

THE

BUFFALO CHIP

RESOURCE MANAGEMENT NEWSLETTER
YELLOWSTONE NP

JULY 1989

MCLAREN MINE TAILINGS CLEAN-UP UNDERWAY by Stu Coleman

Big things have started to happen at the McLaren Mine tailings site on Soda Butte Creek. The site is located outside the park just above the town of Cooke City. For decades, we have been aware of acid mine drainage leaching from the tailings into Soda Butte Creek and flowing into the park. The U.S. Fish and Wildlife Service staff in the park have been monitoring water quality and aquatic invertebrate levels in Soda Butte Creek; their data indicates long-term effects from the mine leachates, although water quality has improved in recent years. The State of Montana had listed the McLaren tailings among sites requiring cleanup for a number of years, but higher priority coal waste sites kept the necessary funds and cleanup target date several years away. In 1988, Yellowstone entertained EPA personnel from Denver who were sympathetic to our concerns about this external effect on park resources, however, there was little that they could do, as the site did not meet the criteria for a "Superfund" project. Superfund sites must pose an imminent threat to public health and safety. Neither Silver Gate nor Cooke City get their domestic water supply from Soda Butte Creek. Thus, a case for public health and safety could not be made. However, EPA did support having the Bureau of Reclamation (BOR) complete a study of the site, and evaluate problems and possible clean-up strategies.

In March of 1989 the BOR completed their Analysis of Corrective Action Alternatives for the McLaren Tailings Site: Cooke City, Montana. The report outlined 4 major problem areas:

1. The runoff and acid seepage from the old mill and oil storage areas;
2. Flooding of Soda Butte Creek which could cause the tailings dam to fail;
3. The tailings dam could fail from hydrologic and/or seismic influences; and
4. Acid seepage from the tailings and tailings dam.

The report warned that point #2 was critical. Because of the watershed acreage burned on Soda Butte Creek, rapid snowmelt and rainfall could stress the dam. According to the report, a 10-year flood event on Soda Butte Creek could cause the dam to fail, and with the watershed's poor ability to hold and slow the path of runoff after the fires, 1989 might be the year for that 10-year flood. Investigation revealed that at the point where Soda Butte Creek first encountered the tailing site, fully 50% of the streamflow was going straight into the tailings and coming out through, around, or under the

tailings dam. This was an untenable situation.

EPA considered this and took action. Assistance and expertise was provided by the NPS Water Resources Division to convince EPA to put the McLaren Tailings site on the Superfund list. This marked the first time a purely environmental issue made the notorious list. The situation is complicated by the fact that the tailings and the land on which they sit are privately owned, patented mining claims. Only the amount of work necessary to eliminate the immediate emergency is authorized for Superfund expenditures by EPA.

Phase I in cleaning up the site involved modifying the stream channel where it met the tailings; this was completed in June. Phase II will begin in mid-July. It will involve drilling holes into the tailings pile to ascertain the extent of leaching and the composition of the tailings themselves. Also, the EPA's legal staff is researching current and past ownership of the claims, in an attempt to affix financial responsibility for this cleanup of an environmental hazard. They then hope to secure reimbursement and cleanup costs through the court system.

Cooperation has been provided by a number of persons I'd like to thank. The USFWS Fisheries Assistance Office in Yellowstone expanded their sampling regime on Soda Butte Creek to bolster pre- and post-cleanup data. Bill Foster and his crew were nothing but cooperative in providing timely assistance to the EPA coordinator and BOR site supervisor with snow removal and site access. Brian O'Dea assisted with logistics and provided valuable local information to numerous parties. Even with 4 agencies involved -- NPS, EPA, USFWS, and BOR -- who says the government can't move in a hurry??

Stu Coleman

--Since the beginning each generation has fought nature. Now, in the life-span of a single generation, we must turn around 180° and become the protector of nature...

Jacques-Yves Cousteau

* * * * *

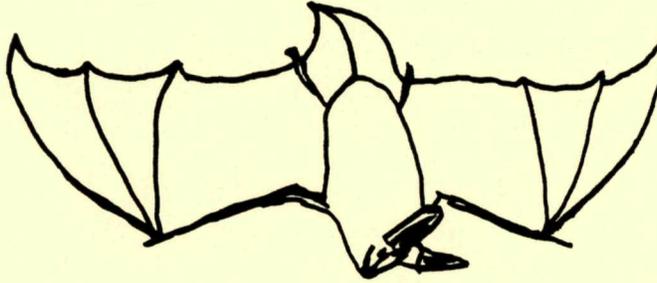
IT'S A BIRD! IT'S A BAT!! IT'S A.....by Stu Coleman and Jim Evanoff

Sometimes we can forget we live in a little different piece of the world than most other people occupy. By living and visiting here, humans trespass - sometimes inadvertently - on the homes of the plant and animal residents. When we conflict, the key is not to provoke a "win-lose" situation, but rather to work out a means by which humans and the potentially offending species can tolerate each other. NPS promotes an "Integrated Pest Management" (IPM) approach to dealing with pest plant and animal species. A pest may be an exotic species, or it may be a native that causes a real or potential nuisance, or a human health or safety hazard. Solving the problem involves first studying the species and the circumstances which pose a reported problem, then considering a range of solutions designed to eliminate the cause, rather than the involved plant or animal species unless necessary. (With a native pest, removal of an offending organism is allowed as a "last resort".)

Take bats, for instance. They usually get a bad rap: it's "common knowledge" that they carry rabies, fly in humans' hair, and suck the blood of unsuspecting victims on a nightly basis! The general public, and most park employees for that matter, know few facts about bats, and they lack the "charisma" of more popular species like squirrels, elk, deer, and bears.

SOME BAT FACTS: Bats are the only major predator of night-flying insects. In studies of the Bracken Cave colony of free-tailed bats (in Texas), scientists found that about 20 million bats eat up to a quarter of a million pounds of insects nightly. An insect-eating bat, such as those found in Yellowstone, can eat 40% of their bodyweight each night - and many of their prey are mosquitoes.....Bats are excellent pollinators and dispersers of seeds, particularly fruits, nuts, and spice species. Bats are even more important seed dispersers than birds.....Bat guano (waste) deposits are an important source of fertilizer, especially in developing countries. Even in the southwestern U.S., 100,000 tons of guano were mined out of a single cave.

Bats are known to carry rabies, but less than one half of one percent (.005) are infected and these bats get sick and die from the disease. Like all mammals, bats have a burden of ectoparasites, but such fleas and mites generally prefer bats to people. Like many other species of the world, bats



are declining both in species and numbers. Habitat loss, pesticide poisoning, and human disturbance all seriously threaten bat populations. The literature suggests that 11 species of bats may be present in Yellowstone; we lack sufficient information about at least 2 species to evaluate their consideration for listing under the Endangered Species Act. The most common bats found in the Yellowstone area are of the brown bat species. They live 25-30 years, and can eat approx. 500 mosquitoes an hour, (approx. 2.5 times their body weight daily). Two major factors contribute to where bats will live: food and attractive, available housing, which for a bat means a warm, dark area with easy access. "Bachelor" homes are where male bats roost and eat. "Nursery" sites are occupied by females, who usually arrive around the first of May each year and have their young two weeks later. For the first three weeks of the young bats' lives, they stay attached to the underside of their mothers. Then they begin to fly, and eventually leave Yellowstone around the end of August for warmer climates south of Wyoming.

SOME BAT PROBLEMS: Bats occasionally inhabit park buildings, especially the older log ones. The Lake area has reported the most significant bat problems. However, virtually every park building could, and many do, harbor bats in night roosts, nurseries, and/or bachelor groups. The IPM approach calls for careful evaluation of the situation before deciding upon appropriate action. Mere presence of bats may not actually be a problem, depending on the amount and type of use in the building. After a problem is clearly defined, such as potential safety hazard to users of a building, then we look at possibilities to discourage or eliminate bat use of that structure. This may best be done by structural alteration, such as plugging entrance and exit holes. However, we have to also consider what effects will occur from such an action -- the bats could die in the building and leave the predictable odor of decay; young bats could die of starvation if the site is a nursery; or the bats could move elsewhere to cause an additional problem.

In a previous issue of the Chip, we addressed the IPM approach to swallows nesting on park buildings. A similar program is being developed for bats. Staff from resource management, maintenance, TW Services, and Hamilton's Stores met recently at Lake, aided by an experienced bat biologist from Montana Fish, Wildlife and Parks Department, to investigate problems and brainstorm solutions. IPM does not rule out the possibility of removing the pest animals, by relocating or destroying the offending individuals. However, such an ultimate solution must be considered in light of the park's fundamental responsibility to protect the native resources here, while minding human health and safety.

If anyone has constructive suggestions on how do deal with this situation, call Terry McEaney or Stu Coleman at x2238. It's driving them (you knew we'd say it) **batty**.....

STATUS OF THE SEVEN MILE BRIDGE TRUMPETER SWANS by Terry McEneaney

A number of rumors have been floating around as of the true status of the nesting trumpeter swans at the Seven Mile Bridge area on the Madison River. As of June 30, 1989, the facts are these:

The Seven Mile Bridge swans were doing well early in the summer. The female (pen) was actively incubating the eggs on Wednesday, June 21. On Friday, June 23, only one swan was present in the nesting territory. The behavior of the swan that was hanging around the nest as described to me was that of the male (cob). That day, a coyote was observed killing a swan close to the nest at Seven Mile Bridge. On Saturday, June 24, the day I estimated the eggs were supposed to hatch, a common raven was observed preying on the swan eggs as the lone male trumpeter swan watched nearby. The only effort the male swan made towards the raven was a simple behavior of wing-flapping. A male red-winged blackbird gave the raven the toughest time as it scolded the raven on the swan nest.

On Tuesday, June 27, I checked the trumpeter swan nest. The common raven destroyed 5 eggs in the nest. The remains of the adult female swan were found within 25 meters of the nest. After examining the scene, it appears that the coyote caught the swan while it was sleeping.

Rumors of swans with cygnets at Seven Mile Bridge this year are untrue, and may have been mistaken for gadwalls feeding with the single swan. The male swan is staying in the area. Hopefully swans will continue to nest in this area, but only time will tell. If anyone has additional questions about swans, please call me at x2245.



NEWSBRIEFS

-Wildlife

Rumors abound about **grizzly bear #134**, who is still alive and living in Yellowstone. Since the initial trapping and translocation away from the Lake developed area, reported in last month's issue, she and her cub of the year have stayed mostly out of the Lake area. She, along with over 35 other radio-collared bears, are regularly aerially located by researchers from the Interagency Grizzly Bear Study Team (IGBST.)

A subadult grizzly has been seen periodically this spring and summer near facilities and the campground in the **Grant Village** area. Rangers have attempted to trap this unmarked individual to translocate it to a backcountry area of the park. To date, trapping has been unsuccessful, but efforts will continue if the bear continues to frequent heavily-used visitor areas. A translocation site has already been selected.

Pronghorn have been reportedly seen this summer in both Hayden Valley and the Fountain Flats area. Park interior valleys have been historically used at times by pronghorn, but Hayden Valley sightings in particular had nearly ceased in the past few decades. Please report all interior pronghorn sightings to the Resource Management Office, x2252.

The final research report on **The Status, Distribution, and Management of Mountain Goats in the Greater Yellowstone Ecosystem** will be available soon from the Resource Management and Research Offices. The report summarizes information collected on the potential threat that non-native mountain goats pose to native plant and animal species in Yellowstone and Grand Teton parks. Mountain goats are sighted most often in the northern corners of the park, adjacent to forest lands where the animals were transplanted to establish hunting opportunities. All sightings of mountain goats should be reported to the Resource Management Office, or submitted on a Wildlife Observation Card.

-Birds

A pair of trumpeter swans was making a nesting attempt at **Beach Springs Lagoon** this spring, and appeared to meet a similar fate to the Seven Mile Bridge pair (see article, this issue.) One of the pair appeared to succumb to coyote predation, and Canada geese subsequently took over the swan nest.

Breeding bird surveys were done in the park again this June. A breeding bird survey is done annually on a predetermined transect; a highly experienced birder begins before sunrise and makes 3-minute stops along the chosen route. An recorder notes all birds heard and/or seen from each stop. The surveys provide trend information on the variety and abundance of bird species found in an area over time. In an effort to increase information about birds across the country, the Park Service is now trying to get all parks to participate in the program, which is conducted on non-park lands as well. Yellowstone began conducting breeding bird surveys in 1981.

-Plants

Two new **exotic plant** species have been found in the park this summer. Thus far identified in the Mammoth area, the new exotics are Corn gromwell (Lithospermum arvense) and Poison hemlock (Conium maculatum). **This** is the highly toxic hemlock that killed Socrates; although native water hemlock, also found in the park, is also extremely poisonous to animals (including humans.) All parts of the plant are toxic, but the root is especially so.

-Resource Protection

The Law Enforcement Office said they had some significant resource-type arrests and/or convictions this summer....Hopefully more details can be shared with readers later. Keep up those protective efforts!

-Geothermal Resources

Giantess Geyser is having a fairly active year....It erupted again on June 24, exhibiting a very short water phase before kicking in to steam phase. Giantess is the largest geyser on Geyser Hill in the Upper Geyser Basin.

A mile down the Firehole, **Fan and Mortar Geysers** have erupted several times recently, after nearly a half year of dormancy. These two adjacent geysers, located just upstream from Morning Glory Pool, erupt in concert with each other on the edge of the riverbank.

Giant Geyser is still displaying hot periods, leading geyser watchers to expect another eruption "relatively" soon. Giant, perhaps second in height only to Steamboat Geyser, erupted 3 times in 1988 and was last seen on 4/17.

Rick Hutchinson reports the Firehole River measured 27°C (approx. 75.6°F) downstream from the Lower Geyser Basin on 7/8. Chances are, it'll get hotter before it gets cooler!

-Interpretation

The editor goofed last month in erroneously crediting South District Interpreter Betty Knight for planning the new **fire wayside exhibits**, which have begun to appear at pullouts along the park roads. Betty gets credit for working closely with Harpers Ferry interpretive designers on the new fire exhibit at the Grant Village Visitor Center which is now open for the season and is reportedly attracting sizeable crowds. Linda Young gets the credit for planning and writing the roadside fire exhibits.

-Research

Ken Adams, working with Wayne Hamilton, reports the following information from their research: The USGS has recently conducted a series of tracer dye experiments to determine **groundwater flow paths** in the Mammoth Hot Springs area. The first experiment consisted of injecting rhodamine dye into a

sinkhole just east of the Hamilton Store in Mammoth. The dye was detected at Hot ("Boiling") River just 2 hours later, which indicates a flow rate of about 1 foot/second. This result is in agreement with a similar dye experiment conducted in 1912. The dye was also detected at MHS-2 (Mammoth Hot Springs-2, above Hot River) at about the same time it first appeared at Hot River. In the second experiment, rhodamine was injected into a sinkhole in the Gardner River upstream from Hot River. The dye was again detected at Hot River a short time later, confirming this flow path. The dye was used in concentrations below visible levels and posed no threat to wildlife, humans, or the environment.

Frank Singer informs us that Yellowstone has been chosen to receive one of the first **Terra Alpha Technology** acknowledgement **awards** for the use of technology in elk ecology studies. The awards recognize those who "implement, pioneer, and expand technologies contributing beneficially to the planetary environment." Other recipients include Tom Thorne and Don Kwiatkowski for work with black-footed ferrets; Igene Biotechnology for developing nontoxic, organic pesticides; and Ramini Narayan for his work with biodegradable plastics.

-Other news

On July 10, the park released an Environmental Assessment on the proposed commercial **log hauling** through the park of salvage timber to be cut on the Gallatin and Shoshone National Forests. The park identified a preferred alternative that would cooperate with this one-time request by the Forest Service and allow this commercial use between 1989 and 1991, after which over 40 million board feet of fire-killed lumber will not be commercial saleable. The park identified a number of mitigating measures, including limited numbers of truckloads per day during restricted, daylight hours, to be escorted by a pilot car at reduced speeds. The document also proposed a fund, contributed as a fee based on the amount of timber hauled, to be used for increased road patrol and maintenance costs associated with the increased heavy traffic. Public comments will be accepted until August 8.

In mid-July, a contractor for the WASO NPS Air Quality Division installed a **transmissometer** to monitor **visibility** in the park. The equipment includes a light transmitter, located across the road from Undine Falls, and a receiver, located in the back end of the lower housing area in Mammoth. The purpose of monitoring is to gather quantitative visibility data, as part of our mandate to protect the park's air quality. Under the Clean Air Act, many national parks and wilderness areas, including Yellowstone, are designated Class I airsheds -- the most pristine air in the United States. Required monitoring includes gathering data on visibility, meteorological information, ozone, and particulates that affect air quality.

From Stu Coleman: "A Tip of the Resource Management Hat" goes to the **Lake and Grant Village area rangers** who participated this spring in monitoring spawning streams for grizzly bear use. Dan Reinhart of the IGBST called to pass along his good words for the work done. He said spawning data collected was "complete, consistent, and timely, and certainly represented quality information." Says Stu, "good decisions come only with good information"; this is the type of cooperative work we'd like to continue between researchers and resource management personnel.

"KNOWLEDGE IS GOOD"
or
"A THOUSAND ANSWERS A DAY"

by Cheryl A. Schreier

"Where are the restrooms?", "When do the deer turn into elk?", "How long is the one-hour horseback ride?", and "What time does Old Faithful go off?". These and other infamous questions are more often asked of concession employees that work in Yellowstone than National Park Service employees working in the green and gray.

Visitors daily contact and ask questions of many more concession employees than all of the NPS personnel wearing "flat hats". (In reality, there are many times more concession employees in Yellowstone than there are NPS employees.) Concession employees answer countless questions while waiting tables, pumping gas, scooping ice cream, and giving change. Given this high contact ratio with the Yellowstone visitor, it is imperative the National Park Service insure that accurate and factual information is presented to the inquiring visitor.

How do concession employees become better informed and receive accurate information? Since the spring of 1987 I have been assigned as an interpretive park ranger with the National Park Service Concessions Management Division. I establish an initial rapport with most concession employees by participation in TW Recreational Services, Hamilton Stores, YPSS, and Yellowstone Park Medical Services orientation programs. Although I work closely with all Yellowstone Park concessioners, I have most contact with TW Recreational Services because of the increased number of visitor-related services; such as guided bus tours, scenicruise tours on Yellowstone Lake, guided horse trail rides, stagecoach rides and cookouts, activity and information desks, and the Old Faithful Inn historic tour. These services comprise the most heavily attended activities within Yellowstone National Park. Thus, they also present a critical opportunity to provide meaningful visitor contact and interpretation.

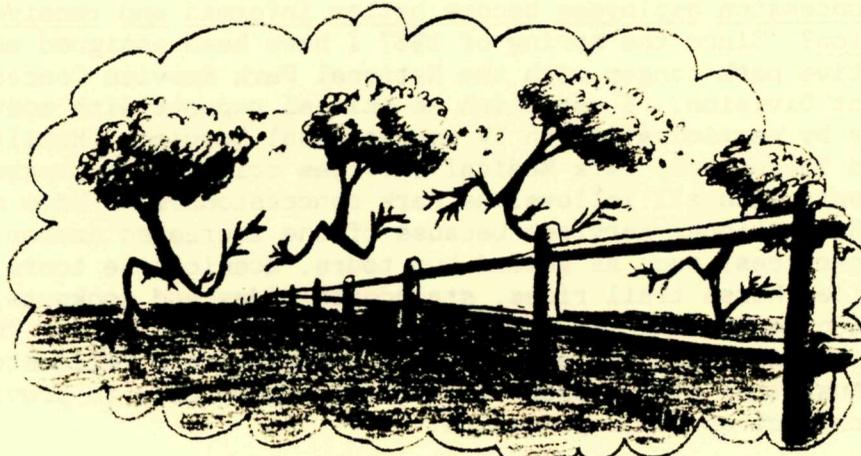
To help the park and the concession staff provide quality information for the visitor I plan, prepare, and present training programs to numerous concession employees, most often in small groups or even on a one-to-one basis. I emphasize the need for employees to have a courteous, helpful attitude combined with timely, accurate information, and I conduct follow-up evaluations periodically throughout the summer. Evaluations are based on Concessions Management (NPS-48) and Interpretation (NPS-6) guidelines. I find the vast majority of concession employees are eager to learn more about Yellowstone and enthusiastic to share their knowledge with the park visitor.

Concession employees are not expected to take the place of National Park Service personnel nor even to perform at the quality level of trained NPS

interpreters, but they are expected to provide courteous and factual visitor contacts.

Although the Concessions Office believes that progress and improvements have been realized, there is still more to accomplish. I want to increase the number of concession employees I contact, train, and evaluate. However, concession employees continue to attend naturalist programs, and to use visitor centers, ranger stations, the research library, and the "Buffalo Chip" for information. I feel confident of their desire and their self initiative to learn more about the great place we all are fortunate to live in. I have been receiving an increased number of positive comments, but would like to have more feedback from park personnel. If you have questions or comments please contact me at the NPS Concessions Management Division, extension 2364.

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HOW TO DEAL WITH BEGGAR WILDLIFE? by Terry McEneaney

It is very discouraging when one drives along a road in Yellowstone and sees visitors feeding wildlife. There are signs at every entrance stations that briefly mentions the rule: "Don't Feed Park Wildlife." But, I wonder how many people really understand the long-term effects of such actions.

Feeding wildlife seems so harmless, but it does have its associated problems. In some areas of the park, ground squirrels and chipmunks are fed consistently at traditional areas. Anyone who has been to Yellowstone for any length of time knows where these are. It is conceivable that as much as several hundred pounds of food are thrown out on the ground for wildlife to consume at any one of these major locations.

The negative effects of feeding wildlife are these: it conditions wildlife to people, causing them to lose their fear of humans and make them more vulnerable to mortality and predation. It can cause them to lose their ability to fend for themselves in the times of the year when visitors are absent. It sets a precedent for other visitors to see and copy the wildlife-feeding behavior. It makes people fail to see any difference between a wild animal and a domestic one; it blurs the distinction between a national park and a city park or a zoo. And, it can cause a human safety problem, which eventually could hurt both humans and wildlife.

If Yellowstone is truly to remain a place where natural regulation takes place, then we must continue to emphasize to visitors the importance of not only observing wildlife in their natural setting, but letting them feed only on their own foods (and of their own volition).

A pair of trumpeter swans is being fed by visitors in the park this summer, along the Madison River. If this action continues, it could spell eventual death for the swans. On some days, the swans have been found standing in the main road watching for handouts. This is extremely dangerous for the pair, and the swans already have enough challenges to survive in the Greater Yellowstone Area.

Do we move the swans because we are likely to lose them to a road accident? I think not. This is their territory, and my preference is to try to modify the human behavior rather than the swans' behavior or location. Each of us can help do our part by reinforcing the message to visitors that feeding (and approaching to closely to) wildlife only likely endangers the animals' survival. We cannot let the public think that "Do Not Feed Wildlife" refers only to the large and evidently dangerous ones. It applies equally to the squirrels, chipmunks, marmots, gray jays, trumpeter swans, and the bears.



Forest violence

HAZARD TREE REMOVAL OPERATION UNDERWAY

(Lore Williams, park Landscape Architect, provided the following information to help answer questions about the roadside tree removal operation that began this spring in the park.)

As stated in the following information being given to visitors at park entrance stations, the 1988 fires exacerbated an already dangerous situation posed by the presence of hazard trees along park roadside and developed areas. Due to the large scale job that needed done following last summer, and to the high cost involved to the government, a contract was awarded to Brand S Lumber Company of Livingston, MT, for removal of hazard trees. The company agreed to pay \$26/1000 ft. of timber removed, while accomplishing the removal of safety hazards that otherwise would have cost us to cut down.

NPS staff are assessing all the trees cut, particularly the green ones. Some green trees do need to be cut, because they can pose a hazard as well as do trees with burned cambium and/or burned roots. Due to concern expressed early in the operation, park staff again reviewed the progress of the tree removal on site. Lore reports that a few trees in the Indian Creek area were mistakenly removed, and a faller on the crew has been replaced. Also, they are "feathering" the cut - varying its distance and pattern from the road edge - to minimize its severity; it should not look like a line paralleling the road. Also, topographic variations will be worked into the cut pattern. The staff involved have also consulted Rick Hutchinson about handling thermal areas in a sensitive manner.

At this point, cutting has stopped due to heavy visitor traffic. The contractor is finishing up yarding trees that are already cut, hauling (at night), and flush-cutting stumps. There are 30-45 YCC and SCA folks cleaning up along with a park crew. Work is complete in the Gibbon Falls Picnic Area. Cutting will resume under the existing contract on August 15.

Yellowstone

National Park Service
P.O. Box 168
Yellowstone National Park
WY 82190

After The Fires: Hazard Tree Removal

As you drive through Yellowstone, you will probably encounter crews removing trees along roadsides. Delays of approximately 10 minutes may occur.

Why are trees being cut along roads?

Last summer's fires affected roadside trees in both obvious and subtle ways. Most of Yellowstone's forest is composed of lodgepole pine trees. These trees are shallowly rooted; burned and dead trees are even more unstable. Winds may topple them, creating hazards on roads. Property damage and personal injury can occur if they strike vehicles. Trees are being removed to reduce the hazard.

Which trees are being removed?

Burned trees, dead trees and some green trees are being cut along portions of park roads.

By what criteria are trees selected for cutting?

Burned trees and dead snags that are obviously unstable are being removed. Exceptionally tall trees, burned or unburned, that are not buffered from roads by breaks of smaller trees and thus are more likely to fall in the wind are being cut. Trees that limit visibility on winding, narrow sections of road are also being removed.

How far back from roads are trees being removed?

Trees are selectively cut at a 0 - 50 foot distance from the road. In some areas, depending on terrain and patterns of tree growth or burning, trees at distances of up to 100 feet are being removed.

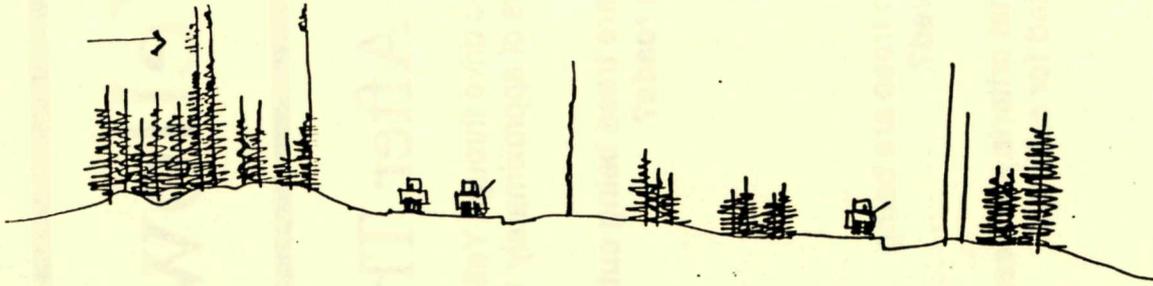
Who is doing the cutting?

Due to the scope of the project, a contract was awarded through the bidding process to a local lumber company. Under terms of the contract, the contractor is responsible for cutting and limbing trees, loading them onto trucks, removing them from the park, and flush cutting stumps. Park Service crews will provide final slash removal and cleaning/restoring of sites. Contractor limits include no off-road vehicle use. Also, trees within 25 feet of a road edge will not be dragged to a truck for loading.

Why is this being done now?

Yellowstone's weather dictates when road work of any sort is done. Roads are snow free only a few months of the year. These months correspond with the period of heaviest park visitation. We apologize for the inconvenience!

For your safety, please do not walk into areas where tree removal is in progress.

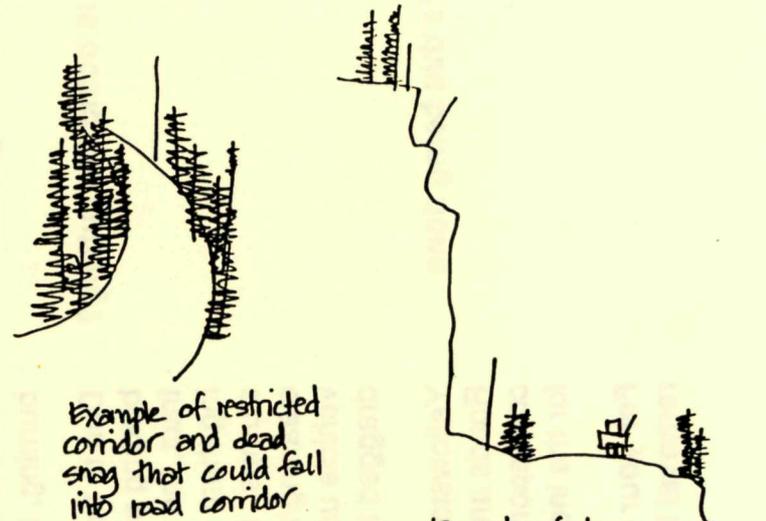


a. Overly tall trees that may catch wind gusts and fall into the road corridor. Usually burned but may be green.

b. Burned telems that are unstable and may fall into the road corridor.

c. Burned or green young trees that restrict sight distances on curves.

d. Dead snags that may fall into the road corridor.



Example of restricted corridor and dead snag that could fall into road corridor

Example of trees at cliff top likely to fall into road and at bottom also likely to fall into road. Note: trees near road edge/dropoff would not be cut since they function as guard rail and keep steep slopes from eroding.

Caution will be taken around thermal areas not to increase hazards.

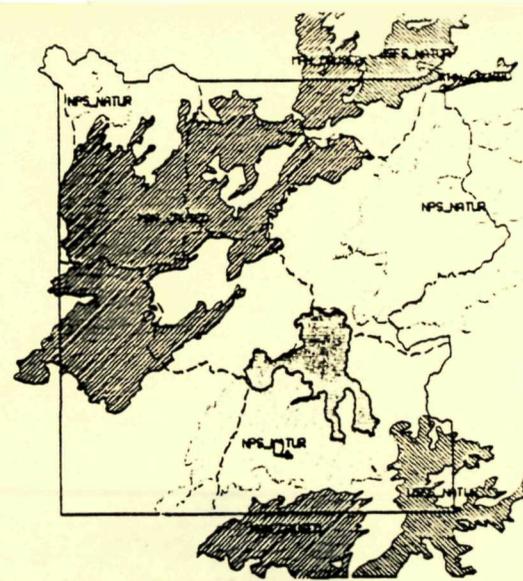
ROADSIDE ENHANCEMENT:

PURPOSE: TO REDUCE HAZARD TREES AND INCREASE AESTHETICS ALONG ROAD CORRIDORS. TREES WILL BE CUT SELECTIVELY IN A 0'-50' DISTANCE (MAY GO AS FAR AS 100' BACK) ALONG ROADS. THIS IS NOT A CLEAR CUT. YOU SHOULD BE ABLE TO SEE THE "BEFORE" AND "AFTER" WITHIN A SHORT DISTANCE.

MOST OF THE TREES ARE DEAD OR ARE SMALL "DOG HAIRS" IN BARRON PITCHES. THEY WOULD EVENTUALLY BE REMOVED AS ROADS ARE WIDENED.

CONTRACTOR LIMITS INCLUDE NO OFF-ROAD EQUIPMENT USE AND NO DRAGGING OF TREES WITHIN 25' OF ROAD EDGE. STUMPS WILL BE FLUSH-CUT. THERE WILL BE NIGHT HAULING WITH SAFETY CONSIDERATIONS.

YELLOWSTONE NATIONAL PARK
1988 SUMMER FIRES



GIS UP AND RUNNING (AND PRODUCING MULTI-COLORED MAPS)!

A warm welcome to George McKay, the new Geographic Information Specialist, has jumped into his new job and the park's newly operating GIS with vigor. His extension is 2108, his office and the computer equipment is in the old Blacksmith Shop behind the Administration Building at headquarters, and he is already overworked! The above map is just one sample (in colors not reproducible here) of what it can do in its early stages. George will be reporting more on what the system can provide in the next issue of the Buffalo Chip. Meanwhile, because of the overwhelming response to the new system, requests should be made on the GIS order form. This will allow prioritization of requests and better allocation of machine (and George's) time.

Please use the following form to make requests of George and the GIS. Send requests directly to him via the park mail system.

GEOGRAPHIC INFORMATION SYSTEMS REQUEST SHEET
Phone 344-7381 Ext. 2108, 2344, 2241

Person Requesting Information/and or Services
Name/Office _____ Ext. _____

Nature of Problem or Request:

- Map production from existing data base. _____
- Statistical report from existing data base. _____
- Consultation for improvements to current project. _____
- Consultation for proposed project. _____
- Tape loading and data manipulation. _____
- Archive and storage. _____
- Map production from new data base. _____
- Instruction for department personnel. _____
- Digitizing and updating existing map. _____
- Digitizing to create a new map file. _____

Other: (Specify) _____

Received By: _____ Completed By: _____
Time/Date: _____ Time/Date: _____

CALL BACK COMPLETED _____ DATE: _____ Initial _____



We...need that wild country...even if we never do more than drive to its edge and look in. For it can be...a part of the geography of hope.

Wallace Stegner