

YELLOWSTONE

NATIONAL PARK

STATE OF THE PARK: 2021

In 2020, Yellowstone lost two valued team members, Donna Youker and Andy Nickerson. This report is dedicated to their commitment and service to the Yellowstone team and the mission of the National Park Service.



Donna Youker
Law Enforcement Ranger
1982-2020

In Memoriam

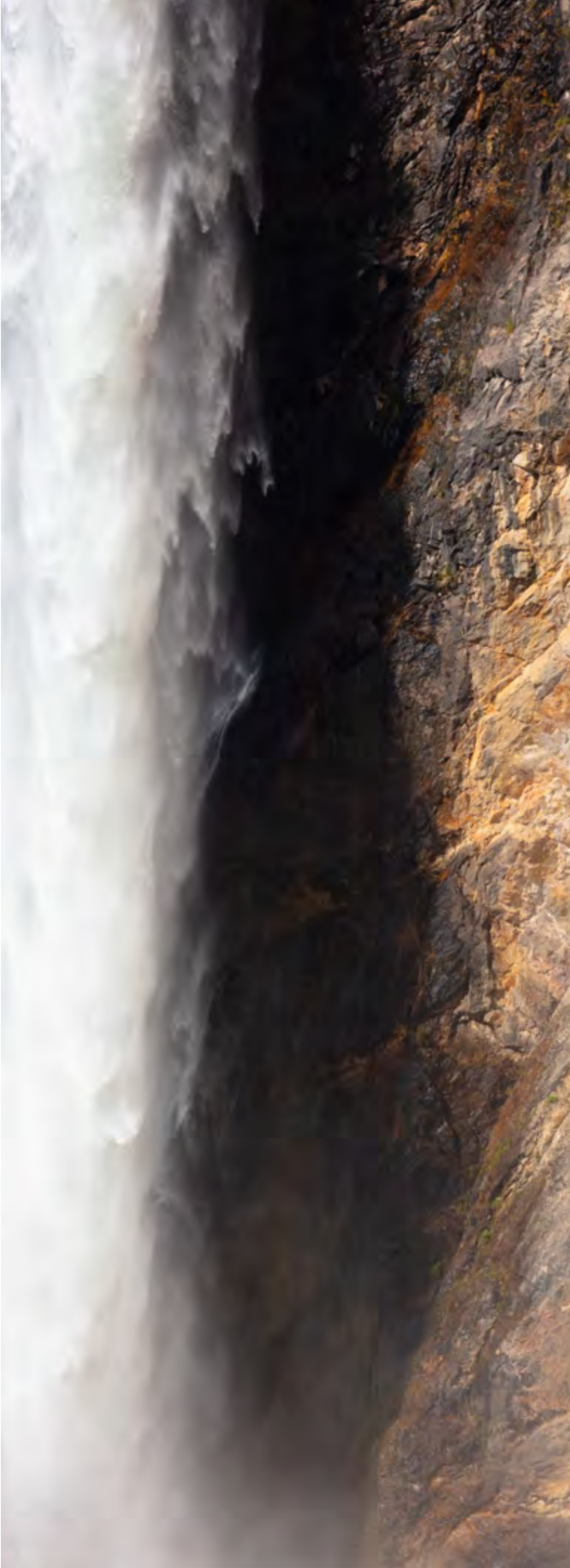


Andy Nickerson
Garage and Fleet Maintenance Manager
1969-2020

Donna began caring for Yellowstone’s backcountry with her first trails job in 2010. Her passion for exploring rugged terrain and snowy mountains developed quickly and kept her out west. In 2018, Donna was stationed at Lamar Buffalo Ranch as a member of Yellowstone’s permanent law enforcement team. Her contributions to the frontcountry and backcountry teams defined her as an outstanding ranger and defender of park resources.

As a military veteran, Andy had history of civil service and carried with him values for leadership and teamwork. In 2002, Andy and his family moved to Montana to pursue his passion for ranching and to begin his career with Yellowstone as the equipment mechanic supervisor. He was an integral part of the Yellowstone team, overseeing the garage and fleet operations parkwide.

Both Donna and Andy personified the many qualities of the Yellowstone team. Their losses were hugely impacting but their commitment and dedication to the park and their fellow team members will always be remembered.
– Cam Sholly, Superintendent



What’s Inside


Yellowstone at a Glance	2
Message From the Yellowstone Senior Leadership Team	4
Yellowstone Strategic Priorities	5
Performing Through COVID-19	6
Major Incidents	7
Focusing on the CORE	8
• Improving Employee Housing	9
• Improving Parkwide Communications and Connectivity	15
• Improving Our Operating Structure	16
• Supporting Our Team	17
• Financial Summary	19
Strengthening the Yellowstone Ecosystem & Heritage RESOURCES	20
• Resource Conservation Efforts	21
• Sustainability Efforts	24
• Threats to the Yellowstone Ecosystem	25
• Preserving Historic and Cultural Resources	29
Delivering a World-Class Visitor EXPERIENCE	30
• Understanding Impacts of Increased Visitation	31
• Responding to Increased Visitation	33
• Connecting People to Yellowstone	35
• Protecting People and Resources	37
Investing in INFRASTRUCTURE	40
• Recently Completed Projects	41
• Projects In Progress	42
• Approved Projects	45
• Deferred Maintenance Project Needs	45
Building Coalitions & PARTNERSHIPS	46
• Working With Our Partners	47



About this Report

Due to COVID-19, we have chosen to use photos of Yellowstone team members primarily from 2019. Photos from this report are available for download at: [Flickr.com/YellowstoneNPS](https://www.flickr.com/photos/yellowstoneNPS/)

Printed versions of this report made possible by the generous donations of Larry and Susan Patrick in partnership with Yellowstone Forever.



Yellowstone at a Glance



2.2 Million
Acres in three states



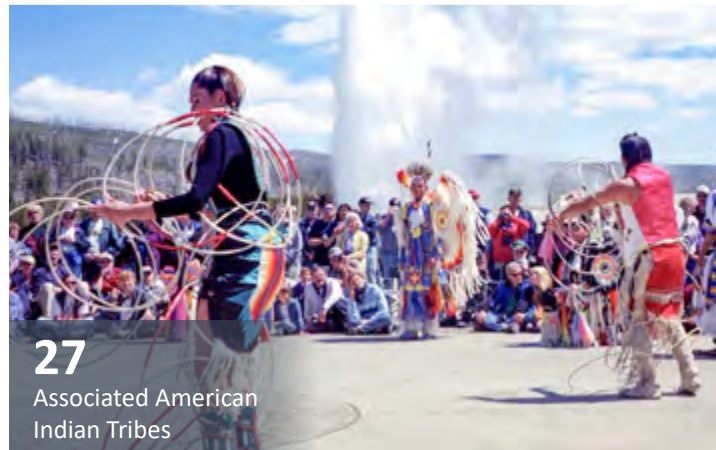
2,500
Miles of rivers and streams



1,000
Volunteers



67
Mammal species



27
Associated American
Indian Tribes



845
Historic structures

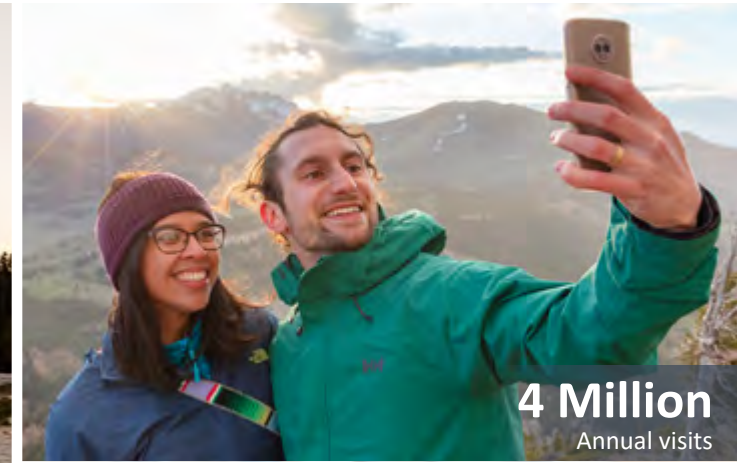


1,160
Native plant species

Yellowstone at a Glance



10,000
Hydrothermal features



4 Million
Annual visits



11
Native fish species



750
Employees



452
Miles of roads



220
Bird species



1,100
Miles of trails



Message From the Yellowstone Senior Leadership Team

We are pleased to present this State of the Park report to the team and partners of Yellowstone National Park. This report highlights the park's substantial successes and challenges over the past two years, along with many of the priorities and actions we intend to pursue over the next two years and beyond.

Yellowstone set five major strategic priorities in 2019, each supporting the overarching National Park Service (NPS) mission and each critical to the success of Yellowstone National Park. These priorities are: 1) Focusing on the Core; 2) Strengthening the Yellowstone Ecosystem and Heritage Resources; 3) Delivering a World-Class Visitor Experience; 4) Investing in Infrastructure; and 5) Building Coalitions and Partnerships. Within each of these strategic priority areas, we have established a wide range of actions designed to help us achieve success.

Yellowstone's workforce is one of the most capable, talented, and resilient in the country. Despite facing unprecedented challenges over the past two years, including COVID-19, our team(s) achieved incredible results across all strategic priority areas. The following pages reflect a wide range of progress, including major employee housing and workforce improvements, ongoing progress in conservation and historic preservation, strategic actions for addressing the effects of climate change, managing increasing visitation, and investing hundreds of millions of dollars into current and future infrastructure improvements.

Importantly, Yellowstone is bigger than its boundary. Each of our partners play a vital role in helping make decisions that not only protect Yellowstone for future generations, but also improve the many positive conservation, environmental, economic, and social impacts the park provides this region and the country.

Whether you are reading this report as a Yellowstone employee, one of our many partners, or a member of the public, you can be proud of the enormous amount of work occurring in America's first national park, none of which can be done without your support. Our continued success will be highly dependent on our ability to innovate, stay focused, and collaborate with each other into the future.

In 2022, Yellowstone will celebrate its 150th anniversary. This milestone is an important reminder of our continuing responsibility as national park leaders. While much has been accomplished, a considerable amount of work remains in front of us. We will continue making decisions that aim to protect the health of Yellowstone for centuries to come.

We hope you enjoy this sampling of work occurring across the park and we thank you for your commitment to the future of Yellowstone and the mission of the NPS.

"It's important that our priorities and actions are clear, not only to our National Park Service team in Yellowstone, but also to our partners and the public."

– Cam Sholly, Superintendent



Yellowstone Strategic Priorities

Focusing on the **CORE**

Focus areas

- Yellowstone Team First
- Improve Strategic Management and Business Acumen
- Improve Organizational Alignment and Effectiveness

Strengthening the Yellowstone Ecosystem & Heritage **RESOURCES**

Focus areas

- Advance and Sustain the Yellowstone Ecosystem
- Promote and Protect Yellowstone's Cultural Heritage
- Ensure Effective Resource Planning and Compliance
- Advance Sustainability

Delivering a World-Class Visitor **EXPERIENCE**

Focus areas

- Understand and Respond to Increased Visitor Use
- Protect People and Resources
- Connect People to Yellowstone
- Improve Visitor Services and Amenities

Investing in **INFRASTRUCTURE**

Focus areas

- Improve Condition and Capacity of Employee Housing
- Improve Parkwide Transportation Infrastructure
- Improve Condition of Historic Structures, Visitor Service, and Public Health Infrastructure

Building Coalitions & **PARTNERSHIPS**

Focus areas

- Ensure Alignment with Yellowstone Forever's Philanthropic Goals
- Build Trust with Gateway Communities
- Honor Tribal Legacies and Heritage
- Cultivate Relationships with Elected Officials
- Strengthen Conservation, Environmental, Economic, and Recreation Partnerships
- Build Global Partnerships



1.5 Million
Vehicles passed through
Yellowstone entrances in 2020



600
Toilets and sinks cleaned and
sanitized throughout the park daily

Performing Through COVID-19

Yellowstone closed to visitors on March 24, 2020, due to the COVID-19 pandemic. The decision was based largely on requests and recommendations from local health officers in surrounding counties, governors, and communities. Over the course of the closure, the park maintained close communications with these partners. As COVID-19 restrictions lifted in Wyoming, Montana, and Idaho, the park released a COVID-19 Reopening Plan and implemented a phased reopening.

Reopening

The park reopened the Wyoming entrances (South and East) on May 18, 2020, and the Montana entrances (West, North, and Northeast) on June 1, 2020.

COVID-19 Mitigations Actions

The park developed and implemented substantial mitigations to minimize exposure risks to protect employees and visitors, including plexiglass screening, personal protective equipment, and alterations to operations. Many of the ideas were developed by the creativity and ingenuity of Yellowstone team members. The park kept all visitor centers closed during 2020 to prevent exposure to employees and visitors. To continue visitor engagement, the park resource education staff developed outdoor contact centers and contacted nearly 1 million visitors.

Maintaining Operations and Protecting Resources

Yellowstone teams did an outstanding job keeping facilities and operations open and clean for visitors and worked diligently to maintain a low transmission rate throughout the busy summer and fall. Teams followed Centers for Disease Control and Prevention guidelines to provide clean restrooms, informal interpretive patrols, emergency medical services, and law enforcement while keeping themselves and visitors safe. The Yellowstone fee team did an outstanding job of collecting over \$12 million in fees needed for projects and operations.

Visitation

Monthly vehicle entries into the park in 2020 started to see significant increases in early July. August 2020 was the second-busiest August on record, and September and October 2020 were the busiest on record. Online pass sales increased by 800%.

COVID-19 Testing

Yellowstone, in partnership with county health officers and Medcor, administered nearly 4,000 asymptomatic tests for employees across the park in 2020. This testing capacity allowed the park to routinely test frontline employees throughout the season and take proactive measures to prevent spread amongst the employee population. The park partnered with the private sector and the state of Wyoming to conduct large-scale active wastewater COVID-19 testing.

Impacts

Of the combined 3,000 (reduced due to COVID-19) employees, volunteers, and contractors, 62 positive cases occurred during 2020, the majority occurring in late September and throughout the month of October. The first NPS employee tested positive on September 25, over four months after the park reopened. The NPS had a total of 19 positives over the entire year. The park saw substantial increases in various violations, many associated with thermal trespasses, entering closed areas, and illegal camping.

Moving into 2021

In partnership with surrounding counties, states, and Medcor, Yellowstone has vaccinated hundreds of frontline team members and has set a goal to offer vaccinations to all employees this spring, including our seasonal and volunteer workforce. Like 2020, the park is developing a summer operating plan with its partners and stakeholders. The plan will likely increase facilities and operations compared to 2020, but will remain flexible and guided by recommendations from our public health professionals. The plan will also adapt to conditions in the park and in surrounding states and counties.



Waterline break repair in progress



Lone Star Fire from the air



Overturned fuel trailer



Firefighters creating a fire break

Major Incidents

Unplanned incidents require significant time and resources across divisions each year. Major incidents in 2020 included:

Mammoth Waterline Break

A major waterline break in July caused a road closure at Mammoth Hot Springs. Since the Dunraven Road was also closed for construction, the break and subsequent closure cut off access between the northern and southern parts of the park. Yellowstone facilities crews worked to locate the break, repair it, and reopen the road in less than 18 hours.

Lone Star Fire

The Lone Star Fire burned over 4,000 acres and came within 3 miles of the Old Faithful developed area. Smoke from the fire caused several road closures over a six-week period. Multiple outside management teams were brought in to assist the park with the fire. This fire underscored the importance of regular fuels reduction within the Wildland Urban Interface. Teams thinned 84 acres of hazardous forest fuel accumulations at Old Faithful during the management of the incident.

Cascade Fuel Spill

A commercial pup trailer overturned during a motor vehicle accident and spilled over 3,000 gallons of fuel 100 feet from the Yellowstone River. The NPS and contractors removed over 1,000 cubic yards of contaminated soil and pumped more than 700 gallons of fuel from the groundwater interface. The park will continue to work with the Wyoming Department of Environmental Quality, U.S. Environmental Protection Agency, and the NPS Damage Assessment National Program Office to conduct additional site characterization and develop remedial options for site cleanup.

Gardiner Structure Fire

In July, a major structure fire occurred in Gardiner, Montana, destroying several businesses. Yellowstone responded with personnel (almost half of the 82 total), equipment, and expertise including five fire engines from across the park. The damage was substantially minimized due to the team effort, quick thinking, and proper actions taken to extinguish the fire.



Focusing on the CORE

Success in this priority is central to Yellowstone's future and revolves around improving the working and living conditions of the Yellowstone team, how the park manages its financial resources, and how we work toward the most effective administrative and operating framework.



Trailer housing

Improving Employee Housing

Yellowstone National Park initiated a major, multimillion-dollar housing improvement effort that will substantially upgrade NPS employee housing across the park. The effort focuses on four goals:

Goal 1: Replace Trailers with High-Quality Modular Homes

Yellowstone has many employee housing trailers dating back to the 1960s that represent some of the worst employee housing in the national park system. Using modular versus on-site construction has allowed the park to build quality units in less time with lower costs. The park will save an estimated \$36 million from the original housing improvement plan proposal.

Key Actions:

- Awarded \$20 million in contracts in 2020 to remove trailers, make site improvements, upgrade utilities, and construct and install new modular homes.
- Removed all seasonal trailers from the Mammoth housing area in the winter and spring of 2020.
- Delivered 31 modular homes at Mammoth and 10 at Old Faithful in 2020. An additional 19 units are scheduled to be placed throughout the park in 2021.
- Completed Bechler planning and design and secured funding to improve employee housing, roads, septic system, visitor contact center, and solar array. Work will be completed in 2021.



New modular housing installed in Mammoth and Old Faithful





Two current homes: old siding and new siding

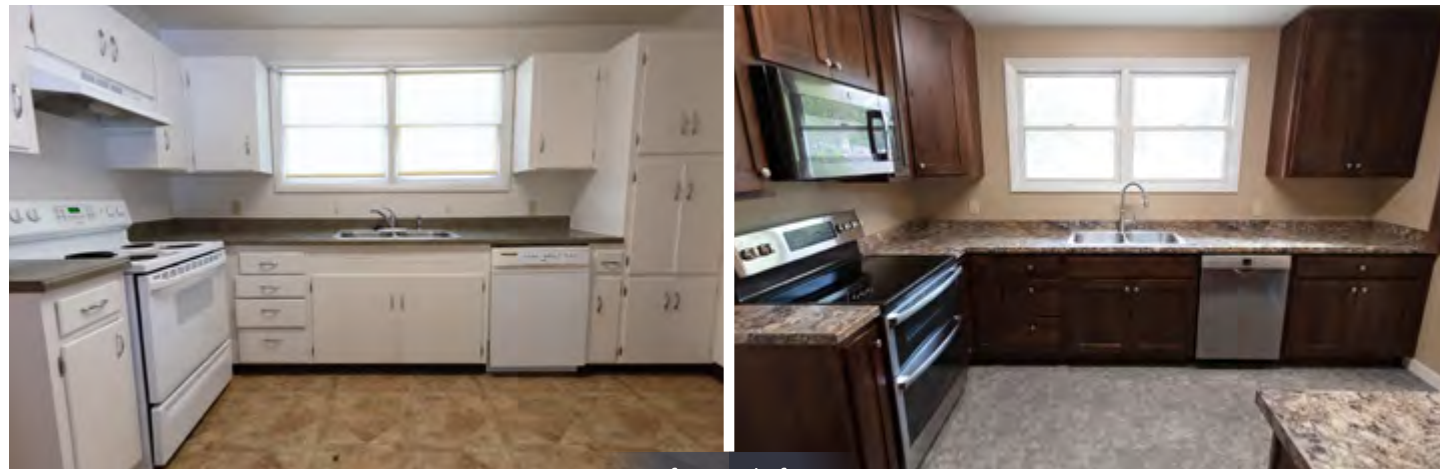
Improving Employee Housing

Goal 2: Improve Condition of Non-Trailer Housing Units

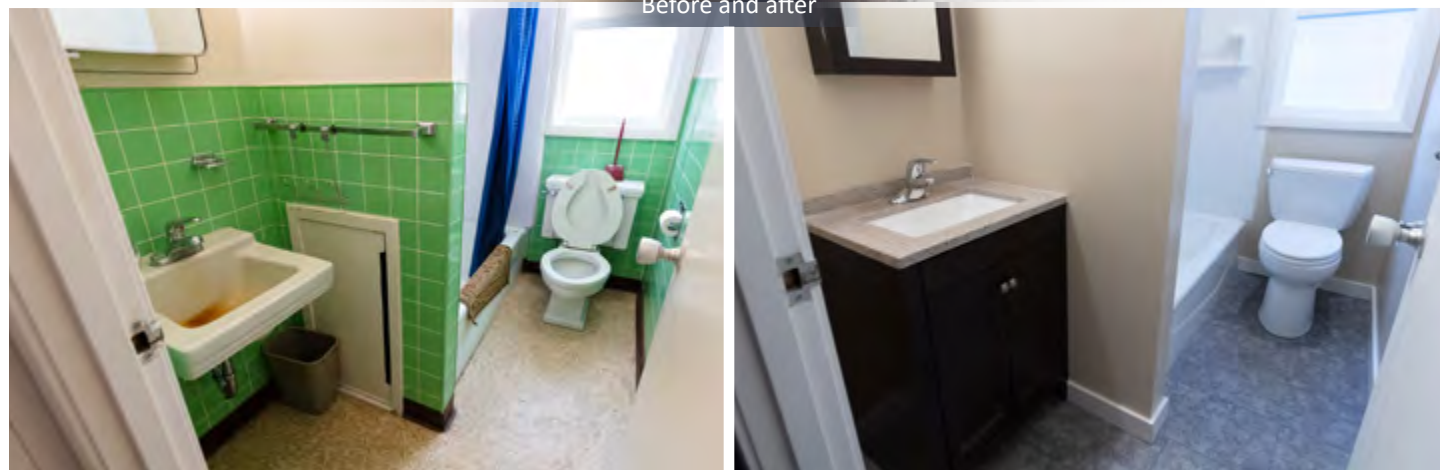
Yellowstone's non-trailer housing units were constructed as early as the 1960's as part of Mission 66 and are spread over nine developed areas. These housing units are the primary residences for NPS employees, many of whom are snowed in completely between December and April. The condition of these houses varies dramatically depending on when they built, with many in extremely poor condition.

Key Actions:

- Rehabilitated 44 housing units in 2019-2020 across the park. New improvements included insulation, appliances (90 washer and dryer sets; 37 range, refrigerator, dishwasher, and microwave sets; and 21 freezers), flooring, fixtures, plumbing, painting, siding, roofing, and windows. An additional 95 units are planned for upgrade in 2021-2022.
- Installed 40 wood-burning stoves into employee housing across the park in 2020, with an additional 31 planned. The stoves provide employees with an additional heat source in the event of a power outage and help reduce energy costs.



Before and after



Improving Employee Housing

"When your coworkers are the people living in the houses you're working on, you really want to bring your A-game. Living in a remote place like Yellowstone, it's important we take care of each other!" – Boyd Tippetts, Carpenter

Improving Employee Housing

Goal 3: Rehabilitate Deteriorating Historic Homes

Designated as a National Historic Landmark in 2003, Fort Yellowstone consists of 34 structures constructed in the 1880s and early 1890s and housed the U.S. Cavalry between 1886 and 1916.

While many of these structures continue to be used as housing and office space, historic preservation is the primary reason for these rehabilitations. This goal is also part of two other Yellowstone strategic priorities—Strengthening Heritage Resources and Investing in Infrastructure. Many of these structures are severely deteriorating and need immediate investment.

Key Actions:

- Conducted condition assessments (first assessments since 2004) on 17 structures within Fort Yellowstone and completed a major project scoping analysis to address the deterioration of the structures.
- Performed emergency stabilization where necessary to prevent further deterioration.
- Identified structural deficiencies and prepared a scope of work to be executed in 2021-2022 in partnership with external historic preservation experts.
- The park has received \$22 million to rehabilitate historic Fort Yellowstone through the Great American Outdoors Act. This project will be one of the largest historic preservation projects in the NPS in 2021.
- The park has received \$21 million funding to rehabilitate the historic Laurel Dorm near the Old Faithful Inn, which is part of the Old Faithful Historic District. This is another major historic preservation project funded through the Great American Outdoors Act.
- Currently conducting planning and design and preparing for contracting with support from the NPS Denver Service Center, Historic Preservation Training Center, Intermountain Regional Office, and Washington, D.C. Office.



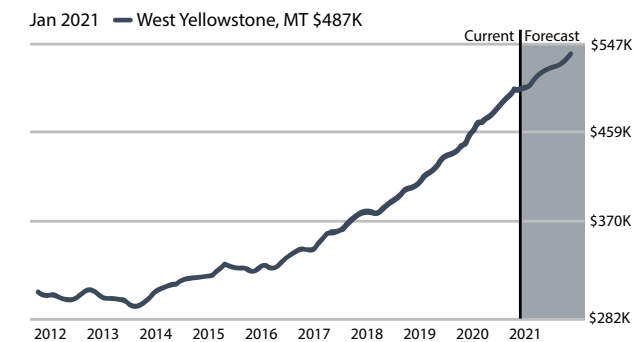
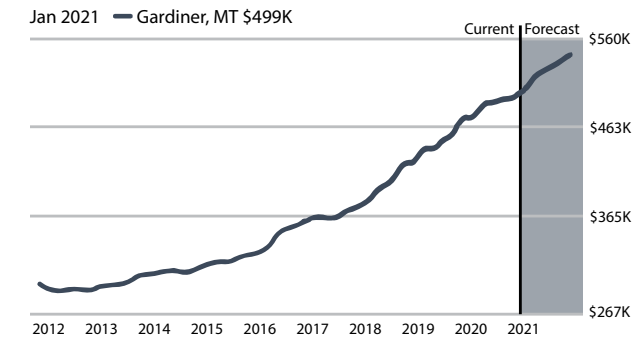
Current condition



Before and after



Gateway Community Market Trends



Gardiner, Montana

Data through January 31, 2021

\$499,867 Average value

↑ 7.0% 1-year forecast

West Yellowstone, Montana

Data through January 31, 2021

\$487,355 Average value

↑ 10.7% 1-year forecast

Comparison Market Trends

Denver, Colorado

Data through January 31, 2021

\$498,911 Average value

↑ 7.3% 1-year forecast

Improving Employee Housing

Goal 4: Increase Housing Capacity

The lack of available and affordable housing in surrounding communities substantially impacts workforce recruitment and retention. Over the past decade, housing prices (purchase and rental) have risen dramatically in communities surrounding Yellowstone. Many of these communities have transitioned to short-term rental markets, making year-round rentals rare and expensive. As increasing portions of the Yellowstone workforce retire, the lack of housing in surrounding communities has made recruiting replacement positions difficult.

The main gateway communities of Gardiner, Montana and West Yellowstone, Montana have median housing averages that exceed major metropolitan areas like Denver, Colorado. In communities around Yellowstone, average home values are over 100% higher than the national average—Gardiner and West Yellowstone were \$499,867 and \$487,355 in March 2021, respectively. Average home values in secondary gateway communities like Livingston, Montana (55 miles from park) are 33% higher than the national average and have increased nearly 10% in the last year, making this option less viable for the future.

Key Points:

- The average salary for a Yellowstone permanent employee is \$65,666.
- Many retirement-eligible employees purchased houses in the 1990s when housing prices were 500% lower than current. Housing capacity will need to increase as the workforce retires—new employees cannot afford housing that averages nearly \$500,000.
- Yellowstone employees are in the “Rest of U.S.” locality pay category and receive thousands less per year than employees living in comparable market metropolitan areas.
- Online rental searches for the gateway communities of Yellowstone in March 2021 resulted in zero matches.

Median Home Listing Prices

March 2021

Primary Gateway Communities

- Gardiner, Montana – \$887,000
- West Yellowstone, Montana – \$475,000
- Cooke City, Montana – \$629,000

Secondary Gateway Communities

- Emigrant, Montana (30 miles) – \$725,000
- Livingston, Montana (55 miles) – \$397,000
- Bozeman, Montana (80 miles) – \$685,000



Wildland Fire / Emergency Operations Center

“The summer can be extremely busy and stressful at times, but when I’m able to coordinate a life flight, a search and rescue helicopter, or other resources to help a person in need—those are the days that make it all worth it.” – Laura Dooley, Dispatcher



“This cannot be the future of Yellowstone’s communications.” – Cam Sholly, Superintendent

Expanding telecommunications infrastructure over decades on Mount Washburn Fire Lookout

Improving Parkwide Communications and Connectivity

Quality communications and connectivity are essential parts of managing Yellowstone. With a combined NPS and partner workforce exceeding 4,000 and an average annual visitation level of 4 million, the park relies heavily on its communications network for public safety, daily communications, business operations, employee recruitment and retention, and visitor experience.

Current Network Infrastructure

The park’s current communication network is largely antiquated, unreliable, slow, and is dependent on equipment installed over decades on mountaintops and in the backcountry. While most developed areas in the park have some level of connectivity, download speeds average 1.5 to 3Mbps. For comparison, modern fiber optic offers speeds up to 1 gigabyte (1,000Mbps).

Internet and Telecommunication Goals

- Ensure reliable radio communications across the park for public and employee safety.
- Reverse resource degradation by pursuing communications upgrades that allow for the removal of antiquated communications infrastructure from mountaintops and backcountry sites.
- Improve broadband options within developed areas to support employee communications, business operations, and visitor experience using the best available technology, least resource-impacting methods, and lowest cost.

Verizon Wireless LTE Upgrades

Less than 8% of Yellowstone currently has cellular coverage. While the park does not have plans to expand cellular coverage, permits have been issued to upgrade the poor bandwidth for existing cell sites.

Fiber Optic Network Installation

Yellowstone is undergoing the required environmental compliance to evaluate a proposal to extend the fiber optic cable from Grand Teton National Park 187 miles along the existing Yellowstone road corridor. The proposed fiber optic network would have the capacity to carry a nearly infinite amount of data and voice services to existing communications network sites. Up to 1 gigabyte speeds (1,000Mbps) would be the standard in developed areas only. If approved, fiber optic would provide a pathway to remove current infrastructure located on mountaintops and in the backcountry.

Satellite Internet for Employee Housing

Multiple locations in the park have no cellular or Internet connection for employees. In 2019-2020, Yellowstone piloted satellite Internet in several of these areas, including Madison and Norris. This proved to be a viable alternative to give employees Internet access and will be expanded in 2021 to cover Northeast, Lamar, and Tower.

Broadband to West, Gardiner, Old Faithful, and Lake

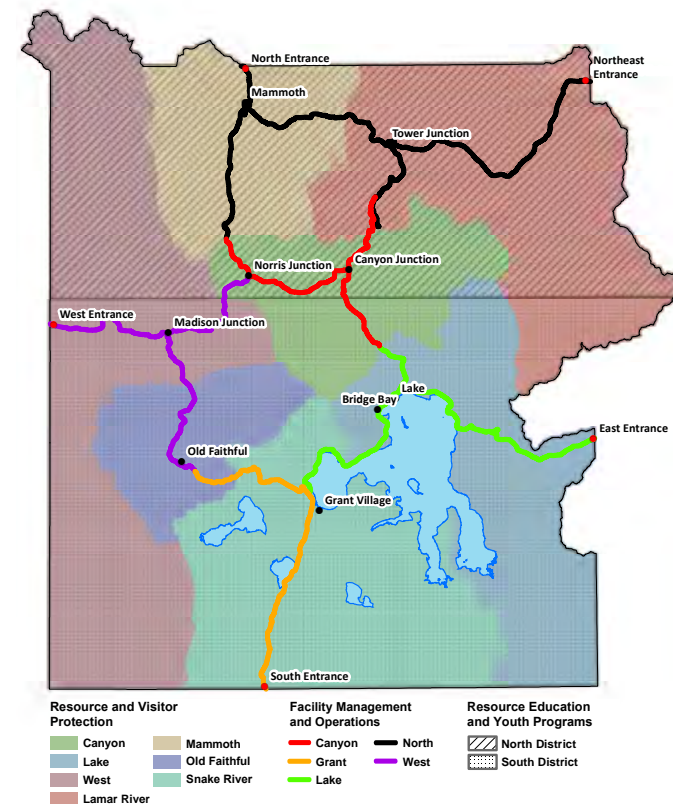
Until a long-term solution is determined, Yellowstone will continue using existing infrastructure to maximize available bandwidth to interior locations. In 2020, fiber broadband (100Mbps) Ethernet connections were installed at the Heritage and Research Center in Gardiner, Montana, and at NPS facilities at the West Entrance. These circuits replaced the legacy 1.5Mbps T1 circuits and are up to 66 times faster.



Improving Our Operating Structure

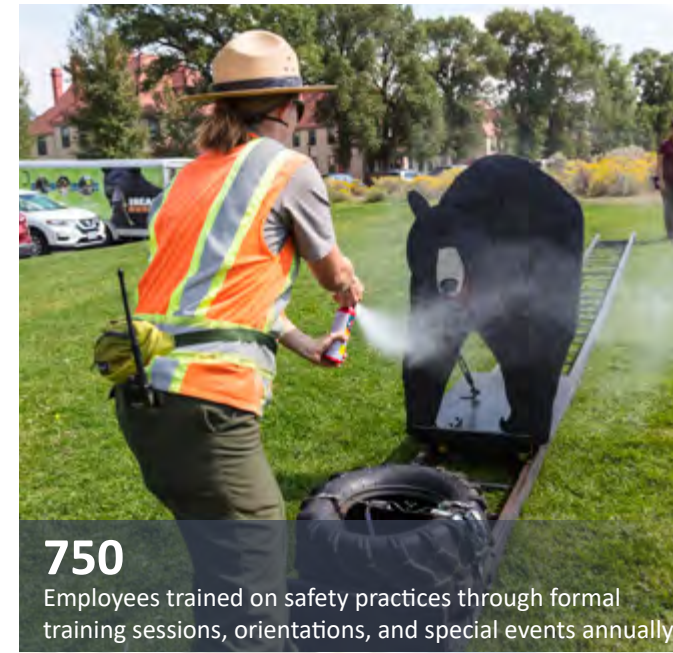
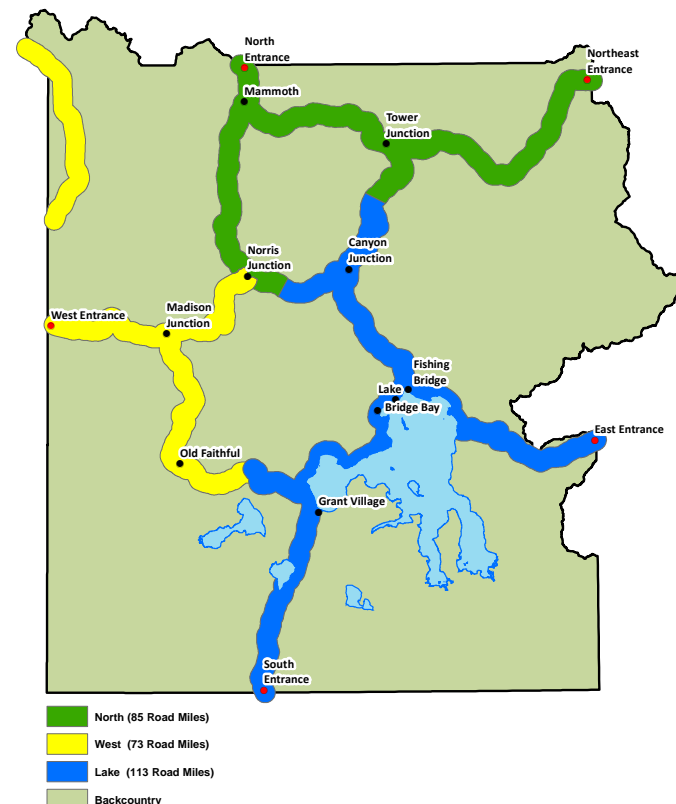
Previous Operating Structure

Yellowstone's operating divisions previously functioned in a misaligned structure consisting of 14 districts, many with different geographic boundaries and disparity between leadership levels within divisions. As an example, the park's Resource and Visitor Protection division operated with seven districts, the Facilities Management and Operations division with five, and the Resource Education and Youth Programs division with two. This structure was largely unaffordable and not conducive to interdivisional communications or resource sharing.



New Operating Structure

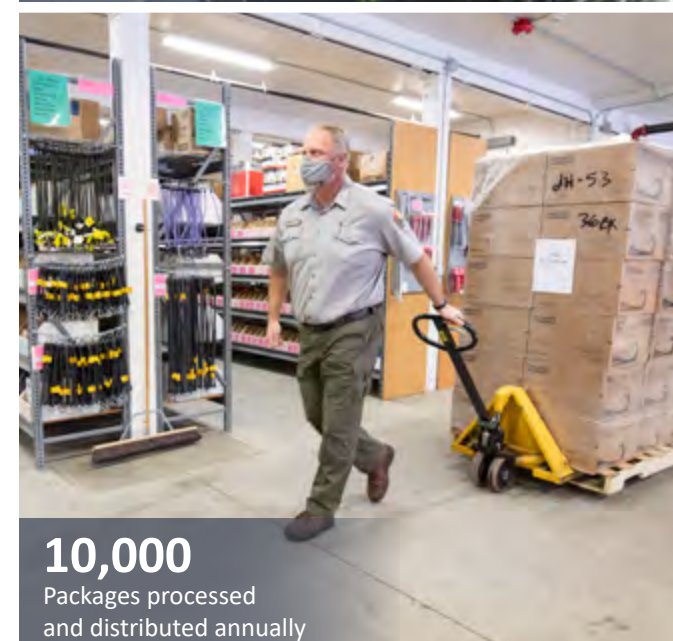
In March 2020, Yellowstone implemented a new field structure. The previous 14 districts were consolidated into three frontcountry districts and one unified backcountry district. All operating divisions now have the same number of districts, same boundary lines, and same leadership levels. This new structure has allowed for greater sharing of resources, improved communications across district boundaries, and is maximizing the use of staffing capacity. The park realized nearly \$1 million in savings, which is being reinvested into key positions across divisions.



750
Employees trained on safety practices through formal training sessions, orientations, and special events annually



1,000+
Vehicles maintained in the Yellowstone fleet annually



10,000
Packages processed and distributed annually

Supporting Our Team

Safety and Wellness Program

Yellowstone recently filled the second of two Occupational Safety and Health professional positions. In addition to providing daily support to employees and supervisors, the Safety Services Office conducted safety engagements with divisional work groups, developed an Operational Leadership key points summary distributed agency-wide, and hosted several after action reviews to create lessons learned products for distribution. The park Employee Safety and Wellness Team coordinated projects such as health fairs and safety days, purchased fitness equipment for employees, served on Critical Incident Stress Management peer support groups, served on Yellowstone's COVID-19 Incident Management Team, assisted with COVID-19 and implementation of personal protective equipment, and expanded the park Respiratory Protection Program to meet the exponentially increasing need for respirator fit testing due to the COVID-19 pandemic. The Safety Office also prepared a draft safety action plan to improve safety performance across the park.

Water and Wastewater Treatment Operations

Yellowstone's water and wastewater teams produced nearly 400 million gallons of clean water and treated over 400 million gallons of wastewater in 2019-2020 in 14 different systems throughout the park. Water production dropped 24% and wastewater treatment dropped 48% in 2020 compared to 2019. These drops are likely due to few overnight accommodations open in the park in 2020.

Garage and Fleet Operations

Yellowstone has one of the largest vehicle fleets in the NPS, including snowmobiles, snow groomers, snowplows, dump trucks, ambulances, and firetrucks. The garage provides a wide spectrum of services ranging from basic oil changes and tire rotations to comprehensive engine rebuilds to ensure Yellowstone's team can operate effectively. The garage team completed thousands of service requests across the entire fleet in 2019-2020.

Craft Shops

Yellowstone's expert teams of carpenters, plumbers, and electricians handled hundreds of calls for service in 2020. The craft shop teams worked diligently to help improve the condition of employee housing (see Pages 9-13), improve visitor experience in key locations like Canyon Village, and make progress in a variety of other critical project areas.

Central Warehouse Operations

Park employees rely on the warehouse for delivery of critical supplies and materials needed to operate the park. Yellowstone's warehouse operations provide a central repository and distribution center for employees throughout the park, processing well over 10,000 packages annually. The warehouse team also managed over 12,000 property assets valued at over \$50 million in 2020.



115,234
Fire detection systems
requiring annual inspection



20,500
Mail and parcel items
delivered to employees

Supporting Our Team

Technology Services

Information Technology and Telecommunications Services maintains a complex data and voice communication network that connects interior locations to headquarters. The network supports 800 computers, 1,265 phone lines, 60 servers, 200 network routers and switches, and 100 terabytes of storage located on several servers throughout the park. The park also inspects, tests, and maintains 292 fire and security systems with over 115,000 smoke, heat, and carbon monoxide detectors, 500 pull stations, 230 motion detectors and panic alarms, five clean agent suppression systems, 67 premise security systems, 63 combination fire and security systems, 12 building access control systems, and 11 video security systems with 176 cameras. The radio shop maintained over 1,000 portable radios, over 800 mobile radios, four radio systems, each with at least one backup channel, eight mountaintop repeaters, 20 radio base stations, 14 dispatch consoles, and nine microwave radio network links.

Technology Services provides technical support through in-house staff and contracts for systems that maintain the Yellowstone Interagency Communications Center and Public Safety Access Point. Systems supported include an enhanced 9-1-1 call taking system, a 9-1-1, radio, and phone recorder, alarm central station monitoring system (for NPS and partners), Computer-Aided Dispatch, and switch-operated administrative phone lines.

In 2019-2020, a combined 1,264 team members were onboarded. Technology services issued building access identification cards and access codes, activated network and email access, enrolled and issued Personal Identity Verification cards, provided desk and mobile phones, and programmed and issued portable radios for all employees.

Mail Courier Operations

During the winter, hundreds of employees and family members work and live in isolated areas throughout the interior of the park with no postal service delivery due to oversnow travel conditions. Yellowstone's mail courier becomes the postal delivery mechanism for park employees. The courier travels 150 miles by oversnow vehicle two times per week delivering an estimated 20,500 pieces of mail and parcel items to employees and family members each winter.

Procurement and Human Resources Services

The park hires hundreds of people each year and relies heavily on the Servicing Human Resources Office (SHRO) to ensure hiring actions are processed and team members are onboarded in a timely fashion. The SHRO team processed hundreds of hiring actions in 2019-2020.

The park's Major Acquisition Buying Office (MABO) executed over \$40 million in contracts for Yellowstone in 2020. From housing improvements to a wide range of other major contracts, the MABO helped the park contract for important supplies and services.

Mail and Copy Room

The Mailroom and Copy Center operations processed 41,000 pieces of incoming and outgoing mail in 2020 and serves as a critical support unit for park operations and programs. The center also completed 887 document printing jobs totaling over 550,000 pages for all divisions.

Financial Summary

Yellowstone Appropriated Budget

- Yellowstone's budget is the largest in the NPS.
- The park has received substantial financial assistance to improve employee housing and address deferred maintenance projects across the park over the past two years.
- The park's appropriated budget (used primarily for operations) was \$35 million in 2010 and \$37 million in 2020. Over the same period, visitation has increased as much as 20% in some years while full-time staffing remained flat.

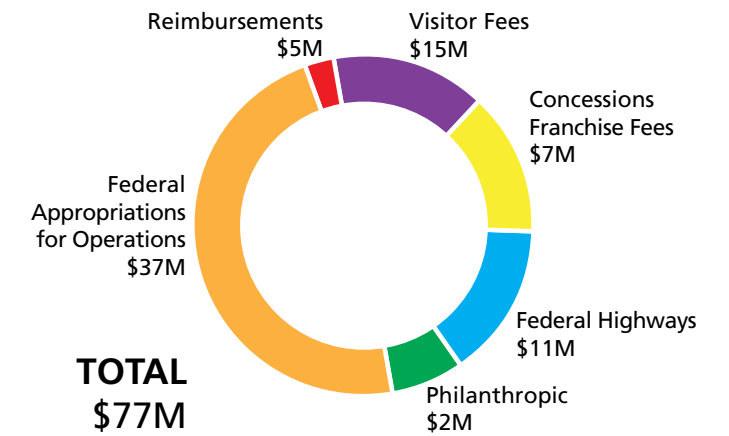
Yellowstone Commercial Services

- Yellowstone has the largest commercial services portfolio in the national park system.
- The park oversees concessions contracts that include nine hotels, 36 food services establishments, 12 general stores, eight gas stations, 24 oversnow operators, 40 backcountry outfitters, and over 250 commercial use authorizations.
- The park retains a percentage of gross revenues that are invested in visitor service-related projects and operations.

Visitor Fee Revenue

- The park by law retains 80% of collected entrance fees.
- The park receives additional revenues from other fee sources, including fishing licenses, campgrounds, and other special use permits.

2020 Financial Resources



\$6.9 Million

Reduction in fee revenue
in 2020 due to COVID-19

\$0.10

Average American taxpayer
yearly contribution to
Yellowstone budget

\$2.91

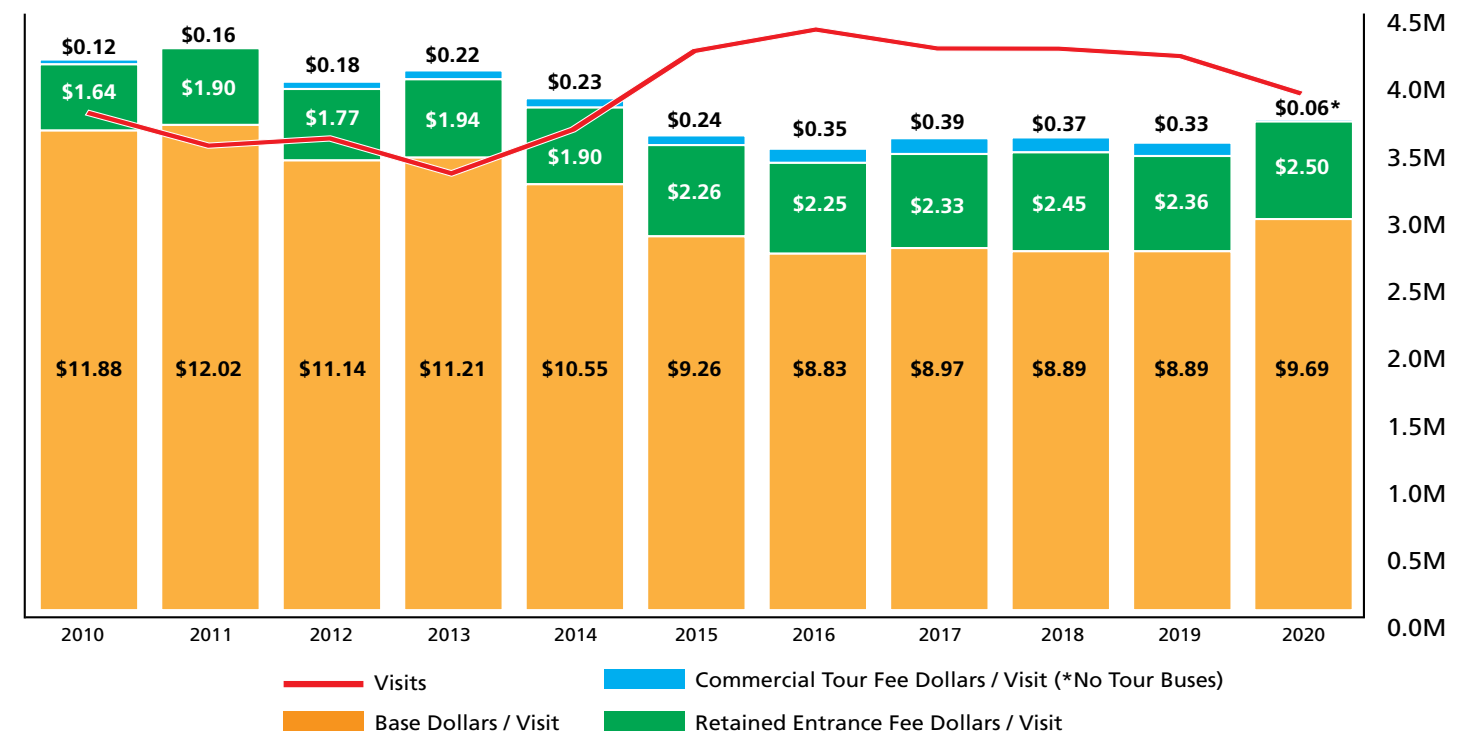
Average cost per person
per day for a family of
four at current fee level

\$647 Million

Spent by Yellowstone
visitors in surrounding
communities in 2019

Dollars Spent per Visit

Base + Entrance Fees + Commercial Tour Fees / Visit (2020 dollars)





Strengthening the Yellowstone Ecosystem & Heritage **RESOURCES**

This goal centers on taking the actions necessary to strengthen, preserve, and protect Yellowstone’s wide-ranging resources. The park is committed to being a world leader in promoting large landscape conservation, understanding and responding to the impacts of climate change, protecting resources from increasing visitor use, and maintaining a robust scientific and research capacity to inform resource-related decisions.

Resource Conservation Efforts

Expanding the Bison Conservation Transfer Program

Yellowstone established a bison quarantine program in 2017 as a way of transferring brucellosis-free bison to tribal partners. This largely successful program has reduced the number of bison shipped to slaughter each year but needs to be expanded to facilitate larger numbers. Success of the program is largely tied to the partnership efforts of the State of Montana, American Indian Tribes, Department of Agriculture, and various nonprofit entities supporting this effort. While the program has largely been funded to date with government funding, the park is exploring options to expand the program with a combination of government and philanthropic dollars.

Key Actions:

- During 2019-2020, in collaboration with partners, the park sent 104 brucellosis-free bison that completed quarantine testing in the Bison Conservation Transfer Program to the Fort Peck Tribes for one year of assurance testing and eventual release.
- The park is partnering with Yellowstone Forever and the Greater Yellowstone Coalition to increase capacity of the transfer program in the future by an additional 250%. This lowers the number of transfer-eligible animals sent to slaughter by more than half and increases the number of bison transferred to new areas from 30 to 80 animals per year. Yellowstone and its partners will invest up to \$1 million in the upcoming years to improve infrastructure and staffing to support the expanded program.
- The park also assisted the Fort Peck Tribes and InterTribal Buffalo Council with the transfer of 40 bull bison of Yellowstone origin from the reservation to 15 American Indian tribes across the United States.

Yellowstone Bison Management Plan

To help guide bison management within Yellowstone over the upcoming decades, Yellowstone is initiating a new Bison Management Plan and preparing a preliminary range of alternatives and impact analyses. The park has established cooperating agencies, initiated tribal consultation, completed the Initial Action Notice, and prepared a Notice of Intent for the Federal Register. This adaptive plan will evaluate management actions within the park primarily and will also consider actions occurring on lands outside the park in Montana. The park will continue working within the current Interagency Bison Management Plan framework and will also continue working closely with tribes to honor Trust responsibilities. The NPS does not have jurisdiction or control over actions such as hunting or tolerance for bison beyond the park boundary.

Bison Research

Yellowstone continued extensive scientific research and data collection in 2019-2020 on bison grazing and grassland health. Outreach efforts of the program included the acceptance of a staff-authored article into the Proceedings of the National Academies of Sciences, presentations to the American Bison Society and Society of Range Management, and interviews with numerous media outlets.



104

Brucellosis-free bison transferred to American Indian Tribes in 2019-2020

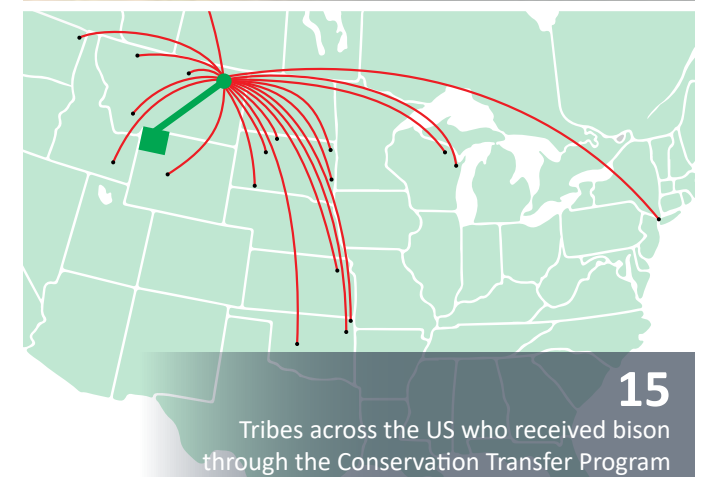


\$1 Million

Investment to expand the Bison Conservation Transfer Program



NPS team at Fort Peck Reservation with Assiniboine and Sioux Tribal members after successful bison transfer in 2019





123
Wolves in nine packs noted in 2020 indicating a stable population



700+
Estimated number of grizzlies within the Greater Yellowstone Ecosystem in 2020

Resource Conservation Efforts

Wolves

The Yellowstone wolf population increased from 94 to 123 in 2020. The wolf population spans nine packs across the park and includes eight breeding pairs. The Junction Butte, 8-Mile, and Wapiti Packs account for approximately 76 of the estimated 123 wolves in the park. All had good “pup” production and good survival rates in 2020.

Yellowstone celebrated the 25th anniversary of the wolf reintroduction by hosting a series of live broadcasts and releasing a comprehensive book, “Yellowstone Wolves: Science and Discovery in the World’s First National Park,” authored by Yellowstone wolf biologists and partners, which synthesizes the science and tells the story of the wolves’ return to the park.

Cougars

Yellowstone used genetic samples to estimate 34 to 42 cougars living across northern Yellowstone from 2014-2017. Monitoring efforts underway in 2020 will aid in updating this estimate. The park fit eight cougars with GPS radio collars to monitor predation and searched 250 clustered locations to identify the remains of 74 prey. Cougars fed primarily on elk and mule deer, with some use of bighorn sheep and pronghorn. The return of cougars is another major conservation success story in Yellowstone.



34-42
Cougars in the northern range estimated in 2020



304
Songbirds banded in 2020 belonging to 30 species

Grizzly Bears

Yellowstone implemented the Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Ecosystem to achieve population, habitat, and conflict prevention standards, which sustained a population of more than 700 bears within the Greater Yellowstone Ecosystem.

The park installed about 555 bear-proof food storage boxes in frontcountry campsites over the past five years to prevent bears from accessing human foods and increase visitor safety. Approximately 75 were installed in 2020. The park is actively partnering with Yellowstone Forever and needs to install another 800+ bear boxes in frontcountry campsites across the park.

The park worked closely with the U.S. Forest Service and U.S. Fish and Wildlife Service to develop site standards to protect and secure habitat for grizzly bears and minimize disturbance and human-caused mortality.

Birds

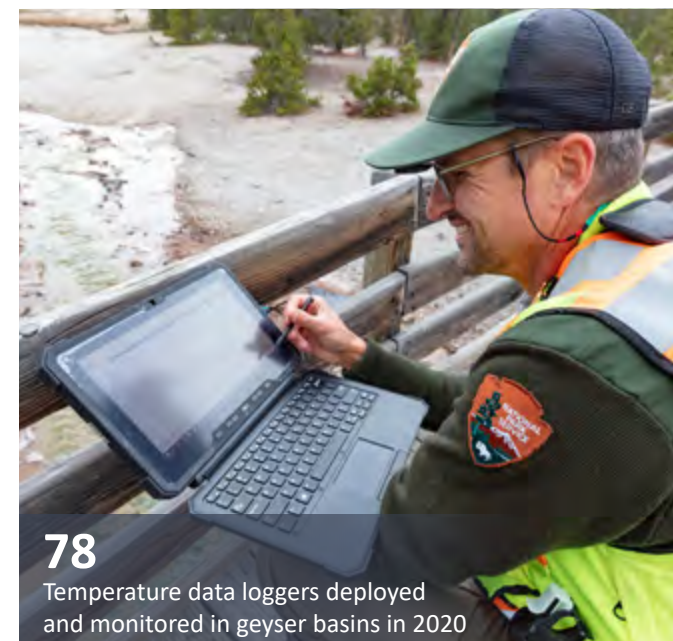
Yellowstone team members banded 304 songbirds belonging to 30 species at summer and autumn banding stations. The program also counted 3,335 birds of 89 species during the International Breeding Bird Survey and monitored 112 raptor nests of bald and golden eagles, osprey, and peregrine falcons.



52
Miles of road corridor surveyed for wetlands in 2020



5.2 Million
Automated streamflow measurements collected in 2020



78
Temperature data loggers deployed and monitored in geyser basins in 2020

Resource Conservation Efforts

Wetlands

Yellowstone reported one new native plant species for the park in 2020. There have been no new reports to the flora since 2018. Crews completed final wetland delineation surveys on the Tower to Northeast road corridor (26 miles) and preliminary wetland surveys for the Canyon to Fishing Bridge road corridor (26 miles). Crews also completed 113 wetland surveys at Old Faithful to support fuel reduction work for the Lone Star Fire and completed and compiled data from wetland surveys at Grant (65.5 acres) for a fuel reduction treatment.

Planning, Compliance, and Social Sciences

In 2020, the team completed two environmental assessments, initiated an Environmental Impact Statement on bison management, began a long-range planning process for Midway Geyser Basin, issued 119 research permits, and completed three formal consultations on the Clean Water Act. The Social Sciences team helped collect 120 days of data on visitor impacts to help inform the park’s visitor use management strategy.

Science Communications

Yellowstone Center for Resources’ Science Communications Office designed and published annual reports for the wolf, bear, bird, and native fisheries programs in 2019. The office distributed over 9,300 copies of Yellowstone Science, which included an issue focusing on the park’s overall health. (Vital Signs issue). Yellowstone Science transitioned to a digital format in 2020. Populated articles can be found at: www.nps.gov/YellowstoneScience.

Hydrology

Yellowstone surveyed more than 200 wells and collected water chemistry samples to monitor drinking water supplies and other park resources. The status of critical water infrastructure is now known for the first time in decades. In collaboration with Grand Teton National Park, U.S. Forest Service, and the U.S. Geological Survey, Yellowstone staff collected critical flow data for the Snake River within Yellowstone and Grand Teton National Parks. The Snake River was designated a Wild and Scenic River under the 2008 Craig Thomas Snake Headwaters Legacy Act.

Geology

Yellowstone acquired high-resolution LiDAR data for the entire park through the U.S. Geological Survey (USGS) 3D Elevation Program. The data will be processed over the next months and available within a year to inform infrastructure as well as cultural and natural resource work.

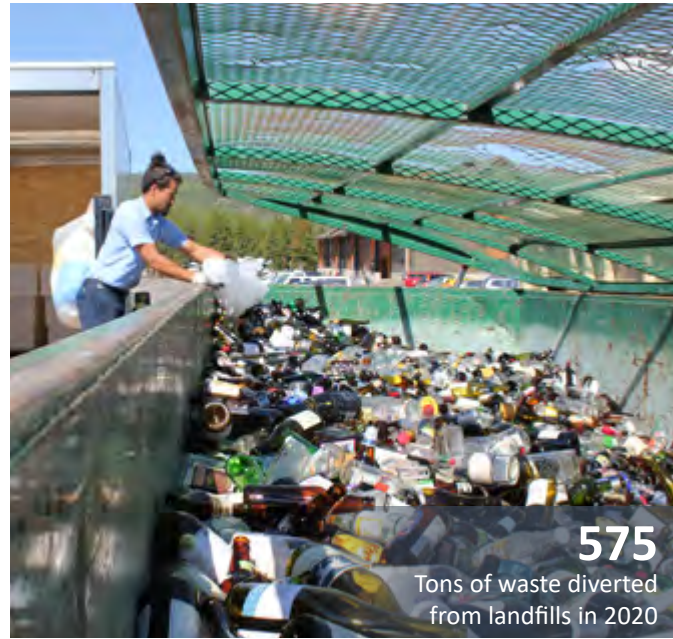
The geology program collaborated with the NPS Geologic Resources Division, the Department of Earth Sciences at Montana State University, and researchers at USGS to create and publish the geologic map of Yellowstone National Park. The map will be published in time for the park’s sesquicentennial in 2022.

Sustainability Efforts

Yellowstone's sustainability program extends the park's commitment to environmental stewardship to include and mitigate the impacts of our own facilities and operations by focusing on reducing greenhouse gas emissions, waste, and the consumption of water and energy.

Waste and Recycling

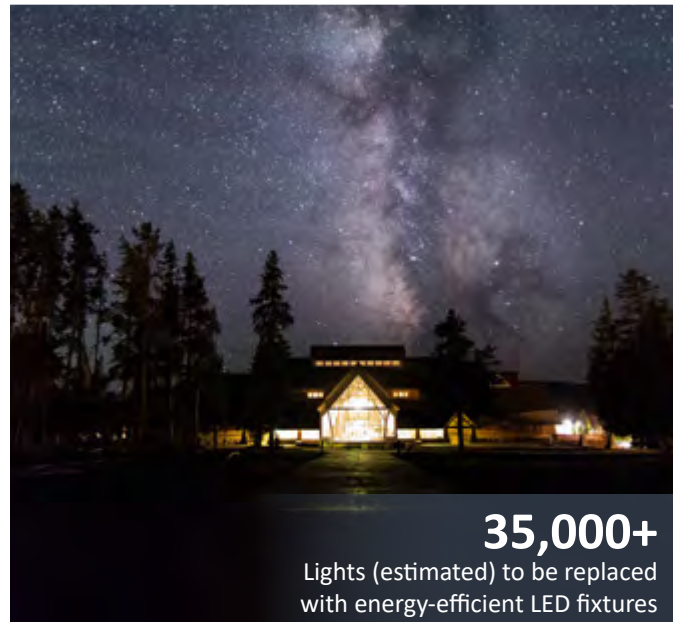
Yellowstone has worked closely with its concession partners to divert nearly 50% of its municipal waste from landfills. Generating over 4,000 tons annually (2020 saw a drop in the diversion rate due to COVID-19 and the reduction of park hotel and camping accommodations), the waste program involves collecting and hauling waste from developed areas of the park to a facility in West Yellowstone and managing a recycling contract, hazardous waste, and propane canister crushing programs. In 2021, Yellowstone plans to contract with a consultant to undertake an environmental and economic analysis of its waste program to improve waste diversion, increase program efficiencies, and reduce costs.



575
Tons of waste diverted from landfills in 2020

LED Retrofit Initiative

Modern LED lights consume 85% less energy than their incandescent counterparts and 50% less than fluorescent lights installed only 10 years ago. In addition to replacing lamps with LEDs opportunistically, staff completed an assessment in 2020 for all outdoor lights that need updating for dark sky compliance. Of the 2,000+ inventoried, half will need a fixture or bulb change. In 2021, staff plans to implement an aggressive parkwide plan for LED upgrades, which includes an estimated 35,000+ indoor lights in NPS-managed buildings.



35,000+
Lights (estimated) to be replaced with energy-efficient LED fixtures

Renewable Energy

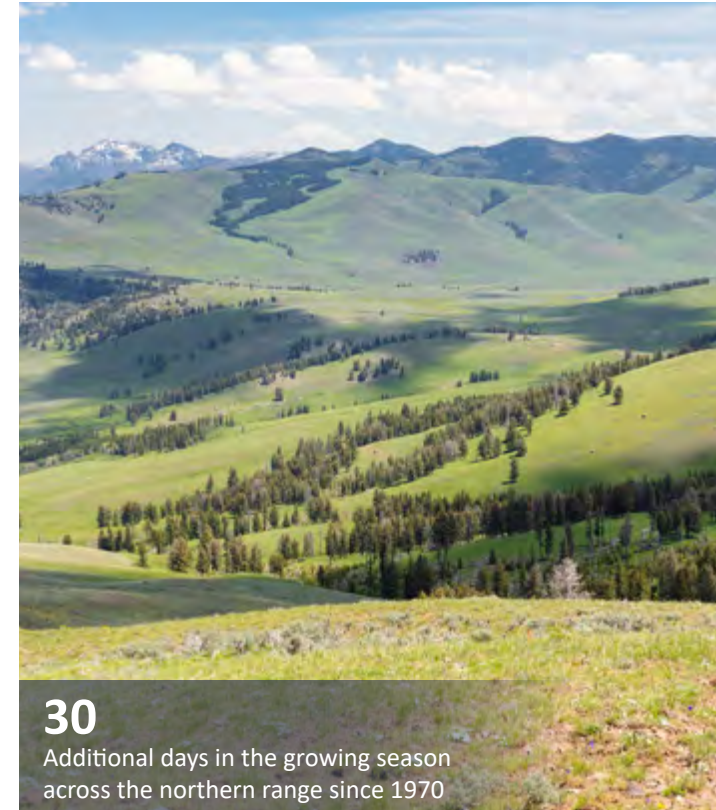
In partnership with Yellowstone Forever, Yellowstone continues to maintain the Lamar Buffalo Ranch microgrid that produces approximately 4.3 KW per hour from solar and hydro. In Mammoth, a hydroelectric generator tied to the main grid saves over \$80,000 in energy costs every year. In 2020, project managers worked with Northwestern Energy to install and activate an off-grid solar system at West Thumb, which generated 3.12 MWH of energy in six months. The installation cost was roughly one-third of what it would have taken to connect this facility to the traditional utility grid. A new solar array will be installed in 2021 to supply power to the Bechler Ranger Station, one of the most remote areas in the Lower 48 states.

Electrifying our Fleet

The recent Executive Order 14008 "Tackling the Climate Crisis at Home and Abroad," aims to revitalize the electrification of federal fleets. Yellowstone plans to assess opportunities for its fleet with an increasing variety of options available from manufacturers. In 2021 the park will pilot an electric vehicle (EV) shuttle system at Canyon (Page 33). In addition to the park's existing 13 EV charging stations, we are engaged with Xanterra, Northwestern Energy, and Yellowstone Park Service Stations to increase EV charging stations around the park.



13
Electric vehicle charging stations located throughout the park



30
Additional days in the growing season across the northern range since 1970



7
Climate monitoring sites maintained in the park

Threats to the Yellowstone Ecosystem

At 3,500 square miles, Yellowstone National Park forms the core of the Greater Yellowstone Ecosystem—one of the largest, nearly intact, temperate-zone ecosystems on Earth. To protect this ecosystem from an increasing number of threats, continuous planning and adaptation are needed into the foreseeable future.

Northern Range Management Plan

Yellowstone is developing a Northern Range Management Plan to provide management direction to establish and achieve a unified vision for what the Northern Range grazing ecosystem should be, including desired future conditions for the herbivore-based food web and functional systems regulated by the dynamics of that food web. The plan will identify threats and anticipate necessary management decisions over the next decade to maintain desired functional states.

Understanding and Responding to Climate Change

Yellowstone continues to document current climate trends by acquiring and analyzing the best regional climate data and making it available to staff and the public. In 2020, the park maintained over 25 weather stations in partnership with the National Weather Service and the Natural Resource Conservation Service. The park continues to work on better methods and metrics to identify and respond to climate change impacts using science, research, and data to drive management decisions relating to resource impacts.

The park is working to develop a more robust climate impact analysis modeling tool to provide managers with potential climate change scenarios that can help inform management decisions in the future.

Key Points:

- The park is contributing to a high-priority planning effort to develop a management plan for Yellowstone's Northern Range by identifying a range of impacts from climate change and working with the planning team to develop adaptation strategies for vulnerable vegetation, wildlife, and ecosystem processes.
- Yellowstone is partnering with other federal agencies within the Greater Yellowstone Ecosystem area to plan a regional, multi-agency aquatic resource workshop to develop, share, and implement cross-boundary climate change adaptation strategies to preserve cold-water fisheries and the interconnected hydrologic system throughout the ecosystem.
- To better understand species' response to climate change, Yellowstone is studying insect species with different physiologies, behaviors, and seasonal timing. The research occurs along a 4,500-foot elevational gradient at seven long-term ecological monitoring sites in the northern section of the park. Equipment at each site continuously monitors weather, soil conditions, the soundscape, snowpack, and plant phenology.
- Between 2018 and 2020, a team of NPS staff, U.S. Department of Agriculture scientists, and citizen science volunteers collected ground beetles, ants, and grasshoppers to establish baseline inventories for these important insect groups. The data generated will provide critical information for focal species and inform larger trends that may be incorporated into climate adaptation response planning.
- The park is evaluating changes to the ecosystem using current monitoring sites and aerial and ground surveys.

Threats to the Yellowstone Ecosystem

Nonnative Lake Trout

In 2020, Yellowstone and its contract fishermen gillnetted 326,000 nonnative lake trout from Yellowstone Lake and deposited 33,000 pounds of soy/wheat pellets on spawning sites to kill embryos. About 3.7 million nonnative lake trout have been killed via gillnetting in Yellowstone Lake since 1995, with a 79% decrease in mature lake trout since 2012. There has been a corresponding rebound in numbers of native cutthroat trout, but intensive suppression is needed for at least four more years to ensure protection of this native species and the millions of dollars spent to date.

Stream Restoration

In 2020, Yellowstone fisheries biologists treated 5 stream miles in the Upper Gibbon River to remove nonnative brook and rainbow trout and restored 15,790 native westslope cutthroat trout embryos to incubators in tributaries. Since 2006, staff have treated 84 stream miles and 281 lake acres and reintroduced 168,000 westslope cutthroat trout, 418,000 arctic grayling, and 3,100 Yellowstone cutthroat trout to native fish restoration project areas. Monitoring indicates treatments are working and surveys show no nonnatives in large stream reaches.

Wildlife Health

Yellowstone's Wildlife Health Program analyzed 76 waterbodies and 3,785 samples for amphibian disease (chytrid fungus and ranavirus) to determine disease incidence in the park. Yellowstone tested 63 bats for the fungus causing white-nose syndrome (WNS) and all tested negative. Monitoring continues to be important as WNS continues to move westward. Yellowstone's Wildlife Health Program tagged 383 female little brown bats using encoded microchips and detected over 1.5 million movements of bats using radio frequency identifications of microchip-tagged bats. Yellowstone recently published research evaluating these movements.

Increasing Visitation

Visitation has increased substantially over the past decades. Although the vast majority of visitor impacts occur within the road corridor and developed areas, about 7% of the park, Yellowstone is developing a new visitor use management strategy (see Pages 31-33) that focuses heavily on better understanding and responding to visitor impacts on resources across the park. The park's primary goal in this area centers on developing a cogent strategy and correlating actions around visitor use management. Our emphasis will continue to work toward preventing and mitigating resource damage in areas of high visitor use, reducing impacts on staffing, operations, and infrastructure, improving visitor experience, and working with partners and communities to address these challenges at a regional scale. Protecting Yellowstone's resources is the predominant goal in this strategy. The park is also ensuring that actions we take today not only address today's visitation impacts, but work to protect resources in the future.



608,912
Nonnative lake trout
killed in 2019-2020



72,790
Native fish fingerlings, fry, and
eggs reintroduced in 2019-2020



3,785
Samples taken for amphibian disease
in 76 different waterbodies in 2018-2020



14,360
Acres of invasive plants
inventoried in 2019-2020



7,577
Watercraft inspected
in 2019-2020

Threats to the Yellowstone Ecosystem

Invasive nonnative plants continue to be highly challenging to the park's native resources. They can displace native plant species, including some endemic to the park's geothermal habitats, change the nature of vegetation communities, and affect fire frequency and the distribution, foraging activity, and abundance of wildlife. These changes can profoundly impact the entire ecosystem. In addition to 1,160 native plant species, 225 nonnative species have been documented in the park.

Terrestrial Invasive Species

In 2019-2020, crews inventoried 14,360 acres of invasive plants, treating 135 acres with herbicide and manually pulling 5.5 acres. Manual pulling efforts increased in 2020 to reduce distribution of seeds from mature exotic plants along the road in the construction zone between Tower and Mount Washburn.

Crews surveyed approximately 150 acres pre-treatment for the Grant Village fuels reduction project and surveyed an additional 55 acres post-treatment for the West Entrance fuels reduction project. Crews found only incidental occurrences of invasive plants at each location.

The program implemented new data recording methods for invasive plant treatment to align with the National Invasive Species Information Management System. Staff also designed, developed, and transitioned to tablet-based field data collection. These methods will streamline data management and field collection efforts.

Aquatic Invasive Species

In 2020, crews performed 4,077 boat inspections, a 9.4% increase from 2019. July, August, and September 2020 saw a noticeable increase of boats with a 6.6% increase, 2.9% increase, and 38% increase from 2019, respectively.

Park inspectors saw a 28% decrease in high-risk boats (used within 30 days and coming from states with known invasives), totaling 102 in 2020. Of these 102 boats, 27 were fully decontaminated. Park inspectors cleaned out (vacuumed, drained, sponged, or swept out) an additional 356 boats.

The program also stationed inspectors at Lewis Lake Ranger Station and spearheaded an interagency effort to station boat inspectors at Hebgen Lake. The Hebgen Lake station performed 324 watercraft inspections. Partners included the City of West Yellowstone, Montana Fish, Wildlife and Parks, and Custer-Gallatin National Forest.



Museum Collection

“It’s an honor to work with such an extensive collection. My favorite pieces to show visitors are the wolf skulls of 7F and 2M—the first naturally formed pack in Yellowstone after the reintroduction.” – Theiline Pigott, HRC Curatorial Intern



Historic design plans at Heritage Research Center



NPS archeologist excavating a test plot



Historic Mammoth Hot Springs Hotel



Before and after ranger patrol cabin renovation

Preserving Historic and Cultural Resources

Yellowstone is rich in historic and cultural resources. The park has 27 associated American Indian Tribes, 25 historic sites, landmarks, and districts on the National Register of Historic Places, with more eligible for listing. It has 1,930 known archeological sites, 300 ethnographic resources, more than 1.3 million museum items, and over 3 million archived documents from the park’s history. Each year, the park’s cultural resources team works in a variety of areas to ensure long-term protection of these critical resources. The park continues to engage American Indian Tribes to find ways to better honor their cultural heritage within the park.

Heritage and Research Center

The Heritage and Research Center houses nearly 1.2 million objects in the museum collection and over 3 million items in the archives and library collection. An additional 1,646 items were catalogued in 2020. The archives collection is an affiliate of the National Archives and the only national park unit designated as such.

Archeology

Although more than 1,930 archeological sites have been documented since the archeology program began in 1995, less than 3% of the park has been inventoried. In 2020, the archeology program performed 35 site condition assessments throughout the park.

Historic Structures and Cultural Landscapes

Yellowstone contains 845 historic structures, including 600 historic buildings. Most of the roads in the park are also listed on the National Register of Historic Places. There are 11 documented cultural landscapes in the park and seven have been determined eligible for the National Register of Historic Places.

Key Historic Preservation Actions:

- The park has received \$22 million to rehabilitate historic Fort Yellowstone through the Great American Outdoors Act. This project will be one of the largest historic preservation projects in the NPS in 2021.
- The park has received \$21 million to rehabilitate historic Laurel Dorm, which is part of the Old Faithful Historic District. This is another major historic preservation project funded through the Great American Outdoors Act.
- Yellowstone has 37 historic backcountry cabins, many used for over 130 years by the U.S. Cavalry and backcountry rangers. These historic cabins serve as essential structures for rangers across remote sections of the park. Yellowstone has renovated several cabins in recent years, but the majority still need substantial work. Preliminary condition assessments performed in 2019 estimate the park needs to invest approximately \$7 million to stabilize, repair, and improve all cabins in the inventory.
- The Yellowstone cultural resources team evaluated a large number of separate facility and resource-related projects in 2020, ensuring compliance with Section 106 of the National Historic Preservation Act.



Delivering a World-Class Visitor **EXPERIENCE**

This priority aims to provide clarity and direction around how the park will handle increased visitation in upcoming years—with special focus on visitor impacts on resources, staffing and infrastructure, visitor experience, and gateway communities. Importantly, the park is moving out of the data gathering phase and beginning to determine the appropriate short- and long-term strategies and actions necessary to protect resources, mitigate impacts of congestion, and improve educational, recreational, and other visitor enjoyment opportunities. These actions are wide ranging and include adjustments to our current visitation management approach along with potential alternatives for managing increasing visitation in the future.

Understanding Impacts of Increased Visitation

In 2019, Yellowstone developed a strategy to better understand and respond to impacts from increasing visitation. The strategy focuses on the following goal areas:

Visitor Impacts on Resources

The park is improving its methodologies and data collection to better understand the impacts of increased visitation on resources. While data indicates minimal visitor impacts on park resources in the majority of the park (outside road corridors and developed areas), limited impacts have been identified in some of the busiest areas of the park, including within the Old Faithful and Midway Geyser basins. Examples include social trails, human waste issues, and litter in thermal areas. In 2020, the park saw substantial increases in thermal trespassing in these corridors. The park is responding by increasing staff in high-use areas and is beginning a site redesign to better protect the Midway and Fairy Falls areas from increasing visitation and associated impacts. The park is also in the preliminary stages of evaluating more aggressive visitor use management actions that may be needed in the future, such as capping visitation access to certain sites using timed entry or other actions.

Visitor Impacts on Park Staffing, Operations, and Infrastructure

The park is working to understand how increasing visitation levels are impacting staffing and service levels, facilities, and infrastructure. Importantly, Yellowstone has been reevaluating staffing models and improving trails, boardwalks, and parking to adapt to changing visitation and use patterns.

Visitor Impacts on Experience

Recent surveys reveal that visitors to Yellowstone are largely satisfied with their experience in the park and roadway traffic does not negatively impact their experience. However, surveys also identified issues around restrooms, congestion, and parking in specific sites at peak season. The park has responded by directing additional resources to these areas and is exploring additional concepts to enhance visitor experience and access, such as a transit feasibility study and piloting an automated shuttle at Canyon Village in 2021.

Visitor Impacts on Gateway Communities

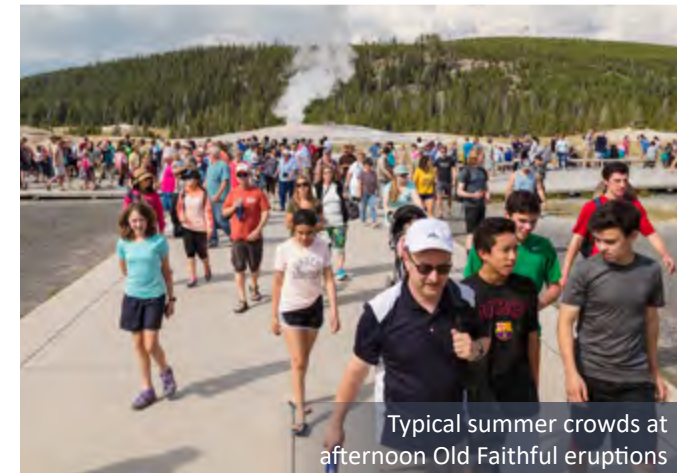
While increasing visitation can economically benefit surrounding communities, additional traffic and congestion has caused concern within communities at certain times of the year. The park works closely with communities to identify actions needed to alleviate congestion. As an example, Yellowstone recently partnered with West Yellowstone on a transportation study designed to help the community and park decision makers reduce traffic congestion approaching the West Entrance.



Graffiti carved into a thermal bacterial mat next to a boardwalk



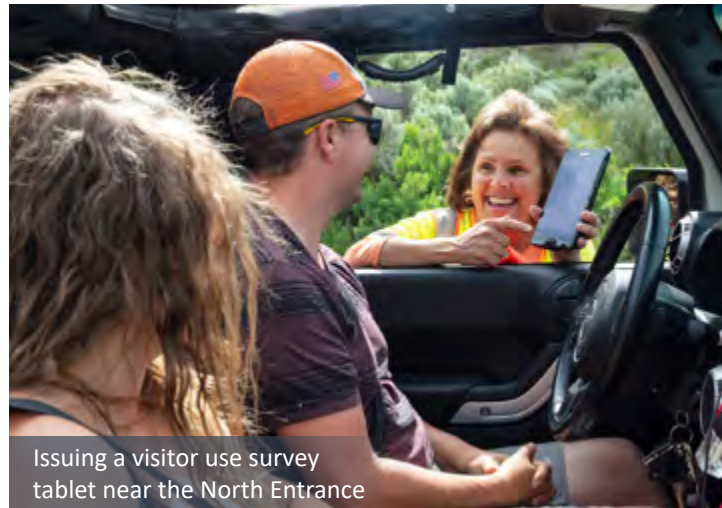
Deteriorating trail to Brink of the Lower Falls



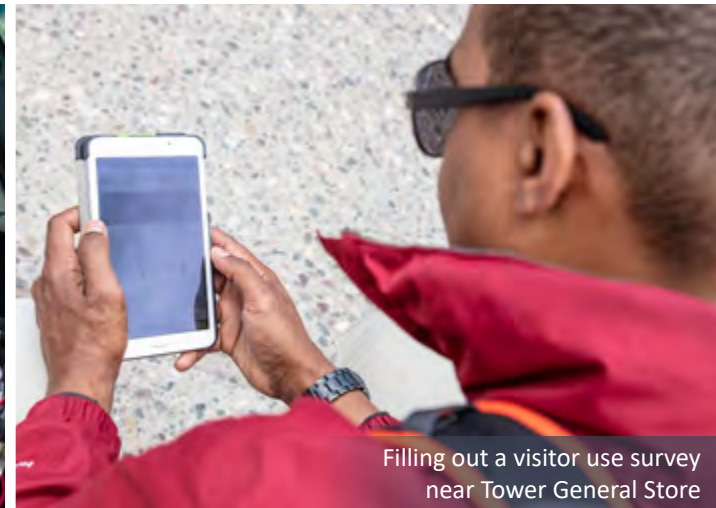
Typical summer crowds at afternoon Old Faithful eruptions



Vehicle lines stretching back to the town of West Yellowstone



Issuing a visitor use survey tablet near the North Entrance



Filling out a visitor use survey near Tower General Store

Understanding Impacts of Increased Visitation

The park conducted one of the most comprehensive visitor use surveys in the country in 2018, with over 7,000 participants providing valuable data and opinions. Beginning in 2019, the park began efforts to address visitor concerns in several notable areas.

Key points from 2018 Visitor Use Survey:

- Visitors to Yellowstone almost always rated their trip as good to excellent.
- Respondents were more likely to experience a greater sense of crowding, traffic congestion, and limited parking availability at Midway Geyser Basin and Fairy Falls.
- Of the more popular sites, respondents rated Old Faithful and Canyon Village the least problematic, likely due to sufficient infrastructure to support a high volume of visitors.
- Visitor experience and frustration ratings appeared to have little to no significant correlation with GPS-based average speeds across road segments in the park. Respondents were generally not frustrated, gave high experience ratings, and did not perceive major problems on roadways.
- First-time visitors were less critical of issues at specific sites compared to repeat visitors.
- The more days respondents spent in the park on their trip, the more likely they were to provide less favorable evaluations of visitor behavior.



Exploring new exhibits outside high-use areas



YCC member issuing a GPS unit near Fairy Falls Trailhead

Youth Citizen Science Monitoring

In 2017, the park began an on-going monitoring project to better understand visitor volumes, behaviors, and impacts at high-use attraction sites and, importantly, track these changes over time. Youth Conservation Corps (YCC) crews count numbers and densities of people and use GPS units to track how visitors use the area and instances of resource impacts. Park managers use this data to make decisions about where new strategies and tactics are needed to respond to increased and changing visitor use patterns, such as new restrooms, different infrastructure design, or additional staffing, signage, or education.

Yellowstone Visits by Year

- 2020: 3,806,305
- 2019: 4,020,288
- 2018: 4,115,000
- 2017: 4,116,524
- 2016: 4,257,177
- 2015: 4,097,710
- 2014: 3,513,484
- 2013: 3,188,030
- 2012: 3,447,729
- 2011: 3,394,326

Responding to Increased Visitation

Using data from the visitor use surveys and transportation studies, the park will focus on reducing impacts within the Midway Geyser Corridor, Old Faithful Geyser Basin, Norris Geyser Basin, and Canyon Village sites. These areas have consistently been identified as having the highest levels of congestion and the highest impacts on resources and visitor experience. In 2020, the park worked a range of solutions to achieve visitor management objectives.

Evaluating Visitor Shuttle Feasibility

Furthering efforts to improve visitor services and respond to congestion, Yellowstone launched two exploratory visitor shuttle initiatives in partnership with the NPS Alternative Transportation Program and the Department of Transportation Volpe National Transportation Systems Center. The shuttle initiatives include:

- Automated Shuttle Pilot: In the summer of 2021, Yellowstone will test a low-speed, automated shuttle at Canyon Village. The purpose of this pilot project is to test emerging automated vehicle technology in the national park context.
- Transit Feasibility Study: Yellowstone has begun a Transit feasibility study to evaluate the potential costs, benefits, infrastructure and staffing needs, and impacts to the park and visitor experience of a localized shuttle system based at Canyon or Old Faithful. The study will help managers evaluate whether such a system is practical or feasible.

Yellowstone Campground Reservations

Beginning in 2021, many of the park's major NPS-managed campgrounds will move to a reservation system during the summer months. Several campsites will remain first-come, first-serve.

Norris Pilot Project and New Parking Design

The Norris parking lot and associated infrastructure were constructed in the 1960s when visitation to the park was well under 1 million. Today, more than 6,000 people per day visit Norris in the peak summer months. To address major congestion problems, the park piloted a parking and traffic control project at Norris Geyser Basin in 2019. The park added overflow parking, improved trail access, and hired additional staff to actively manage traffic, parking, and safety issues. While laborious, many aspects proved successful and will be continued in the future. The park is completing plans for a redesigned parking lot and restroom to serve visitors more effectively.

Planning for Midway Geyser Basin and Old Faithful

The main parking lots in the Midway Geyser Basin area were constructed in the 1980s-1990s when visitation was under 2 million. The park installed a temporary parking lot at Fairy Falls in 2017 to increase parking capacity and alleviate roadside parking problems. After the temporary parking lot was installed, staff observed nearly 1,000 incidents of litter and human waste and increased social trailing. In response, the park is removing the temporary lot and exploring a range of alternatives to provide better parking opportunities, additional restrooms, and consolidated visitor access from a single location to better protect resources while providing improved access.



Rendition of automated shuttle pilot to be used in Canyon Area 2021



Norris overflow parking area at Norris Junction

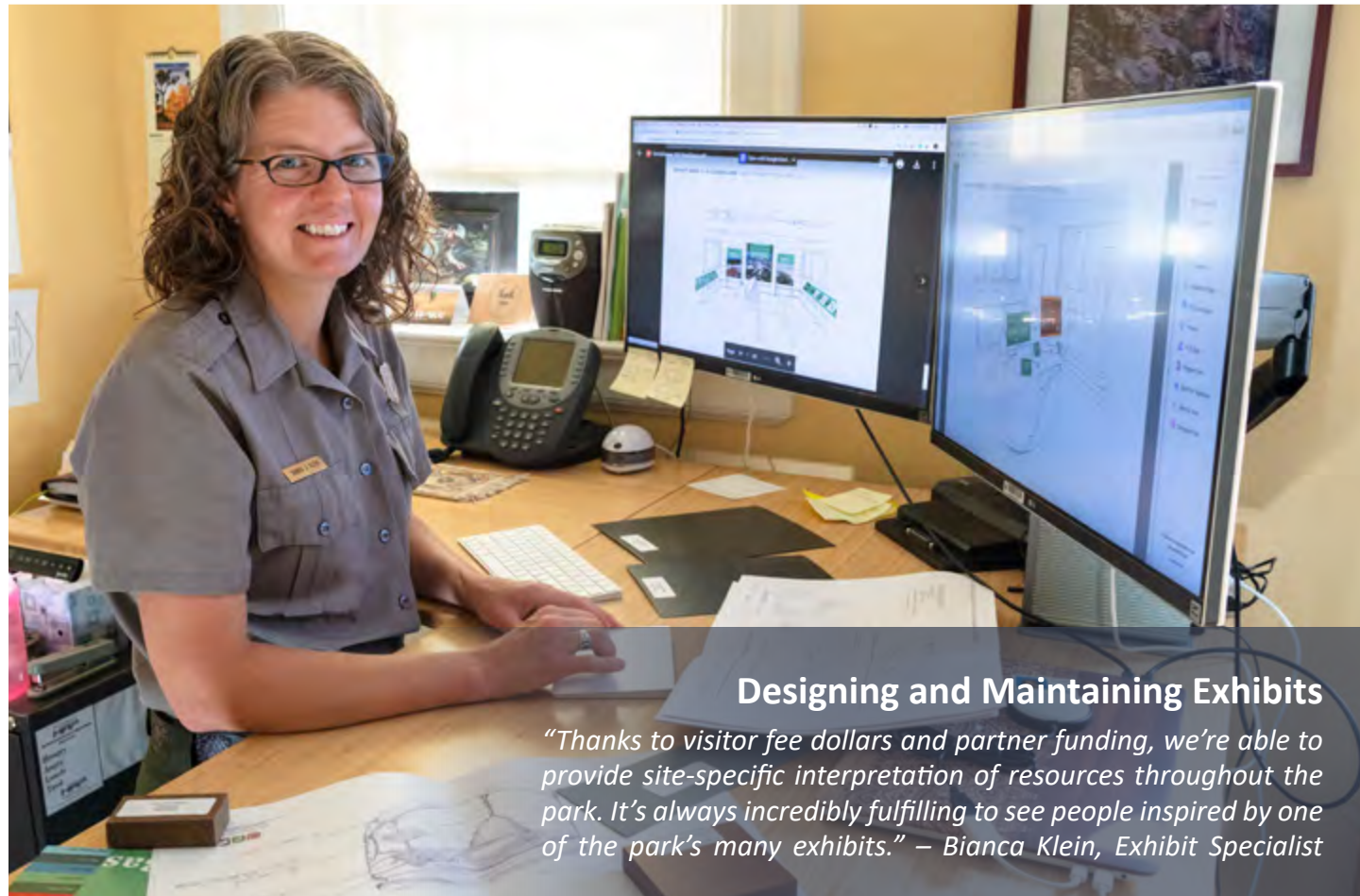


Exploring the boardwalks at Midway Geyser Basin



Junior Ranger Programs

“Each year, we swear in over 40,000 junior rangers and an additional 25,000 people participate in the Junior Ranger Wildlife Olympics Program.” – Linda Young, Chief of Resource Education and Youth Programs



Designing and Maintaining Exhibits

“Thanks to visitor fee dollars and partner funding, we’re able to provide site-specific interpretation of resources throughout the park. It’s always incredibly fulfilling to see people inspired by one of the park’s many exhibits.” – Bianca Klein, Exhibit Specialist



3.3 Million
Followers on social media



4.6 Million
Visits to visitor centers in 2019



40,000
Participants in youth programs



8 Million
Individual users on the web

Connecting People to Yellowstone

On the Web

Yellowstone’s digital platforms saw substantial increases in use in 2020. Visits to Yellowstone’s homepage exceeded 3 million, making it the most-visited park site in the entire National Park System. In 2020, web traffic increased 41% to nearly 8.5 million users. Over 1.2 million users visited the virtual tours web page, a 16,366% increase compared to 2019, and downloads of the NPS Yellowstone App increased by 40%.

On Social Media

Yellowstone’s social media following grew by 13% in 2020. The park produced and promoted a series of 15 distance learning videos while in-person visits were on hold due to COVID-19. The park’s #WhatWeDoWednesdays and #YellowstonePledge campaigns generated various news stories and both campaigns have been replicated by other national parks, partner organizations, and tourism agencies around the world.

In the Park

The park completed a large-scale exhibit installation at Norris Geyser Basin in 2020, substantially improving education opportunities for visitors. Staff also completed a second major exhibit design for the Canyon Visitor Center, which will replace severely outdated exhibits from 2006. A range of wayside exhibits were installed in 2019-2020 in various locations across the park.

The park manages a wide range of physical and digital education and information resources for visitors, including the Yellowstone Park App, park newspapers, fishing regulations, trail guides, brochures, trip planners, and others.

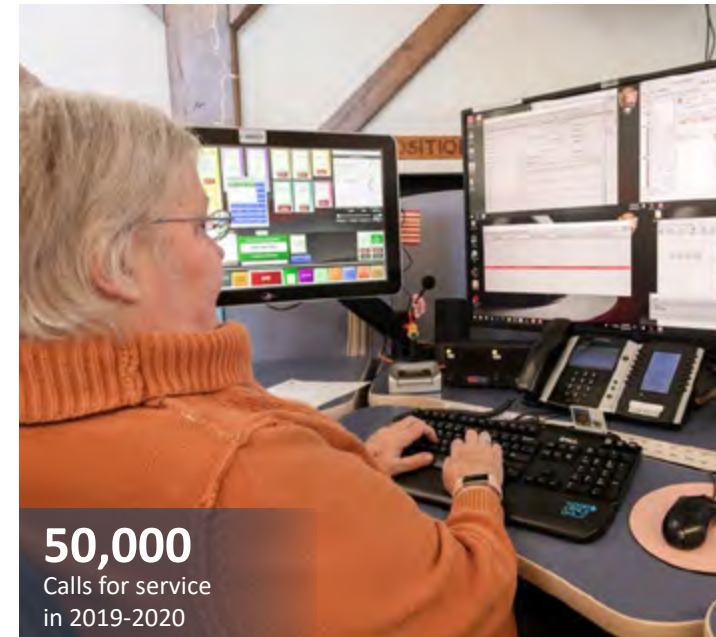
In the News

Yellowstone published 168 news releases, responded to 2,233 media inquiries, facilitated 362 interviews, and was mentioned in more than 2,500 news stories in 2019-2020.



Wildland Fire Management

“Wildland fire has been shaping the Yellowstone landscape for at least 14,000 years. Our challenge today is to maintain fire’s role as a natural ecosystem process while providing for the safety and protection of persons and infrastructure.” – John Cataldo, Fire Management Officer



50,000
Calls for service
in 2019-2020



98
Search and rescues of
visitors in 2019-2020

Protecting People and Resources

Communications Center

Yellowstone’s Communications Center handled over 50,000 calls for service in 2019-2020, including emergency medical, structural fire, law enforcement, and search and rescue response. Additionally, the operation dispatches for nine agencies outside the park.

Structural Fire

Yellowstone’s structural fire company is the largest in the national park system with 11 engines stationed across six developed areas of the park. The park has mutual aid agreements with West Yellowstone, Gardiner, Paradise Valley, Montana’s Park County, Cooke City, Cody, and Grand Teton National Park. In 2019-2020, the team responded to 681 structural fire calls within Yellowstone and local communities.

Search and Rescue

The park handled 98 search and rescue incidents in 2019-2020, including complex high-angle rescues of visitors, searches for lost visitors, and swiftwater rescues.

Wildland Fire and Fuels Reduction

The objectives of Yellowstone’s defensible space fuels reduction projects are to change the fuel structure to reduce crown fire potential and to slow ground fire spread in developed areas of the park. To date, crews have treated 127 acres in Grant Village, 84 acres in Old Faithful, and 56 acres in West Yellowstone. In 2020, the Lone Star Fire burned within 3 miles of the Old Faithful Historic District, underscoring the importance of proactively protecting historic structures from wildland fire threats. The park had 56 wildland fires in 2019-2020.



681
Structural fire response
calls in 2019-2020



267
Acres treated for defensible
space in 2019-2020



5,000
Violation notices
issued in 2019-2020



28,000
Backcountry miles
patrolled in 2019-2020



1,425
Emergency medical
response calls in 2019-2020

Protecting People and Resources

Law Enforcement/Public Safety

Yellowstone rangers issued nearly 5,000 violation notices in 2019-2020 with nearly 1,000 criminal cases filed in the U.S. Magistrate Court. Yellowstone is one of the only parks with its own magistrate judge and full-time assistant attorney. The park saw substantial increases in several crime categories in 2020, including a 100% increase in thermal trespasses. Rangers handled nearly 1,500 motor vehicle accidents in 2019-2020 and a range of other criminal cases, including DUI, drug possession, sexual assault, and various resource crimes. The park is developing a range of crime prevention strategies to proactively reduce and deter criminal activity within the park.

Backcountry Management and Support

Yellowstone has over 2 million acres of backcountry, including 1,000 miles of trails, 300 backcountry campsites, and over 400 miles of boundary. The park's backcountry ranger team plays a critical role in protecting the park from poachers and other resource violations. These rangers also work closely with backcountry stock outfitters and guides across the park. Backcountry rangers patrolled approximately 28,000 miles in 2019-2020.

The park's trail crews performed a wide variety of trail maintenance in 2019-2020, including 15+ miles of reconstructed trail, 650 bridge, drainage, erosion control and retaining structures, 4,800 square feet of rehabilitated human-impacted trail segments, and resurfaced paved trails with over 16 tons of asphalt. The backcountry permit office provided over 5,000 backcountry permits in 2020, a 19% increase over 2019.

The park's corral operation cares for and works 100 head of stock. During the summer and fall, corral employees travel throughout the park to support backcountry logistical needs and special projects, mostly for trail crews and backcountry rangers. With some animals traveling over 1,000 miles in a season, the corrals typically go through 1,300 horseshoes and 10,400 shoeing nails each season.

Emergency Medical Services

Yellowstone's Emergency Medical Services operation has 11 ambulances stationed across eight developed areas of the park. The park has mutual aid agreements with Gardiner, Cooke City, and Grand Teton National Park. In 2019-2020, the team responded to 1,425 emergency medical calls within Yellowstone and local communities.

The park's partner, Medcor, operates three medical clinics located in Mammoth, Lake, and Old Faithful. These facilities serve as critical patient care facilities for employees and visitors.



Patrolling Yellowstone Lake

"The vastness of the lake, the mountains reflecting in the water on a calm day, and the diversity of wildlife in the area—Yellowstone Lake truly is a great treasure. It's a privilege to explore and protect such a special resource." – Jackie Sene, Park Ranger



Investing in **INFRASTRUCTURE**

Actions within this priority include developing a more cogent deferred maintenance reduction plan, improving the quality of data and prioritization processes, and taking better advantage of current and future funding to improve asset conditions and protect investments. The park has an asset inventory valued at \$3.8 billion, with a deferred maintenance level estimated at over \$700 million. In 2019-2020, the park focused heavily on developing better data on the condition of its asset portfolio while prioritizing and formulating projects needing investment.

Recently Completed Projects

Pelican Creek Bridge replacement - \$40 Million
Norris to Golden Gate phase 2 road improvement - \$30 Million

Brink of the Upper Falls trail improvement - \$10 Million



\$40 Million
Pelican Creek Bridge



Before and after



\$30 Million
Norris to Golden Gate



In progress and after



\$10 Million
Brink of the Upper Falls



Before and after

Projects In Progress

Employee housing improvements - \$83 Million
 (Goal I: \$36 Million, Goal II: \$4.8 Million, Goal III: \$43 Million)

Tower to Mount Washburn road improvement - \$28 Million
 North Entrance station improvement - \$12 Million
 Historic Canteen interior and exterior renovation - \$750,000



\$28 Million
 Tower to Mt. Washburn

Current progress



\$12 Million
 North Entrance

Before and current progress



\$750,000
 Historic Canteen

Interior: before and after



Mount Washburn Trail Rehabilitation

"This was not your typical trail project. We're honored to provide an improved hiker experience and preserve a bit of history. This experience confirms that with teamwork, community, optimism, and perseverance, we can accomplish anything!" – Cager Messer, Trails Maintenance Supervisor



Revegetating Road Improvement Project Sites

“Revegetation is an important part of road improvement projects, aesthetically and ecologically. By collecting seeds from a project site, growing them in our greenhouse, and transplanting them back to the project site, we can get a jump start on the rehabilitation. This keeps invasive weeds from taking hold and improves habitat for animals and insects in the park.” – Sam Reid, Biological Technician

Approved Projects

- West Thumb to Old Faithful road improvement - \$50 Million*
- Lewis River Bridge replacement - \$28 Million*
- Fort Yellowstone 17 structure rehabilitation - \$22 Million*
- Laurel Dormitory redesign and rehabilitation - \$21 Million*

All project costs are estimates only for planning purposes and are subject to change. Fixed prices will be determined once a project is formally contracted.
*Projects funded by Great American Outdoors Act FY 2021

Deferred Maintenance Project Needs

- Water and wastewater systems replacement - \$221 Million
- Norris to Golden Gate phase 3 road improvement - \$89 Million
- Yellowstone River Bridge replacement - \$78 Million
- Norris parking area redesign and replacement - \$20 Million
- Backcountry patrol cabins rehabilitation - \$7 Million
- Boardwalks and trails rehabilitation - \$7 Million



\$28 Million
Lewis River Bridge



\$221 Million
Water and wastewater systems



\$22 Million
Fort Yellowstone



\$78 Million
Yellowstone River Bridge



\$21 Million
Laurel Dormitory



\$7 Million
Boardwalks and trails

Building Coalitions & PARTNERSHIPS

Yellowstone's success is predicated on strong partnerships and coalitions. The park will continue to build and align priorities with a wide range of partners, including tribes, elected officials, environmental and conservation groups, concessioners, communities, states, other federal cooperators, and the philanthropic community. The following examples highlight some of the major partnerships key to Yellowstone's success.



NPS Ranger congratulates a newly sworn-in United States citizen at park immigration ceremony



NPS and partners releasing swan cygnets on the Yellowstone River



Current and former Yellowstone superintendents with Fort Peck Chairman and Tribal bison manager

Working With Our Partners

Yellowstone Forever

Yellowstone Forever (YF) is the park's primary nonprofit partner and provides a wide range of support in helping achieve conservation, education, and visitor experience priorities. YF provided the park with over \$4 million in project funds in 2019-2020, including \$1 million for the North Entrance station project, \$1 million in native fish restoration funding, \$500,000 to support the wolf, bear, bison, and cougar programs, and many other forms of support. Post-merger in 2016, YF's growth outpaced its revenues and the organization accumulated substantial debt on several lines of credit. During early 2020, philanthropy and retail revenues dropped substantially due to COVID-19 and other factors, requiring YF to take a range of major organizational actions to realign priorities, restructure, and pay down debt. YF has set a goal to pay down remaining lines of credit by the end of 2021.

In mid-2020, YF hired a new president and CEO (Lisa Diekmann) and charted a recovery path that has already been highly successful. Within the last six months of 2020, YF paid down nearly \$1.6 million in debt, realigned fundraising priorities, and increased philanthropy substantially. YF also hired a new Institute program manager and restarted limited Institute operations—with plans to expand educational programming in the summer of 2021. The park is also working closely with YF to build a range of high-impact projects to support the park's 150th anniversary in 2022.

Partnerships through the Pandemic

The park worked very closely with Wyoming, Montana, and Idaho state governors, state and county public health officials, county commissioners, gateway communities, tourism officials, concessioners, and others to agree on a complex reopening plan during the COVID-19 pandemic. The park's medical clinics, run by Medcor, provided substantial assistance to park employees and visitors through the pandemic. These partners provided critical support, including testing for employees, communications, and operational support.

Tribes

The park consulted 189 times with Yellowstone's 27 associated American Indian Tribes on a wide range of projects throughout the park in 2019-2020. These partnerships are essential to ensuring the park is honoring its Trust responsibilities to the American Indian heritage associated with Yellowstone. The park worked very closely with the Fort Peck Assiniboine and Sioux Tribes as well as the Interagency Tribal Buffalo Council in transferring over 104 bison to the Ft. Peck Reservation in 2019-2020 (see Page 19). These bison were later sent to multiple Tribes across the United States.

Interagency Bison Management Plan

The park continued working closely with tribal, state, local, and federal partners to manage bison exiting the park during the winter months. These partners work closely together to manage this highly complex wildlife management issue. This plan continues to adaptively evolve through increasing coordination and collaboration to meet bison management objectives (see Page 19). In 2020, seven Tribes participated in tribal hunts of bison outside of the Yellowstone boundary.

National Park Foundation

As the official nonprofit partner of the NPS, the National Park Foundation (NPF) worked closely with Yellowstone in 2020 to provide critical funding for a range of park priorities. The foundation secured nearly \$2 million in funding for native fish restoration, the North Entrance project, and other key priorities. NPF also played an instrumental role in supporting and advising the park during the recovery period of Yellowstone Forever.

Wyoming Wetlands Society and Ricketts Conservation Foundation

The park has partnered with the Wyoming Wetlands Society and the Ricketts Conservation Foundation to release trumpeter swan cygnets and increase territorial pairs of swans, which have undergone a decades-long decline in the park. The park also partnered with the Ricketts Conservation Foundation to initiate an ecosystem-wide effort to conserve common loons.



Volunteer veteran group installing fencing for park corral operations



Ribbon cutting at newly renovated Mammoth Hot Springs Hotel



NPS biologist and Montana State University graduate student collecting grizzly bear data



Off-grid solar array installed in partnership with Northwestern Energy

Working With Our Partners

Veterans Supporting Yellowstone

In 2009, Yellowstone established a partnership with Warfighter Outfitters, a nonprofit organization supporting U.S. combat veterans. In 2019-2020, the park hosted 60 volunteers to work on constructing horse corrals in the Canyon and South Entrance areas. Their rehabilitation and construction projects have contributed nearly 200,000 hours of volunteer labor totaling \$4.8 million (using national average \$25.48/hr) and over \$1 million in materials funded by grants from their partner, Arch Venture.

Yellowstone Volcano Observatory

The Yellowstone Volcano Observatory (YVO) Volcano and Earthquake Monitoring Plan 2020-2030 has been submitted to the U.S. Geological Survey publishers and will be released as a special publication. The 2020-2030 monitoring plan, written by the nine entities responsible for the monitoring of the Yellowstone volcanic system, succeeds the 2006-2015 monitoring plan. The monitoring plan articulates the responsibilities of YVO and how the different capacities of the partner entities are utilized to effectively monitor Yellowstone volcano and related seismic activity. The plan also articulates efforts to exploit new innovations in volcano and seismic monitoring to better understand volcanic activity and forecast potential earthquake and volcanic hazards in Yellowstone.

Greater Yellowstone Coalition

The park has partnered closely with the Greater Yellowstone Coalition (GYC) over past years. In 2020, the GYC, Yellowstone Forever, and the park agreed on a partnership to expand bison conservation capacity (see Page 21) and are continuing to look for additional partnership opportunities moving forward.

State Historic Preservation Officers

The park partnered regularly with state historic preservation officers, primarily in Wyoming, to guide and inform important cultural and historic preservation decisions.

Concession Partners

The park enjoys strong relationships with multiple major concession and commercial use operators. These partners were critical to Yellowstone's success during the 2020 season, particularly in dealing with the COVID-19 pandemic. They also work closely with the park in many key areas beyond operations. In 2020, Medcor provided substantial support for employee and visitor COVID-19 testing and medical aid. In 2019, Xanterra Travel Collection worked with the park to complete renovations of the historic Mammoth Hot Springs Hotel. Delaware North Companies worked closely with the park to make upgrades to employee housing and other infrastructure. Yellowstone Park Service Stations set an extremely high standard of service delivery at locations across the park and are engaged with the park in exploring electric vehicle charging stations.

Greater Yellowstone Coordinating Committee

The Greater Yellowstone Coordinating Committee (GYCC) was established in 1964 to help facilitate cooperation between the four federal agencies within the Greater Yellowstone Ecosystem. Through the GYCC, federal land managers pursue voluntary opportunities to cooperate at the landscape scale. In 2020, the GYCC managers formally welcomed the directors of Idaho Fish and Game, Montana Fish, Wildlife, and Parks, and Wyoming Game and Fish to the executive group. This larger group's first meeting was in November 2020 and focused heavily on conservation priorities that transcend boundaries, wildlife corridors, addressing increasing visitor use, and other common priorities. Interagency work in multiple subcommittees continued as well, including climate change, wildlife management, and others.

National Parks Conservation Association

The park worked with the National Parks Conservation Association to promote conservation priorities and address deferred maintenance issues.

Working With Our Partners

Research, Education, and Conservation Partnerships

The park relies on a wide variety of research, education, and nonprofit partnerships across the region, with Montana State University Bozeman, Brown University, Rice University, Oceanographic Institute, University of Utah, University of Victoria, University of Wyoming, University of Montana, University of Maryland, University of California, and many other academic, research, and science institutions. Federal partnerships with agencies like the U.S. Geological Survey and key programs within the NPS Natural Resource Stewardship and Science units (regional and national) also provided critical support. Additional nonprofit partners like the Defenders of Wildlife, and local conservation groups like the Bear Creek Council, helped support the park in several areas, including bison management.

Trout Unlimited

Yellowstone worked with Trout Unlimited and several water rights holders to reconstruct a collapsible fill dam at the upper diversion of Reese Creek to return flows and satisfy water rights obligations with no construction costs to the park. Trout Unlimited continues to be a major supporter of Yellowstone fisheries.

Property and Environment Research Center

The park worked closely with the Property and Environment Research Center (PERC) in a variety of key areas, including addressing the park's deferred maintenance backlog, improving employee housing, and analyzing the park's fee structure. As a longtime proponent of fee authority in the parks, PERC has supported Yellowstone's efforts to effectively harness fee revenues to support park infrastructure and improve the visitor experience. PERC also helped advance key relationships that will enhance transboundary wildlife management in the Greater Yellowstone Ecosystem.

United States Congress

The park enjoys tremendous support from the congressional delegations in Wyoming, Montana, and Idaho.

Northwestern Energy

Northwestern Energy (NE) partnered with Yellowstone in a variety of critical areas in 2020. NE assisted the park in upgrading decades-old utilities within developed areas to support the park's housing improvement project and developed plans to build a new solar array to provide power to Bechler ranger station, one of the most remote areas of the park. NE also engaged with the park to develop new electric vehicle charging stations at several locations.

Federal Highway Administration

The park partners with the Federal Highway Administration Western Federal Lands Division on a wide range of major transportation projects. This partnership has completed hundreds of millions of dollars in projects over the past decade. Current and recently completed projects include Pelican Creek Bridge and Tower to Mount Washburn, Norris to Golden Gate Phase 2, and Brink of the Upper Falls projects. Many future projects are being funded and planned through the Great American Outdoors Act (see Pages 41-45).

Wildlife Conservation Network

The Wildlife Conservation Network (WCN) is one of the largest philanthropic wildlife organizations in the world and has donated over \$175 million to wildlife conservation worldwide. Staff from the Yellowstone Center for Resources met with WCN President Charlie Knowles to discuss feasibility of combining Yellowstone's efforts with the Rocky Mountain region. Staff also participated in two WCN expos, which bring worldwide wildlife projects together and partner them with interested members of the public. Yellowstone presented information on wolves and cougars at the most-recent expo in October 2020. Mr. Knowles and WCN has an interest in these programs and is building a large project to support wildlife conservation in North America.

