



Figure 5 View west of Grand View segment of the Snake River

Initially the views in the Jackass Butte segment are limited in distance due to the canyon cliffs and rim and the curving of the river. At about three miles the canyon rim again disappears to the south, broken only by Castle Butte and Morgan Butte. The north rim fluctuates between being adjacent to the river to two miles from the river. At Wild Horse Butte the canyon closes in again and remains this way for the remainder of the segment. The Swan Falls segment is a large, one mile wide canyon for a majority of its length with cliffs ranging from 300 to 600 feet above the river (Figure 6).



Figure 6 View west of Snake River Canyon below Swan Falls Dam.

The vertical cliffs and angular talus slopes of all four segments provide straight visual lines of rock and low vegetation with a medium texture. Along the Swan Falls, Jackass Butte, and Indian Cove segments the cliffs vary in proximity to the river from immediately adjacent to approximately one half mile away. The cliffs along the Grand View segment are set back as much as three miles. The distance of the canyon rim creates differences in the scale of the



canyon and the feeling of openness. The Swan Falls segment has the highest vertical cliffs (600 feet) but the canyon does not feel tight because the rim to rim distance averages about one mile across.

The south side of the four segments is a mixture of steep cliffs, buttes, rolling hills, and flood plains. The Indian Cove segment initially consists of flood plains slowly rising to low hills. The mixed ownership provides a mixture of croplands, groves of mature trees, and desert vegetation. This combination of vegetation breaks up the visual form across the landscape. The Grand View segment is almost entirely flood plains and rolling hills with no cliffs. The Jackass Butte segment changes character as the canyon cliffs come closer to the river to form an initial enclosed canyon that opens up after a few miles.

For the majority of the year the color tends to be dark cliff faces and brown/tan vegetation. The exception to this is the irrigated agricultural fields which stay green into the fall and the brief period during the spring when vegetation can be a brilliant green.

The BLM administered lands along the Snake River are categorized as Visual Resource Management (VRM) Class I, II, and III. The areas managed under VRM Class I are the north side of the Swan Falls segment, (which was classified as such when the Snake River Birds of Prey Natural Area received national protection in 1972), and those areas in the Grand View and Indian Cove segments along the Oregon National Historic Trail. The remaining segments are a mixture of VRM Class II and III.

Finding

While the visual elements and scenic quality of the Snake River Canyon can be spectacular, they are not unlike many other portions of the Snake River through southern Idaho and other areas of volcanic activity. Examples of similar scenic views in Idaho include the Snake River Canyon and Lower Salmon Falls Creek near Twin Falls. The quality of the scenic values for these four segments of the Snake River does not constitute an outstandingly remarkable scenic value when compared to other regional scenes.

Recreational (R)

Criteria for Outstandingly Remarkable Values Rating

Recreational opportunities are, or have the potential to be, popular enough to attract visitors from throughout or beyond the region of comparison or are unique or rare within the region. Visitors are willing to travel long distances to use the river resources for recreational purposes. River-related opportunities could include, but are not limited to, sightseeing, wildlife observation, camping, photography, hiking, fishing and boating. Interpretive opportunities may



be exceptional and attract, or have the potential to attract, visitors from outside the region of comparison. The river may provide, or have the potential to provide, settings for national or regional usage or competitive events.

Evaluation of the Present Situation

The Snake River Canyon provides a unique opportunity to observe one of the largest concentrations of nesting raptors in the world. This opportunity attracts visitors from the local area, the region, the nation, and other countries. Feature articles in magazines and newspapers has prompted visitation from across the United States. Environmental organizations, such as Hawk Watch International and the Audubon Society, routinely bring visitors from throughout the U.S. for the opportunity to view birds of prey along this stretch of the Snake River.

The Snake River Canyon also provides diverse opportunities for additional recreational activities such as fishing, camping, float and power boating, hiking, mountain biking, horseback riding, waterfowl hunting, and parasailing primarily for local residents. Recreation use occurs year-round with visitor use being highest in the spring and early summer months and lowest during winter months.

Finding

Opportunities for general river-related recreational activities along the Snake River are similar to those that can be found on many western rivers. However, the Snake River Canyon provides a very unique raptor watching opportunity found in only a few places in the United States. This opportunity is truly an outstandingly remarkable recreational value to the birding community.

Geology (G)

Criteria for Outstandingly Remarkable Value Rating

The river, or the area within the river corridor, contains one or more examples of a geologic feature, process or phenomenon that is unique or rare within the region of comparison. The feature(s) may be in an unusually active stage of development, represent a "textbook" example, and/or represent a unique or rare combination of geologic features (erosional, volcanic, glacial, or other geologic structures).



Evaluation of Present Situation

The NCA is located in the western Snake River Plain physiographic province, which is the western limb of a broad, flat arcuate depression which is concave to the north and extends 400 miles westward from northwest Wyoming to the Idaho-Oregon border. The structural depression is fault bounded and has an average width of about 35 miles. The western Plain is a north - northwest - trending 10 million year old basin bounded by normal faults. The surface consists primarily of Quaternary basalt flows underlain by Lake Idaho lacustrine sediments over 1000 feet thick and stream deposits derived from the Idaho batholith to the north and the Owyhee Mountains to the south.

Both arms of the Plain appear to have been strongly shaped by extension of the crust on the North American Plate during the past 17 million years. This structural formation was triggered by the magmatism of the migrating Yellowstone hot spot. In the NCA, the Snake River has cut a deep canyon in the lake deposits. The basalts have repeatedly filled the canyon over the past 100,000 years and subsequently been eroded by the Snake River forming a new canyon. The canyon is the predominant surface feature in the NCA and provides important nesting habitat for the raptor populations that inhabit the area.

The volcanism in the western Snake River Plain region began with extrusion of rhyolitic lavas followed by the eruption of basalt and ash-flow tuffs. As the plain pulled apart and subsided, a lake, or succession of lakes, known as Lake Idaho formed. Volcanic activity occurring when the lake was present resulted in many spectacular examples of three major types of phreatomagmatic volcanoes (volcanic activity associated with water): emergent, subaqueous, and subaerial. Emergent volcanoes, like Sinker Butte, began erupting under water and eventually build a volcanic edifice above the lake level. Subaqueous volcanoes erupt under water and never build above the lake level. Finally, subaerial volcanoes erupt through a buried aquifer system which produces violent eruptive features. All of these volcanic systems contain a significant amount of water, causing a high magma/water interaction. Emergent and subaqueous volcanoes usually form gently sloping tuff cones, whereas subaerial volcanoes form maars or tuff rings. The western Snake River Plain is an excellent area to study phreatomagmatic eruptions and hydrovolcanism.

Bonneville Flood - As glaciers receded during the last ice age, the inland basin of central Utah slowly filled with meltwater, creating Lake Bonneville. This lake covered approximately 20,000 square miles. The water level rose and finally crested at the lowest point in the basin -- Red Rock Pass, Idaho. The lake crested over the pass over a period of 500 to 1000 years before a catastrophic failure of the alluvial threshold dropped the lake level by approximately 100 meters during the Bonneville flood about 14,500 years ago. Water spilled out of Lake Bonneville and flowed north into the valleys of Marsh Creek and the Portneuf River. The deluge entered the Snake River Plain just north of Pocatello and flowed west across southern Idaho before turning



back north into the Hell's Canyon region. Over an estimated eight week period approximately 380 cubic miles of water passed through and over the Snake River Canyon.

The Snake River and its canyons are the major geographic features across the volcanic plain and became the main conduit for the Bonneville flood. The varying topographic features of the Snake River produced distinct types of hydraulics. In places where the canyon is deep and constricted, the velocity of the water increased tremendously. This increased energy allowed the water to pick up talus boulders the size of houses, turn, roll, and smooth out their rough edges, and deposit them many miles downstream. When the water entered wide, open stretches, the velocity decreased and the energy of the water could not keep the boulders suspended. The rocks settled in the bottom of the river and are now exposed on the larger bars along the river. These large, rounded boulders were nicknamed "melon gravel" due to the resemblance to big watermelons.

Dedication Point is an excellent location to view some of the effects of this catastrophic event. The river canyon above Swan Falls Dam is narrow and constricted, and widens below the dam. The large bar on the north side of the river below Dedication Point is covered with the Bonneville Flood boulders. You will notice the boulders on the upstream side of the bar are larger than the boulders on the downstream end. This demonstrates how the river lost energy as the canyon widened and was unable to hold the larger boulders in suspension. Floodwaters completely filled the canyon in some locations and flowed above the canyon rim in other areas. The force of the flood waters scoured the canyon in constricted locations. The river carved out many "box" canyons along the cliffs in places where large eddies formed.

Finding

The portion of the Snake River Canyon located within the NCA provides fine examples of canyon development and erosional features created by massive flood action, however; similar and in many ways much more definitive features can be observed up-stream and down-stream from the NCA and in the Columbia River Gorge and its tributaries. The Bonneville Flood was a single catastrophic event that changed the face of the Snake River Canyon, but the Glacial Lake Missoula Flood, of the Columbia River drainage was many times larger exploding downstream at a rate 10 times the combined flow of all the rivers of the world. Lake Missoula was drained of its estimated 500 cubic miles of water in as little as 48 hours. Rebuilding and failure of the ice dam created catastrophic flooding perhaps as many as 100 times before the alpine glaciers receded for the last time. The geologic resources associated with these four segments of the Snake River, while interesting are not unique when compared to regional geologic features and do not meet the criteria as outstandingly remarkable.



Fish (F)Criteria for Outstandingly Remarkable Value Rating

Fish values may be judged on the relative merits of either fish populations, habitat, or a combination of these river-related conditions.

Populations: The River is nationally or regionally an important producer of resident and/or anadromous fish species. Of particular significance is the presence of wild stocks and/or federal or state listed (or candidate) threatened, endangered or sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of "outstandingly remarkable."

Habitat: The River provides exceptionally high quality habitat for fish species indigenous to the region of comparison. Of particular significance is habitat for wild stocks and/or federal or state listed (or candidate) threatened, endangered or sensitive species. Diversity of habitats is an important consideration and could, in itself, lead to a determination of "outstandingly remarkable."

Evaluation of Present Situation**Populations:**

The Snake River's aquatic habitat is home to 27 species of fish, including white sturgeon, the largest fresh water fish in North America. White sturgeon, redband trout and mountain whitefish are the only native game fish in the NCA, since the salmon and steelhead runs were blocked by downstream dams. Twelve species of exotic game fish have been introduced into the Snake River system. These include small-mouth bass, rainbow trout, perch, crappie and channel catfish. Carp, an exotic fish, may be the most common large fish in the Snake River. Eleven native fish are considered non-game fish including suckers, northern pikeminnow, dace, shiners and sculpin.

Habitat:

The Snake River is a large volume, (greater than fifth order), river that is one of the most important water resources in the state. The river provides important agricultural, recreational, and wildlife resources. In this reach, the river flows through basalt canyons, rangeland, and agricultural land. The channel shape varies from being confined in the canyons to wide single channel areas with extensive floodplains and meandering channels with island complexes.



Findings:

The fish populations and habitat of the Snake River within the NCA are similar to those throughout Idaho and of other large volume rivers in the Pacific Northwest and do not constitute an outstandingly remarkable value.

Wildlife (W)

Criteria for Outstandingly Remarkable Values Rating

Wildlife values may be judged on the relative merits of either terrestrial or aquatic wildlife populations or habitat or a combination of these conditions.

Populations: The river or area within the river corridor contains nationally or regionally important populations of indigenous wildlife species. Of particular significance are species considered to be unique, and/or populations of federal or state listed (or candidate) threatened, endangered, or sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of "outstandingly remarkable"

Habitat: The river or area within the river corridor provides exceptionally high quality habitat for wildlife of national or regional significance, and/or may provide unique habitat or a critical link in habitat conditions for federal or state listed (or candidate) threatened, endangered or sensitive species. Contiguous habitat conditions are such that the biological needs of the species are met. The diversity of habitats is an important consideration and could, in itself, lead to a determination of "outstandingly remarkable".

Evaluation of the Present Situation

Populations: Two-hundred and eighteen bird, 49 mammal, 14 reptile, 4 amphibian species, and an unknown number of invertebrates have been found in the area. Each plays an integral part in the unique ecosystem of the Snake River Plain and Canyon.

While many bird species can be found along the Snake River Canyon, the raptor populations are the most distinctive feature. This unique raptor aggregation is the largest concentration of nesting birds of prey in North America and is generally believed to be one of the densest in the world. It is for this reason the area was congressionally designated a National Conservation Area in 1994. Raptors are relatively scarce animals even under the best conditions because they exist at the top of the food chain where the amount of energy available will support only small populations.



This unusual concentration of raptors exists because of the co-occurrence of two factors critical to their survival. One is that nest sites are very abundant in cavities, cracks, and ledges in the fractured basalt and eroded sandstone that make up the walls of the Snake River Canyon, numerous side canyons, and buttes that arise in the Snake River plain. The second factor is the fertile, fine- and medium-textured loess soils that support grasses, forbs, and shrubs, which in turn sustain many small mammals, birds, reptiles, and invertebrates. These animal populations, especially Piute ground squirrels and black-tailed jackrabbits, are prey for the raptors. Thus, the co-occurrence of abundant nesting sites and food supplies is the chief factor explaining why so many raptors occur in the NCA.

Twenty-five raptor species can be found in the NCA at different times of the year. Sixteen species nest in the NCA, and the remaining nine occur here during migration or in winter. Prairie falcons, golden eagles, red-tailed hawks, northern harriers, and American kestrels are the most common diurnal species. Several owl species are also common, including the barn owl, great horned owl, long-eared owl, short-eared owl, western screech owl, and burrowing owl. Of the 16 nesting raptor species, 10 are year-round residents. Winter visitors include the bald eagle, rough-legged hawk, sharp-shinned hawk, and Cooper's hawk.

Habitat:

The proximity of the Snake River's vertical canyon cliffs to the abundant prey of the Snake River Plain has created a unique raptor habitat in North America. This one of a kind habitat has been recognized by Congress in its designation as a National Conservation Area and by the American Bird Conservancy in its designation as a Globally Important Bird Area.

Raptors use diverse habitats in the NCA, nesting in three distinct zones: the cliffs, the uplands above the canyon, and the riparian areas adjacent to the Snake River. Riparian habitats are limited occurring in narrow bands along the Snake River and several small streams. Trees in riparian areas are important nesting and roosting habitat for several raptors and are hunting habitat for some, including species found there only in the winter. Long-eared owls, northern harriers, western screech-owls, and saw-whet owls are the raptor species that nest in riparian areas of the Snake River.

Finding

The remarkable wildlife values (birds of prey) associated with this portion of the Snake River has been recognized since the 1950's. These same values lead to its first congressional designation as a Natural Area in 1972 and as a National Conservation Area in 1994. The unique raptor habitat and population constitutes an outstandingly remarkable wildlife value.

