

Worksheet to Identify Potential Indicators for Ecological Monitoring

You return to visit your park in 20 years and walk through the park with the current resource manager. The manager tells you about the current condition of the natural resources, the management issues, and threats of the day. What would that person describe to you?

Exotic plants will continue to be a problem. Air quality. Development, especially near Keystone. Protecting the Starling Basin area will continue to be important. Surface water from parking lot and elsewhere polluting the groundwater (affect both drinking water and natural water quality issue). Interest in Black Elk Wilderness being within the park. Fire control/management will continue to be an issue. Interest in peregrine falcon and bighorn sheep. Visitor carrying capacity is being approached for sewer system and parking lot, and fresh water supply. Effects of climbers and other natural resource users on the park.

What are the park's most significant natural resources (e.g., the river and its tributaries, caves and cave fauna, rare plant communities, elk herd)?

Granite. Old growth forest which is a remnant of the historic Black Hills. Diversity of botanical features.

What does your park contribute to regional biological diversity (e.g., what natural resources are preserved and protected at your park that are altered or threatened throughout the rest of the region)?

See above.

What park-specific legislative mandates direct the park to monitor a particular natural resource at your park.

The enabling legislation talks about the forest setting. It implies the visibility.

What federal and state-listed threatened and endangered species are known to occur in the park?

Recent consultations determined that none present that could be impacted.

What is that status of your park's management plans?

1980 GMP (revised in 87 to include the development). Will do another one soon. RMP in 91-92. Climbing mgt plan in 1998. Interp plan in 1992. Cultural plan completed. Fire Management in 2003. No exotic plan. Has a Business Plan and Strategic Plan.

What is currently being monitored at or near the park by NPS or other entities (e.g., plants by fire effects program, plants by LTEM, exotic plants by exotic plant teams, birds by Breeding Bird Survey, butterflies, stream by USGS, Christmas bird count, weather data, NRCS photography, visitors by park staff, state roadside counts --- use the checklist below)?

Air: *No. Did have monitoring in cooperation with state up to 1994. Was a state program.*

Amphibian: No.

Birds: No.

Fire: *Fire Effects.*

Fish: *Several fish inventories and surveys, but no long-term monitoring.*

Geology: Yes. ReSpec.

Mammals: No (state may have some collared animals show up).

Meteorology: NWS reporting station. Has RAWS station.

Pests: Park puts out gypsy moth traps they get from FS. Have actually caught a few. Pest Management plan related to cultural resources.

Pesticides No.

Reptiles: No

Soils: Per tests. State will require park to monitor soil perc as a result of Effluent.

Sound: Have aircraft overflight study. Ft. Collins was involved. Mike has her card.

Vegetation: *No other than Fire Effects and EPMT.*

Visitors *Has a 1987 and 1988 visitor survey. Climbing use study in 95 with U. of MN.*

Visual Landscape: *No.*

Water Quality: *Potable water and waste water. And discharge from parking garage. U. of Santa Barbara has gotten water sample for a study. Pennington County Water Commission Mike McMann looked into water quantity as it relates to structures and developments. Ft. Collins WRD may have the report (by Rick ?).*

Wildlife or Plant Disease: No formal monitoring.

What are the stressors on park resources? What are the sources of each stressor?

Air quality. Altered fire regime. Exotic plants. Mountain goats. Park objectives, structures, visitor numbers and new development to accommodate visitors. Climbers and use on Blackberry trail. Development outside the park. Pine beetle. Helicopter and sound. Development impacts on water quality (runoff).

What potential management actions in the future may require monitoring (e.g., potential species reintroductions, land acquisitions, commercial uses)?

Education center. Prescribe burns.

What would your partners like you to monitor?

Visitor use. State wants monitoring of water quality. State wants Mt. Rushmore to be visible. FS wants to monitor fuels. State is concerned of mountain goats.

What current research is occurring at the park (research differs from monitoring in that it is typically of shorter duration, say 2-3 years)?

Check the permit system. May try and get a digital mapping of the faces.

Vital signs are: 1) sensitive enough to provide early warning of change, 2) have low natural variability, 3) can be accurately and precisely measured, 4) have costs and effort of measurement that are not prohibitive, 5) have monitoring results that can be interpreted and explained, 6) are low impact to measure, and 7) have measurable results that can be replicated with various personnel. Off the top of your head, look into your crystal ball and choose several vital signs to monitor over time to track the condition of natural resources within your park (items can range from broad, e.g., the stream, to narrow, e.g., a particular species). What are those vital signs? Rank them in order of importance.

Geology of the mountain.

Visibility from Iron Mountain road (air quality).

Water quality and quantity for the environment and for domestic use.

Number and distribution of goats (and potential impact on plants).

Old growth pine health.

Vegetation community as a whole.

Exotic plants.

Pine beetles.

Birds