ROCKY MOUNTAIN GAMBEL OAK-MIXED MONTANE SHRUBLANDS

Gambel Oak (*Quercus gambelii*)

Gambel Oak, the most abundant of three oak species on Vermejo, blankets sunny steep slopes of the lower foothills, transition areas above the shortgrass prairie, cliff tops, and rimrock. Gambel oak can hybridize with lower elevation gray oak, creating the wavy oak hybrid. Gambel oak, at the extent of its upper elevation, mixes with pinyon-juniper woodlands and ponderosa pine forest. Often, areas where a wildland crown or stand replacing fire has occurred on a south to west aspect, the oak will comprise the early seral stage or initial replacement species, blanketing the burn scar with short dense oak thickets.

Gambel oak can occur in single tree form in areas of better nutrients or in multi-stem form creating multi-stem thickets. The single tree form oak can reach about 20 feet in height. The oaks have deep root systems and their lignotubers can sprout new clones as well as reproduction from acorn production. (It is much more common for the saplings to sprout from a root system than to have a successful start from an acorn.) The Gambel oak leaves have deep lobes giving them a very distinctive appearance. Depending on moisture and frost, the oaks can exhibit amazing autumn leaf color. The leaves often turn brown and stay on the oak through the winter only falling off once spring arrives.

Gambel oak acorns are fairly small, roughly ½ to 3/4 inches long including their cap. Oak masts or fall acorn production are key food for American black bear, Merriam's turkey, chipmunks, squirrels, Woodhouse's scrub-jay, Lewis's woodpecker, and black-billed magpies. The oaks are browsed by both mule deer and elk. Cynipid gall wasps lay eggs in the leaves of the oaks. Fluid injected by the wasp with the egg stimulates the leaves to surround the egg with plant tissue forming the gall. When the larvae hatch, they begin to eat the inside of the gall. Once the larvae pupates into adult wasp form, it chews its way out of the gall.

Oak thickets provide wildlife shelter zones. The tight growing clones offer dense foliage for most of the year and branches that provide shelter for birds and small mammals. Where the 'shrub oak' dominates an entire slope, the dense plant spacing also can provide shelter for mule deer. The thickets also catch and hold shed oak leaves creating thick plant litter under the scrub oak that aids in soil moisture retention and also improves soil nutrients over time. This may be especially important for soil recovery in burn scar areas.

Mountain Mahagany *(Cercocarpus montanus)*

Mountain mahogany is less dominant than Gambel oak on Vermejo but is an important shrub component, often found in the transition zone between pinyon-juniper and ponderosa pine ecosystems in less wooded areas. The shrub is heavily browsed by deer and sometimes grows to full height only where its branches are intertwined and protected by a pinon tree. The mountain mahogany has a distinctive fruit or seed with a long feathery tail. The leaf is also a unique small wedge shape with prominent veins. The leaves typically turn red in fall as chlorophyl production declines.

New Mexico Locust *(Robinia neomexicana)*

New Mexico locust grows in more disturbed areas and is more prevalent on the eastern portion of Vermejo. The locust have long sharp spines to protect the shrub from browsing and the shrub can reproduce to form tight, almost impenetrable pockets, often in the understory of ponderosa pine. The locust are shrub to small

tree sized and are a member of the pea family. Pollen of the pale pink locust flowers attracts native bees and the blossoms are eaten by mule deer.

Forbs, Grasses and Cacti of the Montane Shrublands

The shrublands also support numerous forbs and cacti. Some of the more drought tolerant forbs include buckwheat, wild geranium, scarlet gilia, and paintbrush. In wetter pockets, wild rose plants are common. Grasses also grow under the oak in gaps where blue gramma, mountain muhly and sideoats gramma predominate. On drier slopes, Spanish bayonet yucca, mountain ball cacti, common beehive or pincushion cacti, and prickly pear varieties can survive in the rocky soils.

Wildlife of the Montane Shrublands

The shrublands of Vermejo provide habitat for numerous birds throughout the year. Some of the species that depend on the Gambel oak are Woodhouse's Scrub jay, the common poorwill, lazuli bunting, rock wren, black-headed grossbeak, spotted towhee, canyon wren, green towhee, and Merriam's wild turkey. In winter, mountain chickadees which are twig gleaners, will search the oak branches and twigs for insects and insect eggs, finding key protein sources to help the small birds that winter over in the mid-elevations of the southern Rockies. Sharp-shinned hawks use their acrobatic flying skills in the tight thickets of oak and locust to hunt for small birds and rodents.

In the drier, rockier areas of the shrublands, mountain short-horned lizards (commonly referred to as 'horny toads'), and western fence lizards hunt insects. The short-horned lizards especially prefer ants and may stake out an ant hill to get a good meal. These reptiles have adapted to higher and colder elevations by females carrying their eggs internally until the babies are born providing warmth and incubation to the eggs in habitats with short growing seasons. The very noticeable smooth green snake also lives in the oak and eats mostly insects and spiders. The bright green snake is active during the day, nonvenomous, non-aggressive and very fast moving.

Some of the small mammals that rely on the shrubland include skunks, raccoon, rock squirrel, woodrat or packrat, and the elusive ringtail. The ringtail are nocturnal relatives of the raccoon that are hardly ever seen. They are omnivores that often live on rocky ledges or in tree cavities that eat insects, bats, small rodents and even the fruit from prickly pear cacti. The pale Townsend's big-eared bat lives in rock ledge overhangs, caves, and abandoned mine adits and hunt moths, beetles, flies and wasps in the shrublands as well as adjacent forests. Larger predators that may hunt in the shrublands include mountain lion, bobcat, grey fox, and numerous raptors.

Frequently Asked Questions:

1. **Do oak produce acorns every year?** No, the oak shrubs and trees do not produce acorns every year. Often bears, turkey, and other wildlife that depend on the acorns will move in autumn to try find area where plants have an acorn mast.
2. **Are acorns edible to humans?** Yes, the native people of the Park Plateau likely collected acorns for food as well as pinyon pine nuts. However, acorns have tannins which can be toxic if consumed in large quantities. The tannins are removed by soaking the acorns or ground acorns making them safe to eat.

3. **What seral stage follows oak growth after a stand replacing fire?** Under normal conditions, it is assumed that the previous forest type (i.e. ponderosa pine or pinyon-juniper) would eventually replace the oak if a seed source is available. Small seedlings would grow under the shelter of the oaks until they could outcompete the oaks for sunlight. Changes in climatic conditions may alter or prolong this transition.