

MONITORING AND EVALUATION REPORT
Fiscal Year 1997

Shoshone National Forest
Rocky Mountain Region
USDA Forest Service

Submitted
April 1998

CERTIFICATION

I have reviewed the Shoshone National Forest annual Monitoring and Evaluation Report for fiscal year 1997. Analysis associated with project implementation under the Forest Plan indicates that the Shoshone National Forest Land and Resource Management Plan, as currently amended, is still valid and sufficient to guide implementation throughout the coming year. However, the interdisciplinary team felt that amendments to the Forest Plan may be needed in the near future in at least two areas; winter use in the Greater Yellowstone Area and roadless areas. The need to amend will depend on the outcome of efforts currently underway on these issues.

The Shoshone National Forest is participating in an interagency assessment of winter use in the Greater Yellowstone Area. The assessment addresses conflicts and issues associated with winter use. Once the assessment becomes final, the Greater Yellowstone Coordinating Committee will respond with additional direction. The Shoshone plan may need to be amended to incorporate explanatory information, additional programmatic direction dealing specifically with winter use, management standards and guidelines and monitoring.

There is currently a proposal from the Chief of the Forest Service to place an 18 month moratorium on road construction or reconstruction in inventoried roadless areas. Concurrently, the Chief issued an advance notice of a proposed rule to review and possibly renew road management on the national forests. Policy changes to current road management may generate a need to amend the Forest Plan.

Other more substantial changes to the Forest Plan will be addressed at the time of revision.

REBECCA AUS
Forest Supervisor

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INTRODUCTION

Monitoring is the preliminary step in the process of deciding whether or not to amend or revise the Shoshone's 1986 Forest Plan. The statutory purpose for monitoring stated in the National Forest Management Act is to ensure that the management system selected in the Forest Plan "will not produce substantial and permanent impairment of the productivity of the land." 16 U.S.C. _1604(g)(3)(C). In order to avoid this result, Forest personnel monitor and evaluate the data collected to determine how well Forest Plan objectives are being met and how closely Forest Plan standards and guidelines have been applied. The regulations also provide for evaluation on a sample basis rather than a comprehensive basis.

Once the report is completed there are two additional steps in the process of deciding whether to amend the Forest Plan. First, an interdisciplinary team evaluates the data collected through monitoring and recommends to the Forest Supervisor whatever changes the team deems necessary. Second, at some point the Forest Supervisor reviews the team recommendations and makes a decision whether or not change is warranted in the way the Forest Plan is implemented.

The following report evaluates Forest Plan implementation during fiscal year 1997. Additional multi-year data is presented in some cases in order to provide perspective on the current state of Forest Plan implementation.

Lower than anticipated budget levels have caused monitoring and evaluation to be less comprehensive than originally envisioned in many cases. However, monitoring efforts have been sufficient to allow the interdisciplinary team to evaluate implementation of the Forest Plan and make recommendations for the Forest Supervisor's consideration. Shoshone National Forest employees have become increasingly creative at implementing the Forest Plan and monitoring under existing budget levels. Some of the approaches noted in this report such as working with volunteers, permittees, special interest organizations, educational institutions, other agencies and National Forests, will become increasingly common as Federal budgets continue to shrink.

This report evaluates Forest Plan implementation under criteria from the 1986 Shoshone National Forest Plan as amended. The report concludes with the interdisciplinary team recommendations to the Forest Supervisor. Some of the recommended changes may be implemented through Forest Plan amendment or revision.

FOREST PLAN

Actual Costs of Applying Management Direction from the Forest Plan

The actual costs of applying management direction are monitored by comparing actual Forest budgets with Forest Plan projections. Table 1 is a comparison of the projected Forest Plan budget with actual allocations 1991 to 1997. In 1997, the total allocated budget was 67% of what was projected in the Forest Plan. Two budget amendments to the Forest Plan have been made since the Plan was published to correct omissions and changes in workload.

Evaluation

The Shoshone National Forest's total budget for 1997 is fairly close to what it was in 1996. However funding for individual items varies greatly in some cases. Funding for the range program, wildlife, fish, soil and water improvements, minerals, the lands program and trail construction are lower than they were in 1996. Funding for other programs, such as fire management, wilderness, and law enforcement are up from 1996 while other programs remained about the same. Fluctuations like this occur annually based on a variety of factors including the current Congress' priorities, therefore it is somewhat more useful to note a long term trend than to compare year to year.

In general, Forest Service budgets are decreasing or remaining level as the Federal government attempts to deal with the federal deficit. This trend is not expected to change anytime in the near future. The Shoshone, like other Forests, is looking to alternative sources of funding to carry out its mission. These include, partnerships with other agencies or groups, concessionaires, contracting work, cost-share programs and volunteers.

Table 1. Forest Budget in Thousand Dollars.

ACTIVITY	FUND CODE	FOREST PLAN	FY 91	FY92	FY93	FY94	FY95	FY96	FY97
Law Enforcement	NFLE	26.0	36.0	19.4	12.7	29.7	14.0	18.1	35.0
Cultural Resources	NFHR	102.5	50.4	73.7	98.5	76.3	36.6	49.1	50.3
Ecosystem Mgmt									
Ecosystem Mgmt cn		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ecosystem Mgmt nf	NFEM/NFIM	0.0	0.0	0.0	0.0	0.0	1,212.9	1,110.2	990.6
Economic Develop	SPEP	0.0	0.0	27.3	15.9	22.7	25.0	20.0	25.0
Facilities									
Facilities Const	CNFA	156.4	64.9	254.2	579.4	343.0	64.5	23.1	109.7
Facilities Mtce	NFFA	295.7	88.4	124.9	43.5	101.0	100.8	103.2	101.8
Federal Highway	HTAE	0.0	0.0	0.0	0.0	9.4	9.4	8.6	10.0
Road Const General	CNGP	753.4	307.7	165.7	61.0	43.7	0.0	0.0	29.7
Road Const Rec	CNRN	19.0	17.2	153.9	153.9	461.0	125.9	134.4	64.8
Road Const Timber	CNTM	74.8	102.2	117.5	256.4	18.9	6.8	12.3	88.7
Road Mtce	NFRD	693.9	271.9	196.2	102.5	188.5	234.1	203.9	193.8
Fire Management	WFPR/WFSU	155.7	245.3	334.6	367.9	368.8	477.3	459.2	488.9
General Admin	NFGA	1,340.3	1,302.0	1,326.6	1,175.2	1,192.9	997.5	1,035.0	943.1
Knutson/vandenberg	CWKV	44.9	28.3	57.7	14.7	59.2	2.2	2.2	0.0
Lands									
Lands - General	NFLA	162.3	132.3	156.5	106.7	127.8	127.6	118.8	94.2
Land Line Location	NFLL	26.3	26.0	28.2	4.8	2.8	0.0	4.9	4.9
Land Acq	LALW	31.3	0.0	5.2	0.0	4.0	4.0	3.8	11.7
Minerals	NFMG	221.5	130.9	253.1	142.9	67.0	16.1	69.2	60.3
Range									
Noxious Weeds		2.7	0.0	3.5	9.0	4.7	9.0	7.9	
Range Admin	NFRG	374.8	331.5	390.4	289.6	276.3	493.9	266.2	262.8
Vegetation Mgmt	NFRV	0.0	0.0	0.0	0.0	8.8	1.8	7.9	8.0
Ranger Betterment	RBRB	80.8	28.8	29.3	19.7	27.0	39.0	33.4	28.5
Recreation									
Recreation Const	CNRF	266.4	151.7	150.6	0.0	343.0	64.5	23.1	109.7
Recreation	NFRM	926.7	1,404.0	802.2	883.0	962.7	860.3	883.3	755.8
Soil & Water									
Soil & Water Admin	NFSO	196.1	183.3	36.5	257.3	206.7	14.5	78.6	90.9
Soil & Water Improv	NFSI	205.1	55.6	5.5	0.0	38.8	76.7	50.0	0.0
Soil Inventory	NFSE	197.2	202.7	245.9	293.5	204.7	301.6	0.0	0.0
T&e Admin	NFTE	386.2	287.1	283.0	270.1	263.0	214.9	217.2	219.5
Timber									
Timber Admin	NFTM	83.2	388.4	200.9	17.2	299.0	162.0	280.0	247.9
Timber Exam		66.1	61.3	37.0	11.3	22.2	20.0	0.0	0.0
Timber Improv	NFFV	46.9	2.1	30.5	2.3	228.6	9.0	9.0	95.8
Timber Planning		181.3	94.2	270.5	110.8	147.3	43.4	0.0	0.0
Timber Prep		164.6	111.2	159.9	135.6	65.9	40.2	0.0	0.0
Brush Disposal	BDBD	23.1	3.9	11.8	3.9	2.7	8.0	4.2	5.1
Insect & Disease Mgmt		0.0	111.6	50.9	12.0	0.0	0.0	0.0	
Reforestation	RTRT	15.0	38.7	233.0	165.7	165.6	165.6	109.9	148.8
Salvage Sale Fund	SSSS	111.5	296.4	234.5	221.7	170.1	300.1	433.2	350.8
Trails									
Trail Const	CNTR	559.0	124.0	54.8	144.9	4.2	116.1	50.1	12.0
Trail Mtce	NFTR	342.7	236.1	285.7	252.2	343.5	296.3	0.0	
Wilderness	NFWM	379.4	782.4	255.1	245.2	431.0	462.3	382.3	408.9
Wildlife & Fish									
Wildlife Admin	NFWL	430.4	470.3	429.6	329.0	265.4	110.9	186.2	116.1
Fish	NFIF	158.6	25.1	103.2	119.9	77.5	54.5	56.1	37.5
TOTAL		9,301.9	8,193.8	7,599.0	6,929.7	7,675.3	7,319.2	6,454.6	6,200.6
% OF FOREST PLAN			88	82	74	83	79	69	67

RECREATION

In 1997, the emphasis for the front country recreation program on the Forest continued to be "having a strong field presence of highly qualified rangers" providing for health and safety of the forest visitor, stewardship and protection of forest resources, and providing high quality services. A daily log was required of each field ranger during the field season.

Priorities were as follows:

- To provide for the health and safety of forest visitors. To protect the grizzly bear by providing high levels of information, education, interpretation, monitoring, and compliance relative to the grizzly bear. To prevent human/bear conflicts. Of the over 150 violation notices issued on the North Zone of the Forest (Clarks Fork, Wapiti and Greybull Ranger Districts), over 75% related to grizzly closure orders.

- To keep all administrative sites and public recreation facilities safe, clean and well maintained.

- To provide adequate levels of monitoring, clean-up and site rehabilitation in dispersed areas such that forest visitors have a high quality experience.

- To provide adequate levels of compliance/enforcement patrols to assure resources are protected and user conflicts minimized.

- To educate visitors on proper land ethics and multiple use, with the focus being no trace techniques and avoiding human/grizzly conflicts.

- To work as partners with resorts, campground concessionaire, and outfitter naturalists to provide for public safety, land stewardship, and high quality value added visitor services (including education and interpretation).

Monitoring was integrated in all aspects of field work, and in addition the Shoshone National Forest continued work on several nationwide Forest Service initiatives to help recreation managers better implement and monitor quality recreation experiences and facilities. Generally these initiatives involve establishing a database to record all developed and dispersed recreation sites, their condition, visitor occupancy rates, and their cost of operation. The "Meaningful Measures" and "Infrastructure" databases are currently in place on the Forest and baseline data entry is complete.

The Forest's Geographical Information System (GIS) database continues to grow and improve. Recreation personnel continue to validate and consolidate recreation site and roads data (from a variety of mapping sources) into one combined data base.

This gathering of information is integral to the management of the recreation program on the Forest and will facilitate a comprehensive recreation monitoring program for the future.

The table 2 illustrates the recreation use the Shoshone National Forest experienced by type of recreation activity in recreation visitor days (RVD).

Table 2. Fiscal Year 1997 Recreation Use in Recreation Visitor Days (RVD)

Activity	RVD
Aerial Trams and Lifts	203
Attending Talks and Programs	109
Automobile Travel	174,400
Boat Launching	202
Boat, Powered	303
Camping, General Day	40,366
Camping, Tent	75,703
Camping, Trailer	28,373
Camping, Vehicle	20,297
Canoeing	266
Cross Country Skiing, Snowshoeing	2,905
Diving	5
Fishing, Cold Water	28,291
Fishing, Ice	68
Games and Play	23
Gathering Forest Products	22,013
General Information	875
Hiking and Walking	53,522
Horseback Riding	49,448
Hunting, Big Game	52,436
Hunting, Small Game	775
Hunting, Upland Birds	587
Ice and Snowcraft Travel	25,838
Motorcycles and Scooters	2,500
Mountain Bike	2,738
Mountain Climbing	7,601
Nature Study (Hobby, Education)	28,081
Organization Camping, General Day	2,508
Organization Camping, Night	10,082
Other Watercraft	164
Picnicking	13,160
Recreation Cabin Use	5,647
Resort and Commercial Pub. Serv, Gen.	18,384
Resort Lodging	40,974
Skiing, Downhill	1,511
Sledding, Tobogganing, Tubing	130
Snow Play	4,065
Specialized Landcraft (OHV's)	2,800
Swimming and Waterplay	350
Team Sports	12
Touring Bike	290
Trailhead/Snowpark Activities	6,100
Train and Bus Touring	20,834
Trapping	167
Viewing Activities	408
Viewing Fish	3,083
Viewing Interpretive Exhibits	3,420
Viewing Interpretive Signs	3,963
Viewing Scenery	341,500
Viewing Wildflowers	267
Viewing Wildlife	19,333
Viewing Works of Humankind	11,666
Sum	1,128,746

1. Off Road Vehicle Use of Designated Travelways

Off road vehicle (ORV) use is prohibited on the Forest except for travel on designated roads (signed with white arrows and/or Forest road numbers) and snowmobiles travelling on snow where permitted. The use of off highway vehicles (OHV), both legal and illegal, continues to increase on the Forest, following the national trend. Off highway use is monitored whenever possible through observation and inspection.

As noted in the 1996 Monitoring Report several areas are of particular concern to Forest personnel. The areas of concern that were identified in the winter of 1996/1997 were incorporated into the 1997 monitoring plan. Areas of concentrated monitoring for the 1997 use season are listed below by District.

Evaluation

Washakie District:

The South Pass and Sinks Canyon Loop areas were monitored on a weekly basis throughout the summer by Forest personnel. Use was slightly above 1996 levels. Law enforcement patrols were made on a regular basis throughout the summer season. Although only slight increase in use was noted, District personnel are having difficulty responding to the overall level of OHV use on the District, and increasing public pressure for more ORV trails.

Wind River District:

Monitoring by Forest Service Law Enforcement personnel indicates that the increasing use trend in the Union Pass area continues. The Wind River District continued to experience very low levels of staffing making it difficult to maintain their identified 1997 monitoring program. The District is in the process of hiring two additional recreation people in FY 98.

Wapiti District:

Forest personnel on the Wapiti District monitored OHV use through visual observation, photography, violation notices and incident reports. Information gathered in the field was entered into a daily journal and new roads were mapped.

1. Clocktower: Past off road travel on Clocktower road had created multiple roading and erosion problems. After closing the last 1/4 mile of the road with a closure gate and advising travelers of the closure with a sign and bulletin board in 1996, for the most part there have been few intrusions. A barrier was placed next to the closure gate in May of 1997 to prevent vehicles from driving around the gate. Since the barrier was installed there have been no violations of the closure. There will have to be continued monitoring as some rutting in the tracks of the old road is occurring during run off.

2. Elk Fork: Resource damage has been noted along riparian areas in Elk Fork Creek. The majority of damage to this area is being caused by OHVs operating during wet periods. It was recommended that Elk Fork be monitored closely in the 1997 use season.

It may be necessary to close the road when it is wet and the ground is unstable to prevent resource damage. Conditions of the road have not improved and in some cases have gotten worse. Resource damage is occurring when drivers circumvent muddy spots creating new "pathways". Engineering has been advised of the road's condition.

3. *North Fork Side Roads:* Many of these roads which have historical use for wildlife viewing and fishing access in the area between Goff Creek and the East Entrance to Yellowstone Park have been eliminated with the realignment of the new highway. Below Goff Creek, use of these roads continues to include new roads being created to access the river or for firewood cutting. Road closed signs have and will continue to be erected when there is encroachment. The river access road east of June Creek has major resource damage as users try to avoid wet areas. As the new highway construction continues many of these roads will be eliminated.

4. *Kitty Creek:* Off road use has become an increasing problem. More and more use by vehicles is occurring on roads that were originally built to accommodate access to timber sales. Vehicles have tried to drive up the main trail and are probably entering the wilderness. Road closed signing is planned for 1998, and the Kitty Creek Road is planned for permanent closure and obliteration starting just above the summer home group. This may be accomplished in 1998.

5. *Blackwater:* Since the gated closure of the spur road in 1996, not only has there been no further encroachment but the old road is naturally rehabilitating itself. The main road at the upper end still has some low spots where water collects and can cause some vehicles to high center.

6. *Sweetwater:* Signing over the past two years has limited off-road use considerably. Little of any resource damage is occurring. Consistent replacement and/or maintenance of signs will help with compliance.

7. *Logan Mountain:* At the private/public land boundary on Logan Creek the sign erected in 1996 stating there was no vehicle travel permitted was cut down as well as the locked chains cut and removed. A new carsonite sign was installed. Access has now been restricted as the present land owner is not allowing travel through his property. The access road off Rattlesnake Creek is controlled by a locked gate. If access remains restricted, resource damage that has occurred will begin to mend.

8. *Rattlesnake Mountain:* Legal access remains tied up in the courts. At present the Red Grade Road can be used (based upon county documents) to access the Forest. However, the issue will not be resolved until the appellate court makes a decision. Patrols will continue to make certain travel remains on the established road.

9. *Ishawooa Creek:* A land exchange has solved much of the off-road use in this area. The Mariposa Ranch restricts access which has made a difference in use. Regular patrols will occur to check for compliance.

10. *Aldrich Creek Outfitter Corral Access:* No problems with off-road use. There continues to be a large accumulation of manure from the corrals.

11. Aldrich Creek Access: Road closed signs have been installed at junctions where illegal roads have occurred. There will be white arrows also installed to keep travelers on the main road. The main road in a number of places is deeply rutted with users driving around the ruts causing resource damage.

12. Carter Mountain Road: OHV use on Carter Mountain continued to increase in 1996. Erosion problems were noted on the east end of Carter and on the Belknap timber sale road. The erosion is caused for the most part by OHV use during wet periods. ORV use on private property adjacent to the Forest continues to be a problem on Carter Mountain. Private property boundary signs were placed in the summer of 1996. Carter Mountain was identified as an area where regularly scheduled monitoring patrols during the 1997 use season would be appropriate.

The plans for implementation of some travel management for 1997 did not materialize. Lack of time/personnel and higher priorities prohibited the work from being done. The installation of white arrows, road closed signs, and reclamation of damaged resource areas will take priority in 1998. An assessment of the road that leads to the Belknap Timber Sale will also be evaluated as to resource damage.

Clarks Forks District:

In 1996 Clarks Fork District personnel identified 8 areas of concern relative to resource degradation associated with motorized use on the District; Bald Ridge, Upper Sunlight Creek, Russell Creek, Clarks Fork Canyon, Table Mountain, Crazy Lakes Trail, Clay Butte-Absaroka Beartooth Wilderness, and the Fantan/Morrison Jeep Trails. These areas became the focus for compliance patrols in 1997.

The Morrison Jeep Trail was patrolled twice weekly via ATV's focusing on off-road violations, resource damage (primarily from camping), and violation of the bear orders. Roads and dispersed areas associated with roads in the following areas were monitored daily: Bald Ridge, upper Sunlight, Clay Butte, Upper Morrison Jeep Trail, Fantan, Crazy Creek, Pilot Creek, Russel Creek, Antelope Butte, and Muddy Creek. Each of these areas was monitored throughout the summer by visual observation. Patrols were documented and violations and incidents were recorded.

Monitoring indicates an overall increase in OHV use on the Clarks Fork District. As in 1996, of particular note was the Bald Ridge area where over 60 vehicles a day are common during hunting season. The Morrison Jeep trail and the Upper Sunlight area are also experiencing an increase in OHV use, particularly among ATV users.

Greybull District:

ATV's are generally used in most of the dispersed areas of the district. Areas where problems with violations have occurred in the past are, Phelps Mountain and Kirwin. The district did not receive as many complaints from other users in 1997. A volunteer was unable to stay at Kirwin so we did not have the visitor observation that we had in 1996.

During the 1997 hunting season the district had very little coverage due to lack of personnel. One person on the district patrolled the front country for the first 10 days of the season.

2. Trail Condition

Summer/Fall Use Trails

The 1997 trails budget was the largest ever and a large percentage of it was spent on the ground. Maintenance coverage was the highest in recent times, and the overall trail system on the Forest was maintained to the highest level in recent Forest history. Maintenance priorities were based upon public safety and resource concerns.

Trail condition is monitored annually on the Shoshone National Forest. In 1996 the Forest implemented a formal Forest wide trails monitoring program. The monitoring goal for all Districts was 100% of all mainline trails during the season. In addition to the mainline trails, a sample of 50% of all secondary trails was to be monitored and the results documented. All monitoring data is to be kept on file within each of the District Offices. There are approximately 1,459 miles of trails on the Shoshone. Motorized use is allowed on approximately 459 of these miles. In 1997, all mainline trails and the majority of secondaries were maintained and monitored. In addition, a portion of the ways were monitored.

Evaluation

Monitoring indicates that in some areas, the Shoshone National Forest continues to have difficulty meeting the public expectations for acceptable levels of trail maintenance. Although many areas still need maintenance, there are many miles of trail at an acceptable standard considering the type and amount of use. Many trails are located in terrain that limits the ability to achieve handbook standards, and management objectives on wilderness trails mandate a lower standard than that usually targeted.

As mentioned above, sections of trail that are unsafe receive first priority; sections of trail that are causing resource problems are the second priority; and crew flexibility allows the highest priority work to be completed throughout the season.

Varieties of trail use are increasing. On the South Zone, outside wilderness, new uses include mountain bikes, wheelchairs, runners, llamas and goats. Llamas and goats are used on wilderness trails as well. With each of these activities comes a separate set of maintenance challenges.

Horse use is the predominant use on the North Zone except in the Beartooth area where backpacking is the primary use. Use on the North Zone has been fairly static, due to late snow/high water and probably the increasing presence of the grizzly.

Although downed timber, washouts, and bog areas require much of the crew's time to repair, these concerns are usually dealt with effectively using primitive skills. Due to the extreme type of terrain present in many areas (slick rock, cliffs, boulder fields, and talus

slopes), and the annual problems associated with high water, it is impossible to eliminate all the major safety hazards using only primitive skills technology.

The majority of safety hazards for both humans and livestock are related to rock hazards on steep side slopes, and excessive grade and poor alignment continue to cause the most resource damage.

Trail condition for the 1997 use season as reported by District is as follows:

Wind River District

During the course of their routine duties Wilderness rangers and trail crew staff covered 100% of the mainline trails on the Wind River District. Monitoring forms and photos were used to record the findings of the field crews.

In 1997 a three person trail crew and two volunteer groups repaired significant damage to several high use areas, and four wilderness rangers cleared most of the mainline trails of downed timber. Many areas of trail braiding are getting worse and will continue to deteriorate without significant attention. Lack of regular maintenance over the last 40 years has led to significant erosion of tread material. Many small bridges and rock structures need replacing.

Washakie District

Wilderness rangers and trail crews monitored 100% of the mainline trails and 90% of the secondary trails on the District in 1997. Trails monitoring reports and photo documentation of problem areas were recorded for each trail segment that had not been documented before. No monitoring of way trails took place due to limited staffing and the low amount of visitor use on these trails.

Nearly 40 documented trail projects are recorded in the District's Trail Project Inventory. The 1997 monitoring effort shows that almost all of these projects still need to be completed. Current budgets allow for only the most basic maintenance procedures such as cutting out fallen trees and cleaning water bars. Many structures such as small trail bridges and rock work need replacing. Two volunteer groups worked on one heavily impacted area for 198 person days. Budget and staffing levels do not permit the level of attention required to complete the identified trail maintenance.

Greybull District

The trail crew, district personnel and volunteers were able to monitor 100% of mainline trails, 67% of secondary trails and 12% of way trails on the Greybull District. Trails were monitored for overall condition, accessibility and resource damage. Field monitoring reports and photos of problem areas were filed at the District Office.

The summer of 1997 was unusually wet. Saturated soils resulted in rock slides and in places large boulders rolled onto trails. Rivers and creeks, which many of the trails parallel and cross, are constantly at work to claim or reroute trails.

Current trail maintenance on the Greybull District is performed by a three person trail crew. This multi-financed crew spent about 75% of their time on trail maintenance, monitoring (including campsite monitoring) and 25% installing bear poles.

Trails are not maintained to standard, but receive minimum maintenance to allow passage and provide for health and safety. Maintenance on the District in 1997 included clearing fallen trees, removing rock slides, and repairing/removing safety hazards from trailways.

The district hosted a Sierra Club Service Trip. Their project was the South Fork of the Wood River Trail, Deadman and East Fork of the South Fork. Fluctuations in river flow continually erode at the trails or block them with debris. The work group built french drains, removed trees, built rock cairns, and blazed trees to mark the trail.

Wapiti District

Trails on the Wapiti District were monitored for resource damage and safety hazards. Field going district personnel and trail crews recorded their observations on trail monitoring forms and with photographs. Field crews were able to maintain and monitor 288 miles (100%) of mainline and secondary trails (125 South Fork & 163 North Fork) as well as monitoring an additional 91 miles of way trails (42 1/2 South Fork & 48 1/2 on North Fork).

The field data collected suggests that the majority of the mainline and secondary trails on the Wapiti District are meeting the management objectives for health and safety. Overall mainline trails are maintained to a Level II standard for wilderness objectives. Most secondaries are maintained to Level I, with high hazard areas repaired. Way trails are being monitored as to condition and use, with no active maintenance at the present time.

Trails on the District appear to have reached a maintenance plateau. Crews are able to keep them open and maintained to their current level which in most areas is meeting management objectives. Without major reconstruction, there is little that can be done above what is presently being done.

Clarks Fork District

Trail crews on the Clarks Fork District maintained and monitored 40.5 miles (100%) of mainline trails, 162.4 miles (98%) of secondary trails, and monitored 26 miles (42%) of way trails. Field data was recorded on trail monitoring forms and photographs.

Many of the same trends found on the Wapiti District apply to the Clarks Fork. Use trends on the District indicate that day use and horse use in the Beartooth Mountains continues to rise sharply. Along with this rise in visitor use trail crews are recording a corresponding increase in maintenance problems.

Winter Use Trails

Winter trail use is an increasingly popular activity on the Shoshone. Winter trail use is monitored annually. Trails are groomed and maintained in cooperation with other agencies or user groups. On the Clarks Fork District field personnel inspect the Clarks Fork snowmobile

trail in the summer or fall. The trail is groomed through a cooperative agreement with the Park County Snowmobile Association and the Wyoming Division of State Parks. Copies of the trail maintenance logs are reviewed by Forest recreation staff and maintenance inspection is done by state park personnel.

On the south end of the Forest - Wind River and Washakie Districts - snowmobile system trails cover about 200 miles and connect with the system trails on the Pinedale, Jackson, and Buffalo Districts of the Bridger-Teton National Forest. The Continental Divide Snowmobile Trail (CDST) is a designated winter recreational trail that begins in Lander, Wyoming and traverses north across the Wind River Mountains to Grand Teton National Park. These trails are inspected annually by District personnel, local snowmobile organizations, and Wyoming Department of Commerce personnel for personal safety, trail reroutes, and additional signs. The Department of Commerce funds the grooming of trails and the Forest, together with local volunteer groups, signs and stakes the trails. Trail counters are placed annually on several main trails to monitor use trends and, indirectly, trail condition as the two are somewhat related. Forest personnel also monitor use and facility condition through periodic inspection and feedback from users.

The CDST is monitored annually through the CDST Monitoring Plan which was developed in partnership with several environmental groups who were concerned about future impacts of the trail on other resource values. The plan includes monitoring of use, and impacts to vegetation, soil, water, air and wildlife. Each year the state of Wyoming compiles and prepares a season report based on the data collected by all the agencies involved with the trail. Meetings were conducted with the Bridger-Teton NF, Grand Teton NP, and the State Division of Parks to discuss common monitoring procedures and problems. The CDST is used in localized areas, but has not received extensive use over its entire length primarily due to snow conditions that last several years.

Newer activities that also involve winter use on trails are Nordic skiing and dog mushing. In some cases they have created safety hazards for all trail users. In addition to signing on most dual use trails to warn people of hazards, the Forest has encouraged dog mushers and nordic skiers to use separate areas and trails, however in many areas this is not possible.

Evaluation

Snowmobiling, cross country skiing and backcountry skiing continue to be the fastest growing segment of recreation use on the Forest. Several of the areas with higher use are experiencing deteriorated conditions. Increased use, road crossings, overcrowding of parking areas, and high speed riding of narrow trails is leading toward increasing danger and conflict.

Storage of vehicles at the Pilot parking area became a major problem in 1997, and all parties were required to remove stored vehicles. This has caused some controversy.

GYA Winter Visitor Use Assessment

The Shoshone National Forest has been represented on an interagency team charged with evaluating winter visitor use in the Greater Yellowstone Area. The team was chartered by the Greater Yellowstone Coordinating Committee (GYCC) in response to greatly elevated levels of snowmobile use in Yellowstone National Park, and a number of other issues that are, or could potentially, affect the six Forests and two Parks represented. The team performed an assessment of the current winter use conflicts that are occurring in the GYA. Issues include crowding, safety, air quality, wildlife impacts, community expectations, wilderness trespass, adequacy of facilities, and conflicts between different user groups. The preliminary report on winter use was published in April of 1997. The final report is expected to be released by June of 1988. For a complete assessment of existing use, issues and conflicts and recommendations, that document is referenced. In short, the existing land base on the Shoshone that is available and suitable for winter use is subject to competition between motorized and nonmotorized forms of recreation. Increasing amounts of snowmobile use are being noted by state trails personnel and forest personnel. Nonmotorized recreation is being displaced, and other impacts are possible. Concerns are being noted about grooming standards, safety, and how to deal with expected further increases in snowmobile use. Recommendations include increased information and education, enhanced field administration, signing, facility expansion, and separation of incompatible uses. The need for better data, and for higher levels of cooperation among interested parties is highlighted in the report.

3. Dispersed Recreation Use and Experience and 4. Dispersed Campsite Condition

Dispersed recreation use and experience and dispersed campsite condition are interrelated and therefore are addressed together in this report. The Forest Plan was amended in March 1997 to update data sources and techniques used to monitor a number of items including these.

Forest Plan standards for campsite condition are stated in terms of Frissell Condition Class. Use of this system for monitoring proved to be un-workable as the Limits of Acceptable Change (LAC) process was undertaken on the Popo Agie wilderness. The modified Cole methodology proved much more descriptive and, as a result, more helpful in developing potential solutions to problems. Monitoring in accordance with this method has been applied primarily in wilderness backcountry sites. The amendment to the monitoring section of the Forest Plan reflects these changes.

In 1997, approximately 75% of dispersed sites on the north end of the Forest were monitored. Dispersed sites along roads were monitored more frequently than backcountry sites. On the south end, the intent was to monitor a similar percentage of sites during the 1997 field season. Unexpected changes in personnel, including the death of an employee, resulted in the monitoring of only a small percentage of total sites. During the winter months south zone employees located groups of dispersed sites on maps in order to get a better idea of where clusters of dispersed camping areas are located. These areas were captured in a Geographical Information System (GIS). This data will be used in FY 98 to help south zone personnel prioritize dispersed campsite inventories and more efficiently monitor dispersed sites.

Evaluation

The Cole numerical ratings for the inventoried campsites indicate a range of degradation from moderate to high. None of the inventoried campsites received a Cole rating of "low degradation" or "pristine". Data indicates that development and cleanliness consistently receive high ratings. Several sites are approaching a rating of maximum degradation. Rehabilitation that removes developments and refuse will unilaterally improve the condition of all dispersed sites.

Past monitoring indicated dispersed areas needing attention, and in 1997, the following were priorities on the Clarks Fork. The Morrison Jeep Trail was patrolled twice weekly via ATV's focusing on off-road violations, resource damage (primarily from camping), and violation of the bear orders. Dispersed areas associated with roads in the following areas were monitored daily: Bald Ridge, upper Sunlight, Beartooths, Upper Morrison Jeep Trail, Fantan, Crazy Creek, Pilot Creek, Russell Creek, Antelope Butte, and Muddy Creek. Each of these areas was monitored throughout the summer by visual observation, campsites were cleaned up (fire rings, firewood piles, structures, & trash), signs repaired or installed, and non-system two tracks closed. Patrols were documented and violations and incidents were recorded.

Within the North Fork corridor on the Wapiti District, resource degradation and littering from dispersed camping is minimal. Dispersed camping is not allowed within 1/2 mile of the highway. Consistent enforcement of the special order prohibiting this has virtually eliminated any problem dispersed areas on the corridor. The following areas are on the North Fork corridor (Cody, WY to Yellowstone highway), one of the most heavily used areas on the Shoshone.

1. Lower Sweetwater Road: There was very little use of this area during 1997. A small amount of trash was removed and a fire ring rehabilitated. The main fire ring on the site was left to encourage continued use and discourage building additional rings. Minimal resource damage is occurring.

2. Lower Kitty Creek Road: Dispersed sites along the road are receiving very little use. Since a yearly inspection of the sites takes place which includes removing litter, rehabilitation of fire rings, and taking down meat poles tied with wire the sites that are used are kept clean with minimal resource damage.

3. Lower Blackwater Creek Road: The narrative for Lower Kitty Creek applies to this area also. Continued monitoring helps minimize resource damage.

4. *Lower Elk Fork Creek Road:* The area continues to be heavily impacted for a 30-day period during the late elk hunting season. One new site was established and a road across a riparian area was created to access it. The site was rehabilitated and the road monitored for any continued use. Campsites for the most part are well maintained with little resource damage noted.

5. *Clocktower Creek Road:* Beyond the closure gate, all camp sites have been rehabilitated and litter picked up. Below the closure gate, campers continue to use sites that are in violation of the special order which prevents camping within 1/2 mile of the highway corridor. During regular patrols the area is monitored, camp site rehabilitated and violation notices are issued when necessary.

6. *Aldrich Creek Road:* Three camp sites are receiving very little use. No resource damage is occurring.

7. *Carter Mountain Road:* The primary use season for Carter Mountain, Aldrich Creek and Corral/Aldrich Creek is during hunting season. The dispersed sites in these areas are showing unacceptable levels of soil erosion and vegetation damage. Many of these campsites are located within grazing allotments. The dual use by cattle and humans is compounding the site degradation problem. Resource degradation has also been noted within the Boulder Creek area. Horses tied to trees appears to be the cause of most of the resource damage. The problems at Boulder Creek appear to have lessened due to diligent education of users by Forest personnel. Sites are used almost exclusively during hunting season. Of the four sites, two are heavily impacted and some resource damage is taking place. The sites will be further monitored in 1998, some reclamation done, and an assessment made as to future use.

8. *Clearwater Creek Spur Road:* A site never used in the past was created just south of the Clearwater Creek bridge. The site is within the restricted 1/2 mile area. The fire ring was rehabilitated and litter collected. Since the site will be impacted by the realignment of the highway there will be little to monitor in the future.

9. *June Creek Road:* North of where June Creek enters the North Fork River, three sites have been used although not very heavily. Little resource damage has occurred. Because the sites exist within the 1/2 mile restricted area, they were dismantled and the area rehabilitated.

10. *Mummy Pit Area:* South of the Mummy Pit gravel pit near the river two sites were located that have been sparsely used. Some trash was removed from the area but no resource damage has been occurring.

The Greybull District was involved in a national recreation use pilot survey. The district was broken up into areas by roaded dispersed and unroaded dispersed. These sites were randomly surveyed on 42 days, beginning June 1, 1997 and running through September 30, of the 97 fiscal year. This survey will continue until May 30, 1998. Survey data is collected and submitted to a receiving center which is compiling and analyzing information on the National level.

This year there was an increase in the number of citations written on the Greybull District. The majority of these citations were for violation of the food storage order. Signing was kept current and up to date. People at the trailheads and campgrounds received information and education from district personnel. Every effort was made to keep users informed of the orders and the situation with the grizzly bears.

On the South Zone of the Forest, areas identified as receiving heavy dispersed use in the 1996 Monitoring Report continue to have use problems. Monitoring of these areas is by observation and inspection which provides relative use trends. Problem areas on the Wind River District are Brooks Lake, the Wiggins Fork Road/Double Cabin area, and the Union Pass area. A new dispersed site monitoring form was developed to be implemented in 1998.

On the Washakie District, Louis Lake Basin is in need of dispersed recreation management. A significant increase in rock climbing activity has been noticed, with parking facilities in Sinks Canyon frequently overflowing throughout the year. A joint BLM, USFS, and volunteer trail project to access the climbing area is being planned for 98.

5. Developed Site Use

Developed recreation site use is monitored largely through user fees and observation. More reliable use data is available for sites where fees are collected. Where user fees are not collected, district recreation personnel keep track of use in a number of ways including car counts at trailheads, visual estimates, and sign-in sheets.

Evaluation

Stabilization work was partially completed on the Blue Ridge Fire Lookout.

Nationwide, the Forest Service is adopting a new system for collecting uniform and consistent data on recreational sites and areas. The new system is referred to as Meaningful Measures. The goals of this effort are to identify measurable components; establish standards of quality; determine realistic costs; prioritize work to be accomplished; allocate the program of work and agree on management attainment targets; and monitor, measure, and report actual management attainment. This system is the result of a Government Accounting Office (GAO) report on recreation resources which acknowledged in its findings that the Forest Service does not have uniform and consistent data on recreational sites or areas. It found that reliable data on maintenance and reconstruction needs is also lacking. There is an effort underway across the Forest Service to address this situation.

In 1995 baseline data was collected and verified during the field season. Forest personnel participated in several Region wide "leveling" meetings. Region wide standards for maintaining recreation facilities were developed and prioritized. Implementation of the Meaningful Measures system should begin in 1998. This process is expected to help the Forest better define the quality of use it provides in addition to just the amount. Measures used to monitor will be consistent throughout the National Forest system.

6. Developed Site Condition

Operation and maintenance of developed sites is part of the Forest's annual program of work. Facilities are maintained to the extent that funding levels allow. In recent years the level of funding has made it very difficult to keep up with both operation and maintenance of developed sites and future funding is not expected to increase. In 1995 in an effort to address the problem, a decision was made to look for other ways to run some of our developed campgrounds. Volunteers, concessionaires and partnerships are some of the options that were considered. Volunteer camp hosts and interpreters have been utilized throughout the Forest and provide a tremendous service. In August of 1995 the Shoshone issued a prospectus to potential campground concessionaires. In March of 1996 a permit was awarded to Rocky Mountain Recreation to operate many of the developed recreation facilities on the Clarks Fork, the Wapiti, and the Wind River Districts. Rocky Mountain Recreation operated developed campgrounds again in 1997.

Evaluation

Implementation of Meaningful Measures, the new Forest Service system mentioned under the previous monitoring element, will help the Forest establish clearer standards for measuring the condition of facilities at developed recreation sites. An inventory of developed sites was recently conducted on the Forest and that information was loaded into a database during the winter of 1996/97. Information on developed site condition will be easier to manage once the database is complete.

On the Clarks Fork District, 8 campgrounds (110 campsites) were again managed by the Rocky Mountain Recreation Company. Management operations and facilities were inspected 3 times per week. Four formal inspections of concessionaire operations were also performed. Complete facilities inspections were made at the end of the operating season.

Campground facilities on the Clarks Fork are nearly all of uniform age. Picnic tables, fire rings, and toilets are in need of replacement. Very few of the District's facilities are accessible to disabled persons. In 1997 the District installed a new toilet at Top of the World Store, removed the toilet at West Summit, graveled all campground roads, and several trailheads (Dead Indian & North Crandall), replaced some fencing, and upgraded several campsites.

Many facilities were stained or painted in 1997. With limited budgets, maintenance levels at developed recreation sites are generally routine and the heavy maintenance backlog is extremely high.

Developed sites on the Wapiti District receive heavy use from June through mid September. Campgrounds on the North Fork Corridor were operated by Rocky Mountain Recreation Company again during the 1997 season. Monitoring of site condition occurred almost daily and was recorded in daily logs and on site inspection forms.

Daily journals indicate that in general campground facilities are clean and well maintained. The primary problem noted by Forest personnel is the degradation of these facilities through daily wear and tear. Most of the picnic tables, hand pumps, fire rings and toilets have been in place since the 1960's and need to be replaced. All hand pumps had the internal workings replaced in 1997. Despite the heavy use these sites receive, soil and vegetation condition is generally good.

All campground facilities in the North Fork Corridor are planned for upgrading and retrofitting during the next decade, starting with Three Mile Campground in 1999.

Two leaking toilets were replaced in the Wapiti Campground in 1997. Since most toilets on the North Fork corridor have been in place for many years, vaults are being monitored closely.

Concessionaire offset fees are expected to continue to help the Forest fund facilities replacement in developed areas.

The campground facilities on the southern half of the Forest are in poorer condition than those on the northern half. Heavy maintenance work has not been completed in a number of locations because of personnel, time and funding limits. As a result, facilities are beginning to show signs of deterioration. The Louis Lake campground, for example, is receiving heavy use and subsequent resource impacts to the campsites and surrounding area. Major rehabilitation and/or reconstruction is needed. The water system in the Sinks Canyon campground requires constant maintenance. In 1995, six breakdowns occurred. Additional Capital Investment funds are needed to upgrade these facilities.

This year the Greybull District replaced two vault toilets at the Jack Creek Trailhead and Campground with new, pre-cast SST's. The district now has 100% replacement of toilets in its high use areas, with 2 at Jack Creek and 2 in the campgrounds on the Wood River, which were previously replaced.

Conditions of the developed sites are generally good. With the help of district personnel and the North Zone fire crew, we were able to remove hazard trees. Although toilets in the campgrounds are handicapped accessible, conditions of the roads and campsites make it difficult to access the toilets unless someone is driven to within approximately 10' of the toilet.

The campground facilities on the South Zone of the Forest are in poorer condition than those on the North Zone. Heavy maintenance work has not been completed in a number of locations because of personnel, time, and funding limits. As a result, facilities are beginning to show signs of deterioration. Louis Lake Campground is receiving heavy use and subsequent resource impacts to the campsites and surrounding area. Major rehabilitation and/or reconstruction is needed. The water system in the Sinks Canyon Campground requires high levels of maintenance. The water system at Louis Lake Campground was shut down temporarily due to bacteria contamination. In 1997, seven breakdowns occurred.

7. Downhill Skiing Use

The Shoshone's single developed downhill ski area, Sleeping Giant, is located on the Wapiti District. The area has the capability to accommodate approximately 2,000 skiers at one time (SAOT). Total skier visits for 96/97 was 4528. This compares to 5154 in 95/96, 3338 in 94/95, and 2685 in 93/94.

Evaluation

The Forest Plan recommends re-evaluation of the ski area development schedule when use exceeds managed capacity for three years. Sleeping Giant did not operate during the 1991/1992, 1992/1993 and 1993/1994 winter seasons. Use figures for 1994 through 1997 indicate that Sleeping Giant has not come close to reaching capacity.

WILDERNESS

Introduction

The overall Forest management philosophy for management of the Shoshone National Forest backcountry, emphasizes a strong field presence of highly qualified, uniformed (and on the North Zone, horse-mounted) rangers in lieu of an office presence, computer assisted planning, office generated inventories, and theoretical problem solving. Unwavering commitment, a tenacious sense of purpose, a strong work ethic, and an exemplary backcountry ethic coupled with a high degree of proficiency in primitive skills, horsemanship, orienteering, and survival are the standard. Field priorities have been on trail maintenance, campsite clean-up/rehabilitation, installation of bear attractant facilities, outfitter permit administration, compliance (with the primary focus being on grizzly bear attractant storage, outfitting, and caching), and education (focusing primarily on low impact techniques and minimizing human/grizzly conflicts). Although not considered as high a priority, a sufficient amount of continuous incidental visual/photo monitoring occurs to assure that resource trends are stable to upward, and both resource and facility inventories are continuously updated based upon field verification.

For reasons of efficiency as well as safety, 3 person backcountry crews are the standard on the North Zone. All backcountry personnel share work including continual visual inventory and monitoring. Each person keeps a daily log, and each crew foreman maintains a detailed log of all activities and sites inventoried and monitored each day in the field.

1. Wilderness Use

The Shoshone National Forest contains all or part of 5 wilderness areas totalling 1,379,048 acres or 56.7% of the total Forest acreage. They are the North Absaroka, Absaroka-Beartooth, Washakie, Fitzpatrick and Popo Agie. Every ranger district on the Forest contains areas of wilderness. Wilderness Implementation Schedules (WIS) have been completed for all wilderness areas on the Forest, and they serve as the basis for wilderness management direction, priorities, and project implementation. A WIS is simply a schedule and priorities for recurring management activities and implementation of projects in each wilderness.

In 1995 the Shoshone experienced an estimated 189,000 recreation visitor days (RVD) in wilderness. In 1996 that number was slightly over 225,000 RVD. Figures for use in wilderness are not available for 1997. See Table 2 for types of use. Wilderness use varies between the north and south halves of the Forest and between the wilderness areas themselves.

2. Wilderness Campsite Condition

Wilderness campsite condition is closely tied to wilderness use. The Wilderness Implementation Schedules (WIS) for the Washakie and North Absaroka identified annual recurring activities and costs for monitoring.

Campsites in wilderness areas that receive heavy use are the most impacted ones. For example, campsites in the Popo Agie wilderness were almost all surveyed by NOLS volunteers in the late 1980s. They found some of the same problems which occur in heavily used dispersed recreation campsites. Many campsites were exceeding Forest Plan standards and guidelines. This is part of

what drove the use allocation process and subsequent permitting system for organized groups or horse users in that area. Individuals are not required to have permits.

Campsites in the North Zone wilderness areas on the Forest are systematically monitored via visual and photo methods as directed in the WIS's for those areas. North Zone backcountry personnel routinely complete visual and photo monitoring of all campsites encountered, and are well aware of the problem areas, sites, problems and needs. On the north end of the Forest the largest impacts occur during hunting season when use is concentrated. On the south end use is relatively steady year long. Although many campsites may not be in the best of condition, the general trend in most areas is stable to upward when comparing the condition over the past two decades. The Shoshone focuses on the overall trend, but sets priorities based on specific problems.

Evaluation

North Zone wilderness/backcountry crews monitored wilderness campsite condition using visual and photo methods as directed in WIS's during the summer of 1997.

Campsites on the north zone of the Forest were monitored throughout the summer, and in selected areas during the fall by a 3 person crew on the Greybull, a 3 person crew on the South Fork (Wapiti District), a 3 person crew on the North Fork (Wapiti), and a 3 person crew in Crandall (Clarks Fork District). In addition, one seasonal employee worked part time in wilderness on the Beartooths, the Gallatin backcountry crews kept an eye on things north of the highway in the Beartooths based upon the single unit funding agreement, and the permanent staff spent a good portion of their time in the field (recreation staff, recreation technician, livestock packer, & law enforcement officer).

In 1997 the South Zone began to revisit campsites surveyed in the late 1980s. A few sites were selected for inventory in 1997 with the goal of redesigning a data form and developing a format for noting a trend over time. No conclusions can be drawn yet, but the process will be better defined and applied in 1998 and beyond. A few sites will be prioritized and monitored each year.

Although there are some impacted sites on the North Zone, the general trend is upward, not only in the condition of campsites but also vegetative condition, and trail conditions. The major areas of concern relative to campsite condition and recreation livestock grazing are Paradise Valley, Swede Creek Meadow, and the Needle Creek Mine area. Campsites are routinely cleaned and rehabilitated, and a tremendous amount of garbage, trash, abandoned junk, and cached equipment has been packed out over the years. Numbers of horses grazing under permit on wilderness allotments, or in trespass have been reduced significantly in the past two decades, and due to the low impact ethic and technology, the average numbers of horses required per user is presently declining.

There are still some problems relative to permitted domestic livestock grazing, and this year the Table Mountain area of the Wapiti District showed signs of heavy use. This coupled with heavy spring grazing of over objective populations of elk has vegetation in some areas in a downward trend.

Although most sites show visible signs of human use, litter and trash is becoming scarcer each year, except in a few areas. This is due to the constant clean-up and compliance coupled with an increasing awareness and proper ethic on the part of users. Outfitter caches are generally a thing of the past, and public caches in the Trout Creek area and Twin Creeks area were the focus for 1997, with a dozen packed out.

Clean-up of the Needle Creek Mine area was pretty much completed this season with only a few pack loads left to remove. This has been a three year project, and if one had not viewed the situation prior to the clean, it would be difficult to imagine how bad it was. Additional litter was also removed from Anderson Lodge this season.

North Zone backcountry personnel issued over 30 violation notices and compiled close to 100 incident notices. Nine officers had primarily backcountry responsibility, and accounted for over 1000 person days in the field. Outfitters received less than 5% of the total violation notices for the Zone.

As identified in the WIS's, and in compliance with national policy, education is a preferred tool in wilderness management on the Shoshone NF with the focus on a wilderness user land ethic. Regulations consistent with this policy, and enforcement of them by a strong force of field personnel is also the standard. With this philosophy, a permit system is not under serious consideration at this time on the North Zone of the Forest.

VISUALS

Adopted Visual Quality Objective (VQO)

The Forest Service Visual Resource Management (VRM) system was developed by the agency to help managers integrate landscape management principles into multiple use resource planning and management. The VRM system outlines procedures for managers to identify and classify the visual characteristics of the major landscape types which make up the Forest. A forest manager may use this system to assess the visual effects of management activities.

Visual quality objectives (VQO) are the goals that describe the acceptable degrees of alteration allowed in the natural landscape (Shoshone Forest Plan, FEIS, Vol. I, page VII-35). This monitoring item was intended to ensure that projects meet VQO or that corrective action, such as mitigation, be initiated when it appears a project will not meet VQO.

This item is monitored at the project level and implemented through the project. VQO compliance of management activities on the Shoshone National Forest is addressed during the NEPA (environmental analysis) process. If project level analysis shows that an existing VQO, as identified in the Forest Plan, is not going to be met by the proposed action two options are available. If it is determined that the VQO is inappropriate for the project area the Forest Plan may be amended, through the NEPA process to change the VQO. If the visual analysis shows that the VQO is appropriate for the project area but is not being met (or is not going to be met), mitigation measures must be taken to meet the VQO in a minimum amount of time. Timeframes for meeting VQO vary between individual visual quality objectives.

Evaluation

Scenery Management System

The Visual Management System is currently being crosswalked into the Scenery Management System. To date half of the Wind River District has been completed. This crosswalk into the new system will continue throughout fiscal year 98. It is projected that the Wind River District will be completed by the end of Fiscal 98.

North Fork Highway Construction

The first phase of highway construction has been completed. Scenery objectives were maintained and in some places improved. A few places will improve in the short term to maintain their designated objective. A 2 hour training on visual techniques was held for Oftedal Construction personnel to help communicate the scenery objectives. A project level plan is being developed and will be completed in FY 98. Along the highway right-of-way berms and boulders have been strategically placed to improve the scenery and establish beneficial microclimates. Seeding is 75% complete and the first phase will be completed in FY 98.

In general standards and guidelines are being met where visuals are concerned. A few areas such as Red Flats that are receiving illegal off road vehicle use. It is in areas like this that the character of the land has suffered some degradation due to improper or unregulated use.

CULTURAL

1. Compliance with Cultural Resource Regulations (36 CFR 800) (43 CFR 10) (36CFR 296)

The Forest is required by law to comply with cultural resource regulations for cultural resource protection.

In 1996 and 1997, the Forest consulted with the Wyoming State Historic Preservation Office (SHPO) under 36 CFR 800 on the following projects:

- 8 Timber/Fuelwood sales
- 6 Range projects including permit renewal agreement
- 2 Wildlife projects
- 2 Recreation projects
- 1 Right of Way projects
- 5 Special Use projects (associated with highway work, etc.)

These figures do not reflect notification of SHPO for projects which did not result in or require consultation.

Also under 36 CFR 800, the Forest consulted with the Advisory Council on Historic Preservation (ACHP) on two projects dealing with National Register eligible properties.

In compliance with the Native American Graves Protection and Repatriation Act (NAGPRA) (43 CFR 10), the Forest is coordinating information with institutions presently curating items from federal lands. This includes review of institutional summaries of human remains and items defined in NAGPRA as subject to requests by tribal entities.

Under the Archaeological Resources Protection Act (ARPA) (36 CFR 296), testing and/or data recovery projects were conducted as part of three projects associated with construction of the Cody-Yellowstone Highway.

2. Protection of Properties Eligible or Potentially Eligible for the National Register

The Forest monitors all properties on the National Register of Historic Places for which it is responsible. There are properties located on the Forest for which other agencies are responsible.

Twenty sites were monitored during 1996 and 1997. Sites were inspected for evidence of unauthorized excavation, incidental damage from other activities such as recreation, and damage from natural processes such as erosion.

During 1996 and 1997 18 public education projects were conducted including 3 interpretive displays, 6 school visits, 2 public presentations, and 2 school field trips.

Evaluation

A large portion of the Heritage Resources program involves education, public attention and awareness. Efforts in these areas appear to be having a positive effect as incidents of new vandalism are decreasing. These efforts should be continued and expanded to further protect the resource whenever possible.

The concern remains that vandalism or looting may be occurring at sites which have not yet been located or recorded by Forest personnel. For example, there are sites in remote locations that have not been surveyed due to small staffs and a shortage of dollars. Ideally, increased survey in these areas would allow assessment of resources present and increased presence would reduce the opportunities for vandalism or theft of artifacts.

During 1996 and 1997 a total of three long term volunteers were utilized, including one International Trainee from England.

The Forest is limited to one full time archaeologist responsible for the Forest program of work. This primary duty in addition to budget constraints, therefore, places a limit on the amount of external coordination that can occur.

THREATENED AND ENDANGERED SPECIES

1. Grizzly Bear Mortalities

The Shoshone National Forest lies within the Greater Yellowstone Area (GYA), home to one of the larger populations of the threatened grizzly bear in the lower 48 states. The Endangered Species Act requires special protection and management on Federal lands of listed species. The Forest Service is committed to help achieve the bear's recovery and works actively with other agencies towards this goal through implementation of the Interagency Grizzly Bear Guidelines.

Prevention of mortalities is an important aspect of the grizzly bear's recovery program. The Forest Plan identified a limit for preventable grizzly bear mortalities of 6 bears for the GYA to be monitored on an annual basis. However, revised monitoring criteria have been adopted by the U.S. Fish and Wildlife Service on the recommendation of the Yellowstone Ecosystem Grizzly Bear Management Subcommittee (YES) of the Interagency Grizzly Bear Committee (IGBC). Shoshone National Forest officials, as members of YES, have played an active role in formulating the revised monitoring criteria.

The 1993 Recovery Plan established a number of parameters to be monitored for determining recovery within the GYA. Criteria for recovery include a limit on grizzly bear mortalities that applies to all jurisdictions within the GYA. Known human-caused mortality is not to exceed 4 percent of the minimum population estimate calculated on a 6-year running average. In addition, female mortality (6-year running average) is not to exceed 30 percent of the 4 percent. Methods for estimating populations and calculating mortality limits are documented in the recovery plan. Because all recovery information reported by the IGBC is summarized by calendar year, mortality information will be presented as such.

Evaluation

Though Grizzly Bear mortalities had been on a downward trend, they began to increase in 1994. Both 1994 and 1995 were poor food years for the bear and resulted in an increase in the number of human/bear conflicts and subsequent habituation, management removal and mortality of bears. Five of the nine mortalities in the GYA in 1996 (management removals) were bears with a previous history of conflicts with humans or livestock, possibly precipitated during previous poor food years. One of the 1996 mortalities was a bear killed by a vehicle on a highway and the other three were hunter related, including the single mortality on the Shoshone National Forest.

Because hunter related bear mortalities are an issue throughout the GYA, considerable time, effort and money are spent on hunter information/education, bear mortality prevention patrols, and enforcement of food storage orders to minimize human/bear encounters during the hunting season. Efforts to educate hunters and outfitters were increased on the Shoshone in 1996 because 3 hunter related mortalities occurred on the Forest in 1995. These efforts were continued in 1997. This and the fact that 1996 and 1997 were good food years were probably factors in the absence of mortalities on the Shoshone, although mortalities did occur adjacent to the Forest. The Forest will continue to be diligent in this effort and look for new or more effective ways to educate hunters.

2. Compliance with Grizzly Guidelines

Compliance with Grizzly Guidelines is incorporated into the Shoshone National Forest's annual program of work. All activities authorized, funded, or carried out are reviewed to determine the effect they may have on grizzlies and their habitat. This includes an examination of potential cumulative effects as well as individual project effects. Projects are reviewed for compliance with the guidelines through the preparation of a biological evaluation. Mitigation measures are incorporated where necessary. When it is determined through this biological evaluation process that activities may affect grizzlies or their habitat, consultation with the U.S. Fish and Wildlife Service occurs. This includes both informal and formal (when appropriate) consultation to ensure compliance with the guidelines.

Evaluation

Twenty biological evaluations were written on projects potentially affecting grizzly bears in FY 97. Formal consultation was begun on the proposed Sunlight Timber Sale but was halted when that project was postponed.

The Forest and the U.S. Fish and Wildlife Service work together to promote recovery of the bear. Forest and District biologists meet regularly with U.S. Fish and Wildlife Service biologists to review all proposed projects and set priorities for consultation.

In 1997 coordination was also conducted with other knowledgeable parties, including biologists with the Wyoming Game & Fish Department. Grizzly bear clauses, as identified in the Guidelines, were included and updated where appropriate in all special use permits, grazing permits, contracts, etc. issued for activities in grizzly habitat on the Forest.

An integral part of the Forest's annual program of work involves efforts to minimize grizzly-human conflicts. These efforts are given the highest priority. Public education is paramount to the continued success in grizzly bear recovery. The Forest disseminates considerable information concerning areas of high seasonal bear activity, identification, behavior, foods, and measures to prevent or minimize grizzly/human conflicts. Information is made available at Forest offices, trailheads and campgrounds, the Wapiti Information Center, Clay Butte Information Center, included in mailings to potential visitors and hunters and distributed by Forest Personnel through personal contacts with Forest users.

The following discussion is focussed on the North Fork (of the Shoshone River) highway corridor which runs between the town of Cody, Wyoming and the east entrance to Yellowstone National Park. This area receives considerable attention due to its heavy use by both humans and grizzlies.

Wapiti Valley Information Center (Bear Box)

The information center (located at the Wapiti Ranger Station) was staffed from Memorial Day through Labor Day weekend. Week days were staffed for 12 hours, 8:00 A.M. - 8:00 P.M., with personnel working 6 hour shifts. Weekends were staffed from 8:00 A.M. - 5:00 P.M. The information center consisted of a building with many

exhibits and an open area with a roof containing displays. A new center is under construction and will be open by Memorial Day 1998. The major emphasis of the center is informing the visitors about food storage regulations, camping and hiking in grizzly country, keeping a safe distance if a bear is spotted, and general information about the yearly and life cycle of the bear. Those visitors who did not enter the building but stopped to view the outside exhibits or use the restrooms were greeted and also given bear information. 18,300 visitor contacts were made. This number is based on the number of visitors who actually registered and a physical count of those who did not register.

Interpreters (Naturalist Program)

Beginning June 15th and running through August 20th, the Wapiti Ranger District in conjunction with the Rocky Mountain Recreation Company (campground concessionaire) sponsor an interpreters program. Rocky Mountain Recreation helped finance the effort in return for campground programs. Seven individuals made an average of 12 presentations per week. The content of the programs varied but all included information about recreating safely in grizzly bear country. Seven of the ten lodges in the corridor participated in the program. Of special note are two additional efforts: (1) the placement of an interpreter at Pahaska Teepee to greet and talk with visitors five days a week during 6 hour shifts - Pahaska Teepee is located near the East Entrance to Yellowstone National Park; (2) weekly programs were held at Buffalo Bill Scout Camp where an average of 200 scouts received information each Sunday evening. Because campground use was down significantly this year (25 - 35% occupancy on average), campers were invited to attend programs at nearby lodges. Invitations to attend programs were also posted on campground bulletin boards. Of the 1250 guests the programs reached at the lodges, over 400 came from campgrounds. Nearly 1200 Boy Scouts received grizzly bear information at the Buffalo Bill Scout Camp.

Safety Talks

Nearly 100 individuals hired to work on the North Fork Highway project were given safety talks and/or shown a safety video on working in grizzly bear country. These talks generated other requests from organizations including Pacific Power and Light, US West Communications, and the Wyoming Highway Department for safety talks about working in grizzly country. A conservative estimate of the number reached is 120.

Additional Information and Education Programs

Additional invitations were received from the following groups for presentations on grizzly bears (numbers in parentheses indicate numbers of individuals): Cody Senior Citizens (22); Lovell Senior Citizens (14); Good Sam Club (56); Cody Middle School Sixth Graders (237); Powell Middle School Seventh Graders (189); Cody East Side School Kindergarten (14); Byron Elementary School Fifth and Sixth Graders (34).

Concessionaire

Employees of the Rocky Mountain Recreation Company (RMR) informed campground users about complying with the food storage order and answered questions about the grizzly bear. All signs at campground entrances, on bulletin boards, and in bathrooms were kept updated and maintained. Forest Service officials were immediately contacted if a violation notice needed to be issued and were advised of any bear activity. Although RMR employed its own customer service officer last year, the company complied with a request this year to instead give the money to the Forest Service to help fund an additional Forest Protection Officer.

Campground/Trailhead Improvements

Every entrance to campgrounds, trailheads, interpretive pullouts, and picnic areas within the North and South Fork drainages had large signs that read "GRIZZLY BEAR AREA - SPECIAL RULES APPLY" installed. In addition, new bulletin boards were installed where needed and signed with pertinent grizzly bear information. Signs were installed limiting 3-Mile, Eagle Creek, and Sleeping Giant Campgrounds to hard sided campers until June 20 and on an as-needed basis for the rest of the summer. (In 1998 these three campgrounds will more than likely be permanently signed hard sided units only). At Eagle Creek and Sleeping Giant Campgrounds, every site was equipped with larger and more customer friendly bear resistant food storage boxes. 3-Mile, Eagle Creek, and Sleeping Giant Campgrounds had every site post replaced with the shape of a grizzly bear paw print with the site number centered on the post. Eventually and as funding allows, every designated camp site within the North and South Fork drainages will have individual storage boxes and site markers.

Campground and Trailhead Compliance

Documentation of activities being conducted by Forest Service Protection Officers on patrol was intensified in 1997. A regular patrol consisted of checking for compliance with grizzly bear special orders; educating and informing users about camping, hiking, hunting, fishing, etc. in grizzly country; removing road kills; and monitoring grizzly bear activity. Between May 15 and October 1 (not including hunter patrol) the following activities were documented: approximately 450 courtesy messages left thanking those who were utilizing safe methods in grizzly bear country; 31 violation notices given for non-compliance with grizzly bear special orders; 51 warning notices given for minor infractions of the orders; 9 road kills removed from road rights of way; 5,923 individuals contacted; 28 sightings of bears (sow/cubs counted on one sighting) which were monitored for movement and visitors advised of safety zone. Campgrounds monitored included: 3-Mile, Sleeping Giant, Eagle Creek, Newton Creek, Rex Hale,

Wapiti, Big Game, Clearwater, Elk Fork, Horse Creek, and Deer Creek. Trailheads monitored included: Pahaska/Sunlight, Eagle Creek, Mormon Creek, Elk Fork, Green Creek, Jim Mountain, Fishhawk, Grinnell Creek, Kitty Creek, Blackwater, Clearwater, Ishawooa, Ishawooa Mesa, Deer Creek, Boulder Basin, Aldrich Creek, Cabin Creek.

Summer Homes

All 70 summer homes on the Wapiti District were inspected three times for compliance with the grizzly bear special order. There was one minor violation noted - empty cans left unattended wherein the owner was given a warning.

Guest Lodges

Within the time frame between May 15-25, all guest lodges were given a courtesy inspection to point out areas that could be improved upon to discourage bear curiosity and incidents or that could violate the special orders. In mid July unannounced inspections were held with all lodges found to be in compliance. However, during routine inspections one lodge was issued a violation notice for allowing garbage to remain unattended on top of a dumpster and one guest was issued a violation notice for leaving a full unattended cooler on the porch of the cabin being rented. For the second consecutive year, employees of all lodges were required to attend a program on grizzly bears. The program centered on communicating to the guests what to do and not do while staying at the lodge, basic facts about bears, how to respond if a bear is encountered, doing routine inspections of the lodge area, etc. This training will continue to be a yearly requirement. Follow up sessions were held throughout the summer as employee changes occurred.

Bear Incidents

The following four human/bear incidents were investigated:

- (1) a mountain biker on the Elk Fork trail had his dog with him. The dog was running ahead and came back being chased by a sow and cub. The biker used his pepper spray which caused the bears to retreat;
- (2) a man and his son were hiking on the Kitty Creek trail when a sow and two cubs were encountered. The sow and cubs approached within 10 yards then retreated. No one had pepper spray in the hiking party;
- (3) a bear(s) did some damage to a tack shed on Green Creek. It could not be determined if the bear involved was a black bear or grizzly as the ground around the shed had been greatly disturbed;
- (4) a grizzly sow and two cubs were sighted in the late afternoon grubbing for food close to the highway construction crew near Mormon Creek. The bears came within 50 yards of the flag crew at which time the project was shut down for the rest of the day.

Hunter Patrol

Hunter patrol began in mid September and ran through December. The front country was mainly covered by two Forest Protection Officers with periodic assistance from the trail crew. Front country statistics for the September - November period are as follows: 868 vehicles logged; 902 flyers placed on vehicles or at camps thanking users for compliance; 3 violation notices issued; 4 warnings given. All campgrounds and trailheads previously listed were monitored as well as Monument Hill and Carter Mountain. Back country patrols have been routinely scheduled under the direction of Bill Oliver. The trail crew is basically involved with the patrols. The main trails within the North and South Fork drainages were and will continue to be covered. By mid November approximately 20 violation notices had been issued and 25 warnings given.

The Forest is complying with the Guidelines and will continue to do so. Information, education and cooperative efforts towards managing grizzly bears and their habitat are making positive contributions to the recovery goals.

3. Grizzly Habitat Effectiveness

Habitat effectiveness is a measure of the degree to which an area of habitat is producing the desired results given its capability. In other words, to what degree is the capability of the habitat being impaired by humans and their activities. This parameter is considered with respect to individual project proposals as they are evaluated, as well as for the entire area of Shoshone National Forest grizzly bear habitat. The latter is often done in conjunction with the annual deliberations of the Yellowstone Ecosystem Grizzly Bear Management Subcommittee. Data from various monitoring efforts, as well as professional judgements are used to assess overall habitat effectiveness for the entire Forest and for specific projects.

The Grizzly Bear Recovery Plan does not currently specify habitat based recovery criteria in which to monitor habitat effectiveness. It does, however, specify several population parameters used to measure population recovery. Although not directly a measure of habitat effectiveness, monitoring of these parameters can give some indication of the capability of the habitat to support bears. Targets for each of these parameters are set in the Recovery Plan that identify levels that must be exceeded or not exceeded, depending on the parameter, for recovery to be achieved. These criteria for the recovery area as a whole are as follows:

1. Fifteen females with cubs over a running 6-year average both inside and outside the recovery zone and within a 10 mile area immediately surrounding the recovery zone.
2. Sixteen of 18 bear management units (BMUs) occupied by females with young from a running 6-year sum of observations. No two adjacent BMUs will be unoccupied.
3. Known human caused mortality not to exceed 4 percent of the minimum population estimate based on the most recent 3-year sum of females with cubs. Furthermore, no more than 30 percent of the 4 percent mortality limit shall be females.

In 1997, there were 31 females with cubs of the year. This is down only 2 from 1996 when there were 33 (highest number recorded in the GYA since 1974) and all 18 BMUs were occupied by

females with young. The 6-year average for females with cubs of the year was 24 and 18 of 18 BMUs occupied. All recovery objectives are being met with the exception of female mortality. See section on Grizzly Bear Mortalities in this report for 1997 mortality data.

Evaluation

The Shoshone National Forest continues to assess the impact of projects on habitat effectiveness at the site specific level, as well as on the Forest as a whole using assessment tools such as biological evaluations, adherence to the Interagency Grizzly Bear Guidelines, consultation with the U.S. Fish and Wildlife Service and various reporting and monitoring efforts. These measures appear to have been successful in maintaining habitat effectiveness for grizzly bears on the Forest.

The Forest is contributing to the overall goal of grizzly bear recovery, particularly in the Greater Yellowstone Area. Grizzly bear habitat on the Forest appears to be stable to increasing. Expansion of bears into new areas and apparent increases in population size and reproduction (females with cubs) on the Forest all point in the direction of positive habitat effectiveness. Continued progress in achievement of population recovery objectives will serve as a barometer for overall habitat effectiveness.

One of the tools in use throughout the Greater Yellowstone Area for quantitatively assessing habitat effectiveness is the grizzly bear Cumulative Effects Model (CEM). The CEM produces quantitative output that describes the relative condition of grizzly bear habitat. All bear management units and subunits on the Shoshone National Forest were evaluated in September 1996 (see the Trend Analysis Section in the Monitoring and Evaluation Report FY 1996 for a discussion of preliminary results). Evaluation is proceeding at the recovery area level (includes portions of other National Forests and Yellowstone National Park). The CEM was not run for the Shoshone BMUs in FY 97. Data is currently being collected for the next set of runs.

4. Wolf Population Status

The endangered gray wolf was reintroduced into Yellowstone National Park in January of 1995. Fourteen wolves relocated from Alberta, Canada were the beginning of an effort to reestablish gray wolves in the Yellowstone Ecosystem. Seventeen additional wolves from British Columbia, Canada were reintroduced to Yellowstone National Park in the latter part of January 1996. These animals, and any other native wolves that could possibly remain in the area, are currently classified as a "non-essential experimental" population which provides for additional management flexibility.

Nine pups were born in the spring of 1995, and 14 in the spring of 1996. Two wolves died during 1995 (one hit by a vehicle and one shot illegally), and nine in 1996 (two hit by vehicles, two from pack rivalries, two shot illegally, one from thermal burns, and two from unknown causes). Twelve wolves from two packs outside of the Greater Yellowstone Area were captured and transferred into holding pens (August 29 and September 8, 1996) in Yellowstone National Park after adults from the packs had been involved in livestock depredations. They were held until their release in 1997. As of December 31, 1996, the GYA supported 40 free ranging wolves: 33 of them belonged to eight packs that should have produced pups during 1997.

However, 12 litters of pups in nine packs were born in 1997; a total of 54 pups were born in 1997.

Identified wolf packs are Rose Creek, Crystal Creek, Soda Butte, Leopold, Chief Joseph, Druid Peak, Thorofare, Washakie, and Nez Perce Family (No adult male or female). There are also several lone wolves and un-monitorable free ranging wolves.

Wolves are monitored as closely as circumstances will permit by the U.S. Fish and Wildlife Service and the National Park Service. The Forest maintains contact with representatives of the U.S. Fish and Wildlife Service and the National Park Service regarding the status and location of the reintroduced wolves. Regularly written reports from the Wolf Recovery Coordinator are received by the Forest Service.

Evaluation

Several packs have made occasional use of parts of the Shoshone National Forest in their home range. Radio tracking in 1995 verified that part of the NE corner of the Clarks Fork District is included in the home range of the Soda Butte Pack. No radio relocations were reported from the U.S. Fish and Wildlife Service during FY 96 but there have been several observations of wolves or tracks in or close to the area identified as the Pack's home range. Then in 1997 this pack began using the southern portion of the park and made trips into the western portion of the Forest. The Crystal Creek and Druid Peak packs also occasionally travelled onto the Forest.

Two wolves from the Yellowstone Wolf Restoration Project formed a pair in the fall of 1996. The male (#15M) came from Alberta, Canada as a pup into the Soda Butte Pen in January of 1995 and the female (#26F) came from British Columbia, Canada as a pup into the Nez Perce Pen in January of 1996. They were seen near Togwotee Pass in late November. From the beginning of January 1997, this pair began using the East Fork and Bear Creek areas off and on the Forest on the Wind River Ranger District. The Shoshone National Forest, National Park Service, Fish and Wildlife Service, and Wyoming Game and Fish Department monitored this pair's activity. On May 3, 1997, the pair made a major move to the Dunoir Valley and were located in the Six Mile drainage on the Forest. This location was later documented to be the den site and this pair had produced 5 pups. This is the first pack to den outside of Yellowstone Park in Wyoming and was the southern most pack of gray wolves in the northern hemisphere. They spent the summer and early fall in the vicinity of the den site in the Six Mile Creek and Dunoir Valley. They were all alive and behaving themselves as of September 30, 1997. However, in October the alpha male (#15M) began to kill livestock on the Diamond G Ranch in the Dunoir and was killed on October 26, 1997.

Because the Forest has considerable desirable wolf habitat in the form of migratory big game herds, it is probable that wolf use and denning on the Forest will increase as recovery progresses. As more pups are born there will be more wolves without radio-collars, making tracking and documentation of use more difficult.

In accordance with provisions of the Endangered Species Act and pertinent regulations, the Forest is a cooperative partner in helping achieve recovery for this species.

5. Inventory of Nesting Peregrine Falcons

A cooperative recovery effort for this species has been ongoing throughout the Forest for the past two decades. Recent efforts by Wyoming Game and Fish Department (WGFD) and Forest personnel have concentrated on monitoring reproductive success and population expansion as the species moves toward recovery and delisting. The items monitored and results for the 1997 nesting season are indicated below. Some historical information is included for perspective.

Monitored items: Number of nest sites, number of nesting pairs, nesting success, and production for the entire Shoshone National Forest (SNF) area. Fifteen priority sites were inventoried for nesting birds including three for the Clarks Fork (CF) District, five for Wapiti (W), four for Washakie (WA), and three for Wind River (WR).

Evaluation

Nesting site occupancy by district was CF-3, W-2, WA-4, and WR-3. These twelve pairs successfully fledged at least 26 young or 2.2 per pair. This is the highest level of production recorded on the Forest since monitoring the success of the reintroduction effort began. Since 1989, the number of known nesting pairs on the SNF has gradually increased from 2 to the current 12, while total production has increased from 3 in 1989, to the present 26 young.

WILDLIFE AND FISH

1. Sensitive Species Surveys

Sensitive species are those plant and animal species identified by a Regional Forester for which population viability is a concern as evidenced by:

- a. Significant current or predicted downward trends in population numbers or density.
- b. Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution. (Forest Service Manual 2670)

During the past five years surveys for sensitive animal species including the common loon, dwarf shrew, water vole, spotted bat, Townsend's big-eared bat, boreal owl, goshawk, lynx, wolverine, and fisher have been conducted on the SNF through a cooperative cost-shared agreement with the WGFD. A review of the status on the Forest for all such species has been completed, and recent efforts have selected a few species for more concentrated survey work each year. The species and items monitored, as well as the results of this effort during the past year are shown below.

Common Loon

Monitored items: Survey of potential nesting lakes in the Ramshorn area north of Dubois, WY and the Beartooth mountains northwest of Cody, WY for the presence of loons. The following lakes were surveyed; Burnt Timber, Bog, Carson, Deacon, Trail, Swamp, Losekamp, Stockade, Sawtooth, Deep, Long, Island, Night, Beartooth, Little Bear, Hauser, Solar, Chain, Fantan, Lily, Granite, Lost, Reno, Ivy, Big Moose, and Little Moose.

Evaluation

Inventories at all lakes surveyed did not result in any observations of either adult or young common loons. The results indicate that nesting pairs probably do not occur on the Forest, although some of these lakes may be used as loafing and feeding sites during the fall migration. It is thought that the majority of Forest lakes occur at too high an elevation to permit successful loon reproductive activities. The habitat characteristics of surveyed lakes indicate that Big Moose Lake and Ivy Lake are the most likely candidates for occupancy by nesting loons. An additional survey of these lakes should be made in the future.

Dwarf Shrew

Monitored items: Survey of potential habitat along streams including wet meadows, dense conifers, aspen forest, and willow bottoms. Areas with vole populations were preferred survey sites as shrews will use vole runways as travel routes. Sites with good ground cover including rocks, down logs, and litter were also preferred trapping sites. Trapping was conducted using museum special traps baited with rolled oats and peanut butter as well as pitfall traps at some sites.

Thirteen locations were inventoried for a total of 6,800 trap nights and 360 pitfall nights. The surveyed locations were along Snow Creek, Sinks Canyon-Bruce's Bridge, Wayne's

Hole-Waynes Creek, Sunlight Basin-Lower Sunlight Creek, Beartooth Creek, Kitten Creek, North Fork Shoshone River, Kirwin-Wood River, South Fork Shoshone River, Dickinson Park-Dickinson Creek, Double Cabin, Jack Creek, and Upper Sunlight Creek-Old Sulphur Camp.

Evaluation

Five hundred and fourteen small mammals representing 15 species were captured. However, no dwarf shrews were trapped. Captured species included the Masked shrew, Dusky shrew, Water shrew, Yellow-pine chipmunk, Least Chipmunk, Uinta Chipmunk, White-footed mouse, Deer mouse, Western Jumping mouse, Southern Red-backed Vole, Heather Vole, Long-tailed Vole, Montane Vole, Meadow Vole, and Water Vole. The Kitten Creek site exhibited high species density and richness in comparison to other sites. One hundred eight small mammals representing nine species were trapped here. This site was characterized by a willow/riparian complex bordered by old growth coniferous forest, with no or light ungulate grazing.

Seventy seven shrews representing three species were captured at 12 locations but three species (Preble's Shrew, vagrant shrew, and dwarf shrew) expected to occur on the Forest were not encountered. However, some potential habitats, such as alpine meadows and old growth forest, were not sampled, or received inadequate sampling. Additional survey work in these sites is planned in 1998.

Water Vole

Monitored items: The same procedures, habitats, survey sites, and trapping effort described above for the dwarf shrew were utilized for monitoring the presence of this species.

Evaluation

Water voles were trapped at six of the thirteen trapping sites. Those sites were Wayne's Hole-Wayne's Creek, Kitten Creek, Kirwin-Wood River, Dickinson Park-Dickinson Creek, Jack Creek, and Sunlight Creek-Old Sulphur Camp. A total of 57 water voles were captured at the six sites.

Information gathered during the past three years indicates that the "sensitive" designation for this species on the Forest may be questionable and should perhaps be reconsidered. This should occur during the sensitive species re-evaluation process using national criteria anticipated to occur in FY 1998 or 1999.

Spotted Bat and Townsend's Big-eared Bat

Monitored items: Survey of potential habitat consisting of caves and abandoned mines, canyons containing cracks and fissures, bare rock walls, and rocky ridges. Also mist netting areas along riparian stream corridors and ponds that were within a 5 minute walk of caves or abandoned mines. Eleven caves and eight abandoned mines were located on the Forest. To date, eleven of these sites have been evaluated for bat habitat potential. Eight of the sites are yet to be surveyed. Twelve sites were surveyed for Spotted bats.

1997 was the final year of a three year initial effort to assess the status of caves and abandoned mines as potential bat habitat. It was also the beginning year for at least a two year effort surveying rocky canyons and other potential habitat areas on the Forest for Spotted bats.

Evaluation

Seven species of bats were documented on SNF managed lands. These included the Western Small-footed Myotis, Long-eared Myotis, Little Brown Myotis, Fringed Myotis, Long-legged Myotis, Hoary Bat, and Townsend's Big-eared Bat. All of these species except the Hoary bat were either captured at the entrances of or observed inside caves and mines. In addition, two Townsend's big-eared bats and the tree dwelling Hoary bat were mist netted along Hunter Creek southwest of Cody. No Spotted bats were encountered during the survey. The survey resulted in documenting the presence of the Fringed Myotis, considered a sensitive species in the Rocky Mountain Region (Region 2) of the Forest Service, on the Shoshone National Forest.

This survey project resulted in the identification of protective habitat improvement management measures for some caves and mines. These recommendations will be considered for implementation in upcoming budget processes as well as continuing inventory of the remaining sites. Due to the fragile environment of caves and abandoned mines and the possible adverse effects of human disturbance on bat colonies, the specific locations of these structures are not described in this report.

Boreal Owl and Goshawk

A limited budget prohibited extensive monitoring efforts for boreals and goshawks in 1997. However in anticipation of placing additional emphasis on these species in the near future, the WGFD and the SNF continued to solicit observations of boreal owls, and observations of nesting goshawks. Followup on reports was also carried out. More extensive survey efforts for these species are scheduled to begin in 1998.

Lynx, Wolverine, and Fisher (LWF)

Monitored items: LWF tracks were searched for on and adjacent to all existing snow machine routes (except the Pahaska Tepee trail) within the Forest at least once (but up to three times for some routes) during the 1996-97 winter. Approximately 373 miles of main routes and 870 miles off main routes were surveyed. A wolverine helicopter survey of natal den sites and tracks along timberline areas was conducted in Pilot Creek, Elk Fork Creek, South Fork Shoshone River/Ishawooa Creek, and the Upper Dunoir drainage. Approximately 400 square miles were surveyed in this manner. Two snowshoe hare turd transects were established in Burroughs Creek and two in Horse Creek in order to monitor future snowshoe hare density for at least a 10 year period. Snowshoe hare is an important prey species for the Lynx.

Evaluation

Lynx tracks were found on Horse and Burroughs Creek on March 5, 1997. The tracks may have been from two different lynx. The tracks of two different lynx were found on March 12, 1997 in the Middle Fork of Long Creek, and tracks of one lynx were found on March 12, 1997 in the same area. A probable set of lynx tracks was found near Granite

Lake in the Beartooth Mountains just across the state line in Montana. The snowshoe hare turd transects were cleared in the 96/97 winter and will be read and again cleared in the 97/98 winter. This will be the first data of this type in Wyoming.

One set of wolverine tracks was located in upper Robinson Creek on the South Fork Shoshone River.

No fishers or tracks of this species were observed. The total data available to the WGFD has led them to conclude that the fisher does not seem to be a reproductively viable species in Wyoming, but they welcome this and other survey opportunities. Additional survey work will be necessary to better determine the status of all three of these species on the SNF.

2. Wildlife Habitat Improvements.

The Forest was able to reverse last year's trend of minimal or no wildlife habitat improvement accomplishment due to the heavy workload of a number of planning efforts over the past decade. The following activities were monitored for habitat improvement accomplishments.

Monitored items: The number of forestwide acres treated for noxious weeds, acres of sagebrush burned, acres of conifers burned, and vegetation planting for cover re-establishment.

Evaluation

Two hundred acres of noxious weeds were treated, half on the North Zone of the Forest (consists of Clarks Fork, Greybull and Wapiti Ranger Districts) and half on the South Zone (consists of Washakie and Wind River Ranger Districts), to increase native plant species and improve desired habitat conditions and diversity. Two hundred and fifty acres of sagebrush were burned in the South Fork Shoshone River valley to retard plant succession and improve habitat for bighorn sheep and other wildlife. Openings of 64 acres and 40 acres were created in Homestake Park and Slate Creek respectively, to reduce fuels but will also benefit wildlife that utilize early successional plant communities. Finally, 525 acres that were burned in the 1988 wildfires were replanted to coniferous species which will provide wildlife cover in future years. A similar or greater quantity of habitat improvements are scheduled for 1998.

3. Winter Range Carrying Capacity.

The purpose of this monitoring item is to determine if total forage use by ungulates on crucial winter range areas is within the allowable standard (varies by grazing system and range type but generally about 60% maximum) set forth in the Forest Plan. It also is to determine, where applicable, the relative use by livestock and wild ungulates.

As part of the process of re-evaluating commercial livestock grazing on 36 allotments on the Forest in 1996, it was decided that in crucial winter range areas, utilization of herbaceous vegetation during the time domestic livestock occupy these areas will not exceed 40% of the total forage available for ungulate use. Sixty percent of the forage available for ungulate use in

these areas would be for wild ungulates. While this measure currently only applies to 33 allotments, it likely will be applied to other pertinent allotments as they are re-evaluated and re-authorization decisions made.

Monitored items: Herbaceous forage use by livestock and wildlife in the Rock Creek drainage (South Fork Shoshone River area), and browse use by wildlife and overall habitat condition and trend in the Elk Fork drainage.

Evaluation

Data was obtained from 4 sites in the Rock Creek drainage. Wildlife utilization of herbaceous forage varied from a low of 11% at two sites to a high of 55% at one site, with the remaining site having 31% utilization. The average wildlife utilization for all sites was 27%. Total ungulate utilization was obtained for only one site where the value was 62%. These figures are close to or within the above referenced standards. However, some wildlife use had occurred prior to installing cages and collecting data, thus the figures likely under represent actual wintering wildlife use. Another production/utilization site is being located near Corral Creek, and additional data is scheduled to be collected for this allotment area in 1998.

Data was obtained from two browse transects and eight permanent transect sites in the Elk Fork drainage. Photographs were taken of an additional eight permanent transect sites which were not inventoried.

The general picture provided by ocular observations and confirmed by the data is that the more palatable browse species are receiving very heavy use by wildlife. No grazing by commercial livestock occurs in the area. Heavy browsing pressure is particularly evident for willow, narrowleaf cottonwood, and bog birch. Even during the summer growing season, the percentage of willow leaders and bog birch leaders browsed were 66% and 82% respectively for one of the two sites. By comparison, the summer browse utilization figures for willow and cottonwood at the other site was an encouraging 16% and 4% respectively. The age distribution of willow at both sites also revealed a tendency toward older age classes with few willows in younger age classes.

Data obtained from the permanent transects and compared with Parker 3-step data from 1960 and/or 1972 indicated that while habitat conditions may have slightly improved, the overall condition is still poor. Lack of adequate desired ground cover, decrease in litter cover, and a decline in plant density was noted at some sites.

The WGFD and SNF personnel have discussed concerns related to existing versus desired habitat conditions in this area. In recognition of this concern and the high numbers of elk above the current objective level, the WGFD extended the 1997-98 hunting season in this area for several weeks. However, mild weather conditions precluded killing as many additional elk as desired. Additional monitoring will continue in this area in future years.

4. Fish Habitat Improvements

As part of fisheries mitigation for the first phase of the North Fork Highway realignment, large keyed rip-rap was placed along the Boy Scout pond dike adjacent to the North Fork River in the spring of 1997. This structure was constructed to: 1) prevent the river from washing out the dike and pond and 2) provide additional fish habitat.

Evaluation

Following spring run-off, it was determined that the upper end of the dike was effective at meeting objectives but the very lower end was lacking sufficient rock material and as a result some dike erosion occurred. The Wyoming Department of Transportation (WYDOT) will have the contractor add additional rock to the structure during the spring of 1998 before spring run-off. This will occur in conjunction with deepening of the Boy Scout pond to provide overwintering fish habitat, another highway mitigation measure.

Pilot Creek and Horse Creek Projects

Monitoring continued on the Pilot Creek and Horse Creek fish habitat enhancement projects. Details describing the objectives of the enhancement projects may be found in the 1995 Monitoring and Evaluation Report.

Evaluation

On the Pilot Creek project, the Clarks Fork river channel has once again migrated and eroded a portion of the stream bank, an event which is anticipated for this type of stream system. Remaining planted vegetation is doing well and helping to stabilize stream banks. Willows are established but growing slowly due to heavy moose browsing. The road barrier has been effective and has kept out all vehicular traffic. The informational sign explaining the project is still in place and will be removed this year since it has served its purpose.

The Horse Creek project has been effective at meeting its overall objectives. Very high spring runoff during 1996 and 1997 undermined a few of the structures and washed out two log revetment structures. Since these two structures were placed on the outside of major stream bends and are difficult to maintain, the Shoshone National Forest and Wyoming Game & Fish Department jointly decided not to repair or replace them. Planted willows have been highly successful in providing bank stabilization and overhead fish cover. As part of follow-up monitoring contained in the Memorandum of Understanding for this project, Wyoming Game and Fish personnel electro-fished this section of stream during the summer of 1997. They found that biomass for fish over six inches long has increased five-fold for rainbow trout and doubled for brook trout since the structures have been in place. The most downstream structures have been effective at preventing any further road erosion.

5. Riparian Condition

Riparian related monitoring was conducted by various interdisciplinary teams and resource specialists across the Forest (See Water Resources, Range and Wildlife sections for additional

riparian monitoring). This section includes riparian related monitoring that was primarily conducted by the Forest Aquatic Biologist or watershed crew and is not discussed elsewhere.

Watershed field crews collected data including information on channel morphology, instream fine sediment and aquatic habitat in order to determine riparian condition on 25 stream reaches across the North Zone of the Forest (Clarks Fork, Greybull and Wapiti districts) in 1997 (See Water Resources section for detailed description of stream reaches).

Evaluation

The riparian information collected in FY 97 is currently being analyzed and will be included in next year's report.

Livestock Grazing

The Forest Aquatic Biologist and other resource specialists conducted riparian monitoring on various livestock allotments. The following are the results of that work.

Evaluation

Ghost Creek Allotment, Unit 4, Muddy Corrals: This was previously identified as a high use area for follow-up monitoring. Some improvement was noted in this meadow. Other meadows in this unit are receiving high livestock use. The issue will be addressed in the next round of Range Environmental Assessments and Allotment Management Plans scheduled to begin in FY 98.

Basin allotment, Russell Creek and riparian pasture: This meadow complex had been previously identified as a high use livestock area. An enclosed riparian pasture was constructed to reduce grazing pressure. An interdisciplinary team visited the site and concluded that while conditions had improved somewhat on the inside of the riparian pasture, livestock grazing and bank trampling had intensified outside the pasture causing further riparian damage. Subsequent monitoring verified this situation. The problem has been identified and potential solutions are being pursued.

Guard Station Allotment, Double D Meadows pasture: This pasture was recently added to the allotment as an early riparian pasture to help spread out livestock use and reduce pressure on other units. Sampling revealed that high intensity, short duration spring grazing had little impact on vegetation or stream banks and resulted in excellent riparian conditions.

Middle Fork Allotment, Shoshone Basin. The Forest Aquatic Biologist, South Zone Hydrologist and Wyoming Game & Fish Fisheries Regional Supervisor monitored Shoshone meadows in response to reports of livestock overuse. Sampling verified that overuse has occurred. The District Ranger and range conservationist were made aware of the situation. This problem will be addressed in the next round of range Environmental Assessments and Allotment Management Plans scheduled to begin in FY 98.

Road Culverts

In addition to inventorying roads, the watershed crews inventoried problem road culverts that were potential barriers to upstream fish passage, causing road erosion problems, stream instability or increased sedimentation that might adversely affect riparian habitat.

Evaluation

The watershed crew identified seven problem road culverts on the North Zone of the Forest in 1997. Forestwide, these problem culverts are currently being evaluated and prioritized for future rehabilitation efforts. A complete list will be included in next year's monitoring report.

Stream health, riparian concerns and fish migration barriers from road culverts were identified on a one mile section of county road adjacent to Squaw Creek on the Clarks Fork District (See also Water Resources Section). A cooperative project is being pursued to realign the road out of the stream bottom, remove two problem road culverts, rehabilitate the old road grade, replace a third with a bottomless arch culvert and rehabilitate the stream as needed.

Stream Crossings

The Forest Aquatic Biologist and Hydrologist measured instream fine sediment levels above and below a ford crossing Spring Creek on FDR 101. The Forest Aquatic Biologist measured fine sediment above and below a ford on Sunlight Creek near Strawberry Gulch. Both streams are in the Absaroka geologic type located in the Sunlight drainage.

Evaluation

Fine sediment levels were not significantly different between upstream and downstream sampling sites on these two fords.

6. Population and Habitat Trend of MIS

Yellowstone Cutthroat Trout

Through a cooperatively funded research project between the Wyoming Game and Fish Department and the Shoshone National Forest, researchers from the University of Wyoming Cooperative Fisheries Unit continued efforts to determine the extent and range of Yellowstone cutthroat trout (YSC) on the Forest. A University of Wyoming graduate student conducted YSC research on the Forest. Conclusions will be published in his thesis which should include recommendations for future management actions. The thesis will be reviewed by WY Game and Fish Department personnel.

Evaluation

On the South Fork Shoshone River, researchers found brown trout and pure YSC from Cabin Creek upstream to Needle Creek. From Needle Creek upstream to Younts Creek they found all pure YSC. From Younts Creek upstream to the headwaters they found all brook trout. No fish were found on the Wood River upstream of Double D meadows.

This was perplexing since this reach contains good fish habitat and overall water quality. The Forest Aquatic Biologist surveyed the Wood River Canyon below Double D meadows and found two potential natural barriers to upstream fish migration that may explain why this reach is barren of fish. This reach may provide a refuge for YSC. The University of Wyoming cooperative research project results are being finalized. Overall findings will be included in next year's report. Management options are being pursued.

RANGE

1. Grazing Use

Grazing use is considered the amount of forage used by permitted commercial livestock on the forest. It does not account for the amount of forage consumed by recreation visitor livestock.

Commercial Livestock: The Forest Plan listed the management practices (grazing in this case) and the proposed outputs for those practices in Chapter III (see table III-1, pages III-13 to III-14 for range projections). The Plan predicted an average annual output of 78 thousand animal unit months (AUM) for cattle and horse grazing and 25.4 thousand AUM for sheep and goats for the period of time between 1985 and 2000. Total Forest commercial livestock grazing was predicted to be 103.4 thousand AUM annually. A number of allotments (4 or 5) are no longer allocated for commercial livestock, hence the allocation for cattle and horses is 77.4 thousand AUM and that for sheep is 20.3 thousand AUM, or a total of 97.7 thousand AUM.

Table 3 shows authorized commercial livestock use on the Forest for the last 11 years. Authorized non-use is grazing use offered but not taken by the permittee for personal reasons or for resource protection. Vacant allotments are available for grazing, but are not being grazed due to lack of demand from the livestock industry (mostly sheep) or because grazing permits have been waived back to the Forest Service and new permits have not yet been issued.

Table 3: Actual Available Commercial Livestock Grazing Use (1,000 AUM)

Year	Cattle/Horse	% Plan	Sheep/Goat*	% Plan	Total	% Plan
Forest Plan	77.4		20.3		97.7	
1986	54.6	71.0	3.5	17.0	58.1	60.0
1987	76.0	58.6	2.0	10.0	60.6	62.0
1988	56.4	73.0	2.3	11.0	58.7	60.0
1989	57.9	75.0	2.3	11.0	60.2	62.0
1990	64.3	83.0	2.3	11.0	66.6	68.0
1991	57.7	76.0	1.6	8.0	59.3	61.0
1992	49.1	63.0	0.9	5.0	50.0	51.0
1993	56.0	72.0	1.4	7.0	57.4	59.0
1994	53.6	69.0	0.4	2.0	54.0	55.0
1995	56.8	73.0	0.2	1.0	57.0	58.0
1996	56.8	73.0	1.3	7.0	58.1	59.0
1997	54.2	70.0	1.6	8.0	55.8	57.0

*AUMs in this column represent sheep grazing use. No commercial goat grazing is occurring on the Shoshone.

Evaluation

Grazing use since 1986 for cattle and horses has been below what the Forest plan projected. Sheep grazing use has fluctuated since 1986 beginning with approximately 37,000 AUM in 1986 to a low of 13,000 AUM in 1995. Demand for sheep grazing has been down.

2. Forage Utilization

Allowable forage utilization is determined by applying the allowable use guides in the Forest Plan to the grazing system being implemented on the ground. Most of the allotments on the Shoshone are managed under a deferred rotation grazing system. Under this system, grazing is delayed or discontinued on a given area or unit of the allotment for a period of time to allow for plant reproduction, establishment of new plants or recovery of existing plants.

Evaluation

In 1997, utilization studies were completed on 27 allotments (listed below) or 35% of a total of 77 allotments grazed. In general, during the 1997 grazing season, forage utilization did not exceed acceptable standards in any one allotment. In some instances, utilization for specific areas within allotments did exceed acceptable standards. The level of utilization within these areas was not representative of the average utilization within the entire allotment and did not exceed acceptable standards by more than 10% on the allotment.

The Forest began a monitoring program for permittees this year, with assistance from the University of Wyoming and the Agricultural Extension Service. Three field workshops were held on the forest to train permittees techniques for establishing and collecting data to monitor both long and short term range conditions. As a result monitoring programs were initiated on eight of the allotments listed below (noted with an *).

Bald Ridge, Basin *, Crandall, Table, Ghost Creek, Lake Creek, Face of the Mountain, Dick Creek *, Horse Creek, Ramshorn, Union Pass *, Dickinson Park*, Sawmill, Bayer Mountain*, Ed Young Basin *, East Fork, Fish Lake, Salt Creek, Hays Park, Wind River *, Warm Springs *, Valley, Community, Rock Creek, Elks Fork, Ishawooa Hills, Pickett Creek.

3. Range Condition and Trend

Range analysis field exams were designed by an interdisciplinary team consisting of a range specialist, a fish biologist, a wildlife biologist, and a hydrologist. Field exams were conducted on 7 allotments by a range resource specialist and/or the Range Field Crew. These allotments are Sawmill, Horse Creek, Ramshorn, Dick Creek, Rock Creek, East Fork, and Elks Fork. Data was collected using a variety of techniques including re-reading permanent trend transects, re-taking photo points, establishment of condition/trend transects in "key areas", browse transects and other approved methods found in the Region 2 Range Analysis Handbook.

Evaluation

Preliminary findings of the data collected in 1997 indicate that, except in a few problem areas, overall conditions are improving and resource conditions are moving toward the desired future condition. This positive trend can be attributed to improved management practices by permittees and to stocking levels which have been declining over the past several decades. Several areas of concern involve excessive utilization of winter range and browse by elk and moose. The Wyoming Game and Fish Department is aware of these situations and is attempting to make adjustments to control population numbers.

4. Allotment Management and Permittee Plans

The Shoshone Forest is continuing with the process of permit issuance and allotment management plan (AMP) development. Environmental analysis (NEPA) was conducted on 36 allotments beginning in 1995. In 1997 permits for 32 allotments and the associated AMP's were issued. These allotments are:

Basin, Lake Creek, Little Rock, Dick Creek, Kirwin, Wood River, Sugarloaf, East Fork, Sunshine, Timber Creek, Francs Peak/Yellow Steer, Carter Mountain, Meeteetse Creek, Bobcat, Ishawooa Hills, Community, Hardpan, Hunter Creek, Valley/Boulder, Dickinson Park, Hays Park, Meadow Creek, Squaw Creek, Doby Cliff, Fish Lake, Salt Creek, Horse Creek, Ramshorn, Parque Creek, Whiskey Mountain, Wiggins Fork and Bear Creek.

The Forest Plan requires that allotment management plans and annual grazing instructions be reviewed and developed. The annual instructions specify the rotation schedule, number of livestock, the season of use and any other instructions or permit conditions that will assist in the management of the resource and implementation of Forest Plan standards.

Evaluation

The Forest has a good start on its 15 year schedule to complete environmental analysis on all of its 77 grazing allotments. In 1998 analysis will begin on another 24 allotments. In addition to the 10 year term AMP's being developed, annual grazing instructions were issued to all permittees authorized to graze livestock on National Forest Lands.

5. Forage Development (Range Readiness)

Sufficient plant development helps insure the long term health and vigor of the forage resource. The Forest Plan requires that 10% of active grazing allotments annually be checked to verify adequate forage development prior to livestock use.

Evaluation

Plant development on the following eleven allotments was field checked in 1997 to confirm the on date: Bald Ridge, Table Mt., Little Rock, Timber Creek, Dick Creek, Community, Belknap, Rock Creek, Hunter Creek, Wood River, Kirwin.

6. Noxious Weeds

The Forest is actively involved in site identification and control of noxious weeds. In all cases an integrated management approach is used. This includes improved livestock management, a special order requiring the use of only certified weed free hay on the Forest, cooperative agreements with the local Weed and Pest Districts, participation in Weed Management Area boards, application of herbicides and the introduction of biological controls where available.

Evaluation

In 1997 360 acres were treated with herbicide and approximately 250 acres were treated with biological control agents (insects) to control noxious weeds. Additionally, 2540 acres were surveyed for the presence of noxious weeds.

TIMBER RESOURCES

1. Allowable Sale Quantity

The Allowable Sale Quantity (ASQ) is the maximum volume of timber that may be sold from the suitable timber base during the planning period specified in the Forest Plan. The quantity is normally expressed as the "average annual allowable sale quantity".

The Shoshone Forest Plan was amended in August 1994 to reflect a recalculated (ASQ). Monitoring since the Forest Plan was written in 1986 indicated that timber data and assumptions used in the Forest Plan analysis had overestimated the amount of timber that the Forest could produce. The allowable variability of 5 percent was being exceeded. This coupled with the fires of 1988 which burned over 9,000 acres of suitable timber land resulted in the need to amend the Forest Plan. The revised ASQ is 45 million board feet (MMBF) or an average annual of 4.5 MMBF.

Evaluation

The Management Attainment Report for the Forest for FY 97 shows that one sawlog sale was offered with a mixture of green and salvage material in it for a volume of 0.5634 MMBF and 3.343 MMBF of small salvage, fuelwood and other product sales (post and pole, commercial fuelwood, small salvage/house log sales) for a total of 3.9 MMBF.

A field review was conducted on some closed timber sales in fiscal year 96 and FY 97. These reviews showed that in some of the older sales the volume of wood designated for cutting in the timber sale contract was far less than the volume prescribed in the silvicultural prescriptions. In the newer sales the volume designated via the timber sale contract was a very close match to the volume prescribed in the silvicultural prescription. This will be monitored again in fiscal year 98.

The Shoshone National Forest ASQ will be revisited as part of the Forest Plan revision process.

2. Restocking of Clearcuts

The National Forest Management Act (NFMA) requires that where trees are harvested for timber production "the cuttings shall be made in such a way as to assure that the technology and knowledge exists to adequately restock the lands within five years after final harvest". For clearcuts that means five years after the clearcut occurs (36 CFR 219.27 sec. (c)(3)). This monitoring item was intended to insure that clearcuts are restocked by the 5th year by requiring regeneration surveys 1, 3 and 5 years after the clearcut.

In 1992, 56 acres of the Shoshone National Forest were treated by clearcut. These acres represent three timber sales on the Wind River district.

Table 4: Acres Treated by Clearcuts in the Last Five Years

Sale Name	Sale Date	Final Harvest Acres
Union Pass Blowdown Salvage	06/92	22
Trapper Creek	06/92	12
Wildcat Blowdown Salvage	09/92	22

The Forest Plan requires that this item be monitored by regeneration survey. The Union Pass Blowdown, Trapper Creek and Wildcat Blowdown Sales were inspected for regeneration certified (5th year survey) in 1997.

Evaluation

Although clearcut areas are monitored on the Shoshone the 1st and 3rd years after harvest, they are not documented unless a problem is noted. The 5th year regeneration survey, however is documented. The Union Pass Blowdown Salvage sale was certified as stocked in FY 97. The Trapper Creek sale was scheduled for planting in the year 2000 and the Wildcat Blowdown was surveyed this year. Certification of the Wildcat Blowdown was found to be questionable during this survey. In 1996 this sale area had a good cone crop and seed production which should result in a fully stocked stand that meets certification criteria. It's possible that the seedlings were not detected in FY 97 due to their small size. This site will continue to be monitored in FY 98 to determine if planting is necessary.

The majority of clearcuts on the Shoshone National Forest occurred prior to the passage of NFMA in 1976. Although regeneration surveys are not required for those acres clearcut prior to 1976, the Forest spends considerable time visiting, evaluating and surveying those acres in order to update records and evaluate past silvicultural treatments on the Forest. Monitoring indicates that regeneration limitations are often due to site preparation or slash disposal methods applied.

In FY 97 approximately 4000 acres of prior treatments were evaluated and certified on the south zone of the Forest (Washakie and Wind River Districts). On the north zone of the Forest (Clarks Fork, Greybull and Wapiti) in the areas that were planted after the 1988 fires 1st year survival exams were accomplished on 665 acres. Results showed 89% overall seedling survival with a range from 72% up to 97% in individual planting units. Third year survival exams were completed on 736 acres showing an overall survival rate of 57%. Competition from grasses and other vegetation, dry conditions in the 1996 growing season, cattle and wildlife damage and destruction of one of the stake row surveys are the main reasons for this lower survival percentage. Fifth year stocking surveys were conducted on 413 acres, most of which were planted in 1993. Results indicate 81% overall stocking in these areas. Dry growing seasons and wildlife and livestock damage are the primary factors reducing overall stocking in these areas.

3. Timber Stand Improvements

Timber stand improvement (TSI) refers to vegetation management activities that improve the composition, condition or growth of a stand of trees. This monitoring item requires that acres of timber stand improvement not vary more than 25% from what is planned annually. The Forest Plan projected 121 acres per year of Timber Stand Improvement for the time period between 1991 and 2000 (Land and Resource Management Plan, Table III-1, page III-14). The following is a list of the acres of TSI projected by the Forest Plan and accomplished for the last seven years:

Table 5: Timber Stand Improvement 1991-1997

Year	Forest Plan Acres	Acres Treated	% of Forest Plan
1991	121	40	67
1992	121	407	336
1993	121	0	0
1994	121	140	115
1995	121	250	206
1996	121	117	97
1997	121	455	376
7 Yr Average	121	201	166

Evaluation

Emphasis for TSI activities has been placed in past cutover areas on the Forest to enhance new stand growth by reducing competition on desirable species and to promote individual tree growth. The majority of this work has been achieved through the use of TSI contracts which are inspected by Forest personnel. Payment to contractors is approved after they meet the minimum requirements of the contract and the inspectors approve the units. Force account crews and seasonal work crews have also completed TSI treatment under the guidance of a forester within this time frame. Accomplishments for the period shown above have been monitored on the ground by contract inspectors and foresters, through the use of daily diaries and inspection reports.

Between 1991 and 1997 the Forest accomplished approximately 166% of what the Forest Plan projected for acres of TSI. It should be noted that some of these contracts are multi-year contracts and therefore acreage accomplishments will vary from year to year. In some years accomplishments may exceed the planned acreage target while in others they are under estimates. After completing a field review of some TSI areas on the Forest this year discussion centered around having 1 precommercial thinning operation in lieu of the two called for in the forest plan. This review was not a forest wide look but indications are that one thinning may be more cost effective than two. This will be again monitored in FY 98.

4. Growth Response

Growth response is monitored by Forest personnel through stand exam surveys. In fiscal year 97 the south zone of the Forest inventoried 4,005 acres, and the north zone of the Forest inventoried 1,500 acres. In addition to the stand exam surveys conducted this year the Forest also conducted field inventories on 889 acres and developed preliminary stand management prescriptions on those stands.

5. Size of Clearcuts

Clearcuts greater than 40 acres in size require the Regional Forester's approval. Clearcuts are rare on the Shoshone National Forest. Those that have occurred (see discussion under Restocking of Clearcuts heading) since 1989 have not exceeded the 40 acre limit.

6. Lands Not Suited for Timber Production

Lands not included in the suited timber base may not be managed for wood fiber production but may be managed for other resource objectives. In some situations wood fiber is a byproduct of resource management such as when openings are created for wildlife in a forested area. The Forest Plan standards and guidelines specify what types of activities are permissible outside the suited timber base and are reviewed before activity occurs. This monitoring item was intended to guarantee that lands outside the suited timber base be managed for the appropriate resource objectives.

Evaluation

The Poleback timber sale was completed this year on the Washakie District. This vegetative treatment was proposed to create a migration corridor for bighorn sheep. Plans to burn the slash left from this treatment are in progress and it is hoped that this will occur in the spring of 98 after the fuels are reduced in this area. It will be seeded and monitored in FY 98. The Switchback sale remains unsold and the Forest is considering offering it for sale again in FY 98.

An estimated 2.5 MMBF of products other than sawlogs were sold on the Forest this year. Products other than logs include fuelwood (commercial and personal use), post and poles and houselogs. These products are removed from both suited and non-suited timber lands. Approximately half of that volume comes from lands not suited for timber production.

WATER RESOURCES

Effects of Specific Resource Management Practices on Waters of the U.S.

Programmatic Level Monitoring

Stream Health Assessments

Since 1994, a seasonal crew has been collecting stream health information on the Forest. The focus of the work has been to assess physical and biological integrity relative to compliance with the Clean Water Act. Twenty-five (25) stream reaches across the North Zone (Clarks Fork, Wapiti and Greybull Districts) were monitored during 1997. Table 6 displays the name and general location of each reach.

Table 6. Stream Reaches Monitored in 1997

Stream	District
Sunlight Creek above Gravelbar Creek confluence	Clarks Fork
Sunlight Creek above Elk Creek confluence	Clarks Fork
Squaw Creek below County Road crossings	Clarks Fork
Dead Indian Creek below campground	Clarks Fork
Crandall Creek above North Fork Crandall confluence	Clarks Fork
North Fork Crandall Creek near Crandall Creek confluence	Clarks Fork
Russell Creek within the riparian pasture	Clarks Fork
Russell Creek upstream of the riparian pasture	Clarks Fork
East Painter Creek upstream of Game and Fish Department habitat unit	Clarks Fork
Trout Creek near Forest boundary	Wapiti
Rattlesnake Creek near Forest boundary	Wapiti
Belknap Creek near Forest boundary	Wapiti
Rock Creek near Forest boundary	Wapiti
South Fork Shoshone River below Wilderness boundary	Wapiti
Hardpan Creek near Forest boundary	Wapiti
Deer Creek above private property	Greybull
Greybull River above Jack Creek confluence	Greybull
North Fork Dick Creek upstream of top rail enclosure	Greybull
North Fork Dick Creek near Forest boundary	Greybull
Gwinn Fork Dick Creek near Dick Creek confluence	Greybull
Dick Creek near Forest boundary	Greybull
Timber Creek near Forest boundary	Greybull
Gooseberry Creek near Forest boundary	Greybull
Wood River near Forest boundary	Greybull
Wood River near Double D Ranch	Greybull

Evaluation

The field information is presently being analyzed by hydrology and aquatic biology staff. Analysis results will be included in next years (FY98) report.

Travelways Monitoring and Inventory

The above mentioned crew has also been inventorying and monitoring travelways (foot and horse trails excluded) on the Forest. The focus of this work has been field data collection to be able to assess effects of travelways on watershed condition and stream health. Information useful to other resources such as engineering, recreation, and wildlife have been collected as well. During 1997, the crew finished, Forest-wide, the field work portion of this project.

In addition to work conducted by the crew, travelway monitoring occurred on the Washakie District as part of initial efforts to design watershed improvement projects.

Evaluation

The field work is presently being entered into the Forest Geographical Information System (GIS) as a map layer and associated database. A report summarizing the information is also in preparation. These three items (map layer, database, and report) should be completed in Fiscal Year 1998.

A primary area of concern on the Washakie District is along the Loop Road, particularly between Louis Lake and South Pass. Another area of concern is Limestone Mountain. Concerns exist with 1) continued expansion of the existing travelway system by Forest users, and 2) continued erosion and sedimentation from the travelway system. Options for addressing travel management are being pursued and watershed improvement projects are being designed.

Project Level Monitoring

North Fork Highway Reconstruction

Monitoring of the Cody to Yellowstone Highway reconstruction occurred throughout Fiscal Year 1997.

Evaluation

Monitoring focused on compliance with Forest Plan standards and guidelines, the Corps of Engineers 404 permit, the Wyoming Department of Environmental Quality (WyDEQ) Pollution Prevention Plan and WyDEQ water quality standards. Compliance concerns with erosion control were identified and corrected. In addition, the Pahaska wetland mitigation site sustained considerable damage from high water during spring runoff. Options for addressing this situation are being pursued.

Winter Range Utilization

Utilization on winter ranges in the Sunlight and North Fork Shoshone River basins were monitored during the winter and spring.

Evaluation

Concerns with overgrazing, primarily by elk, and its effect on watershed condition and stream health were identified. Cooperative dialogue with the Wyoming Game and Fish Department (WYG&F) was initiated. WYG&F offered additional licenses during the 1997 hunting season in an effort to reduce elk numbers. Monitoring of these winter ranges will continue in Fiscal Year 1998.

Watershed Improvements

Monitoring of recent watershed improvement work in the Warm Springs Creek drainage, which involved road obliteration and improved drainage on open roads, continued in Fiscal Year 1997.

Evaluation

Overall the obliteration and improved drainage was effective. Some rolling dips required reconstruction. A need for additional drainage was identified so additional rolling dips were constructed. Depending upon the outcome of continued monitoring, additional culverts may be installed in the future.

Livestock Grazing

Monitoring of commercial livestock grazing for compliance with soil and water related permit conditions occurred on several allotments.

Evaluation

Middle Fork Allotment - See discussion in Evaluation section for Livestock Grazing under Riparian Condition. Monitoring will continue on this allotment to determine if there is an upward trend in condition.

Dick Creek Allotment - Concerns with use in the North Fork drainage were identified. While overall use was within standards, use along unfenced riparian areas was excessive. Much of the riparian along the North Fork has been fenced over the last several years and it appears this may be placing unacceptable pressure on remaining unfenced areas. As a result, options are being pursued for reconfiguration of the fence network.

Table Mountain Allotment - Utilization in meadow environments along Table Creek were monitored. Overall use within the meadows and surrounding uplands was well within standards, but excessive bank damage was observed along "E" stream types. This situation has been encountered across the Forest with this stream type. Options for addressing this situation (excessive bank damage well before overall utilization is met) continue to be developed as more information is collected.

Ghost Creek Allotment - cursory monitoring of this allotment resulted in similar findings as along Table Creek, mentioned above. Again, options are being pursued.

Basin Allotment - Units within this allotment that are under permit to 7D Ranch were reviewed. Overall, soil and water related permit conditions were being met. Minor areas of concern were identified and options are being pursued to correct these.

Timber Sales

Monitoring of commercial timber sales for compliance with soil and water related permit conditions occurred on several sales.

Evaluation

Timber Creek Sale - A review of this sale occurred just before final closeout. Overall, soil and water related permit conditions, at that point in the sale, were properly implemented and effective. Exceptions included 1) a need to make sure all erosion control structures are maintained throughout the life of the sale, particularly before seasonal shutdowns, and 2) a need to disconnect, as much as feasible, the road network from the stream network.

Lodgepole II Sale - A review of road reconstruction occurred shortly after completion. Overall, the reconstruction was satisfactory. One exception was a need to construct a sediment basin at the outlet of an inside ditch.

Pass Creek Sale - A review of temporary roads being used for this sale occurred during use. A need for additional drainage and sediment control was identified and addressed.

Other

Other, less project specific monitoring occurred as well.

Evaluation

Garbage dump - an old garbage dump was located in the Little Warm Springs Creek area. Options for removing the dump are being pursued.

Wind River Lake - During a culvert cleaning operation the lake level dropped significantly after debris was removed from the culvert, resulting in elevated flows downstream that caused some bank erosion. Options for repairing the bank damage are being pursued.

Squaw Creek - Stream health on Squaw Creek (Clarks Fork District) continues to deteriorate due to effects of the Squaw Creek road (portions are located next to the creek and there are three crossings within a one mile stretch), the Clover-Mist Fire and post-fire salvage logging. Options for improving stream health were pursued, resulting in a cooperative project to relocate the road and rehabilitate the stream. This project should be implemented in 1998.

Wapiti Ranger Station Bank Erosion - Stream banks near the Ranger Station continue to erode. Emergency bank protection riprap was placed during spring runoff under close

supervision. The riprap was effective in controlling additional bank loss, but only for the short-term. A long-term streambank stabilization project is being designed.

Water Uses

New water right applications are reviewed to ascertain the requested use will not conflict with existing uses and rights, including instream flow needs quantified by the Big Horn adjudication. Potential conflicts are resolved either as the application is processed through the State Engineer's Office or through Special Use permit clauses once a right is granted.

Evaluation

The Forest was granted an instream flow water right for the Clarks Fork Wild River on December 31, 1996. This water right was approved by the Wyoming State Engineer per language in the Clarks Fork Wild and Scenic River Designation Act of 1990 (Public Law 101-628, November 28, 1990).

The Forest was granted five (5) stock water rights in Fiscal Year 1997. One was to develop a recreational stock water facility at the Jack Creek Trailhead. The other four were to develop livestock water facilities on commercial livestock grazing allotments in order to improve livestock distribution and take grazing pressure off of riparian areas. Three of the facilities are on the Hardpan Allotment, while the fourth is on the Belknap Allotment.

No new water related Special Use Permits were issued in Fiscal Year 1997.

LANDS/SPECIAL USES

Compliance with Land Use Authorizations (Special Uses) and Consistency with the Plan.

The 1997 monitoring plan for special uses continued to focus on those permits which are at the highest risk for potential health and safety concerns and/or potential for resource degradation. These permits are primarily the concessionaire permits through which services are provided to the public for camping, outfitter/guide services, skiing, recreation events and lodge/resorts. All permits within these categories were monitored for compliance with the terms and conditions of the authorization in 1997.

Authorized uses on the Shoshone National Forest continued to increase in 1997. Total authorizations in place at the end of fiscal year 1997 numbered 523, as compared to 507 for 1996. All proposed new uses went through a screening process to determine consistency with the forest plan. Proposed uses which could reasonably be met on private lands and which were not clearly in public interest were not approved.

Evaluation

Monitoring of concessionaire permits was accomplished in several ways. Operating plans for these permits are updated annually. The contents of the plan are agreed upon at the beginning of the operating season between the permit holder and the authorized officer, and become the vehicle through which the concessionaire operation is monitored. Campground permits were monitored daily, and lodge permits, organization camp permits, and the downhill skiing permit were monitored weekly. All recreation events were monitored on a daily basis, while the event was in progress. Monitoring of outfitter/guides operations consisted of both front country patrols and back country patrols, with an emphasis on compliance with the food storage order.

Written reports and correspondence were prepared to document any problems noted. Follow-up on these items consisted of ensuring that compliance was obtained within the time frames agreed upon. Documentation is contained in the special use folder. Copies of violation notices written for permitted activities are also filed in the special use folder.

Ensuring compliance with the grizzly bear food storage order continued to be a top priority. Pre-season inspections were conducted at all lodges on the North Fork corridor (Cody, WY to Yellowstone highway) to review operations and provide suggestions on operating methods to best discourage visitation to the site by bears. Education efforts consisted of pre-season training of all lodge employees, and weekly talks at the Boy Scout organization camp. Follow up sessions were conducted, as needed for new employees. Mid-season inspections of all lodge facilities were conducted and all lodges were found to be in compliance.

Wilderness rangers and trail crew members monitored back country permits. Photographs of outfitter camps were taken and report forms completed. Information sessions were conducted with several lodge permittees covering methods to best utilize backcountry sites to minimize the impact of many people and animals in one place.

In addition to concessionaire permits, categories of non-recreation permits which were monitored included commercial film permits, power lines, and water transmission facilities. The Wyoming Highway Patrol provided assistance in the monitoring of commercial film permits, to ensure traffic control requirements contained in the permit were met.

In summary, the monitoring of special use permits indicates an upward trend in compliance with the terms and conditions of use permits. It is felt that this trend is largely the result of the increased presence of Forest Service personnel in the field during the operating season.

Table 7. 1997 Special Use Permits

<u>South Zone</u>		<u>North Zone</u>	
2	Organization Camp	1	Organization Camp
5	Lodge Resort	14	Lodge/Resort
29	Recreation Residence	71	Recreation Residence
3	Recreation Event	1	Recreation Event
86	Outfitter Guide	49	Outfitter Guide
11	Agricultural	7	Agricultural
11	Road Easements/permits	22	Road Easements/permits
24	Communications permits	13	Communications permits
16	Water conveyance	63	Water conveyance
1	Campground	2	Campground
14	Mineral material	14	Mineral material
4	Research	11	Research
1	Construction Area	8	Construction Area
1	Motion Picture	4	Motion Picture
15	Miscellaneous	16	Miscellaneous
Total: 223		300	

Forest Total: 523 Permits/Easements

FACILITIES

1. Road Construction/Reconstruction (Local, Arterial, Collector).

This monitoring requirement allows a 25% deviation from the planned accomplishment for road construction and reconstruction. The following are Forest Plan projections for collector and local road construction and reconstruction:

Projected Road Construction/Reconstruction 1991-2000

Activity	Collector (Miles)	Local (Miles)
Road Construction	2.0	5.6
Road Reconstruction	1.7	1.9

In FY97, 0.1 mile of new local road was constructed and 4.8 miles of local road were reconstructed and subsequently closed. This is 2% of the average annual for new local road construction and 253% of the average annual for local road reconstruction.

Evaluation

Deviations from the Forest Plan projections continue to occur, particularly with respect to the almost reversal of projected construction and reconstruction miles. The road construction and reconstruction programs on the Forest are almost totally dependent on the timber sale program. Roading for support of the timber program is kept to an absolute minimum necessary to harvest the timber and protect the surrounding resources. For various reasons, timber sales with proposed road work have not sold. The trend away from new construction and into reconstruction also reflects the results of the "no net increase" in new roads policy of the Forest. During plan revision, the number of miles of new and reconstruction need to be evaluated with respect to the timber program and other resource needs.

2. Roads Closed (System Miles Closed by Project Activities)

In FY 97, 4.8 miles of local road were closed after completion of timber sale activities. All 4.8 miles were existing roads which were reconstructed by timber sale activities. At the end of FY 97, there was an inventoried total of 288 miles of closed road on the Forest.

Evaluation

Table III-1 in the Forest Plan shows that there should be 99 miles of closed road on the Shoshone each year. The inventoried number of closed miles would indicate that the Forest is at 291% of its average annual accomplishment. As indicated in the FY96 report, this probably indicates that the Forest needs to continue to look at its closed roads and evaluate them for decommissioning as roads. This should be done at the time of plan revision.

3. Roads Obliterated (Road Miles Obliterated by Project Activities)

Miles of new Forest Development Road constructed are measured against road miles obliterated (decommissioned) so that for each running five-year period, beginning October 1, 1994, the cumulative number of new miles of Forest Development Road constructed does not exceed the cumulative number of miles of road obliterated (decommissioned) in the same five-year period of time.

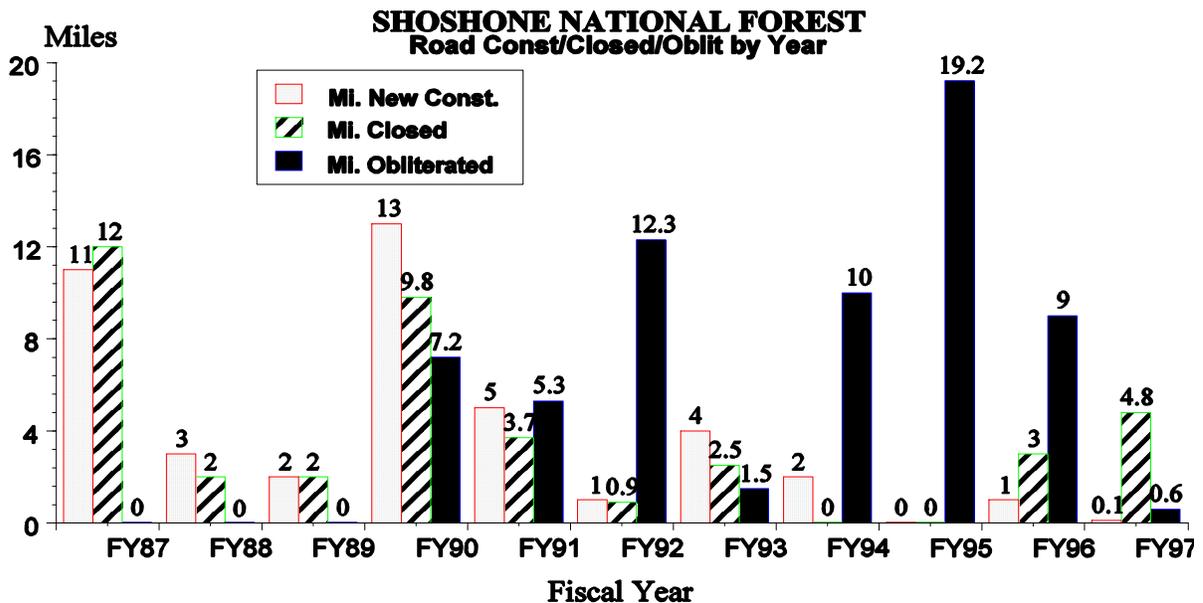
In FY 97, 0.6 miles of road were decommissioned. The forest plan projects an average annual 7.6 miles per year for decommissioning (obliteration). In FY 97, the Forest met only 8% of that projection. The five-year average for decommissioning is 8.1 miles and the average since 1988 has been 5.5 miles per year.

At the end of the fiscal year, the five-year net of roads constructed/decommissioned stood at negative 33.2 miles, indicating that over the past 5 years, 33.2 more miles of road had been decommissioned than new miles of road constructed.

Evaluation

Not being within $\pm 15\%$ of the average annual for FY 97 is not an item of concern. The Forest is committed to an orderly process of road decommissioning.

The following chart summarizes road construction/obliteration and closing for the Forest:



4. Level 1 Road Maintenance (Miles of Level 1 Maintenance Accomplished)

Level 1 maintenance was performed on 91 miles of Forest Development Roads in FY97. Many more miles of non-system roads also received Level 1 maintenance as part of the Watershed Cumulative Effects road inventory. No deficiencies in the closures of these roads were reported. Forest Plan average annual output for Level 1 maintenance is 332 miles. Actual miles maintained were 27% of this total.

Evaluation

Level 1 road maintenance is the lowest priority for maintenance, as priority is given to the Level 3, 4,5 roads where public health and safety are a significant concern. Current budget levels do not allow for forest plan level road maintenance. The Forest has adopted a policy of doing at least 25% of the Level 1 road maintenance each year. This goal is more attainable than full Level 1 maintenance on all level 1 miles each year. During Plan revision, the average annual output for Level 1 road maintenance should be changed to 20-25% of the total mileage every year. By so doing, each closed road receives an inspection and Level 1 maintenance at least every 4-5 years.

PROTECTION

1. Fuels Treatment Target

The fuel treatment program encompasses activity generated fuel reduction and natural fuel reduction. Activity fuel reduction focuses on activities which generate wood debris such as logging, tree thinning and road right-of-way wood debris. Natural fuel reduction focuses on vegetation exceeding natural volumes based on the assumption of natural disturbances and agreed to thresholds. The Forest Plan does not address prescription parameters though Fire Managers apply a model to determine the preferred fuel volume reduction. Measurement frequency is the annual planned target +/- 25%.

Evaluation

The following fuel treatment activities were accomplished in FY 97:

The Forest had a target of 28 acres of activity fuel (BD) and 100 acres of natural fuel treatment. 100% of the activity fuel target was completed and 154 acres of natural fuel treatment was completed or 156% of the target. An increased target of 250 acres was received mid-year with no additional funding. The Forest chose not to deficit spend to complete the unfunded target.

2. Fire Management Effectiveness Index

Monitoring fire management effectiveness involves measuring the relative effectiveness of fire protection by comparing funds spent on suppression to resource loss. The model used to determine the best combination of firefighting resources to achieve the least resource loss is the National Fire Management Analysis System. Currently, a 4 year old analysis is used to evaluate fire management effectiveness. A new analysis is scheduled for 1998.

Evaluation

The most efficient level of fire protection capabilities for the Forest based on the 1993 analysis is \$359,086 for direct suppression funded resources. The Forest received \$275,000 or 76% of the most efficient level of fire protection.

AIR RESOURCES

Effects of Other Resource Management on Air Quality and Air Related Values

Air Quality on the Shoshone National Forest is monitored for two wilderness areas in the Wind River Mountains, the Fitzpatrick and Popo Agie. The Shoshone and Bridger-Teton Forests have collaborated to develop a long-term monitoring program in the Wind River mountains for several reasons. A large percentage of the lakes are extremely sensitive to changes in air quality. Also, there are many air pollution sources from the southwestern part of Wyoming and beyond, such as existing and developing natural gas fields, coal-fired power plants, phosphate fertilizer plants, trona mines, and traffic on Interstate 80.

The Bridger-Teton National Forest has been the lead in developing a long-term air quality monitoring program in the Wind River Mountains with the Shoshone as an integral part of that program. There are two parts to this program: Air Quality Related Values (AQRV) monitoring consists of yearly sampling of two wilderness lakes for a number of chemical and biological parameters. The second part is the National Atmospheric Deposition Program (NADP) site and involves collecting weekly samples from a wet and dry deposition collector located at South Pass on the Washakie Ranger District.

In FY 97 additional sampling was conducted in coordination with the Bridger-Teton National Forest. In cooperation with the National Outdoor Leadership School (NOLS) a synoptic survey was conducted on five high elevation wilderness lakes on the Shoshone and several lakes on the Bridger-Teton. The synoptic survey consists of a one time water sample from the lake or its outlet, to determine its baseline lake chemistry. Lakes sampled in the survey were selected for high potential to have low alkalinity, or a previous sample indicating low alkalinity. Low alkalinity lakes are the most sensitive to acidification and those lakes need to be identified for analysis of the effects of existing and new pollution sources.

In FY 97 the Bridger-Teton received grant funds from the EPA to sample several lakes on the Bridger-Teton and Shoshone Forests. Over ten lakes were sampled at their outlets on the Shoshone in the Wind River Mountains. The protocol was basically the same as the synoptic survey used by NOLS personnel described above. Samplers were trained by Tamara Blett of the Forest Service Rocky Mountain Regional Office.

On the Shoshone National Forest, Lower Saddlebag Lake in the Popo Agie Wilderness and Ross Lake in the Fitzpatrick Wilderness are designated for long term AQRV monitoring. In FY 97 these lakes were each sampled three times, as planned, for trends and changes in lake chemistry and biology. Samples of macroinvertebrates and zooplankton were also taken as indicators of water quality. Certain species of these organisms are very sensitive to chemical changes in water and are good indicators of changes in water quality, particularly pH.

On the Bridger-Teton and the Shoshone National Forests this program is partially funded by cooperating industries and provides indicators of national air quality trends. The Shoshone National Forest has two NADP sites on the Washakie District, one in South Pass and one in Sinks Canyon south of Lander, Wyoming. In FY 97 all the weekly samples were collected at the South Pass site which is administered by the Forest Service. The other site is administered and funded by the Bureau of Land Management. Many chemical parameters are measured including

pH and conductivity. Previous year's data and national site maps are now available on a World Wide Web site at <http://nadp.nrel.colostate.edu/NADP>.

To be able to analyze potential impacts to Lower Saddlebag Lake using the MAGIC model (see discussion below on MAGIC) more information on the watershed was required. Collection of this data began in the fall of 1996 and was completed in 1997. This data collection included soil samples and mapping, vegetation samples, stream flow data, vegetation distribution, a watershed map, bathymetry and lake volume. With the assistance of the Rocky Mountain Regional Office these samples were analyzed and the data sent to the consultant developing and running the model.

Evaluation

Analysis of the data collected in the AQRV lake monitoring and the NADP program is documented in a report written by Jill Baron of the National Biological Survey at the Natural Resource Ecology Laboratory, Colorado State University. The report, dated December 1994, documents and interprets data collected from 1984 to 1993. Some summary statements from the report are paraphrased as follows:

The Wind River Lakes represent the most sensitive lakes in the Western United States because their low base cation and acid neutralizing capacity (ANC) concentrations make them extremely sensitive to changes from environmental disturbance. Therefore, continuation of this long term monitoring program is necessary to detect future anthropogenic impacts. The baseline monitoring program has enabled us to detect trends and define the limits of natural variability in the chemical characteristics of the Wind River Lakes between 1984 and 1993.

Dr. Baron's report made several recommendations for the air quality monitoring program:

1) continuation of the baseline sampling using the current laboratory (a change of labs occurred in 1990) until 1999, in order to be able to use the full period of record with appropriate statistical techniques for determining magnitude and direction of trends;

2) the monitoring program could be modified to sample the lakes at one location instead of three, preferably at the outlet since the lake locations are not significantly different;

3) if the number of lakes needs to be reduced because of budget constraints, Ross Lake in the Fitzpatrick Wilderness should be eliminated;

4) if more reductions are needed, the number of samples taken at each lake could be reduced to once per year.

Based on these recommendations as well as budget reductions, the number of samples collected per year was reduced at each lake beginning in 1995.

Dr. Baron's preliminary analysis of the data suggests a trend for pH and ANC decreasing over time, with nitrates and sulfates (acid precursors) increasing over time. In other words, a negative change in water quality. Additional monitoring and analysis over a

period of several years is needed. Within the next few years, by 1999, further analysis of this data will proceed. It is important to determine if the preliminary findings of a downward trend in water quality are accurate and continuing, and to recommend a course of action for the Forest to meet its responsibility under the Clean Air Act.

The Clean Air Act contains provisions for Prevention of Significant Deterioration (PSD) of air quality in national wilderness areas. Before certain new air pollution sources are permitted, the proponent must apply for and receive a PSD permit from the appropriate air regulatory agency, in this case the State of Wyoming. The Forest Service carries out its responsibility under PSD by making recommendations to the State on permitting of new air pollution sources, whether or not permits should be issued, and what modifications they may need. Collection of this monitoring data is developing a baseline upon which the Forest Service can perform analysis and base recommendations. The Bridger-Teton National Forest has recently developed a Model of Acidification of Groundwater In Catchments (MAGIC), a computer model using data from both Forests. MAGIC will be used to analyze potential new air pollution sources and will help provide recommendations to the State and EPA on permit applications to ensure protection of air quality on the Forest.

Results for NADP and AQRV samples collected in FY 97 have not yet been analyzed. NOLS, in coordination with the Washakie District of the Shoshone, sampled the following wilderness lakes during the synoptic survey: Cirque Lake, Lonesome Lake, one of the Stough Creek Lakes - unnamed - (10,902), unnamed lake (10,860), and Klondike Lake. The data from these lakes has not yet been reviewed or analyzed.

Data from the sampling funded by EPA has been received but only preliminary analysis has been done.

The Forest is proactive in dealing with potential new air pollution sources that may have an adverse effect on air quality. This includes being involved with BLM, EPA, and other agencies, especially the State of Wyoming, in analysis and permitting of new pollution sources, particularly in southwest Wyoming and participating in the Southwest Wyoming Technical Air Forum (SWYTAF).

EVALUATIONS AND CONCLUSIONS

General

An Interdisciplinary Team (IDT) met to reassess the status of the Forest Plan based on the results of this year's monitoring program. As mentioned in the 1996 Monitoring and Evaluation Report, the team found that the Forest Plan is still valid and reasonably up to date. There have been three major Forest-wide analyses in recent year's, Oil and Gas Leasing, Allowable Timber Sale Quantity, and Range analysis. Since 1986, the Forest Plan has been amended eight times, with later amendments superseding some earlier amendments. A list of amendments is provided below. It was stated in recent monitoring reports that the plan is not in need of major amendments given that Forest Plan revision is impending (scheduled to start in 1997). Late in fiscal year 1997 a moratorium was placed on Forest Plan revisions by Congress until new National Forest Management Act (NFMA) regulations have been developed by the Forest Service. This situation places greater emphasis on keeping the Forest Plan current through amendments. The following are IDT findings and recommendations.

Travel Management

Off road vehicle use continues to be an issue on the Shoshone National Forest in some areas (see Off Road Vehicle Use section under Recreation). Impacts are being seen on resources such as watersheds, wildlife habitat, visuals, and cultural sites in certain locations. Changing demographics both locally and nationally mean more people are out on the Forest accessing previously unroaded areas on increasingly popular off-highway vehicles. The Forest lacks sufficient dollars and staffing to enforce compliance with the existing travel management plan. This issue surfaces during the environmental analysis process on almost every vegetation management project on the Forest.

It is recommended that a higher priority be set on implementation of the existing travel management plan. This would include Forest personnel putting up signs in areas where use restrictions are not clearly marked and increased law enforcement (and other) presence in problem areas. Monitoring indicates that public education is a very useful and successful tool. More emphasis needs to be placed on education, and on work with user groups and local governments to explain the reasons for use restrictions.

A better, more accurate Forest visitor travel map would be very helpful to Forest users and indirectly, to Forest resources. The current map is in need of revision. Because some of the roads and trails on the Shoshone National Forest continue on the Bridger-Teton National Forest, the updated map should include portions of the Bridger-Teton.

A related topic is that of winter recreation travel management. The Forest has participated in an interagency assessment of winter use in the Greater Yellowstone Area. The assessment incorporates data from the existing travel plan regarding areas available for over-snow motorized use. It analyzes current winter use and develops information on conflicts and issues associated with that use. The assessment also presents a range of desired winter recreation experiences from relatively primitive, nonmotorized experiences to relatively developed motorized experiences. When the Winter Use Assessment becomes final, it will be useful in determining whether the issue is one that requires further analysis.

Roads

Deviations from forest plan projections for road construction and reconstruction continue to occur. This is partly due to Forest budget levels and also to changes in policy (see discussion for item #1 under Facilities section). It is recommended that the number of miles of new construction and reconstruction be evaluated in the forest plan revision process.

The Forest also continues to carry on its road inventory 2-3 times as many closed roads as are projected in the Forest Plan. It is recommended that the Forest be more aggressive in decommissioning unneeded roads.

Water Resources

Monitoring across the Forest indicates excessive bank damage along "E" stream types in some meadow areas as a result of ungulate grazing even when overall use in the meadows and uplands is within Forest Plan standards (see discussion in Water Resources section under Livestock Grazing). Options are being considered for addressing this issue. One possibility is a bank trampling standard for "E" stream types. It is estimated such a standard would take several years to develop.

Possible or Pending Forest Plan Amendments

Pending Decisions: Line Creek RNA; North Fork Shoshone River Corridor Developed Recreation Management.

Pending Analyses and Decisions: Ramshorn Vegetation Management EIS and fire suppression strategy; Maxon Basin RNA.

Roadless Area Summary

Prior to the Wyoming Wilderness Act of 1984, there were about 776,000 acres of roadless inventoried areas (RARE II) in addition to existing wilderness, two primitive areas, and one special management unit being managed as "roadless" or nonmotorized. With the passage of the Act, some of the RARE II acreage was added to existing wilderness, leaving about 697,000 acres of inventoried "roadless" on the Shoshone to be released for management in accordance with existing land management plans. The primitive areas were incorporated into the National Wilderness Preservation System.

Of the approximately 697,000 acres of RARE II lands released (pending plan revision) for management under the Forest Plan, about 50,000 acres are in several special designation categories managed to maintain roadless character (wilderness study, special management unit, research natural areas, and wild and scenic river corridor). About 430,000 acres are to be managed for purposes not consistent with roading and motorized use (semiprimitive-nonmotorized recreation, big game habitat, and management indicator species), but that allow roads on a restricted basis. The remainder of the released lands are to be managed for road-related uses, subject to standard road construction practices and mitigation. Again, these use allocations are in accordance with the current forest plan.

In 1997, a 30 acre bighorn sheep habitat improvement project was conducted in inventoried roadless (RARE II) using a temporary road. No other projects were implemented in inventoried

roadless areas. Two projects involving inventoried roadless acreage are currently being evaluated through NEPA. These are: the Sunlight Timber Sale on the Clarks Fork District, and the Ramshorn vegetation management EIS on the Wind River District. Both projects could be conducted to a degree without incorporating "roadless" acres.

Shoshone National Forest Plan Amendments to Date

97-001 - Forest Plan Monitoring. Clarified and updated monitoring table, plan Chapter IV.

96-001 - Oil and Gas Leasing. Changed leasing availability and lease requirements according to FOOGLRA. Replaced Plan Appendix K, E, and selected management requirements.

94-001 - Allowable Sale Quantity. Changed ASQ based on 1988 fires and improved timber site data. Updated forest wide management requirements, monitoring provisions, and discussion in the plan Chapter II to incorporate a "no net increase in roads" policy.

91-002 - Grizzly Bear Management. Brought plan into conformance with current grizzly bear management guidelines.

91-001 - Air Quality Management. Deleted a superceded reference and incorporated current national policy on air quality management .

87-003 - Swamp Lake Botanical Area. Delineated and designated a new special area, and provided for its management.

87-002 - Mapping and Management Area Change. Changed a management area designation from 2A to 3A, and closed a road in Bear Basin on the Wind River District. Amendment was subsequently vacated.

87-001 - Mineral Lease Stipulation Changes and Errata. Adopted a revised set of standard leasing stipulations from the Region, replacing the original Plan Appendix E. Also revised Plan Appendix K to provide additional guidance for leasing in Bighorn sheep habitat on the South Fork Shoshone River.