

RECENT PUBLICATIONS

This section lists selected publications on environmental quality that resulted from studies in the National Park System or that relate more generally to pollution issues.

General and Miscellaneous

Bennett, J. 1985. Regulatory uses of SO₂ effects data. Chapter 2 in Winner, W., H. Mooney, and R. Goldstein, eds. *Sulfur Dioxide and Vegetation*. Stanford University Press, Stanford, CA.

Berrang, P., D. Karnosky, R. Mickler, and J. Bennett. 1986. Natural selection for ozone tolerance in *Populus tremuloides*. Submitted to *Science*.

Council on Environmental Quality. 1986. *Environmental Quality, 1984*. U.S. Government Printing Office, Washington, D.C.

Glass, G., and O. Loucks. 1986. Implications of a gradient in acid and ion deposition across the northern Great Lakes States. *Environmental Science Technology* 20: 35-43. This is a nice summary and statistical analysis of National Atmospheric Deposition Program (NADP) data up to 1982 for the Upper Midwest. It points out approaches others might want to use in the analysis of NADP data for their region. (Stottlemeyer)

Hogsett, W., M. Plocher, V. Wildman, D. Tingey, and J. Bennett. 1985. Growth response of two varieties of slash pine seedlings to chronic ozone exposures. *Canadian Journal of Botany* 63:2369-2376.

Interagency Task Force on Acid Precipitation. National Acid Precipitation Assessment Program, Annual Report, 1985. Expected to be available about June 1986.

Interagency Task Force on Acid Precipitation. National Acid Precipitation Assessment Program, 1985 Assessment Report. Expected to be available about September 1986. This and the report above are available from: Director, NAPAP, 722 Jackson Place, N.W., Washington, D.C. 20506.

Malm, W., R. Eldred, T. Cahill, and J. Molenaar. Visibility and particulate measurements in the western United States. Paper presented at 78th annual meeting of the Air Pollution Control Association, Detroit, Michigan, June 1985.

National Research Council. 1986. *Acid Deposition: Long-term Trends*. National Academy Press, Washington, D.C.

Oppenheimer, H., C. Epstein, and R. Yuhnke. 1985. Acid deposition, smelter

emissions, and the linearity issue in the western United States. *Science* 229:859-862.

Rosencranz, A. 1986. The acid rain controversy in Europe and North America: a political analysis. *Ambio* 15(1):47-51.

Roth, P., C. Blanchard, J. Harte, and H. Michaels. 1985. The American West's Acid Rain Test. World Resources Institute, Washington, D.C. 50 p. Copies may be purchased from WRI Publications, P.O. Box 620, Holmes, PA 19043-0620.

Schindler, D., K. Mills, D. Malley, D. Findlay, J. Shearer, I. Davies, M. Turner, G. Linsey, and D. Cruikshank. 1985. Long-term ecosystem stress: the effects of years of experimental acidification on a small lake. *Science* 228:1395-1401. While there have been numerous testimonies to the value of ecosystem-level research in terrestrial ecosystems, this is a strong testimony to the value of such research in an experimentally manipulated aquatic system. (Stottlemeyer)

Stottlemeyer, R. 1986. Monitoring and quality assurance procedures for the study of remote watershed ecosystems. *Amer. Soc. Test. Materials*. In press. Abstract of this is in *Ecol. Bull.* 66(2):277.

U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. 1986. National Air Quality and Emissions Trends Reports, 1984. U.S.E.P.A. Available from Public Information Center, U.S.E.P.A., 820 Quincy St., N.W., Washington, D.C. 20011. Phone: 800-828-4445.

Waring, R., and W. Schlesinger. 1985. *Forest Ecosystems: Concepts and Management*. Academic Press, New York. 340 p. Excellent summary of factors one should consider when undertaking and designing ecosystem-level research, especially in terrestrial systems. (Stottlemeyer)

National Park System—General

American Law Division, Congressional Research Service, Library of Congress. (1985?). Comments on "Protection of national park system units from the adverse effects of air pollution." Legal memorandum.

Bennett, J. 1985. Overview of air pollution effects on national parks vegetation in 1985. *Park Science* 4(4):8-9.

Buffone, S., and C. Fulco. 1986. *Acid Rain in the National Parks*. Available summer 1986 from National Parks and Conservation Association, 1701 Eighteenth St., N.W., Washington, D.C. 20009.

Cooperative Institute for Research in the Atmosphere. 1985. *Assessment of Visibility Impairment on Visitor Enjoyment and Utilization of Park Resources*. Colorado State University, and National Oceanic and Atmospheric Administration. Prepared for the National Park Service.

Flora, M., and S. Kunkle. Development of water quality monitoring strategies in two units of the National Park Service. Paper presented at the National Wilderness Research Conference, Fort Collins, CO, July 23-26, 1985.

Henderson, D., M. Liu, and D. Stewart. 1985. Long distance transport of man-made air pollutants. *Park Science* 5(2):6-8.

Henderson, D., M. Yocke, and H. Hogo. 1985. Night sky—a valuable resource in the Nation's national parks. *Park Science* 6(1):18-19.

Herrmann, R. (ed.) 1984. National Park Service Status Report on Long-term Acid Rain Monitoring in the National Parks. Water Resources Field Support Laboratory, National Park Service. Colorado State University, Fort Collins.

Herrmann, R. 1986. Acid precipitation research and monitoring in the NPS. *Park Science* 6(2):31-32.

National Park Service, Air Quality Division. In press. *Air Quality in the National Parks: A Summary of Research Findings*. Prepared by Energy and Resource Consultants, Inc., Boulder, CO.

National Park Service, Air Quality Division. 1984. *National Park Service Air Resource Management Manual*. 80 p. plus appendices. Available from NPS, Air Quality Division, P.O. Box 25287, Denver, CO 80225.

National Park Service, Water Resources Field Support Laboratory, 1984. *Water Quality Criteria: An Overview for Park Natural Resource Specialists*. WRFSL Report No 84-4. 46 p. Available from: Director, Water Resources Field Support Laboratory, NPS, 107C Natural Resources, Colorado State University, Fort Collins, CO 80523.

Ross, D., and W. Malm. 1986. Visual air quality and the national park visitor. *Park Science* 6(2):14-15.

Sherwood, S. 1984. The National Park Service research program on the effects of air pollution on cultural properties. Paper presented at annual meeting of Air Pollution Control Association, San Francisco, CA, June 24-29, 1984.

U.S. Dept. of the Interior, Associate Solicitor. (1985?). *Protection of National Park System Units from the Adverse Effects of Air Pollution*. Legal memorandum.



Mine spoil embankments along the Big South Fork of the Cumberland River, Big South Fork NRRRA. The highly acidic, pyritic shale in these spoils prevents natural revegetation and adds to erosion and acid runoff problems.

National Park System—Specific Areas

Acadia NP

Kahl, J., J. Anderson, and S. Norton. 1985. Water Resource Baseline Data and Assessment of Impacts from Acidic Precipitation, Acadia National Park, Maine. Prepared for NPS, Water Resources Program, North Atlantic Region. Technical Report No. 16. Includes the technical report and an evaluation for management that summarizes the technical report.

Canyonlands NP

Henderson, D. In press. A mathematical model for predicting night sky glow and its application to Canyonlands National Park. *Jour. Astronomical Society of the Pacific*.

Delaware Water Gap NRA

Baron, J., J. Karish, and E. Johnson (eds.). 1985. Acidic Atmospheric Deposition in Delaware Water Gap National Recreation Area. Proceedings of a Workshop, January 18, 1985 and Management Recommendations. 56 p. Contains a summary of the workshop, abstracts presented at the workshop, management recommendations, references, and a list of participants.

Great Smoky Mountains NP

Baes, C., and S. McLaughlin. 1986. Multielemental Analysis of Tree Rings: A Survey of Coniferous Trees in the Great Smoky Mountains National Park. Oak Ridge National Laboratory Publ. No. 6155. Environmental Sciences Division Publ. No. 2640.

Turner, R., M. Bogle, and C. Baes. 1985. Survey of Lead in Vegetation, Forest Floor, and Soils of the Great Smoky Mountains National Park. Oak Ridge National Laboratory Publ. No. TM-9416. Environmental Sciences Division Publ. No. 2425.

Isle Royale NP and Great Lakes Region

Hanson, D., and R. Stottlemeyer. 1985. Soil anion mobility in mature northern hardwood and boreal forested watershed ecosystems, Michigan's Upper Peninsula. *Ecol. Bull.* 66(2):187.

Nelson-Jameson, D. Rutkowski, and R. Stottlemeyer. 1986. Assessing Anthropogenic Atmospheric Deposition Effects in National Parks of the Great Lakes Basin. Final Report to National Park Service, Midwest Region, Omaha, NE. 53 p.

Rutkowski, D., and R. Stottlemeyer. 1985. Biomass and nutrient content in northern hardwood and boreal forested watersheds, Michigan's Upper Peninsula. *Ecol. Bull.* 66(2):260.

Stottlemeyer, R. 1985. Effects of atmospheric acid deposition on lake/watershed ecosystems of Isle Royale and Michigan's Upper Peninsula. Conference on U.S., Canadian, and Michigan Acidic Deposition Research, Conference Summary, p. 18-19.

Stottlemeyer, R. 1986. Effects of atmospheric acid deposition on watershed/lake ecosystems of Isle Royale and Michigan's Upper Peninsula. Progress Report submitted to National Park Service, Midwest Region, Omaha, NE, and to Dr. William Gregg, Acid Precipitation Program Coordinator, NPS, Washington, D.C. 14 p. with appendices.

Mid-Atlantic Region

Davis, D., and J. Bennett. 1985. Evaluation of Air Pollution Injury to Vegetation in Four Mid-Atlantic National Park Service Areas. Pennsylvania State University, Center for Air Environment Studies, Publication No. 756-85.

Olympic NP

Thomas, T., R. Edmonds, J. Rhodes, T. Cundy, M. Reed. 1986. Precipitation Chemistry and Ecosystem Function in Olympic National Park: Baseline Research for Acid Precipitation Studies. 1985 Annual Report. Copies available from Division of Science and Technology, Olympic National Park. FTS 396-4241 or 206-452-4501 x 241.

Rocky Mountain NP

Baron, J. 1983. Comparative water chemistry of four lakes in Rocky Mountain National Park. *Water Resources Bulletin* 19:897-902.

Baron, J., and P. Walthall. 1985. The nature of precipitation, soil and surface water chemistry in a subalpine ecosystem. Chapter 42, pp. 497-509 in: D. Caldwell, J. Brierly, and C. Brierly, eds. *Planetary Ecology*. Van Nostrand Company, New York.

Baron, J., D. Beeson, S. Zary, P. Walthall, W. Lindsay, and D. Swift. 1985. Long-term Research into the Effects of Atmospheric Deposition in Rocky Mountain National Park; Summary Report, 1980-1984. NPS Technical Report 84-ROMO-2. 43 p.

Baron, J., S. Norton, D. Beeson, and R. Herrmann. 1986. Sediment diatom and metal stratigraphy from Rocky Mountain lakes with special reference to atmospheric deposition. *Canadian Journal of Fisheries and Aquatic Science*. In press.

Baron, J., and D. Beeson. 1984. Long-term research into the effects of atmospheric deposition in Rocky Mountain

National Park. Pp. 237-267 in: A. Galbraith and S. Stuart, eds. *Air Quality and Acid Precipitation Potential in the Bridger and Fitzpatrick Wilderness; Workshop Proceedings*. Bridger Teton National Forest. Jackson, Wyoming.

Baron, J., S. Zary, and D. Beeson. 1986. The interactions of atmospheric deposition and seasonal chemical variability in Rocky Mountain National Park. In: C. Stevens, ed. *Proceedings of the Western Branch, Air Pollution Control Association Symposium on Atmospheric Deposition in the West*. Boulder, CO. In press.

Gibson, J., and J. Baron. 1984. Acidic deposition in the Rocky Mountain region. Pp. 29-42 in: T. Colbert and R. Cuany, eds. *Proceedings: High-Altitude Revegetation Workshop No. 6*. Information Series No. 53. Colorado Water Resources Research Institute, Colorado State University.

Heit, M., R. Klusek, and J. Baron. 1984. Evidence of deposition of anthropogenic pollutants in remote Rocky Mountain lakes. *Water, Air, and Soil Pollution* 22:403-416.

Kunkle, S. and N. Cowdin. 1985. Field Survey of *Giardia* in Streams and Wildlife of the Glacier Gorge and Loch Vale Basins, Rocky Mountain National Park. Natural Resources Report Series 85-3. NPS, Water Resources Division. Fort Collins, CO.

Monzingo, D., and D. Stevens. 1986. *Giardia* Contamination of Surface Waters: A Survey of Three Selected Backcountry Streams in Rocky Mountain National Park. In press. Water Resources Report 86-2. NPS, Water Resources Division, Fort Collins, CO.

Norton, S., C. Hess, G. Blake, M. Mor-

rison, and J. Baron. 1985. Excess unsupported ²¹⁰Pb in lake sediment from Rocky Mountain lakes: a groundwater effect. *Canadian Journal of Fisheries and Aquatic Science*. In press.

Walthall P. 1985. Acidic Deposition and the Soil Environment of Loch Vale Watershed in Rocky Mountain National Park. PhD. dissertation. Colorado State University. 148 pp.

Sequoia NP and the Sierra Nevada

Evison, B. 1985. Air pollution and Sequoia and Kings Canyon National Parks. In *Proceedings, Conference on the Management of Biosphere Reserves*. National Park Service, Great Smoky Mountains National Park, Gatlinburg, TN. Pp. 95-102.

Graber, D., D. Parsons, T. Stohlgren, and P. Haggerty. 1984. Acid rain research in Sequoia National Park. *Bull. Ecol. Soc. Amer.* 65(2):135. Abstract.

Lair, L., H. Taylor, and V. Kennedy. 1986. Snow chemistry of the Cascade-Sierra Nevada Mountains. *Environmental Science and Technology* 20: 275-290.

Melack, J., J. Sickman, and J. Stoddard. 1984. Sensitivity of an alpine lake to acidic atmospheric deposition in the Sierra Nevada, California. *Bull. Ecol. Soc. Amer.* 65(2):135. Abstract.

Melack, J., J. Stoddard, and C. Ochs. 1985. Major ion chemistry and sensitivity to acid precipitation of Sierra Nevada lakes. *Water Resources Research* 21(1):27-32.

Miller, P. 1985. The impacts of air pollution on forest resources. *Forestry Research West*. August 1985. Pp.1-5.

Miller, P., K. Stolte, T. Franklin, A. Gomez, and C. Kazmier. 1984. Ozone effects on important tree species of the Sequoia-Kings Canyon National Parks. Final Contract Report to the National Park Service. 57 pp. plus photos.

Parsons, D., and D. Graber. 1985. Integrated watershed research undertaken at Sequoia National Park. *Park Science* 5(2):22-24.

Parsons, D., and T. Stohlgren. 1985. Long term chaparral research in Sequoia National Park. In *Proceedings, Chaparral Ecosystem Research Conference*. Santa Barbara, CA. In press.

Peterson, D., D. Mouat, and J. Brass. 1984. Remote sensing research of forest structural and functional variables in Sequoia National Park. *Bull. Ecol. Soc. Amer.* 65(2):136. Abstract.

Rundel, P. 1984. Long term effects of acid precipitation on ecosystems of Sequoia National Park, California: vegetation studies. *Bull. Ecol. Soc. Amer.* 65(2):135. Abstract.

Theodore Roosevelt NP

Wetmore, C. 1985. Lichens of Theodore Roosevelt National Park. *Mycotaxon* 23:241-249.



A technician examines a field exposure test rack with Vermont marble (foreground) and Indiana limestone (background) at Research Triangle Park, NC.