Invasive Exotic Rangeland Weeds: A Glimpse at Some of Their Native Habitats

VLADIMIR KOSTIVKOVSKY AND JAMES A. YOUNG

Anyone driving through the Great Basin must be impressed with the tremendous environmental impact of invasive exotic weeds on the former sagebrush/bunchgrass rangelands. There are exotic plant species in the Great Basin that are valuable forage species. These plants are rarely self-invasive, meaning they cannot spread with out the help of humans. Exotic species that can spread without the conscious efforts of humans are usually serious weed species. Cheatgrass is perhaps the most visible example of the impact of exotic species, but there are a host of others that collectively have changed plant succession over millions of acres of rangeland.

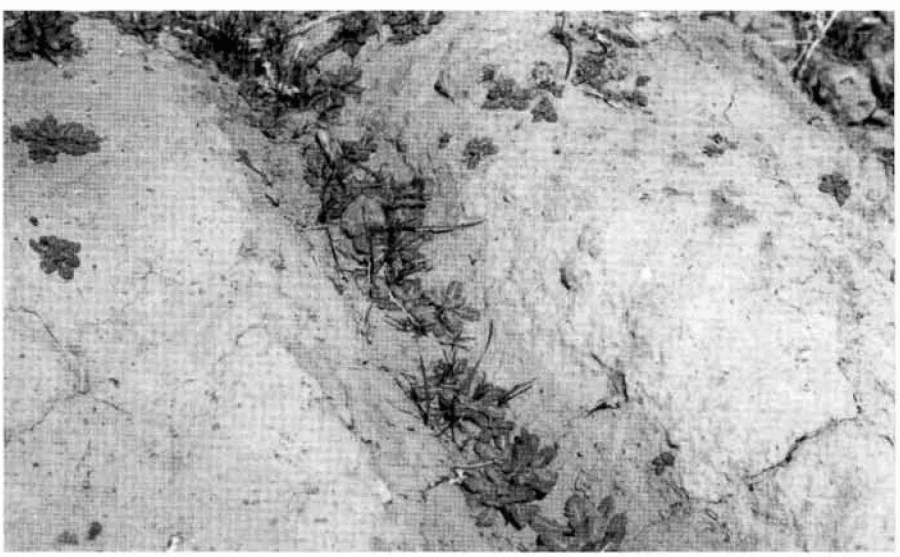
At research field days, producer gatherings, and at technical meetings it is common to hear the question, "Where did these weeds come from and what do they look like in their native habitat?" The center of origin for many of these species is the temperate deserts of Asia.

Floristic Regions

Many of the exotic weeds currently thriving in the Great Basin of western North America originated from Central Asia. Central Asia includes the semi-arid regions from northern China on the east to the Ob River on the west. It includes the northwestern provinces of China, Mongolia, and southern Siberia between the Ob River and Lake Bajkal. Botanically it is considered the center of origin for many groups of plants and is the home of abundant endemic species.

The Central Asian floristic region is nearly a synonymous environment to the Intermountain Area between the Sierra-Cascade and Rocky Mountains in western North America. Portions of both areas are temperate deserts with areas of salty soils. Both areas feature vast landscapes dominated by semi-woody species of sagebrush and at lower elevations chenopod shrubs. Some genera, such as sagebrush, saltbushes, kochia, and winterfat occur in both regions. Greasewood is endemic to North America, and the large chenopod shrub or small tree haloxylon, forms extensive near-woodlands in Asia, but not in the western hemisphere.

The striking difference between the rangelands of Central Asia and the Great Basin is in the tenure of livestock husbandry. Large concentrations of domestic large herbivores were introduced to the Great Basin a little more than a century ago. In portions of Asia, nomadic livestock husbandry has been in existence for perhaps 10,000 years.



Tumble mustard seedling growing in a drill furrow with crested wheatgrass seedlings. Tumble mustard is an exotic weed accidentally introduced from Asia. In former sagebrush/bunchgrass communities in the Great Basin, tumble mustard is suppressed by cheatgrass. Once the cheatgrass is controlled to allow perennial grass seedlings to establish, tumble mustard seeds germinate from the seedbank.

Cheatgrass

Modern revisions of the genus *Bromus* have moved cheatgrass from *Bromus tectorum* L. to *Anisantha tectorum* (L.) Nevski in the Russian literature. This is a widely distributed species from the plains of Central Asia. The western edge of the range of cheatgrass is the Balkan Peninsula with perhaps adventative populations as far west as Spain. In southwestern Spain, on acidic soils, cheatgrass is restricted to old sheep bedgrounds where there is enough nitrogen to allow for its growth. Cheatgrass is common in Israel, Sanai, Jordan, Syria, and the Arabian Peninsula. In the northern part of its distribution, cheatgrass penetrates into the forested zone and it is even found in the environment of Moscow. Cheatgrass thrives in dry conditions. In the forest zone it grows on exposed rocks, in sand pits, stone quarries and on the roofs of old buildings. On the semi-arid and arid plains cheatgrass is found in the drier environments and not in meadows or irrigated oases. Cheatgrass begins growth after the first spring rains, and provides valuable forage until seed maturity in May. During moist autumns germination and growth