NATIONAL NATURAL LANDMARK EVALUATION

Middle Canyon Alluvial Fan
Proposed Research Natural Area (Idaho)

Columbia Plateau Natural Region

Salt Desert Shrub Theme

Low Shrub, Upland Salt Desert Subtheme

November 1989

prepared for

U.S. Department of the Interior
National Park Service

by

The Nature Conservancy
Idaho Field Office
P.O. Box 64
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Susan Bernatas Date

INTRODUCTION

The term salt desert shrub is used to describe a group of associations which occur in areas of low precipitation and saline or droughty soils (The Nature Conservancy et al. 1989). These areas are dominated by low growing shrubs and semi-shrubs of the goosefoot family (Chenopodiaceae). To adequately represent the range of diversity within the salt desert shrub theme it was proposed, in Phase I of the current study, to include two subthemes: Black Greasewood, Playa and Valley Shrub and Low Shrub, Upland Salt Desert Shrub. The latter subtheme is characterized by a domination of one to several low shrubs of the goosefoot family occurring on well drained, upland habitats, and a lack of black greasewood. This report evaluates a potential NNL site to represent the Low Shrub, Upland Salt Desert Shrub Subtheme within the Columbia Plateau Natural Region.

In the 1989 Phase II study, five Low Shrub, Upland Salt Desert Shrub Subtheme sites were evaluated on the basis of illustrative character, condition, diversity, rarity, and value for science and education (Crawford et al. 1989). The following sites were evaluated: Middle Canyon Alluvial Fan proposed Research Natural Area (PRNA) (ID), Sugar Valley Badlands PRNA (ID), Southwest Lemhi Range PRNA (ID), Idaho National Engineering Laboratory (ID), and Honeycombs RNA (OR). On the basis of this evaluation, the Middle Canyon Alluvial Fan PRNA was chosen as the best example of this subtheme.

SITE CHARACTERISTICS

Location

Middle Canyon Alluvial Fan PRNA includes part of the alluvial fan that issues from the mouth of Middle Canyon in the southwestern Lemhi Range, about 9.7 km (6 mi) to the north-northeast of Howe, Butte Co., Idaho. The approximate center lies at a latitude of 43°52'00" north and a longitude of 112°58'00" west.

Lands within the proposed NNL boundary lie within Township 6 North, and Range 29 East. The U.S. Geological Survey topographic map coverage is available using the following quadrangles: Little Lost River Sinks, Idaho (7.5'), 1969; and, Tyler Peak, Idaho (7.5'), 1969. The Circular Butte Quadrangle Surface Management Status map, 1:100,000-scale series, published by the Bureau of Land Management (BLM) also provides coverage.

The site lies 9.7 km (6 mi) north-northeast of Howe, Idaho. Access to the Middle Canyon Alluvial Fan PRNA is via a good unpaved road that approaches the mouth of the canyon from the south. Travel 4.0 km (2.5 mi) east of Howe, on U.S. 22. Take a left (north) onto a gravel road. Travel 6.4 km (4 mi) to an irrigation ditch. Cross the ditch and head west 1 km (0.6 mi) to the lower boundary of the proposed NNL. It is advisable to carry BLM Surface Management Status or USGS topographic maps to facilitate access.

Figure 1. Location of Middle Canyon Alluvial Fan PRNA National Natural Landmark in Butte County, Idaho.

R 29 E T 6 N

Boundary

A boundary was chosen to encompass the range in diversity of Low Shrub, Upland Salt Desert Shrub communities in Middle Canyon Alluvial Fan proposed NNL. The boundary is the minimum required to include an adequate representation of features needed in the Low Shrub, Upland Salt Desert Shrub Subtheme. The NNL boundary follows topographic features on the west, south and east sides. The northern boundary follows the boundary between the BLM land and the Challis National Forest. The proposed NNL boundaries coincide with the proposed RNA boundaries.

The proposed Middle Canyon Alluvial Fan NNL lies in the following sections within T6N, R29E (See Figure 1):

The following was adapted from Caicco and Wellner (1983).

The northern boundary of the proposed area follows the boundary between BLM land and the Challis National Forest; the southern boundary follows the unimproved road which runs along the base of the alluvial fan in Sections 14 and 15, T6N R29E. The western boundary follows a draw which intersects the road about 0.16 km (0.1 mi) NNE of the center of Section 15, taking the left branch at the two points and ending at the intersection of the 1707 m (5,600 ft) contour interval with the northern boundary. The eastern line begins about 0.64 km (0.4 mi) south of the center of Section 14, and follows a drainage to the intersection of the northern boundary with the 1743 m (5,720 ft) contour. See Figure 1 on page 3.

Size

The total area contained within the proposed NNL is estimated to be 750.3 ha (1,854 acres). Area was computed using a Tamay Planix 5000 digitizing planimeter.

Description

The proposed Middle Canyon Alluvial Fan PRNA NNL, as the name implies, is an alluvial fan that issues from Middle Canyon in the southwestern Lemhi Range. The alluvial substrate is assumed to be calcareous in nature as the material it is derived from is limestone. The topography gently slopes from the mouth of the canyon with elevations ranging from 1767 m (5,800 ft) at the upper boundary to 1474 m (4,900 ft) at the lower. The Lemhi Range is a fault-bounded and a major fault is inferred to underlie the fan (Ross, 1961).

The alluvial fan is comprised of a mosaic of associations, whose distribution appears to correspond to soil depth and, to a lesser extent, topographic position and aspect (Caicco and Wellner, 1983) . The primary feature is the presence of a variety of salt desert shrub associations in excellent to very good range condition. Commonly known as saltbushes, shrubby chenopods (Chenopodiaceae) are the principal vegetal components of salt-desert shrub ranges. Shadscale (Atriplex confertifolia) and winterfat (Eurotia lanata) are some of the dominant chenopods on Middle Canyon Alluvial Fan PRNA are. Important members of the aster (Compositae) family found in

salt-desert shrub associations are black sagebrush (Artemisia nova) and green rabbitbrush (Chrysothamnus viscidiflorus). The other notable feature of salt-desert shrub ranges is that the vegetation is characteristically sparse.

Shadscale dominates the overstory on Middle Canyon Alluvial Fan PRNA, while understory dominants include Indian ricegrass (Oryzopsis hymenoides), bottlebrush squirreltail (Sitanion hystrix) bluebunch wheatgrass (Agropyron spicatum), Salmon River ryegrass (Elymus ambiguus var. salmonis), and needle-and-thread grass (Stipa comata).

Three salt desert shrub communities dominate the proposed NNL. Shadscale/Indian ricegrass association covers the majority of the proposed NNL especially on the upper portion of the fan. Shadscale/bottlebrush squirreltail association dominates the lower fan. The winterfat/Sandberg's bluegrass (Poa sandbergii) association is located on the upper fan adjacent to the shadscale associations.

Black sagebrush communities are found in lesser amounts on the alluvial fan. Black sagebrush/Indian ricegrass association occurs on the upper portion of the fan between washes, black sagebrush/bluebunch wheatgrass association occurs on the upper fan and middle slopes and on lower shallow slopes and along drainage channels, and black sagebrush/Salmon River ryegrass is found on rocky canyon slopes.

The following characterization of the climate of central Idaho is adapted largely from Ross and Savage (1967).

Temperatures at Middle Canyon Alluvial Fan are typical of central Idaho with the lowest temperatures occurring in January and high in July. There is a bimodal precipitation pattern with the maximum occurring in May-June and a secondary peak in the winter. March and October are the driest months. The frost free period is 100 days. These generalizations are borne out by precipitation and temperature records from Howe, Idaho, 9.6 km (6 miles) southwest of the proposed NNL and 25 m (82 ft.) below its lower boundary (Table 1).

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Table 1. Average mean monthly and mean annual precipitation and temperature for the period 1962-1981 at Howe, Idaho (Molnau, 1983).

	Temperature				Precipitation		
	Mean Maximum		Mean Minimum		Mean		Percent Annual
Month	°F	°C	°F	°C	mm	ins.	%
January	28.9	11.3	6.7	-10.9	0.84	213	8.6
February	35.1	17.5	11.6	-11.2	0.56	142	5.8
March	43.3	25.7	19.2	- 7.0	0.52	132	5.4
April	60.8	43.2	30.5	- 0.8	0.67	170	7.0
May	68.2	50.6	39.2	3.9	1.31	333	13.5
June	75.9	58.3	45.1	7.2	1.46	371	15.0
July	85.7	29.5	50.5	10.2	0.58	147	6.0
August	83.3	28.2	48.0	8.8	0.74	188	7.7
September	72.3	22.2	38.3	3.5	0.63	160	6.5
October	59.6	15.2	27.5	- 2.5	0.50	127	5.2
November	43.4	6.3	17.1	- 8.2	0.85	216	8.7
December	31.9	-0.1	10.1	-12.1	1.03	262	10.6
Mean Annual	59.3	15.0	30.4	- 0.9	9.69	2461	100.0

Figure 2. Location of biotic communities in the Middle Canyon Alluvial Fan PRNA proposed NNL.

R 29 E T 6 N

1 2 3 4 2

Key to associations:
1. Shadscale/Indian ricegrass with inclusions of black sagebrush/Indian ricegrass and black sagebrush/bluebunch wheatgrass (26%).
2. Shadscale/bottlebrush squirreltail with inclusions of black sagebrush/Indian ricegrass and black sagebrush/bluebunch wheatgrass (68%).
3. Winterfat/Sandberg's bluegrass (2%).
4. Black sagebrush/Salmon River ryegrass (4%).

Plate 1. Shadscale in the bottom of arroyo in the proposed Middle Canyon Alluvial Fan PRNA NNL.

Plate 2. Shadscale on the lower fan in the proposed Middle Canyon Alluvial Fan PRNA NNL.

Plate 3. Winterfat/Sandberg's bluegrass on upper fan of Middle Canyon Alluvial Fan PRNA.

Plate 4. Shadscale (on right) and black sagebrush (on left) on the small ridge at the head of the Middle Canyon Alluvial Fan PRNA.

Plate 5. Arroyo in the center of the Middle Canyon Alluvial Fan proposed NNL.

Plate 6. Alluvial fan on the east side of the arroyo.

Land Use and Present Condition

In general, the present condition of the recommended area is very good to excellent. Natural values of the proposed NNL are currently being protected due to its inclusion within the proposed Middle Canyon Alluvial Fan RNA/Area of Critical

Environmental Concern (ACEC). Management of a proposed RNA/ACEC is consistent with an established RNA/ACEC.

There is a long history of sheep trailing across the area in the autumn. This appears to have little impact on the vegetation as the overall range condition is very good. Grazing values are low to moderate within the area. The area is considered to be crucial antelope, mule deer, and sage grouse winter range (USDI, BLM, 1979).

There are no mineral claims located within the area as of August, 1983. Very little recreational activity takes place within the recommended NNL, with most use probably occurring during hunting season in the autumn.

The Idaho Falls District will soon prepare a Resource Management Plan for the Big Butte Resource Area, which has jurisdiction over Middle Canyon Alluvial Fan PRNA. They will be evaluating various alternatives for all PRNA's in the Resource Area.

Anticipated Damage

The current localized sheep grazing within the recommended boundary is expected to continue, if the area is not fenced.

The road to Middle Canyon bisects the area. No other roads are planned. Some off-road-vehicle usage has occurred on the site, but it is localized and not significant at present.

No mining claims have been established within the proposed NNL. The area has a high potential for sand and gravel deposits, but the volume and quality are unknown. Test pits were dug within the proposed NNL, but this resource has not been developed because of the availability of the materials from more favorably located sources, the cost of developing new sites, and lack of a sufficient demand (USDI, BLM, 1979). Neither the RNA designation nor NNL designation prohibit mineral entry.

Effects of Publicity

The recommended Middle Canyon Alluvial Fan NNL is not expected to be sensitive to increased publicity. The only foreseen effect of publicity is that more of the public will learn of the area's nationally significant ecological values. Any increase in visitor use to the NNL is not expected to be great enough to impact the

ecology of the area.

Ownership

All lands within the proposed NNL are publicly owned. The U.S. Department of the Interior, Bureau of Land Management, Idaho Falls District, Big Butte Resource Area administers surface and mineral rights of the area. Their address is as follows:

Idaho Falls District Office
Bureau of Land Management
940 Lincoln Road
Idaho Falls, Idaho 83401
208/529-1020

ANALYSIS

Significance

Like other western rangelands, much of the salt desert shrublands on the Columbia Plateau have been damaged by livestock grazing. According to estimates by Clapp (1936), there has been a 70 percent reduction in grazing capacity in salt desert shrub ranges. However, the condition of the Middle Canyon Alluvial Fan PRNA is in very good to excellent condition. Middle Canyon Alluvial Fan PRNA is in the Low Shrub, Upland Salt Desert Subtheme as defined by the Phase I of the 1989 study (The Nature Conservancy et al 1989), and is the best example of that subtheme, as evaluated in the 1989 Phase II study (Crawford et al 1989).

Recommendations

In my opinion, the site appears to be nationally significant and I recommend that it be designated as a National Natural Landmark.

Management Guidelines

Presently the area is used to trail sheep during the autumn. This use appears to have little impact probably due to the short period of time that the area is grazed and because it occurs after the growing season. The area is proposed as a Research Natural Area and as such the interim management is consistent with those for an established research natural area.

If it is established, the NNL designation would further enhance the Middle Canyon Alluvial Fan by highlighting the ecological significance.

General Background

Evaluator:

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Botanist, U.S. Forest Service, Wallowa-Whitman National Forest (1988)

Natural Areas Ecologist, The Nature Conservancy, Idaho Field Office (1988-present)

Information contained in this report is based on literature cited, interviews with Idaho Natural Heritage Program staff, and members of the Idaho Natural Areas Coordinating Committee, and
reconnaissance level field investigations during the spring of 1989.

Photographs and considerable information was provided by Bob Moseley, who inventoried the area while employed by The Nature Conservancy and visited the site in October 1989. I relied heavily on the Recommendation Report for Middle Canyon Alluvial Fan RNA written by Steve Caicco and Charles Wellner of the Idaho Natural Areas Coordinating Committee. I spent two days at Middle Canyon Alluvial Fan in June 1989. A total of approximately seven days was spent researching and writing

this NNL evaluation for the proposed Middle Canyon Alluvial Fan PRNA NNL.

REFERENCES

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Crawford, R.C., J.S. Kagan, and R.K. Moseley. 1989. Final Report, Phase II, 1989 National Natural Landmark Ecological Themes. Report submitted to U.S. Department of the Interior, National Park Service, Pacific Northwest Region, Seattle, WA. 83 pp.

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Ross, C.P 1961. Geology of the southern part of the Lemhi Range, Idaho. U.S. Geol. Survey Bull. 1081-F:189-260.

Ross, S.H. and C.N. Savage. 1967. Idaho Earth Science. Idaho Bur. Mines and Geol. Earth Sci. Ser. No. 1. 217 pp.

The Nature Conservancy, Idaho Natural Heritage Program, Oregon Natural Heritage Data Base, Washington Natural Heritage Program. 1989. Final Report, Phase I, 1989. National Natural Landmark Project, Columbia Plateau National Natural Landmark Ecological Themes. Report submitted to the U.S. Department of the Interior, National Park Service, Pacific Northwest Region, Seattle, WA. 91 pp.

USDI, Bureau of Land Management, Idaho Falls District. 1979. Little Lost-Birch Creek Final Range Management Environmental Statement.

APPENDIX I

Common and scientific names of the vascular plant, mammal, amphibian, reptile and bird species of known or probable occurrence within the recommended NNL boundaries.

Flora of the proposed Middle Canyon Alluvial Fan PRNA NNL has not been thoroughly collected, described, or studied.

Scientific name	Common name
Shrubs	
Artemisia nova	black sagebrush
Atriplex confertifolia	shadscale
Chrystothamnus viscidiflorus	green rabbitbrush
Eurotia lanata	winterfat
Forbs	
Opuntia polycantha	starvation cactus
Calochortus nuttallii	Nuttall's segolily
Phlox hoodii	Hood's phlox
Opuntia fragilis	brittle cactus
Machaeranthera canescens	hoary aster
Grass	
Stipa comata	needle-and-thread grass
Oryzopsis hymenoides	Indian ricegrass
Agropyron spicatum	blubunch wheatgrass
Sporobolius cryptandrus	sand dropseed

Bromus tectorum	cheat grass
Poa sandbergii	Sandberg's bluegrass
Sitianion hystrix	bottlebrush squirreltail
Elymus abiguus salmonis	Salmon River ryegrass

Faunal species have not been systematically studied or inventoried in the proposed Middle Canyon Alluvial Fan PRNA.
The following animal species are among those most likely to be found in the NNL:

Scientific Name	Common Name
Bufo boreas	western toad
Scaphiopus intermontanus	Great Basin spadefoot
Buteo jamaicensis	red-tailed hawk
Alectoris chukar	chukar
Phasianus colchicus	ring-necked pheasant
Centrocercus urophasianus	sage grouse
Zenaida macroura	mourning dove
Otus kennicottii	western screech owl
Bubo virginianus	great horned owl
Asio otus	long-eared owl
Pica pica	black-billed magpie
Corvus corax	common ravin
Parus atricapillus	black-capped chickadee
Salpinctes obsoletus	rock wren
Sorex merriami	Merriam's shrew
Sylvilagus nuttallii	Nuttall's cottontail
Lepus americanus	snowshoe hare
Lepus townsendii	white-tailed jackrabbit
Lepus californicus	black-tailed jackrabbit
Tamias minimus	least chipmunk
Spermophilus townsendii	Townsend's ground squirrel
Thomomys talpoides	northern pocket gopher
Reithrodontomys megalotis	western harvest mouse
Peromyscus maniculatus	deer mouse
Brachylagus idahoensis	pygmy rabbit
Deragnothus parvus	Great Basin pocket mouse
Onychomys luecogaster	northern grasshopper mouse
Neotoma cinerea	bushy-tailed woodrat
Microtus musculus	house mouse
Microtus montanus	montane vole
Microtus longicaudus	long-tailed vole
Lemmiscus curtatus	sagebrush vole
Canis latrans	coyote
Vulpes vulpes	red fox
Odocoileus hemionus	mule deer
Sceloporus graciosus	sagebrush lizard
Pituophis melanoleucus	gopher snake
Thamnophis elegans	western terrestrial garter snake

Middle Canyon Alluvial Fan Proposed Research Natural Area

National Natural Landmark Brief

Location: 9.7 km (6 mi) NNE of Howe, Butte Co., Idaho

Natural Region: Columbia Plateau Natural Region

Size: 750.3 ha (1,854 acres)

Owner: Federal; Administered by the U.S. Department of the Interior, Bureau of Land Management, Idaho Falls District.

Description: The proposed Middle Canyon Alluvial Fan PRNA NNL, as the name implies, is an alluvial fan that issues from Middle Canyon in the southwestern Lemhi Range. The alluvial substrate is assumed to be calcareous in nature as the material it is derived from is limestone. The topography gently slopes from the mouth of the canyon with elevations ranging from 1767 m (5,800 ft) at the upper boundary to 1474 m (4,900 ft) at the lower. The Lemhi Range is a fault-bounded and a major fault is inferred to underlie the fan.

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Significance: Middle Canyon Alluvial Fan PRNA has several salt desert shrub associations in very good to excellent condition. Middle Canyon Alluvial Fan PRNA is the Columbia Plateau's best example of the Low Shrub, Upland Salt Desert Subtheme.

Land use: Light grazing by sheep during late fall and winter, and limited recreational use take place in the NNL, but do not significantly impact the natural features of the area.

Special conditions: The NNL is within the Middle Canyon Alluvial Fan PRNA.

Proposed by: Rexford C. Crawford, Washington Natural Heritage Program, Jimmy S. Kagan, Oregon Natural Heritage Data Base, and Robert K. Moseley, Idaho Natural Heritage Program. 1989. Phase I and II. Reports, 1989. National Natural Landmark Project, Columbia Natural Region Ecological Theme, National Park Service.

Evaluated by: Susan Bernatas, Natural Areas Ecologist, The Nature Conservancy, Sun Valley, Idaho. November, 1989

Designated:

Owner agreement: