Spring 2009 • Volume 26 • Number 1 www.nature.nps.gov/ParkScience

PARKScience
Integrating Research and Resource Management in the National Parks

National Park Service
U.S. Department of the Interior

Natural Resource Program Center
Office of Education and Outreach

RESEARCH OF THE CANON NATIONAL PARKS SCIENCE SCHOLARS PROGRAM

Contributions to protected area conservation

- Biological sciences
- Physical sciences
- Social / cultural sciences
- Technology innovation

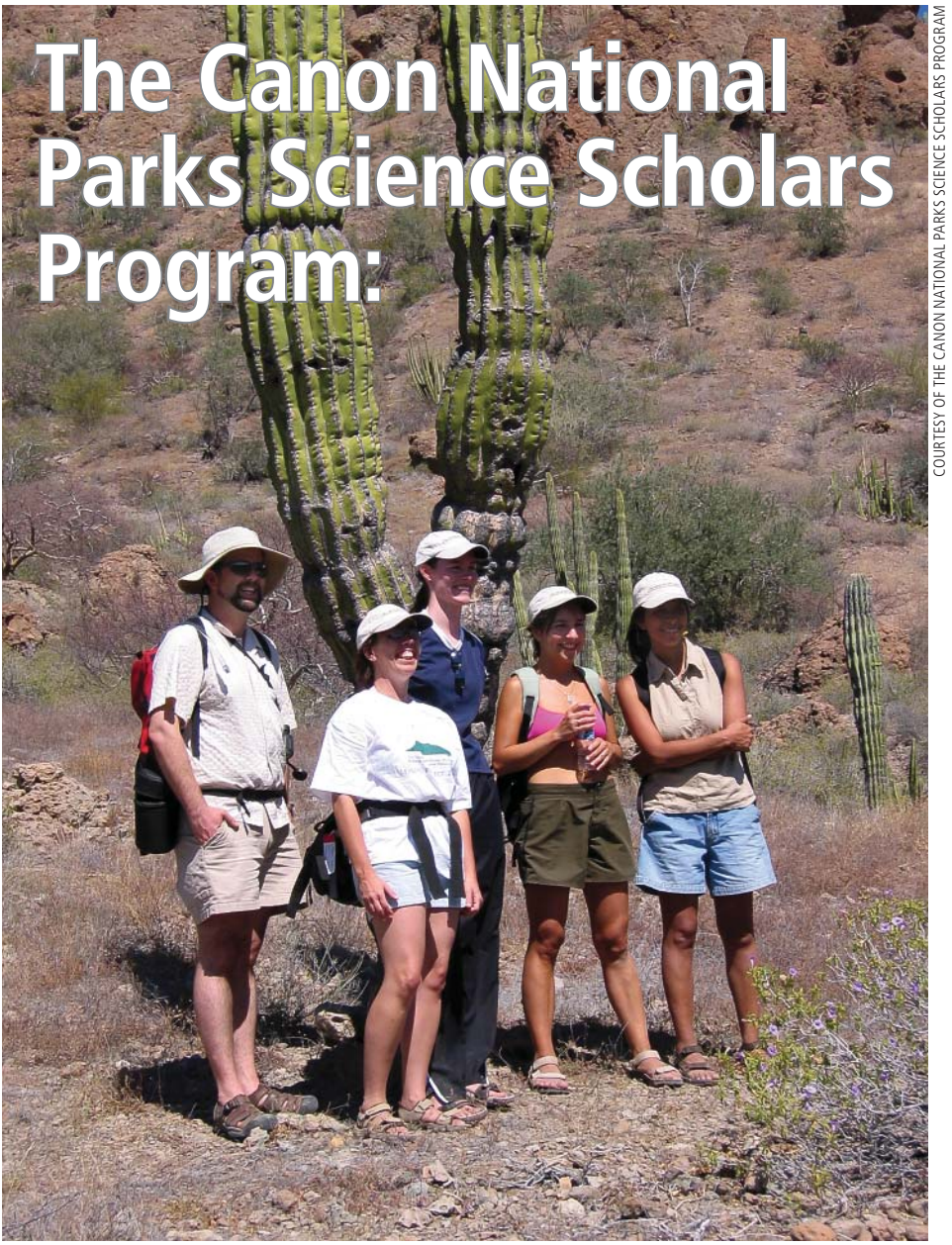
ON THE COVER

The photo mosaic samples the more than 75 men and women who have undertaken research projects in national parks and protected areas over the past 10 years with the support of the Canon National Parks Science Scholars Program. This issue of *Park Science* summarizes a selection of their discoveries in the areas of biological, physical, social, and cultural sciences, as well as technology innovation.

PHOTOS: COURTESY OF THE CANON NATIONAL PARKS SCIENCE SCHOLARS PROGRAM. *MAP:* LIBRARY OF CONGRESS, GEOGRAPHY AND MAP DIVISION

From the Guest Editors

The Canon National Parks Science Scholars Program:



COURTESY OF THE CANON NATIONAL PARKS SCIENCE SCHOLARS PROGRAM

A legacy of science for national parks

AN URGENT NEED THROUGHOUT THE AMERICAS and the world is to better understand how to preserve the natural and cultural resources of national parks for future generations. Hence, educating and preparing the next generation of conservation scientists is a vital responsibility. These scientists will learn, discover, invent, and create solutions to preserve national parks in the 21st century. In 1997, Canon U.S.A., Inc., the National Park Service (NPS), and the American Association for the

Advancement of Science (AAAS) collaborated and created the Canon National Parks Science Scholars Program to help address these important challenges. Canon generously supported this program for more than a decade. The program awarded scholarships to more than 75 doctoral students who conducted research in more than 90 national parks throughout the Americas. Today, program alumni work in academia, the private sector (including nongovernmental organizations), and government. This theme issue of *Park Science* highlights the research activities of selected Canon Scholars and the difference they are making in science and conservation.

About the program

The program's mission was "to encourage the best and brightest graduate students in all relevant disciplines to conduct research important to the future of national parks, expand scientific knowledge concerning conservation and sustainability and share this knowledge broadly, develop future world leaders in science and conservation, demonstrate *kyosei* [coming together for the common good] in an innovative partnership, and help preserve the national parks of the 21st century." Originally, the program awarded scholarships to doctoral students studying in national parks in the United States. Beginning in 2002, the program expanded to include students in all countries of the Americas—Canada, United States of America, Mexico, and countries in Central and South America and the Caribbean.

Because much of the science important to national parks crosses traditional academic disciplines, scholarships covered four broad categories: (1) biological sciences, (2) physical sciences, (3) social/cultural sciences, and (4) technology innovation in support of conservation. The program awarded eight scholarships each year—four to students studying at universities in the United States and four to students studying at universities in other countries throughout the Americas. A significant portion of each student's research had to be in, or directly relevant to, a national park in the country in which he or she had citizenship. AAAS organized and led the annual international scientific review panels that selected the winners, administered the scholarship funds, and participated in program activities.

Each scholar received funding to support his or her doctoral research and complete a dissertation within three years. The total award amount for each scholar—$75,000 beginning in 1997, increased to $80,000 over the period of the program—went toward tuition, books, fieldwork expenses (including research assistants), equipment and supplies needed to complete the research project, laboratory expenses, travel to field sites and scientific meetings, and a student stipend. In addition to their scholarships, Canon Scholars participated in intensive science retreats held over the years at Yellowstone National Park, Wyoming; Williamsburg, Virginia; Washington, D.C.; Vieques, Puerto Rico; Bay of Loreto National Marine Park, Mexico; Waterton-Glacier International Peace Park, Canada; and Grand Canyon National Park, Arizona.

About this issue

The purpose of this issue of *Park Science* is to assemble examples of the scientific research through which Canon Scholars are making a difference in the future of national parks. Four guest editors prepared this special edition: Jean McKendry, the program's coordinator; Andrew Bunn, a Canon Scholar in 2001; Patricia Illoldi-Rangel, a Canon Scholar in 2002; and Gary Machlis, the program's director. Program alumni contributed to several sections of this issue; 12 alumni authored research articles. The research articles are organized around the four program categories and reflect the broad diversity of research in which Canon Scholars are engaged. Guest editors Bunn and Illoldi-Rangel summarized selected peer-reviewed articles (see Information Crossfile department) published elsewhere. Elizabeth Brusati, a Canon Scholar in 2001, also contributed to Information Crossfile. Alice Wondrak-Biel, a Canon Scholar in 1999, reviewed the book *Yellowstone denied: The life of Gustavus Cheyney Doane*.

The biological and physical science articles illustrate the opportunities that national parks provide to make fundamental contributions

to science. They also highlight the stresses that parks face in a changing world. The articles from these two sections cover a breadth of scientific disciplines that would never be brought together at traditional scientific conferences.

The articles in the social/cultural sciences emphasize the importance of people in the preservation and management of national parks. While research on park visitors has become more common, equally significant is research that focuses on park employees, partners, and local residents (present and past). The articles in this section exemplify these topics.

The articles about technology innovation in support of conservation illustrate how contemporary park research and management activities can substantially benefit from scientific advances in technology fields not traditionally associated with national parks.

Conclusion

For more than a decade, the Canon National Parks Science Scholars Program encouraged graduate students to conduct research important to the future of national parks. Many Canon Scholars are now teaching and mentoring a new generation of conservation scientists. The program's legacy is significant yet not fully realized. The need to expand the role of science in national parks continues, and we hope that support for additional national parks science scholars will continue in the future. This special issue of *Park Science* illustrates the diversity of scientific talent that is both needed and available to meet the equally diverse challenges of park management and conservation now and in the future.

The guest editors thank Michael Soukup, former associate director, Natural Resource Stewardship and Science, National Park Service (retired), and Shirley Malcom, director, Education and Human Resources Programs, American Association for the Advancement of Science, for their extraordinary commitment to the success of the Canon Scholars and training the next generation of conservation scientists. We also express our gratitude to the Canon U.S.A., Inc., executives and employees who so enthusiastically supported the program.

—Jean E. McKendry, Andrew G. Bunn, Patricia Illoldi-Rangel, and Gary E. Machlis

Jean E. McKendry *is principal scientist in the College of Natural Resources at the University of Idaho and can be reached at jeanm@uidaho.edu.* ***Andrew G. Bunn*** *is assistant professor in the Department of Environmental Sciences, Huxley College, Western Washington University, and can be reached at andrew.bunn@wwu.edu.* ***Patricia Illoldi-Rangel*** *is a postdoctoral student in the Biocultural and Biodiversity Lab, University of Texas at Austin, and professor in the Faculty of Sciences, National Autonomous University of Mexico, and can be reached at pilloldi@ibunam2.ibiologia.unam.mx.* ***Gary E. Machlis*** *is professor of conservation in the College of Natural Resources at the University of Idaho and visiting senior scientist for the National Park Service and can be reached at gmachlis@uidaho.edu.*