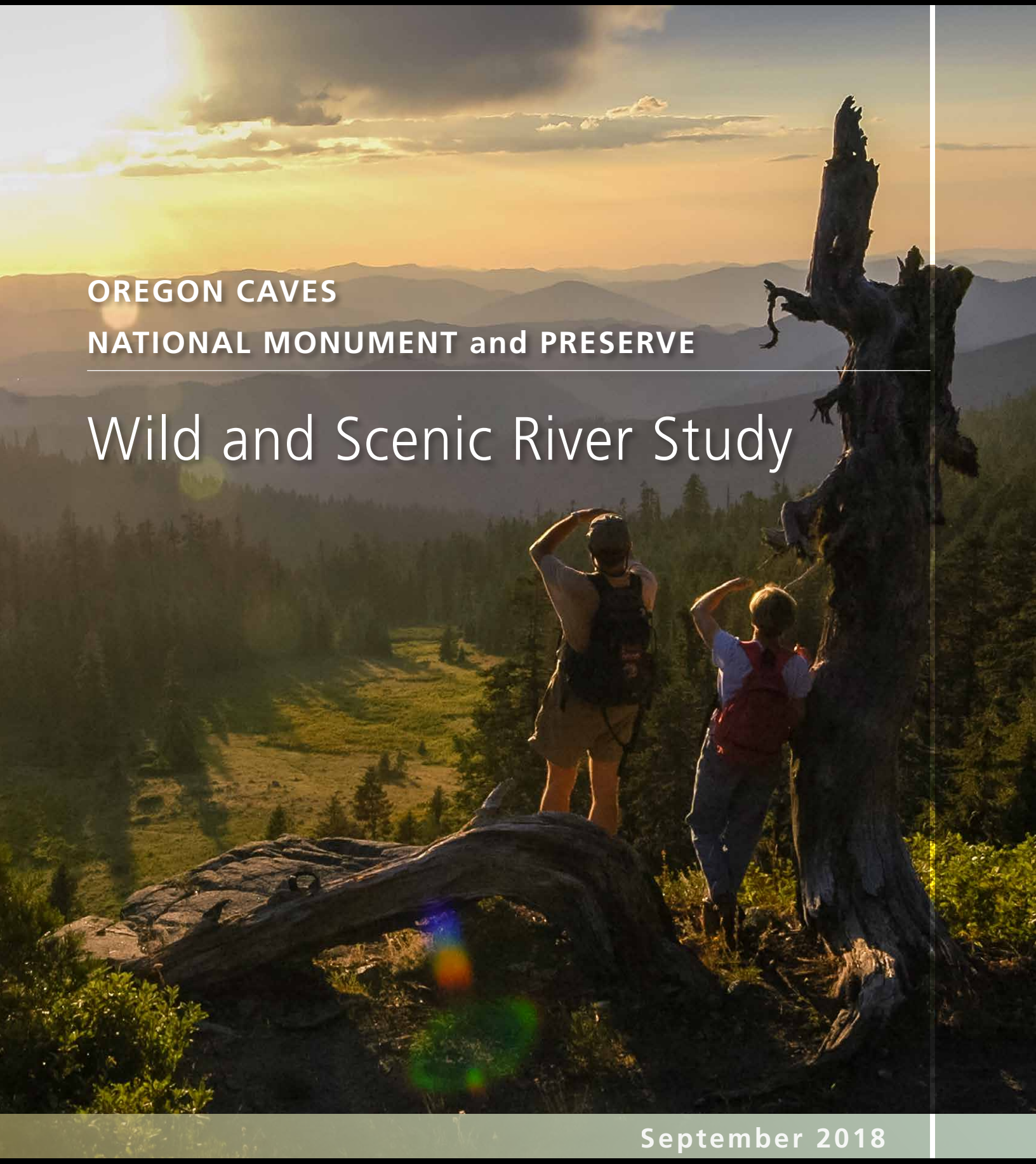
National Park Service
U.S. Department of the Interior



OREGON CAVES
NATIONAL MONUMENT and PRESERVE

Wild and Scenic River Study

September 2018

Lake Creek. Photo: NPS.

OREGON CAVES
NATIONAL MONUMENT AND PRESERVE

Wild and Scenic River Study

Oregon Caves National Monument and Preserve
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Park Planning and Environmental Compliance
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Please refer to "How to Use This Document" to navigate through the chapters.

Lake Creek. Photo: NPS.

HOW TO USE THIS DOCUMENT

The **Executive Summary** at the beginning of the document provides a condensed version of the wild and scenic river study.

Chapter 1: Introduction sets the stage for the wild and scenic river study by describing the study area within the Oregon Caves National Monument and Preserve, the purpose of the wild and scenic study, background about the Wild and Scenic River System, and the planning process.

Chapter 2: Eligibility and Classification Findings includes the eligibility criteria, free-flowing conditions, outstandingly remarkable values, classification criteria and preliminary classification findings.

Chapter 3: Suitability Findings describes the suitability criteria, suitability findings, management intent, and preliminary boundaries of the suitable segments.

The **Appendices** provide more detailed information related to the plan, pertinent legislation, a selected bibliography, a list of the preparers and consultants for the document, and the record of environmental compliance completed to date.

All maps are placed within the text of the applicable chapters. The reader should rely on the text, maps, and tables taken together to fully understand the proposed findings described in this study.

Shed Dragonfly Skin on Spatterdock. *NPS photo.*

Port Orford cedar. Photo: NPS.

EXECUTIVE SUMMARY

STUDY SCOPE AND PURPOSE

On December 19, 2014 through public law 113-291, Congress directed the National Park Service (NPS) to study five creeks in the Oregon Caves National Monument and Preserve (Park) for possible inclusion into the Wild and Scenic Rivers (WSR) system under Section 5(a) of the Wild and Scenic Rivers Act (WSRA). The creeks listed in the legislation are Lower Cave Creek (downstream of River Styx), Lake Creek, No Name Creek, Panther Creek, and Upper Cave Creek (upstream of River Styx). The NPS also studied Waterfelt Creek through Section 5(d)(1) of the WSRA. Below is a summary of the findings.

ELIGIBILITY FINDINGS

The NPS found two of the creeks eligible for WSR designation based upon their free-flowing condition and presence of at least one outstandingly remarkable value (ORV). The eligible Lake Creek segment extends from its headwaters at Upper and Lower Bigelow Lakes to its confluence with Lower Cave Creek. The eligible Upper Cave Creek segment begins in the headwaters and extends to the boundary of the subterranean River Styx WSR. Both Lake Creek and Upper Cave Creek were found to contain an ecological ORV. Lake Creek was also found to contain a geological ORV. NPS found the other creeks, Lower Cave Creek, Panther Creek and its tributary Waterfelt Creek, and No Name Creek, to be ineligible.

Outstandingly Remarkable Values

- Lake Creek's ecological ORV is due to its majestic old growth riparian forests of Port Orford cedar and outstanding macroinvertebrate biodiversity. Lake Creek also contains a geologic ORV because of its rare combination of glacially carved lakes, karstic cave dissolved out of marble and granitic rock occurring together.
- Upper Cave Creek's ecological value is driven from its connectivity and formation of River Styx, an already designated WSR, and its hydrologic complexity. The stream's main distinction is that it is one of the only known streams in the Klamath-Siskiyou region that is intermittent and at the same time disappears into a cave.

PRELIMINARY CLASSIFICATION

The WSRA provides for three possible classifications of eligible river segments: wild, scenic, and recreational. The criteria distinguishing these classifications are primarily based on the degree of human modification of the river and its adjacent shorelines. Based upon the applicable criteria, the best preliminary classifications for the segments in the park are as follows:

Segment	Classification
Lake Creek	recreational
Upper Cave Creek	scenic

SUITABILITY FINDINGS

The suitability analysis was primarily based on the following factors:

- The characteristics that make the river segments worthy of designation.
- The ability of the NPS to manage the river segments to protect their ORVs, water-quality, and free-flowing character.
- The compatibility of WSR designation with other potential uses of the river segments.
- The public's opinion on designation.

WSR protection and management is compatible with the NPS management of the waterways, existing protections in place, and continued recreation use of the park. WSR designation would offer an additional layer of protection through Section 7 of the WSRA and provide opportunities to focus on river values and watershed protection. WSR designation would also offer recognition of the creeks as a special place bringing more attention to the river values of these headwater streams and their role in providing clean water downstream.

The majority of the individuals and organizations who provided input on WSR designation through the scoping public meetings in 2016 and all public input received during the public review of the draft study in 2018 responded that they were supportive of designation. Those who were not supportive were primarily concerned about potential reduction to recreation access and hunting opportunities. The NPS found that WSR designation is compatible with the existing recreation uses of the park and designation is not expected to change public access opportunities currently enjoyed in park.

CONCLUSION

The NPS's findings conclude both Lake Creek and Upper Cave Creek are eligible and suitable for WSR designation.

Lupine Waterdrops. *NPS photo.*

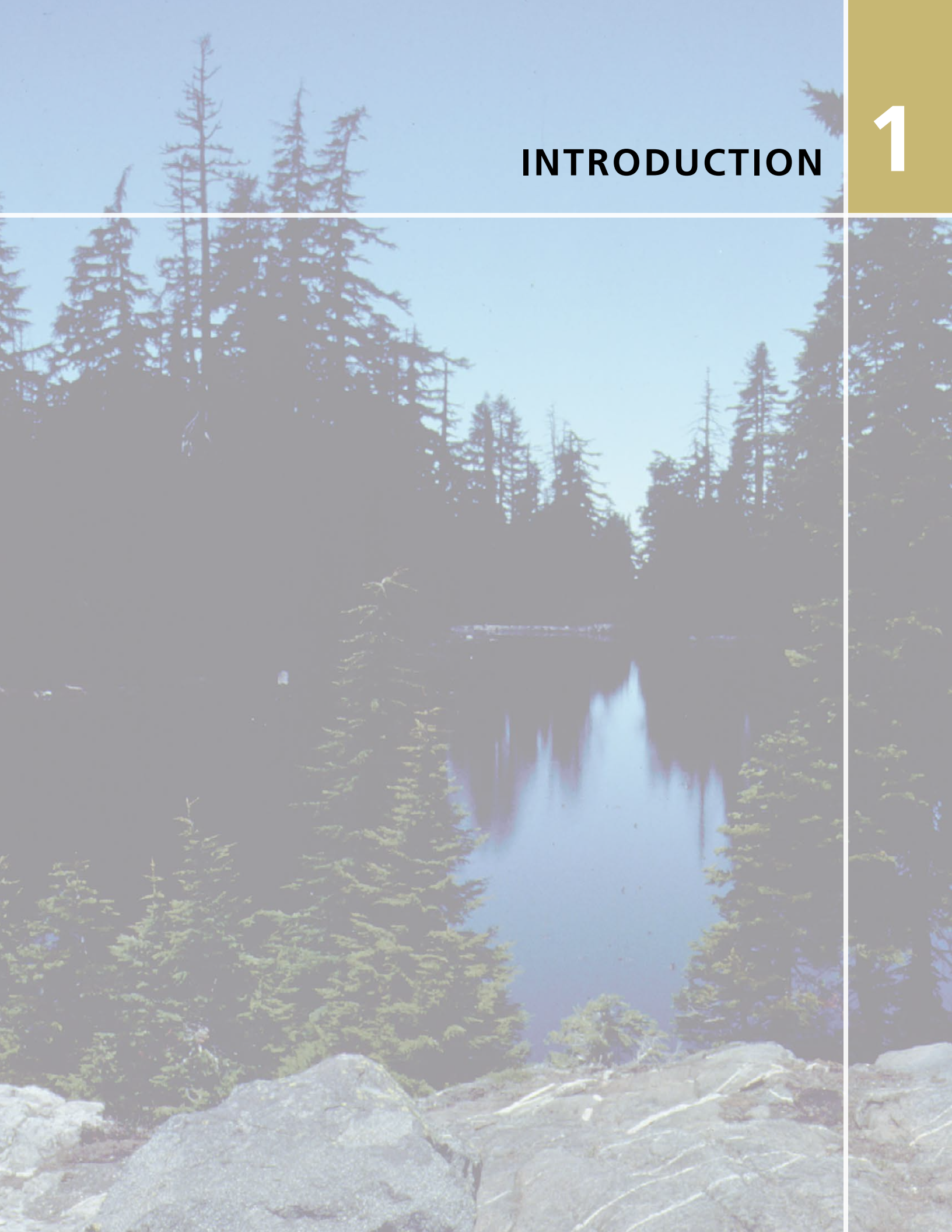
TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
FERC	Federal Energy Regulatory Commission
IWSRCC	Interagency Wild and Scenic Rivers Coordinating Council
NDAA	National Defense Authorization Act
NHPA	National Historic Preservation Act
NPS	National Park Service
Park	Oregon Caves National Monument and Preserve
ORV	Outstandingly Remarkable Value
PEPC	Planning, Environment and Public Comment
USFS	United States Forest Service
WSR	Wild and Scenic Rivers
WSRA	Wild and Scenic Rivers Act

Temporary falls on cave formations. *NPS photo.*

1 INTRODUCTION



Previous Page: Bigelow Lake. This page: Lake Creek below the road crossing. Photos: NPS.

CHAPTER 1: INTRODUCTION

PURPOSE AND BACKGROUND

This study evaluates the eligibility and suitability of creeks in the Oregon Caves National Monument and Preserve (park) for possible inclusion in the National Wild and Scenic River (WSR) System. On December 19, 2014 President Obama signed into law the National Defense Authorization Act (legislation) for Fiscal Year 2015, Public Law 113-291 which directed the National Park Service (NPS) to study five creek segments in the park through Section 5(a) of the Wild and Scenic Rivers Act (WSRA). The legislation designated the subterranean segment of Cave Creek, known as the River Styx, as a National WSR. The legislation also expanded the park by approximately 4,000 acres. The NPS developed this WSR study report in collaboration with the preserve management plan for the new lands transferred into NPS management as part of the boundary expansion. Because Section 5(d)(1) of the WSRA directs federal agencies to identify potential additions to the system when undertaking federal agency plans such as the preserve management plan, the NPS also studied Waterfelt Creek for possible inclusion in the National WSR System.

STUDY AREA

The study area and creeks evaluated are shown in Figure 1. All of the creeks are within the park under NPS management. These creeks are headwater streams in the upper part of the Illinois WSR watershed.

The legislation directed NPS to study the following creek segments under Section 5(a) of the WSRA:

> (A) Cave Creek. The 2.6-mile segment of Cave Creek from the headwaters at the River Styx to the boundary of the Rogue River Siskiyou National Forest.
>
> (B) Lake Creek, Oregon. The 3.6-mile segment of Lake Creek from the headwaters at Bigelow Lakes to the confluence with Cave Creek.
>
> (C) No Name Creek, Oregon. The 0.6-mile segment of No Name Creek from the headwaters to the confluence with Cave Creek.
>
> (D) Panther Creek. The 0.8-mile segment of Panther Creek from the headwaters to the confluence with Lake Creek.
>
> (E) Upper Cave Creek. The segment of Upper Cave Creek from the headwaters to the confluence with River Styx.

To distinguish between Cave Creek and Upper Cave Creek, Cave Creek below the cave is referred to in this report as Lower Cave Creek. Cave Creek above the cave is referred to as Upper Cave Creek.

Section 5(d)(1) of the WSRA directs agencies to study rivers for inclusion in the National WSR system as part of their land management planning processes. The NPS, under Section 5(d)(1) of the WSRA, expanded the study area to include Waterfelt Creek, a tributary of Panther Creek:

- Waterfelt Creek. The 0.8 mile segment from its headwaters to its confluence with Panther Creek.

As can be seen in Figure 1, the creeks studied encompass the main waterways in the park.

PREVIOUS STUDIES

In Congressional testimony on the proposed bill regarding the park expansion and WSR studies, the United States Forest Service (USFS) stated that the Siskiyou National Forest screened all tributaries to the Illinois located on the Siskiyou National Forest as part of a 1989 settlement agreement on the appeal of the land and resource management plan. None of the rivers screened that are currently being studied were found eligible. The NPS

reviewed the 1991 WSR inventory documents for Lower Cave Creek provided by the USFS. The USFS report found Lower Cave Creek to be ineligible due to the modifications to its free-flowing character directly below its outlet from River Styx. Copies of reports for other park candidate streams could not be located. Upper Cave Creek is entirely in Oregon Caves Monument and was not previously studied by the NPS or the USFS.

NATIONAL WILD AND SCENIC RIVER SYSTEM

The National WSR System was established by Congress in 1968 to protect certain outstanding rivers from the harmful effects of new federal projects such as dams and hydroelectric facilities. As of 2017, 208 rivers or river segments totaling over 12,700 miles have been protected nationwide in 40 states and Commonwealth of Puerto Rico. To be considered "Wild and Scenic" a river must be free-flowing and have at least one river-related outstanding natural, cultural, or recreational resource value. The Congressional declaration of policy in the WSRA (16 U.S.C. 1271-1287) states:

> *It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.*

Each river designated into the national system under the WSRA receives permanent protection from federally licensed or assisted dams, diversions, channelization or other water projects that would have a direct and adverse effect on its free-flowing condition, water quality, or Outstandingly Remarkable Values (ORV), or, for projects outside the designated segments, that would invade the segments or unreasonably diminish the segment's fish, wildlife, scenic, or recreational resources. The WSRA explicitly prohibits any new hydropower dam and related facilities licensed by the Federal Energy Regulatory Commission (FERC) on or directly affecting a designated river segment. The determination of a proposed federally assisted water resource project's potential impacts on the river's "outstandingly remarkable" values, water quality, and free-flowing condition is made by the federal river administering agency, in this case the NPS.

The WSRA originally designated eight river segments and specified how others rivers were to be added. Congress can authorize specific river segment(s) to be studied under Section 5(a) of the WSRA and federal agencies are directed to evaluate rivers in conjunction with their land management planning processes under Section 5(d)(1) of the WSRA.

The three main steps involved in a WSR study are eligibility, classification, and suitability. The eligibility analysis is a resource inventory and evaluation to determine if the river is free-flowing; and possess one or more river-dependent exceptional natural, cultural, or recreational ORV. River segments that are found eligible are also classified as wild, scenic, or recreational primarily based on the level of human impact along the river. The last step in the WSR study process is a suitability analysis which assesses whether or not eligible segments should be included in the WSR System. Suitability determination is based on an assessment of the characteristics that make the river segments worthy of designation; the ability of the NPS to manage the river segments to protect their ORVs, water-quality, and free-flowing character; the compatibility of WSR designation with other

potential uses of the river segments; and public support and opinion.

Upon positive suitability findings, the Department of Interior recommends to Congress that a river segment be designated or formally included in the National WSR System. Designation of a river into the National WSR System requires an Act of Congress.

PLANNING PROCESS

In 2015, the NPS initiated the WSR study. The NPS formed an interdisciplinary team with resource specialists, planners, park managers and the Superintendent from Oregon Caves National Monument and Preserve, Inventory and Monitoring Program, Park Planning, and the WSR Program. The study team defined the scope and timeline. As mentioned earlier to improve efficiency, the WSR study is being conducted in collaboration with the preserve management plan team, given the overlap with the study team, geographic area, and public involvement needs. In 2015 and 2016, the study team compiled technical research and reports, conducted field visits, and held internal workshops to develop preliminary eligibility and suitability findings. These preliminary findings were shared with the public through a newsletter and public scoping meetings in spring of 2016. Comments received on the preliminary findings were carefully considered and changes made to the preliminary findings were reflected in the draft report. In the spring of 2018, the draft report was shared with the public. The NPS hosted two public meetings and the draft study was open for a 90-day public comment period. The NPS recieved comments from five organizations and individuals. Commenters expressed support for wild and scenic designation to ensure permanent protection and recognition of the streams and their river values. Chapter 3 contains a more detailed summary of the public engagement process.

COMPLIANCE WITH NEPA

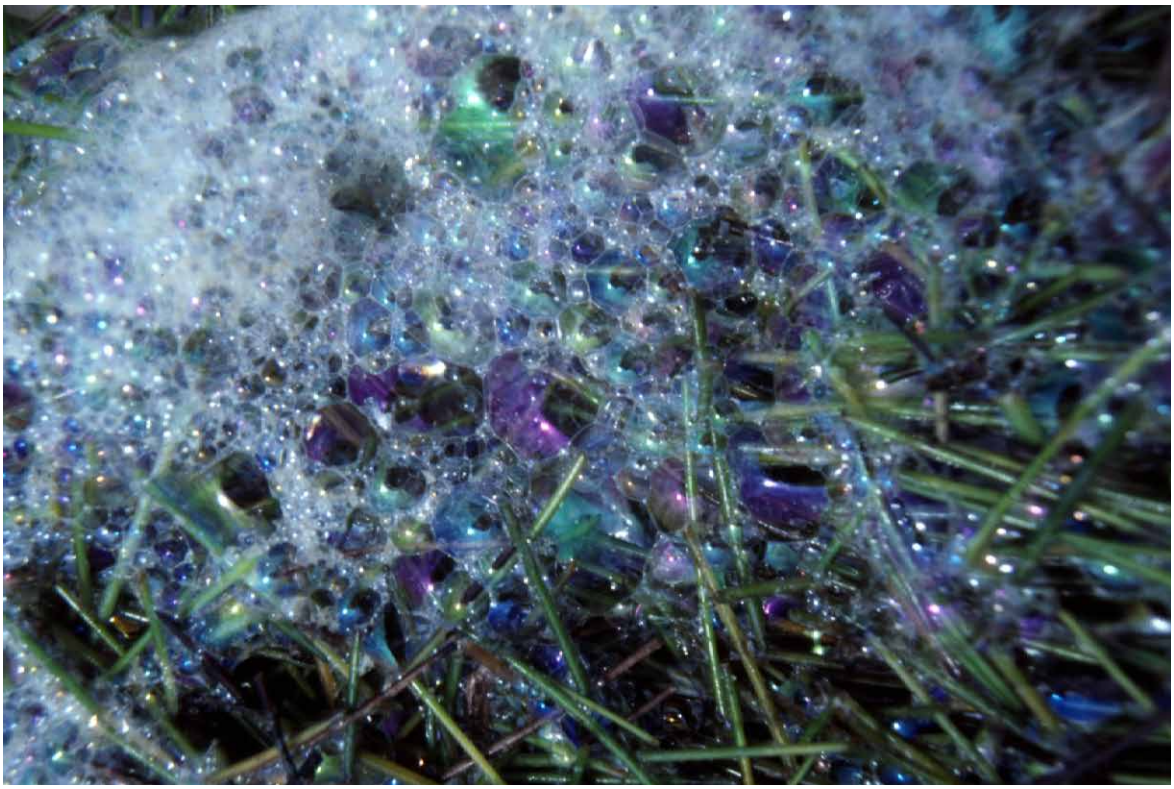
The National Parks Omnibus Management Act of 1998 requires each study to be "completed in compliance with the National Environmental Policy Act of 1969" (42 USC 4321 et seq.)" (54 USC 100507). This study complies with the National Environmental Policy Act of 1969, as amended, which mandates that all federal agencies analyze the

The study team discuss the creeks and their river values during the scoping workshop. *NPS photo.*

impacts of major federal actions that have a significant effect on the environment.

A categorical exclusion (CE) was selected as the most appropriate NEPA pathway for this study. The study is excluded from requiring an environmental assessment or environmental impact statement because there is negligible potential for impacts on the human environment under normal circumstances. The applicable categorical exclusion is in the category of: "Adoption or approval of surveys, studies, reports, plans, and similar documents which will result in recommendations or proposed actions which would cause no or only minimal environmental impact" (NPS NEPA Handbook, 3.2 (R)). A copy of the CE form for the Oregon Caves WSR Study can be found in appendix D of this document.

If Congress designates one or both of the study rivers, a Comprehensive River Management Plan and environmental compliance would be conducted.



Natural organics make colorful streamside bubbles. *NPS photo.*

Oregon Caves
National Monument and Preserve

Figure 1: Wild and Scenic Study Area

National Park Service

Rogue River - Siskiyou National Forest

Buck Peak

FS 4613

FS 059

FS 408

FS 057

FS 4613

FS 067

FS 953

FS 955

FS 079

FS 031

FS 066

FS 013

FS 015

46

FS 150

Lower Cave Creek

FS 017

FS 176

FS 180

Panther Creek

Lake Creek

FS 962

FS 965

FS 969

FS 960

Waterfelt Creek

FS 024

FS 070

FS 040

FS 434

River Styx (F)

Upper Cave Creek

No Name Creek

FS 432

FS 046

FS 614

Lake Mountain

Bigelow Lakes

Horse Mountain

FS 047

FS 445

Mount Elijah

FS 449

Siskiyou - Rogue River National Forest

Legend

- Monument Boundary
- Preserve Boundary
- National Forest
- Oregon Caves
- Cave Creek Watershed
- 1/2 mile Study Corridor
- Cave Creek Campground
- Picnic Area
- Mountain
- Storage Tank
- Water Intake
- River Styx - approx. route
- Stream
- Caves Hwy
- Improved road
- Unimproved road
- Impassable road
- Trails

N

0 0.25 0.5 Miles

Produced by: PWR GIS & PPR
Date: December, 2016
Sources: NHD, NPS, USGS

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ELIGIBILITY AND CLASSIFICATION FINDINGS

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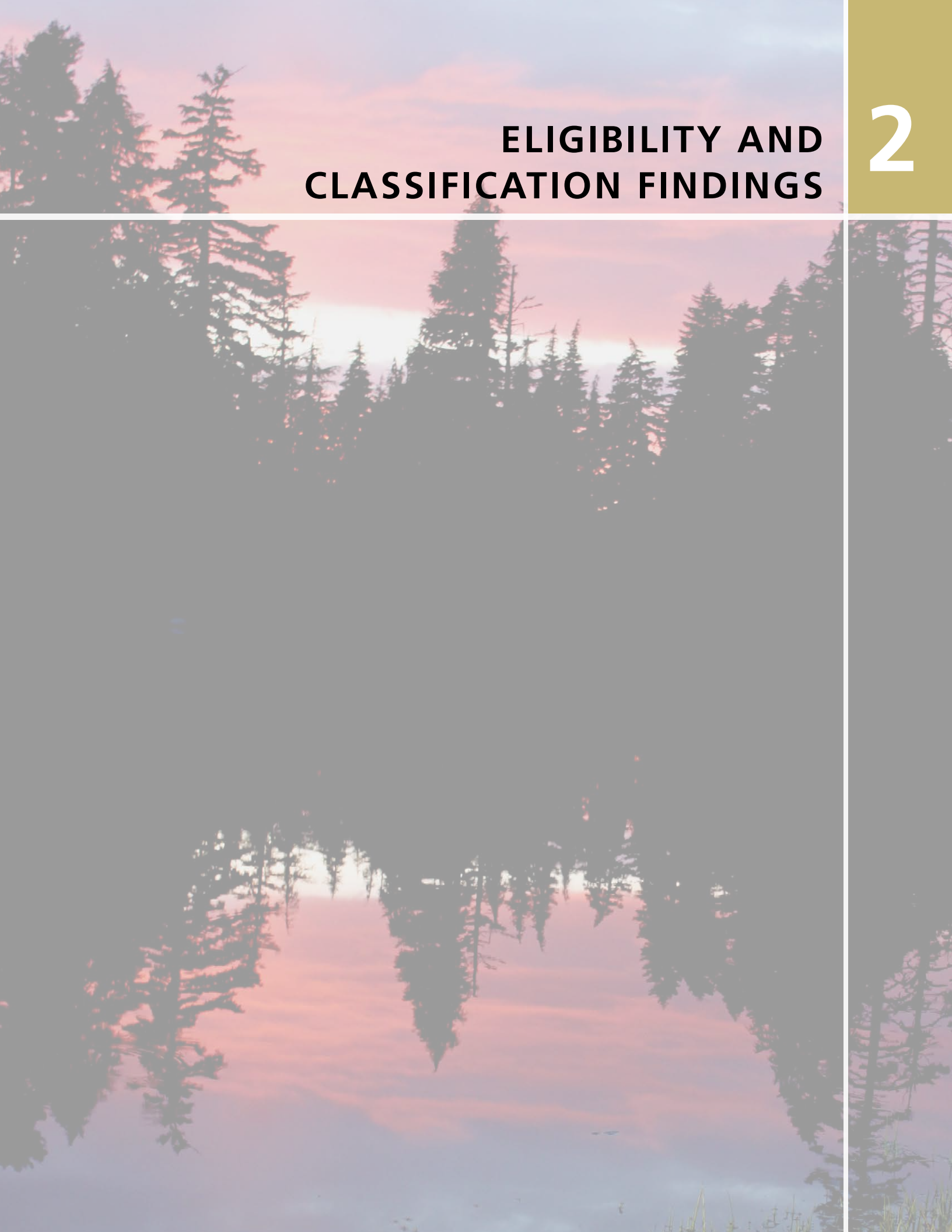


Previous Page: Sunset in the park. This page: Waterfall on Lake Creek. Photos: NPS.

CHAPTER 2: ELIGIBILITY AND CLASSIFICATION FINDINGS

ELIGIBILITY CRITERIA

The subsections below describe the relevant eligibility (free-flowing and ORVs) and classification criteria as set forth in the WSRA, the NPS Director's Order #46 –Wild and Scenic Rivers, the USDA/USDI Interagency Guidelines for Eligibility, Classification, and Management of River Areas as published in the Federal Register on September 7, 1982, and in the Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council (IWSRCC) on the WSR study Process, IWSRCC, December 1999.

The WSRA has two requirements for eligibility; the river segment must be free-flowing and possess one or more ORV. Once eligibility has been established, a preliminary classification is defined largely based on the level of development. Each section below describes in more detail the eligibility criteria.

Free-Flowing Condition

"Free-flowing" is defined in section 16(b) of the WSRA as:

> "…existing or flowing in natural condition without impoundment, diversion, straightening, riprapping, or other modification of the waterway. The existence, however, of low dams, diversion works, and other minor structures . . . shall not automatically bar its consideration for inclusion: Provided, that this shall not be construed to authorize, intend, or encourage future construction of such structures within components of the National Wild and Scenic Rivers System."

A river or river segment can be considered for designation if it is above or below a dam or is dependent on releases from a dam. Any section of river with flowing water, even if impounded upstream meets the definition of free-flowing, as long as the segment's flow is not impeded and the existing flows are sufficient to support flow-dependent ORVs and water quality. Streams do not need to be perennial, or have flow all year-around, in order to be considered free-flowing.

Outstandingly Remarkable Values

To be eligible for inclusion in the National WSR System, a river must possess at least one ORV. A determination of whether or not a river area contains ORVs is based on the professional judgment of the interdisciplinary study team utilizing the best available information and criteria set forth in the WSR IWSRCC technical paper. ORVs can be fish, wildlife, geological, recreational, scenic, historic, cultural, or other similar resource value. An ORV is a river-dependent value that is unique, rare, or exemplary at a regional or national scale. Typically, a "region" is defined as an administrative unit, a portion of a state, or an appropriately scaled physiographic or hydrologic unit. The study team identified a region of comparison for each resource area. In order to be considered river dependent, a value must:

- Be located in the river or in its immediate shorelands (generally within ¼ mile on either side of the river) and
- Contribute substantially to the functioning of the river ecosystem or
- Owe its location or existence to the presence of the river

CLASSIFICATION CRITERIA

The WSRA requires that all eligible or designated river segments be classified as wild, scenic, or recreational. These classifications are based on the amount of human impact (degree of human influence and access to these rivers) and dependent on the water quality present at the time of classification. The WSRA defines these classifications as follows.

- *"Rivers classified as wild have pristine water quality. They are those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.*
- *Rivers classified as scenic are those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds largely primitive and shorelines largely undeveloped, but accessible in places by roads.*
- *Rivers classified as recreational are those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past."*

ELIGIBILITY FINDINGS

Free-Flowing Condition

The creek segments being evaluated for WSR eligibility are headwater streams. They are generally free-flowing and natural. There are some modifications to the creeks including culverts, road crossings, pedestrian bridges, drain fields, one small dam on Lake Creek, and a structured channel through a restaurant and built ponds on a small section of Lower Cave Creek. The creeks were all found to meet the free-flowing definition of the WSRA with the exception of small segment of Lower Cave Creek from the outlet of cave to the culvert below the restaurant.

The free-flowing character by segment is described below:

UPPER CAVE CREEK, HEADWATERS TO THE BOUNDARY OF RIVER STYX

This headwater creek is free-flowing with no impediments to the flow. The stream is intermittent, meaning during the summer/low flow season, the stream sometimes does not flow. As mentioned in the criteria section, intermittent streams can be considered free-flowing as long as they meet the other free-flowing condition criteria. The study team found this segment meets the free-flowing definition in the WSRA.

LOWER CAVE CREEK, FROM THE HEADWATERS AT THE RIVER STYX TO THE BOUNDARY OF THE ROGUE RIVER-SISKIYOU NATIONAL FOREST

The beginning portion of the segment is highly modified. As the stream exits the cave, the flow is directed into two places. The largest

A portion of Lower Cave Creek downstream of the cave was diverted into a structured pond and then a stream that flows through a restaurant as shown above. NPS photos.

percentage of the stream's flow is diverted under the Chateau parking lot. A smaller percentage of the flow is directed into a series of manmade features built from 1933 to 1934 for aesthetic purposes. These include two built ponds, a covered watercourse through a Chateau restaurant, and two built waterfalls. The Chateau is a National Historic Landmark and the Chateau and surrounding buildings are part of a National Historic District. The water manipulation was all deliberately designed to be aesthetically pleasing as part of the rustic architecture theme in which structures were integrated with surrounding features. Once the stream exits the National Historic District and the Chateau building, the creek's flow is returned to the creek's natural bed. The remaining stream segment is free-flowing through a natural riparian area. There are some modifications including two large culverts at forest road crossings that do not impede the flow and a pedestrian bridge. A small campground and trail are also sited near the creek.

Due to the high amount of modification, the section from River Styx to the outlet of the Chateau was found to ineligible because it does not meet the free-flowing definition. The remaining portion of the stream from the outlet at the Chateau to the confluence with the Rogue River Siskiyou National Forest was found to be free-flowing.

LAKE CREEK, FROM THE HEADWATERS AT BIGELOW LAKES TO THE CONFLUENCE WITH CAVE CREEK

Lake Creek starts as two drainages in subalpine meadows. The water flows from Upper Bigelow Lake to Lower Bigelow Lake to a side stream of Lake Creek that then connects with the main Lake Creek. The headwaters of the main portion of Lake Creek begin just below Upper Bigelow Lake. The side stream and the main stream are both called Lake Creek.

This headwater stream and its mapped tributaries are free-flowing and non-intermittent. There is one small dam that is located on a portion of the stream. It is a run of the river operation. Approximately five percent of the streamflow is diverted as a public water supply for the park. There is also one medium size culvert under the forest gravel road below the dam, two intact small culverts above the dam under a former gravel road, as well as a bridge along the paved highway that is the main access to the monument part of the park. Lake Creek was found to meet the free-flowing definition of the WSRA. These structures and the diversion, do not have a significant effect on the free-flowing character of the river.

[Left to right] 1. Lake Creek water intake. 2.The water intake creates a diversion on Lake Creek that spans only part way across the creek. NPS photos.

NO NAME CREEK, FROM THE HEADWATERS TO THE CONFLUENCE WITH CAVE CREEK

This headwater stream is free-flowing and natural. No Name Creek was found to meet the free-flowing definition of the WSRA.

Panther Creek from the headwaters to the confluence with Lake Creek and Waterfelt Creek from its headwaters to its confluence with Panther Creek

These headwater streams are free-flowing and natural. There is one large culvert under a gravel road crossing at Panther Creek that does not impede the flow of the creek. Panther and Waterfelt Creek were found to meet the free-flowing definition of the WSRA.

Outstandingly Remarkable Values

This section describes the outstandingly remarkable findings for the park study streams.

As described above, an ORV must be river dependent and be unique, rare or exemplary at a regional or national scale. Resource experts on the study team first developed technical reports compiling information for each broad resource area that were used as a basis for the ORV findings. Regional significance was determined within the context of delineated geographic regions of comparison specific to each resource being evaluated. The study team reviewed the ORV example criteria for each resource area defined in the IWSRCC WSR study process guidance document and refined the criteria as needed to be more applicable to the park study. These criteria were then rated as follows:

0 - value non-existent, not significant

1 - less significant, than most in the region, not significant

2 - typical in region, locally significant

3 - one of only a few this significant, regionally significant

4 - the most significant in region regionally/nationally significant

Values that rose to a 3 or 4 were considered ORVs. Public comments and new information shared on the potential ORVs was analyzed and any changes are reflected into the ORV findings.

The following describes the ORV findings by resource area.

ECOLOGIC

Criteria

The evaluation of the ecologic ORV included ecologic and hydrologic processes as well as wildlife, aquatic, and botany resources. The study team evaluated whether each potential ecologic value was river-dependent and unique, rare, or exemplary at a regional or national scale. The region of comparison used to evaluate aquatic resources was the first to third order headwater streams in the Pacific Northwest. The region of comparison for the other components of the ecologic value was the Klamath-Siskiyou region. Figure 2 shows the region of comparisons.

Overview

The pristine waters of the park are part of the headwater tributaries of the Illinois River, one of the last major undammed rivers in the Pacific Northwest. The complex, dynamic cave and riparian ecosystems are dependent on the continued existence and integrity of these waters. The Port Orford cedar, the ecologically dominant riparian species, provides dense shading that contributes to cold temperatures and outstanding water quality. As a consequence, the aquatic macroinvertebrate communities are healthy and have some of the highest biodiversity rates in the western portions of the Washington, Oregon, and Northern California.

Upper Cave Creek

Upper Cave Creek from the headwaters to the start of the subterranean River Styx has an ecological ORV due to its connectivity to the River Styx and its hydrologic complexity. Water flowing into the creek mixes with carbon dioxide in the forest floor and soils of the watershed. This feeds the River Styx with a weak acid solution that continues to enlarge the cave and thus provide more habitat

[Left to right] 1. Study team member, Eric Dinger, showing the macroinvertebrates in Lake Creek; the macroinvertebrate biodiversity in Lake Creek was one of the highest rates found in measured headwater streams in the northwest. 2. Dragonfly. NPS photos.

for its rare, endemic species only found here. The flow of the River Styx, along with water dripping through cracks in the marble, also supplies the humidity cave species need to survive the summer drought that otherwise would dry out much of the cave through which the River Styx flows.

The Upper Cave Creek feeds and creates part of the River Styx which has been designated under the WSRA. The stream's main distinction, though, is it is one of the only known streams in the Klamath-Siskiyou region that is intermittent and at the same time disappears into a cave. A disappearing stream is rare in this region with few soluble rock areas. The combination of a disappearing and intermittent stream is rare far beyond the region. Why this unusual situation exists at the park is in part because the creek lies at the junction of two major climate regimes, that of the Pacific Northwest and the Mediterranean climate of most of California. The wet winters dissolve calcite so that the lower part of the stream drains into Oregon Caves. The dry summers and the drainage into the cave cause the stream to become intermittent.

Lake Creek

From its headwaters at Bigelow Lakes to its confluence with Lower Cave Creek, Lake Creek contains an ecological ORV due to its majestic forest of Port Orford cedar riparian corridors and outstanding macroinvertebrate biodiversity. This segment of Lake Creek contains an exemplary example of contiguous groupings of old-growth Port Orford cedar. Port Orford cedar is almost entirely found in the wild within the Klamath-Siskiyou bioregion. It is the dominant tree growing at most elevations in the riparian corridors. Port Orford cedar is a relict species, meaning that its geographic range has shrunk to an area less than a tenth of its original range in prehistoric times. The Port Orford cedar provides dense shading to the stream contributing to its cold temperatures and high water quality. Lake Creek has a high density of waterfalls, plunge pools, and riffles that, along with excellent water quality provides many habitats. The macroinvertebrate communities, particularly the mayflies, stoneflies, and caddisflies are thriving; an indicator of pristine stream systems. The macroinvertebrate biodiversity was found to have one of the highest biodiversity rates among measured streams west of the cascades in Washington, Oregon, and northern California. Part of the high genetic diversity comes from the low local extinction rates due to the stream's, steep slopes, and dense shading that reduces extremes in temperature and moisture, the two major causes of local extinction.

Other Ecologic Values of the Streams

The streams also support other aquatic species including Pacific giant salamanders,

tailed frogs, and mollusk. A variety of bird species including Wilson's Warbler and Lincoln's Sparrow pass through the study area particularly Waterfelt Creek and Bigelow Lakes during fall migration like. These species are typical in the Klamath-Siskiyou region. The Northern Waterthrush is rarely sighted but is not a river-dependent species. There are a variety of plant and vegetation that can be found at the vicinity of Bigelow lakes, some of which are endemic and rare to the Klamath-Siskiyou or otherwise geographically restricted. The majority of these plants and vegetation are not river-dependent. Only Isoetes occidentalis are river/small lake dependent and uncommon in the Klamath-Siskiyou Region. However, it is not a threatened or endangered species and its presence was not found to be unique, rare or exemplary.

Conclusion

Lake Creek and Cave Creek were both found to contain an ecologic ORV. The Upper Cave Creek forms and creates River Styx, an already designated WSR. It also has a rare hydrologic complexity of being both an intermittent and disappearing stream. Lake Creek was found to have an ecologic value due to its majestic old growth riparian forests of Port Orford cedar and exemplary outstanding macroinvertebrate biodiversity. No Name Creek, Panther Creek, Waterfelt Creek, and Lower Cave Creek have high ecological value but are fairly typical compared to other streams in the region. Therefore, they were not found to rise to the level of an ORV.

GEOLOGIC

Criteria

The study team evaluated whether geologic values were river-dependent and unique, rare, or exemplary at a regional or national scale. The region of comparison used to evaluate the significance of the geologic values was the Klamath-Siskiyou region.

Overview

Glacial features in the park include ice-carved lakes (tarns), subalpine ponds, glacially displaced boulders (erratics), windblown loess deposits, hanging valleys, faceted boulders, and residual rock piles known moraines. These

Upper Bigelow Lake. *NPS photo.*

features can be seen in several dozen high-elevation areas below north-facing slopes of the Klamath-Siskiyou region. The park is a premier site for concentrated geodiversity in a region recognized for geodiversity nationally and globally. As such it is an outstanding place to view one of the world's most complete and complex arrays of geology within a short amount of time. High concentrations of geologic diversity with both marble masses and glacial features are very rare in the Klamath-Siskiyou region with the exception of the Bigelow Lakes/Lake Creek area and one place in the much less accessible Marble Mountains. Time of low streamflow allow access to high quality exposures of most of world's three major rock types plus their main subdivisions including granitic rock, meta-basalts, chert, quartzite, marble, argillite, and garnet skarn.

Conclusion

Lake Creek was found to contain a geologic ORV due to the rare combination of marble masses and glacial features. Lake Creek has at least one river dependent adjacent cave dissolved out of marble. The upper portions of Lake Creek contains glacial till lining that was deposited by the stream during floods.

The spectacular exposures of rock types in the Lake Creek river corridor can be seen more easily due to scouring and polishing by stream sediment and its later removal. The combination of a streamside marble cave, glacially carved lakes, and streamside granitic boulders (glacial till) is rare in the region.

There is only one other known area in the region where karstic, granitic and glacial landforms occurs together (the Marble Mountains of California) located about ninety miles south of the park. Perhaps no other area in the region besides the Bigelow Lakes/Lake Creek area has such a concentrated diversity of rock types. All the features at the Lake Creek area are also more easily visible and/or accessible by foot or road compared to the two similar types of geologic features in the Marble Mountains.

The other streams were not found to contain a geologic ORV. The park is a geologic diverse place where you can see a variety of rock types; while you can see this diversity in the candidate streams; this diversity is prevalent across the park and not specifically river-dependent.

RECREATION

Criteria

The study team evaluated whether recreation values were river-dependent and unique, rare, or exemplary at a regional or national scale. The region of comparison used was the Klamath-Siskiyou region.

Overview

The park offers a variety of outdoor recreation opportunities including guided cave tours, hiking, biking, running, horseback riding, snowshoeing, skiing, photography, wildlife watching, picnicking, camping, and hunting. A small campground, located along the banks of Lower Cave Creek, is popular and has a high number of return visitors. Several trails crossing or running alongside the candidate streams are primarily used for hiking. The high alpine Bigelow Lakes, Lower Cave Creek, and the 'Big Tree', the largest diameter Douglas fir tree in Oregon State, are popular hiking destinations in the park. The park partners with nonprofit organizations on interpretation and education programs. One of the themes focuses on the dynamic stream systems in the park.

The main attraction in the park is the guided cave tours which draws people from around the Northwest. Fine dining alongside a diverted Lower Cave Creek stream running through a National Historic Landmark and National Historic District is an experience valued by many visitors. This section through the restaurant is not free-flowing. Some visitors drawn to the park for the cave tours stay long enough to experience the trails and candidate creeks. Visitors from local areas are attracted to the park for the year-long trail use. Camping and hiking are highly valued visitor experiences, though they are typical in the region which offers abundant recreational trail and camping experiences in similar settings.

Conclusion

Recreation was not found to be an ORV for any of the candidate streams. The candidate streams do offer highly valued hiking and camping experiences, but they are similar to other experiences found in the Klamath-Siskiyou region.

AESTHETICS

Criteria

The study team evaluated whether aesthetic values were river-dependent and unique, rare, or exemplary at a regional or national scale. The region of comparison used was the Klamath-Siskiyou region.

Overview

The candidate streams are picturesque with opportunities to view the waterfalls, boulders, glacial cirques, dense vegetation, and hanging lakes. The scenic Port Orford cedar has distinctive lacy, graceful, and low hanging foliage. Visitors get a sense of immersion and solitude when walking through sections of dense Port Orford cedar. Some sections of Lake Creek offer open views that feel more like the High Sierras. Lower Cave Creek flows through the scenic National Historic District and National Historic Landmark. This section of Lower Cave Creek is highly modified as described in the free-flowing section. The built waterfalls and ponds were all deliberately designed to be aesthetically pleasing, but due to the modifications that section does not qualify for WSR eligibility. The Klamath-Siskiyou region is dense with headwater streams with intact riparian corridors, glacial lakes, waterfalls, and boulders. These candidate streams while scenic are typical of the region.

Conclusion

The candidate streams were found to not contain an aesthetics ORV. The streams and their surroundings are scenic, but these values are typical in the picturesque Klamath-Siskiyou region. The study team did not find any rare, unique, or exemplary scenic values.

Campsite at Cave Creek Campground. *NPS photo.*

CULTURAL

Criteria

The cultural ORV value evaluation includes cultural and historical resources. The study team evaluated whether cultural values were river-dependent and unique, rare, or exemplary at a regional or national scale. The region of comparison used was the Klamath-Siskiyou region.

Overview

For thousands of years the Takelma and Applegate River Athapaskans people lived in what is now called the Illinois and Rogue River valleys. Their villages were located along the Rogue River. Salmon fishing was a big part of their culture and diet. Takelma and Athapaskans people also hunted deer and rabbits and gathered camas plants and acorns among many other food sources. European settlers first encountered the Takelma in the late 1820s. Like other Native American Tribes, the Takelma and Applegate River Athabascan people were impacted by disease, warfare and eventually relocation. In 1856, the traditional residents of the Rogue and Illinois Valley were relocated to the Siletz Reservation on the central Oregon coast. The Takelma and Athapaskans were joined on the reservations by their neighbors, the Shasta, as well as tribes from even farther away, such as the Coos and Tillamook. In 1906 less than ten Takelma people were reported to be alive and able to speak their native language.

There is little known about the pre-contact history and use of the candidate streams. A biface or hand axe projectile or knife was found at Upper Bigelow Lake. Based on knapped chert and obsidian flakes, nearby ridges likely served as trading routes between coastal areas and the Cascades. Lower Cave Creek may contain an old milling site that is possibly Native American. Other archeological finds further downstream and excavations in the adjoining Applegate drainage suggest that the Takelma and/or Applegate Athabaskan used the riparian routes to access hunting grounds at the higher elevations in the summer. The creek corridors have not been surveyed for archeological resources, a survey is planned as part of the proposed action in the preserve management plan. It is possible that future surveys could lead to significant findings of river dependent cultural resources. This WSR study, per IWSRCC guidelines, was conducted with the best available information.

European settlers first used the Rogue and Illinois valley for mining, and later logging became the dominant economic driver. Many also lived as farmers and hunters. One hunter, Elijah Davidson stumbled upon Oregon Caves in 1874.

The Chateau and the National Historic District built for visitors to Oregon Caves are significant historic features in the park. However, as discussed in the Free-Flowing Condition Section above, Lower Cave Creek through the National Historic District and National Landmark does not meet the free-flowing standard of the WSRA due to the major modifications to the creek.

Conclusion

The candidate streams were found to not contain a cultural ORV. There is little known about the pre-contact and post-contact use of the stream corridors. The Chateau and the National Historic District around Oregon Caves are significant historic features in the park but are not associated with the free-flowing sections of the candidate streams.

Determinations of ORVs pertain to each river segment as a whole. There may be sections of the segments that exhibit the value to a lesser extent.

Table 2: Outstandingly Remarkable Values Summary

	Ecological	Geologic
Lake Creek	Majestic old growth Port Orford Cedar and outstanding macro-invertebrate biodiversity	Rare combination of glacially carved lakes, karstic cave dissolved out of marble and granitic rock occurring together.
Cave Creek	Forms and feeds the designated River Styx and is a rare combination of an intermittent and disappearing stream	

CLASSIFICATIONS FINDINGS

After determining the river's eligibility for inclusion in the WSR System, the next step is classifying the river into the appropriate category – wild, scenic, or recreational. Classification is largely based on the extent of human development at the time of designation.

Elements of Classification

The IWSRCC guidelines identified water resource development, shoreline development, accessibility, and water quality as the criteria used to determine classification. Classification is an important distinction because it has a direct effect on how each designated segment is administered and whether certain activities on federally owned land within the boundaries are permissible. Classification grandfathers-in existing development, unless these land use activities are degrading the river's ORVs or water quality. Future developments that are compatible with the classification and carried out in an environmentally sound manner are also allowed.

WATER RESOURCE DEVELOPMENTS

There is one small dam that is located on the upper portion of the Lake Creek. It is a run of river operation with little storage capabilities. The intake and small dam will continue to provide water supply for the park and the facility will be improved. The facility is used to divert water for water supply for park use. Upper Cave Creek is free of any water resource projects.

SHORELINE DEVELOPMENT

The creek corridors are largely undeveloped with natural shorelines. There are a few road and trail crossings of Lake Creek as follows:

- Two culverts underneath a former gravel road above the dam
- Culvert underneath the gravel Forest Road 960
- Bridge at Highway 46 crossing
- Culvert underneath Forest Road 76 (this road is recommended to be decommissioned in the proposed action)

Lake Creek is free of roads and trails except at these crossing points. The administration buildings are within a ¼ corridor of Lake Creek but are not located on the creek's banks.

Upper Cave Creek is free of road and trail crossings with one trail, the Big Tree Trail, providing limited access and scenic viewing.

ACCESSIBILITY

As mentioned above, Lake Creek is accessible in some areas by road and trail crossings. Upper Cave Creek is only accessible by trail.

WATER QUALITY

Lake Creek was one of three sites in the park where the Inventory and Monitoring team conducted monitoring of water quality and aquatic resources. All of the measured streams were found to have high water quality with variations reflecting natural conditions. The shade of Port Orford cedar also helps keep the streams temperatures cool. Lake Creek's water quality is very high with good dissolved oxygen. Upper Cave Creek's water quality has not been measured. Upper Cave Creek is a headwater stream in a natural setting with limited human influences. Upper Cave Creek is believed to also have high water quality like the other streams.

Preliminary Classification

Based on the criteria described above, the following classifications apply to Lake Creek and Upper Cave Creek:

- Lake Creek: Headwaters to the confluence of Lower Cave Creek, 3.6 miles, is preliminary classified as recreational due to the diversion that is located in the middle of the segment. The study team recommends keeping Lake Creek as one classification rather than breaking the creek into smaller sub segments given its short length.

Oregon Caves
National Monument and Preserve

Figure 2: Regions of Comparison - Wild and Scenic River Study

National Park Service

PACIFIC OCEAN

WASHINGTON

OREGON

NEVADA

CALIFORNIA

Seattle

Portland

Eugene

Medford

Eureka

Redding

San Francisco

Columbia River

Willamette

Klamath River

Sacramento River

5

Oregon Caves National Monument and Preserve

Klamath / Siskiyou Range
See Inset

N

0 50 100 Miles

Location of Study Area

Legend

- City
- Klamath - Siskiyou Ecoregion
- Highway / Interstate
- Other River
- National Park
- National Forest

Coos Bay

Roseburg

Crater Lake National Park

Grants Pass

Medford

Klamath Falls

Oregon Caves National Monument and Preserve

Illinois R.

KLAMATH / SISKIYOU RANGE

Klamath River

Lava Beds National Monument

Redwood National and State Parks

101

Eureka

Fortuna

Trinity River

Whiskeytown-Shasta-Trinity NRA

Redding

Lassen Volcanic National Park

Sacramento River

Ukiah

N

0 25 50 Miles

Klamath - Siskiyou Range

Produced by: PWR GIS. November, 2015. Sources: EPA, ESRI, NHD, NPS.

Oregon Caves
National Monument and Preserve

Figure 3: Preliminary Classification

National Park Service

Rogue River - Siskiyou National Forest

Buck Peak

Lower Cave Creek

46

Lower Cave Creek

Text

Panther Creek

Waterfelt Creek

Lake Creek

River Styx

Upper Cave Creek

No Name Creek

Lake Mountain

Bigelow Lakes

Mount Elijah

Horse Mountain

Rogue River - Siskiyou National Forest

Legend

- Monument Boundary
- Preserve Boundary
- National Forest
- Oregon Caves
- Cave Creek Campground
- Picnic Area
- Mountain
- Storage Tank
- Water Intake
- River Styx - approx. route
- Streams
- Caves Hwy
- Improved road
- Unimproved road
- Impassable road

Preliminary Classification

- Recreational
- Scenic

N

0 0.25 0.5 Miles

Produced by: PWR GIS and PPR
Date: Feb 2018
Sources: NHD, NPS, USGS

- The Upper Cave Creek: Headwaters to its confluence with the River Styx WSR, 0.2 miles, is preliminary classified as scenic. The segment technically qualifies as wild classification due to its lack of development and high water quality. However since the 0.3 mile River Styx WSR segment is classified as scenic and the contiguous segments are both so short; the study team recommends that Upper Cave Creek retain that same classification as River Styx WSR.

Figure 3 shows the preliminary classifications for Lake Creek and Upper Cave Creek.

Ouzel near Cave Creek. *NPS photo.*

Trout Lily. *NPS photo.*

Suitability Findings

3

Previous page: Preserve. This page: Bigelow Lakes. Photos: NPS.

CHAPTER 3: SUITABILITY FINDINGS

SUITABILITY CRITERIA

The WSRA defines suitability as an assessment of whether eligible river segments should be recommended for inclusion into the National WSR System. It provides the basis for an agency's recommendation to Congress. This suitability analysis utilizes guidance from the IWSRCC and is primarily based on the following four factors:

- The characteristics that make the river segments worthy of designation.
- The ability of NPS and its non-Federal partners to manage the river segments to protect their ORVs, water-quality, and free-flowing.
- The compatibility of WSR designation with other potential uses of the river segments.
- The public's support for designation.

The report also outlines how the NPS intends to manage the creeks. The scope of this analysis includes Lake Creek and Upper Cave Creek.

FINDINGS

Land Ownership, Uses, Zoning, and Restrictions

LAND OWNERSHIP AND MANAGEMENT

Lake Creek and Upper Cave Creek corridors are located entirely within the park, managed by the NPS. The area is primarily used for recreation and natural resource protection. The park is in Josephine County and the lands are zoned as forest commercial which is intended to conserve and protect lands for forest use.

OPPORTUNITIES AND LIMITATIONS ON HYDROPOWER DEVELOPMENT

The Federal Power Act prohibits the FERC from licensing hydropower projects in national parks or national monuments including on Upper Cave Creek. FERC may be able to authorize new hydropower projects in other units of the national park system, including Lake Creek within the park, unless there would be adverse effects to federal lands. Under the WSR Act, FERC is prohibited from authorizing construction of hydropower project works on or directly affecting a designated river.

MINING AND LOGGING

Mining and logging are prohibited in the park. These prohibitions are in place to protect the scenic character and scientific interests of the area. These restrictions will continue to protect the proposed Upper Cave Creek and Lake Creek WSR corridors.

Projects and Plans that are Enhanced, Curtailed, or Foreclosed Due to WSR Status

Suitability studies must assess the potential effects of WSR designation on the goals of tribes, nongovernmental organizations, other local, state, and federal agencies, and the public. This determines what other potential uses of the river may occur in the foreseeable future and if WSR designation would benefit or conflict with these uses. This helps planners, managers, and Congress decide which management action is best suited for the river and the public. This section discusses other relevant plans and projects and their compatibility with WSR designation.

WSR WATER RESOURCE PROJECT EVALUATION (SECTION 7)

The intent of the WSRA is to preserve rivers from harmful effects of water resource projects. The WSRA prohibits any new federally licensed hydropower dams on designated river segments. It also creates a

process for evaluating/determining if other water resource projects have adverse impacts to the river and its special resources. This section describes that evaluation process, types of projects subject to this evaluation, and any known or likely projects in the foreseeable future that could be affected.

Projects that are subject to a Section 7 evaluation under the WSRA have to be:

- federally assisted projects (undertaken, permitted, or funded by a federal agency) and
- located within the high water mark of a river bed

The baseline condition for all such analysis is the condition of the river and its resources at the time of designation. Continued operations of existing water resource projects would not trigger a Section 7 evaluation/determination. Generally, best practices involve conducting a river corridor reach analysis to understand the channel geomorphology and location of the ORVs before implementing site-specific water resources projects.

The following is a sample of the types of water resource projects that could potentially be affected by designating the Lake Creek and Upper Cave Creek as WSRs.

Dam and Hydropower Projects

There are no plans for new dams or hydropower projects in the study area. There is one existing diversion dam that spans part of the Lake Creek waterway. This diversion dam and associated facilities delivers the park's water supply. The NPS plans to upgrade this diversion. Preliminary plans for this diversion include relocating portions of the facility away from the stream, with an intake pipe remaining in the stream. While there would be temporary impacts during construction, this project is expected to be beneficial and less impactful to Lake Creek. The NPS will conduct a Section 7 analysis on this project should the river become designated.

Roads and Bridges

There are no current plans for new roads and bridges along Lake Creek or Upper Cave Creek corridors. Any new road or bridge projects that are located within the stream corridors would need to undergo a Section 7 analysis to ensure adverse impacts do not occur. The preserve management plan is recommending decommissioning of FS 969 and Road 176. Road 176 crosses Lake Creek and Road 969 is within a quarter mile buffer of the stream. Decommissioning these roads would likely be beneficial to the Lake Creek's river values. The NPS will conduct Section 7 analysis on this project should the river become designated.

Bank Stabilization

There are no known bank protection projects proposed in the eligible wild and scenic reaches. In designated WSR segments, federally assisted water resources projects need to be evaluated to ensure there are no adverse effects on the free-flowing character, water quality, and ORVs of the river segment. It is possible that bank stabilization projects could be proposed in the future to protect current infrastructure, recreation resources, or cultural resources. These projects would need to be evaluated to ensure no adverse impacts occur. Corridor reach analyses that evaluate the geomorphology of the river would help inform location, size, and type of appropriate bank stabilization for the river segments. Bioengineering and natural protection methods are encouraged in WSR reaches. Guidance on important resources to protect, process for determining bank stabilization, and type of acceptable methods would be outlined in the comprehensive river management plan.

Habitat Restoration

There are no known proposals for water resource habitat restoration projects within the proposed WSR corridors. However, potential projects could include habitat enhancement structures, such as wood or boulders in the stream corridors. A Section 7 evaluation/determination would need to occur for these projects and this evaluation would identify any adverse effects to the free-flowing character, water quality, and ORVs of the river segments. The need and goals for habitat restoration

can be identified in the comprehensive river management plan which would help guide implementation of in-river habitat enhancement structures.

OTHER NON-WATER RESOURCES PROJECTS

Other projects and developments that are located outside the high water mark of the river corridors do not need to undergo a Section 7 evaluation/determination. However, effects of the project should be evaluated to assure that the river values are protected. These types of projects could include utility lines, vegetation management, and trails.

PORT ORFORD CEDAR

Port Orford cedar is a conifer growing only in Southwestern Oregon and Northwestern California. It is found along streams and plays a significant ecologic function in some forests Port Orford cedar is a relict species meaning, based on fossils; its geographic range has shrunk, in the cedar's case to an area less than a tenth of its original range. It is a near- endemic in that the great majority of its individuals and its center of distribution are in the Klamath-Siskiyou Mountains.

Port Orford cedar is found throughout the park. Lake Creek contains some of the largest continuous sections of old growth Port Orford cedar and it is part of the rationale for an ecologic ORV for Lake Creek. Port Orford cedar is also found to a lesser extent in the Upper Cave Creek corridor.

In 1952, a non-native pathogen Phytophthora lateralis, which causes Port Orford cedar root disease, was identified killing cedar near Coos Bay. Since then, this disease has spread to other parts. Federal agencies including the NPS are following management procedures to both help prevent and manage the disease. WSR designation is consistent with current management direction and measures defined in the preserve management plan to protect Port Orford cedar. The proposed WSR designation and comprehensive river management plan would build on the preserve management plan and support the park's charge to protect and manage Port Orford cedar.

MACROINVERTEBRATES BIODIVERSITY

The macroinvertebrate biodiversity in Lake Creek was very high, an indicator of an undisturbed, pristine stream system. The high biodiversity was measured as taxa

Port Orford Cedar. *NPS photo.*

richness for aquatic macroinvertebrates, particularly mayflies (Ephemeroptera), stoneflies (Plecoptera), and caddisflies (Trichoptera). The proposed WSR designation would help the park protect and enhance the macroinvertebrates by creation of a comprehensive river management plan and a concentrated focus on protecting the watershed and stream corridors.

PROTECTION OF WATER QUALITY

In addition to free-flowing condition and ORVs, water quality must be protected when a river is found eligible. Lake Creek possess excellent water quality. Upper Cave Creek's water quality has not been measured; however it is believed to have high water quality similar to the other measured streams. The proposed WSR designation would help the park carry out its charge to protect water quality through creation of a comprehensive river management plan.

ILLINOIS AND RIVER STYX WILD AND SCENIC RIVERS

Lake Creek and Upper Cave Creek are part of the headwater streams of the Illinois WSR. Upper Cave Creek forms and creates River Styx WSR. Designation and protection of Upper Cave Creek and Lake Creek contributes to the holistic protection and management of River Styx and Illinois River.

The Illinois River is one of the last major undammed rivers in the Pacific Northwest. The Illinois River was designated in 1984 and contains fish, recreational, scenic, botanic, and water quality as ORVs.

River Styx, the underground section of Cave Creek, was designated as a National WSR in 2014. This river was found to contain geologic, ecologic, aesthetics, and recreational ORVs. Upper Cave Creek forms and creates River Styx. A detailed description of River Styx's ORVs is located in Appendix E.

Public Support

In spring of 2016, the NPS released a summary newsletter and held two public meetings on the preserve management plan and WSR study. Approximately 400 newsletters were mailed or emailed to organizations and individuals on the park's mailing list. A comment form was included in the newsletter so that members of the public could provide feedback to the planning team. The public comment period began April 15, 2016 and ran through June 10, 2016. Press releases asking for public comments and announcing the public meetings were distributed to local newspapers. The newsletter was also published and made available for electronic comment on the Planning, Environment and Public Comment (PEPC) website. A link to the newsletter was provided on the park's website.

In May 2016, the planning team held two public open houses in Oregon, including one in Cave Junction on May 3 and one in Grant Pass on May 5th. Displays and stations were set up at the start of the meetings so that attendees could have one-on-one conversations with members of the planning team. Planning team members recorded comments on flipcharts and comment forms were also made available.

The park received written responses in the form of letters, emails, newsletter forms, and web comments from individuals and organizations including the Burke Museum, Oregon Hunters Association, Oregon Wild, Back Country Horsemen of America, Klamath-Siskiyou Wild, American Rivers, Wild and Scenic Rivers, Friends of the Kalmiopsis, American Whitewater, and Western Environmental Law Center on the WSR study. Some commenters provided information on potential ORVs or additional creeks for the planning team to consider. The planning team reviewed and addressed the new information when developing the draft eligibility findings. Through the meeting and in written format, the majority of the public comments expressed support for WSR designation. The primary reasons why people were supportive were that it would provide special recognition and protection to the ORVs of headwater streams and their role in providing clean water downstream. Those who were not supportive were primarily concerned about potential impacts to recreation access

and hunting opportunities. The NPS found that WSR designation is compatible with the existing recreation uses of the park and designation is not expected to change public access opportunities currently enjoyed in the park. Current public access and recreation activities are anticipated to continue as is. In response to these comments, the continuation of public recreation access is also expressed in the management intent section below.

In spring of 2018, the NPS released the Draft Wild and Scenic River Study and the Draft Preserve Management Plan/Environmental Assessment. The NPS announced the draft review period and invited public comment through emails, postcard mailings, flyers, press releases, and the NPS Planning, Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/preserveplan. Emails were sent to approximately 650 individuals, organizations, and agencies on the NPS mailing list, and postcards were mailed to another approximately 200. Electronic copies of the study, plan, and a summary newsletter were made available on the PEPC website, and hard copies were available at public meetings or by request. Hard copies were sent to the Secretary of Agriculture, Secretary of the Army, and the Chairman of the Federal Energy Regulatory Commission. The public was invited to submit comments by mail, e-mail, online, and at public workshops. The public comment period began April 3, 2018 and ran through July 2, 2018. A reminder email was sent out two weeks before the 90-day review period ended.

The planning team held two public open houses in Oregon, one on April 17, 2018 in Grants Pass and one on April 18, 2018 in Kerby. Displays and stations were set up at the start of the meetings so that attendees could have one-on-one conversations with members of the planning team. Planning team members recorded comments on flipcharts and comment forms were also made available. Nineteen individuals attended the two public meetings. Written comments were received from the Shasta Group of the Sierra Club, Oregon Wild, Klamath Siskiyou Wild, National Parks Conservation Association, and individuals. Commenters expressed support for the wild and scenic river study and findings. The primary reasons were because of permanent protection and recognition of the outstandingly remarkable river values and high water quality of the streams.

Other comments and responses are summarized below:

1. Desire for larger sections of streams to be considered for wild and scenic river status in the future.

Response: Federal land management agencies including the NPS evaluate eligibility of streams for wild and scenic designation when directed to by Congress or in conjunction with other land management planning. During those planning processes, the NPS would re-evaluate eligibility of streams when new relevant information is available.

2. Include recognition that fire can have a positive role in ecosystems and adverse impacts can occur when suppressed.

Response: The suitability section of the Wild and Scenic River Study refers to protection of old growth habit from a Fire Management Plan. The study itself does not address the details of fire management and this is outside the scope of the study. It is anticipated that the fire management plan would consider the positive role fire can have in ecosystems and the impacts that can occur when fire is suppressed.

3. Concern that the recreational and scenic classifications of the streams would be the primary considerations and that consumptive recreation would take precedence over resource protection.

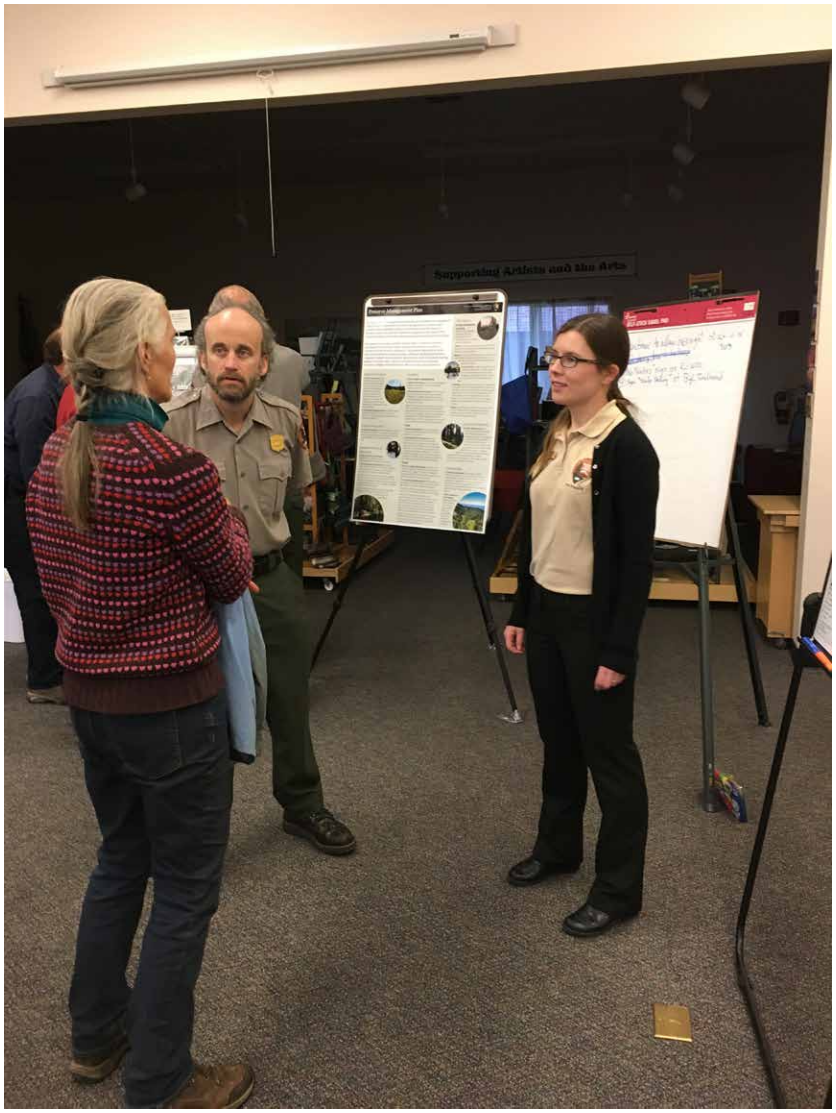
Response: The classification is based on the level of shoreline development, accessibility, water quality, and water resources development present at the time of study. The classification does not affect the prioritization of resources. It is strictly related to the level of

development at the time of study. The outstandingly remarkable values in these two segments are ecological for Cave Creek and ecological and geological for Lake Creek. The NPS will be protecting these streams as if they were designated and managing the streams to protect their free-flow condition, water quality, and outstandingly remarkable values. Current recreation use in the stream corridors is expected to continue.

MANAGEMENT INTENT

This section outlines how the NPS currently manages the eligible river segments, changes that would occur upon implementation of the preserve management plan, and potential changes that would occur if the creeks become designated. It also identifies a proposed WSR boundary and additional costs associated with designation.

The NPS is required by the WSRA to manage eligible and suitable river segments in a manner that protects their free-flowing character, water quality, and ORVs until such the river segments become designated as part of the National WSR System or are found unsuitable. In addition, all the creeks identified in the Congressional authorized study (Upper Cave Creek, Lower Cave Creek, No Name



Public Open House. *NPS Photo.*

Creek, Lake Creek, and Panther Creek) have temporary protection under Section 7(b) of the WSRA. This protection prevents licensing of FERC hydropower projects and requires a review of all other federal water resource projects that could affect the river's free-flowing character, ORVs, or water quality. This protection expires three years after the study report is submitted to Congress.

Current Management and Direction in the Preserve Management Plan

Regardless of WSR designation, in accordance with the WSRA and NPS management policies, the eligible river segments would be managed by the NPS to protect their free-flowing condition and ORVs. The preserve management plan will outline the vision and management actions for areas along Lake Creek and other areas in the Preserve. Management for Upper Cave Creek, which is entirely within Oregon Caves National Monument would be similar to today.

Lake Creek and Upper Cave Creek's free-flowing character, water quality, and ORVs would be protected and preserved. All management actions will be evaluated to avoid adverse effects on the river segments and their resources. The entire list of preserve management plan actions can be found in the alternatives section of the preserve management plan. Below is a summary of key actions and goals that could affect the creek and their river values.

NATURAL RESOURCE PROTECTION AND MONITORING

- Prevent adverse ecological and evolutionary impacts to sensitive species and ecosystems as a whole, using appropriate tools such as restoration and mitigation.
- Protect old growth habitat through the Fire Management Plan.
- Maintain and monitor biodiversity and water quality.
- Monitor invasive species and minimize their spread.
- Re-survey wetlands to compare to past conditions.
- Complete a natural resource condition assessment.
- Monitor and mitigate, where possible, the pressures of climate change and other stressors on native vegetation and wildlife. Develop adaptation strategies to address climate change.
- Enhance restoration of riparian areas and wetland habitats to the greatest extent possible.
- Continue to manage the preserve to prevent the spread of Port Orford cedar disease, including through implementation of the Port Orford Cedar Disease and Management Protocol.

CULTURAL RESOURCE PROTECTION AND MONITORING

- Conduct an archeological inventory on Preserve lands.
- Survey roads, trails, and campgrounds for potential National Register eligibility.

EDUCATION AND INTERPRETATION

The following education and interpretation ideas could include information on the creeks and their river values:

- Conduct educational programming to support classrooms.
- Explore opportunities for partner-provided education on the Preserve.
- Update electronic media to include increased web content as well as mobile device solutions that could be accessed in the field by visitors.
- Update the web-based and print maps, including the official brochure, to include the Preserve lands.

- Improve directional signage throughout the Preserve.

FACILITIES

- Trails - The existing system of trails would be maintained for designated uses. A hardened trail and boardwalk may be developed at Bigelow Lakes if it is found such action would likely increase resource protection. No major expansion or upgrades of the trail system would occur.
- Roads- The Lake Creek Road (4611960) would be maintained as a public road, as well as access for USFS permitted commercial activities, and fire management access. One road within the proposed boundary of Lake Creek would be closed for public use (Roads 4611969).
- Utilities and Infrastructure- The public water system for the monument would be improved to enhance safety, increase reliability, and decrease operational costs. The expected improvements of the existing diversion are expected to have long-term benefits to Lake Creek and its ORVs.

RECREATIONAL USES

Current recreation access and activities are found compatible with WSR designation and are expected to continue into the future.

- Hiking – All areas would continue to be open to hiking, except for the administrative area.
- Camping- Backcountry camping would be allowed under permit. While some primitive vehicle campsites may be developed, no vehicle dispersed camping would be allowed.
- Access-All areas would remain open to hiking, skiing and snowshoeing. Snowmobiling would continue to be prohibited for general public use, except for search and rescue operations.
- Biking-Biking would be permitted on paved and unpaved park and administrative roads, unless posted. Bicycles would not be permitted on single-track trails.
- Pack Animals -Equestrian use would be allowed on designated routes and trails. However, no additional facilities would be constructed to accommodate such uses.
- Hunting-Hunting would continue to be allowed under state regulations. The NPS would develop guidance to manage hunting in areas surrounding the Cave Creek Campground, the Big Tree Trail, and No Name Trail for visitor safety.
- Pets- Leashed pets would be permitted in Cave Creek Campground on campsites and paved surfaces, as well as public and administrative roads, unless otherwise posted.

PARTNERSHIPS

- Formalize and expand partnership using Service First with Rogue River- Siskiyou National Forest
- Pursue partnership opportunities with nonprofits, local governments and tribes as opportunities arise.

Any entities pursuing future federally-assisted projects that have the potential to affect the eligible river segments should consult with NPS in an attempt to avoid or mitigate adverse effects. During the temporary protection period and if the river segments are designated then a water resource evaluation/ determination would be required per the WSRA as described in the Water Resources Evaluation Section above.

COMPREHENSIVE MANAGEMENT PLAN

If the river segments are designated as WSRs, then a comprehensive river management plan (CRMP) would be developed. The CRMP would further outline goals and management actions that would be acceptable and encouraged. This plan would build on and tier off of the preserve management plan and other existing park plans. The CRMP would outline the Section 7 process including the need for any future water resource projects that are federally-assisted to undergo an evaluation/determination to ensure adverse effects do not occur. The CRMP would offer an opportunity for public engagement as well as an opportunity to review the plan and environmental document.

The WSRA directs the river management plan to:

- describe the existing resource conditions including a detailed description of the ORVs.
- define the goals and desired conditions for protecting river values.
- address development of lands and facilities.
- address user capacities.
- address water quality issues and instream flow requirements.
- reflect a collaborative approach, recognizing the responsibilities of, and opportunities for, partnership with all stakeholders.
- identify regulatory authorities of other governmental agencies that assist in protecting river values.
- include a monitoring strategy to maintain desired conditions.

In addition to protections and guidance offered in the WSRA, the WSRA also directs the NPS to use its general statutory authorities where appropriate to protect the ORVs, water quality, and free-flowing character of the river segments. When conflicts arise, the more protective law would be applied.

BOUNDARIES

If the river segments are designated, detailed boundaries would be determined. Unless Congress directs otherwise, these boundaries would be limited to an average of 320 acres per river mile, which equates to about one-quarter of a mile on either side of the river. It is recommended that the preliminary boundaries of the Lake Creek and Upper Cave Creek be one-quarter of mile from the high water mark on either side of the river segments in order to protect the geologic and ecologic values which depend on the surrounding land and water around the streams (see Figure 4). The NPS recognizes its responsibility to use its existing authorities to protect the ORVs that are found both within and outside the preliminary WSR boundaries.

COSTS

The NPS is already managing Lake Creek and Upper Cave Creek. Additional costs related to managing the streams, if designated wild and scenic, would include the cost associated with developing and implementing a comprehensive river management plan. Minimal additional compliance work is also anticipated to comply with Section 7 of the WSRA.

CONCLUSION

Lake Creek and Upper Cave Creek were found to be suitable for WSR designation. The addition of the two segments would provide opportunities to protect and highlight the two headwater streams and the benefits they provide to clean water downstream. These streams are the headwaters of the Illinois WSR. Designation could create more opportunities for holistic management in similar headwater areas. A WSR designation also provides an opportunity to recognize the ORVs of these two streams and a focus on watershed protection of these pristine waters. The majority of the public input received during scoping and all comments received during the public review period on the draft study were supportive of WSR designation. Some comments received during

the scoping period expressed concerns about potential restrictions to recreation access. However, existing public recreational activities at the park were found compatible with WSR designation and restrictions are not anticipated.

WSR designation would elevate the Port Orford cedar, macroinvertebrate biodiversity, ecologic, geologic, and water quality values, thus furthering the purpose of the park. WSR protection is consistent with the way the park manages its lands. WSR designation would offer some additional protections under Section 7 of the WSRA and provide another layer of protection. Designation would require the development of a comprehensive river management plan which would enable better stewardship of the river segments and their special resources.

Water inside Oregon Caves. *NPS photo.*

Oregon Caves
National Monument and Preserve

Figure 4: Preliminary Wild and Scenic River Boundary

National Park Service

Rogue River - Siskiyou National Forest

Buck Peak

FS 4613

FS 059

FS 408

FS 057

FS 4613

FS 953

FS 955

FS 067

FS 066

FS 079

FS 031

46

FS 013

FS 015

FS 150

FS 017

FS 962

FS 965

FS 176

FS 180

FS 969

FS 960

FS 024

FS 040

FS 434

FS 432

FS 046

FS 047

FS 445

FS 4614

FS 970

River Styx (F)

Lake Mountain

Bigelow Lakes

Mount Elijah

Horse Mountain

FS 449

Rogue River - Siskiyou National Forest

Legend

- Monument Boundary
- Preserve Boundary
- National Forest
- Oregon Caves
- Cave Creek Watershed
- Cave Creek Campground
- Mountain
- River Styx - approx. route
- Stream
- Caves Hwy
- Improved road
- Unimproved road
- Impassable road
- Trails
- Preliminary Boundary

N

0 0.25 0.5 Miles

Produced by: PWR GIS & PPR
Date: January, 2017
Sources: NHD, NPS, USGS

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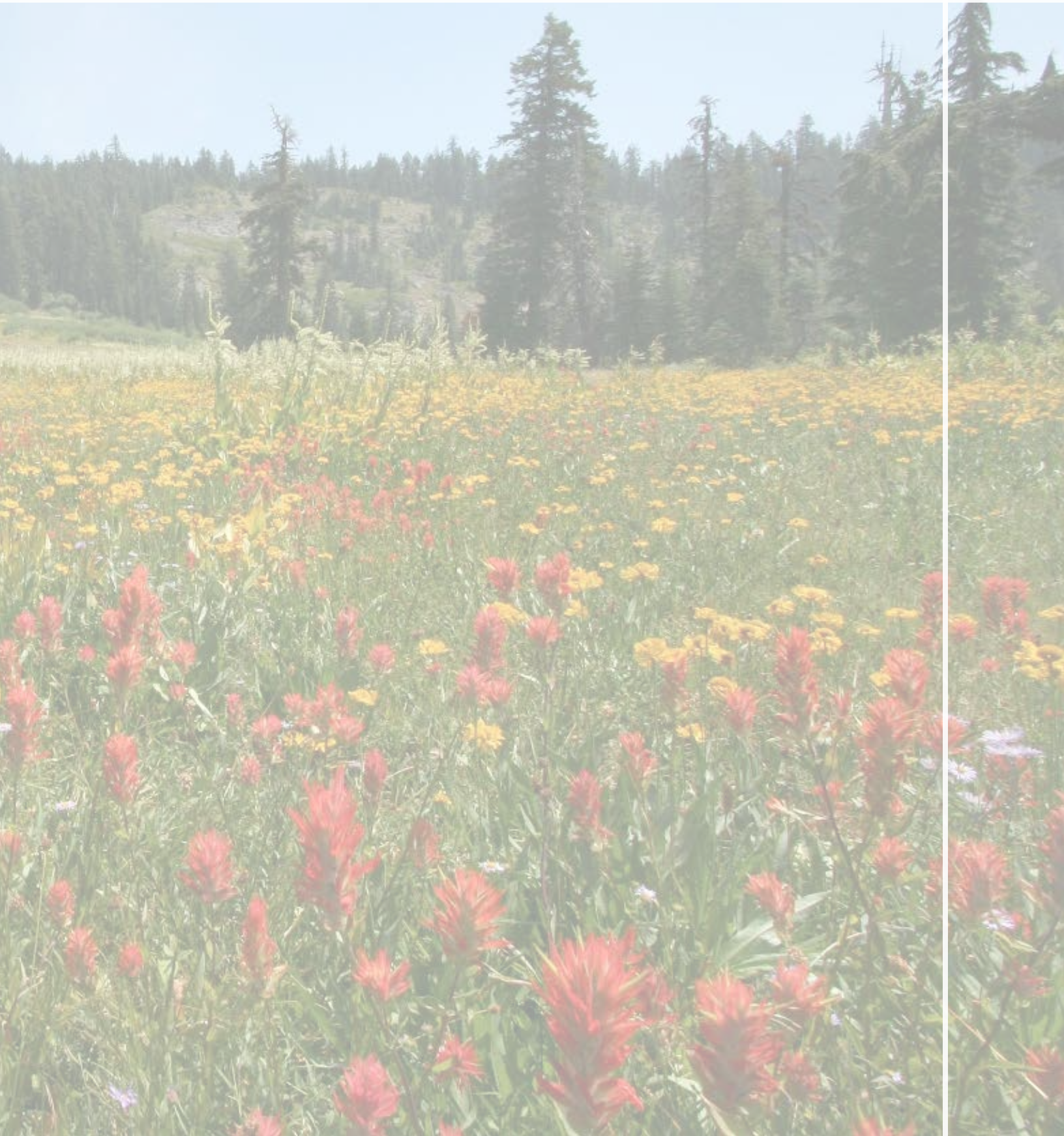
APPENDICES



Previous page: Bigelow wildflowers. This page: Red color of newt warns predators of death if eaten. Photos: NPS.

APPENDIX A: PREPARERS AND CONSULTANTS

OREGON CAVES NATIONAL MONUMENT AND PRESERVE

Thomas Baker, Acting Superintendent

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Bigelow Lakes Hiker. *NPS photo.*

(e) WILD AND SCENIC RIVER DESIGNATIONS.—

(1) DESIGNATION.—Section 3(a) of the Wild and Scenic Rivers Act (16 U.S.C. 1274(a)) is amended by adding at the end the following:

"(208) RIVER STYX, OREGON.—The subterranean segment of Cave Creek, known as the River Styx, to be administered by the Secretary of the Interior as a scenic river.".

(2) POTENTIAL ADDITIONS.—

(A) IN GENERAL.—Section 5(a) of the Wild and Scenic Rivers Act (16 U.S.C. 1276(a)) is amended by adding at the end the following:

"(141) OREGON CAVES NATIONAL MONUMENT AND PRESERVE, OREGON.—

"(A) CAVE CREEK, OREGON.—The 2.6-mile segment of Cave Creek from the headwaters at the River Styx to the boundary of the Rogue River Siskiyou National Forest.

"(B) LAKE CREEK, OREGON.—The 3.6-mile segment of Lake Creek from the headwaters at Bigelow Lakes to the confluence with Cave Creek.

"(C) NO NAME CREEK, OREGON.—The 0.6-mile segment of No Name Creek from the headwaters to the confluence with Cave Creek.

"(D) PANTHER CREEK.—The 0.8-mile segment of Panther Creek from the headwaters to the confluence with Lake Creek.

"(E) UPPER CAVE CREEK.—The segment of Upper Cave Creek from the headwaters to the confluence with River Styx.".

(B) STUDY; REPORT.—Section 5(b) of the Wild and Scenic Rivers Act (16 U.S.C. 1276(b)) is amended by adding at the end the following:

"(20) OREGON CAVES NATIONAL MONUMENT AND PRESERVE, OREGON.—Not later than 3 years after the date on which funds are made available to carry out this paragraph, the Secretary shall—

"(A) complete the study of the Oregon Caves National Monument and Preserve segments described in subsection (a)(141); and

"(B) submit to Congress a report containing the results of the study."

Mendocino gentian, a regionally endemic species. *NPS photo.*

APPENDIX C: SELECTED BIBLIOGRAPHY

Allister, D. E., S. P. Platania, F. W. Schueler et al. 1986. Ichthyofaunal patterns on a geographic grid. In The Zoogeography of North American Freshwater Fishes. Eds. C. H. Hocutt and E. O. Wiley. New York: Wiley, pp. 18-51.

Asmerom, Yemane, Victor J. Polyak, and Stephen J. Burns. 2010. Variable winter moisture in the southwestern United States linked to rapid glacial climate shifts. Nature Geoscience 3: 114-117.

Atzet, Thomas. 1978. Description and classification of the forests of the upper Illinois River drainage of Southwestern Oregon. Diss. Univ. of Oregon.

Audubon. 2013. Important Bird Areas of the U.S. Bigelow Lakes. http://netapp.audubon.org/IBA/Reports/2508 (accessed November 2016).

Ault, Toby R., and Scott St. George. 2010. The prominence of decadal and multidecadal variability in North American precipitation. Journal of Climate 23: 842-50.

Axelrod, D. I. 1962. A Pliocene Sequoiadendron forest from western central Nevada. Univ. Calif. Pub. Geol. Sci. 39: 195-66.

Barnes, Calvin G., K. Johnson, M. A. Barnes, et al. 1995. The Grayback batholith: Magmatism in a back-arc environment , Klamath Mountains, Oreg. Jour. of Petrology 36: 397-415.

Barnes, Calvin G., Rachel B. Weiss, Nolwenn Coint et al. 2014. Development of Jurassic arc complexes in the Klamath Mountain Province, CA and OR (Abstract). 2014 GSA Annual Meeting in Vancouver, British Columbia (19–22 October 2014).

Benda, Lee, and Paul Bigelow. 2014. On the patterns and processes of wood in northern California streams. Geomorphology 209: 79-97.

Betlejewski F and Others (ed). 2001. A range-wide assessment of Port-Orford-cedar (Chamaecyparis lawsoniana) on federal lands. BLM/OR/WA/PL-004/004-1792.

Brenner, Gregory J. 2000. Riparian and adjacent upslope beetle communities along a third order stream in the western Cascade Mountain Range, Oregon. PhD Diss. Oregon State University.

Brown, Larry, and Jason T. May. 2007. Aquatic vertebrate assemblages of the upper Clear Creek watershed, California. Western North American Naturalist 67: 439–51.

Bureau of Land Management. 2007. Sucker Creek Watershed Analysis.

Burke, Thomas E. 2013. Land Snails and Slugs of the Pacific Northwest. Corvallis: Oregon State Univ. Press.

Crawford, Rod. 2015a. Harvestmen. In The Klamath-Siskiyous: Timely Treasures of an Iconic Bioregion, Washington, DC: GPO.

Crawford, Rod. 2015b. Spiders. In The Klamath-Siskiyous: Timely Treasures of an Iconic Bioregion, Washington, DC: GPO.

Damschen, Ellen I., Susan Harrison, and James B. Grace. 2010. Climate change effects on endemic-rich edaphic flora: resurveying Robert H. Whittaker's Siskiyou sites (Oregon, USA). Ecology 91(12): 3609-19.

Deur, Douglas. 2007. Oregon Caves National Monument. Traditionally Associated Populations and Ethnohistory Study: A Study performed under Contract Q9340D0030.

Diedrich, Jackie and Thomas, Cassie. 1999. The Wild and Scenic Rivers Study Process. Interagency Wild and Scenic Rivers Coordinating Council.

Diedrich, Jackie. 2004. Wild and Scenic Rivers Act: Section 7. Interagency Wild and Scenic Rivers Coordinating Council.

Diedrich, Jackie. 2002. Wild and Scenic River Management Responsibilities. Interagency Wild and Scenic Rivers Coordinating Council.

Dinger, Eric et al. 2015. ORCA percentiles. XLS.

Dinger, Eric. 2015a. Integrated Aquatic Community and Water Quality Monitoring of Wadeable Streams in the Klamath Network – Annual Report 2012 results from Oregon Caves National Monument, Redwood National and State Parks, and Crater Lake National Park.

Dinger, Eric. 2016. Oregon Caves National Monument and Preserve Wild and Scenic River Internal Study to Support Investigation into Preliminary Determination of Aquatic Macroinvertebrate Biodiversity as an Outstandingly Remarkable Value.

Dudgeon, D, A. H. Arthington, M.O. Gessner et al. 2006. Freshwater biodiversity: Importance, threats, status and conservation challenges. Biological Reviews 81: 163–182.

Duewell, Jeff. 2015. Wild and scenic expansion for the Rogue? BLM study finds 63-mile stretch of the river is suitable for inclusion. Daily Courier. Sept. 6.

Ersek, Vasile et al. 2009. Environmental influences on speleothem growth in southwestern Oregon during the last 380 000 years. Earth and Planetary Science Letters 279: 316-325.

Ersek, Vasile, Peter U. Clark, Alan C. Mix et al. 2012. Holocene winter climate variability in mid-latitude western North America. Nature Communication 3 Article number: 1219. doi:10.1038/ncomms2222.

Fralish, James S., and Scott B. Franklin. 2002. Taxonomy and ecology of woody plants in North American forests: (excluding Mexico and subtropical Florida). New York: Wiley.

Friday, John. 1983. Debris Flow Hazard for the Oregon Caves National Monument (Portland: USDI-Geological Survey, Water Resources Investigative Report 83-4100.

Grace J. B., S. Harrison, and E. I. Damschen. 2011. Local richness along gradients in the Siskiyou herb flora: R.H. Whittaker revisited. Ecology 92(1): 108-210.

Irwin, W. P., 1994. USGS Geologic Map of Klamath Mountains, California and Oregon.

Irwin, William P. 2003. A Bibliography of Klamath Mountains Geology, California and Oregon, Listing Authors from Aalto to Zucca for the Years 1849 to Mid-2003. USGS Open-File Report 03-306.

Kotyk, M.E.A. J. F. Basinger, and E. E. McIlver. 2003. Early Tertiary Chamaecyparis Spach from Axel Heiberg Island, Canadian High Arctic. Canadian Journal of Botany 81 (2): 113–130.

Liu, Yu-Sheng, Barbara Mohr, and James Basinger. 2009. Historical biogeography of the genus Chamaecyparis (C upressaceaea, Coniferales) based on its fossil record. Palaeobiology, Palaeoenvironments 89: 203-09.

Liu, Zhongfang, Kei Yoshimura, Gabriel J. Bowen et al. 2013. Paired oxygen isotope records reveal modern North American atmospheric dynamics during the Holocene. Nature Communications 5 Article number 3701. doi:10.1038/ncomms4701.

MacGinitie, H. D. 1962. The Kilgore flora: a late Miocene flora from northern Nebraska. Univ. Calif. Pub. Geol. Sci. 35: 67-158.

Mark, Steve, 2011. Domain of the Caveman: A Historic Resource Study of Oregon Caves National Monument. 2nd Ed. National Park Service, Pacific West Region.

Mead, J. et al. 2000. Preliminary report on the Holocene vertebrates from G3D locality. Typescript.

Metcalf, R.V., and W. Barrow, 2002. Paleozoic-Mesozoic subduction related crustal growth in the Klamath Mountains: A view from the eastern Klamath terrane. GSA Abstracts with Programs 34(5): A-43.

Meyers, Judy L., David L. Strayer, J. Bruce Wallace et al. 2007. The contribution of headwater streams to biodiversity in river networks. Jour. of the American Water Resources Association 43(1): 86-103.

Naiman, Robert J., Henri Decamps, and Michael E. McClain. 2013. Riparian landscapes. In Encyclopedia of Biodiversity. 2nd Edition Ed. Simon Levin. New York: Academic Press, Vol. 6, pp. 461-8.

Native Plant Society of Oregon. 2012 Annual Field Trip Meeting. http://siskiyou.npsoregon.org/2012annualmeeting/ftbigelowlakes.php (accessed November 2016).

National Park Service. 2015. Director's Order #46 – Wild and Scenic Rivers.

National Park Service. 2015. Foundation Document: Oregon Caves National Monument and Preserve.

National Park Service, Natural Resource Stewardship and Science Oregon Caves National Monument Geologic Resources Inventory Report. Natural Resource Report NPS/NRSS/GRD/NRR-2011/457.

National Park Service. 2015. Foundation Document: Oregon Caves National Monument and Preserve.

National Park Service. 2015. Archeologic Site Documentation for Cave Creek Campground and Headquarters area.

National Park Service. Geologic Map of Oregon Caves National Monument and Surrounding Cave Creek Watershed. 2012.

National Park Service, Vegetation Map, Oregon Caves National Monument, 2014.

National Park Service. Assessment of Natural Resource and Watershed Condition: Redwood National and State Parks: Whiskeytown National Recreation Area, Oregon Caves National Monument. Natural Resource Report NPS/NRPC/WRD/NRR—2011/335.

Nawa, Richard. 2015. Fish. In The Klamath-Siskiyou: Timely Treasures of an Iconic Bioregion, Washington, DC: GPO.

Nichols, Wallace. 2014. Blue Mind: The Surprising Science that Shows How Being Near, In, or Under Water Can Make you Happiest, Healthier, More Connected and Better at What You Do. New York: Back Bay Books.

Oberdorff, Thierry, Pablo A. Tedesco, Bernard Hugueny et al. 2011. Global and regional patterns in riverine fish species richness: A review. International Journal of Ecology 2011:1-12.

Ramp L and Schumacher CA. 1979. Geologic map of Josephine County, Oregon. Dept. of Geology and Mineral Industries, State of Oregon. Bulletin 100.

Ring, Emily. 2010. Exploration of Fuels Reduction Impact on Cave Hydrology: Connecting surface vegetation to subsurface water conditions. An Oregon Caves National Monument Report.

Roth, John. 2014. Klamath Species. 4,400 pages. Typescript.

Roth, John. 2016. The Geology of the Klamath Province. Typescript. 192 pages.

Roth, John. 2016. The Klamaths: Mountains for all Ages. Typescript.

Roth, John. 2011. Appendix. In Domain of the Caveman: A Historic Resource Study of Oregon Caves National Monument. 2nd Ed." National Park Service, Pacific West Region

Roth, John. 2015a. Lesser Arachnids. In The Klamath-Siskiyous: Timely Treasures of an Iconic Bioregion, Washington, DC: GPO.

Roth, John. 2015b. Mites. In The Klamath-Siskiyous: Timely Treasures of an Iconic Bioregion, Washington, DC: GPO.

Roth, John. 2015c. Overview. In The Klamath-Siskiyous: Timely Treasures of an Iconic Bioregion, Washington, DC: GPO.

Sarr, Daniel A., Andrew Duff, Eric C. Dinger et al. 2015. Comparing ecoregional classifications for natural areas management in the Klamath Region, USA. Natural Areas Journal 35(3): 360-77.

Sax, Joseph L. 1980. Mountains without Handrails. Reflections on the National Parks. Ann Arbor, MI: University of Michigan Press.

Scott, J. Michael, Frank Davis, Blair Csuti et al. 1993. Gap analysis: A geographic approach to protection of biological diversity. Wildlife Monographs 123: 3-41.

Siskiyou Research Group. 1994. Detection of fisher and American marten, Oregon Caves National Monument.

T. Turgeon, S. & J. Lundberg. 2001. Chronology of discontinuities and petrology of speleothems as paleoclimatic indicators of the Klamath Mountains, southwest Oregon, USA. Carbonates and Evaporites 16: 153-167.

Tornwall, Brett, Eric Sokol, James Skelton and Bryan L. Brown. 2015. Trends in stream biodiversity research since the River Continuum Concept. Diversity 7: 16-35.

Thorp J.H., and M. D. Delong. 1994. "The Riverine Productivity Model: An heuristic view of carbon sources and organic processing in large river ecosystems. Oikos 70 (2) :305-308.

United States Department of Agriculture/United States Department of Interior. 1982. Federal Register Notice of the Interagency Guidelines for Eligibility, Classification, and Management of River Areas.

United States Forest Service. 2011. Sucker Creek Aquatic Restoration Plan: Sucker Creek Watershed. Siskiyou National Forest, Illinois Valley Ranger District.

United States Forest Service. 2014. Sucker Creek Legacy Roads and Trails Environmental Assessment. Rogue River-Siskiyou National Forest, Wild Rivers District.

United States Forest Service. 1997. Draft Grayback/Sucker Creek Watershed Analysis. Rogue River-Siskiyou National Forest, Wild Rivers Ranger District.

United States Forest Service, General Technical Report PNW-184. Pacific Northwest Forest and Range Experiment Station, Portland, OR. 161 p.

United States Forest Service and Bureau of Land Management. 2004. "Final Supplemental Environmental Impact Statement for Management of Port-Orford-Cedar in Southwest Oregon."

United States Forest Service. "Managing for Healthy Port-Orford-Cedar in the Pacific Southwest Region." Prepared by the USFS Pacific Southwest Region.

Vander Schaaf, D. M. Schindel, D. Borgias et al. 2004. Klamath Mountains Ecoregional Conservation Assessment. Portland, Oregon: The Nature Conservancy.

Vasile Ersek, Vasile et al. 2009. Environmental influences on speleothem growth in southwestern Oregon during the last 380 000 years . Earth and Planetary Science Letters 279: 316-325.

Walthall GE. 1960. Aquatic insect survey August 1960. Oregon Caves National Monument.

Wang, W. P., C. Y. Hwang, T. P. Lin et al. 2003. Historical biogeography and phylogenetic relationships of the genus Chamaecyparis (Cupressaceae) inferred from chloroplast DNA polymorphism. Plant Syst. Evol. 241:13–28.

Woodward, Colin. 2012. American Nations: A History of the Eleven Rival Regional Cultures of North America. New York: Penguin Books.

Wright, James E., and Sandra J. Wyld. 1994. The Rattlesnake Creek terrane, Klamath Mountains, California: An early Mesozoic volcanic arc and its basement of tectonically disrupted oceanic crust: Geological Society of America Bulletin 106: 1033–1056.

Young RA. 1961. Hydrogeologic evaluation of the streamflow records in the Rogue River Basin, Oregon. USGS. Portland, OR.

Zobel, Donald B., Lewis F. Roth, and Glenn M. Hawk. 1985. Ecology, pathology and management of Port-Orford-cedar (Chamaecyparis lawsoniana).

Soda straw columns in Oregon Caves. *NPS photo.*

APPENDIX D: CATEGORICAL EXCLUSION FORM

National Park Service
U.S. Department of Interior

Pacific West Region
9/04/2018

CATEGORICAL EXCLUSION FORM

Project: Oregon Caves National Monument and Preserve Wild and Scenic River Study

PEPC Project Number: 63675

Description of Action (Project Description):

Wild and Scenic River Study to evaluate five creeks for inclusion in the National Wild and Scenic River System.

Project Location:

County: Josephine State: OR

Mitigation(s):

No mitigations identified.

CE Citation: CEs for Which No Formal Documentation is Necessary

3.2 code =R, Adoption or approval of surveys, studies, reports, plans and similar documents which will result in recommendations or proposed actions which would cause no or only minimal environmental impact.

Explanation:

CE3.2R is the appropriate NEPA pathway for the Oregon Caves National Monument and Preserve Wild and Scenic River Study because the study would result in negligible environmental impact. The study is intended to provide Congress with information about the eligibility and suitability for inclusion in the National Wild and Scenic River System of five creeks in Oregon Caves National Monument and Preserve. Although the study has implications for potential future NPS actions, it will result in negligible environmental impacts and Congressional action is needed to designate the rivers.

Decision: I find that the action fits within the categorical exclusion above. Therefore, I am categorically excluding the described project from further NEPA analysis. No extraordinary circumstances apply.

Superintendent, ORCA: _____ **Date:** 09/04/2018

Extraordinary Circumstances:

If implemented, would the proposal	Yes/No	Notes
A. Have significant impacts on public health or safety?	No	
B. Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation, or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas?	No	
C. Have highly controversial environmental effects of involved unresolved conflicts concerning alternative uses of available resources (NEPA section 102(2)(E))?	No	
D. Have highly uncertain and potentially significant environmental effects of involve unique or unknown environmental risks?	No	
E. Establish a percent for future action or represent a decision in principle about future actions with potentially significant environmental effects?	No	
F. Have a direct relationship to other actions with individually insignificant, but cumulatively significant, environmental effects?	No	
G. Have significant impacts on properties listed or eligible for listing on the National Register of Historic Places, as determined by either the bureau or office?	No	
H. Have significant impacts on species listed or proposed to be listed on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species?	No	
I. Violate a federal, state, local or tribal law or requirement imposed for the protection of the environment?	No	
J. Have a disproportionately high and adverse effect on low income or minority populations (EO 12898)?	No	
K. Limit access to and ceremonial use of Indian sacred sites on federal lands by Indian religious practitioners or adversely affect the physical integrity of such sacred sites (EO 130007)?	No	
L. Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112))?	No	

APPENDIX E: RIVER STYX'S OUTSTANDINGLY REMARKABLE VALUES

GEOLOGIC

River Styx flows through a marble cave, a rare type of cave in the Pacific Northwest and one made even rarer by having a present-day stream in it. The cave contains a diverse geologic record, featuring a concentrated variety of types of rock and dramatic visual evidence of change spanning millions of years as the cave cut through hundreds of feet of rock. Visitors have opportunities to see and understand the local and regional geology from the inside out and in four dimensions, including glacially ground silt, volcanic ash, limestone deposits, and erosional features left by the river as it has cut downward. Through small group tours led by interpretive rangers of the NPS, visitors to River Styx have opportunities to explore the complex geologic beauty of the caves and to observe how the erosional and mineral precipitation properties of water shape the earth, both above and below ground.

The cave also contains a nationally significant collection of fossils that were preserved in the undisturbed confines of the cave environment for thousands of years. At least one large skull embedded in cave deposits has depended on the River Styx for its continued preservation for tens of thousands of years.

Dripping water drawn from the stream as it descends continues to create cave formations. These mineral laden drips produce river dependent stalagmites that have been used to establish Oregon Caves as a premier center for the study of past climates of the last third of a million years. This unique research done here has established that a long-term ocean fluctuation in the Pacific Ocean known as the Pacific Decadal Oscillation is real, that it has a fairly constant time cycle, and appears to be jump started by solar cycles, that ~thousand year climate cycles occur, and, along with data from other sites, that there is a north-south curve of the jet stream that changes storm frequencies.

ECOLOGIC

Ecologic is an outstandingly remarkable value for the River Styx due to the rich variety of habitat types and unusually high genetic diversity due to one of the highest concentrations of animal endemics than has been reported from any other cave in the Pacific Northwest. This complex, dynamic cave ecosystem is dependent on the pristine waters of the River Styx and the surrounding watershed for its continued existence and integrity. The animal endemics depend on a microbial food base to survive which is dependent on the water dripping down from the stream and the dissolved organic matter that it brings.

AESTHETICS

Visitors to River Styx are immersed in the beautiful novelty of the cave. The tour through it offers the opportunity to observe beautiful and diverse cave formations and rare geologic features rarely so concentrated in the Pacific Northwest. The unusual shapes of the cave deposits and erosions themselves excite the imagination. Especially with the lights turned off and the quiet that ensues, the splashing burble of the River Styx reverberates through the cave, leaving an impression of wonder, mystery, even awe. Visitors experience River Styx from many different perspectives, whether seen from a walkway directly above, dimly glimpsed or only heard through small rocky windows, or felt as cold water dripping towards the stream. Such aesthetics are often a major part of a once-in-a-lifetime experience for visitors from the Pacific Northwest.

RECREATIONAL

The cave attracts visitors from throughout the Pacific Northwest and around the world but especially from western Oregon and northwestern California. The tight twisting

and turning cave routes provide visitors with a sense of discovery, immersion, adventure, and amazement. It's a memorable experience leaving visitors, often those entering an attractive cave for the first time, with a sense of accomplishment and a renewed interest in nature. The immersive nature of the experience engages most senses, allowing visitors to feel water dripping in the cave, hear the echoing sounds of River Styx, and see the scenic splendor of the river and cave formations. The small group tours, led by NPS interpretive rangers, offer exemplary interpretive experiences and ample opportunities for personal challenge and memorable achievement, as well as learning about the complex rocks and hydrology of the cave environment and the mountain watershed.

River Styx. *NPS photo.*

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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Lake Creek. Photo: NPS.

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