DECISION NOTICE/DESIGNATION ORDER

Decision Notice
Finding of No Significant Impact
Designation Order

By virtue of the authority vested in me by the Secretary of Agriculture under regulations at 7 CFR 2.42, 36 CFR 251.23, and 36 CFR Part 219, I hereby establish the Horse Creek Research Natural Area. It shall be comprised of lands described in the section of the Establishment Record entitled "Location."

The Regional Forester has recommended the establishment of this Research Natural Area in the Record of Decision for the Bridger-Teton National Forest Land and Resource Management Plan. That recommendation was the result of analysis of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.41. Results of the Regional Forester's analysis are documented in the Bridger-Teton National Forest Land and Resource Management Plan and Final Environmental Impact Statement which are available to the public.

The Horse Creek Research Natural Area will be managed in compliance with all relevant laws, regulations, and Forest Service Manual direction regarding Research Natural Areas. It will be administered in accordance with the management direction/prescription identified in the Establishment Record.

I have reviewed the Bridger-Teton Land and Resource Management Plan (LRMP) direction for this RNA and find that the management direction cited in the previous paragraph is consistent with the LRMP and that a Plan amendment is not required.

The Forest Supervisor of the Bridger-Teton National Forest shall notify the public of this decision and mail a copy of the Decision Notice/Designation Order and amended direction to all persons on the Bridger-Teton National Forest Land and Resource Management Plan mailing list.

Based on the Environmental Analysis, I find that designation of the Horse Creek Research Natural Area is not a major Federal action significantly affecting the quality of the human environment (40 CFR 1508.27).

This decision is subject to appeal pursuant to 36 CFR Part 217. A Notice of Appeal must be in writing and submitted to:

The Secretary of Agriculture
14th & Independence Ave., S. W.
Washington, D. C. 20250

and simultaneously to the Deciding Officer:

Chief (1570)
USDA, Forest Service
P.O. Box 96090
Washington, D. C. 20090-6090

The Notice of Appeal prepared pursuant to 36 CFR 217.9 (b) must be submitted within 45 days from the date of legal notice of this decision. Review by the Secretary is wholly discretionary. If the Secretary has not decided within 15 days of receiving the Notice of Appeal to review the Chief's decision, appellants will be notified that the Chief's decision is the final administrative decision of the U. S. Department of Agriculture (36 CFR 217.17 (d)).

_____ _____

Chief Date

SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Horse Creek Research Natural Area

Bridger-Teton National Forest

Teton County, Wyoming

The undersigned certify that all applicable land management planning and environmental analysis requirements have been met and that boundaries are clearly identified in accordance with FSM 4063.21, Mapping and Recordation and FSM 4063.41 5.e (3) in arriving at this recommendation.

Prepared by_____ Date_____
Walter Fertig, Botanist
Wyoming Natural Diversity Database

Prepared by_____ Date_____
George Jones, Ecologist/Coordinator
Wyoming Natural Diversity Database

Recommended by_____ Date_____

Jackson Ranger District, Bridger-Teton NF

Recommended by_____ Date_____

Bridger-Teton National Forest

Recommended by_____ Date_____

Intermountain Region

Recommended by_____ Date_____

TITLE PAGE

Establishment Record for Horse Creek
Research Natural Area within Bridger-Teton
National Forest, Teton County, Wyoming

ESTABLISHMENT RECORD FOR
HORSE CREEK RESEARCH NATURAL AREA
BRIDGER-TETON NATIONAL FOREST
TETON COUNTY, WYOMING

INTRODUCTION

The Horse Creek Research Natural Area (RNA) is located at the west end of the Gros Ventre Range, approximately 10 miles southeast of Jackson, Wyoming. The RNA includes the core of the Horse Creek drainage and the highlands on the west slope of Gros Peak. The Horse Creek watershed contains outstanding examples of over 30 different riparian, forest, forbland, and alpine community and habitat types (Tuhy 1987). The lower and middle sections of the watershed contain mesic forests of Douglas-fir (Pseudotsuga menziesii)[1] and a mosaic of upland shrub and forb communities (Moseley 1989). The upper basin contains forests of subalpine fir (Abies lasiocarpa), Engelmann spruce (Picea engelmannii) and aspen (Populus tremuloides), as well as a variety of forb, shrub, and alpine communities. The RNA includes the entire elevational sequence from the Snake River Valley bottom to the alpine (Collins 1985).

Since settlement times, the Horse Creek watershed has been used primarily for livestock grazing and recreation. Cattle grazing occurred mostly outside of the RNA, although cattle were formerly driven through the area from the grazing allotment on lower Horse Creek to Granite Creek. No evidence remains of past cattle use in the RNA. Recreation usage has included hunting, hiking, and horseback riding (Tuhy 1987).

The Horse Creek watershed was initially recommended as a potential RNA by Youngblood (1981). It was also strongly recommended for special area designation at the 1984 Wyoming natural area needs workshop (Collins 1985). In 1987, Joel Tuhy of The Nature Conservancy conducted an Environmental Analysis of the site and recommended it for RNA designation (Tuhy 1987). Tuhy's preferred alternative was recommended by the District Ranger of the Jackson Ranger District in 1988 (Jones 1988).

Land Management Planning

The Horse Creek RNA was recommended for designation in the preferred alternative of the Bridger-Teton National Forest Land

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[1]Nomenclature for vascular plants (except trees) follows Dorn (1992) for scientific names and Hitchcock and Cronquist (1973) for common names. Tree nomenclature follows Little (1979).

Nomenclature for vertebrates follows Baxter and Stone (1985), Clark and Stromberg (1987), and Dorn and Dorn (1990).

and Resource Management Plan (USDA Forest Service 1989 a, p 49) and in the Record of Decision for the Forest plan (USDA Forest Service 1990, p 6).

OBJECTIVES

The main objective of the Horse Creek RNA is to maintain and preserve several coniferous forest, aspen forest, riparian, forbland, and alpine habitat and community types. The RNA provides areas for the study of natural processes, baseline areas for determining long and short-term ecological changes, monitoring comparison areas for assessing effects of resource management techniques and practices applied to similar ecosystems, and protects biological diversity.

JUSTIFICATION

The Horse Creek RNA was selected to help fill gaps in the RNA system for the Pinus albicaulis/Vaccinium scoparium, Abies lasiocarpa/Vaccinium globulare (Pachistima myrsinites phase), and A. lasiocarpa/Actaea rubra habitat types and the Populus tremuloides/Tall Forb community type. The RNA also protects several riparian community types, such as Cornus stolonifera [sericea]/Heracleum lanatum, Alnus incana/Ribes hudsonianum, and Salix exigua/Equisetum arvense cts, that are poorly represented by existing RNAs (Tuhy 1987). In addition, Horse Creek RNA provides known or potential habitat for eight US Forest Service (USFS) Region 4 and Bridger-Teton National Forest (BTNF) Sensitive plant species and US Fish and Wildlife Service (USFWS) candidate species. These are: boreal draba (Draba borealis), wolverine, lynx, northern goshawk, great gray owl, flammulated owl, three-toed woodpecker, and boreal toad (USDA Forest Service 1991; US Fish and Wildlife Service 1993; Fertig and Marriott 1993; Joslin 1994).

PRINCIPAL DISTINGUISHING FEATURES

Important features of the area include:

-- A rich mosaic of coniferous forest, aspen, riparian, forbland, upland shrub, and alpine communities following an altitudinal gradient from the Snake River Valley to the summits of the Gros Ventre Range. Over 30 different plant communities are present, representing a large proportion of the community variation in the Gros Ventre Range. The area also serves as an important repository of native biological diversity.

-- Known habitat for boreal draba, a BTNF Sensitive plant species, and potential habitat for seven USFS Region 4 Sensitive species. The area also provides habitat for several additional rare plants and animals monitored by The Nature Conservancy's Wyoming Natural Diversity Database (WYNDD).

-- The RNA protects the middle reaches of the Horse Creek drainage.

LOCATION

The Horse Creek RNA is located within the Jackson Ranger District of Bridger-Teton National Forest. It is also contained within the Gros Ventre Wilderness Area. Figures 1-2 show the location of the RNA.

Latitude and Longitude

The approximate center of the RNA is at latitude 43^0 22' 47" north and longitude 110^0 36' 40" west. The geographic center of the RNA is at UTM coordinates 4802766.56503 north and 531529.66912 east (Figure 2).

Boundary

Horse Creek RNA is a parcel of land located in Sections 1 (N2 & SW4), 2, 3, 4, 5 (SE4), 8 (E2 & E2W2), 9 (N2 & SW4), 10 (N2), and 11 (NW4NW4) of Township 39 North, Range 115 West; Sections 29 (SW4SW4), 30 (W2 & SE4), 31 (W2 & NE4), and 32 (NW4) of Township 40 North, Range 114 West; and Sections 24 (SE4SE4), 25 (E2 & SW4), 26 (SE4), 34 (SE4), 35 (E2 & SW4), and 36 of Township 40 North, Range 115 West of the Sixth Principal Meridian.

The boundary of the RNA (Figure 2) primarily follows topographic features. The western border follows the crest of the divide separating Horse Creek from an unnamed tributary that parallels the Gros Ventre Wilderness boundary. The northern border follows the divide separating the main stem of Horse Creek from the North Fork, forming an irregular arc extending from an 8900 foot summit in the northwest corner to the summit of an unnamed 10682 foot peak northwest of Gros Peak. The eastern boundary is formed by the crest of the Gros Ventre range, extending southeast from peak 10682 to a 10600 foot summit approximately 1.25 miles southeast of Gros Peak. The southern border follows the crest of the divide separating Horse Creek from Little Horse Creek. In the southeast corner of the RNA, the

boundary crosses Horse Creek and follows a small divide separating the main stem of the creek from a small southwest-draining tributary.

Area

The total area of the RNA is 6565 acres (2657 hectares).

Elevation

Elevation ranges from 6400 ft (2590 m) at the bottom of Horse Creek Canyon at the western boundary, to 11180 ft (4524 m) at the summit of Gros Peak on the northeastern border.

Access

Horse Creek RNA is located approximately 10 miles southeast of Jackson, Wyoming. The western boundary can be reached by automobile, but requires crossing a private ranch (permission is required). An established, well-maintained foot and pack trail follows Horse Creek. Slopes surrounding the creek valley are steep and may entail strenuous climbing.

From Jackson, proceed south on US highway 191 approximately 12 road miles (Figure 1). Turn east on the Horse Creek Road (just south of the "Teton Mystery"). The trailhead of the Horse Creek trail is 4 road miles east, and can be reached by automobile with permission of the private ranch and under suitable weather conditions.

From Alpine or Pinedale, the RNA may be reached by proceeding to Hoback Junction and following US Highway 191 north 1.25 miles to the Horse Creek Road.

The eastern highlands of the RNA can be reached from the Granite Highline Trail. This trail may be accessed from the Cache Creek trailhead, approximately 6 miles southeast of Jackson, or from the Granite Creek Road, about 0.75 miles south of Granite Creek campground. Both trailheads require hiking 4-10 miles to reach the RNA.

AREA BY COVER TYPES

The Vegetation

The Horse Creek RNA contains a mixture of coniferous

forests, shrub stands, and herbaceous vegetation. In the western third of the RNA, Douglas-fir woodlands are common on all but the steepest northeast-facing slopes and on some broad ridgetops. These woodlands grow mainly on the Douglas-fir/Rocky Mountain maple habitat type. They are intermixed on west-facing slopes with patches of the arrowleaf balsamroot-Rocky Mountain little sunflower (Balsamorhiza sagittata-Helianthella uniflora) community and on other slopes with patches of the nettleleaf horsemint-viguiera (Agastache urticifolia-Viguiera multiflora) community. Steep, northeasterly slopes support woodlands of subalpine fir and Douglas-fir.

In the central third of the RNA, north-facing slopes support mixed forests of subalpine fir and Douglas-fir with large patches of the nettleleaf horsemint-viguiera community. West-facing and southwest-facing slopes also support mixed subalpine fir-Douglas fir woodlands and smaller areas of Douglas-fir woodlands, with numerous small patches of the nettleleaf horsemint-viguiera community. Large stands of the arrowleaf balsamroot-Rocky Mountain little sunflower community cover steep south-facing slopes.

The eastern third of the area is mostly unforested. A mix of Osterhout sagebrush/mountain forb (Artemisia tridentata ssp. vaseyana f. spiciformis/Mountain forb) stands and nettleleaf horsemint-viguiera stands covers much of the landscape on slopes and benches at middle elevations. Stands of subalpine fir grow on the subalpine fir/mountain gooseberry (Abies lasiocarpa/Ribes montigenum) habitat type and the subalpine fir/grouse whortleberry habitat type, whitebark pine phase (Abies lasiocarpa/Vaccinium scoparium, Pinus albicaulis phase) on north-facing and west-facing slopes. The high, steep slopes and ridges in the northeastern end of the RNA contain open subalpine fir and whitebark pine woodlands, subalpine fir krummholz, rock outcrops, and talus slopes.

Avalanche tracks, common on the southern valley wall, provide habitat for the shrubby subalpine fir-Rocky Mountain maple (Abies lasiocarpa/Acer glabrum) avalanche chute community and stands of the cowparsnip-western blackhead (Heracleum lanatum-Rudbeckia occidentalis) community. The valley bottom throughout the RNA contains a mix of stands. Engelmann spruce stands grow along Horse Creek in the upper and lower sections of the valley. In the center of the valley, the riparian zone contains a mixture of Booth willow, mountain alder, and red-osier dogwood stands, bordered by cowparsnip-western blackhead stands on the adjacent upland footslopes.

Much of the vegetation throughout the RNA is in mid-seral

stages. The subalpine fir - Douglas-fir woodlands will, in the absence of disturbance, shift in composition to greater dominance by subalpine fir. Frequent disturbances on avalanche chutes will maintain the shrubby and herbaceous vegetation. Although the middle-elevation slopes in the eastern third of the area might support subalpine fir-whitebark pine woodlands, pocket gophers appear to be maintaining the shrubby and herbaceous vegetation growing there. The extensive arrowleaf balsamroot-viguiera patches probably grow on sites too dry to support woodlands, and hence will remain much as they are.

Area by Types

Cover types were mapped on 1:24,000 scale topographic maps using aerial photos and field reconnaissance. The area of each cover type was estimated from the maps.

SAF Cover Type (Eyre 1980), Figure 3.	Acres	Hectares
206 Engelmann Spruce-Subalpine Fir	1498	599
208 Whitebark Pine	239	95
210 Interior Douglas-Fir	1510	604
217 Aspen	50	20
218 Lodgepole Pine	32	13

Kuchler Types (Kuchler 1966), Figure 4.	Acres	Hectares
11 Douglas-fir forest	1619	648
14 Western spruce-fir forest	1953	781

Habitat Types & Community Types, Figure 5.	Acres	Hectares
1 *Pseudotsuga menziesii*/*Acer glabrum* habitat type (Steele et al. 1983)	1163	465
1/18 *Pseudotsuga menziesii*/*Acer glabrum* habitat type (Steele et al. 1983) with *Agastache urticifolia*-*Viguiera multiflora* community type (Gregory 1983)	104	41
2 *Pseudotsuga menziesii*/*Spiraea betulifolia* habitat type, *Calamagrostis rubescens* phase (Steele et al. 1983)	10	4

3	Pseudotsuga menziesii/Calamagrostis rubescens habitat type, Calamagrostis rubescens phase (Steele et al. 1983)	11	4
4	Pseudotsuga menziesii/Physocarpus malvaceus habitat type (Steele et al. 1983)	150	60
5	Abies lasiocarpa/Acer glabrum habitat type with A. lasiocarpa/Arnica latifolia habitat type and A. lasiocarpa/Vaccinium globulare habitat type, Pachistima myrsinites phase (Steele et al. 1983)	816	326
5/18	Abies lasiocarpa/Acer glabrum habitat type with Abies lasiocarpa/Arnica latifolia habitat type (Steele et al. 1983) and Agastache urticifolia-Viguiera multiflora community type (Gregory 1983)	358	143
6	Abies lasiocarpa/Vaccinium globulare habitat type, Vaccinium globulare phase (Steele et al. 1983)	162	65
7	Abies lasiocarpa/Calamagrostis rubescens habitat type, Calamagrostis rubescens phase (Steele et al. 1983)	12	5
8	Abies lasiocarpa/Arnica cordifolia habitat type, Arnica cordifolia phase (Steele et al. 1983)	5	2
9	Abies lasiocarpa/Vaccinium scoparium habitat type, Pinus albicaulis phase (Steele et al. 1983)	66	26
10	Abies lasiocarpa/Vaccinium scoparium habitat type, Pinus albicaulis phase with Abies lasiocarpa/Ribes montigenum habitat type, Pinus albicaulis phase; Pinus albicaulis/Vaccinium scoparium habitat type; and Abies lasiocarpa krummholz community type (Steele et al. 1983)	1007	403
11	Abies lasiocarpa-Acer glabrum avalanche chute community type (Montana Natural Heritage Program, no date)	63	25

11/17	Abies lasiocarpa-Acer glabrum avalanche chute community type (Montana Natural Heritage Program, no date) with Heracleum lanatum-Rudbeckia occidentalis community type (Gregory 1983)	186	75
12	Picea engelmannii/Galium triflorum habitat type and Abies lasiocarpa/ Actaea rubra habitat type (Steele et al. 1983) with Picea spp./Cornus stolonifera community type (Youngblood et al. 1985)	84	34
13	Populus tremuloides/Tall Forb community type (Mueggler 1988)	33	13
14	Salix boothii/Smilacina stellata community type with Alnus incana/Ribes hudsonianum community type, Cornus stolonifera/Heracleum lanatum community type, and Salix exigua/Equisetum arvense community type (all Youngblood et al. 1985)	36	14
15/18	Artemisia tridentata ssp. vaseyana f. spiciformis/Mountain Forb community type (Bramble-Brodahl 1978) with Ligusticum filicinum-Delphinium occidentale community type and Agastache urticifolia-Viguiera multiflora community type (both Gregory 1983)	630	252
16	Balsamorhiza sagittata-Helianthella uniflora community type (Gregory 1983)	228	91
16/18	Balsamorhiza sagittata-Helianthella uniflora community type with Agastache urticifolia-Viguiera multiflora community type (Gregory 1983)	278	111
17	Heracleum lanatum-Rudbeckia occidentalis community type (Gregory 1983)	34	14
18	Agastache urticifolia-Viguiera multiflora community type (Gregory 1983)	127	51
18/16	Agastache urticifolia-Viguiera multiflora community type (Gregory 1983) with	321	128

Balsamorhiza sagittata-Helianthella uniflora community type (Gregory 1983)

PHYSICAL AND CLIMATIC CONDITIONS

Physical Conditions

Horse Creek RNA is located on the west slopes of the Gros Ventre Range and contains the mid-reach of Horse Creek. The creek drains west-southwest, ultimately joining the Snake RIver. Horse Creek Canyon is narrowly V-shaped with extremely steep canyon walls. A less steeply-sloping bench is found at the base of the high alpine peaks in the northeastern part of the RNA (Tuhy 1987).

Climatic Conditions

The Gros Ventre Range is included in the western Wyoming climate region by Baker (1944). This area, which includes the Wyoming Range, Tetons, and Yellowstone Plateau, is characterized by uniform, moderately high monthly precipitation. The climate of this area contrasts sharply with mountainous areas to the east which have drier, more continental climatic conditions.

No climate stations are maintained in the Gros Ventre Range. The nearest station is located 10 miles to the northwest in Jackson. This station is at about the same elevation as the lower end of Horse Creek, but is much lower than the high plateau and summits at the east end of the RNA. Data from the Jackson station provide only a rough approximation of conditions in most of the RNA.

In Jackson, peak precipitation occurs in December-January as snow and in May-June as rain. Lowest precipitation is recorded in July. The frost-free period averages only 32 days in the summer (Martner 1986).

Summary of Monthly Climate Values, Jackson, Wyoming
Elevation 6230 feet (1899 m), 1951-1980
(From Martner 1986)

Month	Mean Temperature		Average Precipitation	
	°F	°C	Inches	mm
January	16.0	- 8.9	1.63	41.4
February	20.2	- 6.5	1.00	25.4
March	26.3	- 3.2	1.03	26.2

April	37.2	2.9	1.08	27.4
May	46.3	7.9	1.72	43.7
June	54.0	12.2	1.72	43.7
July	60.8	16.0	0.84	21.3
August	58.6	14.8	1.15	29.2
September	50.7	10.4	1.16	29.5
October	40.6	4.8	1.09	27.7
November	27.5-	2.5	1.13	28.7
December	17.5-	8.1	1.65	41.9
Mean Annual	38.0	3.3	15.20	386.0
Mean April-Sept.	52.6	11.4	7.67	194.8

DESCRIPTION OF VALUES

Flora

Climax vegetation in the southwestern third of the Horse Creek RNA is Douglas-fir woodland on all but the steepest northeast-facing slopes and some broad ridgetops. The woodlands are mixed with areas of climax herbaceous vegetation on steep, dry slopes. Vegetation on avalanche tracks will be maintained in its early-seral shrubby and herbaceous state. On the steep northeast-facing slopes and broad ridgetops, subalpine fir woodlands are the climax vegetation.

In the central third of the RNA, climax vegetation on the north-facing slopes is subalpine fir woodland with large openings of forb-dominated vegetation. West-facing slopes support climax vegetation of Douglas-fir woodlands, and south-facing slopes support climax vegetation of dry forb-dominated vegetation. The high-elevation slopes in the eastern third of the RNA support climax vegetation of subalpine fir and whitebark pine woodlands.

In riparian areas along Horse Creek, the climax vegetation is Engelmann spruce woodland.

No federally listed Threatened or Endangered plant species

are found in the Horse Creek RNA. One BTNF Sensitive species and four state rare species (monitored by WYNDD) are found in the RNA. These species include:

Species	Comments
Artemisia tridentata var. vaseyana f. spiciformis [syn. = A. spiciformis]	A regional endemic taxon known from fewer than 10 occurrences in Wyoming. A single stand occurs on a high bench near the eastern boundary of the RNA (Tuhy 1987).
Astragalus robbinsii var. minor	A species of limited distribution in Wyoming, known from less than 5 occurrences in the western mountains. Found on rocky gravel bars along Horse Creek.
Draba borealis	A BTNF Sensitive species, discovered for the first time in the RNA in 1993. Two small populations are found on the south bank of Big Horse Creek on well-shaded, moist limestone rock outcrops and ledges in Picea engelmannii/Ribes lacustre forest.
Pedicularis procera	A species of limited distribution in Wyoming, known from less than 10 occurrences. One population was found on shady, moist banks of the North Fork of Horse Creek in 1993.
Phacelia heterophylla var. virgata	A species of limited distribution in Wyoming, known only from Lincoln and Teton Counties. Locally common in higher elevation forb meadows.

In addition to these known species, suitable habitat may be present for several rare species found on alpine limestone. These include Parrya nudicaulis (naked-stemmed parrya) and Saussurea weberi (Weber's saw-wort), two USFS Region 4 Sensitive plants found in similar habitats to the east in the Wind River Range (USDA Forest Service 1989 b, 1991; Fertig 1992). Future surveys should be conducted for these species in the RNA.

A brief and incomplete floristic survey was conducted in the Horse Creek RNA in August, 1993. The following species checklist is based on field studies and collections by Tuhy (1987 and Rocky Mountain Herbarium records) and Fertig (unpublished records). For additional information on the vascular flora of the Gros

Ventre mountains, consult Lichvar (1979).

Common Vascular Plants of Horse Creek RNA

Scientific Name	Common Name
Trees	
Abies lasiocarpa	Subalpine fir
Alnus incana var. occidentalis	Mountain alder
Picea engelmannii	Engelmann spruce
Picea pungens	Blue spruce
Pinus albicaulis	Whitebark pine
Pinus contorta var. latifolia	Lodgepole pine
Populus balsamifera	Balsam-poplar
Populus tremuloides	Quaking aspen
Prunus virginiana	Common chokecherry
Pseudotsuga menziesii	Douglas-fir
Salix lasiandra var. caudata	Pacific willow
Shrubs	
Acer glabrum	Rocky Mountain maple
Amelanchier alnifolia var. pumila	Western serviceberry
Artemisia tridentata var. vaseyana f. vaseyana	Mountain big sagebrush
f. spiciformis	Osterhout sagebrush
Artemisia tripartita var. tripartita	Threetip sagebrush
Ceanothus velutinus	Mountain balm
Cornus sericea	Red-osier dogwood
Juniperus communis var. depressa	Common juniper
Lonicera involucrata	Black twin-berry
Lonicera utahensis	Utah honeysuckle
Mahonia repens	Oregon grape
Paxistima myrsinites	Mountain lover
Physocarpus malvaceus	Mallow ninebark
Purshia tridentata	Bitterbrush
Ribes lacustre	Swamp gooseberry
Ribes oxyacanthoides var. setosum	Northern gooseberry
Rosa woodsii	Woods rose
Rubus idaeus	Red raspberry

var. aculeatissimus
Rubus parviflorus Thimbleberry
Salix boothii Booth's willow
Salix drummondiana Drummond willow
Salix melanopsis Dusky willow
Salix wolfii Wolf's willow
Shepherdia canadensis Soapberry
Sorbus scopulina Mountain-ash
Spiraea betulifolia Shiny-leaf spirea
var. lucida
Symphoricarpos oreophilus Mountain snowberry
var. utahensis
Vaccinium globulare Blue huckleberry
Vaccinium scoparium Grouse whortleberry

Forbs

Achillea millefolium Common yarrow
var. lanulosa
Actaea rubra Red baneberry
Agastache urticifolia Nettleleaf horsemint
Agoseris aurantiaca Orange agoseris
Anaphalis margaritacea Pearly-everlasting
Anemone multifida Pacific anemone
Angelica arguta Sharptooth angelica
Antennaria microphylla Small-leaved pussy-toes
Antennaria racemosa Raceme pussy-toes
Antennaria rosea Rosy pussy-toes
Apocynum androsaemifolium Spreading dogbane
Aquilegia coerulea Colorado columbine
Arabis drummondii Drummond's rockcress
Arabis hirsuta Hairy rockcress
var. pycnocarpa
Arabis holboellii Holboell's rockcress
var. secunda
Arenaria congesta Ballhead sandwort
var. congesta
Arenaria lateriflora Bluntleaf sandwort
Arnica cordifolia Heart-leaf arnica
Arnica latifolia Mountain arnica
Arnica longifolia Seep-spring arnica
Arnica parryi Nodding arnica
Artemisia dracunculus Tarragon
Aster bracteolatus Eaton's aster
Aster conspicuus Showy aster
Aster engelmannii Engelmann's aster
Aster foliaceus Leafy-bract aster
var. canbyi
var. parryi

Aster glaucodes
Aster hesperius Marsh aster
Aster integrifolius Entire-leaved aster
Aster occidentalis Western mountain aster
Aster perelegans Elegant aster
Astragalus agrestis Field milkvetch
Astragalus miser Weedy milkvetch
Astragalus robbinsii Robbins' milkvetch
var. minor
Balsamorhiza sagittata Arrowleaf balsamroot
Bupleurum americanum American thorough-wax
Campanula rotundifolia Harebell
Capsella bursa-pastoris Shepherd's purse
Castilleja linearifolia Wyoming paintbrush
Castilleja miniata Scarlet paintbrush
Cerastium fontanum Mouse-ear chickweed
Chenopodium berlandieri White goosefoot
Cirsium scariosum Elk thistle
Clematis occidentalis Rock clematis
var. grosseserrata
Collomia linearis Narrow-leaved collomia
Collinsia parviflora Small-flowered blue-eyed Mary
Crepis acuminata Tapertip hawksbeard
Cryptantha affinis Slender cryptantha
Delphinium occidentale Western larkspur
Disporum trachycarpum Wartberry
Draba albertina Slender draba
Draba borealis Boreal draba
Epilobium angustifolium Fireweed
var. angustifolium
Epilobium brachycarpum Tall annual willow-herb
Epilobium ciliatum Common willow-herb
Erigeron speciosus Showy fleabane
Eriogonum umbellatum Sulfur buckwheat
var. majus
Fragaria vesca Woods strawberry
Fragaria virginiana Virginia strawberry
Galium boreale Northern bedstraw
Galium triflorum Sweetscented bedstraw
Gayophytum diffusum Spreading groundsmoke
var. strictipes
Gentianella amarella Northern gentian
Geranium bicknellii Bicknell's geranium
Geranium richardsonii White geranium
Geranium viscosissimum Sticky geranium
Geum macrophyllum Large-leaved avens
var. perincisum
Geum triflorum Prairie-smoke
Habenaria unalascensis Alaska rein-orchid

Hackelia floribunda Many-flowered stickseed
Helianthella quinquenervis Nodding helianthella
Helianthella uniflora Rocky Mountain little-sunflower
Heracleum lanatum Cow-parsnip
Hieracium albiflorum White-flowered hawkweed
Iliamna rivularis Streambank globemallow
Ipomopsis aggregata Scarlet gilia
Lactuca serriola Prickly lettuce
Ligusticum filicinum Fern-leaf lovage
Linanthus septentrionalis Northern linanthus
Linum lewisii Wild blue flax
Lithospermum ruderale Western gromwell
Lupinus argenteus Silvery lupine
Maianthemum racemosum False spikenard
var. amplexicaule
Maianthemum stellatum Starry false Solomon's-seal
Melilotus officinalis Yellow sweet-clover
Mertensia ciliata Ciliate bluebells
Mimulus guttatus Yellow monkey-flower
Mimulus lewisii Lewis' monkey-flower
Orthilia secunda Sidebells pyrola
Osmorhiza depauperata Blunt-fruit sweetroot
Osmorhiza occidentalis Western sweetroot
Pedicularis procera Gray's lousewort
Penstemon procerus Small-flowered penstemon
Perideridia montana Gairdner's yampah
Petrophyton caespitosum Rocky Mountain rockmat
Phacelia hastata Silverleaf phacelia

Phacelia heterophylla Virgate phacelia
var. virgata
Phacelia sericea Silky phacelia
Polygonum douglasii Douglas knotweed
Potentilla arguta Tall cinquefoil
Potentilla glandulosa Glandular cinquefoil
Potentilla gracilis Slender cinquefoil
var. nuttallii
Pterospora andromeda Pinedrops
Ranunculus macounii Macoun's buttercup
Rudbeckia occidentalis Blackhead
Sagina saginoides Alpine pearlwort
Scrophularia lanceolata Lanceleaf figwort
Sedum lanceolatum Lanceleaved stonecrop
Senecio serra Butterweed groundsel
var. serra
Senecio streptanthifolius Cleft-leaf groundsel
Solidago canadensis Canada goldenrod
Solidago multiradiata Northern goldenrod

var. scopulorum
Swertia radiata Green gentian
Taraxacum officinale Common dandelion
Thalictrum fendleri Fendler's meadowrue
Thalictrum occidentale Western meadowrue
Thlaspi arvense Field pennycress
Tragopogon dubius Yellow salsify
Trifolium hybridum Alsike clover
Trifolium pratense Red clover
Trifolium repens White clover
Urtica dioica Stinging nettle
Valeriana occidentalis Western valerian
Veronica biloba Bilobed speedwell
Viguiera multiflora Viguiera
Viola adunca Early blue violet
Viola canadensis Canada violet

Graminoids

Bromus carinatus California brome
Bromus ciliatus Fringed brome
Bromus inermis Smooth brome
Calamagrostis canadensis Bluejoint reedgrass
Calamagrostis rubescens Pinegrass
Carex hoodii Hood's sedge
Carex rossii Ross sedge
Dactylis glomerata Orchard-grass
Deschampsia elongata Slender hairgrass
Elymus glaucus Blue wheatgrass
Elymus spicatus Bluebunch wheatgrass
Elymus trachycaulus Slender wheatgrass
var. trachycaulus
Festuca idahoensis Idaho fescue
Juncus ensifolius Dagger-leaf rush
Phleum alpinum Alpine timothy
Phleum pratense Common timothy
Poa palustris Fowl bluegrass
Poa pratensis Kentucky bluegrass
Stipa nelsonii Nelson's needlegrass
var. dorei
Trisetum spicatum Spike trisetum

Ferns and fern allies

Cystopteris fragilis Brittle bladder-fern
Equisetum arvense Field horsetail
Equisetum hyemale Common scouring-rush

Fauna

No federally listed Threatened or Endangered vertebrate species are currently known to occur in the Horse Creek RNA. Potential habitat may exist for 15 USFS Region 4 Sensitive species and WYNDD "rare, uncommon, or imperiled" species in the vicinity of the RNA (Garber 1991 a; USDA Forest Service 1991). These species include:

Species	Comments
	Mammals
Silver-haired bat	Listed by WYNDD as rare or uncommon. Reported from the vicinity by Clark and Stromberg (1987).
Hoary bat	Listed by WYNDD as rare or uncommon. Documented for the general vicinity by Garber (1991 b). Suitable habitat may exist in the RNA.
Montane vole	Listed by WYNDD as rare or uncommon. Reported from the vicinity of the RNA by Clark and Stromberg (1987).
Wolverine	A USFS Region 4 Sensitive species and USFWS C2 candidate. Reported from the Granite Creek area east of the RNA (WYNDD records). Potential habitat may exist in the Horse Creek drainage.
Mountain lion	Listed by WYNDD as rare or uncommon. Probable resident of the RNA.
Lynx	A USFS Region 4 Sensitive species and USFWS C2 candidate. Several historical records are known from the mountains in the vicinity of Horse Creek (WYNDD records). Potential habitat may be present within the RNA.
	Birds
Sharp-shinned hawk	Listed by WYNDD as rare or uncommon. Potential habitat is available in conifer and aspen forests in the RNA (C. Garber, personal comm.).

Cooper's hawk	Listed by WYNDD as rare or uncommon. Potential habitat is available in conifer and aspen forests in the RNA (C. Garber, personal comm.).
Northern goshawk	A USFWS C2 candidate. Potential habitat available in the RNA. One individual may have been located during botanical surveys in 1993.
Great gray owl	A USFS Region 4 Sensitive species. One breeding record known from the greater Jackson area (WYNDD records).
Flammulated owl	A USFS Region 4 Sensitive species. One record known from the greater Jackson area (WYNDD and WY Game and Fish records).
Northern saw-whet owl	Listed by WYNDD as rare or uncommon. Breeding records and potential habitat are known from the general vicinity of the RNA (Dorn and Dorn 1990).
Three-toed woodpecker	A USFS Region 4 Sensitive species. Potential habitat is present in conifer forests of the RNA (C. Garber, personal comm.).

Amphibians and Reptiles

Boreal toad	A USFWS C2 candidate. Reported from two locations in the vicinity of the RNA (Baxter and Stone 1985).
Rubber boa	Listed by WYNDD as imperiled. Several unconfirmed reports are known from the Jackson Hole area (Baxter and Stone 1985). Suitable habitat may exist at lower elevations of the RNA.

Vertebrate species have not been systematically inventoried in the Horse Creek RNA. The following tentative species list is derived from literature sources (Baxter and Stone 1985; Clark and Stromberg 1987; Dorn and Dorn 1990; Oakleaf et al. 1992). Species for which suitable habitat is lacking in the RNA have been excluded from this list.

Common Name	Scientific Name

Mammals

Masked shrew	Sorex cinereus cinereus
Dusky shrew	Sorex vagrans obscurus
Water shrew	Sorex palustris navigator
Little brown myotis	Myotis lucifugus carissima
Long-legged myotis	Myotis volans interior
Long-eared myotis	Myotis evotis evotis
Silver-haired bat	Lasionycteris noctivagans
Hoary bat	Lasiurus cinereus cinereus
Pika	Ochotona princeps ventorum
Nuttall's cottontail	Sylvilagus nuttallii grangeri
Snowshoe hare	Lepus americanus
Least chipmunk	Tamias minimus consobrinus
Yellow pine chipmunk	Tamias amoenus luteiventris
Uinta chipmunk	Tamias umbrinus fremontii
Yellow-bellied marmot	Marmota flaviventris nosophora
Uinta ground squirrel	Spermophilus armatus
Golden-mantled ground squirrel	Spermophilus lateralis castanurus
Red squirrel	Tamiasciurus hudsonicus
Northern flying squirrel	Glaucomys sabrinus bangsii
Northern pocket gopher	Thomomys talpoides bridgeri
Beaver	Castor canadensis
Deer mouse	Peromyscus maniculatus
Bushy-tailed woodrat	Neotoma cinerea
Southern red-backed vole	Clethrionmys gapperi idahoensis
Heather vole	Phenacomys intermedius
Montane vole	Microtus montanus
Long-tailed vole	Microtus longicaudus longicaudus
Muskrat	Ondatra zibethicus
Western jumping mouse	Zapus princeps utahensis
Porcupine	Erethizon dorsatum
Coyote	Canis latrans
Red fox	Vulpes vulpes
Black bear	Ursus americanus cinnamomum
Marten	Martes americana
Ermine	Mustela erminea muricus
Long-tailed weasel	Mustela frenata
Mink	Mustela vison
Striped skunk	Mephitis mephitis hudsonica
Mountain lion	Felis concolor
Lynx	Felis lynx canadensis
Bobcat	Felis rufus pallescens
Elk	Cervus elaphus nelsoni
Mule deer	Odocoileus hemionus hemionus

Moose Alces alces shirasi

Birds

Sharp-shinned hawk Accipiter striatus
Cooper's hawk Accipiter cooperi
Northern goshawk Accipiter gentilis
Red-tailed hawk Buteo jamaicensis
Golden eagle Aquila chrysaetos
American kestrel Falco sparverius
Blue grouse Dendragapus obscurus
Ruffed grouse Bonasa umbellus
Sage grouse Centrocercus urophasianus
Sandhill crane Grus canadensis
Killdeer Charadrius montanus
Common snipe Gallinago gallinago
Mourning dove Zenaida macroura
Great horned owl Bubo virginicus
Boreal owl Aegolius funereus
Northern saw-whet owl Aegolius acadicus
Calliope hummingbird Stellula calliope
Broad-tailed hummingbird Selasophorus platyceras
Red-naped sapsucker Sphyrapicus nuchalis
Downy woodpecker Picoides pubescens
Hairy woodpecker Picoides villosus
Three-toed woodpecker Picoides tridactylicus
Red-shafted flicker Colaptes auratus cafer
Olive-sided flycatcher Contopus borealis
Western wood-pewee Contopus sordidulus
Hammond's flycatcher Empidonax hammondii
Cordilleran flycatcher Empidonax occidentalis
Tree swallow Tachycineta bicolor
Gray jay Perisoreus canadensis
Steller's jay Cyanocitta stelleri
Clark's nutcracker Nucifraga columbiana
Black-billed magpie Pica pica
Common raven Corvus corvax
Black-capped chickadee Parus atricapillus
Mountain chickadee Parus gambeli
Red-breasted nuthatch Sitta canadensis
White-breasted nuthatch Sitta carolinensis
Brown creeper Certhia americana
House wren Troglodytes aedon
American dipper Cinclus mexicanus
Ruby-crowned kinglet Regulus calendula
Mountain bluebird Sialia currucoides
Townsend's solitaire Myadestes townsendi
Swainson's thrush Catharus ustulatus
Hermit thrush Catharus guttatus

American robin Turdus migratorius
Gray catbird Dumetella carolinensis
American pipit Anthus rubescens
Warbling vireo Vireo gilvus
Yellow warbler Dendroica petechia
Audubon's warbler Dendroica coronta auduboni
MacGillivray's warbler Oporornis tolmiei
Wilson's warbler Wilsonia pusilla
Common yellowthroat Geothlypis trichas
Western tanager Piranga ludoviciana
Lazuli bunting Passerina amoena
Green-tailed towhee Pipilo chlorurus
Chipping sparrow Spizella passerina
Vesper sparrow Pooectes gramineus
Fox sparrow Passerella iliaca
Song sparrow Melospiza melodia
White-crowned sparrow Zonotricha leucophrys
Dark-eyed junco Junco hyemalis
Western meadowlark Sturnella neglecta
Common grackle Quiscalus quiscula
Rosy finch Leucosticte arctoa
Pine grosbeak Pinicola enucleator
Cassin's finch Carpodacus cassinii
Red crossbill Loxia curvirostra
Pine siskin Carduelis pinus
Evening grosbeak Coccothraustes vespertinus

Amphibians and Reptiles

Tiger salamander Ambystoma tigrinum
Boreal toad Bufo boreas boreas
Northern leopard frog Rana pipiens
Spotted frog Rana pretiosa
Rubber boa Charina bottae
Wandering garter snake Thamnophis elegans vagrans
Valley garter snake Thamnophis sirtalis fitchi

Geology

The Horse Creek RNA is located on the western edge of the Gros Ventre Range and along the northern edge of the Wyoming thrust belt. The western three-fourths of the RNA is composed of overlapping folds and sheets of surficial sedimentary material. Traces of at least three major thin-skin faults (Bear, Game Creek, and Jackson) are present in the RNA (Goetze 1981). A fourth fault, the Cache Creek, cuts more deeply and has lifted Precambrian gneisses and schists from the core of the Gros Ventre Range to the surface (Lageson and Spearing 1988). These rocks

are exposed only at the extreme eastern end of the RNA (Goetze 1981).

Most of the surface rocks of the RNA are sedimentary in origin and date from the Paleozoic and Mesozoic. The lower elevations of the Horse Creek Basin contain outcrops of the Phosphoria, Dinwoody, Wells, Chugwater, and Madison Limestone formations. At higher elevations, other formations, including the Darby, Bighorn Dolomite, Gallatin Limestone, Gros Ventre, and Flathead Sandstone are found (Goetze 1981). All of these sedimentary formations are composed of various layers of limestone, dolomite, sandstone, shale, and conglomerate. Quaternary talus, alluvium, and glacial deposits are also found in the RNA (Goetze 1981; Tuhy 1987).

For additional information on the complex geology of the Gros Ventres, the Horse Creek RNA, and western Wyoming, consult Love, C. and J. D. Love (1978), Love, J. D. and C. Love (1978), Love and Christiansen (1985), and Schroeder (1974; 1976).

Soils

Information on soils in the Horse Creek RNA comes from Nordin and Blackwell (1985).

The soils in all of the RNA except the highest ridges and cirques in the northeast belong to the Typic Cryoboralfs-Typic Cryoborolls-Typic Cryochrepts association, 30 to 70 percent slopes. These soils are well drained and contain substantial volumes of rock fragments. For the most part they are stable and support woodlands.

In the highest terrain in the northeastern part of the RNA, the soils belong to the Typic Cryochrepts-Lithic Cryorthents-Argic Cryoborolls association, 10 to 90 percent slopes. They are well drained soils with substantial volumes of rock fragments. The vegetation is primarily alpine with small areas of conifer krummholz.

Lands

The Horse Creek RNA is all reserved Forest Service land. The entire RNA is located within the Gros Ventre Wilderness. Most of the RNA is included within Phosphate Reserve # 4, Wyo. # 1. established in 1908 (Tuhy 1987).

Cultural

There are no known historical or cultural sites within the

RNA.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

The Horse Creek Basin is located along the eastern edge of the Wyoming thrust belt and is suspected to have high potential for oil and gas deposits (Tuhy 1987). Although there has been past interest in this area, no exploratory drilling has been done (USDI Geological Survey 1981). The Gros Ventre Range is known to contain substantial phosphate reserves, and formations containing phosphates occur at several locations in the RNA. A large part of the RNA is included in Phosphate Reserve #4, Wyo # 1 (Tuhy 1987).

As part of the Gros Ventre Wilderness, the Horse Creek RNA is withdrawn from all forms of mineral leasing, subject to valid existing rights. FSM 4063.3 also withdraws the RNA from mineral leasing. At present, there are no valid existing leases for coal or phosphates in the RNA, nor are there any mining claims within the RNA's boundaries (Tuhy 1987). At least 10 oil and gas leases dating from 1969-1975 are found in the RNA. All of these leases have been suspended (Tuhy 1987).

Grazing

The Horse Creek watershed within the RNA is not in a grazing allotment and has been closed to commercial grazing of cattle and sheep since 1967. In the past, cattle were trailed through the watershed to pastures in the Granite Creek area. Since this activity was ceased, the riparian areas of the RNA have recovered to a natural condition. RNA establishment will have no impact on the existing grazing status of the area. Grazing will continue to be allowed for horse parties.

Timber

Horse Creek RNA contains extensive stands of timber, much of which is of potential commercial value. Because of its status as a Wilderness Area, timber harvest is not allowed in the RNA. Likewise, under FSM 4063.3, logging or wood gathering activities are not allowed.

Watershed Values

Withdrawal of the RNA from mineral leasing, timber harvest, and grazing will protect the Horse Creek watershed.

Recreation Values

The Horse Creek RNA is currently used primarily for hiking, horseback riding, camping, and hunting. Several commercial outfitter camps are located at the edges of the RNA. Most activity is concentrated along the trail corridors, although some dispersed recreation also occurs in late summer and fall. Due to access difficulties, recreational use of the RNA area by private individuals is probably lower than would be expected for comparable wilderness areas near Jackson. The overall low level of recreational activity has had a minimal impact on the natural conditions of the RNA with the exception of trail corridors (Tuhy 1987).

Wildlife and Plant Values

Horse Creek RNA contains habitat for boreal draba, a BTNF Sensitive plant. This species is dependent on moist, well-shaded calcareous ledges and outcrops. Maintaining this type of habitat is in keeping with the objectives for the establishment of the RNA and the direction of FSM 2670, which calls for the Region to "provide special management emphasis that will ensure [the] viability [of Sensitive species] and will preclude trends toward endangerment that would result in the need for federal listing" (USDA Forest Service 1988).

The Wyoming Game and Fish Department owns and operates an elk winter feeding range downstream of the RNA at the confluence of Horse and Little Horse creeks. Potential vegetation treatment projects to improve habitat for elk are not allowed in the RNA due to its Wilderness designation (Tuhy 1987).

Special Management Area Values

The Horse Creek RNA is located within the Gros Ventre Wilderness Area. Management of the RNA is compatible with most directions under the Wilderness Act. Where the two are incompatible, priority is given to management directives of the Wilderness Area (FSM 4063.32, FSM 1920).

Transportation Values

There are no roads present in the RNA. The Forest Service maintains two trails in the RNA: the Horse Creek Trail following Horse Creek, and the Granite Highline Trail that cuts across the northeastern section of the RNA (mostly above 9000 feet). At

least one outfitter's route (following Blackman Creek) is also present. The further proliferation of outfitter trails should be discouraged unless adequate water bars and other erosion control structure are built. The trails of the RNA are open only to foot and horse transportation. At current levels of traffic, these trail uses are compatible with the goals of the RNA. Access could be a potential problem that needs to be resolved with the cooperation of private landowners in the Lower Horse Creek Valley.

MANAGEMENT PRESCRIPTION

The Horse Creek RNA is contained within the Gros Ventre Wilderness and is managed under prescription DFC 6B (USDA Forest Service 1989 a, p. 253). Management emphasis is to provide for the protection and perpetuation of natural conditions. The area is withdrawn from mineral leasing, grazing, and timber management.

Vegetation Management

Logging is not permitted. Livestock grazing is permitted, and grazing is managed to maintain or enhance range and watershed condition. A fire management prescription will be implemented to allow wildfires to burn to the maximum practicable extent, and suppression techniques used will be those with the least long-term impact on the area.

ADMINISTRATION RECORDS AND PROTECTION

Administration and protection of the Horse Creek RNA will be the responsibility of Bridger-Teton National Forest. The District Ranger, Jackson Ranger District, has direct responsibility.

The Director of the Intermountain Research Station, Ogden, Utah, will be responsible for any research projects conducted in the RNA. Requests to conduct research in the Horse Creek RNA should be referred to the Director, who will evaluate research proposals and coordinate all studies and projects in the area with the District Ranger.

All plant and animal specimens collected in the course of research in the RNA will be properly preserved and maintained within university or federal agency herbaria and museums approved by the Intermountain Research Station Director.

Records for the RNA will be maintained in the following offices:

Regional Forester, Intermountain Region, Ogden, UT
Supervisor, Bridger-Teton National Forest, Jackson, WY
District Ranger, Jackson Ranger District, Jackson, WY
Director, Intermountain Research Station, Ogden, UT

ARCHIVING

Designated personnel at the Intermountain Research Station will be responsible for maintaining data and reports from Horse Creek RNA. Descriptive data on Horse Creek RNA will also be stored in the computerized RNA database at the office of the Northern Region, Missoula, Montana.

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