

SHENANDOAH NATIONAL PARK

NATURAL RESOURCE MANAGEMENT



SHENANDOAH NATIONAL PARK
BEAR MANAGEMENT PLAN
1990

Shenandoah National Park
U. S. Department of the Interior
National Park Service
Rt. 4, Box 348
Luray, Virginia 22835

SHENANDOAH NATIONAL PARK

BEAR MANAGEMENT PLAN

1990

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I. Introduction

The eastern black bear (Ursus americana) is indigenous to Shenandoah National Park (SNP) and the entire Blue Ridge Mountain chain. When the Park was established, the bear population was so low that sightings were considered rare. Through the protection offered by the Park, the population slowly increased until by the late 1950's there were an estimated 75 bears in the Park. Since the 1960's, much of the Park's hardwood forest has reached mast producing age. Intensive farming near the Park boundary has increased the availability of preferred bear forage such as apples, peaches, corn, and honey. This abundance of food, coupled with the protection of good habitat, led to a dramatic increase in the bear population between 1960 and 1974.

In 1972, the Park entered into a research agreement with the Virginia Department of Game and Inland Fisheries. The resulting research project consisted of a large-scale trapping program designed to provide information on population density, home range, population dynamics, reproductivity, growth rates, and mortality. During the four-year period of intensive trapping, over 300 individual bears were processed. Data from this study showed that the Park was sustaining a healthy population of approximately 300 plus animals. Considering that these bears were not evenly distributed over the 300 square miles of Parkland, the population density in good habitat exceeded one bear per square mile, which is considered high even for excellent bear habitat.

Between 1976 and 1989 two major bear research projects were completed. Data from this work showed that the Park bear population had increased from an estimated 300 animals to 500-600 bears by 1989.

A bear population monitoring program was designed and implemented in 1983. The field protocol includes a system of 185 permanently established bait stations which are geographically distributed throughout the Park (refer to project N-49 for details). Data received through this monitoring program indicates that the population has been stable or very slightly increasing since 1984. A combination of information from State harvest records, Park bear incidents and bear sightings support this finding.

During the 1960's, it became evident that direct management of the growing bear population was necessary. Large numbers of bears were foraging for human food in the picnic areas, campgrounds, and concession facilities. Property damage incidents increased significantly, and managers became concerned about visitor safety. In 1974, funding was requested to initiate an intensive bear management program. In 1975, all of the Park dumps were closed to the depositing of edible refuse.

In February 1976, a comprehensive Bear Management Plan was implemented. This plan called for a program of three main objectives:

- A. To restore and maintain the natural integrity, distribution, and behavior of the black bear population.
- B. To provide for a minimum of adverse bear/human conflicts.

C. To provide opportunities for visitors to observe and appreciate the black bear in a natural state.

To achieve these objectives, a program consisting of seven elements designed to treat the causes of the problem was implemented. These included:

1. Control of all unnatural food sources within the Park.
2. Education and enforcement of new food storage regulations.
3. Removal of problem bears.
4. Reporting.
5. Record keeping.
6. Public relations.
7. Research.

Within six years, bear property damage incidents decreased from 231 in 1975 to 43 in 1981, and property damage was reduced from \$14,672 in 1975 to \$644 in 1981. During this time period, 41 problem bears were removed from the Park and transferred to the State Game Commission for release in remote areas of the State in western Rockingham, Augusta, and Rockbridge counties.

Between 1982 and 1986, both frontcountry and backcountry bear incidents continued to decline reaching a low of less than 10 incidents per year. This low incident rate has remained about the same to the present. During the past few years only one (1) or two (2) problem bears have required some management action. Overall, the bear management program initiated in 1975 was very successful, and the objectives as stated in the Plan were accomplished.

The Park still contains a very high bear population. In recent years, bear incidents have showed a steady increase in the backcountry and along the Park boundary. New bear management problems have developed which require a shift in management emphasis and priorities. This new plan addresses these new and developing concerns and establishes new management objectives.

II. The Problem

The Park's bear management concerns, traditionally centered around the frontcountry and the developed areas, now also include problems in the backcountry and on adjacent private lands. During the early 1980's the number of reported bear incidents in all areas has remained fairly constant, however, those that do occur create difficult management and operational problems. Incidents occurring in the more remote wilderness areas require a great deal of staff time to resolve and often result in the temporary closure of popular backcountry areas.

Over the past decade reported bear damage to crops on adjacent farmlands has increased. Most of this damage is to corn crops, however, occasional complaints of livestock and beehive damage are received. Damage complaints result in an average of 50 bears a year being trapped and removed by the State trapper from areas adjacent to the Park boundary. If trapping efforts are not successful and depredations persist, farmers are issued permits to kill the offending bears.

Illegal bear poaching has become a serious concern. Bear parts, particularly gall bladders, teeth, and claws bring high prices in the orient and elsewhere, making commercial poaching very profitable. As in past years bears are also poached for their head and hides. It is not known at this time what effects extensive poaching may be having on the bear population levels and distribution. It is possible that continued increases in poaching, combined with a high legal hunting success rate and bears being removed because of damage complaints, could result in a decline in the Park bear population.

The physical and topographical parameters of the Park environment contribute in several ways to a unique management situation. The Park is rapidly becoming an island of highly productive wildlife habitat surrounded by human development. Suitable bear range adjacent to the Park is being replaced by industrial and housing developments. As more and more large farms and forest tracts are subdivided and developed, the ability of the bear population to freely disperse will be hampered. In addition, this development often results in posting of private property against hunting. The legal harvest of bears from adjacent lands has been the only means of removing excess animals. If hunting was significantly curtailed, the increased bear population could greatly magnify bear management problems and concerns in the Park's back-country and on private lands along the Park boundary.

When the Park was established, most of the more fertile lowlands and large hollows were not included because of their economic value as agricultural areas. This resulted in the present configuration of the Park consisting of a 90-mile section of the main Blue Ridge and numerous contiguous side ridges. Only the smaller hollows between these side ridges were included in the Park. The resulting serpentine boundary line produces a ratio of boundary to Park acreage which is very high. To encompass the Park's 194,000 acres, the boundary is 351 miles long. This is a ratio of one mile of boundary for every 553 acres. If the Park were square or rectangular, as is the case in many parks carved from public domain, the ratios would be one mile of boundary for every 2377 acres. Consequently, Shenandoah National Park has over four times the edge effect on wildlife habitat than it would with a regular boundary. In addition, there are four times the amount of adjacent agricultural area for bears to obtain food sources. The predominate forest types in the Park consist of mixed hardwoods. Dominant species on the more mesic sites are red oaks, white oak, and hickory. Chestnut oak becomes more prevalent on the zeric ridges and higher elevations. The forests are now reaching maturity and are heavy mast producers. This combination of a diversified food supply

produced on the forest edges, concentrated food sources on adjacent agricultural areas and high mast production from a mature oak/hickory forest within the Park, results in a unique and highly productive bear habitat.

Gypsy moth defoliation may have a dramatic effect on what is now primarily an oak forest. Recent monitoring has indicated that repeated defoliation may reduce the oak component of the forest by as much as 50 percent. If this occurs over a large area, bears and other wildlife species dependent on oak mast, will be forced to adopt alternative food sources or travel outside of their normal home range in search of food. There is a concern that repeated oak mast failure will result in an increase in bear mortality due to a higher hunter success rate, greater poaching and more animals being removed because of crop damage complaints.

III. Bear Management Objectives

A. To the greatest degree possible permit natural processes and legal hunting outside the Park to regulate the black bear population and distribution within the Park.

B. Maintain both frontcountry and backcountry visitor use regulations and management actions that result in a minimum of disruption to natural bear population dynamics, and an acceptable level of adverse bear/human conflicts.

C. Maintain a cooperative a bear management program with the Virginia Department of Game and Inland Fisheries for lands adjacent to the Park that will support National Park Service (NPS) efforts to provide an adequate level of protection for the area black bear population.

IV. Program Activities

Bear management in parks which receive heavy visitor use has been recognized as a challenging and often difficult endeavor. In most cases, management programs and actions have been directed at individual animals rather than the population as a whole. The main thrust of this plan will be to manage the population as a continually dynamic resource. In the unique park ecosystem found at Shenandoah, where reproduction and mortality are variable, an individual animal has little impact on the general health and integrity of the total population. Since the Park's frontcountry and backcountry areas exhibit different types of bear problems and management concerns, these two areas will be addressed separately in the plan.

In the backcountry and wilderness areas, management efforts to alleviate bear/human conflicts will concentrate on the altering or controlling of visitor activities rather than taking action against offending bears. This concept is based on the premise that backcountry users are temporarily encroaching on established bear territories. It is more ecologically sound to adjust visitor use patterns to be more compatible with known bear habitat.

Management efforts in the frontcountry will be directed at controlling the presence of bears in the developed areas established for visitor use. We will continue to make every effort to prevent the conditioning of bears in these areas. All bears which continue to frequent frontcountry areas and exhibit conditioned or aggressive behavior will be trapped and removed, according to the criteria established in Section D, Trapping and Removal of Problem Bears.

The following management actions will be used Parkwide in an effort to reduce or mitigate adverse bear/human conflicts. They should be viewed as a step-up plan in which the least restrictive or severe method which will do the job is used first. If this procedure does not work, then the next method is used. However, since there is a great deal of variability in the type and magnitude of problem bear activity, it may be necessary to bypass some steps or even to go to the most severe action immediately. Thorough field investigations are necessary to rapidly determine the most appropriate management action to be taken.

A. Control and Removal of Unnatural Food Sources

Bears are drawn into the vicinity of people by the presence of human food. A major element of this plan will be to continue to remove, to the greatest extent possible, all sources of human food. This will be accomplished in both the frontcountry and backcountry areas of the Park.

1. Frontcountry

a. Bearproof trash cans will be used throughout the Park.

b. Bearproof trash houses will be maintained and properly used by the various concession facilities.

c. Park refuse will be collected and transported to landfills outside the Park in such a way as to prevent bears and other animals from gaining access to it.

d. Food storage regulations will be enforced at camp-grounds and picnic areas. As per special regulation, Title 36, Code of Federal Regulations, Section 2.10, visitors are required to store food items, when not being prepared for eating, in a vehicle or camping unit which is constructed of solid non-pliable material, or to suspend it at least ten feet above the ground and four feet horizontally from any post, tree trunk, or limb. Special food storage poles are located in the campgrounds for use by those campers who do not have any other suitable storage facility.

e. Regulations prohibiting the feeding of bears will be strictly enforced.

2. Backcountry

a. Refuse from trash receptacles maintained in the backcountry will be picked up frequently enough to prevent trash overflow.

b. Backcountry campers are subject to the same food storage regulations as campground users. The only efficient method presently known is to suspend the foodsack from a tree limb so that it is at least ten feet above the ground and four feet from the trunk. This procedure is effective in keeping mildly-conditioned bears and other wildlife away from food-stuffs. However, aggressive bears showing advanced conditioned behavior are usually persistent enough to get to foodsacks even when maximum effort has been made to comply with the regulations.

c. Food storage poles will continue to be maintained at trail huts.

d. Backcountry campers will continue to be required by regulation to pack out all refuse.

B. Visitor Warning

1. Frontcountry

When a bear has been seen frequenting a campground or picnic area, efforts should be increased to warn visitors of the possibility of a bear encounter and to assure complete compliance with food storage regulations.

2. Backcountry

When increased bear activity is noticed, such as a sow with cubs being frequently seen, or property or food damage incidents start to occur in a backcountry area, the following steps should be taken:

a. The situation or incident should be promptly reported to the Chief Ranger's office.

b. A general announcement will be broadcast to all backcountry camping permit issuing stations advising them of increased bear activity. An emphasis will be placed on assuring that all campers obtaining permits for the area of bear activity will be cautioned about proper food storage.

c. When possible, patrols of the areas should be increased, and all campers in the area checked for proper food storage.

d. Approved adverse conditioning methods may be applied to the problem bear if an opportunity presents itself to do so, and it is believed that it might have a positive effect.

e. These procedures will remain in effect for a minimum of eight days, or as long as bear activity continues to occur.

C. Restrictions of Visitor Use

1. Frontcountry

Only under extreme conditions will campgrounds or picnic areas be closed to the public because of bear activity. This alternative will be considered only when there is a real and demonstrated threat to visitor safety that cannot be mitigated in any other way.

If such a condition occurs, approval for closure will be sought from the Superintendent. The facility will be properly signed and guarded to prevent visitor access.

2. Backcountry

When three or more bear incidents occur within a five-day period within a given area, that area may be closed to overnight use. The decision to close an area will depend on the severity of the incidents and the difficulty in closing that particular area.

When one unprovoked incident occurs which results in a visitor injury, the area will be closed to overnight camping, and depending on the nature of the incident, to day use as well. In the event of an unprovoked bear attack resulting in injury or death, the area will be closed to all travel. The following steps will be taken to effect restrictions of visitor use.

a. Appropriate field investigations will be made of all incidents.

b. The district ranger, in consultation with the appropriate staff member of the Natural Resources Division, will recommend appropriate action to the Chief Park Ranger. Approval authority for the restriction of visitor use or the closing of an area rests with the Superintendent.

c. The standard "aggressive bear, area closed" signs (SNP-259) will be posted at all trailheads and trail junctions leading into the problem area. The appropriate block will be checked indicating whether overnight use or all use is prohibited.

d. A general radio announcement will be made by Park Headquarters to all permit issuing stations advising personnel of the closure. The trails closed to entry or the specific area closed to camping will be specified and backcountry codes given.

e. No permits will be issued for the trail and area codes specified.

f. If necessary, patrols will be scheduled to assure visitor compliance. Physical barricades may be placed at trailheads.

g. Restrictions will remain in effect for eight days unless the bear has been caught or is known to have left the area.

D. Trapping and Removal of Problem Bears

The decision as whether or not a particular bear should be captured and removed from the Park should be based on two primary factors: (1) visitor safety, and (2) the probability of the bear being successfully returned to a natural lifestyle.

Black bears are a valuable Park resource. Every attempt should be made to control or adjust human activities to prevent situations from getting to the point that the only alternative is the removal of the bear. Individual bears will pass through developed areas or happen by backcountry campsites during the normal course of their travels. The mere presence of a bear in close proximity to people should not be of major concern. It is the behavior of the animal that needs to be monitored. Bears that have become "conditioned" to the presence of humans behave differently than non-conditioned normal or wild bears. Examples of conditioned behavior are: (1) the bear cannot be scared away from developed areas or places where food may be present, (2) the bear shows aggression toward humans by walking towards people with teeth bared, or bluff charges, (3) the bear breaks into tents or vehicles, and (4) the bear tries to bit or swat a person who did nothing to aggravate the bear. Bears that start showing these types of conditioned or aggressive behavior need to be managed. In general the following guidelines should be used:

- Bears that show conditioned behavior on three or more occasions (incidents) with a seven day period should be considered for capture and removal unless unusual circumstances exist.

- All incidents must be documented on a bear incident report form.

- Requests for permission to capture and remove a bear must be obtained from the Chief of Natural Resources and Science unless emergency conditions exist.

1. Frontcountry Procedures

a. Live Trapping with Culvert Traps

The use of culvert-type live traps will be the preferred method of capturing problem bears, as it requires the least manpower and is the method least likely to injure the bear. In public use areas, traps will only be set between the hours of 10 p.m. and 8 a.m., unless a specific situation otherwise warrants. When a bear is trapped, it will be removed to a location where it will receive the least public attention.

All traps will be clearly marked with appropriate danger warnings. In situations where traps are set in campgrounds, the campsite will be either barricaded or roped off to prevent visitors from tampering with the trap.

b. Live Trapping with Foot Snares

Under certain limited and carefully monitored circumstances, foot snares may be employed to capture bears when efforts with a culvert trap have failed. Snares will be set and tended by qualified staff in the Natural Resources and Science Division. Approval to use snares in the frontcountry must be obtained from the Chief of Natural Resources and Science in consultation with the Chief Park Ranger.

c. Capture Rifle

If live trapping a bear is unsuccessful, the use of an immobilization drug administered by a capture rifle may be considered. The use of this equipment will be in accordance with the Park Wildlife Handling and Immobilization Guidelines.

Since most capture attempts on free roaming bears occur in public use areas, enough manpower must be available to keep visitors at a safe distance and to provide information to the visitor about the operation. Many visitors are highly concerned about the welfare of the Park bears, others are merely curious. When possible, field rangers should answer questions and provide information about how and why we are capturing the bear. This is not always possible during the capture attempt; therefore, after the bear is removed from the scene, a ranger should stay in the area for a while to answer questions. It is hoped that this will not only provide education and information for the visitor, but will increase voluntary compliance to basic elements of our bear management program.

If the bear is to be removed from the Park, transportation arrangements will be made by the Chief, Division of Natural Resources and Science (CNR), or the Supervisory Natural Resources Specialist.

Consideration should be given to bears which require removal from the Park during the fall hunting season. When a bear is released in an unfamiliar area, his chances of surviving hunting pressure are greatly reduced until he has had a chance to settle down.

2. Backcountry Procedures

Trapping of conditioned problem bears will be attempted only when the specific animal can be identified as the one responsible for the incidents. Culvert traps or foot snares may be used. Snares may only be used when the area has been closed to all travel. They should be placed out of sight of the trail and checked each morning. Non-target bears will be released at the capture site. Identified problem bears will be turned over to the State trapper for release outside the Park.

The live capture of free-roaming bears utilizing immobilization drugs will not be attempted unless there is vehicular access into the area.

E. Relocation of Problem Bears

Unless unusual conditions exist, bears will not normally be relocated in the Park. Experience has shown that this is usually a futile procedure. The Park is not large enough for bears to be relocated far enough away to foil their homing instincts. Any exceptions to this protocol must be approved by the CNR.

In most cases, captured bears will be transferred to the Virginia Department of Game and Inland Fisheries (VDGIF). Bears will not be relocated to areas outside the Park boundaries without expressed permission of the receiving agency. Although we have a cooperative agreement with the VDGIF, it is still necessary to contact the State bear biologist or State trapper working out of the Staunton office to arrange for a bear transfer. In most cases, the State trapper will come to the Park to pick up the animal. The VDGIF usually makes their releases on State-owned lands or the national forests. This procedure provides a means by which the State can reintroduce bears into areas with depleted populations. Arrangements for transfers will be made by the Chief of Natural Resources and Science.

F. Destruction of Problem Bear

The district ranger may recommend that a bear be destroyed if the animal's behavior indicates a real threat to visitor safety or it has been involved in a documented unprovoked attack, resulting in serious personal injury. The authority for destruction rests with the Chief of Natural Resources and Science unless a field ranger should encounter an actual attack in progress. In such cases, the ranger is authorized to take immediate action and destroy the bear. When it has been decided that a bear will be destroyed, the following procedures will be followed:

1. The area will be closed to all visitor access.
2. A minimum of two firearms qualified permanent uniformed staff members will be involved.
3. The team will be armed with either high-powered rifles, or shotguns loaded with rifled slugs.
4. The carcass will be removed from visitor travel areas.

V. Personnel and Training

The success of this program requires the full support of all field divisions. The primary responsibility for overall program management rests with the Division of Natural Resources and Science. Rangers, interpreters, and maintenance staff all have important roles that are necessary for the successful implementation of this plan.

Field personnel responsible for trapping and capture operations will be certified as meeting Servicewide and SNP training and experience qualifications. Certification can be obtained by passing a NPS-sponsored training course that meets NPS-77 guidelines for content and hours. Such courses will be given periodically as needed in SNP and are offered by the Albright Employee Development Center. District rangers will nominate persons on their staff whom they wish to have certified by a SNP training course. Details of our training procedure can be found in the SNP Guidelines for the Capture and Drug Immobilization of Wildlife.

Tailgate critique sessions will be held after each capture attempt using immobilization drugs to evaluate the operation and to recommend any changes in future operations.

VI. Safety

Although visitor safety and the safe handling of bears during capture efforts are included in the previous elements, the major concerns are again listed for easy review.

A. Culvert traps will usually only be set in public use areas between the hours of 10 p.m. and 8 a.m. Exceptions to this criteria must take into consideration the hazard to visitors that traps may present when set during daylight hours. Traps will be clearly marked "DANGER" and will be roped off when appropriate.

B. Foot snares will be closely tended when set in or near public use areas. Captured bears will be immediately immobilized and removed from the area.

C. Capture attempts of free-roaming bears with drugs will not be attempted in the immediate vicinity of visitors. Capture guns will be handled as dangerous weapons and will be used only by properly trained and certified personnel.

Any accidents or injuries will be immediately reported to the Chief of Resource Protection and Visitor Management.

D. Necessary precautions will be taken to assure the safe handling of captured bears. Visitors will not be allowed to assist in the handling of immobilized bears.

E. Bears in traps will be removed from public use areas as soon as possible to prevent people from tampering with the traps or teasing the bears. Traps containing bears will be locked to prevent unauthorized release of the animal.

F. Drugs used for the immobilization of bears will be stored in locked cabinets or safes in accordance with the Drug Enforcement Agency's

regulations for controlled substances. Accurate records will be kept on the amount of drugs received, distributed, and used.

G. When not in use, traps will be locked.

VII. Environmental Compliance

The actions detailed in this plan were reviewed for compliance with the National Environmental Policy Act (NEPA). It has been judged that these actions are categorically excluded under Appendix 2, 516DM2. Applicable exclusions are: B4, resource plans; D2, minor visitor use restrictions; and E7, removal of individual animals that pose a threat to visitor safety. Further environmental analysis is not necessary nor warranted.

VIII. Reporting

Incidents: All incidents involving aggressive or conditioned behavior, property damage, or personal injury will be reported on SNP-266, Bear Incident Record. It should be noted that individual bears will occasionally pass through or forage in and near developed areas without presenting any management problems. The presence of a bear in these areas should not be reported as an incident until the animal shows conditioned behavior or is seen repeatedly over a several day period.

All blocks on the form should be filled out. The exact location of the incident should be specified. Bear incidents should be thoroughly investigated. It is important to get an accurate description of the bear, and it's behavior characteristics at the time of the incident. Use the back of the form if necessary to thoroughly describe the incident. A DI-134 and Form 10-343 must also be completed for all incidents resulting in personal injury. All incidents will be called into dispatch on the day of occurrence and a report number assigned. Be sure that you specify that you need a bear incident number and not a case incident number. The report should be forwarded to the Natural Resources and Science Division as soon as possible. This procedure allows us to maintain the constant, Parkwide awareness of bear activity necessary to predict potential management problems.

Management Actions: Management actions will be reported on Form SNP-267, Bear Management Action Record. Management actions do not need to be called into dispatch. The reports should be sent through the Chief Rangers office to the CNR, where a report number will be assigned. If a bear is captured, a Wildlife Capture Record (SNP-48) will also be completed. Instructions for this form are found in the Wildlife Capture and Immobilization Guide.

APPENDIX A

Bear Management Research Action Statements

The following research action statements define research areas or needs that are necessary to better understand black bear population dynamics and its relationship to visitor use within the Park. In order to develop management actions which deal directly with correcting adverse bear/human interactions in the backcountry and wilderness areas, a thorough understanding of all aspects of bear behavior is needed.

1. Response of Black Bears to Gypsy Moth-Induced Habitat Changes

It is certain that gypsy moth defoliation and subsequent tree mortality will cause rapid changes in forest ecosystem dynamics. The type and magnitude of these changes is still unknown, however, it is suspected that significant changes will occur in the availability in preferred black bear food sources. Some foods such as hard mast (acorns and hickory nuts) may be reduced while soft mast species such as blackberry, blueberry, and grape may increase. Changes in food types and availability is likely to effect movement patterns, reproductive success, and home range size. Research will be needed to determine changes, predict future trends, and recommend management actions.

2. Black Bear Population Monitoring

The present bear population monitoring program has been in effect since 1984. This bait station visit method provides a reasonably accurate trend of relative population levels. Conducted during the last week of June each year, this system should be continued.

3. Annual Mast Survey

An annual hard mast survey was established in 1982. This survey provides an index of relative hard mast production throughout the Park and should be continued.

4. The Effects of Poaching on the Bear Population

The illegal poaching of bears in certain locations within the Park may be effecting population levels or causing unnatural distribution patterns. Better methods of determining the magnitude of poaching activity and its effects on the resource are needed to protect the bear population from excessive mortality.

5. The Effects of Legal Hunting on Population Levels and Distribution

Hunting pressure adjacent to the Park boundary can be both a positive or a negative influence on population levels. Legal and controlled hunting is the preferred method of removing excess animals from high population areas. Currently, Park management has no method of influencing harvest levels or the establishment of annual hunting regulations or seasons.

6. The Effects on High Density Backcountry Use on the Utilization of Home Range by Black Bears

Seasonal high density visitor use within a bear's home range may adversely affect normal habitat utilization patterns. Repeated disruptions may lead to adverse bear/human conflicts. Visitor use may need to be regulated in currently popular areas to protect critical bear habitat.

7. The Effects of Land Use Changes in the Vicinity of the Park on Population Size, Structure, Movement Patterns, and Habitat Utilization

Rapid changes in land use near the Park threaten to drastically alter bear habitat, movement patterns, and mortality from legal hunting. Bear management in the future is very likely to be confounded by conflicting interests of Park visitors and adjacent landowners and hunters. Actions need to be initiated now to set the stage for future mitigation actions.

APPENDIX B

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APPENDIX CBlack Bear Population MonitoringAnnual Index Summary

1983 ND-08 percent, CD-7 percent, SD-11 percent, Park average 9 percent

1984 ND-30 percent, CD-20 percent, SD-31 percent, Park average 34 percent

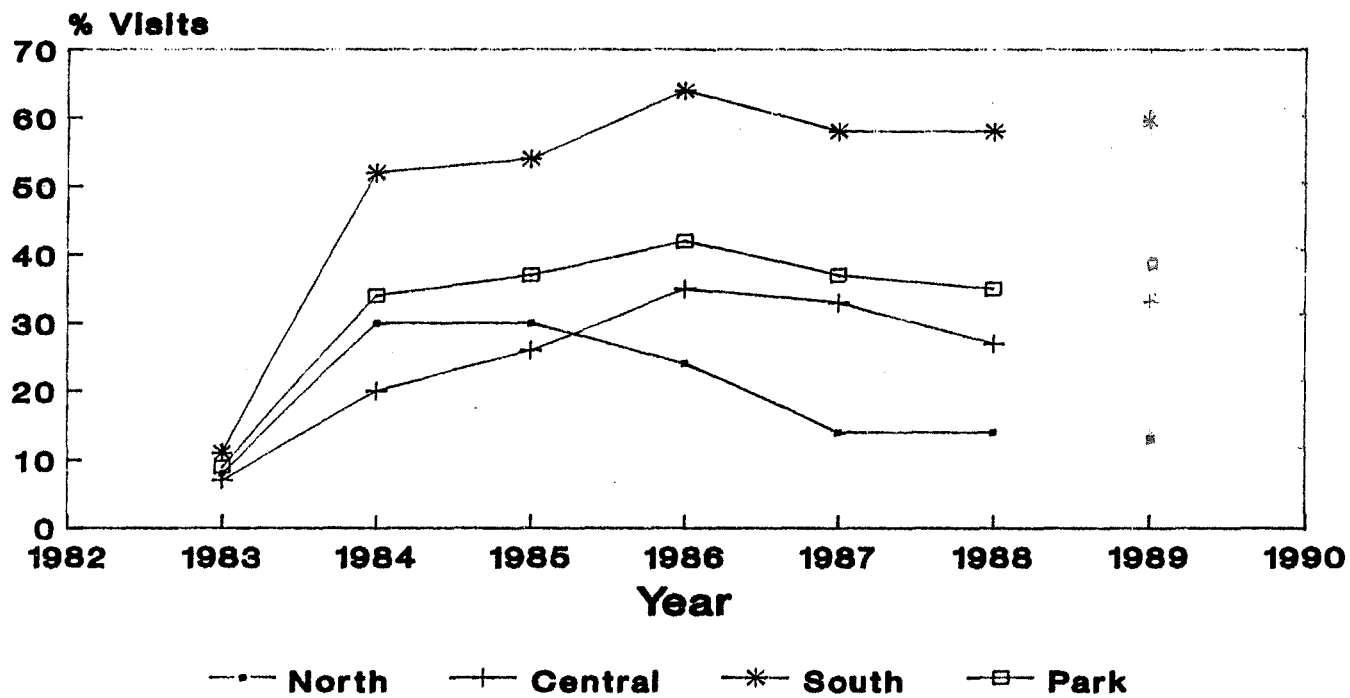
1985 ND-30 percent, CD-26 percent, SD-54 percent, Park average 36 percent

1986 ND-24 percent, CD-35 percent, SD-42 percent, Park average 33 percent

1987 ND-14 percent, CD-33 percent, SD-58 percent, Park average 37 percent

1988 ND-14 percent, CD-27 percent, SD-58 percent, Park average 35 percent

Shenandoah National Park Black Bear Survey



SHENANDOAH NATIONAL PARK BEAR INCIDENTS 1979-88

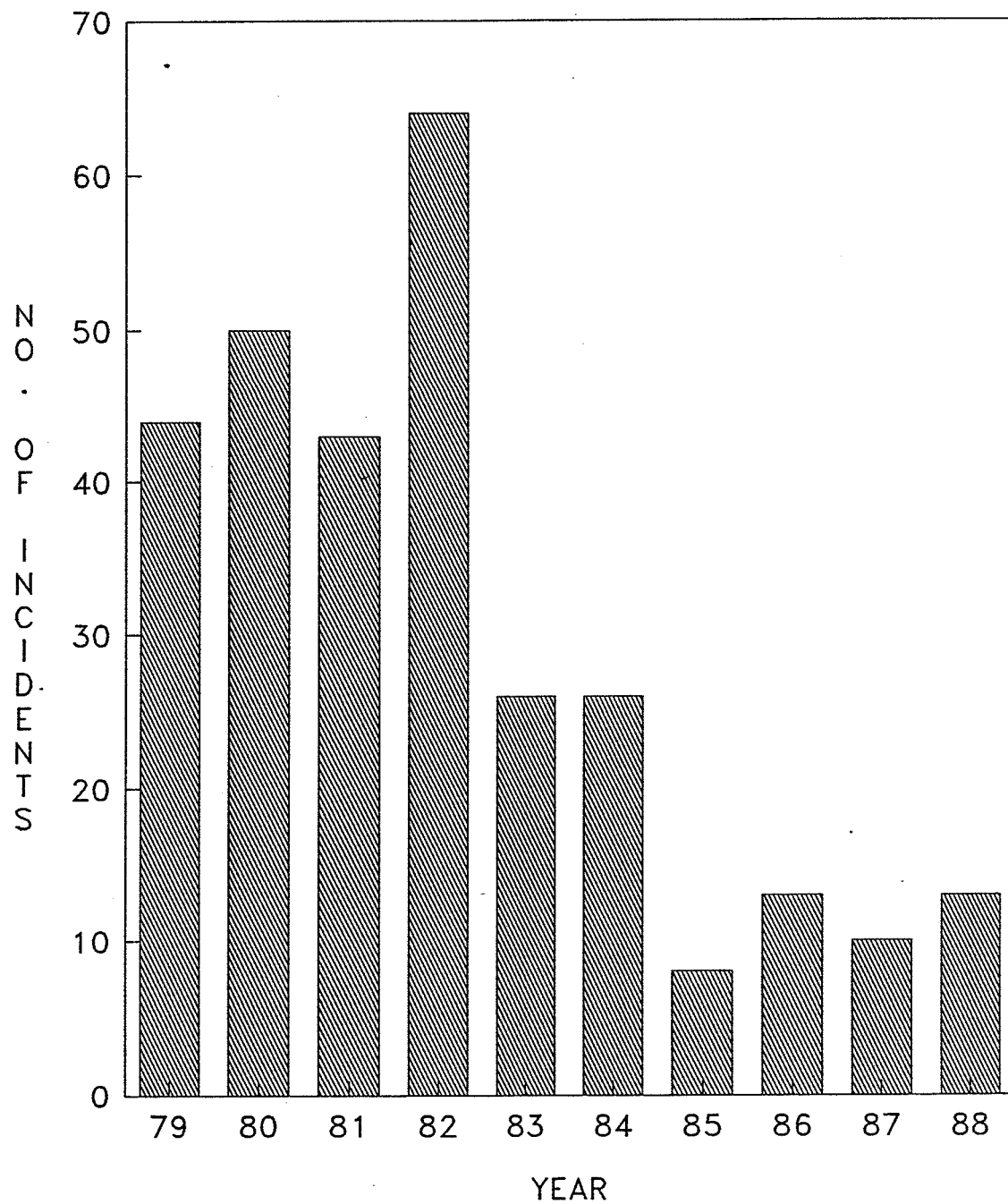


Table 7. Black bear damage by category in Shenandoah National Park,
Virginia, 1979-88.

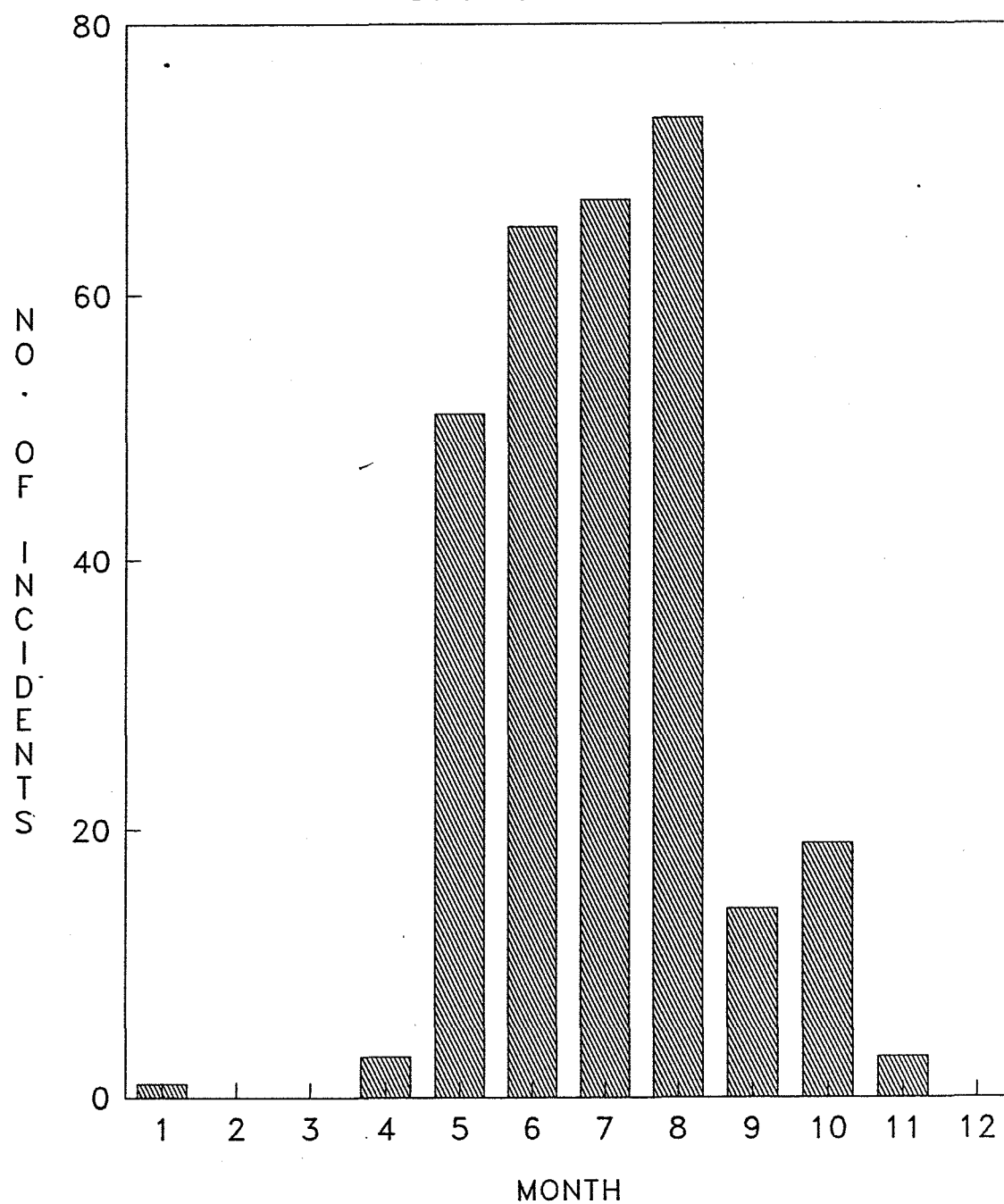
Category	$\bar{x}$ number of incidents/yr.	% of incidents	$\bar{x}$ annual value (\$)	% of value
Personal items	20.3	68.4	879	72.2
Confrontations	3.9	13.1	11	0.9
Observations	1.8	6.1	0	0
Other	3.7	12.5	328	26.9
Totals	29.7		\$1,218	

Table 8. Frontcountry versus backcountry black bear incidents in
Shenandoah National Park, Virginia, 1979-88.

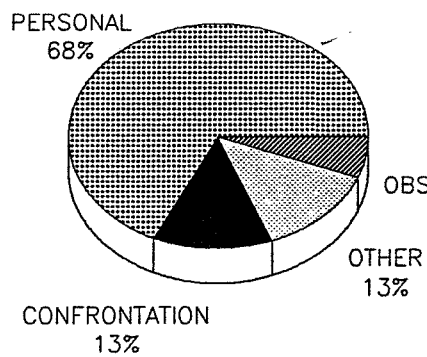
Category	Backcountry	Frontcountry	Unclassified	Total
Personal items	153	50	0	203
Confrontations	19	15	5	39
Observations	8	6	4	18
Other	1	21	15	37
Totals	181	92	24	297
Percent	60.9	31.0	8.1	

BEAR DAMAGE DISTRIBUTION

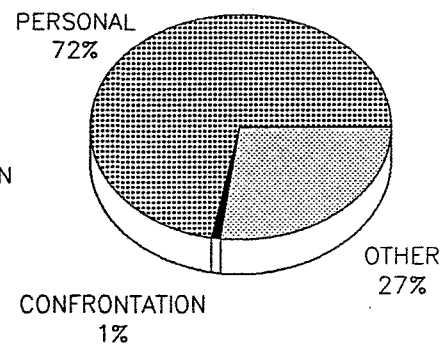
SNP 1979-1988



SNP BEAR DAMAGE



% OF INCIDENTS



% OF \$ VALUE

BEAR MANAGEMENT ACTION
Management actions and population loss

1	Date	2	Time	3	Location code	4	Trail code	5	Case number	
Location description (be specific)								6	UTM coordinates	
Type of Management Action				7	Bear condition			13	Tag information	16
1. Capture				1. Normal			1. Not tagged			
2. Visitor restrictions				2. Thin			2. Tagged			
3. Area closure				3. Unusually fat			Tag numbers			
4. Other (describe)				4. Sick			Rt. ear			
5. Injured				Bear description			14	Lt. ear		
Capture Method				8	1. Cub			Tattoo		
1. Trap				2. Yearling						
2. Snare				3. Subadult						
3. Drug				4. Adult						
4. Firearm				Sex			15			
Drug Capture Data				1. Male						
Drug type				2. Female						
Dose				3. Unknown						
Time administered				Description of management action or loss						
Time down										
Time recovered										
Total minutes bear down				9						
Release information				10						
1. Release same location										
2. Release in park										
3. Release outside park										
Release location										
Distance from capture										
Population loss				11	References to past management actions, incidents or observations. (Justification for action)					
1. Natural death in park										
2. Vehicle kill in park										
3. Illegal kill in park										
4. Management kill, accidental										
5. Management kill, intentional										
				Reporter:						

SHENANDOAH NATIONAL PARK

WILDLIFE CAPTURE RECORD

DATE _____ DISTRICT _____ TYPE of capture: Drug Trap Snare Other

SPECIES _____ AGE _____ SEX _____ CONDITION _____ TAG # _____

REASON FOR CAPTURE _____

CAPTURE LOCATION _____

RELOCATED/RELEASE LOCATION _____

DRUG CAPTURE DATA: Dose _____ cc Dart Type _____

Method _____ Location of Injection _____

Time Injected _____ Time Down _____ Time Recovered _____

Reaction/Behavior _____

Additional Doses Given _____

Comments _____

CAPTURE PERFORMED BY: _____

REVIEWED BY: _____

Chief Ranger

Chief, Natural Resources & Science