

Research Natural Area Recommendation for

SAND KIPUKA

Bureau of Land Management

Shoshone District, Idaho

October, 1983

INTRODUCTION

Sand Kipuka was suggested as a potential Research Natural Area (RNA) by Bureau of Land Management (BLM) personnel during a meeting on May 17, 1983, of Edwin Tisdale and Charles Wellner, Idaho Natural Areas Coordinating Committee (INACC), with Shoshone District BLM people. Joe Carter of the Shoshone BLM District, Edwin Tisdale and Steve Catco of the Idaho Committee examined Sand Kipuka on June 15, 1983, and decided that it was a good candidate RNA.

Members of the Idaho Committee were working under an agreement with the Western Regional Office of The Nature Conservancy, San Francisco, to identify, describe, and propose needed RNAs on public lands administered by the BLM in southern Idaho.

JUSTIFICATION

Sand Kipuka (symbol: IDSAA) was selected to represent undisturbed examples of a major range habitat type that occurs on the Snake River Plain of southern Idaho. This type, which is well-developed locally on the sandy soils of the kipuka, is dominated by Wyoming(?) big sagebrush and needle-and-thread grass. In addition to this type, a Utah juniper woodland is well-developed on the surface of the lava flows that surround the kipuka. The woodland approaches a closed canopy locally, and has a mixed shrub layer of moderate density. Both of these situations are needed in a RNA network to include the range of natural diversity in Idaho (Wellner and Johnson, 1974). Although the kipuka shows signs of past disturbance, both by overgrazing and juniper cutting, it is difficult to know how much of this disturbance may be due to the natural instability of the sandy substrate. The presence of local areas within the kipuka of relatively undisturbed vegetation makes Sand Kipuka a good choice.

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PRIMARY FEATURES

Botanic: K-055 sagebrush steppe; K-023 juniper-pinyon woodland; SAF-239 pinyon-juniper. Idaho Natural Diversity Scorecard-eastern Snake Plain sage/grass; eastern Snake Plain juniper woodland. Other vegetation type-ARTRW?/STCO; JUOS/mixed shrub.

Zoologic: Bobcat; mule deer

Aquatic: None

Landforms: Basin; kipuka; lava flows

Geologic: Igneous; basalt; Pahoehoe lava; Recent

Alterations: Grazing; juniper cutting

LOCATION, SIZE, OWNERSHIP, ACCESS

District: Shoshone

Resource Area: Monument

County: Blaine

Latitude: 42°44'00" N

Longitude: 113°15'30" W

Section(s): SE¼ of Section 11 and NE¼ of Section 14, T8S, R27E.

Location: Sand Kipuka lies approximately 12 air miles east of Minidoka, Idaho.

Size: 320 acres

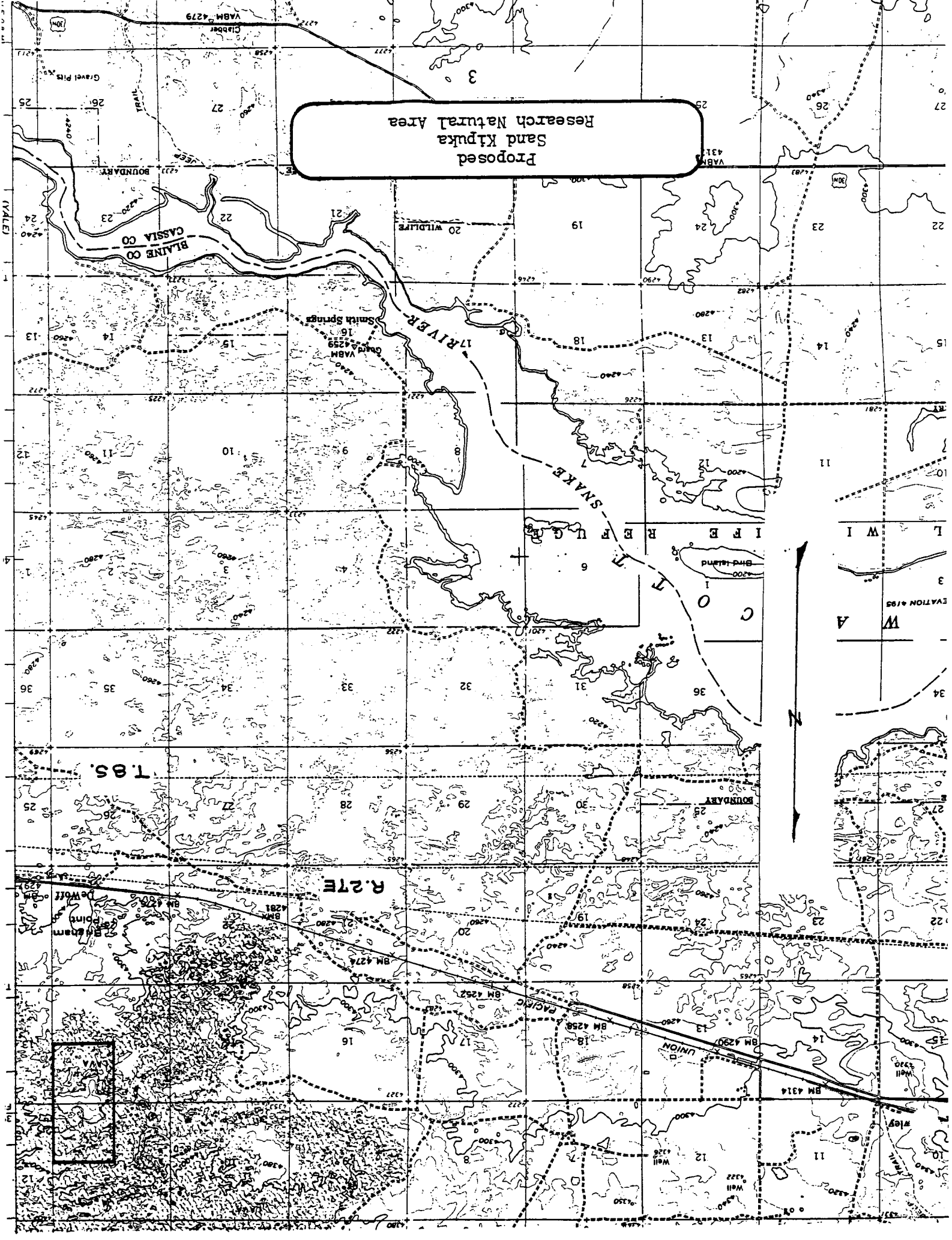
USGS Quad: Lake Walcott, Idaho (15'), 1959

Aerial Photos: BLM Photo 06-04-16 (1980)

Elevation: The lavas which surround the kipuka lie at about 4,400 feet, while the floor of the kipuka is at an elevation of 4,360 feet.

Physical Boundaries: The proposed area is coextensive with the parts of Sections 11 and 14, T8S R27E, as described above (see map, page 3).

Access: Sand Kipuka is reached by a 30-minute hike over a gentle lava surface from the end of a poor road which approaches from the west in Section 15 (T8S R27E). Specific road information should be obtained from the Shoshone BLM District.



Proposed
Sand Kipuka
Research Natural Area

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Ownership/Status: Surface and mineral rights are administered and managed by the BLM.

PHYSICAL AND CLIMATIC CONDITIONS

Climate: The weather station nearest to the site is located at Minidoka Dam (Station No. 10-5980); it is located approximately 13 air miles southwest of the kipuka at an elevation of 4,210 feet. Temperature and precipitation data are available for the period 1947-1981, and are summarized in Table 1 (Molnau, 1983).

Table 1. Temperatures and precipitation for Minidoka Dam, Idaho, weather station (1947-1981).

Month	Temperature (°F)		Precipitation (in)
	Average	Minimum	Percent
Annual	Maximum	Mean	Annual
January	33.8	16.0	11.5
February	40.6	21.4	7.0
March	48.5	26.5	8.5
April	58.8	33.3	9.3
May	68.6	41.5	12.3
June	78.0	48.9	9.8
July	88.3	56.3	3.7
August	86.1	54.4	5.2
September	76.8	45.7	5.8
October	63.7	36.1	7.4
November	47.4	27.6	9.5
December	37.1	20.5	10.0
Annual	61.1	35.9	9.31
Annual			100.0

Temperatures follow a predictable pattern throughout the year with maximum temperatures occurring in July and minimum temperatures in January. July is also the driest month of the year, and marks the beginning of a dry season which lasts into the late fall. Precipitation throughout the remaining months of the year is surprisingly uniform with rainfall exceeding 1.0 inch only in the months of January and May. The period between the last spring freeze (50 percent probability of 32° F) and the first fall freeze is estimated to be 140 days (Everson et al., 1978).

Physiography: Sand Kipuka lies within the eastern Snake River Plain section of the Columbia intermontane geomorphic province. It is a depression surrounded by lava flows (Photo 1). The difference in elevation between the floor of the kipuka and the surface of the lava flows averages about 25 feet.

Photos 1, 2, and 4 by E. W. Tisdale; photos 3, 5, and 6 by S. Caicco.

Photo 2. The lava fields that surround Sand Kipuka.

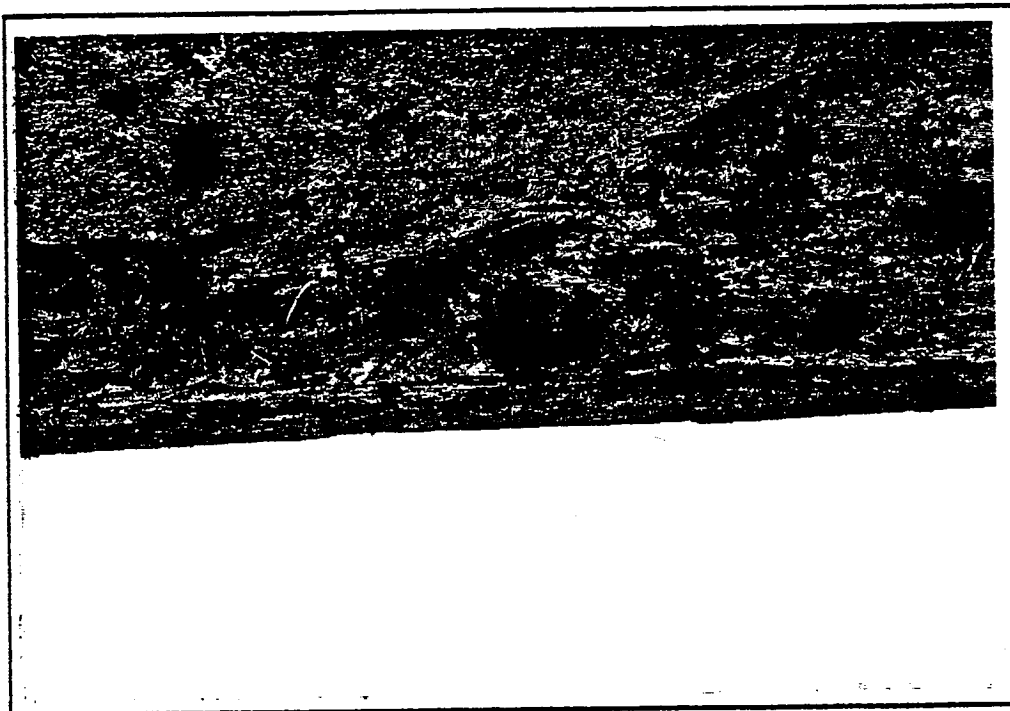
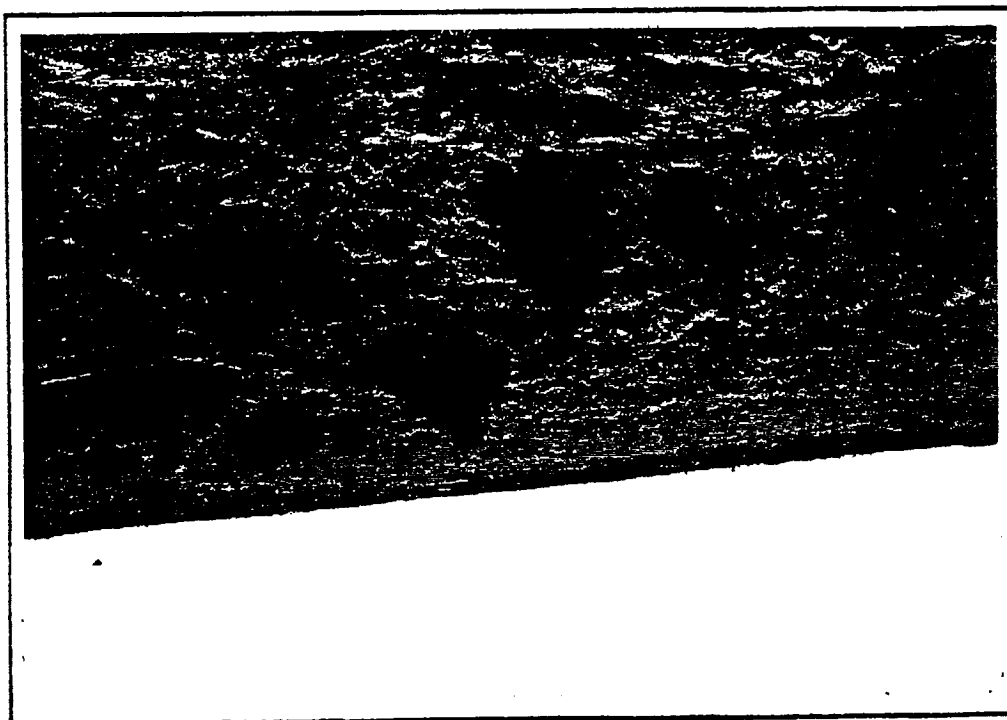


Photo 1. Sand Kipuka is a depression surrounded by lava flows.



Geology: The entire area is included within the Moon-Kings Bowl-Wapi Lava Fields (Photo 2), an extensive Pleistocene volcanic field of Pahoehoe basalts with a smooth rolling surface and little soil cover (Armstrong et al., 1978). No detailed geologic investigation of the area has been made.

Soils: Soils within the kipuka are part of the Vining-Kecko-Rock outcrop complex. About 35 percent of the area is covered by the Vining fine sandy loam, 30 percent by the Kecko loamy fine sand, and 20 percent by rock outcrop. Also occurring are the Feltham loamy fine sand (10 percent) and the Banbury fine sandy loam (5 percent). The Vining loamy fine sand occurs on the con-vex tops and sideslopes. It is formed from aeolian materials derived from various sources, and is moderately deep and well drained, with moderate permeability and an effective rooting depth of 20 to 40 inches. The Kecko soil is found in the depressions and drainageways; it is very deep and well drained, with moderately rapid permeability and an effective rooting depth of 60 inches or more. It is also formed from aeolian materials derived from mixed sources.

RESOURCES

Principal Resource: The principal feature of Sand Kipuka is the extensive vegetation dominated by big sagebrush (*Artemisia tridentata*)^{1/} and needle-and-thread grass (*Stipa comata*). It was not possible to determine which subspecies of big sagebrush was predominant, although it is certain that both species *wyomingensis* and species *tridentata* are present (Photo 3). This vegetation is in fair to good condition locally, although large areas within the kipuka show signs of severe disturbance. The degree to which the disturbance can be attributed to the natural instability of the sandy substrate under the influence of wind is unknown. Other factors known to have affected the present condition of the kipuka are discussed in the section on "Historic Alteration."

Biotic Systems: Only a single major range habitat type was identified on the site (Hironaka et al., 1983). The predominant shrub in this type is either basin big sagebrush or Wyoming big sagebrush. The understory dominant is needle-and-thread grass (Photo 4). It covers approximately 100 acres of the proposed area.

In addition, a juniper woodland is developed on the lavas which surround the kipuka. The Utah juniper (*Juniperus osteosperma*) occurs as scattered individual of presumed great age, but locally they form dense stands with a nearly closed canopy (Photo 5). A number of shrubs occur within the woodland (Photo 6) (see Appendix 1).

^{1/} Botanical nomenclature for the genus *Artemisia* follows Beetle (1960). The authority for all other taxa is Hitchcock and Cronquist (1973). Plant symbols follow Plummer et al. (1977).

Photo 4. Big sagebrush/Needle-and-thread grass habitat type on Sand Kipuka.

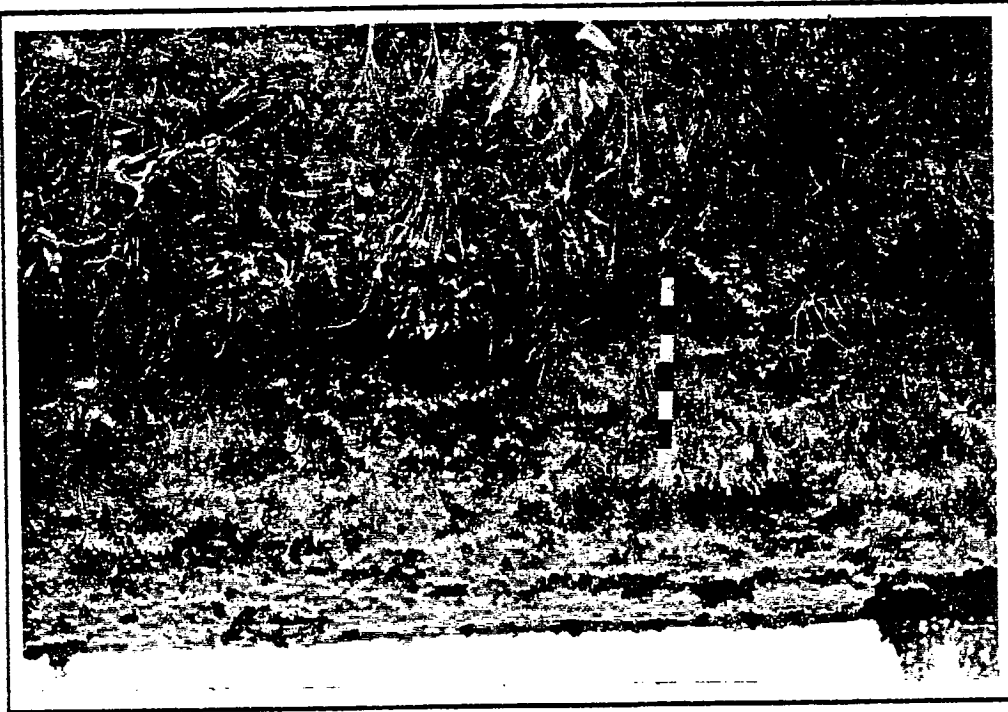


Photo 3. Vegetation of Sand Kipuka is dominated by big sagebrush with an understory of needle-and-thread grass.

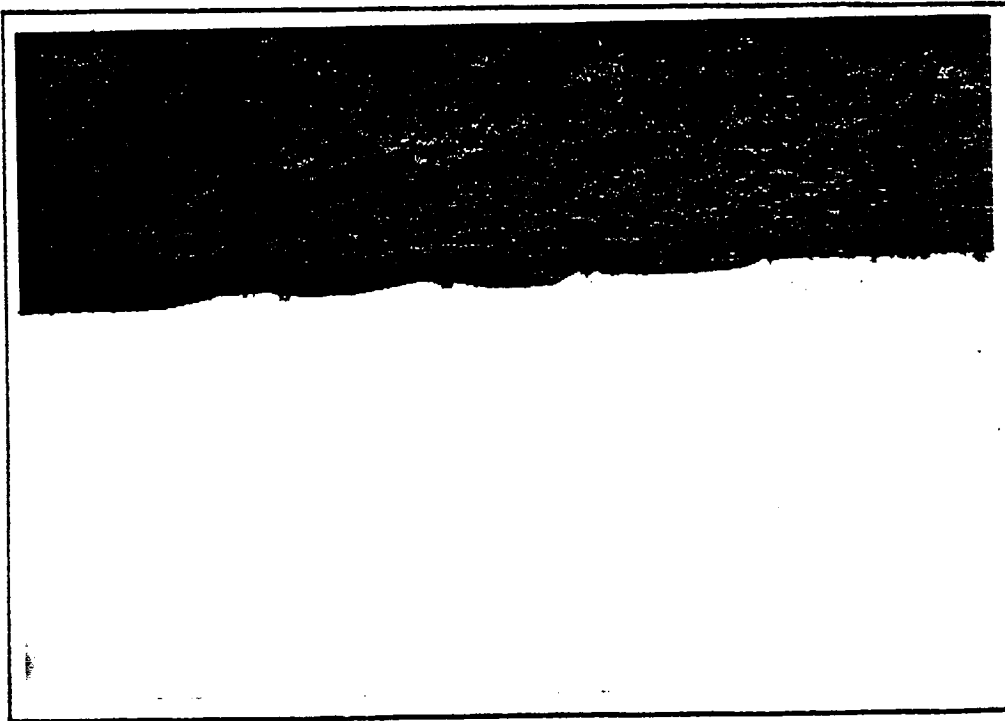


Photo 6. Closeup of Juniper woodland that surrounds Sand Kipuka.

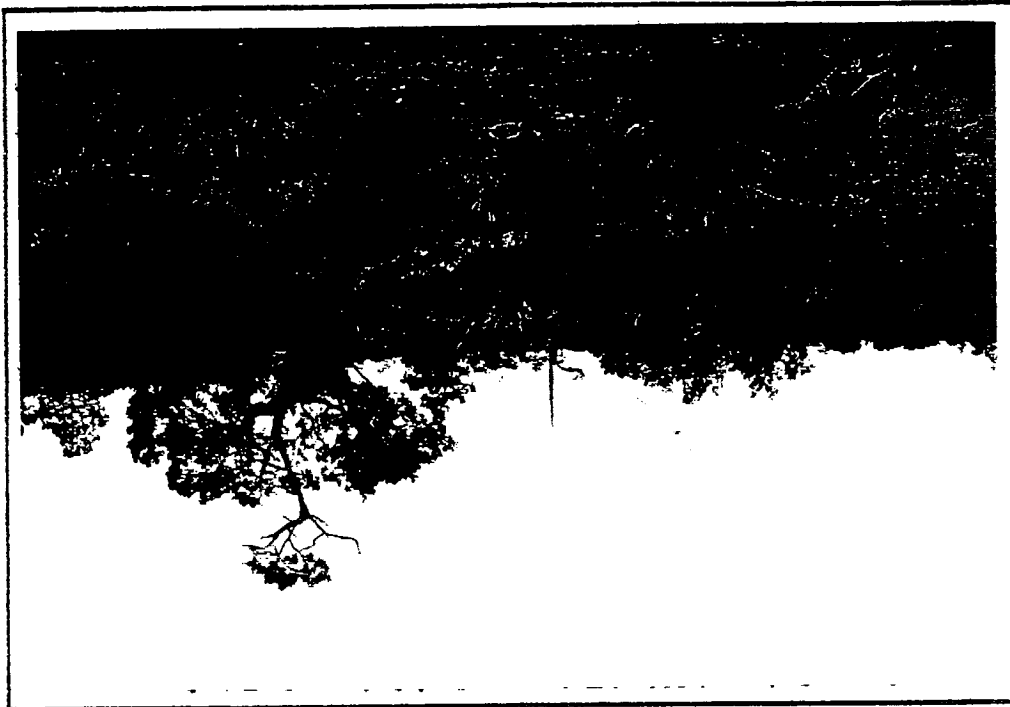
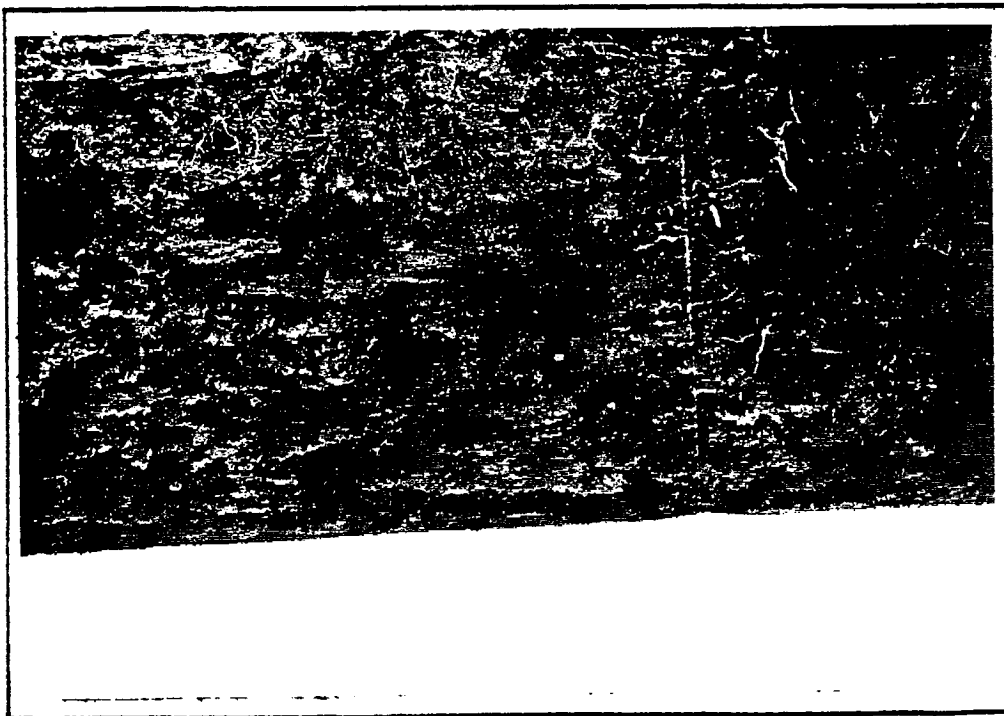


Photo 5. Juniper woodland surrounding Sand Kipuka.



Idaho Natural Diversity Scorecard Category (Crawford, 1982): eastern Snake Plain sage/grass; eastern Snake Plain juniper woodland.

Historic Alteration: In addition to the degree of natural disturbance attributable to redistribution of the sandy substrate by wind, several other factors have contributed to the present condition of the kipuka. Grazing of domestic livestock was most likely heavy in the past. Juniper cutting was also common along the edges of the kipuka, and on the lava flows. Remnants of an old trail over which the timber was transported are identifiable. There is some evidence of local burning, although nothing suggests widespread disturbance by fires. Although all of these factors have influenced the vegetation of the site, it is unlikely that any of them (excluding wind disturbance) have occurred for some time (perhaps 50 or more years?).

Geology: The geologic features of the area constitute a good example of the volcanism that has characterized the history of the Snake River Plateau. Physiography: The topography of the site is typical of the areas near the edge of the Wapi Lava Field.

Soils: The unstable nature of the sandy substrate creates a complex management problem. Overgrazing of the vegetation that stabilizes the substrate increases the loss of soil due to wind erosion. Diversity: A low to moderate degree of floristic diversity occurs on the site. Habitat diversity is low, but the habitat type(s) which is/are represented covers an extensive area (see Appendix 1). Other Known Examples of Primary Features: Several adjacent kipukas also have a sandy substrate which supports the same habitat type(s). These kipukas, however, are highly disturbed and do not compare in quality with the better portions of the proposed area.

VALUES AND POSSIBLE CONFLICTS

Cultural Values: Fragments of worked obsidian found in the kipuka indicate that its location was known in prehistoric times. An inventory of the site has not been conducted.

Mineral Values: As of August, 1983, no mining claims had been established within the proposed area. The geology of the area makes it unlikely that any such claims will be established at a future date.

Grazing Values: Moderate forage value, but the lack of water may limit the utility of the site for grazing.

Timber Values: Moderate due to the presence of juniper.

Watershed Values: The kipuka has no external drainage.

Recreation Values: The site is of high scenic value, and offers an opportunity for primitive recreation and solitude. Recreational use by foot travelers is unlikely to conflict with proposed RNA designation.

Transportation Plans: No usable roads exist within the proposed area, and no roads are currently being planned.

Wildlife Values: Evidence of mule deer and bobcat was seen, as well as a number of non-game species of birds.

Other Values: None

MANAGEMENT CONSIDERATIONS

Although the area has been severely disturbed in the past, it remains the best known example of the range type that is present. It should be managed to improve the quality of this vegetation.

INFORMATION SOURCES

Shoshone BLM
S. Catlico, INACC
J. Carter, Shoshone BLM
E. Tisdale, INACC

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AUTHORS

This report was prepared by S.L. Catco and C.A. Wellner.

APPENDIX 1

Plant species and abundance list for the ARTWTW/STCO h.t. in the proposed Sand Kipuka RNA, Shoshone BLM District.

Scientific Name	Common Name	Abundance
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Shrubs

<i>Artemisia tridentata</i> ssp.	Basin big sagebrush	2?
<i>Artemisia tridentata</i> ssp.	Wyoming big sagebrush	3?
<i>Chrysothamnus viscidiflorus</i>	Green rabbitbrush	2+
<i>Eriogonum fasciculatum</i>	Antelope bitterbrush	2+

Grasses

<i>Agropyron smithii</i>	Bluestem wheatgrass	2
<i>Agropyron spicatum</i>	Bluebunch wheatgrass	2
<i>Bromus tectorum</i>	Cheatgrass	4
<i>Elymus cinereus</i>	Great basin wildrye	2
<i>Festuca bromoides</i>	Barren fescue	3+
<i>Poa nevadensis?</i>	Nevada bluegrass	2+
<i>Poa sandbergii</i>	Sandberg bluegrass	3
<i>Stipa comata</i>	Bottlebrush squirreltail	2+
<i>Stipa comata</i>	Needle-and-thread grass	4-5
<i>Stipa thurberiana</i>	Thurber needlegrass	4-5

Forbs

<i>Allium geinum?</i>	Nodding onion	2+
<i>Arabis holboellii</i>	Holboell's rockcress	2+
<i>Astragalus purshii</i>	Pursh milkvetch	2+
<i>Balsamorhiza sagittata</i>	Arrowleaf balsamroot	3
<i>Calochortus nuttallii?</i>	Nuttall's sego lily	2
<i>Castilleja sp.</i>	Indian paintbrush	2+
<i>Crepis acuminata</i>	Long-leaved hawkbeard	2+
<i>Delphinium sp.</i>	Larkspur	2
<i>Eriogonum umbellatum?</i>	Sulfur buckwheat	2
<i>Erysimum sp.</i>	Wallflower	2
<i>Lomatium dissectum</i>	Fern-leaved lomatium	3
<i>Lupinus caudatus?</i>	Tailcup lupine	3
<i>Opuntia polyacantha</i>	Starvation prickly pear	2+
<i>Pensstemon cyaneus</i>	Dark-blue penstemon	2+
<i>Phlox hoodii?</i>	Hood's phlox	2+
<i>Phlox longifolia</i>	Long-leaf phlox	2+
<i>Tragopogon dubius</i>	Yellow salisfly	2+
<i>Zigadenus venenosus</i>	Deadly zygadenus	3

1/ 1 = uncommon, 2 = abundant, 3 = occasionally, 4 = moderately abundant, 5 = very abundant.

APPENDIX 2

Animal species of possible occurrence^{1/} in the proposed Sand Kipuka RNA.

Scientific Name	Common Name	A Possible Occurrence by Situation ^{2/}	B
Mammals			
<i>Taxidea taxus</i>	Badger	X	X
<i>Canis latrans</i>	Coyote	X	X
<i>Felis concolor</i>	Mountain lion	X	X
<i>Felis lynx canadensis</i>	Canada lynx	X	X
<i>Felis rufus</i>	Bobcat	X	X
<i>Marmota flaviventris</i>	Yellowbelly marmot	X	X
<i>Spermophilus townsendi</i>	Townsend ground squirrel	X	X
<i>Eutamias minimus</i>	Least chipmunk	X	X
<i>Thomomys talpoides</i>	Northern pocket gopher	X	X
<i>Pergomathus parvus</i>	Great basin pocket mouse	X	X
<i>Dipodomys ordii</i>	Ord kangaroo rat	X	X
<i>Onychomys leucogaster</i>	Northern grasshopper mouse	X	-
<i>Peromyscus ermitus</i>	Canyon mouse	X	X
<i>Peromyscus maniculatus</i>	Deer mouse	X	X
<i>Neotoma lepida</i>	Desert wood rat	X	X
<i>Neotoma cinerea</i>	Bushy-tailed wood rat	X	X
<i>Lagurus auratus</i>	Sagebrush vole	X	X
<i>Erethizon dorsatum</i>	Porcupine	X	X
<i>Lepus townsendi</i>	White-tailed jack rabbit	X	X
<i>Lepus americanus</i>	Snowshoe rabbit	X	X
<i>Lepus californicus</i>	Black-tailed jack rabbit	X	X
<i>Silvillagus nuttalli</i>	Mountain cottontail	X	-
<i>Silvillagus idahoensis</i>	Pygmy rabbit	X	X
<i>Cervus elaphus</i>	Rocky Mountain elk	X	-
<i>Odocoileus hemionus</i>	Mule deer	X	X
<i>Antilocapra americana</i>	Pronghorn antelope	X	X
Reptiles			
<i>Gambelia wislizeni</i>	Leopard lizard	X	X
<i>Sceloporus occidentalis</i>	Western fence lizard	X	X
<i>Sceloporus graciosus</i>	Sagebrush lizard	X	X
<i>Phrynosoma douglasii</i>	Short-horned lizard	X	X
<i>Eumeces skiltonianus</i>	Western skink	X	X
<i>Chernidophorus tigris</i>	Western whiptail	X	X
<i>Coluber constrictor</i>	Racer	X	X
<i>Masticophis lateralis</i>	Striped whitt snake	X	X
<i>Pituophis melanoleucus</i>	Gopher or bull snake	X	X
<i>Rhonohelius lecontei</i>	Long-nosed snake	X	X
<i>Hypsiglena torquata</i>	Night snake	X	X
<i>Crotalus viridis</i>	Western rattlesnake	X	X

APPENDIX 2 (Continued)

Scientific Name	Common Name	Possible Occurrence by Situation ^{2/}	
		A	B
<u>Amphibians</u>			
<i>Ambystoma macrodactylum</i>	Long-toed salamander	X	X
<u>Birds</u>			
<i>Anas platyrhynchos</i>	Mallard	X	-
<i>Anas strepera</i>	Gadwall	X	-
<i>Anas acuta</i>	Pintail	X	-
<i>Anas carolinensis</i>	Green-winged teal	X	-
<i>Anas cyanoptera</i>	Cinnamon teal	X	-
<i>Mareca americana</i>	American widgeon	X	-
<i>Spatula clypeata</i>	Shoveler	X	-
<i>Cathartes aura</i>	Turkey vulture	X	X
<i>Accipiter cooperii</i>	Cooper's hawk	X	-
<i>Accipiter striatus</i>	Sharpshinned hawk	X	-
<i>Buteo jamaicensis</i>	Red-tailed hawk	X	-
<i>Aquila chrysaetos</i>	Golden eagle	X	X
<i>Circus cyaneus</i>	Marsh hawk	X	-
<i>Falco mexicanus</i>	Prairie falcon	X	X
<i>Falco columbarius</i>	Pigeon hawk	X	-
<i>Falco sparverius</i>	Sparrow hawk	X	X
<i>Centropus urophasianus</i>	Sage grouse	X	X
<i>Alectoris graeca</i>	Chukar	X	-
<i>Perdix perdix</i>	Hungarian partridge	X	-
<i>Phasianus colchicus</i>	Ring-necked pheasant	X	-
<i>Branta canadensis</i>	Canada goose	X	-
<i>Zenaidura macroura</i>	Mourning dove	X	X
<i>Bubo virginianus</i>	Great horned owl	X	X
<i>Phalaenoptilus nuttalli</i>	Poor will	-	X
<i>Ereophila alpestris</i>	Horned lark	X	X
<i>Pica pica</i>	Black-billed magpie	X	X
<i>Corvus corax</i>	Common raven	X	X
<i>Corvus brachyrhynchos</i>	Common crow	X	X
<i>Oreoscoptes montanus</i>	Sage thrasher	X	-
<i>Lanius ludovicianus</i>	Loggerhead shrike	X	-
<i>Sturnella neglecta</i>	Western meadowlark	X	-
<i>Fasserina amoena</i>	Luzuli bunting	X	-
<i>Jungo oreganus</i>	Oregon junco	X	X
<i>Pooecetes gramineus</i>	Vesper sparrow	X	-
<i>Chondestes grammacus</i>	Lark sparrow	X	-
<i>Spizella breweri</i>	Brewer's sparrow	X	-
<i>Ampelisca belli</i>	Sage sparrow	X	-
<i>Calamospiza melanocorys</i>	Lark bunting	X	-

1/ Taken from USDA, BLM 1979 Shoshone Grazing Environmental Statement (draft).
 2/ A = *Artemisia tridentata* ssp. *wyomingensis* zone
 B = Java flow complex