

Catoctin Mountain Park

Natural Resource Condition Assessment Brief

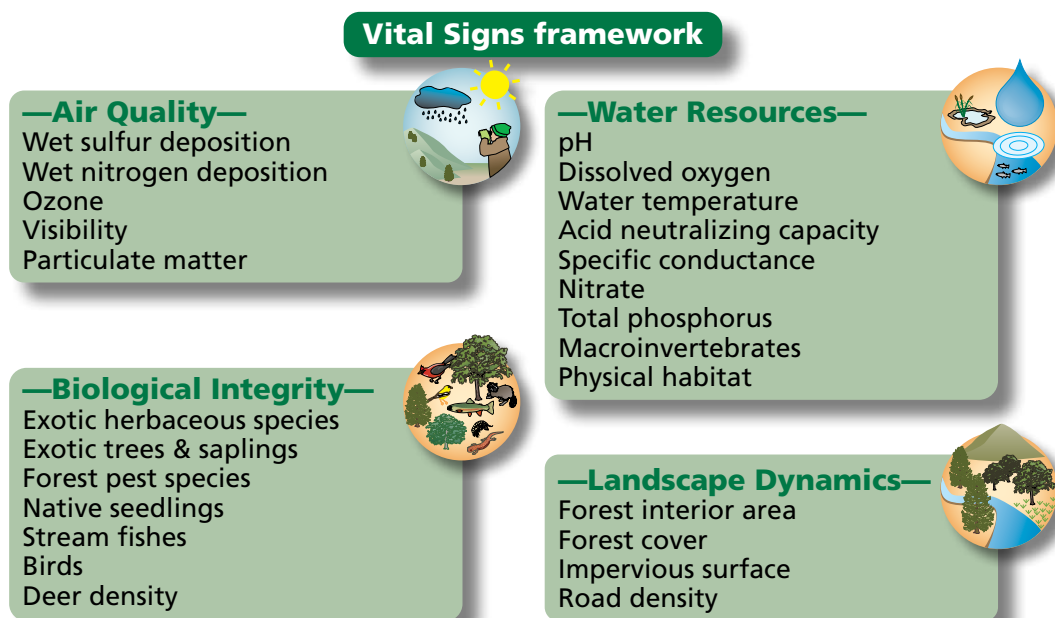
National Park Service
U.S. Department of the Interior



Natural Resource Condition Assessments (NRCAs) evaluate the current condition of a subset of natural resources and resource indicators in a national park. This brief summarizes the findings of the 2013 NRCA for Catoctin Mountain Park.

Natural resources in Catoctin Mountain Park are in moderate condition overall. A vital signs framework was used to assess natural resource conditions within Catoctin Mountain Park. Within each vital sign, we identified indicators like ozone levels, stream water pH, and the number of native tree seedlings present, and sourced related data. We established reference conditions for each indicator and calculated their

percentage attainment of reference condition. A score for each vital sign category (air quality, biological integrity, water resources, and landscape dynamics) was calculated by averaging indicator scores in that category. We then averaged vital sign categories to calculate an overall park assessment. Based on key vital sign findings, management recommendations were developed and data gaps were identified.



Natural resource condition assessment of Catoctin Mountain Park.

Vital Sign	Reference condition attainment	Current condition
Air Quality	13%	Very degraded
Water Resources	80%	Very good
Biological Integrity	44%	Moderate
Landscape Dynamics	81%	Very good
Catoctin Mountain Park	55%	Moderate

KEY FINDINGS AND RECOMMENDATIONS

Overall, the natural resources of Catoctin Mountain Park were in moderate condition.

The vital signs framework showed that air quality condition was generally very degraded, water resources condition was generally very good, biological integrity condition was variable but moderate overall, and landscape dynamics condition was generally very good.

Air Quality

Air quality was in a very degraded condition. Degraded air quality is a problem throughout the eastern United States, and while the causes of degraded air quality are largely out of the park's control, the specific implications to the habitats and species in the park are less well known. Gaining a better understanding of how reduced air quality is impacting sensitive habitats and species within the park would help prioritize management efforts.

The close connection between climate and air quality is reflected in the impacts of climate change on air pollution levels. In particular, the U.S. EPA has concluded that climate change could increase ozone concentrations and change amounts of particle pollution.

Water Resources

Water resources were in very good condition overall. However, total phosphorus was in a very degraded condition, which is similar to results found in parks throughout the region. Specific conductance is currently in very good condition but is showing a general degrading trend, also in keeping with trends throughout the region. The stream Physical Habitat Index is on the borderline of being classified as being in degraded condition, so more data about sensitive locations and which parts of the index are failing would be informative. Data gaps and research recommendations revolve around maintaining good water quality by identification of nutrient sources and sensitive organisms.

The cold temperatures of streams in Catoctin Mountain Park support several species of trout. Water temperature increase is one of the most immediate threats from climate change, and this would result in the loss of trout from Catoctin's streams.

Biological Integrity

Biological integrity was in a moderate condition overall, although results for individual metrics were variable. Deer density and the tree seedling stocking index

were both in very degraded condition. Studies show a relationship between high deer density and poor forest regeneration and as such, deer management should continue to be a top priority. Other monitoring recommendations include exotic species monitoring and education, and continuing to monitor pests and plant diseases. Data gaps and research needs include developing a bird index for non-forest species and modeling the effects of climate change and other stressors on the region's forests.

How climate change may affect the park's resources and habitats should be an ongoing research focus, in particular how it might affect the introduction and spread of exotic species and forest pests and diseases.

Landscape Dynamics

Landscape dynamics were in a very good condition overall. Forest interior area, forest cover, and impervious surface (at various spatial scales) were all in good or very good condition, as was road density within the park. This is due at least in part to the proximity of several protected areas—Cunningham Falls State Park immediately to the south of Catoctin Mountain Park, South Mountain Park to the northeast, and Seymour B. Cooper Memorial Wildlife Sanctuary to the east of the park. However, road density adjacent to the park was in very degraded condition, mostly due to the proximity of the towns of Thurmont to the southeast of the park and Cascade to the north of the park.

Research needs for the park mostly relate to its function as a habitat corridor in the region. Catoctin Mountain Park has conducted workshops to plan for different climate change scenarios. Even under a plausible climate future with the least change from existing climate conditions, impacts and implications to the park are substantial and include a drier landscape, increased storms and wildfire, decrease in brook trout habitat, increase in floods and erosion, and less annual snowfall. How climate change may affect the park's resources and habitats should be an ongoing research focus.

CONCLUSIONS

Natural resources in Catoctin Mountain Park are in moderate condition overall but are under threat from surrounding land use, regionally poor air quality, and overpopulation of deer. Climate change is predicted to negatively affect many of the natural resources of the park, including increasing ozone levels and particle pollution, raising the water temperature of these cold-water, trout-supporting streams, changing forest composition, and affecting exotic species and forest pests and diseases.

Developed in collaboration with:



For more information, please visit the Park's Visitor Center or call (301) 663-9388.

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