appear in leaf axils. The fruit looks winged in the middle and contains small brown seeds.

Greasewood provides good forage for grazing domestic animals and wildlife, particularly during fall and winter. It does, however, contain soluble oxalates that are poisonous to livestock, especially sheep, when the plant is eaten in large quantities. In many areas, greasewood provides forage for pronghorn and mule deer. Small mammals such as the white-tailed prairie dog, chisel-toothed kangaroo rat, Ord kangaroo rat, painted chipmunk, western chipmunk, porcupine, and jackrabbit also feed on greasewood. In Lewis's journal the entry for May 11, 1805 says that greasewood "...has no perceptible taste or smell, and no animal appears to eat it." Evidently, Lewis was unaware of greasewood's importance to wildlife, or encountered the shrub at a time of year when it was not much used by wildlife.

Greasewood was previously placed in the goosefoot family (Chenopodiaceae), but recent reviews of historic collections have established a new family for this genus called Sarcobataceae, making this the second new family of western North American plants found by Lewis and Clark, the first being Calochortaceae, the mariposa lily family.

Greasewood is used to stabilize disturbed sites such as mine spoils and road scars and is particularly useful on saline or alkaline soils. It is used on long-term revegetation projects and can be grown from seed, propagated from cuttings, or transplanted as young shrubs. However, the plants' capacity for concentrating salts should be taken into account and may eventually make restoration more difficult.

Greasewood has had many medicinal and food uses over the years. Some tribes used an infusion of leaves for insect bites and to kill red ants that were swallowed. An infusion of the burned plant was used for diarrhea and the burned roots were used for toothaches. Some Montana Indians used young twigs and leaves as greens and others used the seeds as food. The wood was used for arrow shafts, boomerangs, clothes hooks and musical rasps. Indian women valued greasewood for digging sticks and cooking fires. Sacagawea may have used a sharp-pointed greasewood stick when she gathered roots called "white apples" (*Psoralea esculenta*) on May 8, 1805. Then she may have roasted the roots in the embers of greasewood twigs so the ashes would impart a salty flavor since greasewood leaves also concentrate salts. The bright green leaves often display a salty crust. Where the leaves drop, there's a build-up of salt. Greasewood flats attract

antelope, deer, and elk. In May 1805, the Corps of Discovery also saw plentiful game near Sand Creek, in the vicinity of present-day Fort Peck Dam.

The scientific community doesn't credit Lewis or Pursh with first describing greasewood. It's unfair, but can be explained by "publish or perish." Lewis died on October 11, 1809, never having published his journals and Pursh, for some reason, did not apply a name to the greasewood specimen he labeled and did not include it in his 1814 publication, *Flora Americae Septentrionalis*.

Regardless, we in Montana will honor Lewis for his 1806 greasewood collection and will remember the arduous journey that brought the specimen to the attention of western science.