
NATURAL RESOURCES ACTIVITIES 1992

This is the second annual report on natural resources developments. Its focus is national level activities that directly affect the management of natural resources in the parks. It is targeted especially to park managers.

Strategic Planning Efforts

Servicewide, efforts are underway to implement the Stewardship Goal of the Vail Agenda, stemming from the 75th Anniversary Symposium held in Vail, Colorado in late 1991. The Natural Resources 5-Year Strategic Plan is the vehicle for implementing a large part of this agenda. The plan was approved by the Director in April 1992. Implementation measures were also developed and initiated in 1992. Related tasks involved 9 teams, utilizing 71 individuals from parks and regional and Washington offices. A list of the teams and their members is attached to this report.

Cape Cod Meeting

One of the Service's most exciting and significant meetings in recent memory occurred at Cape Cod on March 10-12, 1992. Approximately 75 cultural and natural resources employees gathered to develop ways to meet a challenge from the Vail Symposium "...to promote closer ties between cultural and natural resource professionals." Five working groups creatively discussed the issues, problems, goals, and objectives of this effort and developed options to meet the challenge.

Some of the Cape Cod recommendations focused on personnel practices, suggesting ways the National Park Service could recruit the best resource professionals available and then develop them to their full potential. Other recommendations were made for increasing resource managers' involvement in park planning and decision making. In continuation of a theme put forth by several groups in recent years, the joint workshop recommended that the Service put a high priority on gathering baseline resource data in all parks to serve management, resource management, protection, planning, and interpretation. In a closely allied area, the workshop recommended that the Service develop a mandatory set of minimum standards for data management practices. This is a serious issue because the failure to address data management responsibilities has recently been cited as an internal control problem in other agencies.

Improving Research

NOTE: These activities occurred before the proposed reorganization of National Park Service research activities into a new National Biological Survey (NBS). Many of the reported activities should assist NBS in meeting NPS needs in the future.

NRC Report The National Research Council (NRC) of the National Academy of Sciences released a report entitled "Science and the National Parks" in August 1992. This report contained 10 major recommendations for improving the NPS research program. A group of 12 NPS regional and field managers met in Washington, D.C. on September 24-25 to identify action options for the Director on each of the 10 primary recommendations in the NRC report. On October 7, 1992, the Director

signed a memorandum to his senior staff initiating the implementation of preferred options for each of the 10 recommendations, one of which is to seek legislation establishing an explicit legislative mandate for the NPS research program. This effort has been incorporated under the auspices of the Strategic Plan to Improve the Natural Resource Program of the National Park Service. Work is now underway on each of the specific actions approved by the Director.

Strategic Ecological Research Based on ideas advanced by the Ecological Society of America's Sustainable Biosphere Initiative, the NPS sponsored a workshop through the University of New Mexico to examine possible Service roles in strategic ecological research. This workshop involved 27 participants, about half from the NPS and half from academic institutions. Participants reviewed NPS natural resource policies from their diverse ecological perspectives, identified ecological research needed to address key issues that probably will confront park managers in the future, and examined a possible role for the Service in the broader ecological research agenda suggested by the Sustainable Biosphere Initiative. Workshop participants identified the need to create a strong science program as a base for management decisions, using the best science available when developing policy. The workshop participants recommended the Service develop a two-level research agenda to provide 1), management-oriented, short-term research and 2), strategic, long-term research addressing long-term and future management issues. Participants also suggested this two-level program could be organized around the priorities of the Sustainable Biosphere Initiative (global change, biodiversity, and sustainable development) and should deal with six themes: Threats to park natural resources, status and trends of those resources, park natural resource management in the context of the surrounding landscapes, predicting resource outcomes of management alternatives, participating in the national research agendas, and maintaining a high quality Park Service science program.

Research Grade Evaluation Dr. Bruce M. Kilgore's July 1991 report on recommended improvements in the NPS application of the Research Grade Evaluation (RGE) program was used as the basis for revising the Servicewide guidelines for the program. Dr. Kilgore developed the report on a detail to the office of the Associate Director, Natural Resources, after examining the RGE systems in several other agencies, particularly other Interior agencies. The most significant change in the program was the centralization of RGE under the Associate Director, Budget and Administration, with delegation of coordination responsibility to the appropriate programmatic Associate Director. Hence, in the natural science program, all RGE panels will be coordinated through the office of the Associate Director for Natural Resources. Previously, each Regional Chief Scientist independently developed and conducted RGE panels for the region's research natural scientists. Other approved changes included formalizing the role of the key (in-depth) evaluator for each RGE case, and establishing a regular quarterly schedule for RGE panels throughout the year. These changes bring the NPS more in line with the way other Federal bureaus operate the RGE program. The NPS currently has 96 research scientists covered by RGE.

Training

In March 1992, the newest class of the Natural Resources Management Trainee Program was initiated. This represents the sixth class of the program begun in Fiscal Year 1983 to increase the number of natural resources managers in the Service equipped with the requisite knowledge and skills to carry out effective resources management programs. Prior to this class, 117 persons have graduated in the program. The new class will graduate in October 1993.

In addition, in 1992, training classes in natural resources have included GIS for Managers, Integrated Pest Management, Water Quality Inventory and Monitoring, and Management of Biological Resources. The latter is the first course on this topic in several years.

Awards

Because he has demonstrated an unusually high degree of commitment to the protection of natural resources, the 1992 Director's Award for Superintendent of the Year for Natural Resources Stewardship was presented to J.W. "Bill" Wade, Superintendent of Shenandoah National Park. Wade recognizes that effective natural resource management requires a professional program supported by specially trained staff. On January 1, 1990, Shenandoah's new Division of Natural Resources and Science opened for business. In the past two years, the Division has added GIS, air quality, and inventory and monitoring staff positions to manage and implement the extensive GIS and air quality monitoring programs, as well as the innovative new inventory and monitoring program at the park.

Robert Stottlemeyer, Research Ecologist with the Water Resources Division, received the 1992 Director's Award for Research. Stottlemeyer has served the National Park Service in research, management, and advisory capacities, but has always maintained an active research program, conducting research in 11 parks. Since 1976, he has been the author or co-author of 133 publications, reports, and abstracts in the fields of long-term studies on forest vegetation, nutrient dynamics, biogeochemical cycling, and global climate change.

Robert F. Doren, Assistant Research Director at Everglades National Park and recipient of the 1992 Director's Award for Natural Resource Management, has made significant contributions to the field of exotic pest management and control. Faced with the massive invasion of Brazilian Pepper, which now poses one of the most serious long-term threats to the Everglades ecosystem, Doren developed the one method that has managed to control the plant and restore wetlands into the infested areas. In recognition of his expertise and leadership in this area, Doren chairs the Exotic Pest Plant Council which represents over 200 government agencies, universities, corporations, environmental organizations and individuals.

Improved Information for Management Decisions

A Servicewide Inventory and Monitoring (I&M) Program Coordinator reported for duty and was assigned to work under the supervision of the Deputy Associate Director for Natural Resources. The Servicewide Coordinator worked with the I&M National Advisory Committee to formulate a strategic plan for completing baseline natural resource inventories in all NPS units containing significant quantities of natural resources.

NPS-75 The National Park Service issued NPS-75, Natural Resource Inventory and Monitoring Guideline, a document developed under the auspices of the Associate Director for Natural Resources to provide Servicewide policy, guidance, and direction to parks designing and implementing comprehensive natural resource I&M programs. NPS-75 represents official NPS policy; I&M efforts at all NPS organizational levels should be consistent with the guidance .

Inventories Basic natural resources information needed for park ecosystem protection and management was identified. The plan for implementing the I&M program includes a schedule for completing resource inventories in approximately 250 park units over the next 10 years. Executing the plan will assure that all natural resource parks possess basic data and information to effectively assess threats to park ecosystems and assist in managing park resources. In FY 1992, approximately \$425,000 was provided to NPS units through the Servicewide I&M Program to conduct natural resource inventories

Prototype Monitoring In addition to funds for resource inventories, \$1 million was also provided to support long-term monitoring studies in the four prototype parks identified during 1991--Denali, Channel Islands, Shenandoah, and Great Smoky Mountains. Knowledge gained through the prototype monitoring effort will be used by these parks to identify threats to ecosystems and to develop appropriate strategies for dealing with those threats. The data will also be shared with other parks. In FY 1992, the prototype parks were funded at approximately 50 percent of their fully-funded levels. A FY 1993 budget increase moved these four units to approximately 75 percent funding as well as providing a considerable increase for natural resource inventories.

Global Science

Global Change Research Program In 1992, the National Park Service Global Change Research Program funded new research in several different biogeographic areas: Paleoenvironments in the Great Lakes region; modeling global change in the central grasslands; mangrove-marsh evolution, groundwater, and modeling in south Florida parks; vegetation change in the Colorado Rockies; structure and function of Ozark Highlands streams; and hydrologic systems, landscape classification, and modeling in the Glacier National Park area. The plans of three new active participants were also approved: Gulf Coast, Sonoran Desert, and Corals.

The program held its first annual meeting of site coordinators and published the color booklet "Global Change Research in U.S. National Parks." Development of "PROTRACK," a program/project tracking system for global change and inventory and monitoring linked to the National Park Service Investigator's Annual Report data base system, was initiated.

Man and the Biosphere The Wildlife and Vegetation Division, in cooperation with the U.S. MAB Secretariat at the Department of State and the EuroMAB Organization, prepared a directory of contacts, research activities, and scientific infrastructure for 176 EuroMAB biosphere reserves in the U.S., Canada, and 30 European countries. Working with European scientists, the Division also adapted database protocols for assessing the status of biological inventories and for inventory of plant and animal species in national parks for use in biosphere reserves.

Cooperative Activities and Partnerships

Many of the activities described elsewhere in this report involve cooperative efforts with other Federal agencies and non-Federal partners. Below, however, some of the newer partnership efforts are highlighted.

Publications Under an NPS/FWS Interagency Agreement, publishing capabilities were increased in 1992 for two NPS journal-quality series: Scientific Monographs and Proceedings. A subject editor, from the U.S. Fish and Wildlife Service, Office of Information Transfer, serves as a referee and conducts anonymous peer reviews for manuscripts submitted to the two NPS series. The National Park Service provides a technical writer-editor and an editorial assistant for production support. One monograph was printed, two monographs prepared for typesetting, and three (one monograph and two proceedings) reviewed in 1992. Under this agreement, a standard process for having NPS manuscripts peer reviewed ensures the integrity and credibility of scientific information disseminated through these two series. Other series, not administered under this cooperative agreement, are available for publications for which less rigorous review is appropriate.

Activities with the U.S. Fish and Wildlife Service Several cooperative activities were initiated between the National Park Service and the U.S. Fish and Wildlife Service (USFWS). These included an effort with the USFWS Columbia Missouri Laboratory on the toxicity of water contaminants. A technical scope of work and three-agency Memorandum of Agreement was developed for conducting resource studies for input into the Bureau of Reclamation Colorado River Annual Operations Planning Process. The NPS is also working with USFWS to provide instream flow-related technology to the NPS and identify opportunities for a long-term program to cooperate on the development of instream flow quantification methods. Finally, the NPS is represented on the Interagency Steering Committee for the USFWS Gap Analysis Program, which is developing a national GIS database to support conservation planning at the landscape, regional, state, and national scales.

U.S. Geological Survey Several cooperative endeavors are underway between the NPS and the U.S. Geological Survey (USGS). The agencies have met to cooperatively develop information on requisite funding to permit large-scale expansion of the USGS National Water Quality Assessment Program (NAWQA) Water Quality Monitoring Network into national parks to meet Service information needs. The NPS is an active participant on the NAWQA Interagency Advisory Committee, and on several NAWQA basin Committees. Plans are being developed to establish a NAWQA station in Bandelier NM. The USGS is cooperating with the NPS to establish a water quality monitoring program for Lake Powell, with an emphasis on contaminants. The USGS has provided technical assistance to the NPS Southwest Region in evaluating hydrogeologic factors related to an application to construct a Hazardous Waste Landfill near Lake Amistad NRA.

Volunteers in Acadia During the summer of 1992, the National Park Service sent 16 volunteer teachers to Acadia NP to help researchers conduct biological inventories, to learn about the importance of natural resource management, and to take this information back into the classroom. The project was a part of "Expedition into America," a pilot project designed to use volunteers to facilitate the development of complete biological inventories in the 250 national parks with significant natural resources. "Expedition into America" was developed in cooperation with Earthwatch, a non-profit organization established to support scientific field research. Under a Servicewide cooperative agreement, Earthwatch provided administrative support to the Acadia project while the NPS provided scientific expertise, local logistics, and funding. The Division of Interpretation participated with natural resource offices in jointly funding this cooperative venture. In 1993, the project will be expanded to include six other national parks: Big Bend, Cumberland Island, Golden Gate, Mammoth Cave, Oregon Caves, and Shenandoah. Acadia also hosted 12 volunteers from the Garden Club of America (GCA), who worked on surveying and restoring threatened or endangered plant species in the park. These volunteers were sponsored by GCAs "Partners for Plants" program, which is designed to encourage and support volunteer efforts for endangered plant work on federal lands.

Volunteer Bird Projects The American Birding Association publishes an annual Volunteer Directory listing projects needed by Federal and Canadian agencies that are suited to the abilities of skilled amateur birders. Most of the projects involve inventory or monitoring. The Park Service's Wildlife and Vegetation Division submitted 67 bird-related projects from 8 regions for inclusion in the 1992 directory. The results will be evaluated after the 1993 field season to learn how many volunteers came to the NPS as a result of this advertisement, how satisfied the parks were with the volunteers' work, and some indication of the volunteers' feelings about their experience.

Geographic Information Systems

During 1992, the use of geographic information systems (GIS) in parks continued to grow. Over 80 parks now have trained staff using GIS-compatible resources data on hardware and software. GIS use in the Service has been accelerated by the commitment of emerging programs, such as I&M, to the development of GIS-compatible data and the use of GIS. The I&M Program began funding development of a nominal GIS data base for all I&M parks. Funding is being directed toward development of digital based cartographic data (boundary, transportation, hydrography and contour themes) and vegetation data. In addition, the newly established GIS Branch at the Denver Service Center will increase support for use of GIS in park planning.

During the year, the NPS played an active role in developing a DOI Mapping and GIS Implementation Plan. The plan is directed toward coordinating mapping and GIS activities among bureaus to minimize duplication and optimize effectiveness. Activities included developing Departmentwide clearinghouses for information on spatial data planned for development and available in each bureau and coordination of each bureau's programmatic requirements and strategic plans. In addition, the NPS actively participated in development of spatial data transfer standards, meta data standards, and data content standards. These standards will further the ability to share quality data among government agencies, industry, and the public. These development activities were mandated by the Office of Management and Budget and compliance with the published standards will be required by all Federal agencies.

Air Quality

The National Park Service air quality program monitors air quality in over 70 parks, conducts research on air pollution effects on park resources, and provides technical assistance and policy guidance on air quality issues to the parks, the regions, the Directorate, and the Assistant Secretary, Fish and Wildlife and Parks. Many of the air pollution problems affecting parks are regional in nature and require action by more than one State to solve. This year, important regional initiatives were begun to address air quality issues in Great Smoky Mountains, Shenandoah, and Grand Canyon National Parks.

Great Smoky Mountains and Shenandoah National Parks In 1992, the Department announced that sensitive resources at Great Smoky Mountains were experiencing adverse impacts from air pollution and that major sources of pollution proposed in the vicinity would likely contribute to the impacts. The Department recommended that the States in the region not issue permits for major new sources of air pollution unless measures are taken to ensure that the new sources are benign to park resources. This is consistent with the approach identified in 1991 for Shenandoah.

A conference was held in Gatlinburg, Tennessee to address the regional nature of the air pollution problems at Great Smoky Mountains and Shenandoah. Over 150 people attended, representing industry, state and federal agencies, academia, and the public. The conference examined the scientific understanding of air pollution in the

Southern Appalachians, as well as ideas for addressing it. In response to the controversy over new source permits and the discussions at the Gallinburg conference, the Environmental Protection Agency (EPA), nine southeastern States, the National Park Service, and the U.S. Forest Service met in June to launch the Southern Appalachian Mountain Initiative (SAMI). Its mandate is to develop mutually agreeable regional solutions to the identified air pollution problems. SAMI has the opportunity (a) to consider all air pollution sources in the region, (b) to examine what various Clean Air Act programs can do for Class I air quality protection, and (c) to develop cost-effective, innovative ways to reduce air pollution levels in the Southern Appalachians.

Grand Canyon and the "Golden Circle" Parks The 1990 Clean Air Act Amendments authorized the formation of Visibility Transport Commissions to examine cases where interstate transport of air pollution causes visible haze in certain large national parks and wilderness areas. Congress specifically mandated the creation of the Grand Canyon Visibility Transport Commission. Established by the EPA in late 1991, the Commission approved a work plan in June 1992 to accomplish its objectives in time for presentation of its recommendations to the EPA by November 1995 regarding what measures, if any, should be taken to protect and restore good visibility in the Grand Canyon. In defining the scope of the Commission's work, the EPA Administrator included 16 Class I parks and wilderness areas of the "Golden Circle" because these areas share similar air quality concerns. The Commission includes representatives from eight western States, the Environmental Protection Agency, the National Park Service, the Forest Service, the Bureau of Land Management, and the Fish and Wildlife Service. A committee structure has been put in place to carry out the Commission's work plan with an interactive approach among the states, agencies, environmental organizations, academia, and public interests. This organization will facilitate maximum public input through a Public Advisory Committee and an external communications plan. The NPS is participating with direct involvement on Commission committees and through in-kind performance of tasks contained in the work plan.

Monitoring Network In 1992, monitoring was reduced to a degree in response to rising costs. Following an assessment resulting in a 5-year monitoring plan, the total sites for gaseous pollutant monitoring were reduced from 42 to 34, while the visibility network was reduced from 62 to 44 sites. Adjustments within the networks were also made.

Wildlife and Vegetation

Integrated Pest Management (IPM) In the past, all proposals for the use of pesticides were approved through the Washington Office. In 1992, the Director transferred approval authority to the regions for certain relatively low-risk pesticides. Of the 1,400 pesticide proposals processed annually, more than half can now be approved at the regional level. The new procedure should result in a net savings of time and money, shorten processing time, and improve service to the parks.

Efforts were initiated to reduce chemical use on croplands within parks by applying the principles of sustainable agriculture. Nationwide, the NPS maintains thousands of acres of cropland, primarily to achieve historic or landscape objectives. Regional IPM coordinators met to define the scope of the problem in the NPS and to develop appropriate approaches. Although croplands are a small percentage of our lands, they receive an unusually large share of pesticides and synthetic fertilizers. Sustainable agriculture principles promote crop rotation and other natural means to provide plant nutrients and to control weeds and insects.

Nine parks received money in 1992 from the U.S. Forest Service for the management of forest insects. With it, they treated more than 7,000 acres and surveyed another 143,000. Most of the funds were used in the management of gypsy moths.

Watchable Wildlife In September 1992, the Park Service helped fund and participated in the first National Watchable Wildlife Conference held in Missoula, Montana. The conference follows the December 1990 signing of an MOU with 13 other organizations to participate in the Watchable Wildlife Program. The program's immediate goals are to increase wildlife viewing opportunities, educate the public about the needs of wildlife, and promote wildlife conservation; the program's ultimate goal is to assist in maintaining the biological diversity of the United States. Also during the year, personnel from the Wildlife and Vegetation Division helped develop several new state wildlife viewing guides. A total of 12 guides, including about 45 Park Service units among the premier sites in each state, are now available. "Watchable Wildlife in the National Parks," a color folder describing the program, the NPS role in it, and some examples of the wildlife viewing opportunities in the National Park System, was published and distributed to all regions.

Wildlife Health In March 1992, Yellowstone National Park was selected by the Wildlife and Vegetation Division to assist with a pilot Wildlife Health Survey Project that will serve as a prototype for the National Park Service. Biological samples are being collected, disease surveys conducted, and samples banked for future needs. These samples will provide critical information to wildlife managers on the disease exposure and health status of the park's wildlife, as well as an understanding of the influences diseases have on wildlife. Resource managers have categorized the following issues to be addressed by the wildlife disease sampling program: threatened or endangered species recovery, public health and safety, protection of native species, cross-boundary issues, animal welfare, and improved baseline information.

During 1992 the Wildlife and Vegetation Division conducted a 5-day wildlife capture and restraint course, open to participants Servicewide. In addition, a 2-day wildlife capture and sample collection course was conducted for Yellowstone National Park and a 2-day wildlife disease course for both the National Capital Region and Yellowstone.

Fisheries Management The Service's fisheries research and management programs continued to develop in 1992 following the Director's adoption of the Recreational Fisheries Program, "A Heritage of Fishing." A Fisheries Program Manager was appointed in the Wildlife and Vegetation Division to provide technical assistance as well as management of fisheries programs.

Fisheries resources occur in 153 units of the National Park System. A needs assessment completed in December 1992 provided an action plan for dealing with the Park Service's inability to carry out many of the basic activities required to manage park fishery resources. The estimated cost for full implementation of the plan over a multi-year period is \$14 million. These costs include \$6.3 million in salaries for 122 new positions, \$4.7 million for fisheries research and management projects, and nearly \$3 million for the rehabilitation and improvement of the existing recreational fisheries infrastructure.

In May 1992 the Park Service, along with the Forest Service, Fish & Wildlife Service, Bureau of Land Management, and Bureau of Reclamation, signed a Memorandum of Understanding with Berkley, Inc., and In-Fisherman, Inc. A key element of the agreement was the publication of "Pathway to Fishing" educational materials and programs. "Pathway" is an educational, walk-through seminar designed for children and adults; it teaches fishing techniques, angler ethics, and good stewardship of fisheries resources and public lands.

Neotropical Migratory Bird Program The NPS completed regional review of its draft migratory bird program plan recommending key roles for the NPS regarding breeding and migratory habitat, public outreach, and international assistance. The overall Park Service strategy presented in this draft plan is to integrate Partners in Flight activities into the basic operations of each of the participating parks and regional offices. Several parks incorporated migratory bird activities into their resource management plans and inventory and monitoring activities. The National Park Service also contributed personnel and funds for international assistance. With funding from the National Fish and Wildlife Foundation, Ted Simons of the University of Virginia CPSU visited Costa Rica where he provided technical assistance and prepared coordinated proposals in cooperation with the Cornell Library of Natural Sounds.

White-tailed Deer Management In 1992, the Inter-Regional White-tailed Deer Team was established. The team includes representatives from the North Atlantic, Mid-Atlantic, National Capital, Southeast, and Midwest regions. The team has three basic roles. It acts as an advisory group, identifying tactical and strategic research needs, recommending strategies for education/interpretation, and reviewing proposed management actions. The team will also serve as a clearing house, assembling, summarizing, synthesizing, and disseminating information to staff at park, regional, and national levels, and facilitating communication among

research, management, and interpretation. Lastly, the team will be a resource team providing assistance to parks in defining goals and objectives, establishing or refining monitoring programs, and instituting interpretive programs.

Water Resources

In 1992, the Water Resources Division (WRD) had significant accomplishments in all of its principal program areas; water rights, water operations, planning and evaluation, and applied research. Examples are described below.

Water Rights Over 50 parks are involved in water rights adjudications and hearings or other proceedings related to water rights. A case in Colorado's San Luis Valley which posed a significant threat to the instream flow water rights at Great Sand Dunes NM was won by the United States. Also, a concentrated effort to negotiate water rights claims for Craters of the Moon NM and the Idaho portion of Yellowstone resulted in a settlement between Idaho and the United States which protects instream flows and present and future consumptive uses at both parks. Settlement discussions between the Montana Reserved Water Rights Compact Commission and an NPS negotiation team have produced "agreements in principle" for Yellowstone and Glacier and Big Hole NB. All parties hope to produce a Compact and receive public comment in time for submission to the Montana Legislature for ratification in the 1993 biennial legislative session. Other significant efforts included preparations for hearings on the water rights applications of the Las Vegas Valley Water District (involving Death Valley NM, Lake Mead NRA, and Great Basin NP); negotiations with Bureau of Reclamation on a Water Service Contract for Black Canyon of the Gunnison NM; a motion for summary judgement concerning Rocky Mountain NP water rights; and negotiations and trial preparation in Utah's Virgin River adjudication for Zion NP.

Wetlands Substantial progress was made in wetlands protection and management during 1992. Wetland restoration, inventory, and impact assessment projects were funded at Congaree Swamp NM, Cape Cod NS, Denali NP&P, Assateague Island NS, and National Capital Parks-East. Wetlands-related technical assistance was provided to 17 parks, including delineations, designs for monitoring networks, hydrologic data analyses, and training in wetlands identification and management. One of the more significant technical assistance efforts was at Dinosaur NM, where wetland and riparian habitat for a threatened orchid species has been degraded by an irrigation ditch. Results of a study to assess hydrologic conditions and develop restoration plans for the site were published in the 1992 WRD technical report, "Hydrologic Conditions Related to the Hog Canyon Riparian Restoration Project, Dinosaur National Monument." Publication of a color brochure, "Wetlands in National Parks," was another significant accomplishment in 1992. Over 70,000 copies of the brochure are being distributed at parks to inform the public about the types of wetlands found on NPS lands, their functions and values, and the NPS role in wetlands management, restoration, and protection.

Colorado River Operation of the Colorado River reservoir system directly affects river and reservoir resources in seven NPS units. Several actions occurred in 1992 which directly influence the management of these river-related resources. The Grand Canyon Protection Act was signed into law by the President. A five-year program of experimental releases was initiated at Flaming Gorge Dam in an attempt to enhance downstream native fish populations in Dinosaur. The NPS and Bureau of Reclamation are cooperating to schedule water releases on an interim basis through Black Canyon to protect and enhance resource values along the Gunnison River until final release schedules can be agreed upon. In addition, the NPS, through the Water Resources Division, became a formal participant on the Bureau of Reclamation's Colorado River Annual Operating Planning Task Group, which prepares technical evaluations related to systemwide reservoir operations. The signing of the Grand Canyon Protection Act is of particular significance. For the first time, downstream natural, cultural, and recreational resource values stand on equal footing with water, flood control, and hydropower as primary purposes for which a Colorado River dam is operated. An Environmental Impact Statement (EIS) on the Glen Canyon Dam operation is presently being prepared by the Bureau of Reclamation in cooperation with other agencies, including the NPS. The EIS will form the technical basis for changing dam operations to benefit downstream resources, as directed by the new law. The WRD has played an important role in the development of this EIS and in carrying out a number of supporting studies.

Water Quality The Water Resources Division moved forward with two national initiatives in 1992 to support the parks' water resource information and monitoring needs. The WRD developed an as yet unfunded initiative for long-term water quality monitoring of selected NPS waters, as described earlier under "Cooperative Agreements and Partnerships." The focus of the initiative is to expand the scope of the present USGS NAWQA program to include selected NPS units. Secondly, the design and development of a park-based Water Quality Data Management System (WQDMS) is the first high-priority effort of the division to develop an interactive national park-based water quality data storage, retrieval, and management system. A vital first step in creating the system was taken in 1992 with the award of a contract to Horizon Systems, Inc. Horizon will create individual park data bases by downloading and reformatting for the NPS data management system all physical, chemical, and biological data that resides in the EPA's multi-agency compilation of water quality databases, STORET. The initial effort will involve 30 parks.

NATURAL RESOURCES STRATEGIC PLAN IMPLEMENTATION TEAMS

Team I - Roles & Functions Team

Team Leader: Bruce Kilgore, Regional Chief Scientist, Western Regional Office

WASO Goal Leader: Mike Ruggiero, Chief, Wildlife and Vegetation Division

Team Members:

- Larry Bancroft, Chief, Natural Resources, Sequoia and Kings Canyon National Parks
- Steve Frye, Chief Ranger, Glacier National Park
- Russ Galipeau, Chief, Resource Management, Wrangell-St. Elias National Park and Preserve
- Jon Jarvis, Superintendent, Craters of the Moon National Monument
- Gary Larson, CPSU, Oregon State University
- Dave Mihalic, Superintendent, Mammoth Cave National Park

Team IIA - Organization Team

Team Leader: Ron Hiebert, Regional Chief Scientist, Midwest Regional Office

WASO Goal Leader: Abby Miller, Program Coordinator, Natural Resources

Team Members:

- Francis A. "Cal" Callabrese, Director, Midwest Archeological Center
- Bill Ehorn, Superintendent, Redwood National Park
- Bill Jackson, Chief, Branch of Operations, WASO Water Resources Division
- Beth Johnson, Resource Management Specialist, Delaware Water Gap National Recreation Area
- James Larson, Regional Chief Scientist, Pacific Northwest Region
- Charles van Riper, CPSU Leader, University of Northern Arizona

Team IIB - Budget Team

Team Leader: Ron Hiebert, Regional Chief Scientist, Midwest Regional Office

WASO Goal Leader: Abby Miller, Program Coordinator, Natural Resources

Team Members:

- Bill Ehorn, Superintendent, Redwood National Park
- Beth Johnson, Resource Management Specialist, Delaware Water Gap National Recreation Area
- Patty Neubacher, Chief, Division of Budget, Western Region
- Charles van Riper, CPSU Leader, University of Northern Arizona

Team III - Professionalism Team

Team Leader: Kathy Jope, Chief, Natural Resource Management, Pacific Northwest Regional Office

WASO Goal Leader: Dan Kimball, Chief, Water Resources Division

Team Members:

- Rob Arnberger, Superintendent, Big Bend National Park
- Mario Fraire, Chief, Personnel Division, WASO
- Dan Huff, Regional Chief Scientist, Rocky Mountain Region
- Jeff Marion, CPSU Leader, Virginia Polytechnic Institute and State University
- Gordon Olson, Chief, Research and Resource Preservation Division, Denali National Park
- Carroll Schell, Supervisory Natural Resource Specialist, Great Smoky Mountains National Park
- Ken Stahlnecker, Natural Resource Specialist, Crater Lake National Park

Team IV - Training Team

Team Leader: Dave Haskell, Chief, Resource Management, Shenandoah National Park

WASO Goal Leader: John Christiano, Chief, Air Quality Division

Team Members:

- Jeff Bradybaugh, Supervisory Resource Management Specialist, Mammoth Cave National Park
- Steve Cheney, Superintendent, Natural Bridges National Monument
- Steve Cinnamon, Chief, Resource Management Branch, Midwest Regional Office
- Dale Ditmanson, Superintendent, Florissant Fossil Beds National Monument
- Harold Smith, Superintendent, Organ Pipe Cactus National Monument
- Gary Vequist, Resource Management Specialist, Alaska Region
- Bill Walker, Natural Resource Specialist, Employee Development Division, WASO

Team V - Program Management Information

Team Leader: Anne Frondorf, chief, Planning and Information Branch, Wildlife and Vegetation Division, WASO

WASO Goal Leader: Phil Wondra, Chief, Geographic Information Systems Division

Team Members:

- Rolf Diamant, Superintendent, Frederick Law Olmsted National Historic Site
- Lincoln Fairchild, Computer Specialist, Park Historic Architecture Division, WASO
- Jay Goldsmith, Natural Resource Specialist, Western Regional Office
- Bob Krumenaker, Physical Scientist, Southwest Regional Office
- Steve Petersburg, Resource Management Specialist, Dinosaur National Monument
- George Turnbull, Chief, Information Management, Western Regional Office

Team VI - Resources Information Team

Team Leader: Jan van Wagtendonk, Research Scientist, Yosemite National Park

WASO Goal Leader: Phil Wondra, Chief, Geographic Information Systems Division

Team Members:

- David Graber, Research Biologist, Sequoia & Kings Canyon
- Mary Magee, Natural Resource Specialist, Western Planning Team, Denver Service Center
- Noel Pavlovic, Plant Research Ecologist, Indiana Dunes National Lakeshore
- Linda Pettit-Waldner, Global Climate Change Data Administration, Wildlife and Vegetation Division, WASO
- Susan Stitt, Biologist, GIS Division, WASO
- Thomas Stohlgren, Ecologist, Rocky Mountain National Park
- Sarah Wynn, GIS/I&M Coordinator, Rocky Mountain Regional Office

Team VII - Strategic Research Agenda Team

Team Leader: Mike Ruggiero, Chief, Wildlife and Vegetation Division, WASO

WASO Goal Leader: Denny Fenn, Deputy Associate Director, Natural Resources

Team Members:

- Dominic Dottavio, Regional Chief Scientist, Southeast Region
- John Karish, Regional Chief Scientist, Mid-Atlantic Region
- Gerry Wright, CPSU Leader, University of Idaho
- Ted Simons, CPSU Leader, University of Virginia
- Jill Baron, Ecologist, WASO Water Resources Division
- Dave Reynolds, Regional Resource Management Specialist, Mid-Atlantic Region
- Bill Porter, Professor, State University of New York, Syracuse

Team VIII - Research Administration Team

Team Leader: Sam Kunkle, Regional Chief Scientist, Southwest Regional Office

WASO Goal Leader: Denny Fenn, Deputy Associate Director, Natural Resources

Team Members:

- Kurt Jenkins, Wildlife Biologist, Wrangell-St. Elias National Park and Preserve
- Gene Wehunt, Chief, Planning and Professional Services Branch, Western Regional Office
- Dave Peterson, CPSU, University of Washington
- Mary Foley, Regional Chief Scientist, North Atlantic Region
- Dave Lime, CPSU Leader, University of Minnesota
- Jim Sherald, Research Plant Pathologist, Center for Urban Ecology, National Capital Region
- Donna O'Leary, WASO Natural Resources Publication Coordinator

Natural Resources Interpretation Committee

Team Leader: Dee Morse, Environmental Protection Specialist, Air Quality Division, WASO

WASO Goal Leader: John Christiano, Chief, Air Quality Division

Team Members:

- Warren Bielenberg, Regional Chief of Interpretation, Midwest Region
- Carl Bowman, Physical Scientist, Resource Management Division, Grand Canyon National Park
- Bob Huggins, Interpretive Specialist, Interpretation Division, WASO
- Larry Pointer, Chief, Resource Management, North Atlantic Regional Office
- Dave Sharrow, Hydrologist, Water Resources Division, WASO
- Nape Shelton, Writer/Editor, Wildlife & Vegetation Division, WASO
- Bob Valen, Chief, Interpretation, Big Thicket National Preserve
- Deborah Wade, Chief, Interpretation, Acadia National Park
- Gary Waggoner, Chief, Policy and Planning Branch, Geographic Information Systems Division, WASO