



United States Department of the Interior

NATIONAL PARK SERVICE

Pacific Northwest Region
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Memorandum

To: Associate Regional Director, Operations,
Pacific Northwest Region

Through: Chief, Resource Management and Visitor
Protection, Pacific Northwest Region

From: Natural Resource Specialist, Pacific Northwest Region

Subject: Trip Report - Craters of the Moon National Monument
May 7-11, 1989

I. PURPOSE OF VISIT

Crater of the Moon has been conducting a variety of research and monitoring activities over the past few years under the direction of the University of Idaho Cooperative Parks Study Unit (CPSU). Because of the park's remoteness from the Regional Office, seldom can their programs be reviewed. This session was arranged to discuss various resource management issues with the park's Chief Ranger Neil King and Ranger/Natural Resource Specialist Shelley Sparhawk. The meeting also involved CPSU scientist Dr. Gerry Wright who discussed ongoing and past research. Most of the week's discussions took place in the field where the type and condition of natural resources could be observed.

Chief of Interpretation Dave Clark participated in the concluding session to understanding the purpose, extent, and results of the programs which could be interpreted for the public. Superintendent Bob Scott was unable to attend because the PNR Superintendent's Conference was also held that week.

II. BACKGROUND

The park's resource management program is extensive and covers a variety of natural resources. Plant and animal inventories, non-native plant management, data base management. Where programs are not occurring, the staff has examined the resources and decided on planning or mitigation activities which should be undertaken. They have requested funding for their critical program and incorporated many into daily operations. The chief

ranger assures that the park ranger's tasks are almost entirely related to natural resource programs. This assures that programs receive full attention.

Another reason for the success of the research and resource management programs is the outstanding assistance provided by the Dr. Gerry Wright, CPSU director at University of Idaho. He has an in-depth knowledge of plant and animal resources of the entire park and is on-site frequently enough to conduct and/or supervise the work. The exemplary cooperation between the staff and the CPSU has resulted in a variety of scientifically important programs destined to expand our knowledge of the condition and threats to resources within the park. Neil King, Shelley Sparhawk, and Gerry Wright are commended for their work.

III. SITES VISITED

On May 7, Sunday afternoon, we discussed the week's agenda, specifically projects and methodologies which they wished to evaluate. We viewed the front-country volcanic features, spent a day in the wilderness areas at cave sites, water holes and backcountry camping zones. We reviewed vegetation transects in natural vegetation and pulled mullein, an exotic, along the roadside while discussing preferred treatments. North of the highway, in the riparian zone, we visited the research station.

IV. CURRENT RESOURCE MANAGEMENT PROGRAMS

A. Progress

May 8 Monday

1. Non-native Vegetation Encroachment We tested the use of a spade to cut the stems of mullein plants 3 inches below the surface, thereby causing death. The park is also using Roundup along this same roadway. Shelley will write an IPM plan for mullein. She will also monitor the effectiveness of herbicide treatment as well as spading.

2. Mine Tallings Silver mining peaked in the late 1800's until 1913. The site of one old abandoned mine has been partly revegetated with great basin wild rye. Another mining site in the area will also be rehabilitated as funding and staff time become available. Because it is out of view of visitors, and no additional impacts are occurring, this resource management project is a low priority.

3. Air Quality Monitoring In the frontcountry several instruments measure air quality parameters. Visibility is monitored by an automatic camera which takes pictures at a point on the horizon where the engineering laboratory, INEL's, exhaust plume would likely be seen if discharged.

The park maintains both a dry and wet sampler for acid rain deposition. A high volume sampler measures the suspended particulate matter. EPA uses CRMO as a national standard for particulates and states that CRMO is among the areas in the U.S. with the cleanest air.

May 8 in the evening we attended a State Air Quality Board meeting open to the public. The State vs EPA Agreement on air quality was discussed. The documents purpose was to identify, coordinate, and State, local, and EPA tasks needed to protect health, aesthetics, and environmental pollution. The informed group of citizens in attendance had several questions and concerns about the permit process and were quite vocal in their attempts to prevent industry from polluting.

The staff expressed their appreciation for Mike Tollefson's participation in CRMO's A Day in the Air. Nearly 1500 visitors attended, viewing the monitoring station and participating in demonstrations. The May 1989 issue of the COURIER describes the importance of this public event.

4. Storage of Pesticides and Applicator Safety Shelley Sparhawk (IPM Coordinator) and Janet inspected the pesticide storage area. A separate storage cabinet is needed to house remaining chemicals since they are toxic substances. Hand sprayer and personal protective gear were available and are used by the staff every time pesticides are used.

May 9 Tuesday

1. RMP Revised Guideline

A. The major changes for preparation of RMP were discussed as well as the objectives for the upcoming workshop. Projects were identified which need major revision (See Attachment.)

2. Visitor Use Impacts along Frontcountry's Loop Drive

A. A new interpretive site is proposed at Big Sink a pahoehoe and aa aa flow. It displays a unique example of a collapsed flow.

B. Since visitors tend to head directly from the campground to the first stop along the Loop Drive, social trails are developing across the lava flow. It was suggested that a trail be constructed from the campground to the first lava feature on the Loop.

C. Inferno Cone has enough use that a path has been developed up the cinders and the top flattened somewhat.

Several possibilities were discussed for mitigating the impacts. Closing the cinder cone to foot traffic was rejected as an unacceptable alternative since the Loop Drive is designed to provide several unique encounters with different types of lava domes and flows.

The park staff will continue to investigate various types of paths such as sand ladders, but will not install one immediately until all options have been considered. The constructed path would be more unsightly than the displaced cinders resulting from regular foot traffic. Although there is some downward movement of particles, that process is slow and the park favors raking cinders back into place.

It was also decided that Inferno Cone would not be considered as one project statement but that a new statement would be written which combines all front-country features. There are similar trails along other cones in the Loop Drive.

D. Some areas near the walking path along the loop drive have been revegetated, primarily near the spatter cones. Off-road vehicles have damaged buckwheat-covered volcanic soils, therefore, individual plants will be relocated.

3. Monitoring Fire Effects Three years ago a fire occurred on BLM property adjacent to the park. Two transects have been placed in this sagebrush community, one on a south-facing slope and a northeast facing slope. They extend 50 meters within an enclosure and 50 meters outside of it, where grazing occurs. Dr. Wright and Dr. Steve Bunting (OSU fire ecologist) will read the transects this year and analyze the data to determine how many more years the transects should be read. Reading the transects requires a high degree of familiarity with all the grassland plant species and is quite difficult for new NPS rangers/ or resource managers to learn if they are new to the idea.

4. Basic Resources Inventory There are several components to the inventory. The deer population count has been in place for several years. A census is taken twice a year. In fall the number of bucks, does, and young are counted and in spring the doe/fawn ratio is calculated. All deer observed along a road transect are counted. There are 8 surveys per year. Hunter statistics and road kills are also used in the population analysis.

In the last few years a bird census has been added. The census is an indicator of long-term health of the ecosystem. The monitoring measures species diversity in specific vegetation types. The four top priority habitat types will be

monitored each year and two others from a list of 17 total habitat types. Approximately 60 bird species will be recorded through these monitoring efforts.

Some consideration has been given to requesting Regional science dollars to employ an ornithologist for the bird survey because it requires an impressive knowledge of numerous bird songs. For now, the park staff will attempt to become proficient in survey methods. This will require study time in winter and spring, instructional tapes, and spring practice sessions in the field before monitoring begins. Spring 1989 was a test season, during which time Shelley Sparhawk developed the study aids necessary and will investigate the use of volunteers with extensive birding experience. A small mammal inventory was completed by the CPSU. It resulted in baseline data and yearly monitoring is not required.

May 10 Wednesday

1. Deer Browse Monitoring Monitoring vegetation transects in areas of heavy deer browsing is also included in the basic resource inventory. These transects, found at Coyote Butte, measure density, percent cover and frequency of plant species. They are read for three years (1980-82), not read for the next three years, then read again for three years (1986-88) and so on. Dr. Wright will analyze the data and determine if monitoring should be discontinued. The study was intended to determine if available browse is decreasing because of an increase in the deer population. The transects may not be needed because the deer census will provide data on population changes.

In addition, Gerry Wright has established 50 photopoints throughout the park to monitor vegetation and geological features. Some are the exact location as historic photographs. Photos will be taken on a rotation basis and often by the park staff, sometimes by the CPSU. Dr. Wright recommended establishing two frequency vegetation transects elsewhere in the area and monitor them by the same method (nested frames) as the fire transects. This new transects will also become part of the basic resource inventory program.

2. Standard Operation Procedure (SOP) for Research The group decided that an outline of all the routine research and monitoring activities with a description of the methods to be used would be useful for institutionalizing the activities. For park staff a procedures manual will be useful for assuring that identical field methods are used and to clarify the purpose of the research.

This SOP, to be prepared by the Chief Ranger, will also include a schedule of activities since it is crucial that monitoring take place at specified times in order for the data to be scientifically valid. A bulletin published by the Forest, Wildlife, and Range Experiment Station at the University of Idaho in 1988, A Review of Scientific Research at Craters of the Moon National Monument can be used as a guidelines for the SOP.

3. Backcountry/Wilderness Management Only a relatively small proportion of the park's visitors hike into the backcountry. No visitor use occurs in the winter and less than 100 backpackers use the backcountry during the summer months. One of the limiting factor is the lack of water. Because visitor use is so low, impacts are not detectable. There is rarely a fire ring, no bare soil or denuded vegetation has been observed. No evidence of camping is visible except for occasional displaced rocks. No overnight horse use is allowed.

Nevertheless photopoints will be taken at Echo Crater, a designated camping area. Perhaps one horse group per year requests permission to ride in the Wilderness zone. The staff feels that implementation of Limits of Acceptable Change (LAC) is unfeasible at this time since resource conditions are pristine.

The park staff was contacted by the PNRO Recreational Planning Division about the feasibility of routing the Centennial Trail through the wilderness of CRMO. After careful consideration, the park staff discussed this proposal with Kathy Maurich, PNRO, and stated that this would not be possible because of the limitations posed by the lack of water resources and the long, rough hike or ride across the lava flows. Foot travel is extremely difficult, slow and often unpleasant in rough terrain and dense vegetation.

4. Data Base Management Gerry Wright hired a temporary employee to computerize data about all the literature available about CRMO natural resources. This final disk will remain with the park to update as more literature is written and is maintained in the park library. This project is part of the 3-year Regionwide Data Base Management program for every park in the Region. It is funded through NRPP money.

Different software programs have been used for different data sets ie, DBASE, LOTUS, and a statistical analysis package. The staff would like to establish a better integrated system of managing data. Roger Hoffman, a CPSU research technician wrote a custom program for wildlife observations.

5. Geographic Information System A GIS would be useful for storing and automating map data for all the inventory and monitoring efforts by the park and the CPSU. Fire management efforts units will be entered. The CPSU has the \$30,000 hardware and will use ARCINFO software. A person will be needed to operate the computer. An initial investment of time will be needed to learn the software capabilities and become skilled at its use. Most recently the CPSU received \$40,000 for inventory and monitoring some of which will be used for CRMO's GIS.

May 11 Thursday

1. Interpretation Gerry Wright will prepare a summary of Basic Resource Inventory which can be used for interpretation. The final product can be written by Dave Clark, Chief Interpreter. Dave suggested that all researchers be required to prepare an abbreviated summary of their methods and findings which can be used by interpreters.

2. Cave Management Approximately 100 caves have been located in the park. Seventy were inventoried by a 2-person volunteer team who delivered impressive original maps and descriptions. They plan to gradually survey more as time permits. Shelley is working with other volcanic parks who have already prepared a cave management plan.

B. Needs

1. Plans

A. Fire Management Plan will be completed in fall with the assistance of the CPSU. The revised plan will include a map of fire management zones ie natural prescribed fire, suppression etc.

B. Cave Management Plan will be written in fall and winter of 1989-90.

C. Resource Management Plan will be revised in winter 1990.

D. Wilderness Management Plan is complete and is was under review by local agencies until May 15. The plan has already been approved by the Regional Director. Any changes made by the park which address local agency concerns will be incorporated by CRMO and need not return to the Regional Office for review.

V. SUGGESTIONS

Having different funding sources (ie AIR, WATER, NRPP) which could apply to the same project in the RMP, makes it difficult for the parks to decide under which source funding should be requested. The changes of receiving funding from a particular source varies from year to year.

If a workshop is to be held and there is another to be scheduled, consider having them back-to-back so remote parks like CRMO can benefit from lower travel costs.

VI. FOLLOW-UP ACTIVITIES

The staff wishes to invite the Regional Wilderness Committee to CRMO for a field investigation of this relatively untouched backcountry zone. During this time the group could assess methods for maintaining such ecological integrity.

There will be a slide-talk, at the Tuesday, June 27 staff meeting, on research and resource management at CRMO.



Janet Edwards

Attachments (3)
RMP Projects
CRMO Action Plan
CRMO Research & RM

cc:
CRMO, Superintendent Bob Scott w/enc
CRMO, Neil King/Shelley Sparhawk w/enc
PNRO-RP, Kathy Maurich w/enc
PNRO-RS, Jim Larson w/enc
PNRO-RS, Shirley Clark w/enc
CPSU-UI, Dr. Gerry Wright w/enc

ATTACHMENT 1

Resource Management Plan Projects Which Need Major Revision

1. Basic Resources Inventory
 - A. Include water resources. Map and categorize pot holes, ice caves, and the riparian zone. Some water holes are being lost.
 - B. Describe the method of monitoring deer populations, including browse transects.
 - C. Discuss aerial photographs as a tool for inventorying resources.
 - D. Include an invertebrate study, including herpetology.
 - E. Include a study of the lichen community
2. Data Base Management
 - A. Add GIS component
 - B. Include data from field surveys
3. Fire Management
 - A. Now that the Fire Management Plan is nearly completed, funding is needed to implement it. Currently the CPSU is adding information requested by PNRO and the park.
4. Limber Pine Ecology Study
 - A. Unique at the park's high elevation, the pine density is increasing 4% per year. A better understanding of the biology and ecology of the plant are needed.
5. Monitoring Resources
 - A. It is a high priority to combine all resource and monitoring including vegetation, birds, and post-burn wilderness area.
6. Vegetation Management
 - A. Mitigating measures taken to eradicate pests should be considered.
 - B. The non-native plant control program within the park should be strengthened. Currently the park has some infestation from mullein, cheatgrass, diffuse and spotted knapweed,

7. Visitor Impacts To Front-Country Volcanic Features
(including Inferno Cone.)

A. Determine and construct protective devices

B. Investigate the impacts from the following activities:
 unpaved trails,
 volcanic rock collections,
 illegal off-road vehicle travel
 campsites, front-country

CRATERS OF THE MOON ACTION PLAN FOR RESOURCE MANAGEMENT

p. 1

PROJECT	PARK	OBJECTIVE	TARGET
Air quality particulates Hi-vol sampler	CRMP/IDAHO	Monitor every 6 mos.	Ongoing
Air quality visibility INEL plume	INEL/CRMO	Photo taken automatically every minute	Ongoing
Air quality visibility	CRMO	Monitor 3 times per day	Ongoing
Meteorological station	CRMO/NOAA/INEL	Monitor atmospheric cond.	Ongoing
Air quality acid precip.	CRMO/BLM/NADP	National atmospheric deposition site	Ongoing
Coyote Butte vegetation monitoring	CPSU	CPSU will analyze the data to see if monitoring should be discontinued. CPSU will read this summer.	11/89
Vegetation monitoring	CPSU	Monitor by photopoints. Locate areas for new veg transects to monitor veg change.	12/89
Geological features monitoring	CPSU	Add new photopoints in areas where changes may occur.	6/90
Mule deer survey	CRMO	Monitor population change	Annually
Bird census	CRMO	Develop SOP's, training aids, prepare for first year of annual monitoring, spring 1990	9/89
Vegetation-fire effects	CRMO	Monitor nested plots	Annually
Fire Mgmt Plan	CPSU/CRMO	Complete first draft	9/89
Statement for management on resource monitoring	CRMO	Write statement on importance of monitoring program so that it is institutionalized	8/89

CRATERS OF THE MOON ACTION PLAN FOR RESOURCE MANAGEMENT

p. 2

PROJECT	PARK	OBJECTIVE	TARGET
Work schedule for accomplishing all monitoring activities	CRMO	Write a schedule of activities by week or season	8/89
Resources Mgmt Plan	CRMO/CPSU	Revise for new format	3/90
Baseline resource inventory	CRMO	Rewrite basic resource inventory to include other components of the natural environment	3/90
Data base management	CRMO/CPSU	Determine methods and direction	3/90
Visitor Impacts to Geologic Features	CRMO	Address visitor use impacts around the loop	3/90
Vegetation Management	CRMO	Include non-native plant management	3/90
Basic resources monitoring	CRMO	Describe entire monitoring program	3/90
Limber pine ecology	CRMO	Discover why limber pines are increasing	3/90
Cave Management	CRMO	Will update project statement	3/90
Threatened/Endangered Species	CRMO	Need a separate project statement even though it will be included in cave mgmt. proj. statement	3/90
Air quality particulates Hi-vol sampler	CRM/IDAHO	Monitor every 6 months	Ongoing
Air quality visibility INEL plume	INEL/CRMO	Photo taken automatically every minute	Ongoing
Air quality visibility	CRMO	Monitor 3 times per day	Ongoing
Meteorological station	CRMO/NOAA/ INEL	Monitor atmospheric cond.	Ongoing

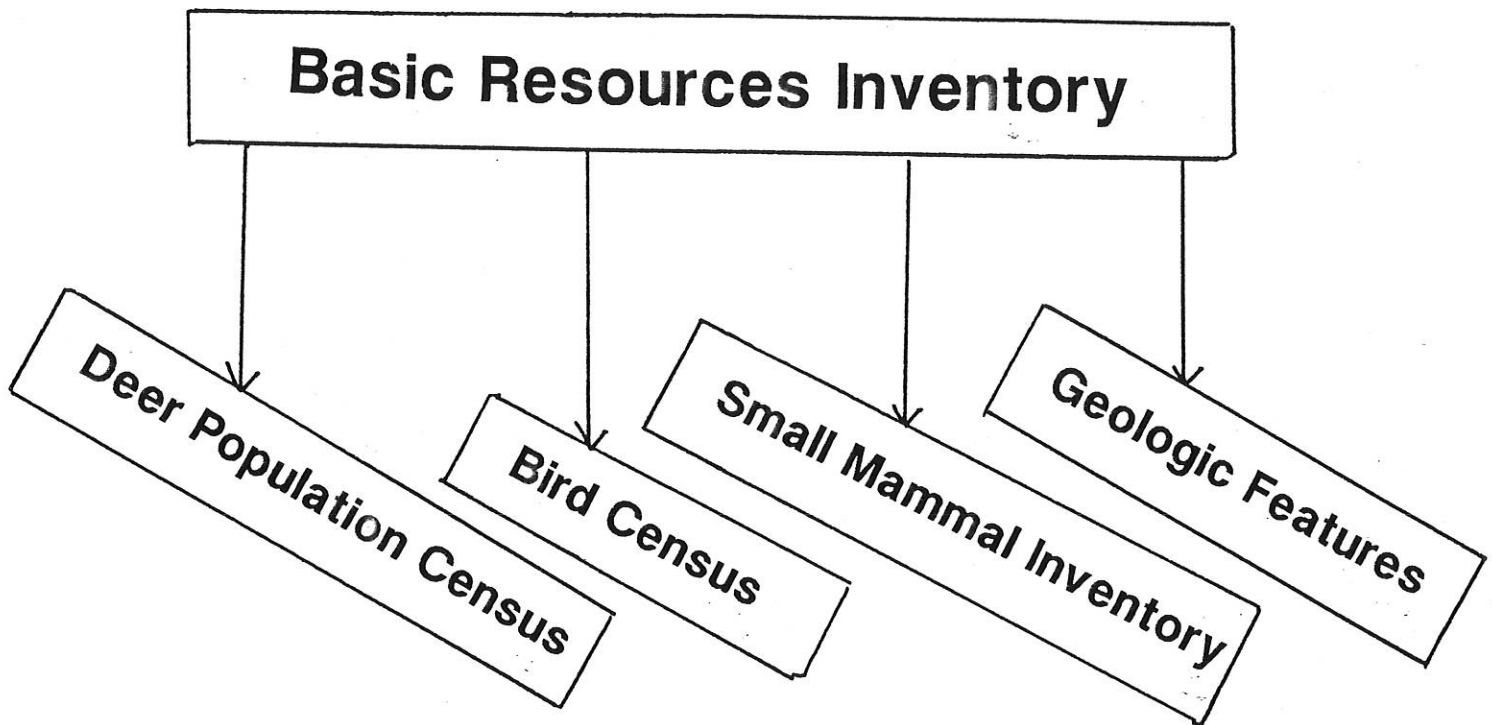
CRATERS OF THE MOON ACTION PLAN FOR RESOURCE MANAGEMENT

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PROJECT	PARK	OBJECTIVE	TARGET
Air quality acid precipitation	CRMO/BLM/ NADP	National atmospheric deposition site	Ongoing
Coyote Butte Vegetation monitoring	CPSU	CPSU will analyze the data to see if monitoring should be discontinued. CPSU will read this summer.	11/89

CRATERS OF THE MOON NM

RESEARCH AND RESOURCE MANAGEMENT



Monitoring

Air

Acid Rain

Visibility

Particulates

Weather

Plants

Shrublands

Limber pines

Fire effects

Animals

Deer

Birds

Geology

Visitor Impacts

Wilderness

Visitor Impacts

Characteristics

