State of the Parks - 1980
A Report to the Congress

National Park Service
United States Department of the Interior
May 1980

State of the Parks 1980

A Report to the Congress

Prepared by the Office of Science and Technology,
National Park Service
U.S. Department of the Interior
May 1980

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under United States administration.

CONTENTS

	Page
LIST OF FIGURES	iv
LIST OF TABLES	v
EXECUTIVE SUMMARY	vii
INTRODUCTION	1
Methodology and Description of Printout	2
THREATS TO PARK RESOURCES	3
SOURCES OF THREATS	20
THREATENED RESOURCES OF THE NATIONAL PARKS	24
CONCLUSIONS	34
APPENDIX I - Questionnaire	37
APPENDIX II - Printout for Glacier National Park	45
APPENDIX III - Park Rank Order by Number of Reported Threats for all Threat Categories	52

LIST OF FIGURES

		Page
Figure 1	Total Number of Park Threats by Major Threat Category (4,345 Reported Threats) and Showing Number of Internal vs. External Threats.	4
Figure 2	Status of Present Knowledge About Total Reported Threats.	7
Figure 3	Number of Known and Suspected Threats by Threat Category Which Require Research to Adequately Document as Compared with Threats Which are Adequately Documented by Research.	8
Figure 4	Average Number of Threats Reported for Selected Classifications of Park Areas.	18
Figure 5	Number of Threats Reported for the Individual NPS International Biosphere Reserves as Compared with Average Number of Threats Reported for all National Parks.	19
Figure 6	Percent of Threatened Resources by Resource Category.	31

LIST OF TABLES

		Page
Table 1	Rank of Threats by Subcategory.	9
Table 2	Percent and Number of Threats Reported by Subcategory of the Air Pollution Category.	11
Table 3	Percent and Number of Threats Reported by Subcategory for the Water Quality Pollution and Water Quantity Changes Category.	12
Table 4	Percent and Number of Threats Reported by Subcategory for the Aesthetic Degradation Category.	13
Table 5	Percent and Number of Threats Reported by Subcategory for the Physical Removal of Resources Category.	14
Table 6	Percent and Number of Threats Reported by Subcategory for the Exotic Encroachment Category.	15
Table 7	Percent and Number of Threats Reported by Subcategory for the Visitor Physical Impacts Category.	16
Table 8	Percent and Number of Threats Reported by Subcategory for the Park Operations Category.	17
Table 9	Ranking of Threatened Biological Resources.	25
Table 10	Ranking of Threatened Physical Resources.	26
Table 11	Ranking of Threatened Aesthetic Resources.	28
Table 12	Ranking of Threatened Cultural Resources.	29
Table 13	Ranking of Threatened Operational Features.	30
Table 14	Ranking of Top Ten Threatened Resources Reported.	33

EXECUTIVE SUMMARY

The National Park Service recently has completed its first Servicewide survey designed to identify and characterize threats that endanger the natural and the cultural resources of the parks. This 1980 State of the Parks report presents the results of that survey. It focuses on three aspects of the threats to the parks problem: First, the Report identifies specific threats which endanger the resources of individual parks; second, it identifies sources of threats, whether located internal or external to park boundaries; and third, the Report identifies park resources which are endangered by the threats.

The findings presented in this Report are based upon information submitted by park superintendents, park natural and cultural resource managers, park scientists, and park planners. It should be emphasized that the recognition and the perception of threats may be affected by the professional training and experience of these observers. A park superintendent, for example, may be most sensitive to operational problems associated with overcrowding or vandalism; a park scientist or resource management specialist may be particularly aware of threats to water quality or wildlife habitat; a park planner is more likely to perceive disruptions associated with zoning or land use practices. Further, the respondent to the threats survey may show a greater interest in problem areas with prospective solutions and may fail to emphasize certain issues simply because they appear to be beyond his or her span of influence. Clearly, there are subjective judgments involved in any threats reporting and evaluation process. However, collectively, the results of this systematic park-by-park survey provide important new information concerning a broad spectrum of problems and issues with which the National Park Service must deal.

Threats Survey Results

The term "threats" as used in this Report refers to those pollutants, visitor activities, exotic species, industrial development projects, etc., which have the potential to cause significant damage to park resources or to seriously degrade important park values or park experiences. Without qualification, it can be stated that the cultural and the natural resources of the parks are endangered both from without and from within by a broad range of such threats. In this regard, the most significant findings developed in this study may be summarized as follows:

o Park units representing all size and use categories, and all types of ecosystem, reported a wide range of threats affecting their resources. These threats, which emanate from both internal and external sources, are causing severe degradation of park resources.

o The 63 National Park natural areas greater than 30,000 acres in size reported an average number of threats nearly double that of the Servicewide norm. Included in this category are units such as Yellowstone, Yosemite, Great Smoky Mountains, Everglades and Glacier. Most of these great parks were at one time pristine areas surrounded and protected by vast wilderness regions. Today, with their surrounding buffer zones gradually disappearing, many of these parks are experiencing significant and widespread adverse effects associated with external encroachment.

o The 12 Biosphere Reserve Parks, which are unique natural areas that range in size from 15,000 acres to more than two million acres and which are dedicated to long-term ecosystem monitoring under the UNESCO Man and the Biosphere program, surprisingly reported an average number of threats nearly three times the Servicewide norm. This is particularly disturbing because the Biosphere Reserve Parks are considered to be model ecological control areas. The large number of threats reported by these parks may reflect the greater emphasis directed to monitoring in these areas.

If this is, in fact, the reason for the increased occurrence of reported threats in the Biosphere Reserve parks, it suggests that significant numbers of threats may have been overlooked in other parks which, to date, have received much less monitoring and research attention.

o More than 50 percent of the reported threats were attributed to sources or activities located external to the parks. The most frequently identified external threats included: Industrial and commercial development projects on adjacent lands; air pollutant emissions, often associated with facilities located considerable distances from the affected parks; urban encroachment; and roads and railroads.

o Threats associated with activities or with sources located within park boundaries continue to cause significant degradation of park resources, park values, and visitor park experiences. The most frequently reported internal threats are associated with: Heavy visitor use; park utility access corridors; vehicle noise; soil erosion; and exotic plant and animal species.

o Scenic resources were reported to be significantly threatened in more than 60 percent of the parks. Air quality resources were reported endangered in more than 45 percent of the parks. Mammal, plant, and fresh water resources all were reported threatened in more than 40 percent of the units. Other endangered resources are listed in ranked order of occurrence in the report.

o A surprising 75 percent of the reported threats to park resources have been classified by onsite park observers as inadequately documented by either private or government research. Threats associated with air pollution, water pollution, and visitor related activities most frequently were cited as needing additional monitoring, scientific measurements or research documentation.

Conclusions

The units of the National Park Service represent all of the major categories of ecosystems within which we live. These parks, individually and collectively, constitute the best of our natural and cultural resources. The lessons that we learn and the progress that we make in our attempts to better manage and protect these resources are of benefit to us all.

The results of this study indicate that no parks of the System are immune to external and internal threats, and that these threats are causing significant and demonstrable damage. There is no question but that these threats will continue to degrade and destroy irreplaceable park resources until such time as mitigation measures are implemented. In many cases, this degradation or loss of resources is irreversible. It represents a sacrifice by a public that, for the most part, is unaware that such a price is being paid.

The diversity and complexity of the problems identified in this report serve to emphasize the need for an expanded program to protect and preserve the resources of the parks. To develop and implement such a program requires that the National Park Service know what natural and cultural resources exist in each park, establish the condition of these resources, and determine how and to what extent these resources are threatened. Essentially we must do the following:

o We must prepare a comprehensive inventory of the important natural and cultural resources of each park and develop a plan at the park level for managing these resources.

o We must establish accurate baseline data on park resources and conduct comprehensive monitoring programs designed to detect and measure changes both in these resources and in the ecosystem environments within which they exist.

o We must pay additional attention to those threats which are associated with sources and activities located external to the parks. These threats today pose unique problems because of the Service's limited ability to deal directly and effectively with such outside influences.

o We must improve our capability to better quantify and document the impacts of various threats, particularly those which are believed to most seriously affect important park resources and park values.

To accomplish these objectives will require that the Service significantly expand its research and resource management capabilities. At the present time, the natural science research program of the National Park Service is base funded at a level of only nine million dollars and is staffed by fewer than 100 scientists; this is an average of less than one researcher for each three units of the System and represents only 1.1 percent of the total Park Service staff. Similarly, there are fewer than 200

personnel in the Service who have resource management training; many of these personnel are senior level Park Rangers and Park Superintendents who are able to devote only a small portion of their time to resource management problems.

The staff and the funding resources currently available within the research and the resource management areas clearly are inadequate to respond to the needs of the Service. Internal actions are being taken to strengthen existing research and resource management programs. However, it must be emphasized that a continuing and expanded commitment is required to address the wide range of issues defined by the threats survey, and that the support of the Congress will be needed to deal with these important problems.

A final comment. The enabling legislation establishing the National Park Service and its individual park units clearly mandates, as the primary objective, the protection, preservation and conservation of park resources, in perpetuity for the use and enjoyment of future generations. The National Park Service recognizes that changes in priorities and reallocation of resources will be required to meet this mandate and is committed to such changes.

INTRODUCTION

America's National Park System may be considered a barometer of the world's environmental conditions. The more than 320 park Units serve as refugiums for this nation's natural and cultural resources. Our archeological and historical resources are the best links with the past and circumspection of the future. The diversity of plants and animals have evolved through time by interacting with their own kind and other species in a complex way we cannot hope to duplicate or improve upon. The large, natural populations perpetuate the genetic diversity to insure their futures and to act as harbingers for human futures as well.

In its early years, the National Park System experienced a number of well documented threats; logging of the giant sequoias, poaching of wildlife in Yellowstone, and private exploitation at Hot Springs. Such encroachments occurred before the turn of the century. By the first half of this century the System was impacted by the drowning of Hetch Hetchy Valley in Yosemite, destruction of archeological sites at Mesa Verde, irrational predator control at Grand Canyon, and mineral exploitation at Organ Pipe, Death Valley and Glacier Bay. Proposed uses of our fragile resources included tunneling through Rocky Mountain, logging of Sitka spruce during World War II at Olympic, and the construction of dams on inland waterways such as the Potomac, Colorado and Virgin rivers.

Following World War II, Mission 66 was developed to revitalize deteriorating park facilities. Sequoias were leaning and falling with disturbing regularity and people were asking why. Fears were being expressed that DDT was becoming an ever greater biological hazard, that the saguaros were vanishing, that Yosemite Valley was becoming choked beyond recognition by an unnatural and hazardous invasion of non-endemic trees; that feral goats threatened the unique vegetation in Hawaii, that Yellowstone elk populations were expanding beyond practical control, and that Everglades was dying of thirst.

The 1960's and 1970's brought additional problems including dams on the Colorado and Green rivers, highly visible grizzly bear issues at Yellowstone and Glacier, increasing feral burro impacts on water sources and on native animals and plants in the arid Southwestern parks of Grand Canyon, Death Valley and Bandelier; negative influences of feral pigs on Smoky Mountain ecosystems; and the depletion of humpback whales at Glacier Bay. And for the first time, events occuring external to park boundaries began to be recognized as the cause of serious damage to park values. These adjacent activities included residential, commercial, industrial and road development; grazing; logging; agriculture; energy extraction and production; mining; recreation; and a myriad of others. The rapid expansion of external threats introduced new economic, legal and technological issues. The advent of NEPA, the Endangered Species, Clean Air, Clean Water, and other Acts, although providing valuable mechanisms for protecting resources, introduced new procedures and requirements that demanded new skills and increased interaction with other units of government and with the public sector.

As we look to the decades ahead, with some 2% of the land in the continental United States under our care and protection, we see parks as fragile and irreplaceable ecosystems in a world of increasing populations and decreasing resources.

The State of the Parks - 1980 report is our first systematic attempt to identify threats to park resources on a Servicewide basis. The report is organized to deal with three aspects of the problem: (1) The specific threats which endanger park natural and cultural resources; (2) the sources of those threats; and (3) the park resources which are endangered by the threats.

Methodology and Description of Printout

The State of the Parks report is based on information obtained through a survey questionnaire sent to each of the 326 units of the National Park System. A copy of this questionnaire is included in Appendix I. The questionnaire was divided into two parts; part one provided a checklist of possible threats that may exist within any park area and was designed to gather statistics about these threats .... i.e. the extent to which each reported threat is adequately documented by research, monitoring or other data; whether the source of each threat is of internal or external origin; and whether each threat is or is not identified in the area's Resources Management Plan, which is the master document identifying each park unit's resources and prescribing a program for managing these resources. Part 2 of the questionnaire provided an opportunity for the respondents to quantify the threats by documenting the specific sources of the threats and the resources impacted.

A computerized Threats Information Management System (TIMS) was developed to assist with analysis of the more than 320,000 bits of data submitted by the individual park units. TIMS was utilized for data storage, retrieval and analysis and to produce a variety of printouts used in the report preparation. A copy of one such printout (for Glacier National Park) illustrating the detailed list of park threats and associated data acquired in parts 1 and 2 of the questionnaire is included in Appendix II.

THREATS TO PARK RESOURCES

The term "threat" that is used in this report refers to those pollutants, visitor activities, exotic plant and animal species, industrial and commercial development projects, etc., which have the potential to cause significant damage to park physical resources or to seriously degrade important park values or park visitor experiences.

The 73 different threats which are identified in this report can be aggregated into the following seven general threat categories:

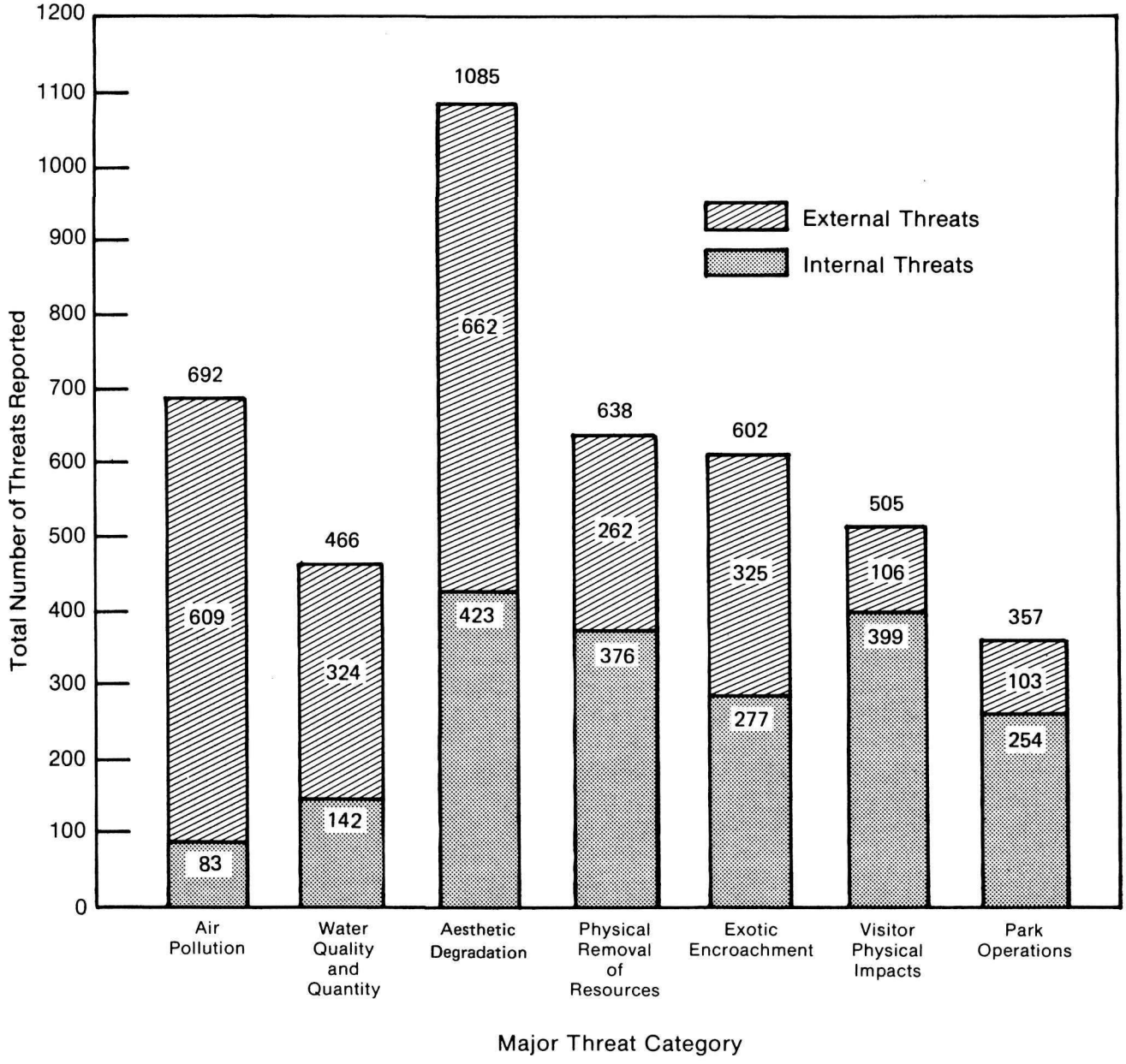
- Aesthetic Degradation (land development, timbering, etc.)
- Air Pollution (acid rain, hydrocarbon pollutants, etc.)
- Physical Removal of Resources (mineral extraction, poaching, etc.)
- Exotic Encroachment (animals, plants, blasting, etc.)
- Visitor Physical Impacts (campfires, trampling, etc.)
- Water Quality Pollution and Water Quantity Changes (oil spills, toxic chemicals, etc.)
- Park Operations (trails, misuse of biocides, etc.)

These seven major threat categories are discussed below. Figure 1 shows the total number of threats which were reported in each threat category.

Aesthetic Degradation threats include mineral surveys, development, extraction and production, timbering, grazing and agriculture, forest disease/pest infestations, wildland fires, land developments, utility access, roads and railroads, vistas (roadsigns, inholdings, etc.), urban encroachments, overcrowding and vandalism, and "other" (may include such diverse aesthetic impacts as construction sites, sewage treatment plants, disposal of dredge materials, trespass cattle, aircraft and vehicles). There were ,085 Aesthetic Degradation threats reported, or 25% of the total number of reported threats.

The importance of Aesthetic Degradation supports a 1979 study undertaken by the Conservation Foundation entitled, "Federal Resource Lands and Their Neighbors." That document summarized responses of questionnaires sent to Federal land managers in several agencies (including the National Park Service), and stated that adjacent land development was the principal threat to the national parks.

Figure 1 Total Number of Park Threats by Major Threat Category (4,345 Reported Threats) and Showing Number of Internal Threats vs. External Threats



Air Pollution includes threats such as suspended particulates, carbon monoxide, carbon dioxide, hydrocarbons, acid rain, nitrogen dioxide, odors, radioactivity, and "other" (includes heavy metals and oxidants). There were 692 such Air Pollution threats reported, or 16 percent of the total number of reported threats.

Physical Removal of Resources threats include logging, mineral extraction, gas and oil extraction; hunting and fishing and poaching or overharvesting; grazing, berry and fruit picking, specimen (natural and cultural) collecting, soil erosion; fire, landslides and other catastrophes; American Indian Freedom of Religion activities, and "other." There were 638 Physical Removal of Resources threats reported, or 14 percent of the total number of reported threats.

Exotic Encroachment threats include animals, plants, unnatural fire, unnatural weather, noise, seismic blasting/sonic booms, and "other." There were 602 Exotic Encroachment threats reported, or 14 percent of the total number of reported threats.

Visitor Physical Impacts include threats such as campfires, trampling, erosion, wildlife harassment, habitat destruction, cross-country skiing, off-road vehicles, subtle influences such as algae growth in caves, etc., and "other." There were 505 Visitor Physical Impacts threats reported, or 12 percent of the total number of reported threats.

Water Quality Pollution and Water Quantity Changes includes threats such as inorganic and organic chemicals, salt/sediment deposition, unnatural flooding or flow decrease, thermal discharge, oil spills, radioactivity, toxic chemicals and "other." There were 466 Water Quality Pollution and Water Quantity Changes threats reported, or 11 percent of the total number of reported threats.

Park Operations threats include roads and utility corridors, trails, facilities, research, suppression of natural fires, misuse of biocides, employee ignorance, political pressures and "other." There were 357 Park Operations threats reported, or 8 percent of the total number of reported threats.

Figure 1 also illustrates the distribution of internal vs. external threats in the seven major categories (crosshatched sections of the categories). Within the air pollution category, 609 threats are associated with sources located external to the parks (88 percent), while 83 threats are internal. For the aesthetic degradation category, 662 of the threats are external (61%), while 423 are internal. In the physical removal of resources category, 262 of the threats are external (41%), while 376 of the threats are internal. The exotic encroachments category has 106 external threats (21%), while 399 are internal threats.

It also is possible to examine the seven threat categories by threat levels. Of a total of 4,345 threats reported Servicewide, 1,434 (33%) were designated as "suspect, and needs documentation," 1,825 (42%) were designated as "known, but needs further documentation," and 1,086 (25%) were designated as "known,

adequately documented by research and data are available" (Figure 2). "Adequate" documentation includes scientific research reports and/or photographs. Thus, 75% of all reported threats identified by the 310 respondents to the questionnaire are in need of research to document adequately.

Figure 3 portrays the array of inadequately documented threats for the seven threat categories. There is surprisingly little variation; paucity of research for all threat categories is obvious. Air Quality threats require the greatest attention with 637 threats (92%) inadequately documented, followed by Aesthetic Degradation with 629 threats (58%) inadequately documented, Physical Removal of Resources with 491 threats (77%) inadequately documented, Exotic Encroachment with 421 threats (70%) inadequately documented, Visitor Physical Impacts with 404 threats (80%) inadequately documented, Water Quality/Quantity with 396 threats (85%) inadequately documented and finally, Park Operations with 257 threats (72%) inadequately documented.

Specific types of threats within the seven major threat categories also were analyzed. The number of parks which reported each type of threat are listed in descending order in Table 1.

Tables 2 thru 8 display the percentage and number of threats reported within each of the seven major threat categories. For example, Table 4 shows that of a total of 1,085 Aesthetic Degradation threats reported, 153 or 14%, were Land Development related threats.

Figure 4 shows the numbers of reported threats associated with various types of parks. The Servicewide mean was 13.6 threats per park unit. The 126 cultural parks reported an average 11 threats per unit. An average 23 threats was reported for the 85 natural areas greater than 10,000 acres in size. The 63 natural areas greater than 30,000 acres in size excluding recreational areas and newly established parks without staffs, exhibited a mean of 24.5. However, when considering only the 12 National Park Service Biosphere Reserves for which data exists a considerably higher mean of 36.3 occurred (Figure 5). The large numbers of threats associated with the Biosphere Reserves is particularly disturbing because those units are dedicated to ecosystem monitoring through the UNESCO Man and the Biosphere Program, and the United States National Park Biosphere Reserves are considered to be ecological standards for the network of International Biosphere Reserves.

Finally, for reference purposes Appendix III lists the parks in rank order according to the number of threats reported by each.

Figure 2 Status of Present Knowledge About Total Reported Threats

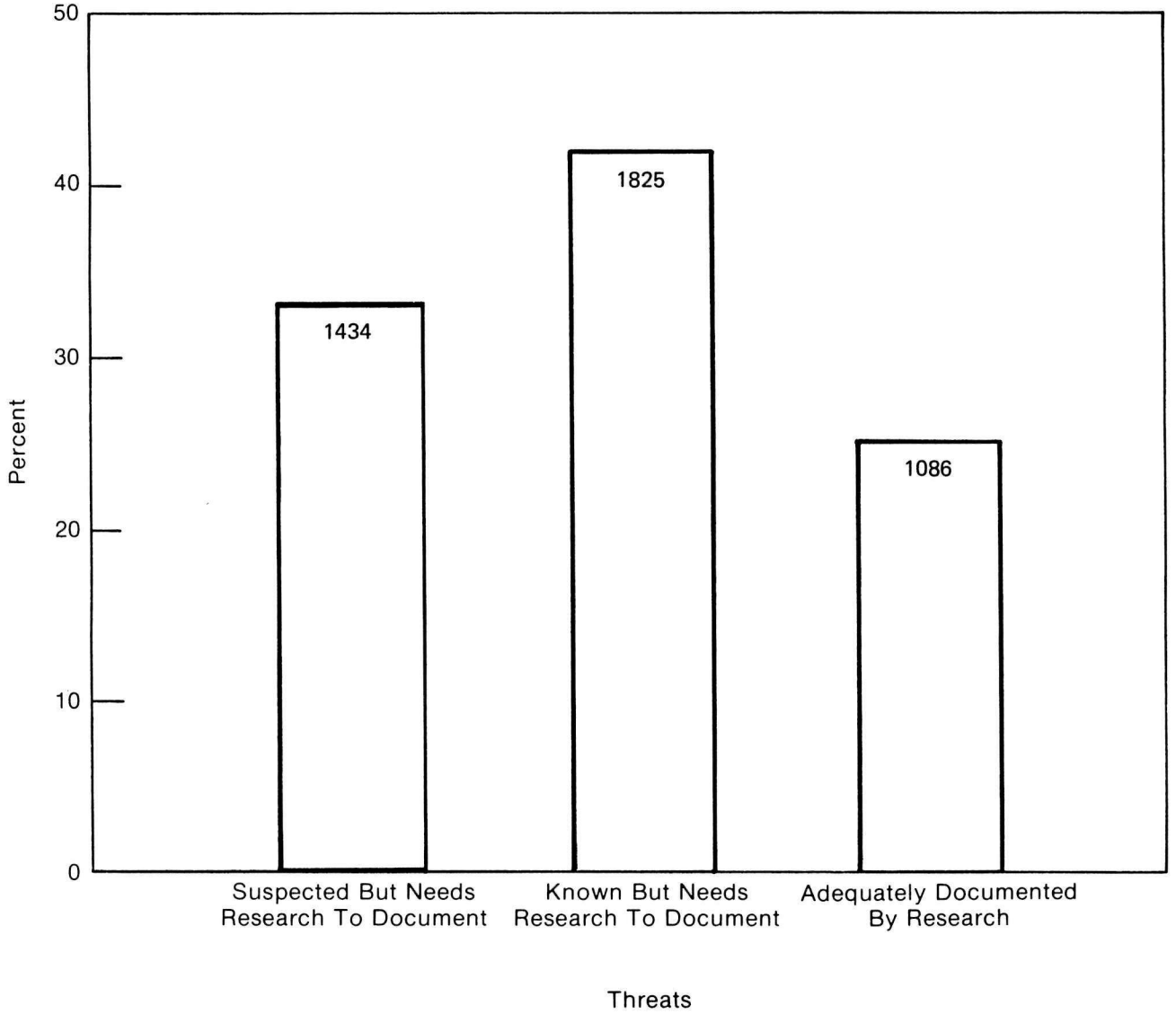


Figure 3 Number of Known and Suspected Threats by Threat Category Which Require Research to Adequately Document as Compared with Threats Which are Adequately Documented by Research

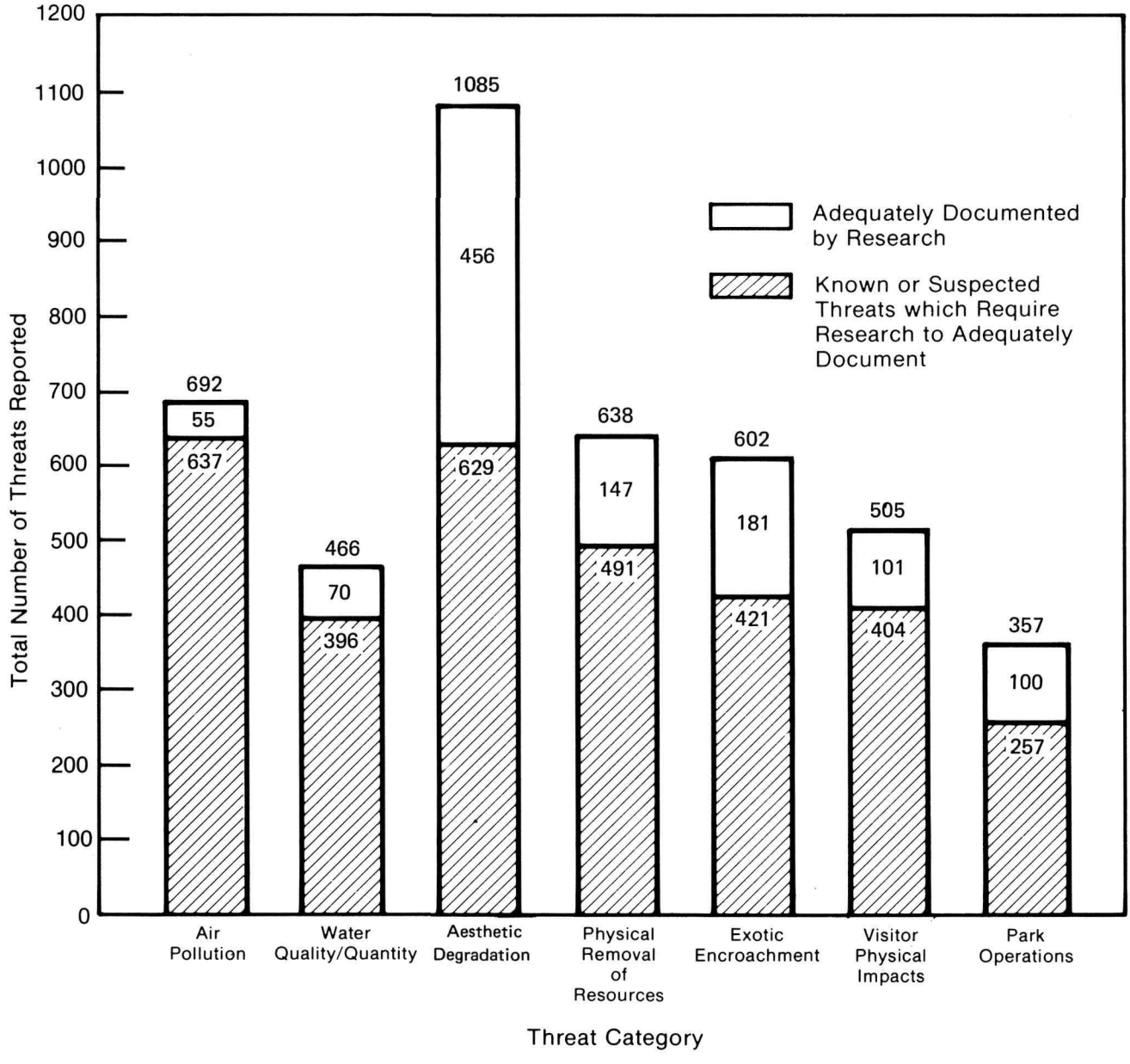


Table 1 Ranking of Threats by Subcategory

Number of Threats	Subcategory	Category
153	Land Development	Aesthetic Degradation
120	Plants (Kudzu, Tamarisk, etc)	Exotic Encroachment
116	Utility Access (Powerlines, Pipelines, etc.)	Aesthetic Degradation
110	Overcrowding and Vandalism	Aesthetic Degradation
107	Roads and Railroads	Aesthetic Degradation
106	Trampling (Soil Compaction & Loss of Vegetation)	Visitor Physical Impacts
104	Smoke	Air Pollution
102	Soil Erosion	Physical Removal of Resources
100	Urban Encroachment	Aesthetic Degradation
97	Noise—Motor Vehicles	Exotic Encroachment
96	Noise—Aircraft	Exotic Encroachment
94	"Other"	Aesthetic Degradation
93	Organic	Water Quality; Pollution and Water Quantity Changes
91	Erosion (Shortcutting, Stream Banks, etc.)	Visitor Physical Impacts
91	Vista-Road Signs, Inholdings, etc.)	Aesthetic Degradation
90	Animals (Burros, Goats, etc.)	Exotic Encroachment
86	Off Road Vehicles	Visitor Physical Impacts
83	Acid Rain	Air Pollution
83	Chemical Particulates	Air Pollution
83	Archeological Collecting	Physical Removal of Resources
83	Hunting/Poaching/Overharvesting	Physical Removal of Resources
82	Mineral Surveys, Development, Extraction	Aesthetic Degradation
76	Dust	Air Pollution
73	Forest Disease/Pest Infestations	Aesthetic Degradation
72	Unnatural Fire (Human Caused)	Exotic Encroachment
70	Unnatural Flooding or Flow Decrease	Water Quality: Pollution and Water Quantity Changes
69	Hydrocarbons	Air Pollution
68	Roads and Utility Corridors	Park Operations
66	Toxic chemicals	Water Quality: Pollution and Water Quantity Changes
65	Inorganic	Water Quality: Pollution and Water Quantity Changes
64	Facilities	Park Operations
60	Grazing or Agriculture	Aesthetic Degradation
59	Wildland Fires	Aesthetic Degradation
57	Political Pressures	Park Operations
56	Wildlife Harrassment	Visitor Physical Impacts
55	Odors	Air Pollution
55	CO	Air Pollution
51	Grazing	Physical Removal of Resources

Table 1 Ranking of Threats by Subcategory (Continued)

Number of Threats	Subcategory	Category
51	Specimen Collecting (Rocks, Plants, etc.)	Physical Removal of Resources
51	Campfires	Visitor Physical Impacts
51	Salt/Sediment Deposition	Water Quality: Pollution and Water Quantity Changes
51	Fire, Landslides, Other Catastrophes	Physical Removal of Resources
48	NO_x	Air Pollution
48	Seismic Blasting Shocks, Sonic Booms	Exotic Encroachment
47	Oil Spills	Water Quality: Pollution and Water Quantity Changes
46	Habitat Destruction	Visitor Physical Impacts
46	Suppression of Natural Fires	Park Operations
46	Mineral Extraction	Physical Removal of Resources
45	Fishing/Poaching/Overharvesting	Physical Removal of Resources
42	CO_2	Air Pollution
40	Timbering	Aesthetic Degradation
38	Gas and Oil Extraction	Physical Removal of Resources
36	Trails	Park Operations
35	Subtle Influences	Visitor Physical Impacts
30	"Other"	Visitor Physical Impacts
28	Fog	Air Pollution
28	"Other"	Air Pollution
28	Oil Spills	Water Quality: Pollution and Water Quantity Changes
26	Amer. Indian Freedom of Religion Act.	Physical Removal of Resources
25	"Other"	Physical Removal of Resources
25	Logging	Physical Removal of Resources
25	Employee Ignorance	Park Operations
25	Noise—Industrial	Exotic Encroachment
24	Noise—Visitor	Exotic Encroachment
23	Acid Mine Drainage	Water Quality: Pollution and Water Quantity Changes
22	Research (Collecting, etc.)	Park Operations
21	"Other"	Park Operations
21	Radioactivity	Air Pollution
18	Unnatural Weather (Cloud Seeding, etc.)	Exotic Encroachment
15	Misuse of Biocides	Park Operations
14	Radioactivity	Water Quality: Pollution and Water Quality Changes
13	Berry and Fruit Picking	Physical Removal of Resources
12	"Other"	Exotic Encroachment
10	Cross-Country Skiing	Visitor Physical Impacts
9	Thermal Discharge	Water Quality: Pollution and Water Quantity Changes
4345	Total	

Table 2 Percent and Number of Threats Reported by Subcategory for the *Air Pollution* Category

Subcategory	Percent	Number
Smoke	15	104
Acid Rain	12	83
Chemical Particulates	12	83
Dust	11	76
Hydrocarbons	10	69
Odors	8	55
CO	8	55
NO_x	7	48
CO_2	6	42
Fog	4	28
"Other"	4	28
Radioactivity	3	21
	100%	692

Table 3 Percent and Number of Threats Reported by Subcategory for the *Water Quality Pollution and Water Quality Changes* Category

Subcategory	Percent	Number
Organic	20	93
"Unnatural Flooding or Flow Decrease	15	70
Toxic Chemicals	14	66
Inorganic	14	65
Salt/Sediment Deposition	11	51
Oil Spills	10	47
"Other"	6	28
Acid Mine Drainage	5	23
Radioactivity	3	14
Thermal Discharge	2	9
	100%	466

Table 4 Percent and Number of Threats Reported by Subcategory for the *Aesthetic Degradation* Category

Subcategory	Percent	Number
Land Development	14	153
Utility Access-Powerlines, Pipelines, etc.	11	116
Roads and Railroads	10	107
Overcrowding and Vandalism	10	110
Urban Encroachment	9	100
Vista-Road Signs, Inholdings, etc.	8	91
"Other"	8	94
Mineral Surveys, Development, Extraction	8	82
Forest Disease/Pest Infestations	7	73
Grazing or Agriculture	6	60
Wildland Fires	5	59
Timbering	4	40
	100%	1085

Table 5 Percent and Number of Threats Reported by Subcategory for the *Physical Removal of Resources* Category

Subcategory	Percent	Number
Soil Erosion	16	102
Archeological Collecting	13	83
Hunting/Poaching/Overharvesting	13	82
Grazing	8	52
Specimen Collecting (Rocks, Plants, Etc.)	8	51
Fire, Landslides, Other Catastrophies	8	50
Mineral Extraction	7	45
Fishing/Poaching/Overharvesting	7	45
Gas and Oil Extraction	6	38
Amer. Indian Freedom of Religion Activities	4	26
"Other"	4	26
Logging	4	25
Berry and Fruit Picking	2	13
	100%	638

Table 6 Percent and Number of Threats Reported by Subcategory for the *Exotic Encroachment* Category

Subcategory	Percent	Number
Plants (Kudzu, Tamarisk, etc.)	20	120
Noise—Motor Vehicles	16	97
Noise—Aircraft	16	96
Animals (Burros, Goats, etc.)	15	90
Unnatural Fire (Human-Caused)	12	72
Seismic-Blasting Shocks, Sonic Booms	8	48
Noise—Industrial	4	25
Noise—Visitor	4	24
Unnatural Weather (Cloud Seeding, etc.)	3	18
"Other"	2	12
	100%	602

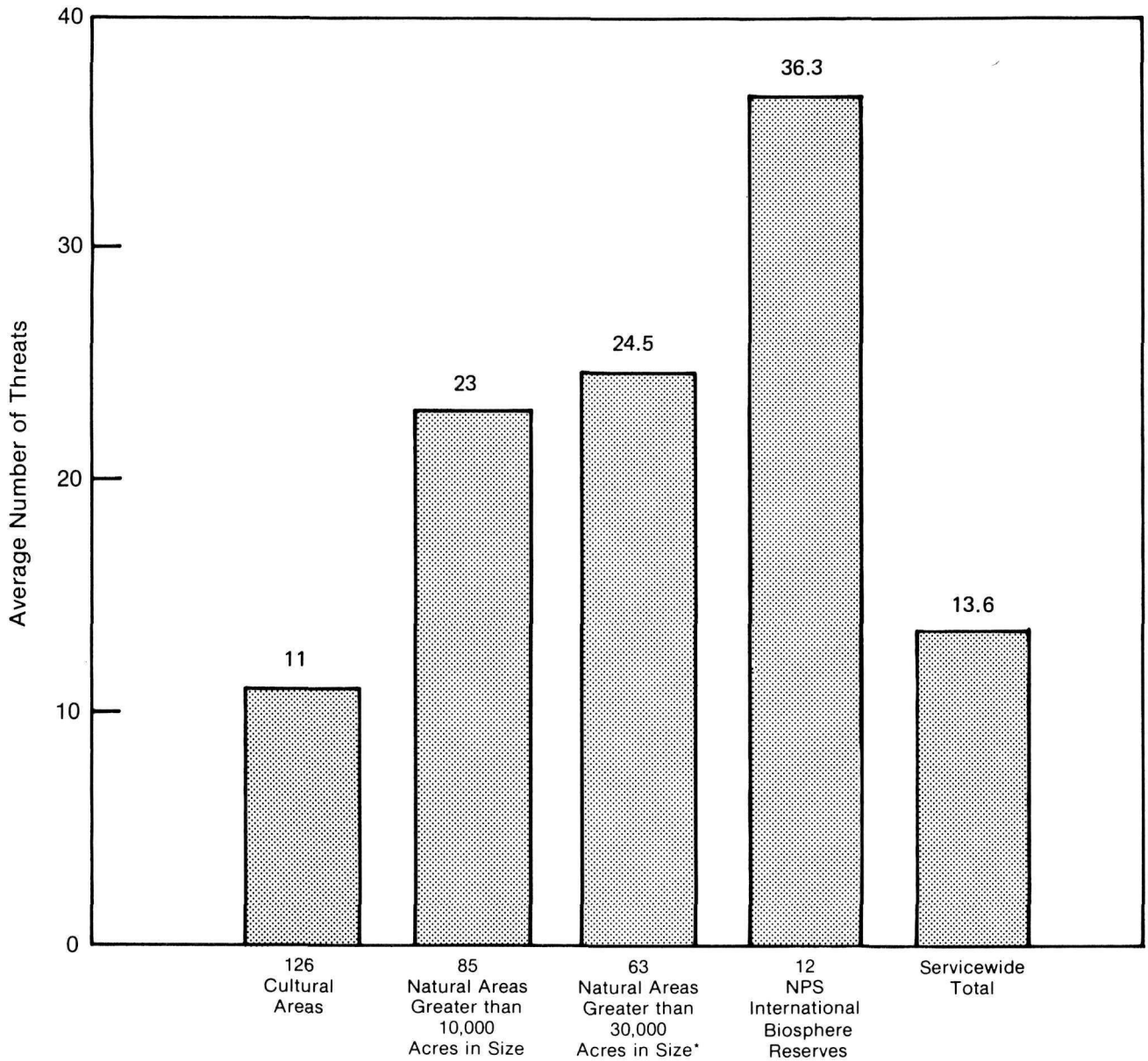
Table 7 Percent and Number of Threats Reported by Subcategory for the *Visitor Physical Impacts* Category

Subcategory	Percent	Number
Trampling (Soil Compaction & Loss of Veg.)	21	106
Erosion (Shortcutting, Stream Banks, etc.)	18	91
Off Road Vehicles	17	86
Wildlife Harassment	11	55
Campfires	10	51
Habitat Destruction	8	40
Subtle Influences	7	35
"Other"	6	30
Cross-Country Skiing	2	10
	100%	505

Table 8 Percent and Number of Threats by Subcategory for the *Park Operations* Category

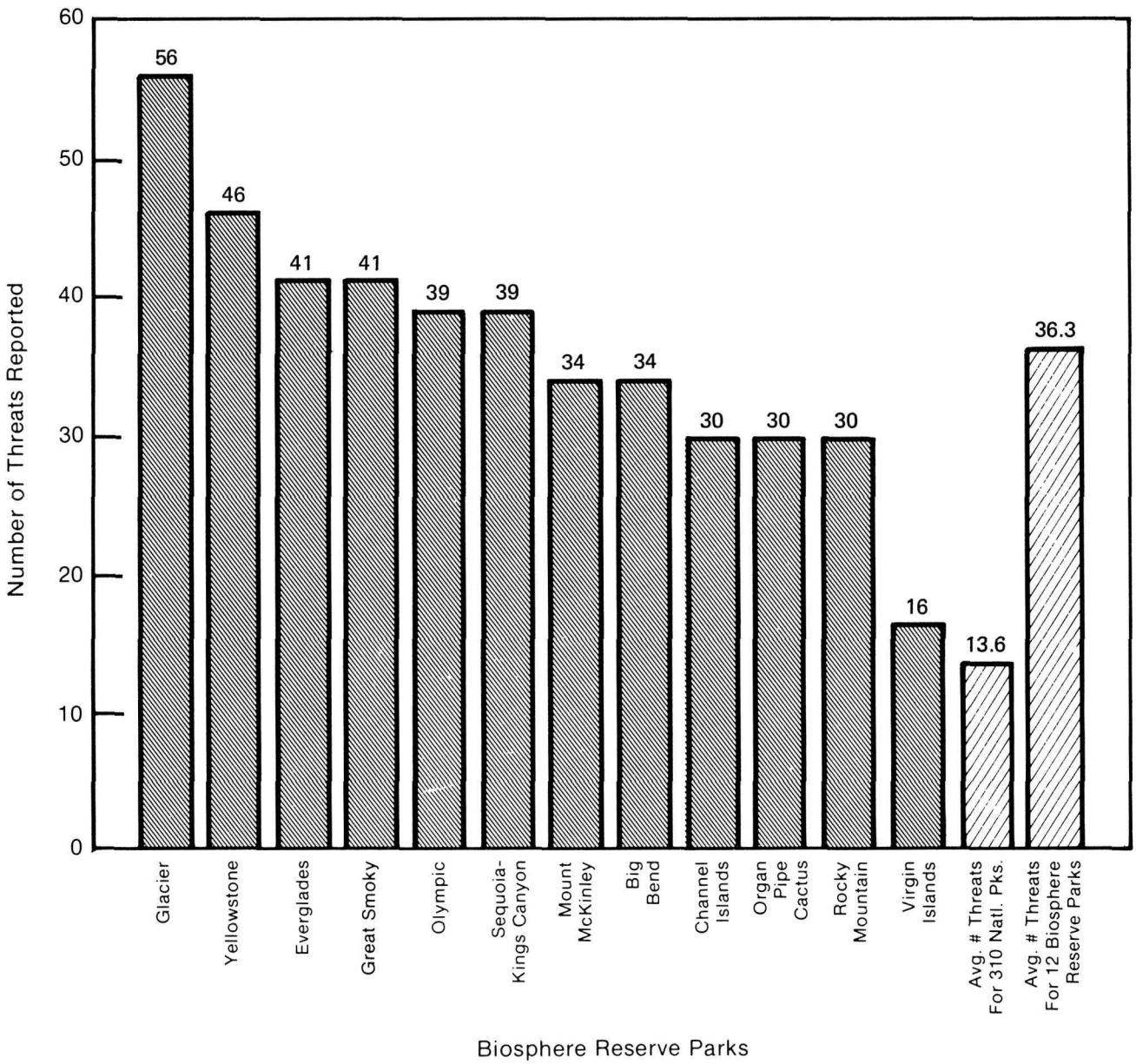
Subcategory	Percent	Number
Roads and Utility Corridors	19	68
Facilities	18	64
Political Pressures	16	57
Suppression of Natural Fires	13	46
Trails	10	36
Employee Ignorance	7	25
Research (Collecting, Etc.)	6	22
"Other'	6	21
Misuse of Biocides	5	18
	100%	357

Figure 4 Average Number of Threats Reported for Selected Classifications of Park Areas



*Excludes recreational and newly established parks without staff.

Figure 5 Number of Threats Reported for the Individual NPS International Biosphere Reserves as Compared with Average Number of Threats Reported for All National Parks



SOURCES OF THREATS

Threat sources are those facilities, vehicles, physical substances, human or animal activities, etc., that cause real or potential impingements upon park resources. Sources can be both internal and external in character. They can be associated with sudden, catastrophic events or with slow acting processes. And they can be isolated by themselves or combined with a few to several sources.

The National Park Service long has recognized many of the more obvious internal threats, especially those that directly affect the more significant and visible park resources. Some of the common sources of threats relate to visitor activities such as picnicking, camping, hiking, backpacking, boating, horseback riding, etc. At some point in the expanding use of the parks by visitors, such activities can cause adverse impacts upon the park resources that include trampling, wildlife harassment, vandalism or worse.

Frequently reported internal sources of threats include forest pests, forest diseases, wildland fires, commercial collectors, poachers, the absence and inadequacy of visitor contact points and facilities, employee apathy and ignorance, pet policy, and several issues directly relating to park planning; i.e., poorly designed trails, roads and facilities, and even more basic the too often poorly designed park boundaries.

Examples:

PINE BEETLE INFESTATIONS are degrading pine forests at Big Thicket and Glacier.

At Big Bend and Organ Pipe, CACTUS COLLECTORS are poaching such large quantities of plants that the natural scene is being changed.

FOSSIL COLLECTING has become commonplace at Badlands.

At Bandelier, Olympic and other parks, increased numbers of CAMPERS and BACKPACKERS are damaging the area's wilderness character.

At Glacier Bay, increased BOATING may have affected the habitat of the endangered humpback whales.

Overabundance of VISITORS has damaged the cultural sites and structures at Petersburg, Shiloh and many other cultural parks.

At Cape Lookout, OFF-ROAD VEHICLES have become a major impact on the area resources.

The very presence of park visitors necessitates vehicle use and requires facilities to provide adequate care for the people and their belongings. Park roads, trails, concession accommodations, utilities, access routes, sewage lagoons, landfills, required maintenance equipment use and facilities, water lines, and the like are all associated with the scheme of public use of the parks. Each of these has been reported as a source of threats.

Other reported sources that directly impinge upon park resources are related to adjacent land uses common in agricultural and rural areas. These include land clearing, cattle and other feral animals, dust, burning of fields and refuse, application of fertilizers and other toxic chemicals and even DDT still being used in Mexico but affecting animal species in the United States.

Examples:

CATTLE trespass into Glacier impacts natural resources and visitor campgrounds.

At Cape Lookout, HORSES, COWS, GOATS and SHEEP have significantly altered the marshes and grasslands of the Shelford Banks.

BARBARY SHEEP appear to be the next crisis exotic species within the southwest.

At Great Smoky Mountains, exotic EUROPEAN BOARS continue to destroy that park's unique vegetation and wildlife.

PESTICIDE USE in the parks has dangerous side effects that are causing some concern.

Water related threats such as dams, flood control canals, cooling water discharge, dredging, flooding, and water mining are all reported as directly or indirectly affecting the unique resources of the national parks.

Examples:

The largest hot water lake in the world is threatened at Lassen by an adjacent GEOTHERMAL TEST WELL.

DREDGING along the Gulf Islands can have serious effects on the natural systems there.

At North Cascades, planned DAM CONSTRUCTION on Copper Creek will impact many unique park resources.

Impacts from urban developments are far reaching as well and produce an overwhelming variety of sources, such as airports and various aircraft, including helicopter tours, low flying jets and sonic booms, a wide variety of land vehicles, including trains, snowmobiles, motorbikes and raceways; city utilities and access routes, athletic complexes, firing ranges, garbage dumps, municipal sewage plants, human wastes, landfills, road salting, logging and a wide use of biocides.

Examples:

Water quality of Chattahoochee River is seriously impacted by RAW SEWAGE and CHEMICAL RUNOFF from adjacent lands.

At Harpers Ferry, the EXPANDING URBAN SCENE is conflicting with the 1865 setting for which the park was established.

A new HIGHWAY is under construction along Glacier's western border.

A 300 ft. TOWER affects Gettysburg's historical scene.

At Olympic, LUMBER PULP and PAPER MILLS are impinging upon the park's Class 1 airshed.

URBAN ENCROACHMENTS are threatening the cultural scenes at Petersburg, Richmond and Saratoga.

SOLID WASTE DISPOSAL is degrading water quality at Fire Island.

Mining and associated activities were reported as threat sources by many of the parks. Oil, gas and coal development were commonly expressed concerns; mining of gravel, bauxite, bentonite, copper, gold, lead, potash and uranium were also all included. Mine tailings and ponds, coal slurry lines, and related transportation of mining products were listed.

Examples:

OIL, GAS, COAL and URANIUM DEVELOPMENTS are all impacting the significant cultural resources at Chaco Canyon.

At Glacier, an OPEN-PIT COAL MINE is planned near the northwest corner.

GEOTHERMAL DEVELOPMENTS are scheduled along Bandelier's western border and not far from Yellowstone and Grand Teton.

A COPPER SMELTER is sited within 25 miles of Grant-Kohrs Ranch National Historic Site.

Industry poses threats not only to adjacent parks but also to parks which are a considerable distance from the sources. Many of the park units reported real and potential impacts from coal-fired and nuclear power plants and their waste products; petroleum refineries; chemical, wood processing and desalinization plants; carpet and textile, pulp and paper, saw and steel mills; charcoal kilns, shipyards, off-shore oil wells, oil sludge fires, marine tankers and associated oil spills, pipelines, powerlines and a wide variety of heavy construction.

Examples:

An ALUMINUM PLANT exists 6 miles from Glacier.

At Indiana Dunes, adjacent INDUSTRIAL PLANTS and NUCLEAR PLANT CONSTRUCTION threatens the natural and cultural resources.

At Santa Monica Mountains, air quality and visibility is seriously impacted by INDUSTRIAL ACTIVITIES within the greater Los Angeles Basin.

LOGGING OPERATIONS are affecting the natural scene near Glacier.

The Everglades JETPORT still exists along the northern border of the park.

At Acadia, a proposed POWER PLANT at Sears Point will degrade the park's Class 1 air standards.

All of the above are a few examples of specific threat sources reported in the threats survey. Each can be mitigated with time and appropriate funding. Yet collectively they represent a problem to the parks of great magnitude.

The preceding discussion has centered generally on threats and threat sources as perceived by individual park managers and their staffs. The threat perceptions of these park personnel may not be the same from one park to the next, nor will the threats now perceived necessarily remain the same in the future. Perceptions, by definition, reflect values, attitudes and judgements of those responding to the issues. Future examination of these issues in combination with new information and additional analysis may yield different responses as the park managers become better informed about the issues of concern.

Threatened park resources are comprised of those natural and cultural features which a national park was created to protect and preserve, and can be conveniently aggregated into five resource categories: biological; physical; aesthetic; cultural; and operations. Biological resources, for example, include plants, mammals, forest habitats and a range of other living organisms. These five major threatened resource categories are discussed below.

Threatened BIOLOGICAL resources include a wide variety (19 subcategories) of living organisms and biological entities. Collectively, biological resources in national parks were reported to constitute 32% of all the reported threatened resources. These threatened resources include plankton, fresh and salt water plants and animals, terrestrial plants and animals, invertebrates, vertebrates, and 10 ecological communities or habitats (Table 9). Ranking of the 19 biological subcategories shows mammals as the single most mentioned biotic group followed by plants and wetland communities. Vertebrate animals, when regarded as a single group of related organisms with common problems, account for over 35% of all threatened resources in this grouping. On the other hand, if the interpretation is by proximity in physical space of organisms, the ecological communities collectively comprise the single largest entity perceived as threatened (38% of all biological response pertained to ecological communities). Endangered species problems are reported from relatively few parks (5%) despite the legal requirements pertaining to their habitat identification, population monitoring, and overall protection. Similarly, cave species or coral reef communities ranked near the end of the threatened biological resources listing because they occur in relatively few parks. Thus ranking on these lists does not adequately portray severity of threats.

Threatened PHYSICAL resources include non-living natural resources such as air and water quality, soil degradation, mineral extraction, geysers and other unique geological features (Table 10). Physical resources were reported to constitute 24% of all the reported threatened resources. Air and water concerns rank together at the top of this list, while paleontological features are perceived as threatened in far fewer park units. Such a ranking may indicate the relative distribution of air, water, and paleontological artifacts in the park system as much as it reflects the probability of threats to these resources. On the other hand, threats to such resources as fresh water supply in particular areas,

Table 9 Ranking of Threatened Biological Resources

	Threatened Resource	No. of Parks
1.	Mammals (land & water)	136
2.	Plant Species (land & water)	132
3.	Wetland Communities/Habitats	87
4.	Birds (land & water)	71
5.	Woodland Communities/Habitats	67
6.	Fishes	67
7.	Forest Communities/Habitats	60
8.	Endangered Species/Threatened Species	43
9.	Invertebrates (land & water)	41
10.	Grassland Communities/Habitats	34
11.	Amphibians & Reptiles	33
12.	Desert Communities/Habitats	20
13.	Meadow Communities/Habitats	18
14.	Tropical Communities/Habitats	15
15.	Scrub Communities/Habitats	10
16.	Cave Species (animals & plants)	8
17.	Plankton	4
18.	Tundra Communities/Habitats	4
19.	Coral Communities/Species	3

Table 10 Ranking of Threatened Physical Resources

	Resource Threatened	No. of Parks
1.	Air Quality	140
2.	Fresh Water Quality	130
3.	Soils	119
4.	Visibility (air)	99
5.	Fresh Water Supply	41
6.	Marine Water Quality	27
7.	Beach-Dunes	23
8.	Minerals	19
9.	Geological Features (unique)	18
10.	Cave Systems	18
11.	Paleontological Features	5

e.g., the South Florida Parks, may be difficult to assess accurately with the methods used here. It is clear that the physical, geological, and other non-living natural resources of national parks constitute an important subject for future detailed examination.

Threatened AESTHETIC resources comprise subjective and sometimes intangible features such as silence, odors, general scene (vistas, wildfire scars, etc.), wilderness/natural scene, and other similar attributes (Table 11). Aesthetic resources were reported to constitute 20% of all the reported threatened resources. The general scene is the predominant reported threatened feature within this category. Similarly "park experience" (a summation of reported backcountry and frontcountry experiences) is the next most reported threatened resource closely followed by silence. Odoriferous environmental aspects are the lowest ranked aesthetic resource, in sharp contrast to the visually oriented general scene. This contrast perhaps illustrates the relative importance of vision versus smell in human perception and subsequent aesthetic interpretation.

Threatened CULTURAL resources consist of a discrete assemblage of features relating to archeological, historical and anthropological attributes. Cultural resources were reported to constitute 16% of all the reported threatened resources. Historic landscapes, archeological-historical sites and structures as well as particular objects all received comparable mention by park managers (Table 12). This category of resources seemed to be well defined and the concern expressed was specific. Almost every park in the system reported one or more of these resources was threatened, suggesting that protection of these resources is perceived by many managers as an important aspect of National Park management.

The response pertaining to OPERATIONAL features such as roads, trails, buildings, etc., as well as concerns for the health and safety of both visitors and employees, was less frequent than for other categories (Table 13) and constituted only 8% of the total reported threatened resources. Park managers apparently perceived these matters as largely unthreatened in the context of overall environmental concern. Most operational facilities were constructed for the convenience of the visitors or to meet the needs of the Service; consequently, threats to such facilities probably are viewed as internal matters readily remedied by routine maintenance activities supported by adequate funding. Issues concerning the health and safety of persons was the most reported operational topic while frontcountry facilities were second ranked. The remaining six elements of this category, presumably subject to relatively infrequent problems, are of approximately equal concern.

Figure 6 illustrates the relative frequency with which park resources in each of the above five categories were reported threatened.

Table 11 Ranking of Threatened Aesthetic Resources

	Threatened Resource	No. of Parks
1.	General Scene	191
2.	Silence	114
3.	Frontcountry experience	84
4.	Wilderness-Natural Scene	80
5.	Backcountry experience	39
6.	Odor	22

Table 12 Ranking of Threatened Cultural Resources

	Threatened Resource	No. of Parks
1.	Landscapes (historic)	111
2.	Sites (historic, archeological)	107
3.	Structures (historic, archeological)	91
4.	Objects	79
5.	Cultural Districts	47

Table 13 Ranking of Threatened Operational Features

	Operational Feature	No. of Parks
1.	Health & Safety (Visitor-Employee)	74
2.	Frontcountry Facilities	55
3.	Frontcountry Trails	26
4.	Frontcountry Roads	23
5.	Backcountry Campsites	20
6.	Frontcountry Campgrounds	17
7.	Backcountry Trails	11
8.	Backcountry Facilities	6

Figure 6 Percent of Threatened Resources by Resource Category

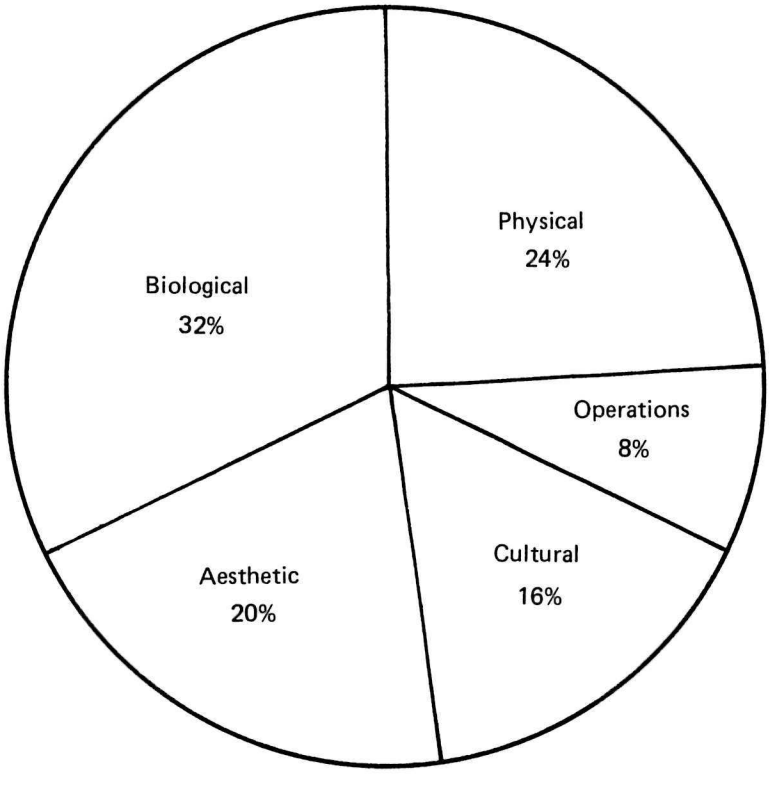


Table 14 similarly shows a ranking of the individual resources most often reported threatened. The single most frequently mentioned resource regarded as threatened was the general scene. The high position of air quality on the list unquestionably is attributable to efforts of the Service to raise the awareness level in matters pertaining to the serious impact of air pollutants. Similarly, mammals appear with considerable frequency as a threatened resource. Curiously, this group of vertebrates is relatively small in species numbers in most park areas and, furthermore, most mammal species are obscure nocturnal animals unknown to most persons. However, a few relatively large mammals (bear, deer, elk, etc.) attract considerable attention and consequently park managers may tend to accord them an importance exceeding their occurrence in most park units. This case, like that of air quality, may not accurately reflect the total problem of threatened natural resources, but rather may reflect popular awareness of particular situations or issues. What the perceptions reported by park managers indicate is that further information should be obtained at periodic intervals and carefully analyzed for further use.

The top ranked threatened park resources listed in Table 14 provide a measure of the major concerns and attitudes of park managers at the present time. Clearly, however, the foregoing comments suggest that considerable additional emphasis needs to be directed to this area.

Table 14 Ranking of Top Ten Threatened Resources Reported

	Threatened Resource	No. of Parks
1.	General Scene (vistas, fire scars, etc.)	191
2.	Air Quality (CO, CO_2, SO_4, etc.)	140
3.	Mammals	136
4.	Plants	132
5.	Fresh Water Quality	130
6.	Experiences (frontcountry & backcountry)	123
7.	Soils	119
8.	Silence	114
9.	Landscape (archeological, historic)	111
10.	Sites (archeological, historic)	107

CONCLUSIONS

The National Park Service was created for the express purpose of preserving prime examples of the nation's natural and cultural heritage for the use and enjoyment of present and future generations. Beginning with the Yellowstone Act of 1872 and continuing through the ensuing enabling acts of the various National Park System units, the concept of the preservation of natural and cultural resources has been irrevocably coupled to the concept of wise use of the parks.

In perhaps no legislation since the Yellowstone Act has the principle of management in an unimpaired state, in perpetuity, been so clearly stated or so clearly required. National Park Service mandates are clear: the natural zones of the National Park Service must be managed so as to insure that natural ecosystem processes operate unimpaired unless otherwise specifically provided for in the law, and the historic zones must be managed to provide full protection for the cultural resources therein.

In recent years the National Park Service has experienced rapid growth and greatly expanded public use. During the period 1960 - 1979, 84 new areas encompassing 49 million acres have been added. Total visits to the parks have increased from 135 million to 282 million.

One of the major concerns facing the National Park Service relates to the question of expanded visitor use: how can more and more of the people who own these great resources continue to enjoy them without damaging their natural and historic qualities?

The pressures from without are equally demanding. Many previously pristine areas today have become surrounded by and exposed to an ever growing array of incompatible and threatening activities on adjacent lands...ranging from trespassing livestock which trample vegetation to acid rain from remote industrial facilities which causes severe damage to park terrestrial and aquatic systems and historic structures.

It is clear that events are taking place that are causing demonstrable and severe damage to the natural and the cultural resources of the nation's national parks, monuments, historic sites and other units. The survey suggests that no area is immune. Although some impacts are subtle and not immediately obvious, long-term consequences can be disastrous.

Only one-quarter of all reported threats have adequate documentation. The paucity of information relates not only to resource conditions and the status of impinging internal and external activities, but

also to the basic information available for planning and decision-making. Very few park units possess the baseline natural and cultural resources information needed to permit identification of incremental changes that may be caused by a threat. The priority assigned to the development of a sound resources information base has been very low compared to the priority assigned to meeting construction and maintenance needs. Research and resources management activities have been relegated to a position where only the most visible and severe problems are addressed.

As we look to the future, we recognize that we must find ways to deal with conflicting and competing demands; on the one hand we must protect and preserve our park resources; on the other we must be responsive to important needs associated with energy development and other national objectives.

The National Park Service cannot remain on the sidelines and expect to reject a proposed project merely because it poses a potential threat to park resources or park values. As Federal Land Managers, we must be prepared to identify viable alternatives in those situations where proposed development activities would damage the parks. We must be prepared to work constructively and cooperatively in an effort to find acceptable solutions to complex issues. And perhaps most important, the National Park Service must have the factual data on which to base and to support its position, and to enable us to argue it persuasively.

It is for all of these reasons that we emphasize the critical need to establish quantitative baseline data on park resources. We need research to define threshold damage levels and to develop exposure versus response relationships. We need comprehensive monitoring programs to quantify existing environmental and ecosystem conditions and to detect changes in those conditions. We need to develop a much better capability to predict how proposed new sources or activities will affect air quality, water quality and water quantity, visibility, scenic values, and other park attributes. As an internal management tool, we particularly need baseline information as a guide for setting priorities and allocating available resources, for knowing where and when to initiate mitigation programs, and as a basis for formulating and supporting our position in adversary proceedings.

To deal with the wide range of pervasive and complex problems facing the parks today will require a comprehensive science and resource management program that addresses sound resources management planning, the development of an information data base for each park unit, a carefully structured and well documented monitoring program, and a resources management plan that adequately addresses not only the many threats that exist Service-wide, but additionally the steps to be taken to mitigate these problems.

At the present time the budget (FY 1980) for natural and cultural science programs throughout the Service, including those activities which respond to immediate short-term problems of individual park superintendents, is approximately $12 million, or slightly more than two percent of the total National Park Service budget. Similarly there are about 100 scientists working on various research and technology related projects Servicewide, or roughly 1.1 percent of the total National Park Service staff.

Within the combined cultural and natural resource management areas there are fewer than 200 personnel Servicewide; this includes a significant number of park rangers who have had varying levels of resource management training or experience but who may devote only a small percentage of their time to actual natural or cultural resource management activities. It also includes a substantial number of general aides and technicians.

Thus, there are a total of about 300 personnel Servicewide (3.2 percent of the total Park Service staff) in the combined science and resource management fields. Approximately twenty percent of the personnel do not have college degrees, and a substantial number of others work primarily on operational activities within their principal role as park rangers or park superintendents.

Simply stated, the current levels of science and resource management activities are completely inadequate to cope effectively with the broad spectrum of threats and problems which have been identified and discussed in this report. The Park Service, in submitting this report and its findings to the Congress, publicly calls attention to this serious deficiency.

APPENDIX I

QUESTIONNAIRE

Threats to the Parks

Park	Region	Name of Respondent	Date	Page

In the light of the Enabling Legislation, the Legislative History, and the Statement for Management, What Threats are Impacting the Park Resources and to What Extent?	Use Part 2 for explanations Threat Level Check one				Check one		Check one	
	1. None that can be determined.	2. Suspected, but needs research to document adequately.	3. Yes, but needs research to document adequately.	4. Yes, adequately documented by research & data available.	Internal Threat	External Threat	Addressed in area Resources Management Plan	Not addressed in area Resources Management Plan
THREATS								
1. AIR POLLUTION								
A. Suspended Particulates (visibility)								
1. Smoke								
2. Dust								
3. Chemicals								
4. Fog (water Condensate)								
B. CO								
C. CO_2								
D. Hydrocarbons								
E. Acid Rain								
F. NO_x								
G. Odors								
H. Radioactivity								
I. Other								

QUESTIONNAIRE

Threats to the Parks

Park	Region	Name of Respondent	Date	Page

In the light of the Enabling Legislation, the Legislative History, and the Statement for Management, What Threats are Impacting the Park Resources and to What Extent?	Use Part 2 for explanations Threat Level Check one				Check one		Check one	
	1. None that can be determined.	2. Suspected, but needs research to document adequately.	3. Yes, but needs research to document adequately.	4. Yes, adequately documented by research & data available.	Internal Threat	External Threat	Addressed in area Resources Management Plan	Not addressed in area Resources Management Plan
THREATS								
2. WATER QUALITY POLLUTION (surface & ground) & WATER QUANTITY CHANGES								
A. Chemical								
B. Sewage								
C. Salt/Sediment Deposition of Erosion								
D. Geothermal								
E. Unnatural Flooding or Flow Decrease								
F. Oil Spills								
G. Radioactivity								
H. Acid Mine Drainage								
I. Other Toxic Chemicals (e.g., Sulfur, Acids, Biocides, etc.)								
J. Other								

QUESTIONNAIRE

Threats to the Parks

Park	Region	Name of Respondent	Date	Page

In the light of the Enabling Legislation, the Legislative History, and the Statement for Management, What Threats are Impacting the Park Resources and to What Extent?	Use Part 2 for explanations Threat Level Check one				Check one		Check one	
	1. None that can be determined.	2. Suspected, but needs research to document adequately.	3. Yes, but needs research to document adequately.	4. Yes, adequately documented by research & data available.	Internal Threat	External Threat	Addressed in area Resources Management Plan	Not addressed in area Resources Management Plan
THREATS								
3. AESTHETIC DEGRADATION (inside and outside)								
A. Mineral Surveys, Development, Extraction, and Production								
B. Timbering								
C. Grazing or Agriculture								
D. Forest Disease/Pest Infestations								
E. Wildland Fires								
F. Land Development								
G. Utility Access - Powerlines, Pipelines								
H. Roads and Railroads								
I. Vista (roadsigns, inholdings, etc.)								
J. Urban Encroachments								
K. Overcrowding and Vandalism								
L. Other								

QUESTIONNAIRE

Threats to the Parks

Park	Region	Name of Respondent	Date	Page

In the light of the Enabling Legislation, the Legislative History, and the Statement for Management, What Threats are Impacting the Park Resources and to What Extent?	Use Part 2 for explanations Threat Level Check one				Check one		Check one	
	1. None that can be determined.	2. Suspected, but needs research to document adequately.	3. Yes, but needs research to document adequately.	4. Yes, adequately documented by research & data available.	Internal Threat	External Threat	Addressed in area Resources Management Plan	Not addressed in area Resources Management Plan
THREATS								
4. PHYSICAL REMOVAL OF RESOURCES								
A. Logging								
B. Mineral Extraction								
C. Gas and Oil Extraction								
D. Hunting, Poaching or Overharvesting								
E. Fishing, Poaching or Overharvesting								
F. Grazing								
G. Berry and Fruit Picking								
H. Specimen Collecting (rock, plants, animals)								
I. Soil Erosion								
J. Fire, Landslides, other catastrophies								
K. American Indian Freedom of Religion Activities								
L. Archeological Collecting								
M. Other								

QUESTIONNAIRE

Threats to the Parks

Park	Region	Name of Respondent	Date	Page

In the light of the Enabling Legislation, the Legislative History, and the Statement for Management, What Threats are Impacting the Park Resources and to What Extent?	Use Part 2 for explanations Threat Level Check one				Check one		Check one	
	1. None that can be determined.	2. Suspected, but needs research to document adequately.	3. Yes, but needs research to document adequately.	4. Yes, adequately documented by research & data available.	Internal Threat	External Threat	Addressed in area Resources Management Plan	Not addressed in area Resources Management Plan
THREATS								
5. EXOTIC ENCROACHMENT								
A. Animals (burros, goats, gypsy moth, etc.)								
B. Plants (kudzu, tamarisk, etc.)								
C. Unnatural Fire (human-caused)								
D. Unnatural Weather (cloud seeding, etc.)								
E. Noise								
1) motor vehicles (cars, boats, snowmobiles)								
2) aircraft								
3) industrial								
4) visitor								
F. Seismic-Blasting Shocks, Sonic Booms, etc.								
G. Other								

QUESTIONNAIRE

Threats to the Parks

Park	Region	Name of Respondent	Date	Page

In the light of the Enabling Legislation, the Legislative History, and the Statement for Management, What Threats are Impacting the Park Resources and to What Extent?	Use Part 2 for explanations Threat Level Check one				Check one		Check one	
	1. None that can be determined.	2. Suspected, but needs research to document adequately.	3. Yes, but needs research to document adequately.	4. Yes, adequately documented by research & data available.	Internal Threat	External Threat	Addressed in area Resources Management Plan	Not addressed in area Resources Management Plan
THREATS								
6. VISITOR PHYSICAL IMPACTS								
A. Campfires								
B. Trampling (soil compaction & loss of veg.)								
C. Erosion (shortcutting, stream banks, etc.)								
D. Wildlife Harassment								
E. Habitat Destruction								
F. Cross-country Skiing								
G. Offroad Vehicles								
H. Subtle Influences (e.g., algae growth in caves, etc.)								
I. Other								

QUESTIONNAIRE

Threats to the Parks

Park	Region	Name of Respondent	Date	Page

In the light of the Enabling Legislation, the Legislative History, and the Statement for Management, What Threats are Impacting the Park Resources and to What Extent?	Use Part 2 for explanations Threat Level Check one				Check one		Check one	
	1. None that can be determined.	2. Suspected, but needs research to document adequately.	3. Yes, but needs research to document adequately.	4. Yes, adequately documented by research & data available.	Internal Threat	External Threat	Addressed in area Resources Management Plan	Not addressed in area Resources Management Plan
THREATS								
7. PARK OPERATIONS								
A. Roads and Utility Corridors								
B. Trails								
C. Facilities								
D. Research (collecting, etc.)								
E. Suppression of Natural Fires								
F. Misuse of Biocides								
G. Employee Ignorance								
H. Political Pressures								
I. Other								

Part 2 - Additional Explanations for Threat Levels 2, 3, and 4

THREAT: number according to questionnaire	Specific Sources of Threats	Resources Threatened in Priority Order (discuss each briefly)

APPENDIX II

Printout for Glacier National Park

Printout example: Part 1 includes a full list of all possible threats; threat levels designated by one of four options (i.e., none determined; suspected, needs documentation; yes, needs documentation; and yes, adequately documented); int/ext, referring to designation as internal, external or combined; and whether the threat is addressed or not addressed within the area Resources Management Plan. Part 2 includes all threats designated, the sources of those threats, and the resources threatened.

NATIONAL PARK SERVICE
THREATS INFORMATION MANAGEMENT SYSTEM
DETAIL LIST OF THREATS BY PARK - SURVEY: PART 1

ORGANIZATION 1430 - GLACIER NATIONAL PARK

THREAT	THREAT LEVEL	INT/EXT	RESOURCE MGMT PLAN
SMOKE	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
DUST	NONE DETERMINED		
CHEMICALS	YES, NEEDS DOCUMENTATION	EXTERNAL	ADDRESSED IN RMP
PO4 (WATER CONDENSATE)	NONE DETERMINED		
CO	SUSPECTED, NEEDS DOCUMENTATION	INTERNAL	NOT ADDRESSED IN RMP
CO X			
HYDROCARBONS	NONE DETERMINED		
ACID RAIN	SUSPECTED, NEEDS DOCUMENTATION	EXTERNAL	ADDRESSED IN RMP
NO X	NONE DETERMINED		
ODORS			
RADIOACTIVITY	NONE DETERMINED		
AIR POLLUTION (OTHER)			
INORGANIC (NO 3, PO 4, ETC.)	SUSPECTED, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
ORGANIC (SEWAGE, ETC.)	SUSPECTED, NEEDS DOCUMENTATION	INTERNAL	ADDRESSED IN RMP
SALT/SEDIMENT DEPOSITION (EROSION, EVAPORATION, ETC.)	YES, NEEDS DOCUMENTATION	EXTERNAL	ADDRESSED IN RMP
"UNNATURAL" FLOODING OR FLOW DECREASE			
THERMAL DISCHARGE (EXCLUDING NATURAL GEOTHERMAL AREAS)	YES, NEEDS DOCUMENTATION	EXTERNAL	ADDRESSED IN RMP
OIL SPILLS			
RADIOACTIVITY	NONE DETERMINED		
ACID MINE DRAINAGE			
TOXIC CHEMICALS (METALS, ACIDS, BIOCIDES, ETC.)	SUSPECTED, NEEDS DOCUMENTATION	EXTERNAL	ADDRESSED IN RMP
WATER POLLUTION (OTHER)	SUSPECTED, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
MINERAL SURVEYS, DEVELOPMENT, EXTRACTION, & PRODUCTION	SUSPECTED, NEEDS DOCUMENTATION	EXTERNAL	ADDRESSED IN RMP
TIMBERING	YES, NEEDS DOCUMENTATION	EXTERNAL	ADDRESSED IN RMP
GRAZING OR AGRICULTURE	YES, NEEDS DOCUMENTATION	INTERNAL	ADDRESSED IN RMP
FOREST DISEASE/PEST INFESTATIONS	SUSPECTED, NEEDS DOCUMENTATION	INTERNAL	ADDRESSED IN RMP
WILDLAND FIRES	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
LAND DEVELOPMENT	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
UTILITY ACCESS - POWERLINES, PIPELINES	SUSPECTED, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
ROADS AND RAILROADS	YES, NEEDS DOCUMENTATION	EXTERNAL	ADDRESSED IN RMP
VISTA (ROADSIGNS, INHOLDINGS, ETC.)	YES, NEEDS DOCUMENTATION	INT & EXT	NOT ADDRESSED IN RMP
URBAN ENCROACHMENTS	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
OVERCROWDING AND VANDALISM	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
AESTHETIC DEGRADATION (OTHER)			
LOGGING	YES, NEEDS DOCUMENTATION	EXTERNAL	ADDRESSED IN RMP
MINERAL EXTRACTION	YES, NEEDS DOCUMENTATION	EXTERNAL	NOT ADDRESSED IN RMP
GAS AND OIL EXTRACTION	YES, NEEDS DOCUMENTATION	EXTERNAL	ADDRESSED IN RMP
HUNTING, POACHING OR OVERHARVESTING	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
FISHING, POACHING OR OVERHARVESTING	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
GRAZING	YES, NEEDS DOCUMENTATION	INTERNAL	ADDRESSED IN RMP
BERRY AND FRUIT PICKING	YES, NEEDS DOCUMENTATION	INTERNAL	NOT ADDRESSED IN RMP
SPECIMEN COLLECTING (ROCK, PLANTS, ANIMALS)	SUSPECTED, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
SOIL EROSION	YES, NEEDS DOCUMENTATION	EXTERNAL	ADDRESSED IN RMP
FIRE, LANDSLIDES, OTHER CATASTROPHIES	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
AMERICAN INDIAN FREEDOM OF RELIGION ACTIVITIES	SUSPECTED, NEEDS DOCUMENTATION	INT & EXT	NOT ADDRESSED IN RMP
ARCHEOLOGICAL COLLECTING	SUSPECTED, NEEDS DOCUMENTATION	INTERNAL	ADDRESSED IN RMP
PHYSICAL REMOVAL OF RESOURCES (OTHER)			
ANIMALS (BURROS, GOATS, GYPSY MOTH, ETC.)	NONE DETERMINED		
PLANTS (KUDZU, TAMARISK, ETC.)	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
UNNATURAL FIRE (HUMAN-CAUSED)	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
UNNATURAL WEATHER (CLOUD SEEDING, ETC.)	SUSPECTED, NEEDS DOCUMENTATION	EXTERNAL	NOT ADDRESSED IN RMP
MOTOR VEHICLES (CARS, BOATS, SNOWMOBILES)	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
AIRCRAFT NOISE			

NATIONAL PARK SERVICE
THREATS INFORMATION MANAGEMENT SYSTEM
DETAIL LIST OF THREATS BY PARK - SURVEY: PART 1

ORGANIZATION 1430 - GLACIER NATIONAL PARK

THREAT	THREAT LEVEL	INT/EXT	RESOURCE MGMT PLAN
INDUSTRIAL NOISE	YES, NEEDS DOCUMENTATION	EXTERNAL	NOT ADDRESSED IN RMP
VISITOR NOISE	SUSPECTED, NEEDS DOCUMENTATION	INTERNAL	NOT ADDRESSED IN RMP
SEISMIC-BLASTING SHOCKS, SONIC BOOMS, ETC.	YES, NEEDS DOCUMENTATION	EXTERNAL	ADDRESSED IN RMP
OTHER EXOTIC ENCROACHMENT			
CAMPFIRES	YES, ADEQUATELY DOCUMENTED	INTERNAL	ADDRESSED IN RMP
TRAMPLING (SOIL COMPACTION & LOSS OF VEG.)	SUSPECTED, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
EROSION (SHORTCUTTING, STREAM BANKS, ETC.)	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
WILDLIFE HARASSMENT	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
HABITAT DESTRUCTION	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
CROSS-COUNTRY SKIING	SUSPECTED, NEEDS DOCUMENTATION	INTERNAL	ADDRESSED IN RMP
OFFROAD VEHICLES	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
SUBTLE INFLUENCES (E.G., ALGAE GROWTH IN CAVES, ETC.)	SUSPECTED, NEEDS DOCUMENTATION	INTERNAL	ADDRESSED IN RMP
VISITOR PHYSICAL IMPACTS (OTHER)			
ROADS AND UTILITY CORRIDORS	YES, NEEDS DOCUMENTATION	EXTERNAL	ADDRESSED IN RMP
TRAILS	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
FACILITIES	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
RESEARCH (COLLECTING, ETC.)	SUSPECTED, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
SUPPRESSION OF NATURAL FIRES	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
MISUSE OF BIOCIDES	SUSPECTED, NEEDS DOCUMENTATION	EXTERNAL	ADDRESSED IN RMP
EMPLOYEE IGNORANCE	SUSPECTED, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
POLITICAL PRESSURES	YES, NEEDS DOCUMENTATION	INT & EXT	ADDRESSED IN RMP
PARK OPERATION (OTHER)			

NATIONAL PARK SERVICE
THREATS INFORMATION MANAGEMENT SYSTEM
SURVEY - PART 2

ORGANIZATION 1430 - GLACIER NATIONAL PARK

THREAT	RESOURCES THREATENED
INORGANIC (NO 3, PO 4, ETC.)	
SOURCE: OUTSIDE LOGGING	FRESH WATER QUALITY GENERAL SCENE (VISTAS,SCARS, ETC.)
ORGANIC (SEWAGE, ETC.)	
SOURCE: PARK SEWAGE	FRESH WATER QUALITY WETLAND PLANT COMMUNITY VISITOR/EMPLOYEE HEALTH/SAFETY
OIL SPILLS	
SOURCE: PROPOSED OIL + GAS LEASING,OIL SPILLS	FRESH WATER QUALITY WETLAND PLANT COMMUNITY GENERAL SCENE (VISTAS,SCARS, ETC.)
TOXIC CHEMICALS (METALS, ACIDS, BIOCIDES, ETC.)	
SOURCE: PROPOSED COAL DEVELOPMENT	FRESH WATER QUALITY WETLAND PLANT COMMUNITY
WATER POLLUTION (OTHER)	
SOURCE: RIGHTS	FRESH WATER SUPPLY
MINERAL SURVEYS, DEVELOPMENT, EXTRACTION, & PRODUC	
SOURCE: ADJACENT COAL MINE	FRESH WATER QUALITY
TIMBERING	
SOURCE: USFS LOGGING	GENERAL SCENE (VISTAS,SCARS, ETC.)
GRAZING OR AGRICULTURE	
SOURCE: CATTLE	SOILS TERRESTRIAL MAMMALS NATURAL SCENE (WILDERNESS, ECOSYSTEM) GENERAL SCENE (VISTAS,SCARS, ETC.)
FOREST DISEASE/PEST INFESTATIONS	
SOURCE: PINE BEETLES	FOREST PLANT COMMUNITY GENERAL SCENE (VISTAS,SCARS, ETC.)
WILDLAND FIRES	
SOURCE: WILDFIRES	NATURAL SCENE (WILDERNESS, ECOSYSTEM) GENERAL SCENE (VISTAS,SCARS, ETC.)

NATIONAL PARK SERVICE
THREATS INFORMATION MANAGEMENT SYSTEM
SURVEY - PART 2

ORGANIZATION 1430 - GLACIER NATIONAL PARK

THREAT	RESOURCES THREATENED
LAND DEVELOPMENT	
SOURCE: ADJACENT DEVELOPMENT	GENERAL SCENE (VISTAS,SCARS, ETC.)
UTILITY ACCESS - POWERLINES, PIPELINES	
SOURCE: UTILITIES CORRIDORS	GENERAL SCENE (VISTAS,SCARS, ETC.)
ROADS AND RAILROADS	
SOURCE: ROADS,RAILROADS	TERRESTRIAL MAMMALS GENERAL SCENE (VISTAS,SCARS, ETC.)
VISTA (ROADSIGNS, INHOLDINGS, ETC.)	
SOURCE: INHOLDINGS	MEADOW PLANT COMMUNITY TERRESTRIAL MAMMALS GENERAL SCENE (VISTAS,SCARS, ETC.)
URBAN ENCROACHMENTS	
SOURCE: ADJACENT DEVELOPMENT	GENERAL SCENE (VISTAS,SCARS, ETC.)
OVERCROWDING AND VANDALISM	
SOURCE: VISITORS	GENERAL SCENE (VISTAS,SCARS, ETC.) FRONTCOUNTRY FACILITIES
SMOKE	
SOURCE: SLASH BURNING,NATURAL PRESCRIBED FIRE	AIR QUALITY (CHEMICAL) VISIBILITY
CO	
SOURCE: VEHICLES	AIR QUALITY (CHEMICAL) VISIBILITY
HYDROCARBONS	
SOURCE: ALUMINUM PLANT	FOREST PLANT COMMUNITY NATURAL SCENE (WILDERNESS, ECOSYSTEM) GENERAL SCENE (VISTAS,SCARS, ETC.)
ACID RAIN	
SOURCE: PROPOSED COAL DEVELOPMENT	FRESH WATER QUALITY FOREST PLANT COMMUNITY

NATIONAL PARK SERVICE
THREATS INFORMATION MANAGEMENT SYSTEM
SURVEY - PART 2

ORGANIZATION 1430 - GLACIER NATIONAL PARK

THREAT	RESOURCES THREATENED
LOGGING	
SOURCE: CANADIAN,USFS,BLACKFEET RES.-LOGGING	TERRESTRIAL MAMMALS GENERAL SCENE (VISTAS,SCARS, ETC.)
GAS AND OIL EXTRACTION	
SOURCE: USFS + BLACKFEET RES. OIL + GAS EXTRACTION	TERRESTRIAL MAMMALS GENERAL SCENE (VISTAS,SCARS, ETC.)
HUNTING, POACHING OR OVERHARVESTING	
SOURCE: RESIDENT POACHING	TERRESTRIAL MAMMALS
GRAZING	
SOURCE: LIVESTOCK TRESPASSING	SOILS FOREST PLANT COMMUNITY TERRESTRIAL MAMMALS NATURAL SCENE (WILDERNESS, ECOSYSTEM) GENERAL SCENE (VISTAS,SCARS, ETC.)
AMERICAN INDIAN FREEDOM OF RELIGION ACTIVITIES	
SOURCE: BLACKFEET RELIGIOUS ACTIVITIES	FOREST PLANT COMMUNITY NATURAL SCENE (WILDERNESS, ECOSYSTEM) GENERAL SCENE (VISTAS,SCARS, ETC.)
CAMPFIRES	
SOURCE: REMOVE VEGETATION	FOREST PLANT COMMUNITY
TRAMPLING (SOIL COMPACTION & LOSS OF VEG.)	
SOURCE: CAMPSITE,LAKESHORE	FOREST PLANT COMMUNITY WETLAND PLANT COMMUNITY BACKCOUNTRY CAMPSITES GENERAL SCENE (VISTAS,SCARS, ETC.) FRONTCOUNTRY CAMPSITES
EROSION (SHORTCUTTING, STREAM BANKS, ETC.)	
SOURCE: SHORT-CUTTING	BACKCOUNTRY TRAILS GENERAL SCENE (VISTAS,SCARS, ETC.)
HABITAT DESTRUCTION	
SOURCE: VISITOR PRESSURE	FRESH WATER QUALITY FOREST PLANT COMMUNITY MEADOW PLANT COMMUNITY ENDANGERED/THREATENED ANIMALS

NATIONAL PARK SERVICE
THREATS INFORMATION MANAGEMENT SYSTEM
SURVEY - PART 2

ORGANIZATION 1430 - GLACIER NATIONAL PARK

THREAT	RESOURCES THREATENED
PLANTS (KUDZU, TAMARISK, ETC.)	
SOURCE: LEAFY SPURGE,KNAPWEED,RUSSIAN THISTLE	SIGNIFICANT PLANT SPECIES MEADOW PLANT COMMUNITY
UNNATURAL WEATHER (CLOUD SEEDING, ETC.)	
SOURCE: CLOUD SEEDING	SIGNIFICANT PLANT SPECIES MEADOW PLANT COMMUNITY
MOTOR VEHICLES (CARS, BOATS, SNOWMOBILES)	
SOURCE: VEHICLES,BOATS	SILENCE NATURAL SCENE (WILDERNESS, ECOSYSTEM) BACKCOUNTRY EXPERIENCE GENERAL SCENE (VISTAS,SCARS, ETC.) FRONTCOUNTRY EXPERIENCE
AIRCRAFT NOISE	
SOURCE: AIRCRAFT,HELICOPTERS,TRAINS	SILENCE NATURAL SCENE (WILDERNESS, ECOSYSTEM) BACKCOUNTRY EXPERIENCE GENERAL SCENE (VISTAS,SCARS, ETC.) FRONTCOUNTRY EXPERIENCE
VISITOR NOISE	
SOURCE: VISITORS	SILENCE NATURAL SCENE (WILDERNESS, ECOSYSTEM) BACKCOUNTRY EXPERIENCE GENERAL SCENE (VISTAS,SCARS, ETC.) FRONTCOUNTRY EXPERIENCE
ROADS AND UTILITY CORRIDORS	
SOURCE: ACCESS FOR PUBLIC	FRESH WATER QUALITY FOREST PLANT COMMUNITY MEADOW PLANT COMMUNITY NATURAL SCENE (WILDERNESS, ECOSYSTEM)
TRAILS	
SOURCE: SUPPRESSION OF NATURAL FIRES	FRESH WATER QUALITY FOREST PLANT COMMUNITY
POLITICAL PRESSURES	
SOURCE: BLACKFEET TREATY RIGHTS	

APPENDIX III

Park Rank Order by Number of
Reported Threats for all Threat Categories

Park	Number of Threats
Chattahoochee River National Recreation Area	64
Cuyahoga Valley National Recreation Area	58
Prince William Forest Park	57
Glacier National Park	56
Santa Monica Mountains National Recreation Area	53
Yosemite National Park	52
Big Thicket National Preserve	51
Yellowstone National Park	46
Indiana Dunes National Lakeshore	44
Ozark National Scenic Riverways	44
Fire Island National Seashore	43
St. Croix National Scenic Riverway	42
Badlands National Monument	41
Everglades National Park	41
Great Smoky Mountains National Park	41
Whiskeytown National Recreation Area	41
Bighorn Canyon National Recreation Area	40
Lassen Volcanic National Park	39
Sequoia National Park	39
Mount McKinley National Park	39
Bandelier National Monument	38
Big Cypress National Preserve	37
Death Valley National Monument	37
Lake Mead National Recreation Area	36
Big Bend National Park	34
Olympic National Park	34
Rock Creek Park	33
Grand Portage National Monument	33
Shenandoah National Park	32
Redwood National Park	32
Grant-Kohrs Ranch National Historic Site	31
Zion National Park	31
Buffalo National River	31
Grand Canyon National Park	31
Saguaro National Monument	31
Rocky Mountain National Park	30
Gateway National Recreation Area	30
Biscayne National Monument	30
Channel Islands National Monument	30
Organ Pipe Cactus National Monument	30
New River Gorge National River	29
Glen Canyon National Recreation Area	28
Timpanogos Cave National Monument	28
Klondike Gold Rush National Historical Park	28
Cape Hatteras National Seashore	27
Palo Alto Battlefield National Historic Site	27

Park	Number of Threats
Curecanti National Recreation Area	26
Pipe Spring National Monument	26
Richmond National Battlefield Park	26
Greenbelt Park	25
Colonial National Historical Park	25
Mammoth Cave National Park	25
El Morro National Monument	25
Padre Island National Seashore	25
George Washington Parkway	24
Fredericksburg & Spotsylvania Btfld Mem NMP	24
Gulf Islands National Seashore	24
Jean Lafitte National Historical Park	24
Wrangell-St. Elias National Monument	24
Knife River Indian Villages Natl Hist Site	23
Wolf Trap Farm Park	23
Ice Age National Scientific Reserve	23
Pictured Rocks National Lakeshore	23
White House	22
Cumberland Gap National Historical Park	22
Fort Caroline National Memorial	22
Kennesaw Mountain Natl. Battlefield Park	22
Carlsbad Caverns National Park	22
Guadalupe Mountains National Park	22
Bryce Canyon National Park	21
Canyonlands National Park	21
Edison National Historic Site	21
Allegheny Portage Railroad Natl Hist Site	21
Assateague Island National Seashore	21
Gettysburg National Military Park	21
Chickamauga & Chattanooga Natl Military Park	21
Theodore Roosevelt National Memorial Park	20
Petersburg National Battlefield	20
Fort Donelson National Military Park	20
Fort Larned National Historic Site	20
Homestead National Monument of America	20
Arches National Park	19
Capitol Reef National Park	19
Colorado National Monument	19
Fort Pulaski National Monument	19
Chesapeake & Ohio Canal Natl Historical Park	18
Catoctin Mountain Park	18
Congaree Swamp National Monument	18
Stones River National Battlefield	18
Stones River National Cemetery	18
William Howard Taft National Historic Site	18
Jefferson National Expansion Memorial NHS	18
Sleeping Bear Dunes National Lakeshore	18
Chickasaw National Recreation Area	18
Haleakala National Park	18
Manassas National Battlefield Park	17

Park	Number of Threats
Fort McHenry Natl Monument & Hist Shrine	17
Natchez Trace Parkway	17
Brices Crossroads Natl Battlefield Site	17
Tupelo National Battlefield	17
Fort Smith National Historic Site	17
Chaco Canyon National Monument	17
Puukohola Heiau National Historic Site	17
Florissant Fossil Beds National Monument	16
Minute Man National Historical Park	16
Morristown National Historical Park	16
Harpers Ferry National Historical Park	16
Virgin Islands National Park	16
Ocmulgee National Monument	16
Apostle Islands National Lakeshore	16
Arkansas Post National Memorial	16
Hawaii Volcanoes National Park	16
Crater Lake National Park	16
Wind Cave National Park	15
Castle Clinton National Monument	15
Valley Forge National Historical Park	15
Wright Brothers National Memorial	15
Cape Lookout National Seashore	15
Wilson's Creek National Battlefield	15
Oregon Caves National Monument	15
Johnstown Flood National Memorial	14
Hopewell Village National Historic Site	14
Upper Delaware National Scenic River	14
Isle Royale National Park	14
Amistad Recreation Area	14
Gran Quivira National Monument	14
Wupatki National Monument	14
Joshua Tree National Monument	14
Great Sand Dunes National Monument	13
Hovenweep National Monument	13
Mount Rushmore National Memorial	13
Delaware Water Gap Nat. Recreation Area	13
Hampton National Historic Site	13
Mound City Group National Monument	13
Walnut Canyon National Monument	13
Pu'uhonua O Honaunau National Historical Park	13
Natural Bridges National Monument	12
Yucca House National Monument	12
Cape Cod National Seashore	12
Antietam National Battlefield Site	12
Monocacy National Battlefield	12
Andersonville National Historic Site	12
Shiloh National Military Park	12
Navajo National Monument	12
Petrified Forest National Park	12
Chiricahua National Monument	12
Jewel Cave National Monument	11

Park	Number of Threats
Acadia National Park	11
Fort Raleigh National Historic Site	11
Lake Meredith Recreation Area	11
Tumacacori National Monument	11
Golden Gate National Recreation Area	11
Kenai Fjords National Monument	11
North Cascades National Park	11
Devils Tower National Monument	10
Dinosaur National Monument	10
Fossil Butte National Monument	10
Mesa Verde National Park	10
Carl Sandburg Home National Historic Site	10
Hot Springs National Park	10
Casa Grande National Monument	10
Lowell National Historical Park	9
Saint-Gaudens National Historic Site	9
George Washington Birthplace Natl Monument	9
Independence National Historical Park	9
Fort Frederica National Monument	9
Voyageurs National Park	9
San Antonio Missions National Historical Park	9
White Sands National Monument	9
Pecos National Monument	9
Gila Cliff Dwellings National Monument	9
Glacier Bay National Monument	9
Fort Bowie National Historic Site	9
Pinnacles National Monument	9
Custer Battlefield National Monument	8
Fort Laramie National Historic Site	8
General Grant National Memorial	8
Roger Williams National Memorial	8
Fort Jefferson National Monument	8
San Juan National Historic Site	8
Vicksburg National Military Park	8
Cumberland Island National Seashore	8
Effigy Mounds National Monument	8
George Rogers Clark National Historical Park	8
Capulin Mountain National Monument	8
Tonto National Monument	8
Coronado National Memorial	8
Lake Clark National Monument	8
Ebey's Landing National Historical Reserve	8
Mount Rainier National Park	8
Grand Teton National Park	7
Hamilton Grange National Memorial	7
Piscataway Park	7
Fort Matanzas National Monument	7
Kings Mountain National Military Park	7
Obed Wild and Scenic River	7
Russell Cave National Monument	7
Scotts Bluff National Monument	7

Park	Number of Threats
Pea Ridge National Military Park	7
Alibates Flint Quarries & Tex Pan Pueb Cult	7
Cabrillo National Monument	7
Katmai National Monument	7
Whitman Mission National Historic Site	7
Fort Union Trading Post Natl Historic Site	6
Theodore Roosevelt Birthplace Natl Hist Site	6
Saratoga National Historical Park	6
Guilford Courthouse National Military Park	6
Canaveral National Seashore	6
Castillo de San Marcos National Monument	6
Lincoln Boyhood National Memorial	6
Lincoln Home National Historic Site	6
Fort Davis National Historic Site	6
Canyon de Chelly National Monument	6
Hubbell Trading Post National Historic Site	6
John Muir National Historic Site	6
Saugus Iron Works National Historic Site	5
Blue Ridge Parkway	5
De Soto National Memorial	5
Fort Union National Monument	5
Lyndon B. Johnson National Historic Site	5
Bent's Old Fort National Historic Site	4
Federal Hall National Memorial	4
Salem Maritime National Historic Site	4
Fort Necessity National Battlefield	4
Big South Fork National River & Recr Area	4
Pipestone National Monument	4
Aztec Ruins National Monument	4
Coulee Dam Recreation Area	3
Cedar Breaks National Monument	3
Golden Spike National Historic Site	3
Boston National Historical Park	3
Friendship Hill National Historic Site	3
Fort Sumter National Monument	3
Abraham Lincoln Birthplace Natl Hist Site	3
Fort Scott National Historic Site	3
Ninety Six National Historic Site	3
Tuskegee Institute National Historic Site	3
Perry's Victory & Internatl Peace Memorial	3
Eugene O'Neill National Historic Site	3
Lava Beds National Monument	3
Lehman Caves National Monument	3
Big Hole National Battlefield	2
Adams National Historic Site	2
Longfellow National Historic Site	2
Buck Island Reef National Monument	2
Christiansted National Historic Site	2
Cowpens National Battlefield	2
Herbert Hoover National Historic Site	2
Point Reyes National Seashore	2
Tuzigoot National Monument	2

Park	Number of Threats
Sitka National Historical Park	2
Black Canyon of the Gunnison Natl Monument	1
John Fitzgerald Kennedy Natl Historic Site	1
Roosevelt Campobello International Park	1
Martin Van Buren National Historic Site	1
Theodore Roosevelt Inaugural Natl Hist Site	1
Lowell Land Acquisition	1
Horseshoe Bend National Military Park	1
Chamizal National Memorial	1
Montezuma Castle National Monument	1
San Juan Island National Historical Park	1

All other areas reported "no threats."

GPO 869 772