

On The Air

National Park Service - Air Resources Division - Quarterly Review

Spring 1999

John Christiano Posthumously Recognized with Distinguished Service Award

John Bunyak

At the Department of the Interior's 59th Honor Awards Convocation held on March 4 NPS Director Robert Stanton presented Marilyn Christiano with a Distinguished Service Award in recognition of her late husband's outstanding contributions in protecting and preserving air resources within the National Park System from 1979 to 1996. The Distinguished Service Award is the highest honorary recognition an employee can receive within the Department of the Interior. In presenting the awards, Director Stanton proclaimed, "These individuals not only inspire us to take pride in our work, but encourage us to do great things. I am proud to say that each award recipient has truly made a difference that counts now and for future generations to come."

John Christiano was one of only six NPS employees recognized with the Distinguished Service Award. As a direct result of John's leadership, the NPS Air Resources Division has achieved and maintained a national reputation as a premier air resource management agency. Under his direction, NPS's air quality monitoring and research programs have made significant contributions to the state of science, particularly with respect to visibility. These programs have also influenced the enactment of legislation and regulations protective of the resources under NPS stewardship. In reference to John's efforts in developing a win-win solution regarding the control of air pollutants from the Centralia Power Plant in the State of Washington, Secretary

Babbitt stated, "Christiano has for years and years been one of the most respected and loved leaders in the National Park System.... John has had an extraordinary impact on the National Park Service." Assistant Secretary Frampton added at the time, "Mr. Christiano's sharp mind, technical expertise, and deep sense of fairness played a major part in bringing the target solution to realization. He cared deeply about national parks and he committed his life's work to reducing air pollution's adverse effects on the public health and environmental resources."

John received the Department's Superior and Meritorious Service awards and numerous performance awards during his 17-year career with the NPS. Unfortunately, this outstanding career ended much too soon. John died in early December 1996 as a result of injuries suffered in an automobile accident. John is gone, but not forgotten. ☆



Director Stanton presents Marilyn Christiano with Department's Distinguished Service Award on behalf of her late husband John

HOT OFF THE PRESS * * *

Vice President Gore Unveils New Visibility Protection Program for National Parks

Chris Shaver

Over twenty years ago, Congress established a national goal of restoring natural visibility conditions to national parks and wilderness areas. Since that time, visibility monitoring conducted in many parks around the country has documented widespread visibility impairment, but regulatory programs only required remedial action if the pollution could be linked to a specific facility. The NPS has successfully established such a link in a few cases, and some large power plants have agreed to install pollution controls. A more efficient and comprehensive approach for reducing regional haze that veils scenic vistas in parks was announced on Earth Day by Vice President Gore at Shenandoah NP.

Long-term monitoring conducted in national parks around the country documented the need for the new rules. The NPS Air Resources Division was actively involved in negotiations with various stakeholders and worked closely with EPA in crafting the final rule. The rule builds upon existing air pollution control programs which are designed primarily to protect public health, and the first plans are due at the same time States submit plans for meeting new health-based air quality standards adopted by EPA last summer (2005-2008). But the rule requires steady and continuing emission reductions even after health goals are met and sets a target date of 2064 for achieving "natural" visibility conditions in national parks and wilderness areas. States will be required to submit 10-year plans with measures needed to stay on a glide path toward that target (at least a 10% improvement in visibility each decade).

Irrespective of what other measures states may choose to adopt, the rule requires that the "best available retrofit technology" be installed at hundreds of power plants and industrial facilities that were built without pollution controls and have otherwise avoided installing modern technology. States will have the option of achieving BART-or-better emission

reductions through economic incentive or market-based programs.

The rule also translates the recommendations made by the Grand Canyon Visibility Transport Commission in 1996 into enforceable requirements, per an agreement ARD staff helped negotiate with western states and stakeholders. Western states will have the option of implementing the Commission's plan in lieu of the federal rule, with plans due in 2003.

EPA estimates that the annual cost of the rule through 2018 will be \$1 - \$4 billion with corresponding benefits of \$3.5 billion to \$10.8 billion. The actual costs and benefits will depend on choices states make regarding their visibility goals and associated strategies.

We will provide field staff with a more detailed summary of the rule and what it means to the NPS shortly. The rule is posted on EPA's web site (www.epa.gov/airlinks). ☆

Ozone Health Advisory Guidance Distributed

Dee Morse

Air pollution reaches unhealthy levels in several NPS units between April and October. Proposed revisions to the NPS Management Policies would require that parks make reasonable efforts to notify park visitors and employees of these unhealthy conditions. Notification procedures will be included in Level III guidance (NPS-77) to be issued within the next year. In the interim, and in anticipation of this summer's "pollution season," park managers have requested guidance for actions to take to protect park employees and visitors when ozone concentrations reach unhealthy levels. In response to this request, the ARD provided guidance for issuing ozone health advisories at NPS units Servicewide. The guidance for Ozone Public Health Advisories at NPS areas was sent to all Superintendents and Regional Directors on April 2. ☆

Sunburned Frogs?

Kathy Tonnessen

Unexplained declines in populations of frogs and toads have increased worldwide in recent years, with many of these declines being documented in mountainous regions. Thinning of the stratospheric ozone layer and consequent increase in certain wavelengths of UV radiation have also occurred, and are predicted to impact high elevation sites more strongly. Some experiments in the lab and field show that frog development can be affected by UV light. But what is really happening out there in high-elevation ponds?

To shed some light on this mystery, the EPA-Duluth Lab and the NPS are joining forces in 1999 and 2000 to investigate UV exposure in six parks (Acadia, Great Smoky Mountains, Rocky Mountain, Glacier, Olympic and Sequoia-Kings Canyon National Parks) as part of PRIMENet (Park Research and Intensive Monitoring of Ecosystems Network).

The outline of the two-year study was developed during a workshop held in Duluth, MN, in January. Researchers from the NPS, EPA, USGS, and academia reviewed existing information on pond-breeding frog species in the six candidate parks and recommended the best way to use the \$500K funding for this two-year study. The amphibian surveys in the three PRIMENet parks will make use of existing data bases collected by USGS, NPS, USFS, and the California Air Resources Board on amphibian species extent along an elevational gradient.

The UV dosimetry project will attempt to characterize how much UV radiation the developing tadpoles "see" in representative ponds and wetlands in the six parks. Site specific radiometer measurements will be calibrated to the Brewer spectrophotometer, installed in the PRIMENet parks by the EPA. Field researchers will also collect pond water to measure the amount of dissolved organic carbon present. These natural organics block UV transmittance in pond water. The field observers will also determine the amount of shading by vegetation in each habitat "patch" to determine the "real" dose of UV-B.

This detailed UV study will be coordinated with amphibian surveys in three mountain parks that have extreme elevation gradients, Glacier, Olympic, and Sequoia-Kings Canyon NPs. Field crews will make

repeated observations of amphibian habitats in these parks in an attempt to correlate species presence with environmental gradients, such as UV.

This PRIMENet project will be the beginning of a larger investigation that will be expanded to additional park units, should the Department of Interior amphibian initiative be funded in FY 2000. If the requested \$8.1 million in base funding is approved by Congress, then the USGS, FWS, NPS, and BLM will have considerable resources to study the health of frog, toad and salamanders on public lands, and to study the stresses that are causing population declines and malformations. ☆



Welcome

We would like to introduce you to Mike Eissenberg, the newest member of our staff who is our new monitoring specialist. Mike has worked for the NPS for the last 7 1/2 years. During that time, he designed building mechanical systems for the Denver Service Center. Prior to that, he worked as a civilian for the Army in Denver, and as a civilian for the Navy in Philadelphia.

Mike will be coordinating our various contracts and providing assistance to our network of air and visibility monitoring stations. You can reach Mike at (303) 969-2488, fax (303) 969-2822. ☆

Project MOHAVE Final Report

[Mark Scruggs](#)

On March 22 the EPA released a report on the 7-year, Congressionally funded study (Project MOHAVE) to determine the contribution of a variety of sources including the Mohave Generating Station (MGS) to visibility impairment at Grand Canyon National Park. The study indicates that the MGS contributes to visibility impairment at the park, though it is not the largest contributor. The EPA will soon review the results of Project MOHAVE and determine the appropriate pollution control requirements, if any. The public will be given an opportunity to comment on the EPA determination as part of a formal rulemaking process. ☆

What's the WRAP About?

[Chris Shaver](#)

The Western Regional Air Partnership (WRAP) was established in October 1997 to promote and monitor implementation of the Grand Canyon Visibility Transport Commission recommendations regarding visibility protection in the Colorado Plateau. The Department of the Interior was a charter member of the WRAP; ARD staff, along with Carl Bowman from Grand Canyon NP, have actively participated in WRAP activities. The limited focus of the WRAP has been of concern to States and tribes outside the original transport region who joined the WRAP, but there was a reluctance to expand the WRAP's purpose until the scope of the new regional haze program and its effect on other western states and stakeholders became clear.

Given the imminent publication of the final regional haze rule and its requirements for all states to develop plans to reduce regional haze in national parks and wilderness areas, the WRAP voted at its March 30-31 meeting to expand its charter to encompass "regional or common air quality management issues." The WRAP will now be providing technical assistance and coordinating air pollution control strategy and policy

development across the West, with initial emphasis on helping states comply with the new regional haze regulations.

In addition to expanding its purpose, the WRAP established the Northwest Air Managers Committee to jumpstart regional air quality planning in those areas that were not included in the GCVTC and are likely to need different or additional strategies tailored to visibility problems in parks and wilderness areas outside the Colorado Plateau. ARD staff will be working with this Committee as it develops a work plan over the next few months. ☆

Permitting Activities Up in Arizona and Colorado

[Tonnie Maniero](#)

After averaging one PSD permit per year for the past several years, Arizona and Colorado are now being inundated with PSD permit applications. Four PSD applications are currently being reviewed in Arizona, and eight are under review in Colorado. Many of the applications are for construction of new, or additions to existing, natural gas-fired power plants. The power plant activity is due, in part, to energy shortages in both states during last year's unusually hot summer. Fortunately, staff in both states' air permitting agencies has been working closely with ARD technical staff to ensure NPS issues are addressed. Staff of both states have also required applicants to address potential project impacts on Class II NPS areas—something that not all states are willing to do. ARD appreciates the way region and park staff has pitched in to help us with the workload. John Reber of the Intermountain Region, Ken Czarnowski and Craig Axtell of Rocky Mountain NP, and Carl Bowman of Grand Canyon NP have attended meetings and finalized technical letters, often with little advance notice. Thanks, guys, for all your help! ☆

Another Regional Review is Off and Running

[Tonnie Maniero](#)

Air quality representatives of six of the nine California Class I parks met regarding ARD's most recent air quality review at the Pacific West Region Park Air Coordinators (PAC) meeting in Joshua Tree NP in March. Judy Rocchio, Regional Air Quality Coordinator, organized the meeting to provide Tim Sullivan, the Principal Investigator, and Tonnie Maniero, the ARD project coordinator, an opportunity to discuss in detail the project objectives, needs, and timeframe. This review, the fourth funded by ARD, will not only focus on ambient air quality and effects in the Class I parks in California, but also will have a regional overview that will be relevant to other NPS areas in the state. The California review is the most ambitious to date, given the size of the area to be covered, the variety of ecosystem types, the quantity of data, and the extent of air quality problems. Tim Sullivan took advantage of the PAC meeting to meet with Joshua Tree NP Resource Management staff and examine park files. He will visit the other eight parks in June. The final report for this project should be available in September 2000. ☆

Fire Management Integration

[Brian Mitchell](#)

A meeting was held in the Denver NRPC offices on March 11 to discuss the need and process to integrate fire management and natural resource protection issues and goals. The areas of interest are in planning, research, and monitoring. There was a good cross-section of representation from fire (ROMO, IMRO, and Boise Fire Management Program Center) and natural resources (Intermountain Office, Denver, Washington, D.C., and Ft. Collins). The meeting served as a follow-up to a July 1998 meeting between fire and natural resources program officials held in Boise and helped to shed light on a number of internal activities that could help assure appropriate consideration of respective program goals.

Besides general information sharing now and in the future, a few near-term activities are planned to

address the integration of natural resource concerns into the fire planning process. For example, an interdisciplinary natural resources team plans to review selected park fire management plans to see how well resource issues are addressed. There is also a planning task force effort slated for early May to develop a "template" for NPS units to use in preparing environmental assessments, fire management plans, and prescribed fire schedules; Colorado National Monument was selected as the park unit to use for this planning effort based on new NPS policy guidance (DO-18 and RM-18). The group identified other opportunities for cooperation and coordination affecting inventory and monitoring activities as well as needed research. Meeting notes are available from Brian Mitchell, Air Resources Division, for more details. ☆

George Wright Society Conference

[Dee Morse](#)

Several people from the Air Resources Division attended and presented papers at the George Wright Society 10th Conference on Research and Resource Management in Parks and on Public Lands, in Asheville, North Carolina. Bruce Nash and Tim Goddard (NRID) co-chaired a session on Management Tools I: Information Tools That Can Help You Manage Natural Resources. In this session Bruce Nash presented a paper entitled, "Using AQUIMS to Manage and Interpret Resource Information." AQUIMS is a user-friendly computerized system for managing resource information by resource managers, interpreters, and policy experts; Tom Dotts presented a paper entitled, "Nature Net: The NPS Natural Resource Web Site;" and Dee Morse presented a paper entitled, "Gaia's Guard: An Interactive Computer Game for Teaching Natural Resource Issues." In another session, Kathy Tonnessen presented a paper entitled, "PRIMENet: a Cooperative NPS/EPA Demonstration Intensive Site Project to Monitor Stressors and Relate to Ecosystem Responses in National Parks". Francine Patterson, Cassandra Garcia, Bruce Nash, and Dee Morse also provided demonstrations of AQUIMS and Gaia's Guard at the conference. ☆

Governor's Summit on Mountain Air Quality

[John Bunyak](#)

North Carolina Governor James Hunt hosted the first Governor's Summit on Mountain Air Quality, held in Asheville on April 7. Governor Don Sundquist (Tennessee), Governor Roy Barnes (Georgia), and representatives from the other five Southern Appalachian Mountains Initiative states (i.e., SC, VA, AL, KY, and WV) also attended the Summit. Governor Hunt invited Governor Michael Leavitt (Utah) as a special guest speaker. Governor Leavitt, citing his experience with the Grand Canyon Visibility Transport Commission in the west, emphasized the importance of all stakeholders working together to address regional air pollution problems.

The goal of the summit was to establish a basis for cooperative efforts that will effectively address air pollution problems in the Southern Appalachians and "Clear the Air" in this nationally treasured region. In announcing the summit, Governor Hunt proclaimed, "this Summit demonstrates our commitment to protecting and restoring the air quality in the southern Appalachian Mountains." The Summit consisted of a series of panel discussions. The "Overview of the Challenges We Face" panel discussed the nature of the mountain air quality problems we are facing. For example, Jim Renfro (Great Smoky Mountains NP) discussed visibility, acid deposition, and ozone impacts at the park, and Bill Jackson (U.S. Forest Service) discussed visibility impacts in Forest Service Wilderness Areas in the region. The "Various Roles in Addressing the Issues" panel discussed the air quality issue from the perspectives of federal and state government, the research community, industry, and the private citizen, and how these different stakeholders can have a role in developing a regional response. During the "Governors' Roundtable and Response Panel" individuals from environment, business and industry, and government sectors joined the Governors to discuss information that had been presented by earlier panels and to talk about how we can work together and move forward in our region to "Clear the Air." To provide a forum to assess progress of our clean air efforts, Governor Barnes agreed to host the next summit in Georgia in 2000, and Governor

Sundquist agreed to host a summit the following year in Tennessee.

The Summit also provided an opportunity for a formal signing ceremony regarding the Permitting Procedures Agreement. North Carolina joined the State of Tennessee and the Departments of the Interior and Agriculture--the Federal Land Managers--as signatories to a permitting procedures agreement. (See related article in last Quarterly report). ☆

Proposed Use of Tracers Stalls U.S.-Mexico Plans for a Joint Visibility Study for Big Bend National Park

[Miguel Flores](#)

U.S. and Mexico investigators have been unable to reach agreement on the proposed use of tracers for the Big Bend Regional Aerosol and Visibility Observational, or BRAVO, study. The U.S. has proposed that 4 distinct tracers be emitted from 2 coal-fired power plants in east Texas and 2 locations in Mexico, one of which being the Carbón II coal-fired power plant. Perfluorocarbon tracers will be used as part of the BRAVO study to determine the transport and dispersion of emissions from specific sources and source areas into Big Bend National Park. Mexico maintains that such a scenario places Mexican emission sources at greater jeopardy than U.S. sources, and hence, the need to control tagged sources based on the result of the study. Mexico argues that under the U.S. proposal, tracers would be used to represent a greater number and percentage of Mexican emission sources than U.S. emission sources, thus, as proposed the tracers would not be representative of the emissions and their transport and dispersion causing the problem at Big Bend. Moreover, Mexico argues that the 1996 Big Bend Regional Visibility Preliminary Study clearly demonstrated that U.S. sources were the primary contributors to visibility impairment at the park, a conclusion the U.S. finds as being unfounded. The U.S. tracer proposal is based on considering several key factors: quantity of emissions in both countries;

frequency of air mass transport into Big Bend from different directions; and, the distance of sources from Big Bend. The U.S. believes the use of these criteria for the release of tracers will adequately represent the visibility problem at Big Bend.

The BRAVO study is a four-month study scheduled to start on July 1, 1999, and conclude on October 31. Mexico's failure to agree on this important element of the study severely jeopardizes a joint study with Mexico this summer. As a result, U.S. investigators are making plans to conduct a U.S.-only study that would include the release of tracers from a location in Eagle Pass, Texas, to simulate the transport and dispersion of emissions from the Carbón II plant into Big Bend. Tracers would also be used to tag at least one facility in east Texas. A U.S.-only study would place approximately 40 samplers, mostly in Texas, to measure fine particles using IMPROVE samplers on a daily basis. About half of these locations would also sample SO₂, ions, elemental and organic carbon, and tracers. Four wind profilers would be deployed in south and central Texas, including one at Big Bend National Park, to better define wind flow patterns near the park. Six sites, situated in an arc around Big Bend, would measure tracer concentrations on a 6-hour basis to better characterize the presence/absence of emissions from tagged sources.

The site at Big Bend would be equipped with continuous monitoring for SO₂, sulfates, and tracers in addition to the 24-hour measurements for fine particles. Fine particle size distributions will be determined using specialized samplers and scanning electron microscopy will be employed to determine how particle type may vary with size. Additional optical monitoring (transmissometers, nephelometers, and aethelometers) will also be employed to obtain better optical measurements at the park. Finally, chemical speciation of carbon particles will be made to differentiate between industrial and wood smoke emissions. Carbon speciation is important as 40% of Big Bend's light extinction budget is attributed to carbon species. Another 40% of light extinction are associated with sulfates.

The BRAVO Steering Committee, comprised of NPS, U.S. EPA, the Texas Natural Resource Conservation Commission, and Mexico's *Procuraduría Federal de Protección al Ambiente*, will continue to have meetings through early May to see if agreement can be reached

to conduct a joint study. The U.S. will not allow a start date of later than July 1, as a later start date would not allow a good characterization of visibility conditions at Big Bend during the time of the year when southeasterly winds prevail and transport from Mexico is greatest. Participants for the BRAVO study include: University of California at Davis, Colorado State University, the National Oceanic and Atmospheric Administration (Las Vegas, Boulder and Idaho Falls labs), Brookhaven National Laboratory, Department of Energy, Texas Natural Resource Conservation Commission, Air Resource Specialists, Desert Research Institute, and ENSR Corp. EPA is funding the study with some funding and significant contributions of staff time and expertise provided by the Air Resources Division. For additional information contact Miguel Flores, Air Resources Division at 303-969-2076. ☆

Western Region PAC Meeting Update

[Tonnie Maniero](#)

Chris Holbeck of Joshua Tree NP hosted the annual Western Region Park Air Coordinators (PAC) meeting March 9-11. Resource Management, Interpretation, and/or Maintenance staff from twelve Western Region, one Alaska Region, and three Intermountain Region, parks attended the meeting. The topic of this year's meeting was *Integrating Sustainable Practices and Air Quality*. Don Shepherd of the ARD gave a presentation on park emission inventories and ways to reduce in-park emissions. Employees of the Seattle office of the Western Region discussed national and regional sustainability initiatives and energy efficiency. Representatives from the Bay Area Air Quality Management District (AQMD), the Mojave Desert AQMD, and EPA-Region 9 provided examples of interpretation of sustainable practices. A highlight of the meeting was a park tour led by Joshua Tree NP's Chief of Maintenance to showcase the park's sustainability projects, which include a solar-powered campground/maintenance/residential area at Cottonwood, and a solar-powered amphitheater for interpretive talks at one of the campgrounds. ☆