



The Future of the Frank and Jeanne Moore Steelhead Special Management Unit North Umpqua River, OR.

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in partnership with
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EXECUTIVE SUMMARY

The Steamboat Creek Basin, an important tributary of Oregon's North Umpqua River, has long been recognized for its exceptional ecological value, particularly as habitat for summer steelhead. More than half of the North Umpqua's summer steelhead spawn and rear in this basin, which was federally designated in 2019 as the Frank and Jeanne Moore Wild Steelhead Sanctuary. This designation, while symbolic of the basin's importance, did not include special management directives or resources. In the face of climate change, increased wildfire frequency, and political uncertainty around federal environmental protections, Pacific Rivers undertook an extensive review of the basin's stream temperature history to better inform the Sanctuary's future management, including efforts improving wildfire resilience and mitigating catastrophic wildfires.

Our project began with a comprehensive effort to recover and analyze stream temperature data collected in the basin since 1969. Although the earliest raw datasets were lost, we utilized Steven Holaday's 1992 thesis as a reliable synthesis of conditions from 1969 to 1990. From 1990 onward, raw temperature data existed but were largely unprocessed, stored across disparate agencies, and lacking quality control. We collected, cleaned, and standardized these datasets, then conducted a trend analysis on maximum summer stream temperatures at key locations within the basin.

The analysis revealed that while earlier periods showed temperature declines likely due to riparian recovery following historic logging, recent decades have seen widespread warming. Upper Steamboat Creek showed the most significant increase, suggesting either land-use or climate-driven warming beyond regional air temperature trends. Big Bend Creek, fed by groundwater, remained thermally stable and serves as a mitigating influence on the mainstem. However, other tributaries, including Cedar and Canton Creeks, also showed warming trends. Wildfires since 2020 have further accelerated canopy loss and likely increased temperatures, though comprehensive post-fire data are not yet incorporated into the analyses.

We learned that the need for a dedicated management plan for the Sanctuary is critical. Despite the basin's ecological significance and federal protection, the Sanctuary is not managed with explicit additional consideration for its unique thermal function. Budget constraints and competing wildfire response priorities have further weakened the capacity for focused management, as stream and fisheries management is deprioritized. This disconnect between designation and implementation raises concerns about the long-term effectiveness of the Sanctuary in protecting vulnerable summer steelhead populations.

What we have learned is that the Sanctuary's future depends on more than symbolic legislation—it requires focused, science-based, and collaborative management. We recommend

investment in a formal long-term monitoring network, including air and water temperature stations, paired with secure and accessible data infrastructure. A new management partnership should be created to coordinate research, monitoring, and restoration activities. Particular focus should be given to post-fire impacts on stream temperature and salmonid responses to thermal and flow regimes. Without proactive steps and coordinated stewardship, this federally designated Sanctuary risks being managed in name only, and lose its defining purpose as a cold water refuge.

INTRODUCTION

The Steamboat Creek Basin, a key tributary to the North Umpqua River in southwestern Oregon, holds immense ecological and cultural significance. The basin provides critical spawning and rearing habitat for anadromous salmonids, including summer steelhead. The North Umpqua and Siletz Rivers are the only basins that support Oregon Coastal summer steelhead Species Management Unit (SMU), a designation by the State of Oregon as a sensitive species. More than 50% of the steelhead in the North Umpqua rear in the Steamboat Basin. The geologic assemblage of the area creates a hydrologic regime that provides year-round cool water—critical for salmonid habitat.

The basin supports a late successional forest mosaic dominated by Douglas-fir, western hemlock, incense cedar, and other fire-adapted species, and the basin provides some of the last high-quality cold-water refugia for native salmonids in the region. However, the increased frequency of extreme wildfires due to climate change poses significant risk to this ecological balance. Drought, higher temperatures, and legacy fire suppression have left much of the basin vulnerable to uncharacteristically severe fires, threatening both stream health and forest integrity. Proactive conservation management is urgently needed to protect these ecosystem functions.

This memo outlines an in-depth stream temperature data compilation and assessment of trends over many decades, explains existing legislative and administrative protections, identifies key gaps in protection, and proposes next steps to improve protections under the threat of climate change and the uncertainty of continued conservation program funding and potential dismantling of Federal Protections.

The Ecological Importance of Steamboat Creek and the North Umpqua

The Steamboat basin is located about 20 miles east of Glide, Oregon (Figure 1). The majority of the Steamboat drainage (minus Canton Creek) comprises the Frank and Jeanne Moore Wild Steelhead Sanctuary (referred to as 'Sanctuary' hereafter) and is managed by the Forest Service. Canton Creek, the largest tributary of Steamboat Creek, lies just west of Steamboat Creek and enters Steamboat Creek about one mile from the mouth. The Canton Creek Basin is part of the Oregon and California railroad lands a checkerboard of private timber land and BLM land.

Steamboat Creek is a groundwater fed stream, and the watershed provides over 50 stream miles of high-quality habitat for summer and winter steelhead (*Oncorhynchus mykiss*), coho salmon (*O. kisutch*), Chinook salmon (*O. tshawytscha*), migratory and resident cutthroat trout (*O. clarkia*), rainbow trout (*O. mykiss*) and other native species.

Steamboat Creek and its tributaries are uniquely significant as habitat for coastal summer steelhead. Summer steelhead are listed as a sensitive species largely due to the vulnerability associated with the summer-run life history strategy and the existence of only two isolated populations: those in the North Umpqua and Siletz River basins.

The U.S. Forest Service has recognized the watershed's value as habitat for coastal summer steelhead as "outstandingly remarkable." (USFS 1991) The Steamboat Creek

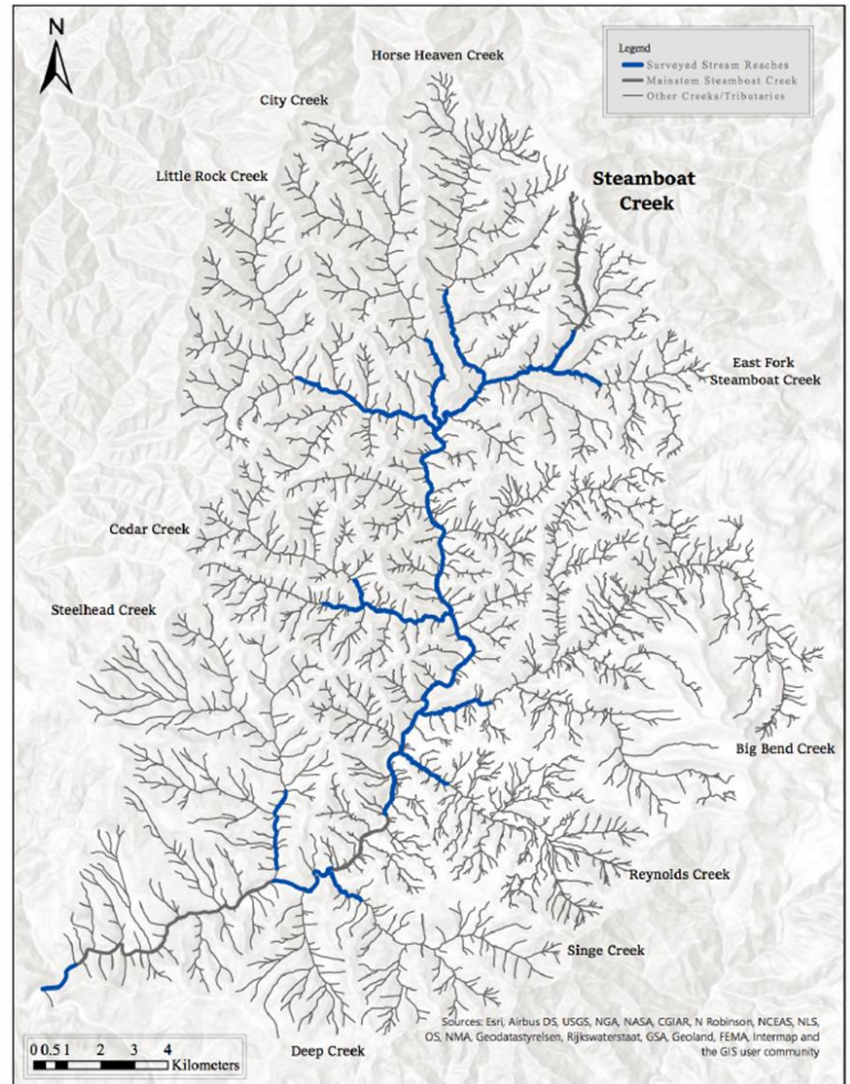


Figure 1: Map of the Steamboat Basin from Pacific River's Long-term Monitoring Program.

watershed serves as habitat for more than half of the North Umpqua River summer steelhead population. As the Oregon State DFW described, “summer steelhead of the Umpqua system are peculiar in that practically the entire run enters the Steamboat Creek drainage to spawn.”(ODFW 2022) The U.S. Forest Service recognizes that Steamboat Creek watershed’s high-quality summer steelhead habitat is “of regional, national and international significance.”(Draft LEIS 1968) As the U.S. Forest Service noted, “as people come from literally all over the world to fish for North Umpqua River summer steelhead, this fishery is culturally and economically significant for the state of Oregon and is culturally important at the national level.”(USDA 2001).

Steamboat Creek’s habitat and particularly its cold-water refugia are anticipated to become even more critical as climate change disruptions, (i.e., reduced snowpack, lower streamflow in the summer, warmer ambient air temperatures) result in increased stream temperatures. A recent Oregon Department of Fish and Wildlife assessment found the watershed’s cold water and high streamflow permanence would be resilient to climate change effects and continue to serve as refuge for juvenile salmon (ODFW 2022), *as long as they remain protected.*

Existing Protections

The Steamboat Basin, aside from Canton Creek, is a state and federally-protected basin. The Northwest Forest Act has classified it as a ‘Tier 1 Key Watershed’ and a ‘Late Successional Reserve’. The Umpqua National Forest Land and Resource Management Plan (LRMP), established in 1990, governs use and management of national forest lands, including standards for water quality, fish habitat, fire, and recreation. Within the LRMP, protections for water quality and fish are considered, but balanced with timber and recreation objectives.

The 100,000-acre Frank and Jeanne Moore Wild Steelhead Special Management Area designation was enacted through federal legislation in 2019 to honor the legacy of Frank and Jeanne Moore and to safeguard wild steelhead habitat in the North Umpqua basin, including most of the Steamboat Creek watershed. The legislation is intended to protect thermal refugia and water quality essential for steelhead survival. It recognizes the importance of maintaining cool stream temperatures in the face of climate change. *However, no additional management directives were included in the designation.*

We have uncertainty around how safe these designation and protections are under the current Trump administration, as it is already making efforts to undermine and roll back environmental regulations, while making drastic reductions in funding and cuts in workforce of the Forest Service and other Federal Agencies. During the first Trump

administration (2017–2021), several key environmental regulations that protect watersheds were weakened or targeted for rollback, creating new vulnerabilities for cold-water ecosystems and salmon habitat. Notably, the administration pursued substantial revisions to the National Environmental Policy Act (NEPA), and Clean Water Act protections. With the Northwest Forest Plan (1994), federal directives from the first Trump Administration encouraged reinterpretation or weakening of old-growth forest protections to expand logging opportunities. These policies created uncertainty around long-term conservation planning and signaled a reduced federal commitment to watershed-scale, science-based management. While some of these first-term rollbacks have been reversed, their legacy continues to pose risks to the regulatory framework that safeguards the basin. The current administration has signaled a renewed and intensified effort to dismantle environmental regulations and shift federal land management priorities toward unregulated resource extraction. This effort is accompanied by an aggressive rollback of climate and watershed science programs, with language in policy memos discouraging the use of terms like “climate change” or “ecosystem integrity.” In aggregate, these actions threaten to erode the foundational safeguards for watersheds like Steamboat Creek and undermine decades of collaborative conservation work.

As mentioned, no additional management directives were included in the Legislation that enshrined the Sanctuary. Our goals are to improve and expand ecological monitoring, promote more stakeholder collaboration in the protection of these basins, and safeguard protections in the Sanctuary, a special management unit for thermal habitat refugia.

MOTIVATION

In 2019, after more than two decades of work by non-profit organizations and politicians, the Frank and Jeanne Moore Steelhead Sanctuary was established as a Forest Service management area with a focus of serving as a thermal refuge for summer steelhead in both the Steamboat Basin and the North Umpqua River. Recent genetics work identified the Steamboat Basin as the most important tributary for spawning and rearing summer steelhead in the North Umpqua River basin (ODFW 2022), and the North Umpqua supports one of only two populations of Oregon coastal summer steelhead.

Stream temperatures have been of interest in the Umpqua basin for decades. The primary in this effort has been the temperature requirements of summer steelhead in the basin. Steelhead ideally spend their first two years in freshwater, and few rivers and

streams in western Oregon provide suitable cold water necessary to sustain summer steelhead through the summer months, which consist of high temperatures and negligible precipitation.

When timber harvest began in the riparian zones of the Steamboat basin in the 1950's, stream temperatures began to rise. Beginning in 1969, OSU researcher, George Brown (Brown et al. 1971), initiated a long-term temperature monitoring study within the Steamboat Basin. In 1992, Steven Holaday examined the stream temperature response to primarily timber harvest in the basin. He examined the trajectory of the stream temperature regimes from 1969-1990 within the Steamboat basin with an adjacent control, Boulder Creek, which was not logged during the period of study. The basis of his study was the analysis of the stream temperatures from the long-term sites established in the earlier George Brown project.

In addition, more recent and excellent studies of the temperature regime of the Umpqua basin, as a whole, have been conducted from about 2006 to the present (Damann, 2007 – 2023). While these studies are excellent and provide a context for understanding how land management practices such as timber harvest affect stream temperature, they do not address the specific issues within the Steamboat watershed.

The purpose of our current project is to explore the trajectory of the stream temperature regime within the Steamboat basin (1969-present) and understand the relationships among climate factors, land management, and stream temperature. This information is fundamental for managing the basin as a thermal Sanctuary, which was the goal of the Moore Sanctuary designation. Our objectives were to start with the raw daily maximum, minimum, and average daily stream temperatures for the long-term sites established by George Brown and examine the long-term trajectory from 1969-present.

THE RAW DATA

Temperature-monitoring has been conducted at various sites in the Steamboat and Canton basins since George Brown initiated a temperature study in 1969, albeit by various agencies and varying frequencies and time periods. In the Steamboat basin, the vast majority of data collection in Steamboat Creek has been conducted by the USFS. In Canton Creek, the data collection was conducted by the BLM, while Douglas County has maintained the Boulder Creek temperature data collection.

Prior to this project, the data had not been collated or maintained on a single server. Our search required us to make requests to the agencies identified above, as well as the USGS, and hydrologists who had worked in the basin for years. After months of

work, we were able to obtain the known records. Many were in older file formats, unformatted and without apparent QA/QC performed.

Data pre-dating 1999 were provided as either a daily high and a daily minimum (aka raw data was not available), or data points collected twice daily, at 9 am and 4 pm.

Beginning in 1999, most measurements were collected at 30-minute intervals in the Steamboat basin. The Boulder Creek data spanning 1990-1998 were provided as 30-minute timesteps, as were data from 2006-2024. Figure 2 displays the data that was used in this study.

The data were inventoried, extracted from the older file types and brought into Excel; then a daily maximum temperature, minimum temperature, and mean daily temperature were calculated. Quality assurance procedures included 1) missing flag check to ensure that all missing data really has the appropriate flag; 2) relative mean/max/min check for each record to make sure that min less than or equal to mean and mean less than or equal to max; and 4) data at the beginning and end of a data set were checked that they did not include apparent times out of water during implementation and retrieval. This entire process took several months.

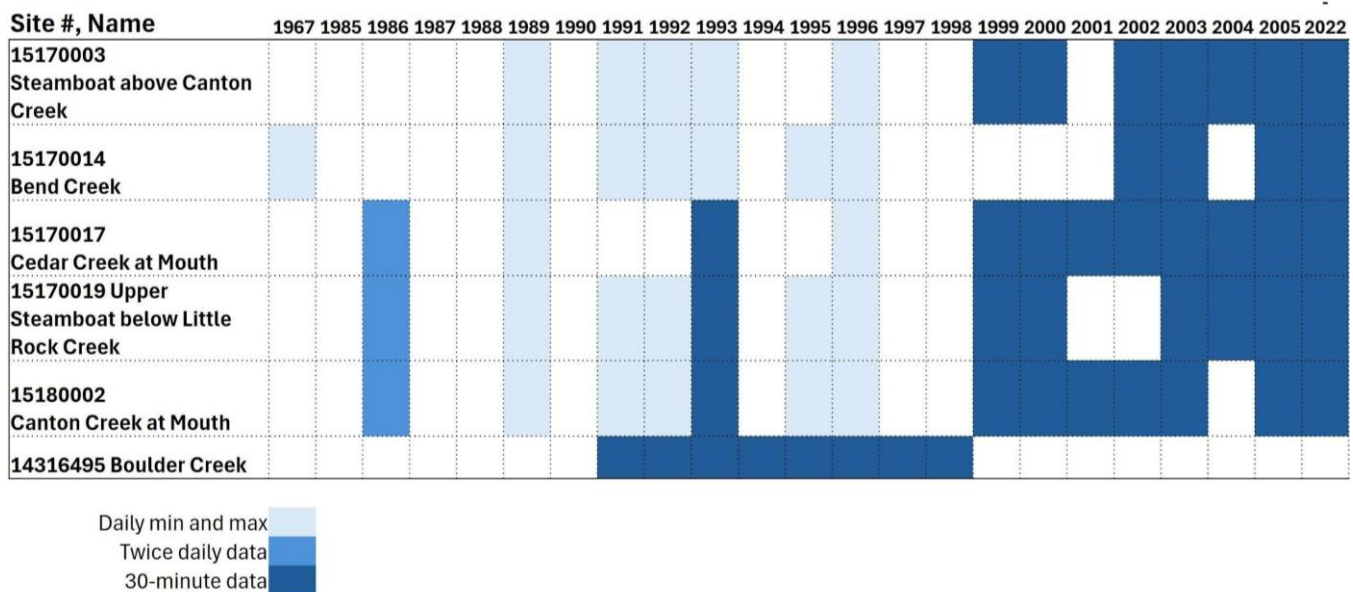


Figure 2: Inventory of available temperature data for selected basins.

Notice that from 1969, the initiation of George Brown's study, to 1990, very little of the data is available. Neither the USFS nor the BLM retained this data. Fortunately, we

discovered Steve Holaday's (1992) thesis that covered the data from 1969-1990. From 1990, most of the data was available, but it was in very poor condition. Pulling all this together was the important first step. A next step should include archiving the information and making it broadly available. In the following section, we will examine Steve Holaday's (1992) thesis work.

ANALYSIS

Phase 1. Summarize Steven Holaday's thesis (1969-1990)

Steven Holaday completed his Master's thesis at Oregon State University in 1992. His basic question was how timber harvest, especially in riparian zones, affected the stream temperature regime within the Steamboat Creek basin. He assumed that summer air temperatures and stream flow were constant over the period from 1969-1990. While they may vary considerably from year to year, a regression of maximum air temperature and stream flow would have a slope of zero, indicating that the long-term trend was stable. Therefore, if the trajectory of stream temperature was not stable, it would be the result of changes in the landscape due to management activities. He selected the average of the fifteen highest daily temperatures recorded during the summer as the measure of annual maximum stream temperature at each site.

Figure 3 illustrates the trajectory of annual maximum stream temperatures at selected sites in his study. First, the annual maximum stream temperature at the control site, Boulder Creek, actually increased from about 63.5 F to 65.5 F from 1969-1990. Because the basin was a roadless area with no management one would expect the annual maximum stream temperature to remain constant or decline slightly with an increase in tree height within the basin if the assumptions that maximum air temperatures and streamflow are constant are true. These results support the notion that regional air temperatures increased during the period. Second, all sites within the study had a decreasing trajectory of maximum stream temperature, except lower Steamboat Creek, which showed a decline of less than 0.5 F. He attributed the majority of the declines in stream temperature to the regrowth of riparian vegetation which shaded the streams.

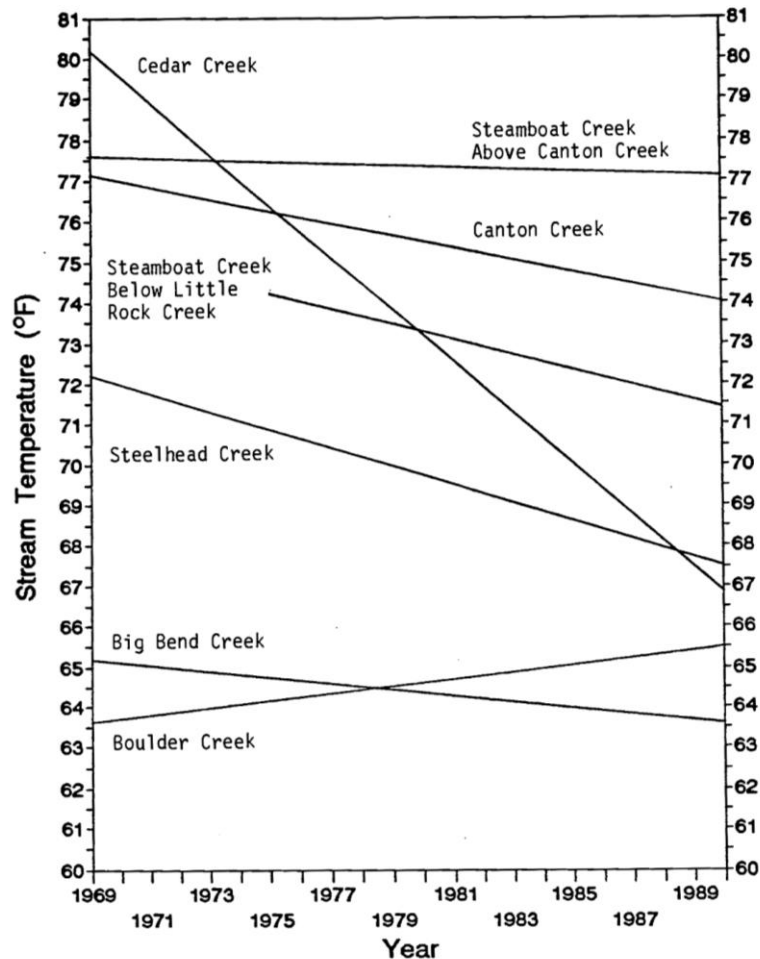


Figure 3: Linear regression trends of annual maximum stream temperatures over time (1969-1990) for Steamboat Creek, selected tributaries, and Boulder Creek (extracted from Holaday (1992), p 45.).

Cedar Creek decreased the most from over 80 degrees to slightly less than 67 F. Even lower Steamboat Creek slightly decreased during the period, suggesting that the declining stream temperatures in the tributaries did bring the mainstem temperatures down a little. However, it must be noted that the lower mainstem Steamboat site tracked the trend in air temperature closely. This is not a surprise. Lower Steamboat Creek is wide -- with a wide non-vegetative zone -- so it is largely open to solar radiation for much of the day.

Phase 2. Extend Holaday's study from 1990 to present

Holaday's thesis covered the period from 1969 -1990. In this section we will use his method and expand the analysis to 2022. We must first check his assumptions that air temperature and stream flow do not change from 1991-2022. We will do this using the

same linear regression analysis that he used, and we will use two features to decide if the assumptions are met. The first one is the slope of the line. If air temperature and stream flow have a slope of 0, they are stable throughout the period. If not, the assumptions were not true. The second feature is R-squared (or r^2), which is a measure of how well the regression explains the data. R-squared values range between 1 and 0; when 0, the model explains none of the variability of the independent variable and 1, where the model explains 100% of the variability. We also graphed the data. If the data all fits on a line, the model explains all the variability, if not, the data will be distributed more randomly. The agreement with the line of equality and the r^2 will be discussed for each site.

First, we will examine to see if the average maximum air temperature is stable from 1991- 2022.

We used data from the H.J. Andrews Forest located 45 miles from the northern part of the Steamboat basin. We used the data from 'Watershed 2' in the Andrew's Forest, because it is a long-term site located in old-growth vegetation. The linear regression of the average of the 15-days with the highest maximum air temperature (C), the measure that Holaday used, for the period was 0.14 and the r^2 was .006. The slope was not 0 so it suggests that the air temperatures increased through the period; however, the r^2 was very close to zero, which indicates that the regression explained none of the variation. Figure 5 illustrates the relationship. There is no pattern to the distribution of data points. So, we accept the assumption that air temperature is stable throughout the period. Next we examined streamflow.

We used the stream discharge on July 1 at the USGS gaging station in Steamboat Creek, which is located below the mouth of Canton Creek, near the mouth of Steamboat Creek. The regression of Stream discharge (cubic feet per second, cfs) over the years 1991-2022 resulted in a slope of -2.18 and an r^2 of 0.07. Clearly, the slope is not 0 during this period, but the r^2 was very low near zero. Figure 6 illustrates the distribution of the data over the period. So, for the purposes of this analysis we will accept the assumption that stream flows were stable throughout the period. We then examined the average 15-day maximum daily stream temperature at the available long-term site used in Holaday's thesis.

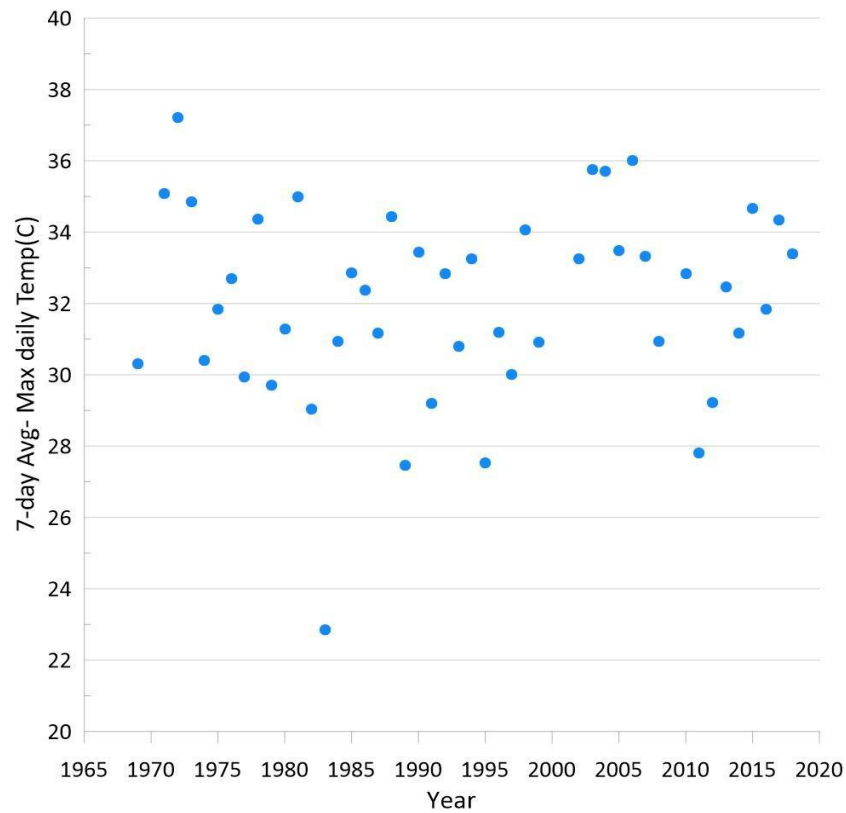


Figure 5. Max Air Temp (C) - H.J. Andrews (1969-2018)

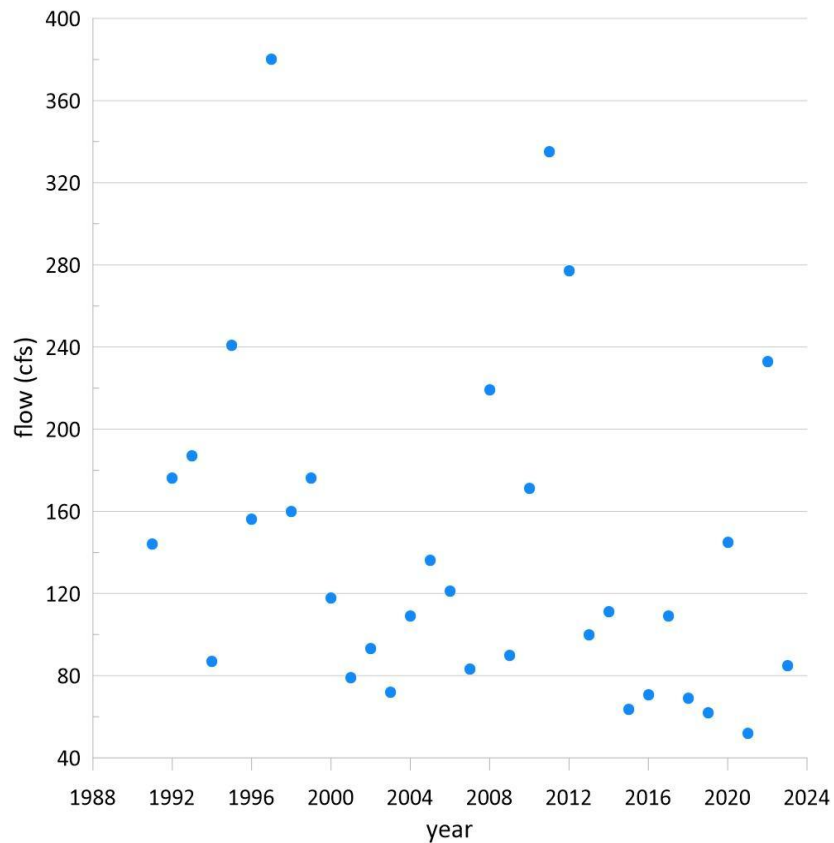


Figure 6. Steamboat flow (cfs) July 1 (1991-2022)

Lower Steamboat Creek above Canton Creek

Regression analysis was run on the available streamflow data for the lower Steamboat for the period 1991-2022. The results were: slope 0.059; r^2 of 0.095; and Figure 7. The slope is positive but the scatter between the years is high. These results are the opposite of those observed by Holaday for the period 1969-1990. He saw a slight decrease in stream temperatures over the period. So, it would appear that a slow gradual increase in stream temperature is occurring in lower Steamboat Creek. This is probably primarily the result of a slow increase in air temperature over this period.

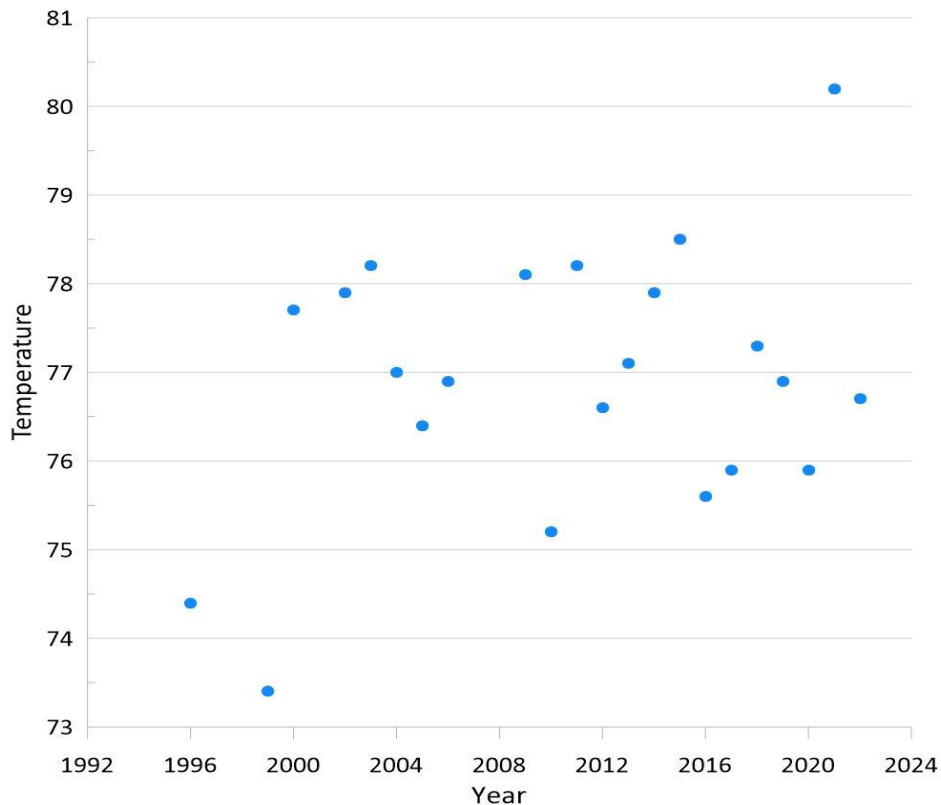


Figure 7. Fifteen Day Average Max Temp Steamboat (1991-2022)

Upper Steamboat Creek above Cedar Creek

Regression analysis was run on the available temperature data for the period 1991-2020. The results were: slope =0.179; r^2 = 0.47 ; Figure 8. There is an increase in maximum stream temperature over this period. Both the slope and the r^2 were positive. Figure 8 illustrates this well. In Holaday's study this site had a slight negative slope over the period. From 1991-2022, this site is trending toward higher temperatures at a rate higher than the increase in air temperature for the region.

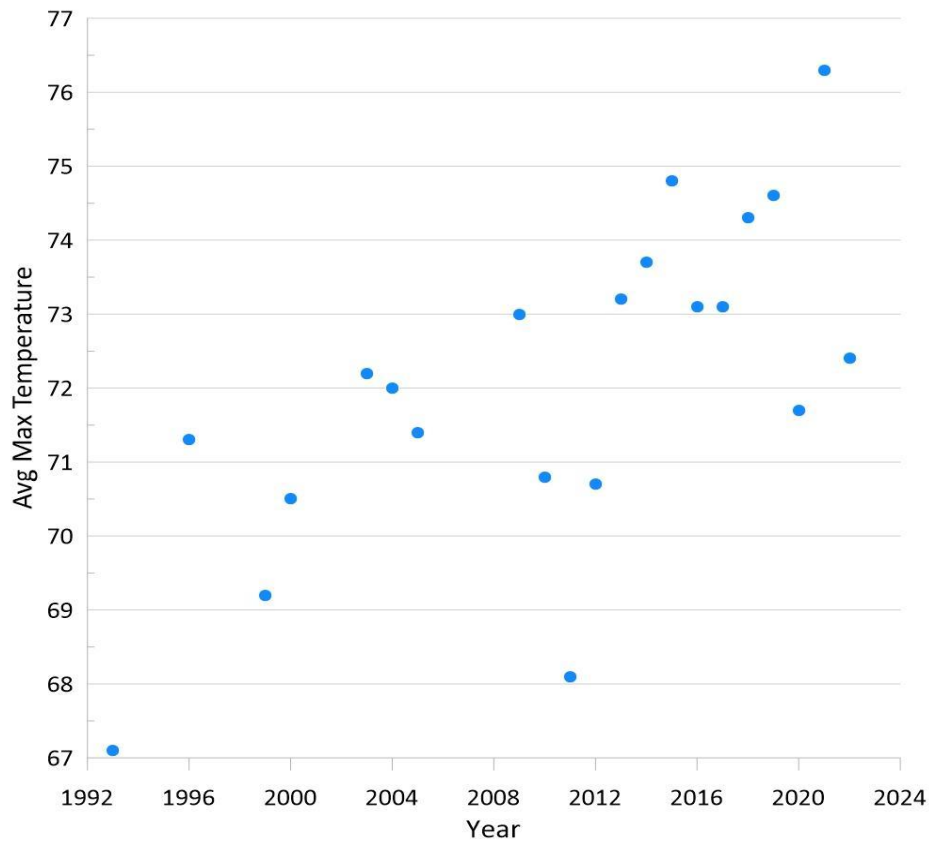


Figure 8. 15-day Avg Max Temperature Upper Steamboat (1991-2022)

Cedar Creek

Regression analysis was run on the available temperature data for the period 1991-2022. The results were: slope= 0.10; $r^2 = 0.3$ (Figure 9). There was an increase in stream temperature over the period as illustrated in the figure. The rate of increase is about 60% of that observed for upper Steamboat Creek. This is significantly different than the results observed earlier by Holiday. From 1969-1990, he observed a significant decrease in stream temperature in Cedar Creek. He attributed the decrease in stream temperature to the growth of riparian vegetation after extensive timber harvest in the 1950's-1960's. It would appear that the riparian forest closed the canopy over the stream in the early 1990's. The trend has been toward higher stream temperatures since the early 1990's, coincident with increasing regional air temperatures.

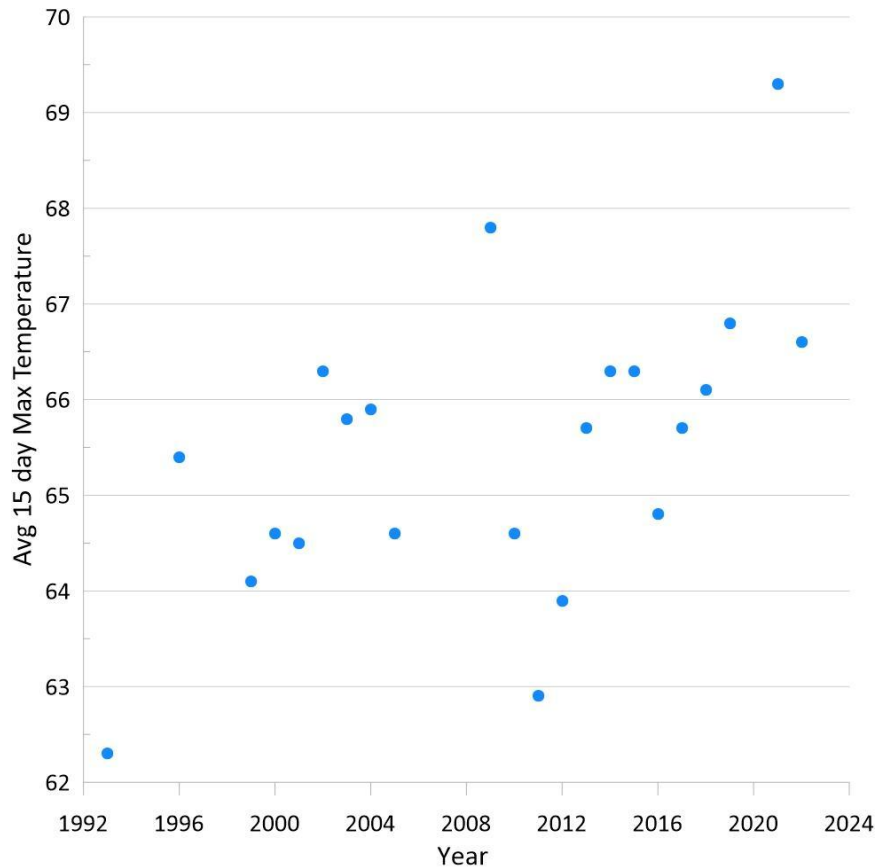


Figure 9. 15-day Avg Max Temperature Cedar Creek (1991-2022)

Big Bend Creek

Regression analysis was run on the available temperature data for the period 1991-2022. The results were: slope= -0.006; r^2 =0.0005; and Figure 10. The slope suggests that there was a slight decrease in stream temperatures during the period; however, the r^2 was essentially zero, so the model does not explain any of the variation over years. So, it appears that stream temperature did not increase from 1991-2022. From 1969-1990, stream temperatures declined a little. The streamflow in Big Bend is primarily groundwater driven from the High Cascades and very stable, so it is expected that stream temperatures would be buffered from changes in air temperature.

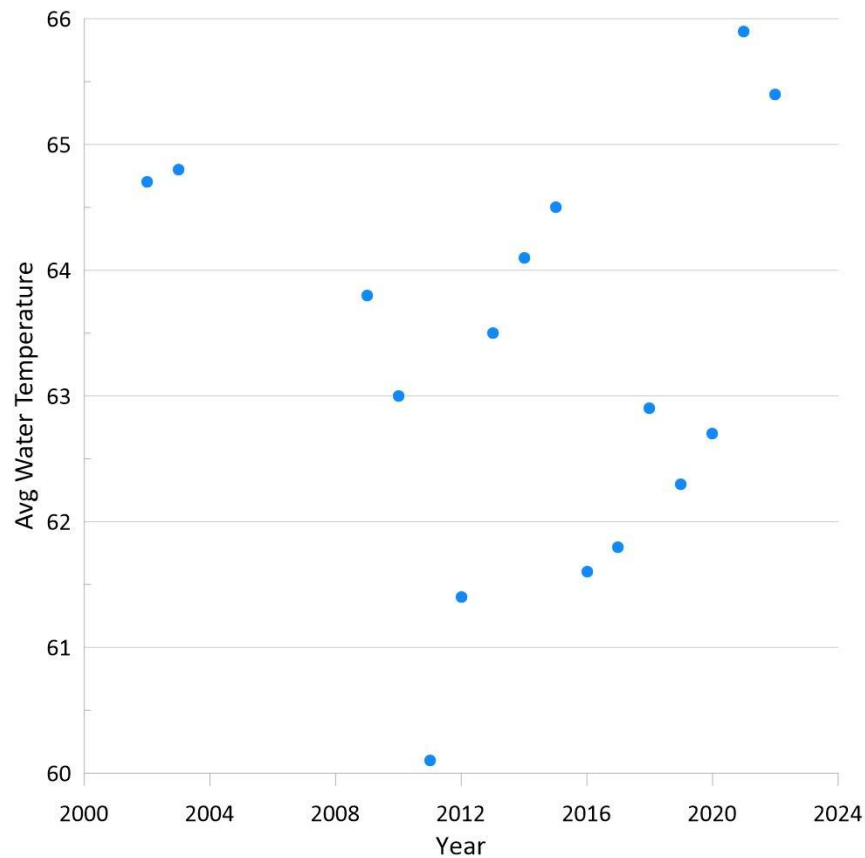


Figure 10. 15-day Avg Max Temperature Big Bend Creek (1991-2022)

Canton Creek

Regression analysis was run on the available temperature data for the period 1991-2022. The results were: slope= 0.08; $r^2 = 0.19$; Figure 11. Canton Creek had an increase in stream temperature from 1991-2022. From 1969-1990, Canton Creek stream temperatures declined.

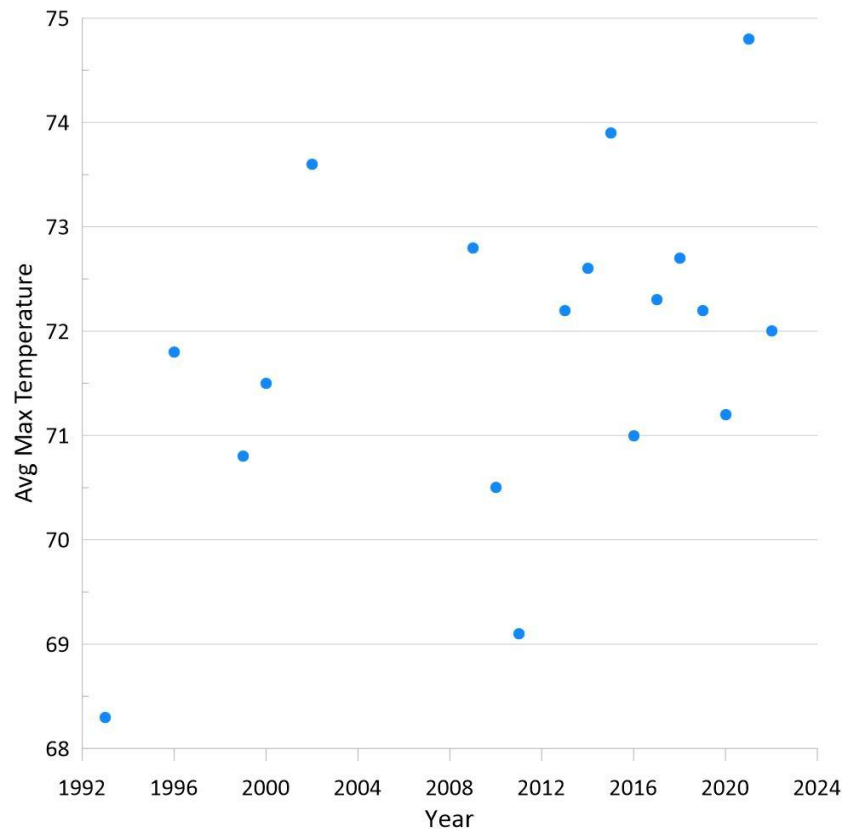


Figure 11. 15-day Avg Max Temperature Canton Creek (1991-2022)

SUMMARY

We compared the period 1991-2022 with the period 1969-1990 (from Holaday's thesis). First, he assumed that air temperatures and streamflow did not trend up or down during his period of study. His test indicated that he was warranted in making those two assumptions. It is less evident that the assumptions are true for the later period, however the r^2 results are so low, we can't with confidence decide either way. So, for the purposes of the analysis, we accepted that they were stable.

First, Big Bend Creek is a stable ground-water stream. There is no evidence that stream temperatures increased from 1991- 2022. Steam temperature increased at all other sites. The highest increase was for upper Steamboat Creek above Little Rock Creek. The increase in temperature was more than expected given that air temperature may have increased a little over the period. This suggests that something in the upper part of Steamboat basin is causing the increase in stream temperatures. This warrants attention. It should be a high priority for investigation. The increase in stream temperatures in lower Steamboat Creek was only 30% of the increase in upper Steamboat Creek. It is likely that the cold water coming in from Big Bend Creek mitigated much of the temperature increase in upper Steamboat Creek.

Cedar Creek and Canton Creek had slightly increased stream temperatures from 1991-2022. Both sites were likely experiencing temperature increases due to an increase in air temperatures for the period.

Starting in 2020, there have been a series of major fires in the basin. They have certainly caused stream temperatures to rise in these streams as much riparian vegetation was burned, opening the canopy to direct sunlight. A major focus on the effects of the fires on stream temperatures should be among the highest priorities of the management of the Sanctuary, along with management measures aimed at increasing resilience to fire and reducing the potential for catastrophic wildfires in the basin.

NEXT STEPS

- 1) Our work in the basin and the analysis of the data suggest that there should be a review of the current stream temperature monitoring plan within the basin. Currently, the stream temperature project is not tied to a long-term temperature station. The closest air temperature information available for 1969 to the present is the H.J. Andrews Forest outside Blue River. It is located about 45 miles north of the northernmost point in the Steamboat basin. The Idleyld Park site was about 20 miles from the mouth of Steamboat Creek. The Andrews site does have the advantage of being a forested site in the western Cascades at about the same elevation, but it is double the distance from the basin from the Idleyld Park site. As a means of beginning that conversation, we propose a long-term stream monitoring network in key basins paired with two air temperature-precipitation stations, as follows:

Long-term Air Temperature- Precipitation Station

- Low- near mouth of Steamboat Creek at bunk house
- High- On ridge top near middle of basin

Stream gages:

Canton Basin

- Pass Creek
- Upper Canton
- Near mouth Canton

Steamboat Basin

- Lower Steamboat- above Canton
- Lower Steamboat- below Canton
- Upper Steamboat- above Cedar
- Cedar Creek
- Big Bend Creek
- Steelhead Creek

These sites would represent long-term monitoring sites and other interim sites would be proposed as relevant.

2) Included as a priority next step is to gather information to improve our understanding of how natural processes and management activities affect stream temperature.

- Finish organizing the data and determine where it will be housed long-term.
- A primary focus will be on the analysis of each tributary and mainstem site, building in differences in stream flow, stream cleaning, and fire regime, using our preliminary analysis tools to guide the exploration. We are primarily interested in the maximum annual stream temperatures and the cumulative degree-days, i.e. cumulative average daily stream temperature throughout the summer months. The timing of many metabolic functions in fish and macroinvertebrates is greatly affected by the total degree days.
- Lastly, incorporate our salmonid surveys of Canton Creek and Steamboat Creek into the picture. How do each year-class of steelhead respond to the annual temperature and flow regimes in the basin? We will construct an annual snapshot of the abundance and distribution of salmonids in the basin using GIS.

Subsequent Chapters of this work will include a summary of the current Regulatory Framework in the Basin(s) (i.e., existing legislative and administrative protections), identification of known gaps in protection, and proposals of science-based recommendations to support the long-term resilience of this watershed in the face of climate change, fire risk, and other threats.

REFLECTIONS

The long-term stream temperature information represents a microcosm of the issues surrounding the management of the Sanctuary. The early data from 1969-1990 has been lost. However, Holaday's thesis does provide a summary of the information. The information from 1990 to present was currently available, but it was in raw form; it had not been processed. It is difficult to know who is responsible for its collection, maintenance, and archiving. We currently have brought the existing information together, processed it, and have put it into a usable form. Now what?

The Forest Service expressed the view that adequate regulation currently exists as a sufficient framework for the management and protection of the Steamboat Sanctuary. Pacific Rivers suggested this project to learn if, in fact, that position is well-founded. The Forest Service has been under a real budget crunch due to the fact that wildfire management is usurping the majority of their budget and there is ongoing

uncertainty about their scope, work, and budget going forward. For these reasons, it appears that the Forest Service will have less resources available for the management of the Sanctuary. The Forest Service has agreed to consider our work product evaluating the status of protection for the Sanctuary.

In addition to this factor, in recent years, the Forest Service has been under a real budget crunch due to the fact that wildfire management is usurping the majority of their budget. There is current political uncertainty about the scope, work, and budget of the Forest Service. For these reasons, it appears that the Forest Service will have less resources available for the management of the Sanctuary.

These points raise several issues. We believe that the following are important issues for the management of the Sanctuary:

- 1) The temperature monitoring in the basin (Steamboat and Canton). Who has oversight? Who will maintain sampling (and possibly adding sites)? Where will it be stored and shared? Who will be analyzing it and reporting on findings? Pacific Rivers is prepared to take on this role.
- 2) Given the recent fires: Analysis of the effects on stream temperatures; mass erosion events in the basin; recovery of vegetation, especially in riparian zones.
- 3) Wildfire: Will wildfire budget demands outweigh every other budget factor in the years ahead? Will analysis of road maintenance and generation of sediment into the stream system be part of decision making about the road network? How does fire management and flame retardant affect stream biota? Will this issue have any bearing on the Sanctuary?
- 4) How will the Steamboat Sanctuary as a special management area be managed given the NW forest plan and regional and national directions? Will there be any room for comment?

Given this situation we believe that the creation of a management partnership for the Sanctuary provides the strongest opportunity for the future of the Frank and Jeanne Moore Steelhead Sanctuary.

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About Us

Dr. Charley Dewberry, Ecologist

Charley Dewberry is a stream ecologist, restoration specialist, and author with over three decades of experience in salmon recovery and watershed restoration. As one of the original survey leads for Oregon's Coastal Salmon Restoration Initiative, Charley developed pioneering field methods for salmon habitat assessment and monitoring. He has conducted extensive fieldwork in the Steamboat Creek watershed and across the Pacific Northwest, where his ecological insight and commitment to wild fish conservation have shaped both grassroots and policy-level restoration efforts.

Liz Gilliam, MSc. Geomorphologist

Liz Gilliam is a geomorphologist with a deep background in river systems and watershed processes. Her work integrates science-based restoration with practical land management strategies, particularly in riverine and estuarine systems. Liz has supported numerous projects focused on improving stream function, fish habitat, and climate resilience, including work in the North Umpqua basin. She contributes technical expertise to Pacific Rivers' science and policy initiatives.

Pacific Rivers

Pacific Rivers is a nonprofit conservation organization dedicated to protecting and restoring the watershed ecosystems of the American West. Since 1987, Pacific Rivers has combined science, advocacy, and partnership to safeguard rivers, streams, and the communities that depend on them. The organization works closely with Tribes, local communities, and public agencies to secure lasting protections for freshwater ecosystems, ensure clean water, and support the recovery of native fish populations. Pacific Rivers has a long-standing commitment to the North Umpqua watershed and the Steamboat Creek basin, where it champions science-based strategies for river health and resilience.

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