



Aspen Monitoring in the UCBN

Network parks where resource is being monitored

- City of Rocks National Reserve
- Craters of the Moon National Monument and Preserve

Importance: At risk of region-wide decline

Quaking aspen (*Populus tremuloides*) is currently undergoing a region-wide decline. Aspen decline in the West has been observed over the past 50 years and is commonly attributed to a decrease in fire frequency, caused by the effective fire suppression that began as a result of Euro-American settlement. Changing fire regimes has allowed an expansion of conifer species into some aspen stands. Another phenomenon commonly referred to as aspen 'die-off' has been observed within the past decade. Mature aspen stems begin to die and if aspen regeneration is limited this will eventually lead to the loss of the aspen roots and stand, possibly as a result of drought and early snow melt cause by warming climate trends. Aspen ecosystems contribute considerably to the biodiversity of the parks and their unique beauty attracts visitors in the summer and fall.

Status and Trends

Aspen stands in CIRO (66 stands) and CRMO (26 stands) have been identified and mapped via remote sensing, aerial photo interpretation and field reconnaissance. Stands larger than 0.3 ha in size are included in the sampled population, except for aspen growing directly in riparian areas and shrubby snow-damaged aspen. Each aspen stand is assigned a number of plots along transects depending on the stand size. In 2007 permanent plots in 23 stands were established in CRMO. In 2008 data was collected in 16 stands containing 88 plots in CIRO. Three stands in CRMO and 11 stands in CIRO were deemed unsuitable for sampling because of predetermined selection criteria. At each plot the number of aspen and conifer stems in five predefined size classes are recorded. These data will provide estimates of aspen regeneration, stem density, dead aspen stems and conifer abundance. The park stem count averages for 2007-2008:

CRMO 2007: suckers – 5185, regeneration – 1660, mature – 777, and dead – 1060

CIRO 2008: suckers - 2657, regeneration - 1834, mature - 502, and dead – 217

Four stands in CRMO have a regeneration < 500 stems/ha, of which stand #26 also has a sucker count < 500 stems/ha and stand #13 has no mature stems within the sampled plots.

Monitoring Objectives

Estimate current status and long-term trend in:

- regeneration of park aspen populations as well as individual stands.
- conifer density within CIRO and CRMO aspen stands.
- aspen abundance, as measured by stem density of live and dead trees.

Management Applications

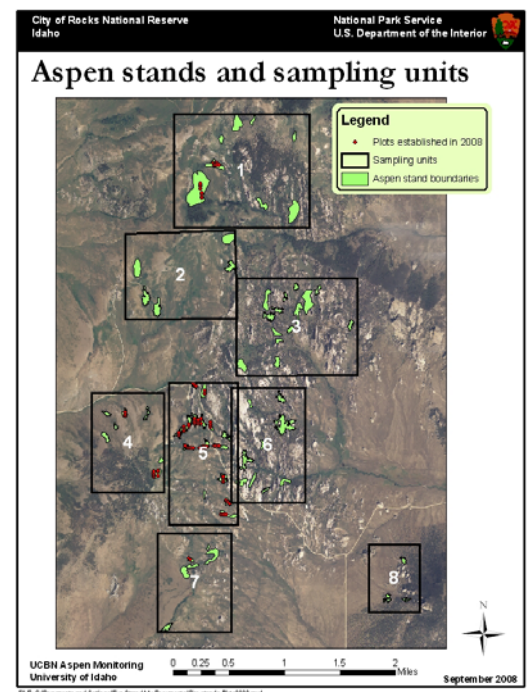
- Provide information and decision support to park management.
- Identify stands with insufficient regeneration or a negative trend in regeneration, decreasing live aspen abundance, or increasing conifer density.
- Record long-term trends for climate change assessments and effects in parks.

Contact Information

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In 2008 students from the Oregon Museum of Science and Industry (OMSI) assisted UCBN in collection of aspen stand structure data



Sampling units in City of Rocks National Reserve., 88 plots in 16 stands were sampled in 2008 in sampling units 1, 4, 5 and 6.