

HISTORY
NPS-General
#33

Division of Natural Resources

Annual Report - Fiscal Year 1994



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**Southwest Regional Office
National Park Service
Department of the Interior**

Table of Contents

Introduction/1

Natural Resource Management/3

Resource Management Plans/3

Professionalization and Resource Management Assessment Program/3

Cooperative Agreements/4

Biology Programs/4

Integrated Pest Management/4

Inventory and Monitoring/5

Threatened and Endangered Species/6

Wildlife Fisheries/6

Cooperative Neotropical Migratory Bird Projects/7

The National Biological Service/8

Caves and Geologic Resources/9

Geographical Information Systems/10

Small Projects/11

Air Quality/12

Water Resources/12

Oil and Gas/13

Environment/13

Appendices/14

Appendix A - Project Abstracts/14

Appendix B - Division Staffing/31

Appendix C - Park Codes/36

Introduction

In Fiscal Year 1994, the Division of Natural Resources provided park staffs with the technical support they need to protect, restore, and manage natural resources. This report outlines the natural resource programs and projects conducted by the Division during the year.

In 1994 we especially strived to help parks develop their Resource Management Plans (RMP). A major contribution in this regard was our regional training course, conducted in early 1994. The course provided hands-on training in the use of RMP to 130 participants from around the region. Bob Krumenaker (now transferred from the Division) provided the leadership for this activity.

Technical support to develop park projects continued to be a principal service of the Division. Projects were supported this year in biological sciences, earth sciences, caves, and other topics, as detailed in the individual sections below. Separate support in geographic information systems was provided by the Southwest GIS Center in Albuquerque. The Center's activities are summarized in this report.

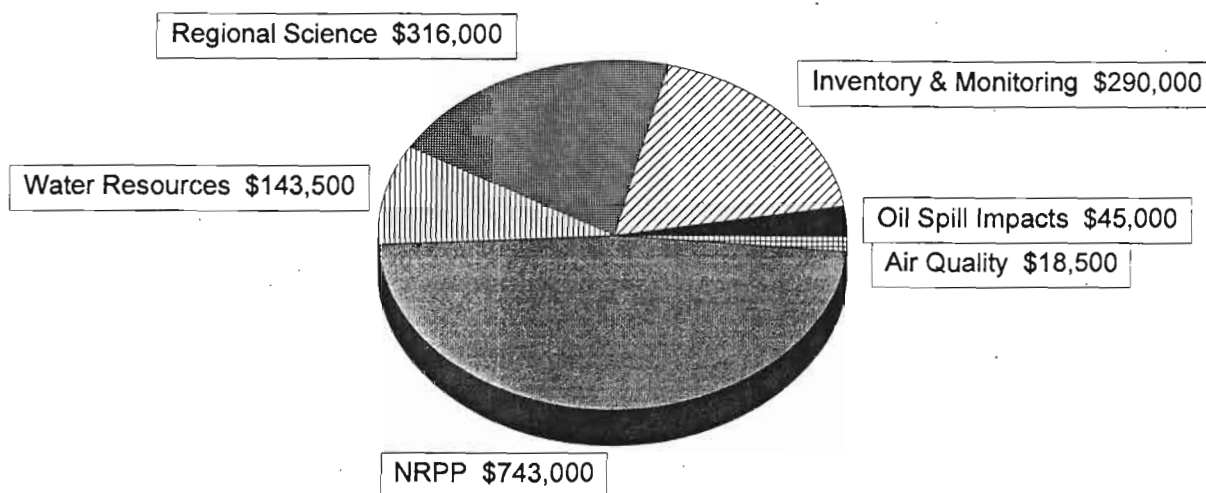


Figure 1: Sources of funds for all natural resource projects in the Southwest Region for Fiscal Year 1994. (NRPP - Natural Resources Preservation Program. All funds are Washington Office derived except the Regional Science Base.)

This was the Park Service's first full year of cooperation with the new National Biological Service (NBS). By initiating this cooperation we helped several of the parks open new activities or projects with the NBS this year. Perhaps more importantly, we established a foundation for possible future projects in the region.

This year was one of shrinking staff --presenting some real challenges; nonetheless, our program went well, as described in this report. The Division looks forward to redefining its role and mission in a way to continue valuable resource support to parks under NPS's new shape for the future.

TECHNICAL CATEGORY	DOLLARS SPENT
Air Quality	17,400
Cave and Geologic Resources	45,670
Environmental Impacts	77,760
Geographical Information Systems	16,400
Integrated Pest Management	377,300
Inventory and Monitoring	331,350
National Biological Service	2,000
Resource Management Program	365,850
Vegetation	15,000
Water Resources	156,240
Wildlife	25,400

Figure 2: Distribution of funds by project category throughout the Southwest region for Fiscal Year 1994.

Natural Resource Management

Resource Management Plans

The Southwest Region continues to be committed to developing a programmatic approach to managing natural resources. The principal mechanism toward this goal is through the Resource Management Plan (RMP). All parks in our region are on the computerized RMP database and have made significant strides in documenting all natural resource management needs and in prioritizing those needs.

A regional training course conducted by the Division in January 1994 emphasized using the RMP to formulate the natural resource long and short term program by examining baseline information, resource status and threats, and program needs. Approximately 130 participants from most parks in the region attended and received hands-on training in RMP development and use.

Professionalization and Resource Management Assessment Program

Under the professionalization program - which refers to the effort by the National Park Service (NPS) to enhance resource programs by increasing the number of specialist positions at the park - the region received three natural resource positions and funds for Bandelier, Big Bend and Hot Springs. The region is scheduled for one position to be used as a circuit rider for a group of parks east of Flagstaff, Arizona, namely: El Morro, Aztec Ruins, Hubbell Trading Post, and Canyon de Chelly. The Resource Management Assessment Program (RMAP), which is described below, has shown a significant variance between the staffing needs of the parks in the Southwest Region and current natural resource staffing.

NPS natural resource funding requests and budget initiatives have consistently suffered from the inability to objectively determine staffing needs. In an effort to resolve this, the RMAP process was initiated. The RMAP provides an objective review of park natural resources, such as the number of sensitive species, miles of river, acreage, and other indices of resources. From this information, the RMAP process estimates workload and recommends staffing and funding to manage the parks natural resources.

Based on the results from the RMAP process, the Southwest Region is requesting forty nine additional Full Time Equivalent (FTE) positions, which will be part of the Fiscal Year 97 Congressional Budget request.

Cooperative Agreements

Cooperative Agreements are the key tools through which the NPS establishes relationships with universities to accomplish specialized projects of resource management and research for the parks. The division completed sixteen cooperative and interagency agreements or modifications during the fiscal year. These agreements spanned the region from wetlands research at Jean Lafitte, to geochemical studies of the Historic Pool at El Morro, and to Oryx fencing by the State of New Mexico for White Sands.

Biology Program



Our division's emphasis in the biological sciences continues to be extension, training, information transfer (with an emphasis on networking), and technical advice. However, this year did usher in an increased emphasis on inventory and monitoring, as discussed below. We also have a long-range goal to enhance the professional development of park staffs, to enable them to achieve maximum independence.

Integrated Pest Management

Hantavirus efforts dominated the Integrated Pest Management (IPM) program in the Southwest Region this year. The hantavirus is a rodent-borne pathogen which is often fatal to humans. Individual parks such as Chickasaw, Hubbell Trading Post, and Navajo, were visited and advised on how to reduce the risk from this virus. A rodent-proofing follow-up survey was done at Bandelier. We coordinated efforts with Big Thicket, Big Bend, Buffalo River, Chickasaw, the Washington Office (WASO), and the Navy for a rodent survey sponsored by the Centers for Disease Control. This survey is designed to fill in some of the gaps in our understanding of this disease.

A funding package was prepared by the Hantavirus Incident Command Team for submittal to WASO, and a total of \$500,000 was received for structural improvements throughout the region. Some of the funds also were used to present a hantavirus/rodent management course for park personnel in Albuquerque.

Other projects and events included:

PARK	PROJECT
Southwest Region	Participated in drafting legislation on New Mexico noxious weeds.
Lyndon B. Johnson	Developed two Cooperative Agreements with Texas A & M to research invertebrate and weed pest complexes to produce Integrated Pest Management Plans for the park.
Arkansas Post	Developed a Cooperative Agreement with the University of Arkansas to study armadillos and determine ways of reducing their impact.

Inventory and Monitoring

Our region received \$290,000 to create automated bibliographic data bases for natural resources in thirty parks. A cooperative agreement was arranged with the University of Idaho for this project. If funds permit, it is our intent to also produce bibliographies for the region's other parks as well.

Other projects and events included:

PARK	PROJECT
Southwest Region	Contracted with the Nature Conservancy to review, verify, and update the NPFauna and NPFlora data bases.
Pecos	Explored possibility of a pilot soil survey.
Southwest Region	Developed a park directory for I & M contractors.
Southwest Region	Proposed that some additional Southwest Region Parks be designated as I & M parks. The Washington staff has responded favorably.
Chickasaw	Developed a Cooperative Agreement with the Oklahoma Biological Survey to conduct a vegetation survey. This includes plant collection and a vegetation map for the park.

Threatened and Endangered Species

Fiscal year 94 has ushered in a new emphasis on preventive conservation biology. This new directive focuses on the recovery of category species (those proposed for listing), so that they will not need to be listed as threatened or endangered. Following is a table of major projects which the Southwest Region has conducted.

PARK	PROJECT
Southwest Region	Submitted comments on the proposed listing as endangered and on the designation of critical habitat for the southwestern willow flycatcher.
Big Bend	Investigated research possibilities on the Bolson tortoise where it has been extirpated.
Padre Island	Worked closely with other federal and state agencies in an effort to stop All-terrain vehicle impacts to tidal wind flats by peregrine researchers on the lands surrounding Padre Island.

Wildlife and Fisheries

With the relatively new development of the National Biological Service (NBS), the Southwest Region has met extensively with NBS representatives to discuss a cooperative future mission. One of these meetings included the U. S. Fish and Wildlife Service and the U. S. Forest Service, to explore ways to work cooperatively on a neotropical migratory bird program. Other activities are listed below.

PARK	PROJECT
Southwest Region	Attended a bighorn sheep meeting sponsored by the New Mexico Department of Game and Fish to learn about reintroduction options.
Southwest Region	Served as a panelist on multiple-use environmental management at the U.S./Mexico Border Environmental Issues Conference in Albuquerque.
Big Bend	Provided information to Big Bend's staff on bear management, due to the increasing number of bear incidents in the park.

Cooperative Neotropical Migratory Bird Projects

In Fiscal Year 94 we initiated activities to promote the monitoring and inventorying of neotropical migratory birds. A small workshop was held in Albuquerque to determine funding sources, proposal development, and methodologies. Attending the workshop were specialists and representative resource management leaders from several agencies including the National Biological Service (NBS).

Four parks are currently involved in neotropical migratory bird projects. Big Thicket used its seed money to set up a workshop on the utilization of point-census monitoring protocols and on the use of software systems for data management. The workshop was designed to assist recipient NPS resource managers to implement studies that use standard monitoring protocols which are also used by other organizations such as Partners-in-Flight. Jean Lafitte has contracted a researcher from Louisiana State University to compare habitat utilization between two habitat types and to examine the appropriateness of point-count methodology. Big Bend has performed annual surveys for migratory and non-migratory birds on four walking transect routes, and has initiated a three year \$300,000 National Biological Service program to conduct research on landscape scale habitat relations for neotropical migrant landbirds. This is part of an overall Biosphere Reserve Study for the area. Padre Island has been conducting a monitoring program of neotropical migratory birds via mist netting. To date, five undocumented species at Padre Island were found.

Funding for the four parks was: Big Thicket \$1,500, Jean Lafitte \$1,500, Big Bend \$3,000, and Padre Island \$7,500.



The National Biological Service

This year the Division explored many ideas for cooperation with the National Biological Service (NBS), a new research agency within the Department of Interior. We developed cooperation with NBS's Mid-Continent Ecological Science Center (MESC) in Fort Collins, Colorado, which conducts its work in New Mexico and Arizona as well as in Rocky Mountain states further north.

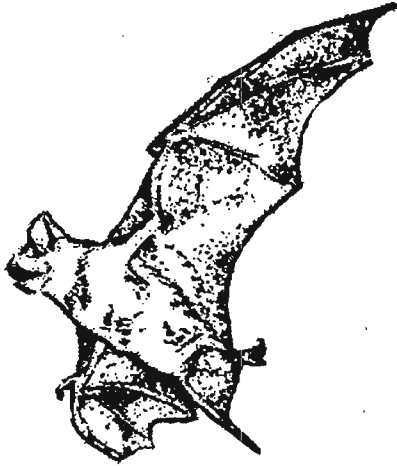
Early in 1994 the Division facilitated a small workshop in Albuquerque with the NBS, the Forest Service, the Fish and Wildlife Service, and two Southwest Region parks -- Big Bend and Padre Island -- to explore project ideas in the subject of neotropical migratory birds.

Later in the spring, the Division organized a day's workshop at NBS's Southern Science Center (SSC), in Lafayette, Louisiana to acquaint NBS researchers with Southwest Region park programs. Attending this workshop were natural resource specialists from five of our national parks, NBS personnel, and the Southwest Region's Chief and Assistant Chief of the Natural Resource Division.

These and other meetings between the Southwest Region's staff, NBS colleagues and natural resource specialists at several of our parks have stimulated ideas for new NBS projects. Proposals under discussion include neotropical migratory birds, turtle migration, water quality, wetland research, and fire ecology. Projects in all these areas are either underway or in discussion for future work.

It appears that the NBS will produce some remote sensing images for use at Big Bend. This remote sensing work will take place through funding from the Department of Interior's (DOI) effort to fund projects along the Mexican border which is in response to the North American Free Trade Agreement (NAFTA). As of early 1995, the NBS plans to support further studies of toxic substances in the Rio Grande at Big Bend National Park. A new project pertaining to bats is also to be funded by NBS and may benefit our parks.

Caves and Geologic Resources



The Southwest Region has been a driving force in bringing about public awareness and national recognition to caves and their geological and biological resources. The feasibility report to Congress on establishing a National Cave Research Institute has been completed and is ready for publishing. Two Memorandums of Understanding have been drafted and signed with both the National Speleological Society and with Bat Conservation International. In addition, an interagency agreement is being drafted to support cave management government-wide.

The conflict of interests over the possible oil and gas drilling around Carlsbad Caverns has resulted in the first ever cave protection zone outside of National Park boundaries, leading to the Lechuguilla Cave Protection Act of 1993. We have been monitoring these new developments with the Bureau of Land Management throughout Fiscal Year 94.

The division has provided information, consultation, and technical support in the management of cave resources to all National Park Service regions in the nation as well as to the state of Alabama at Cathedral Cavern. Internationally, we co-led a field trip and presented a paper on environmental tourism in caves in San Juan, Puerto Rico. We have provided consultation to Australia, the Ukraine, and the Republic of Crimea.

We have continued our support of speleological and geological research at numerous Southwest Region parks. At Carlsbad Caverns a water infiltration study is being conducted to determine the effects of parking-lot runoff and potential sewage leaks on the cave's environment. At the Amistad cave we have started to collect data on karst resources. A cooperative agreement with the College of Santa Fe is providing understanding to the geological history of the Capulin Volcano in northeastern New Mexico. (Recent studies indicate that this volcano is four times older than previously determined.) At El Malpais studies are underway on the impacts of large fires on cave flora and fauna. In addition, a service-wide Cave Management Seminar and Workshop was hosted by the region in San Antonio, Texas the week of June 13 to 17. The agenda for the seminar was developed in conjunction with the WASO office.

Geographical Information Systems

The Southwest Geographic Information Systems Center, a joint venture of the National Park Service and the University of New Mexico, continues to support field units and the Regional office in Geographical Information Systems (GIS) applications and global positioning technology.

From funds received directly from Washington, the GIS Center has provided on-going technical assistance and personal instruction in the application of the Environmental Programming and Planning Language (EPPL7) and the Geographical Resources Analysis and Support System (GRASS) to numerous parks throughout the region. In March, a formal GIS EPPL7 course was held in San Antonio, Texas.

In keeping step with current technology and in maximizing work efficiency, the center purchased several pieces of equipment which included an Accutab Digitizer. This machine allows central editing, re-digitizing, and modification of digitized files. Another significant purchase was the 1200 dots-per-inch color scanner, which scans parks and provides digital orthophotos of those parks.

A major priority of the GIS Center has been to operate the Trimble Global Positioning System (GPS) Unit Community Base Station for the differential correction of GPS data. This base station provides support to NPS field areas in the use of GPS technology and provides base files not only to the NPS but also to other federal, state, and local governments and their contractors.

A high point in the GIS Center's year was the feature article in the October 1994 issue of "GPS World" which focused on the project being done by the Center in real-time GPS mapping of cultural resources. This article was downloaded on Internet and has given the Center some international attention. Another high point is that the Southwest GIS Center became the first entity in the Government to use the Internet to move purchased files from the United States Geological Survey to the customer.

During Fiscal Year 94, the GIS Center produced digital orthophotos of Lyndon B. Johnson National Historical Site, Chickasaw National Recreation Area, Palo Alto National Battlefield, and all three units of Salinas Pueblo Missions National Monument.

A time-intensive project has been the vegetative mapping of Padre Island National Seashore. Numerous other plots of Padre Island also have been prepared for oil and gas analysis as well as fresh water pond analysis.

The GIS Center has provided Advanced Very High Resolution Radiometer data (AVHRR) for the Ecosystem initiative of the National Park Service. This data covers various themes in the Colorado Plateau and the Lower Mississippi Valley.

Small Projects

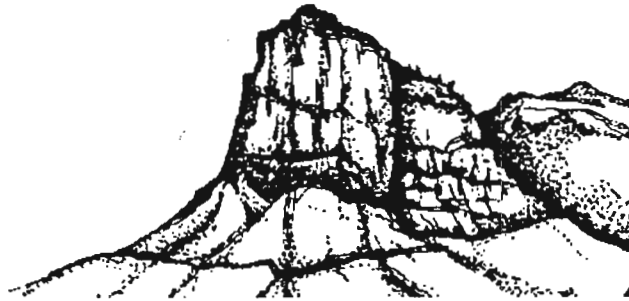
A small projects fund was set aside this year to help parks meet those small projects and equipment needs which are generally too small to be competitive through regular Resource Management Plan (RMP) channels.

Listed below is a breakdown of projects covered by this fund.

PARK NAME	PROJECT	\$ AMOUNT
Division of Information Management	Purchase Video Projector	1000
Amistad	Control Exotic Vegetation	2000
Arkansas Post	Relocate Native Trees	500
Bandelier	Study Water Quality	1000
Big Bend	Purchase Bear Traps	1800
Buffalo National River	Control Exotic Vegetation	1200
Capulin Volcano	Revegetate Portions of Park	1700
Capulin Volcano	Purchase Bear Proof Containers	3850
Chickasaw	Develop Digitized Maps	2050
El Malpais	Protect Cave Resources	550
El Morro	Purchase Computer	2550
Lake Meredith	Fence Park Boundary	2000
Padre Island	Study Effects of Vehicles	1800
Pecos	Purchase Wildlife Survey Equipment	1400
San Antonio Missions	Purchase Surveying Equipment	330
San Antonio Missions	Purchase Water Quality Monitoring Kit	100

Air Quality

Three of our parks in the Southwest region have been designated by the Air Quality Division of the National Park Service as sites for collecting visibility and fine particulate air quality data and for monitoring gaseous pollutants within the national sampling network. The parks chosen for these studies are Big Bend, Guadalupe Mountains, and Bandelier.



Water Resources

In fiscal year 94, work was started to prepare a Water Resource Management Plan at Big Bend National Park. This cooperative project is underway with the University of Arizona and aims to provide a basic framework for the park to assess its water supplies, quantify stream flows, evaluate water quality in the river, and understand other aspects of water resources in the park. This basic information, now lacking, is essential for park management and for future planning of recreational and other river and water uses.

Buffalo National River continued its progress on several water resources efforts of importance, including erosion control on the river banks, the monitoring of park rain events, and the mapping of riparian zones in the park.

The region continued its cooperative project with the National Biological Service (NBS) on wetland modelling at Jean Lafitte National Historical Park, working together with the NBS Southern Science Center in Lafayette, Louisiana on this investigation.

Other water activities this year included: water quality monitoring at Bandelier, New Mexico; work on a water corridor management plan at Big Thicket National Preserve; a water quality assessment at El Morro, New Mexico; an infiltration study at Carlsbad Caverns; and ground-water monitoring at White Sands National Monument.

Oil and Gas

Five Parks in the Southwest Region administer over 200 nonfederal oil and gas operations. The majority of these operations are administered under the National Park Service's (NPS) Nonfederal Oil and Gas Rights Regulations. These regulations enable the NPS to work with operators to ensure that oil and gas development does not harm park resources.

The highlights of the nonfederal oil and gas program include a precedent-setting lawsuit and the development of a standard operating procedure for dealing with soil and ground-water contamination resulting from nonfederal oil and gas operations. The lawsuit was filed against the Superintendent of Padre Island by the owner of a private oil and gas estate. The plaintiff claims that the NPS does not have the authority to regulate nor prohibit the development of a privately-owned oil and gas estate. This case is being defended by the Department of Justice with assistance from Padre Island's Superintendent, the nonfederal oil and gas program manager, the Regional Minerals Coordinator and a Mining and Minerals Branch technical team.

This last fiscal year was also marked by the discovery that three nonfederal oil and gas operations at Padre Island National Seashore caused soil and ground-water contamination. This too, is a precedent-setting issue for the National Park Service. The southwest regional office organized a technical team comprised of specialists from several federal government agencies and divisions to work with a number of large corporations in an attempt to complete site characterizations and remediation. Because of the precedent-setting nature of this issue, the technical team is developing a standard operating procedure for Servicewide use.

Environment

The National Park Service and the National Biological Service are conducting research on global climate change at Big Thicket National Preserve in Texas. This study involves two projects which evaluate the effects of global climate change, one which focuses on tree ring analysis and the other on vegetation at Big Thicket.

Bandelier has now completed several years of research on the long-term effects of the La Mesa fire, which occurred at Bandelier in 1977. The studies included fire history research, response of bird communities in various vegetation zones, erosion and deposition processes of six small watersheds, and nitrogen cycling processes. In Fiscal Year 94 a symposium was held in collaboration with the Los Alamos National Laboratory, the United States Forest Service, and the Southwest Fire Council to discuss the research and findings of these studies.

APPENDIX A: ABSTRACTS OF PROJECTS

TECHNICAL CATEGORY	AIR QUALITY
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PARK	Bandelier		
PROJECT TITLE	Air Quality Monitoring		
FUNDING SOURCE	Air Quality	AMOUNT	\$3290
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	Carl Newman (Chief Ranger)
PROJECT START DATE	10/01/93	EXPECTED END DATE	Ongoing
ABSTRACT	Collect visibility and fine particulate air quality data as part of NPS national monitoring network. Gaseous pollutant monitoring, also paid by NPS, is done cooperatively by the Los Alamos National Laboratory.		

PARK	Big Bend		
PROJECT TITLE	Air Quality Monitoring		
FUNDING SOURCE	Air Quality	AMOUNT	\$3290 plus \$7530 for gaseous pollutant study.
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	Betty Alex
PROJECT START DATE	10/01/93	EXPECTED END DATE	Ongoing
ABSTRACT	Collect visibility, fine particulate, and gaseous pollutant air quality data as part of NPS national air quality monitoring network.		

PARK	Guadalupe Mountains		
PROJECT TITLE	Air Quality Monitoring		
FUNDING SOURCE	Air Quality	AMOUNT	\$3290
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	Fred Armstrong
PROJECT START DATE	10/01/93	EXPECTED END DATE	Ongoing
ABSTRACT	Collect visibility, fine particulate, and gaseous pollutant air quality data as part of NPS national air quality monitoring network.		

TECHNICAL CATEGORY	CAVE AND GEOLOGIC RESOURCES
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PARK	Amistad		
PROJECT TITLE	Caves: Descriptions and Inventories		
FUNDING SOURCE	Regional Science	AMOUNT	\$120
PROJECT MANAGER	Ron Kerbo	PARK CONTACT	Rod Danner
PROJECT START DATE	Summer 1994	EXPECTED END DATE	Summer 1995
ABSTRACT	Data collection of karst resources of the recreation area. This data collection involves locating and marking cave entrances and a narrative description of the caves, or springs and of their contents. Recommendations for detailed inventories have been made.		

PARK	Capulin Volcano		
PROJECT TITLE	Volcanic strata study		
FUNDING SOURCE	Regional Science	AMOUNT	All money obligated in FY92
PROJECT MANAGER	Ron Kerbo	PARK CONTACT	Geoffrey Smith
PROJECT START DATE	Fiscal Year 92	EXPECTED END DATE	September 1994
ABSTRACT	Study volcanic strata of Capulin Volcano Monument and surrounding areas. This project is under a Cooperative Agreement with the College of Santa Fe.		

PARK	Carlsbad Caverns		
PROJECT TITLE	Determine Water Infiltration Rates		
FUNDING SOURCE	Water Resources	AMOUNT	\$24438 to Cooperative Agreement \$562 to Park
PROJECT MANAGER	Ron Kerbo	PARK CONTACT	Dale Pate
PROJECT START DATE	Summer 1994	EXPECTED END DATE	Summer 1996
ABSTRACT	The area above Carlsbad Cavern has been significantly altered, and the cave is overlain with buildings, parking lots, sewer lines and water lines all of which affect the infiltration of water into the cave. This project studies surface water infiltration routes into the cave, determines quality of the water, and will suggest actions to mitigate possible threats of possible harmful effluent into the cave.		

TECHNICAL CATEGORY	CAVE AND GEOLOGIC RESOURCES
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PARK	El Malpais		
PROJECT TITLE	Fire Effects on Cave Ecology		
FUNDING SOURCE	Regional Science	AMOUNT	\$550
PROJECT MANAGER	Ron Kerbo	PARK CONTACT	Ken Mabery
PROJECT START DATE	August 1993	EXPECTED END DATE	July 1995
ABSTRACT	Analyze impact on cave flora and fauna from a fire of known duration and intensity.		

PARK	Southwest Regional Office		
PROJECT TITLE	Regional Cave Workshop		
FUNDING SOURCE	Regional Science	AMOUNT	\$20,000
PROJECT MANAGER	Ron Kerbo	PARK CONTACT	N/A
PROJECT START DATE	June 1994	EXPECTED END DATE	June 1994
ABSTRACT	Conduct a national cave training seminar and workshop to build a tool kit of information and network of people to effectively and professionally deal with cave and karst resource management concerns. Thirty people attended this seminar representing seven regions.		

TECHNICAL CATEGORY	ENVIRONMENTAL IMPACTS
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PARK	Bandelier		
PROJECT TITLE	LaMesa Fire Symposium		
FUNDING SOURCE	Regional Science	AMOUNT	\$5000
PROJECT MANAGER	Sam Kunkle	PARK CONTACT	Craig Allen
PROJECT START DATE	March 94	EXPECTED END DATE	May 94
ABSTRACT	A three day symposium on the research and findings of the two year study on the long-term effects of the La Mesa fire which occurred in Bandelier some 15 years ago. This symposium brought together the various investigative scientists and other interested participants to hear presentations on the research and to discuss the ecological implications of these findings. (In 1993, Regional Science funded \$35,500 for this research project.)		

PARK	Big Thicket		
PROJECT TITLE	Oil and Gas Impacts		
FUNDING SOURCE	NRPP	AMOUNT	\$35,140
PROJECT MANAGER	Linda Dansby (REC)	PARK CONTACT	Paul Whitefield/Eleanor McKee
PROJECT START DATE	Fiscal Year 94	EXPECTED END DATE	Fiscal Year 94
ABSTRACT	Fund GS-9 position to administer park oil and gas program. Assist operators develop Plans of Operations, prepare EA's and other compliance documents, and conduct routine monitoring and inspection of operations sites.		

PARK	Southwest Region		
PROJECT TITLE	Oil and Gas Impacts		
FUNDING SOURCE	NRPP	AMOUNT	\$37,620
PROJECT MANAGER	Linda Dansby (REC)	PARK CONTACT	Linda Dansby
PROJECT START DATE	Fiscal Year 94	EXPECTED END DATE	Fiscal Year 94
ABSTRACT	Funding for travel and printing costs to develop an Oil and Gas Management Plan/Environmental Analysis for Padre Island; and for travel and support costs associated with oversight to 3 oil and gas companies for site characterization and remediation of contaminants at PAIS. This funding was also used for other oil and gas data collection and program support costs.		

TECHNICAL CATEGORY	GEOGRAPHICAL INFORMATION SYSTEMS
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PARK	Southwest GIS Center		
PROJECT TITLE	GIS Operations		
FUNDING SOURCE	WASO	AMOUNT	(GIS Center funded directly by WASO \$40,000)
PROJECT MANAGER	Milford Fletcher	PARK CONTACT	N/A
PROJECT START DATE	Fiscal Year 94	EXPECTED END DATE	Fiscal Year 94
ABSTRACT	Purchase computer equipment and sponsor EPPL7 classes.		

PARK	Southwest GIS Center		
PROJECT TITLE	Student Employee		
FUNDING SOURCE	Regional Science	AMOUNT	\$7800
PROJECT MANAGER	Milford Fletcher	PARK CONTACT	N/A
PROJECT START DATE	Fiscal Year 94	EXPECTED END DATE	Fiscal Year 94
ABSTRACT	To fund a cooperative education student from the University of New Mexico.		

PARK	Salinas Pueblo Missions		
PROJECT TITLE	Purchase RM/GIS Computer Equipment		
FUNDING SOURCE	Regional Science	AMOUNT	\$3600
PROJECT MANAGER	Bob Krumenaker, Milford Fletcher	PARK CONTACT	Loretta Mosely/Glenn Fulfer
PROJECT START DATE	Fiscal Year 94	EXPECTED END DATE	Fiscal Year 94
ABSTRACT	Purchase RM/GIS Computer Equipment.		

TECHNICAL CATEGORY	GEOGRAPHICAL INFORMATION SYSTEMS
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PARK	San Antonio Missions		
PROJECT TITLE	Purchase RM/GIS Computer Equipment		
FUNDING SOURCE	Regional Science	AMOUNT	\$5000
PROJECT MANAGER	Bob Krumenaker, Milford Fletcher	PARK CONTACT	Alan Cox
PROJECT START DATE	Fiscal Year 94	EXPECTED END DATE	Fiscal Year 94
ABSTRACT	Purchase RM/GIS Computer Equipment.		

TECHNICAL CATEGORY	GLOBAL CHANGE
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PARK	Big Thicket		
PROJECT TITLE	Tree Ring Study		
FUNDING SOURCE	Global Climate/NBS	AMOUNT	(NBS funding - transferred directly to park. \$40,000)
PROJECT MANAGER	Sam Kunkle	PARK CONTACT	Rick Strahan
PROJECT START DATE	Fiscal Year 93	EXPECTED END DATE	Fiscal Year 97
ABSTRACT	Evaluate effects of global change via tree ring analysis. This project is under a Cooperative Agreement with Columbia University.		

PARK	Big Thicket		
PROJECT TITLE	Gulf Coast Study		
FUNDING SOURCE	Global Climate/NBS	AMOUNT	(NBS funding - transferred directly to park. \$102,000)
PROJECT MANAGER	Sam Kunkle	PARK CONTACT	Rick Strahan
PROJECT START DATE	Fiscal Year 93	EXPECTED END DATE	Fiscal Year 97
ABSTRACT	Evaluate the effects of global climate change on the vegetation of BITH, with a Cooperative Agreement with Rice University.		

TECHNICAL CATEGORY	GLOBAL CHANGE
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PARK	Big Thicket		
PROJECT TITLE	Administrative Costs		
FUNDING SOURCE	Global Climate/NBS	AMOUNT	(NBS funding - transferred directly to park. \$10,000)
PROJECT MANAGER	Sam Kunkle	PARK CONTACT	Rick Strahan
PROJECT START DATE	Fiscal Year 93	EXPECTED END DATE	Fiscal Year 97
ABSTRACT	This is funding to cover the salary, travel, and other miscellaneous administrative costs to the two global change projects.		

TECHNICAL CATEGORY	INTEGRATED PEST MANAGEMENT
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PARK	Arkansas Post		
PROJECT TITLE	Armadillo Management Plan		
FUNDING SOURCE	Regional Science	AMOUNT	\$8300
PROJECT MANAGER	Jerry McCrea	PARK CONTACT	Eddy Wells
PROJECT START DATE	Fall 1994	EXPECTED END DATE	Fall 1995
ABSTRACT	Establish a cooperative agreement with the University of Arkansas for a biologic study and integrated pest management plan for armadillos.		

PARK	Buffalo National River		
PROJECT TITLE	Survey Biota Prior to Gypsy Moth Spraying		
FUNDING SOURCE	Regional Science	AMOUNT	\$10,000
PROJECT MANAGER	Jerry McCrea	PARK CONTACT	George Oviatt
PROJECT START DATE	Fiscal Year 94	EXPECTED END DATE	Fiscal Year 95
ABSTRACT	Monitor biota (esp. invertebrates) in the north end of the park, in the event that outside forces call for gypsy moth management actions (beyond monitoring). This enables management to predict impacts if spraying was proposed for park lands.		

TECHNICAL CATEGORY	INTEGRATED PEST MANAGEMENT
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PARK	White Sands		
PROJECT TITLE	Oryx Fencing		
FUNDING SOURCE	NRPP	AMOUNT	\$359,000
PROJECT MANAGER	Bob Howard	PARK CONTACT	Bill Fuchs
PROJECT START DATE	Fiscal Year 92	EXPECTED END DATE	Fiscal Year 95
ABSTRACT	Fence boundary to keep out exotic Oryx.		

TECHNICAL CATEGORY	INVENTORY AND MONITORING
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PARK	El Malpais		
PROJECT TITLE	Curate Natural History Specimens		
FUNDING SOURCE	NRPP	AMOUNT	\$4000
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	Ken Mabery
PROJECT START DATE	Fall 1993	EXPECTED END DATE	Winter 1994
ABSTRACT	Curate specimens gathered in previous NRPP-funded Resource Base Inventory studies.		

PARK	Pecos		
PROJECT TITLE	Floristic Study		
FUNDING SOURCE	Regional Science	AMOUNT	(\$7000 obligated in FY93. None obligated in 94)
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	Gary Hartley
PROJECT START DATE	Fiscal Year 93	EXPECTED END DATE	January 1995
ABSTRACT	Vegetation mapping and inventory project for newly acquired park lands.		

TECHNICAL CATEGORY	INVENTORY AND MONITORING
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PARK	Petroglyphs		
PROJECT TITLE	Resource Base Inventory		
FUNDING SOURCE	Regional Base	AMOUNT	\$33,910
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	Reed McCluskey
PROJECT START DATE	September 1994	EXPECTED END DATE	December 1995
ABSTRACT	Inventory of all biotic resources at the park through a Cooperative Agreement with the University of New Mexico.		

PARK	Southwest Region		
PROJECT TITLE	Park Bibliography Projects		
FUNDING SOURCE	Servicewide I & M Funds	AMOUNT	\$272,600
PROJECT MANAGER	Jerry McCrea	PARK CONTACT	Park RMS
PROJECT START DATE	June 1994	EXPECTED END DATE	June 1996
ABSTRACT	A Cooperative Agreement has been signed with the University of Idaho's National Biological Survey Center to develop an automated bibliographical data-base using ProCite software for the 30 parks in the Southwest region which are designated as Inventory and Monitoring parks. The bibliography will cover the known natural resource research that has been accomplished in and around each park.		

PARK	Lyndon B. Johnson		
PROJECT TITLE	Entomological Survey and IMP Plan		
FUNDING SOURCE	NRPP - Small Parks	AMOUNT	\$20,840
PROJECT MANAGER	Jerry McCrea	PARK CONTACT	Jack Bixby,
PROJECT START DATE	Fall 1994	EXPECTED END DATE	Fall 1995 or Spring 1996
ABSTRACT	Study biological pests and prepare an Integrated Pest Management plan for the park which covers all the known agricultural, forestry, and structural pests. This includes invertebrate pest species.		

TECHNICAL CATEGORY	NATIONAL BIOLOGICAL SERVICE
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PARK	Southwest Region		
PROJECT TITLE	National Biological Service Meeting		
FUNDING SOURCE	Regional Science	AMOUNT	\$2000.00
PROJECT MANAGER	Sam Kunkle	PARK CONTACT	N/A
ABSTRACT	Meeting with NBS personnel, natural resources specialists from five parks, and Southwest regional office specialists, to acquaint NBS researchers with the Southwest Region's park programs and to discuss potential research projects to be done in cooperation with the NBS.		

TECHNICAL CATEGORY	RESOURCE MANAGEMENT PROGRAM
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PARK	Buffalo National River		
PROJECT TITLE	Streambank Restoration		
FUNDING SOURCE	NRPP	AMOUNT	\$169,500
PROJECT MANAGER	Bob Howard	PARK CONTACT	David Mott
PROJECT START DATE	Spring 1994	EXPECTED END DATE	Fiscal Year 96
ABSTRACT	Stabilize eroding banks of the Buffalo River by establishing cedar tree revetments and other "natural" protective structures at key sites. Well-developed protocols exist from OZAR and have been tested in small projects previously at BUFF.		

PARK	Chaco Culture		
PROJECT TITLE	Ethnography		
FUNDING SOURCE	Regional Science	AMOUNT	(\$8000 - obligated in FY93. No obligations made in FY94)
PROJECT MANAGER	Ed Natay	PARK CONTACT	Hershell Schultz
PROJECT START DATE	Summer 1993	EXPECTED END DATE	June 1994
ABSTRACT	Ethnobotanical study of present-day native interests in CHCU plants needed for religious purposes. This project is designed to help park managers understand and manage their obligations under the American Indian Religious Freedom Act.		

TECHNICAL CATEGORY	RESOURCE MANAGEMENT PROGRAM
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PARK	Jean Lafitte		
PROJECT TITLE	Wetlands Model		
FUNDING SOURCE	NRPP-NBS	AMOUNT	\$100,000
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	David Muth
PROJECT START DATE	Fiscal Year 93	EXPECTED END DATE	Fiscal Year 95
ABSTRACT	Develop major ecological model of Barataria wetlands system to help NPS decide on management strategies.		

PARK	Southwest Region		
PROJECT TITLE	Park Science		
FUNDING SOURCE	Regional Science	AMOUNT	\$5300
PROJECT MANAGER	Nancy MacCurdy	PARK CONTACT	N/A
PROJECT START DATE	Fiscal Year 94	EXPECTED END DATE	Fiscal Year 94
ABSTRACT	Money transferred to PNRO in support of Park Science publication.		

PARK	Southwest Region		
PROJECT TITLE	Details and Circuit Riders		
FUNDING SOURCE	Regional Science	AMOUNT	\$10,070
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	N/A
PROJECT START DATE	Fiscal Year 94	EXPECTED END DATE	Fiscal Year 94
ABSTRACT	Procure detailers to help with RNR program.		

TECHNICAL CATEGORY	RESOURCE MANAGEMENT PROGRAM
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PARK	Southwest Region		
PROJECT TITLE	Co-op Students, and Permanent Staff Shortfalls		
FUNDING SOURCE	Regional Science	AMOUNT	Coop/Temp. Staff \$15,370 Perm. Staff \$44,710
PROJECT MANAGER	Bob Krumenaker and Cindy Phares	PARK CONTACT	N/A
PROJECT START DATE	Fiscal Year 94	EXPECTED END DATE	Fiscal Year 94
ABSTRACT	Supplemental staffing and salaries.		

PARK	Southwest Region		
PROJECT TITLE	Small Park Natural Resource Projects		
FUNDING SOURCE	Regional Science	AMOUNT	\$20,900
PROJECT MANAGER	Sam Kunkle, Bob Krumenaker	PARK CONTACT	varies
PROJECT START DATE	Fiscal Year 94	EXPECTED END DATE	Fiscal Year 94
ABSTRACT	Small projects fund. (Note page 11 for detailed listing of projects.)		

TECHNICAL CATEGORY	VEGETATION
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PARK	Bandelier		
PROJECT TITLE	Revegetation Trials with DSC		
FUNDING SOURCE	Regional Science	AMOUNT	\$5000
PROJECT MANAGER	Sam Kunkle	PARK CONTACT	Craig Allen
PROJECT START DATE	Fiscal Year 92	EXPECTED END DATE	Fiscal Year 94
ABSTRACT	A cooperative study with the Denver Service Center. This study tests native vegetation at Bandelier to determine those species that work best for revegetation of bare areas and for erosion control.		

TECHNICAL CATEGORY	VEGETATION
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PARK	Big Thicket		
PROJECT TITLE	Curate Plant Collection and Repatriate Trailing Phlox		
FUNDING SOURCE	Regional Science	AMOUNT	\$10,000
PROJECT MANAGER	Jerry McCrea	PARK CONTACT	Paul Whitefield
PROJECT START DATE	Summer 1994	EXPECTED END DATE	Summer/Fall 1995
ABSTRACT	Curate existing collection of plants and repatriate a plant that is currently found on nearby Nature Conservancy lands.		

PARK	Salinas Pueblo Missions		
PROJECT TITLE	Survey Vegetation		
FUNDING SOURCE	NRPP - Small Park	AMOUNT	(\$1000 obligated in FY93. No money obligated in FY94)
PROJECT MANAGER	Ron Kerbo	PARK CONTACT	Glenn Fulfer
PROJECT START DATE	June 1992	EXPECTED END DATE	September 1994
ABSTRACT	In conjunction with San Juan College, survey vegetation of SAPU. The survey concentrates on inventories of the plant species which occur in the Abo and Quarai units of the Monument.		

TECHNICAL CATEGORY	WATER RESOURCES
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PARK	Bandelier		
PROJECT TITLE	Operate NAWQA Station		
FUNDING SOURCE	Water Resources	AMOUNT	\$5000
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	Brian Jacobs
PROJECT START DATE	Fiscal Year 93	EXPECTED END DATE	Fiscal Year 95
ABSTRACT	Interagency Agreement with the U.S. Geological Survey to establish and monitor a water quality assessment site on Frijoles Creek as part of the Rio Grande Basin National Water Quality Assessment Program (NAWQA) effort.		

PARK	Big Bend		
PROJECT TITLE	Water Resources Management Plan		
FUNDING SOURCE	Water Resources	AMOUNT	(\$75,930) No money obligated in FY94. All money obligated in FY93.
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	Phil Koepp
PROJECT START DATE	Fiscal Year 93	EXPECTED END DATE	September 1995
ABSTRACT	To prepare a WRMP which includes research, field investigations, analysis, and strategies for assessing water supplies, establishing a flow database, evaluating water quality and contaminants, identifying public water supplies, assessing floodplain management and monitoring seeps and springs. This project is being conducted in cooperation with the University of Arizona.		

TECHNICAL CATEGORY	WATER RESOURCES
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PARK	Big Thicket		
PROJECT TITLE	Water Corridor Management Plan		
FUNDING SOURCE	NRPP	AMOUNT	\$80,000
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	Rick Strahan
PROJECT START DATE	September 1992	EXPECTED END DATE	September 1995
ABSTRACT	Conduct interdisciplinary investigations into ecological, physical, social, and political concerns relating to managing water corridor units of BITH. Prepare a water corridor management plan. Cooperative project with Rice University.		

PARK	Buffalo National River		
PROJECT TITLE	Inventory/Map Riparian Zone		
FUNDING SOURCE	Water Resources	AMOUNT	\$17,000
PROJECT MANAGER	Bob Howard	PARK CONTACT	David Mott
PROJECT START DATE	Summer 1994	EXPECTED END DATE	Fiscal Year 1995
ABSTRACT	Map wetlands and riparian zone of Buffalo National River		

PARK	Buffalo National River		
PROJECT TITLE	Monitor Rain Events		
FUNDING SOURCE	Water Resources	AMOUNT	\$12,500
PROJECT MANAGER	Bob Howard	PARK CONTACT	David Mott
PROJECT START DATE	Spring/Summer 1994	EXPECTED END DATE	Fiscal Year 1995
ABSTRACT	Develop water quality monitoring system to determine short-term impacts of storm events. This is the first of a two year project.		

TECHNICAL CATEGORY	WATER RESOURCES
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PARK	Buffalo National River		
PROJECT TITLE	Water Quality Monitoring		
FUNDING SOURCE	Water Resources	AMOUNT	\$27,000
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	David Mott
PROJECT START DATE	10/01/93	EXPECTED END DATE	Fiscal Year 94
ABSTRACT	Assist with salary for park's hydrologist, who has developed an extensive water quality monitoring program for the park.		

PARK	El Morro		
PROJECT TITLE	Snapshot Water Quality of Historic Pool		
FUNDING SOURCE	Water Resources	AMOUNT	\$14,740
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	Michelle Pelletier
PROJECT START DATE	April 1994	EXPECTED END DATE	April 1996
ABSTRACT	Agreement with the College of Santa Fe to do "snapshot" assessment of water quality and associated biota of historic pool. In addition to agreement, RNR has split the cost of an SCA with RCC to do resource management in the park, establishing the "substantial involvement" required by the Cooperative Agreement.		

PARK	White Sands		
PROJECT TITLE	Groundwater Monitoring		
FUNDING SOURCE	Water Resources	AMOUNT	\$10,000
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	Bill Fuchs
PROJECT START DATE	Fiscal Year 93	EXPECTED END DATE	Fiscal Year 96
ABSTRACT	Monitor wells and assess ground-water quality, looking at suspected contamination from adjacent military reservations.		

TECHNICAL CATEGORY	WILDLIFE
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PARK	Pecos		
PROJECT TITLE	Small Mammal Inventory		
FUNDING SOURCE	DSC	AMOUNT	(Denver Service Center funding - transferred directly to park. \$4000)
PROJECT MANAGER	Bob Krumenaker	PARK CONTACT	Bobbi Simpson
PROJECT START DATE	Spring 1994	EXPECTED END DATE	Fiscal Year 95
ABSTRACT	Survey mammals at proposed development areas. This project is conducted in cooperation with the University of New Mexico.		

PARK	Southwest Region		
PROJECT TITLE	Neotropical Migratory Bird Initiative		
FUNDING SOURCE	Regional Science	AMOUNT	\$13,500
PROJECT MANAGER	Sam Kunkle / Jerry McCrea	PARK CONTACT	BIBE: Phil Koepp PAIS: John Miller / Sean Baker
PROJECT START DATE	March 1994	EXPECTED END DATE	September 1994
ABSTRACT	Assist PAIS, BIBE, and SWRO to develop 3 proposals on neotropical migratory birds, to identify possible sources of funding and to submit these proposals. Fund meetings to brain-storm the proposals, yield background information useful for proposal development, and provide incentive for the parks to develop the larger proposals.		

PARK	Wupatki		
PROJECT TITLE	Antelope Study		
FUNDING SOURCE	Regional Science	AMOUNT	\$12,000
PROJECT MANAGER	Sam Kunkle	PARK CONTACT	Charles van Riper
PROJECT START DATE	Fiscal Year 92	EXPECTED END DATE	Fiscal Year 94
ABSTRACT	Study the mortality of pronghorn fawns in relation to bedding habitat selection.		

APPENDIX B

Funding Criteria for Regional Science Base and Other Natural Resources Funds

A. Purpose of the Regional Science Base

The regional science base has averaged \$200-300,000 per year over the last several years. Rather than assume all parks have equal needs, we see the principal purpose of the regional science base is to:

- Provide funds for projects and technical support efforts that have multi-park or regionwide benefits
- Stimulate pilot or demonstration projects, new and innovative ideas, partnerships, and other ventures that benefit park or regional resource management (especially if there is commitment for long-term support, if required, from other sources)
- Address unforeseen environmental or resource management crises that require immediate attention
- Provide technical support and expertise to parks and the Directorate beyond the capability of individual parks.
- Address resource management issues that can be solved or mitigated in less than three years.

We strongly support long-term monitoring and continuing resource management projects and will eagerly work with park managers on strategies to secure park base funds to support them. With limited funding, however, these generally cannot be funded through the regional science base.

B. Connection to Resource Management Plans

The Washington Office has recently announced that, beginning in FY 1994, no Servicewide natural resource funds will be distributed to a park unless it has an approved Resource Management Plan (RMP). We will work with parks to get quality RMPs completed and approved as soon as possible. We require that all projects receiving regional science funds be submitted in RMP project statement format and be in the computerized RMP database.

We shall apply these same criteria to all Servicewide and non-NPS funding sources requiring regional coordination, priorities, etc., in addition to the specific criteria established for a particular funding source (e.g. Natural Resource Preservation Program, Water Resources, Geographic Information Systems, etc.)

C. Guidelines Used to Select Natural Resource Projects for Funding

1. Screening Factors. In order to be considered for support, a proposed park project must:

- Contribute to sound ecosystem management, conservation biology principles, prevention or restoration of degraded resources, etc.
- Be consistent with law, regulation, NPS policy, park management documents, etc.
- Be described in an RMP project statement (in RMP database transmitted to regional office) which clearly describes project objectives, methods, etc.

2. The following six criteria weigh especially heavily in the selection of projects for funding:

- There is a commitment from park or regional management to use project results to improve management decisions and/or park operations;
- The timing is critical (resource damage, political sensitivity, or other reasons);
- The project is needed to support planning effort(s) underway or imminent (e.g. new areas, General Management Plans, Development Concept Plans, etc.);
- The RMP has been approved;
- The project is listed as a high priority in the park RMP;
- Project completion is feasible within budget and via method proposed.

Few projects would meet all of these criteria, but to compete successfully for funding, a project must meet most.

3. Other important criteria also taken into account in selecting fundable projects:

- Pilot, new, demonstration, or innovative project;
- Budget reasonable and well thought-out;
- Issue can be solved or mitigated within project timeframe (generally ≤ 3 years);
- Provides training or other experiences that will have long-term benefits;

- Commitment of in-kind or other support from park or partners;
- Park and/or project is part of a special emphasis effort or focus by SWRO or WASO.
- Commitment of long-term support from park or other sources (if needed) after pilot funding concludes
- Workload on regional office staff is commensurate with the potential value of the project's products and benefits

Again, no project would meet all of these criteria, but a project's chance of funding is enhanced by clear evidence that these factors have been considered in project design.

APPENDIX C

DIVISION OF NATURAL RESOURCES as of January 1994

DOUGLAS BRADLEY
Computer Specialist, SW GIS Center
(505)766-8400

Responsible for UNIX/GRASS portion of the GIS program and system manager for regional SUN workstations, SW GIS Center computer systems, and hardware consultant for Regional GIS programs.

TERESA A. ENGLES
*Cooperative Agreement
Student, (part-time)
University of New Mexico*
(505) 988-6736

Responsible for biological data analysis, preparation of materials for technical reports, and biological technician functions.

MILFORD R. FLETCHER
Unit Leader, SW GIS Center
(505)766-8400

Responsible for regional Geographic Information Systems program and operation of SW GIS Center.

DAVID C. FREDERICK
Computer Clerk, SW GIS Center
(505)766-8400

Responsible for EPPL7 program, and assisting with GIS.

LORAYN M. GONZALES
Office Automation Clerk, SW GIS Center
(505)766-8400

Responsible for general office management.

ROBERT J. HOWARD
Resource Management Specialist
(505)988-6867

Responsible for development and coordination of cooperative agreements and resource management plans.

RONAL C. KERBO
Cave Management Specialist
(505)988-6855

Responsible for national cave management coordination; advises NPS, other agencies and the private sector on cave management related issues.

SAMUEL H. KUNKLE
Chief, Natural Resources Division
(505)988-6862

Responsible for overall management of the natural resources program; global climate change programs; liaison with NBS.

CRYSTAL LUCERO
Secretary (part-time)
(505)988-6870

Responsible for general office management, correspondence, travel, and other secretarial functions.

GERALD D. McCREA
Regional Biologist
(505)988-6829

Responsible for Integrated Pest Management Program; Endangered Species monitoring and compliance; wildlife and vegetation inventory and monitoring programs; and review of planning documents.

CINDY PHARES
Budget Assistant
(505)988-6714

Responsible for cooperative agreements, division's administrative workload, including budget administration and tracking, procurement, contract administration, and personnel.

APPENDIX D

PARK CODE	PARK NAME
AMIS	Amistad National Recreation Area
ARPO	Arkansas Post National Memorial
AZRU	Aztec Ruins National Monument
BAND	Bandelier National Monument
BIBE	Big Bend National Park
BITH	Big Thicket National Preserve
BUFF	Buffalo National River
CACH	Canyon De Chelly National Monument
CAVO	Capulin Volcano National Monument
CACA	Carlsbad Caverns National Park
CHAM	Chaco Culture National Historical Park
CHCU	Chamizal National Monument
CHIC	Chickasaw National Recreation Area
ELMA	El Malpais National Monument
ELMO	El Morro National Monument
FODA	Fort Davis National Historic Site
FOSM	Fort Smith National Historic Site
FOUN	Fort Union National Monument
GICL	Gila Cliff Dwelling National Monument
GUMO	Guadalupe Mountains National Park
HOSP	Hot Springs National Park
HUTR	Hubbell Trading Post National Historic Site
JELA	Jean Lafitte National Historical Park and Preserve
LAMR/ALIB	Lake Meredith National Recreation Area. Alibates Flint Quarries National Monument.
LYJO	Lyndon B. Johnson National Historical Park

PARK CODE	PARK NAME
NAVA	Navajo National Monument
PAAL	Palo Alto Battlefield National Historic Site
PAIS	Padre Island National Seashore
PERI	Pea Ridge National Military Park
PECO	Pecos National Historical Park
PETR	Petroglyph National Monument
SAAN	San Antonio Missions National Historical Park
SAPU	Salinas Pueblo Missions National Monument
WHSA	White Sands National Monument
WUPA/SUCR/WACA	Wupatki National Monument, Sunset Crater Volcano National Monument, Walnut Canyon National Monument, -part of Flagstaff Unit-FLAG