

The OHIO ACADEMY of SCIENCE

1500 West Third Avenue Suite 228 • Columbus OH 43212-2817
Phone 614/488-2228 • Fax 614/488-7629
Email oas@iwaynet.net • Website <http://www.ohiosci.org>
Fostering curiosity, discovery and innovation to benefit society.

The Ohio Journal of Science

109(4-5):76-144

Knowing Nature: Paul Bigelow Sears (1891-1990) and American Ecology

Copies of the Sears memorial edition may be purchased online for \$15 each at
http://www.ohiosci.org/store/ohio_journal_of_science.html *or request ordering details by email at*
oas@iwaynet.net.

Paul B. Sears' Contributions to the Development of Paleoecology

Linda C. K. Shane¹, (retired) Limnological Research Center, University of Minnesota, Minneapolis, MN 55455

Abstract. Paul B. Sears laid the foundation for both the methodology and many of the major research questions that concern paleoecological research in North America and globally. Using sediment records mostly from Ohio as a starting point, he investigated the relative ages of glacial geomorphic features and the Ohio postglacial climate record. From there using his own and other records he investigated rates of sedimentation, regional sequences of revegetation after final deglaciation, rates of vegetation change, climatic interpretation of that change and the possible synchronicity of the North American and European climatic histories. Foundational early papers focused on the methodology and taxonomy of pollen analysis and the use of early land-survey data to reconstruct the vegetation record prior to European settlement and agricultural development. The latter was a critical strategy to identify modern climate analogs for fossil pollen assemblages. He also fostered mechanisms for international and interdisciplinary research communication. The field of paleoecology—the record of past environmental and climate change—was once esoteric. Today the ecological meaning of documented changes through time is one of the keys to understanding the consequences of today's rapid global climate change.

Ohio J Sci 109 (4-5): 76-87, 2010

¹Address correspondence to Linda C.K. Shane, 9 Fieldstone Ct, Portland ME 04103-2718 shane002@umn.edu

Paul B. Sears: The Role of Ecology in Conservation

John F. Disinger¹ [1930-2005], Professor Emeritus, School of Natural Resources, The Ohio State University, Columbus, OH 43210.

Abstract. Paul B. Sears made his mark in four interrelated fields: botany, natural history, ecology and conservation. His personal commitment to, and academic and professional competence in plant sciences paved the way to a rigorous analysis of the intricate interrelationships among living things and their environments that are of central concern to ecologists. However, Sears' contributions as a conservationist may have been even greater, as he championed the need for coherent communication between the professional scientist and the lay public, especially political decision-makers. He believed that environmental choices can be scientifically sound only to the extent that they understand the nuances and implications of the science underlying their practical concerns and obligations. Sears maintained that scientists must communicate their findings in language that is understandable and with a sense of urgency that can elicit a positive response. Several of his own works, particularly *Deserts on the March*, clearly exemplify how this can, and should be, accomplished. He also left an enduring contribution to society: a sharpened focus on the meaning and necessity of an ecological perspective on the human role in nature.

Ohio J Sci 109 (4-5): 88-90, 2010

¹Posthumously published

Contributions of Paul B. Sears to Natural Vegetation Mapping in Ohio

Ronald L. Stuckey¹, Herbarium, Museum of Biological Diversity, College of Biological Sciences, The Ohio State University, Columbus, OH 43212

Abstract. Paul B. Sears (1891-1990), using data from original land surveys and both published and unpublished accounts, was the first individual to prepare natural vegetation maps of Ohio. As a youth with a strong curiosity about plants, Sears became especially interested in the native prairie flora south of his home in Bucyrus, Ohio. While Sears was an instructor at The Ohio State University, his desire to study the state's natural vegetation was expanded by Edgar N. Transeau. By 1919, Sears had constructed a map showing the original prairies in relation to the system of moraines in Ohio. In that same year, he began obtaining records of "witness trees" left by land surveyors in the Old Northwest Territory and devised symbols to plot those records on an Ohio map. In 1923, Sears drew a map of virgin forests in Ohio using patterns of lines to show the extent of the different forest types, but it was not published until 1941. His second virgin forest map, published in 1925, used various symbols to indicate oak, beech and ash forests. The same publication included his maps depicting the relationships of oak and beech forests to the moraines and physiographic regions of the state. In 1926, Sears published a map of the natural treeless areas of Ohio showing their correlations with physiography, moraines, preglacial drainage routes and postglacial lakes. Sears prepared 11 natural vegetation maps; two for northwestern Ohio were not published. He published 9 covering the entire state in *The Ohio Journal of Science*. An unpublished 1919 map of Ohio prairies first appears here.

Ohio J Sci 109 (4-5): 91-98, 2010

¹Address correspondence to Dr. Ronald L. Stuckey, 1320 Old Henderson Rd., Columbus OH 43212.

Scientific Wildlife Management in Ohio: The Legacy of Paul B. Sears

Thomas W. Townsend¹, Associate Professor Emeritus, School of Natural Resources, The Ohio State University, Columbus, OH 43210

Abstract. Paul B. Sears had an eclectic interest in ecosystems, including an active concern for wildlife. His professional training was in botany and ecology, but he was one of the first to recognize and write clearly about wildlife as a resource vitally dependent on soils, plant communities, and human land use. He employed his impressive scientific capabilities in active service to practical wildlife conservation as chairman of the Board of the National Audubon Society, member of the Ohio Commission on Conservation and Natural Resources and member of The Ohio Wildlife Council. In these positions and others, he did much to further scientific wildlife management. He probably will be remembered best in wildlife management circles for his insightful insistence that wildlife problems were ecosystem problems generated, and therefore solvable, by humans.

Ohio J Sci 109 (4-5): 99-103, 2010

¹Address correspondence to Thomas W. Townsend, 996 Kenley Ave., Columbus OH 43220

Paul B. Sears and the Ecological Society of America

Robert L. Burgess (1931-2002)¹, College of Environmental Science and Forestry, State University of New York, Syracuse, NY

Abstract. Paul B. Sears, perhaps more than any other person, epitomized American plant ecology. In a professional career spanning almost 7 decades, he made major contributions to vegetation mapping, paleoecology and Pleistocene history, vegetation studies, conservation, human ecology and our use of land; and particularly, the varied roles of scientists in modern society. He introduced his work in most of these subjects by presenting papers at the annual meetings of the Ecological Society of America (ESA). As a member or chair of numerous committees, Sears pushed the ESA to become involved in supporting the teaching of ecology in college curricula, conservation efforts, applied ecology, human ecology and

outreach to government and the public. He also served the ESA as an editor, vice president and president. His influence is still felt in the ESA, although few realize where the ideas originated. Sears was named Eminent Ecologist by the ESA in 1965, a title as appropriate today as it was then.

Ohio J Sci 109 (4-5): 104-108, 2010

¹Posthumously published.

Paul B. Sears: The Generalist as Teacher

W. Dwight Billings [1910-1997]¹, Department of Botany, Duke University, Durham, NC

Abstract. Paul B. Sears' early ecological interests continued to expand over 70 years into such areas as vegetation mapping, paleoecology, climate change and conservation. Few ecologists saw and understood the interactions of the earth's biosphere in space and time as broadly as he did. He wrote that the laws of human society and those of nature often are not in harmony, and something must be done to ensure that the biosphere remains sustainable. His teaching started with his children; continued in the classroom and in one-to-one sessions with graduate students; and extended to his colleagues and the general public through his work in organizations, his lectures and his writing. Sears set an example for ecologists to act as citizens and teachers, as well as investigators.

Ohio J Sci 109 (4-5); 109-110, 2010

¹Posthumously published.

Paul B. Sears: Professor

Gertrude Enders Huntington¹, Department of Anthropology and Department of Geological Sciences, University of Michigan, Ann Arbor, MI 481090

Abstract. As a professor at Oberlin College and Yale University, Paul B. Sears taught principles that influenced his students throughout their careers. These included the obligation to disseminate knowledge to others. However, he also believed that no one could teach another all that he or she knew and, rather, should impart an attitude, an approach. He advised students that they must be respected in a specific area of expertise before they could pursue broader interests. The Conservation Program that Sears established at Yale was innovative by accepting students from varied and nontraditional backgrounds, in accepting women (the author was the first) and in allowing students to take courses in other colleges and schools at the university. Thirty-six years later, the first graduates of the program were able to have reunion at Sears' home in Taos and realized that they had been privileged to study with a great man.

Ohio J Sci 109 (4-5): 111-112, 2010

¹Address correspondence to Dr. Gertrude Enders Huntington, 129 Kendall Dr., Kennett Square PA, 19348. huntingtn@umich.edu

Paul B. Sears: Lessons in Classroom, Field and Living Room

Loren D. Potter¹, Department of Biology [Emeritus], University of New Mexico, Albuquerque, NM 87131

Abstract. Paul B. Sears was kind and humble. He disliked false pretense and always was appreciative of the common man. He noted that the goal of teaching was to help students along the road so they could surpass the achievements of the teacher. Sears taught that a permanently balanced relationship with the environment was possible by prudent and skillful use of resources to obtain the maximum good for the longest time. His skills as a speaker, writer and artist enhanced his teaching and publications. A major goal of his teaching was to help students reconstruct the past, appreciate and understand the complexities and interactions of the present and thus knowledgeably predict the futures. Sears was active and still eager to learn and to interact with students even in the last years of his life.

Ohio J Sci 109 (4-5): 113-115, 2010

¹Address correspondence to: Dr. Loren D. Potter, La Vida Llana, 10501 Lagrima De Oro Rd NE, Albuquerque NM 87711-3737

Teaching Children: The Naturalist Paul B. Sears at Home

Catherine Sears Frazer¹, Professor Emerita, Department of Philosophy, Grinnell College, Grinnell, IA 501120

Abstract. Paul B. Sears' three children experienced the downside of growing up with a famous father, but they valued the enjoyment of being with him outdoors on numerous trips. He took them to prairies, peat bogs, woodlands and mountains, where he taught them to observe the landscape and the ecosystems. They learned to respect natural hazards but to meet natural challenges. Their collections sometimes were taken to Sears' laboratory for close examination. Later in their lives, Sears often was invited to give lectures or speeches at the schools where they were students or faculty members. He always was revitalized by an audience, and even in his last year of life, he took the time to talk to a student about ecology. Sears instilled in his children a love of the natural world and a respect for the processes of nature.

Ohio J Sci 109 (4-5): 116-118, 2010

¹Address correspondence to Catherine Sears Frazer, 970 Aurora Ave., Apt 106 F, Boulder CO 80302

Paul B. Sears: Through a Daughter's Eyes

Sallie Harris Sears¹, Associate Professor Emerita, Department of English, State University of New York, Stony Brook, NY 11790

Abstract. Paul B. Sears was most at ease with his three children in any outdoor setting. There he pointed out the details of the landscape and the damage done by humans. He encouraged them to explore and deal with challenges. These interactions gave the children a sense of connection with their father that was often otherwise lacking. They also shared experiences on the family farm with Sears' parents, which provided insight into his childhood. As his career developed, both his extensive academic duties and his popularity as a lecturer and speaker at meetings, which entailed extensive travel, often kept him away from his family. Throughout his life, Sears pursued many interests and learned new skills; his sketches were used to illustrate his books, and he later took up watercolor painting and calligraphy. In his final years, he seemed to be haunted by doubts about personal issues and to be more pessimistic about the future of our ecosystem. However, he left his children with an appreciation of the natural world as he saw it and respect for his life's work.

Ohio J Sci 109 (4-5): 119-127, 2010

¹Address correspondence to Dr. Sallie Harris Sears, 333 East 30th Street, Apt. 6B, New York, NY 10016

Bibliography of Publications by Paul B. Sears (1891-1990)

Juliana C. Mulroy¹, Department of Biology, Denison University, Granville, OH and Janet L. Oblinger, Department of Pathology, The Ohio State University, Columbus, OH

Abstract. Paul B. Sears authored or coauthored more than 550 publications from 1914 to 1988. They included journal articles, abstracts or complete papers presented at meetings, book chapters, books, magazine articles, letters, many book reviews and editorials. Subjects discussed ranged from entomology and cytology to palynology/paleoecology to many aspects of ecology, conservation and conservation education. Numbers of publications peaked in several years of the 1950s, ranging from 20 to 30 per year. This bibliography is largely complete, but items may well have been missed because Sears was so prolific. This listing was current circa 2005.

Ohio J Sci 109 (4-5): 128-136, 2010

¹Address correspondence to: Juliana C. Mulroy, Assistant Professor, Department of Biology, Denison University, Granville, OH 43023. Email: mulroy@denison.edu

Bibliography of Publications Relevant to Paul B. Sears (1891-1990)

Juliana C. Mulroy¹, Department of Biology, Denison University, Granville, OH and Janet L. Oblinger, Department of Pathology, The Ohio State University, Columbus, OH

Abstract. Paul B. Sears and his work were discussed in hundreds of publications beginning in 1908. They included high school and college yearbooks, reviews of his books, newspaper articles, award citations, letters, biographies, and obituaries. The greatest number of publications (more than 50) mentioning Sears appeared in the 1930s. This listing may not be complete because of extensive editing, losses and additions since first compilation in 1994. It is an entry point to understand Sears' influence on the fields of ecology, conservation and education.

Ohio J Sci 109 (4-5): 137-139, 2010

¹Address correspondence to: Juliana C. Mulroy, Assistant Professor, Department of Biology, Denison University, Granville, OH 43023. Email: mulroy@denison.edu

Paul Bigelow Sears (1891-1990): Eminent Scholar, Ecologist and Conservationist

¹Ronald L. Stuckey, 1320 Old Henderson Road, Columbus, Ohio 43220

Abstract. Paul Bigelow Sears, botanist, ecologist and conservationist, was one of the most respected and honored ecologists in North America. He had the remarkable ability to explain complex environmental problems clearly and simply to colleagues, students and citizens. Sears devoted his life to furthering man's understanding of the delicately balanced ecosystems upon which mankind's very survival exists. The keenness of his mind, the warmth of his personality, the quality of his writing and his capacity to relate scientific problems to human affairs earned Professor Sears the distinction of an exemplary individual in American science. For his many accomplishments, he was the recipient of many honors and awards.

Ohio J Sci 109 (4-5): 140-144, 2010

¹Address correspondence to Ronald L. Stuckey, 1320 Old Henderson Road, Columbus, Ohio 43220

-end-