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Lotus purshianus

Lotus purshianus is one of the few annuals that furnish forage for livestock and wildlife in the foothill grasslands of California. It is green long after the winter annual grasses and forbs have dried. Last fall, germinating rains were favorable for all the legumes, however, with the cold weather and drought that followed, the native Trifoliums became depauperate while the Lotus maintained its regular growth.

Morphological variability of L. purshianus from sea level to 2073 m is great, and, at lower elevations, flower and pod size decrease on individual plants during the hottest part of summer. Two plants each from elevations of 91, 305, 792, 1067, 1433, 1676 and 2073 m were grown in the controlled atmosphere greenhouses at California State University, Fresno. Little or no overall difference in morphological appearance was observed until the 14th week of growth. Near maturity it was evident that plants from seed collected at 1676 and 2073 m were definitely smaller overall as well as leaf and flower size, and taxonomically should be considered L.p. var. glaber (Nutt.) Munz (L. americanus var. minutiflorus Ottley). All of the plants were acyanogenic. Range plants from 305 m elevation tested at the same time ranged from 0-+2 cyanogenic. Pigmentation in the greenhouse plants was too minimal to be categorized while the native plants ranged in various combinations of pigmentation from light to heavy on stems, leaves and even pods at the two higher elevations.

One-half of several plants were caged with fine nylon net to test self fertility at the San Joaquin Experimental Range (305 m), 30 miles north of Fresno. More seed was set under the cages than outside. Some L.p. growing in Fresno (91 m) were visited regularly, and the flowers worked vigorously, by megachilid bees.

A large population of L.p. on the upper banks of a small artificial pond at the Experimental Range were setting very little seed in 1975 and a prescribed burn in August destroyed the plants that were still growing. Wildlife probably utilized what little seed there was. There is no L.p. in that area this year.

Lotus strigosus

In this same general burned area, L.s. was very common this year and we would agree with ecologists who consider it a "fire" species.

Nematodes were extracted from the rhizospheres of several range annuals. Numbers of plant parasitic nematodes per 1 ml of sample (extracted from washed roots contained in a soil core of 2278 cm³) for L. strigosus, Trifolium variagatum, and Avena barbata were 6, 46, and 120.

Other Loti

Donald L. Neal, Range Scientist, reports that current cooperative studies between Pacific Southwest Forest and Range Experiment Station and California State University, Fresno in the central Sierra Nevada have shown the value of several species of Lotus to mule deer (Odocoileus hemionus hemionus). L. scoparius was heavily used on the winter range by tractable deer. (Deer who will feed while on harness and leash. Trained as fawns by graduate students in the Biology Dept., California State University, Fresno, under direction of Dr. David Chesemore.) L. micranthus was selected on the spring migration route. On the summer ranges L. nevadensis was used in the brushy areas and L. oblongifolius in the wetter areas. In August, L. oblongifolius represented 1 to 4.5 percent of the deer diet, as much as 16 times its proportion of the vegetation available in the area. August is a period of declining deer condition in the area and species that the deer actively seek out are good candidates for seeding to improve the quality of the deer diet.

L. oblongifolius and L. crassifolius are among several native species which have been selected for possible use in revegetation of forest clear cuts in the central Sierra Nevada. 250,000 seed of L. oblongifolius have been collected for a cooperative germination study between the PSW Forest and Range Experiment Station and the Agricultural Research Service, USDA, Reno, Nevada. Harvest of L. crassifolius has shown a high infestation of bruchid weevils (Acanthoscelides fraterculus). When seed heads with stalks are collected when mature, but slightly green, we seem to obtain less weevil infestation and the seed appears to be ripening satisfactorily. We hope this will increase amount of viable seed obtained above 50 percent. Visual observations indicate that shade from overstory apparently reduces blooming and seed set for both L. oblongifolius and L. crassifolius.