



Vital Sign Update: 2018 Results for Vegetation Community Monitoring at Whiskeytown National Recreation Area

Importance

Whiskeytown has exceptionally diverse vegetation! From white alder covered in California wild grape vines along riparian corridors, to dense upland chaparral, to coniferous forests on Shasta Baldy, and many other types in between, distinct plant communities grow in the park. Each responds uniquely to its surrounding climate, soil, and disturbance conditions. Each is vital to the park's health, providing food and shelter to animals, and cycling water, carbon and other nutrients through the soil for continual reuse. But natural and human-caused changes, like fire, climate, local land-use, and invasive species can profoundly affect plant communities. To detect concerning changes that park managers need to know about, we've been monitoring land plants (terrestrial vegetation) at Whiskeytown since 2012. We measure composition (variety and abundance of species), structure (tree size, height, and density; shrub height) and function (tree death and regeneration) as vital signs of ecological health. This brief describes how we measure one of these elements—*species composition*—in the park, and reports the average conditions we found over the past 3 sampling events that ended in 2018.

Measuring Vegetation Composition

Changes in vegetation are not always unhealthy. To understand which changes are concerning, we examine our species data in multiple ways. Taken as a whole, these various measures provide the context park managers need to identify negative trends and make decisions.



Within a 20 x 50 m plot (0.1 ha), this botanist uses her trusty hand lens to identify plants for a total count of native and nonnative species present. In smaller nested plots, we also measure the total cover of each species to calculate diversity at different scales within the park.

Species Richness

Richness is a straight count of the number of vascular plant species (not mosses or fungi) in our plots. In general, the wider variety of species we find, the more biodiverse and resilient the ecosystem is. Related to species richness, we also examine several measures of *diversity*—each one provides slightly different information about the balance of species relative to each other.

Nonnative Species

Because nonnative species can cause serious ecological problems, we report how many nonnative species we detect, how much area they cover, and the ratio of native to nonnative species. This ratio is a useful measurement to track over time and to compare with more disturbed areas inside and outside the park.

Results and Ongoing Monitoring

Every 3 years, between late May and early July, we monitor terrestrial vegetation at 46 sites from 3 types of habitat at Whiskeytown, barring unforeseen complications. In 2018, we sampled 34 sites in the park (excluding 10 high-elevation and 2 riparian sites due to the Carr Fire). We'll sample park vegetation again in 2022.

At Whiskeytown, riparian sites had higher species richness than upland or high-elevation sites. However, all 3 habitat types were diverse. Overall, Whiskeytown had more total species than any other Klamath Network park. Nonnative species occurred with varying abundance and richness in the park, but not in high elevation sites. View the map on the back for detailed results.

More Information

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Project overview, reports, and protocol:
<https://www.nps.gov/im/klmn/vegetation.htm>

Datasets and all related publications:
<https://irma.nps.gov/Datastore/Reference/Profile/2171794>

Vegetation Composition Sample Sites at Whiskeytown National Recreation Area

