

North Star Visitor Use Management - Q&A

Clarifications on Scope, Means and Methods - Visitor Use Study:

During the study period, did you monitor hikers, fishing, jogging, dog walking, swimming? What about tubes, rafts, canoes, kayaks?

This study focused on users who were floating the river by design. The type of watercraft was not part of the Visitor Use Study. Open Space and Trails does track user numbers by type of vessel. Paddleboards are by far the most commonly used vessel. Public surveys have been and will be conducted by OST to reach broader audiences and members of the community.

Is there a reason you didn't select August for the counting? Do you suspect it would have been significantly higher?

River use at North Star in August is typically lower as the water levels typically drop toward the end of July. The data OST has collected since 2018 has shown that July has the most visitors floating the river and the study sought to capture the busiest time period.

Did you look at the trash problem by the North Star take out and also the jumping off the bridge?

Those were not things that we specifically studied during the on-site data collection itself, in terms of presence of litter or kind of non-conforming behaviors. However, those are topics that could be part of the conversation through the engagement process itself.

When you calculate the percentage of PPV, what is the time period that you are using (i.e., if you are including non-peak hours, then that would skew the results lower)?

PPV (people per view) were counted every 10 minutes, starting at the top of the hour, from 9AM to 7PM. Some results are shown just for peak times 2-4PM. The different periods of day are noted in the graphs..

If PPV is a snapshot of users in one spot and feeling of crowding in that spot, isn't an entire float a composite of many snapshots? And potentially accumulated feelings of crowding?

PPV is a model of a key component of the visitor experience and relates specifically to recreation use of the Preserve. The PPV model is a way to operationalize and think about a key aspect of the experience. DJ&A also asked about perceptions of crowding in other parts of the river user experience other than floating the river itself. DJ&A is not suggesting that visitors' responses to numbers of people per viewscape in the photo simulations comprehensively captures the entire experience, but the combination of the two metrics, PPV and perceptions of

crowding, is a well-tested and commonly applied approach to understanding and monitoring crowding.

Is it possible that survey respondents were less likely to participate in the survey during the busiest times since it can be overcrowded at the takeout and they had to rush out? If so, could we be missing some important opinions when it is most busy and crowded?

DJ&A tried to get a couple of really key pieces of information from non-respondents (people who declined to participate) that can be compared to characteristics of respondents to see if there's something systematically different between respondents and non-respondents. One of those questions was, did you feel crowded on your float today? There was a statistically significant difference between respondents and non-respondents in their answer to this question. Non-respondents are more likely to have said, yes, I felt crowded than those who took the full survey.

Can you define commercial vs public use? What was the ratio of public vs. commercial users who were part of the survey? Did you gather data in your surveys on where the user was from (local or otherwise).

About 1 in 5 survey respondents used a commercial shuttle to access the river.

Commercial = Users that were guided and/or shuttled via a commercial operator. 18% of survey respondents represented clients of commercial operators.

Public = Those using the Preserve on their own. 82% of survey respondents were non-commercial, or public visitors.

Two-thirds of respondents were from Colorado. The majority of public users were Roaring Fork Valley residents. Among commercial users, respondents were more likely to have a secondary residence in the valley than the general public.

The full report will be available on the project website with the results broken out for both Roaring Fork Valley residents/visitors and commercial/non-commercial responses.

Why is this survey not focused on wildlife conservation as this is the main designation for the Preserve?

This Visitor Use Survey was designed to study river use, as one of many actions identified in the 2020 Management Plan and as approved by the boards. Other actions from that plan include wildlife surveys, vegetation surveys, etc. that document ecological conditions of the Preserve. Those reports are available on our website.

Clarifications on Means and Methods - Ecological Review:

Did Dr. Monz study the protocols from 2000- 2024 or only from 2020- 2025?

Dr. Monz looked at the range of protocols that have been developed and implemented over the 25-year history of doing ecological monitoring on the Preserve. He looked back in time to see those protocols and their development, how they've progressed over time, what's been added, and how they've been part of an overall adaptive management process, which is the role of monitoring.

Monitoring gains a lot of power and importance when it's integrated well into an overall management process. That really was the goal of Dr. Monz's review, in order to determine his best recommendations for being able to advance monitoring as part of a process of maintaining a high degree of ecological conditions in the future. There's a long history. Some things were implemented early on, like some vegetation monitoring, for example, that then led to the development of other protocols. There's been a lot of activity in the last 10 years to implement new protocols to advance these ideas within the context of a management process; if change in management is needed, it can be implemented based on the data.

See the [OST website](#) for specific reports. Data is collected on regular intervals as recommended by various experts and best practices. North Star receives an even higher intensity of study than most natural protected areas locally or nationally.

Did Dr. Monz note the relation to increased number of river users to the departure of the Great Blue Heron?

Dr. Monz noted OST's observation through data of limited great blue heron nesting sites along the river over the years and a trend toward decreasing nesting. While no causality is inferred, there are some suggestions of things that could be done in order to enhance that habitat. Within the context of these findings, various kinds of management strategies have since been implemented, from creating no-fly zones for paragliders and quiet zones for river users, to active protection of the nesting trees and habitat sites. This was provided in the presentation as an example of clear integration of the monitoring findings into the adaptive management. Herons have healthy population numbers in the State of Colorado, nest nearby and still utilize the Preserve, even though they no longer nest there.

Did Dr. Monz study birds in relation to higher river use?

Dr. Monz did not study any specific species. He reviewed monitoring protocols at North Star. OST has contracted independent studies of birds at North Star. Those findings are detailed in the North Star Nature Preserve Wildlife Monitoring Report (2020 - 2021), which was shared with Chris Monz as well. That study found 9 species having statistically significant upward trends, while trends in densities were downward for three species over the monitoring period 2001-2020.

Dr. Monz stated: "What I've found is a robust and rigorous program of monitoring. I think this represents a seriousness of purpose of monitoring and an integration into an adaptive management process - all state-of-the-art components when it comes to parks and protected areas. I think there will be some recommendations that will come out that will help enhance future monitoring in North Star."

Chris, did you look at trout health and their breeding in the river?

There's currently no fishery monitoring specifically for trout. Open Space and Trails coordinates with Colorado Parks and Wildlife (CPW), as they manage the fish within the river. CPW historically did fish/trout surveys within North Star. Part of what makes North Star an attractive place to float is its low gradient, which means the finer sediments settle out of the water column, making a pretty sandy-pebble river bottom, which is less desirable trout reproduction habitat. CPW does stock the Roaring Fork River in and around the Aspen area, including North Star, which influences the trout populations there. There is a protocol and data for aquatic macroinvertebrate sampling, as another indicator for river health.

Is there a study of how the elk calving has been impacted by river use? Is the elk calving area in the sound zone of the river? Do the elk need access to the river during calving?

The area is not mapped as an elk production area by CPW. It is known to be used as rearing habitat from surveys and observation, though the best rearing habitat is on the far side, away from the river. OST wildlife studies have not shown any decline in elk usage of the Preserve (and in fact show an increase in elk detections in the most recent survey). Site specific studies of elk calving is not recommended (per CPW) as the negative impact of study disturbance during calving can lead to calf abandonment. Colorado Parks and Wildlife will be part of the working group and their expertise will contribute to wildlife related actions.

On his last slide, Chris Monz alluded to additional ways to manage use. Could he provide some examples?

Broadly, from an ecological perspective, the literature is clear that under high-use situations, containment or confinement strategies tend to reduce overall ecological disturbance. There's a long history of experimental work and studies looking at that very issue. And when you look at North Star, that's essentially one of the management strategies that is happening, in that visitor use is confined to a relatively narrow corridor that attracts people and provides an opportunity to experience the Preserve area without dispersing across the entire landscape and, as a consequence, potentially proliferating disturbance. That doesn't necessarily mean that, in areas of concentrated visitor use, we want excessive disturbance, so that is where some good adaptive management comes in - to be able to allow people to visit a place with minimal disturbance. Minimum impact and low-impact education is an important component of management in these situations.

Data Clarifications:

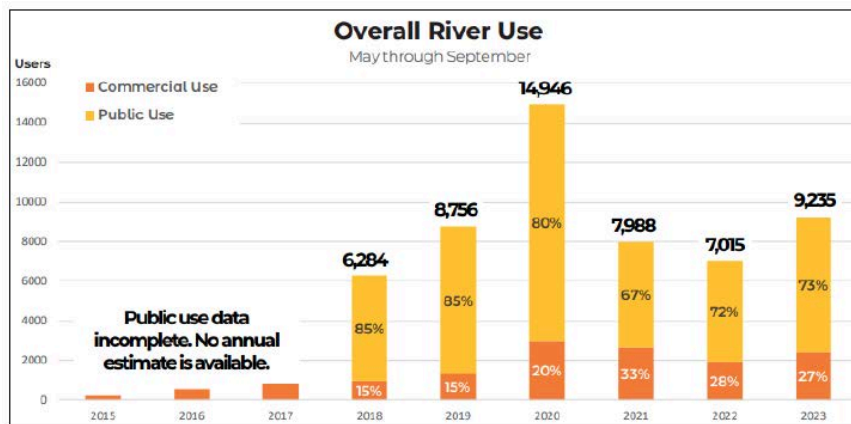
In regards to the last slides about asking users what regulations there should be moving forward (more regs on commercial.. no further on public) is there data on the percentage of users that answered the survey - were they public or commercial users (of the data collected how many answered as public vs. commercial)?

Yes, these responses are included in the Final Report which will be posted to the current projects page on the [Open Space and Trails Website](#).

The Visitation Trends slide shows no public floaters 2015-2017, but I know many went out including me without a guide. Why are there no public users for this time period in the chart? Clarification on the change in commercial use over time?

Yes, there were public floaters during that period and for many years prior, however no data exists for that period so it was not included in the graph. 2015-2017 is not showing total use numbers, but does show total commercial use which was pulled from records submitted by those holding commercial operating permits.

The difference between the number of commercial users in 2018 versus 2023 is about 50 percent. (2018: 1786 commercial users, 2023: 2963 commercial users)



Monitoring going back ~25 years does not capture the much more natural state of that landscape of more than ~50 years ago before natural integrity was altered by willow grubbing, draining, and haying/grazing operations. Given OST staff interest in restoration and rewilding to more pristine conditions, would it be useful to identify a nearby and more pristine landscape as a model to guide restoration efforts. This rather than using the ecologically diminished Northstar of 25 years ago as a baseline model. The willow/cottonwood complex along the entrance to Difficult Campground may provide a good model to guide rewilding/restoration efforts.

OST is actively engaged in restoration and rewilding work at North Star with those references in mind. Rewilding is a long-term game, and in line with the current management philosophy for

North Star of supporting natural resilience and ecosystem process rather than aggressive intervention. Willow extent is increasing on site through natural regeneration and willow plantings. It will not, however, be possible to return to pristine landscape conditions or perhaps even those reference sites due to legacy impacts of agriculture (extensive non-native grasses) and the permanent water diversions upstream that have contributed to reduced wetland acreage and groundwater recharge.

Ecological effects are often seen in the rear view mirror some time after impacts. Because we saw a doubling of use during COVID there is the potential that in a decade or so we could see growth to sustained levels of high use. Can you talk about other projects you have worked on where large increases in recreation have led to impacts on habitat?

From Dr. Monz: “The relationship between use-and disturbance is non-linear—that is—most of the disturbance to ecological conditions occurs with the initial use in a previously unused area. If use continues to be confined to a limited spatial extent, then even in situations where use has increased dramatically, additional ecological disturbance can often be minimal.

So large scale habitat disturbance is a concern when use expands beyond a designated trail or a use corridor/area thus expanding the spatial extent of use. This is particularly an issue with mechanized and/or motorized use where the potential to travel much further, with more mechanical force exists, but it is a concern with any use type.

Thus far in my review and experience at North Star, I have not observed the situation I describe above. As I previously mentioned, use is confined to a small spatial extent and somewhat regulated by limited access areas. I’m not suggesting that the use area should be a “sacrifice zone” as smaller scale disturbance can be very intense and should be considered, but broadly habitat areas for a wide range of species are being protected by confining use to a narrow spatial extent.”

The greatest congestion and overcrowding takes place at the parking lots particularly at Wildwood where weekends were always double the capacity at peak times. If the levels of PPV in some of your surveys were seen the already overloaded capacity of parking would be even worse. While the PPV study is interesting, is this methodology more commonly used in national parks which are designed around car access that have more controls on car capacity? (Arches NP car permits,etc.)

The PPV indicator is widely used in parks and protected areas with a diverse range of modes of access. It has played an important role in avoiding the unintended consequences of “demand driven” transportation planning in parks. There are several examples of responding to parking challenges in parks by mode shifting to shuttle and/or expanding parking capacity. In the cases of mode shifting to shuttle, there are examples of this helping to address safety, experience, and resource impacts of overflow parking, but inadvertently providing levels of recreation access that cause “downstream” crowding and/or similar “overuse” impacts. This is because alternative transportation can be key to help in these situations to address parking challenges, but also have the ability to override the regulating effect parking lot footprints have on levels of visitor access. For these reasons, we intentionally pair transportation-related indicators (like VAOT in the North Star VUM study) with crowding-related indicators (like PPV in the North Star VUM study) to understand the “limiting factor” for visitor use management. In the case of the North Star VUM study, the findings suggest parking may be a more “limiting factor” than crowding on the river itself. In isolation, logical solutions might be to introduce alternative transportation solutions and/or enhance parking footprints. The PPV indicator serves to help test the extent to which “transportation supply-related solutions” can be introduced without causing unacceptable crowding impacts on the river. This approach has been instrumental in helping shift the thinking about how to “optimize” shuttle in places like Zion and Rocky Mountain National Parks and about how to “right-size” parking footprints and other transportation facilities and services in a diversity of other parks and protected areas.

Commercial Use Questions:

What value do you think professional permitted guides offer?

There's a long history of commercial use at North Star, and it did grow in terms of the number of commercial operators that were allowed at North Star over time. It has been an adaptive process of trying to figure out the balance and tension between guiding companies potentially adding to the use at North Star versus the benefit of having visitors go with good stewards of the river and mitigating individual vehicle trips. Most recently, the number of commercial operators was reduced, not necessarily the use. In general, guided trips allow people to access North Star in a way that either makes them feel safe or provides more education.

Guides and shuttle drivers are required to attend a class at the start of the season, led by Open Space and Trails and the Roaring Fork Conservancy, that emphasizes regulations and natural resources at North Star. The Request for Proposals currently in use to select operators asks respondents to describe their education and stewardship plans, and how they educate their staff and commercial clients prior to a float through North Star.

Would consultants agree that commercial guiding offers more safety and education, which are major considerations and shouldn't be reduced, last year reduced from 13-5 guide services? Would consultants favor low-volume commercial operations over high-volume guide services (i.e. some operators do in a few days what others do in season)?

Utilizing permitted guiding operations to provide transportation and educate people on the importance of the Preserve and the ways to be respectful of its ecological values has been an adaptive management strategy used to address the popularity of use over the years that OST has managed North Star. As we get into the public engagement portion of the management plan process, we will have opportunities to talk about commercial use. Outfitters and guides can play an important role in minimum impact education and nature education/interpretation, which are essential visitor management strategies.

Current Management Questions:

How does the quiet zone get monitored? And no-fly zone?

There's no monitoring protocol related to the quiet zone. There is, however, enforcement from OST rangers. The quiet zone extends through private property where OST does not have the jurisdiction to monitor, so it is a complicated landscape in terms of regulation. The no-fly zone was specifically for the paragliders. OST also has a prohibition on drones over open space properties which is also enforced by our ranger team.

The importance of soundscape in parks and protected-area management has gained importance in recent years. It is something to consider monitoring, as those values are more important to folks in a nature-based experience. There is now well-developed science looking into ecological disturbance as a consequence of anthropogenic noise and the importance of natural quiet in maintaining a healthy ecosystem. So that would be an important piece to advance in this current management planning process, if desirable.

Beavers are entering the North Star Preserve. Beavers increase biodiversity, raise the water table, and help with wildfire mitigation. What studies will be done on user impact on beaver restoration at North Star?

OST has completed two beaver activity surveys at North Star (in 2018 and 2023) and beavers seem to be doing well there, which is what we like to see. OST monitors beaver dams (they typically "blow out" during peak runoff from high water levels), observes bank lodges and chew activity, and has completed willow plantings for habitat improvement. Because beavers are not active during the day, and the Preserve is closed from dusk to dawn, there isn't much concern for conflict or disturbance.

How did OST respond to the 2018 beaver study recommendation re: buffer zones?

River-based quiet zones have been implemented, and the area with greatest beaver activity is closed to all terrestrial recreation, as recommended.

There seems to be a meaningful number of insects on the river. Do we know if there is any mitigation going on?

Insects are an important part of an ecosystem - a critical source of food, for a variety of avian species. In terms of mitigation, North Star mosquito control is overseen and paid for by the East Aspen Metropolitan District.

Taking into account people are floating in snowmelt that poses clear safety concerns, would consultants recommend rafts, kayaks and canoes over SUP use, where users are much more exposed?

Vessels that do not impact the resource by being oversized or drag on the river bottom are appropriate. Otherwise it would be important to allow the visitor to choose their preferred activity type to enhance visitor freedom and the realization of specific benefits. There could be social-conflicts between vessel types, but we currently do not have indications of this. Monitoring experience conditions is important as use and activity types potentially change.

Future Management Implications:

As two-thirds of users are first-time users, thoughts on safety issues with the growing moose population in terms of guided vs.. self-guided experiences?

DJ&A has conducted a number of studies. The one that comes to mind most recently has been up in Grand Teton National Park, about visitors interacting with charismatic wildlife in ways that both disturb wildlife and potentially put the visitor in an unsafe situation. The best intervention involves a two-pronged approach. One is visitor education and minimum impact education in terms of visitors maintaining safe distances from wildlife. Second is enforcement. Both play an important role in any kind of situation where you're dealing with visitors approaching wildlife, harassing wildlife, improper handling of food - all of the things that we're concerned about when it comes to wildlife and human interaction.

At North Star, there's an adaptive response. When moose are seen, temporary signage is installed to caution visitors and there may be an increased ranger presence to minimize potential safety issues. Safety, specifically regarding moose, can be a point of discussion during the management plan process.

What is the plan to manage the public use at North Star? Do we foresee a daily use fee to float?

At this time OST does not have a mechanism to control public use of the river at the Wildwood Put-in where the majority of float trips begin as this is USFS land. Identifying appropriate thresholds for use and management strategies can be discussed as a part of the management plan.

The commercial operators are stewards to the Preserve that educate users how to properly use the Preserve and educate users about the Preserve. Why are the commercial operators being limited to only 5 operators as of last year while the public use is not being limited? The public use is increasing and in order to limit or minimize impacts, it seems like it only makes sense to do something about the public use. Curious about the plan for public use...

The Board of County Commissioners directed a limitation on the number of commercial operators, capping the number at five in 2024. Five will be the limit again in 2025. The 2025 update to the North Star Management Plan will be a time to review public and commercial use and see if any changes are warranted.

COMMENTS:

The recently completed Roaring Fork Watershed Biodiversity and Connectivity Study informs a recognition of Northstar as arguably one of the most important wildlife valley-crossing zones between Independence Pass and Glenwood Springs. This importance was recently underscored by one of our respected independent wildlife biologists who has contributed to the Northstar monitoring process. This wildlife connectivity function between Richmond Ridge and Smuggler Mountain merits a placeholder in the management plan process. - Tom Cardamone, Watershed Biodiversity Initiative

Concern was expressed about the herons.