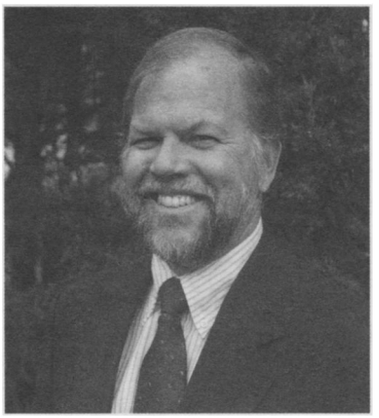

Stephen R. Carpenter, ESA President 2000–2001

Early in his youth, Steve Carpenter developed an incurable case of hydrophilia. While visiting relatives on a Missouri farm, he discovered the pond, its cattails, blackbirds, frogs, and fishes. Steve learned that he wanted to become an ecologist while working as an undergraduate assistant in Glacier National Park, counting trees with Bob Howarth. While avoiding lighting strikes, meteorites, bears and their supervisor's .44 magnum, Steve and Bob realized that you could get paid for fascinating outdoor work. Many of us can identify with these moments when revelation occurred. They produce a glorious obsession that takes us to interesting places. His now finds him serving as President of the Ecological Society of America.

In Stuart Fisher's laboratory at Amherst College, Carpenter wrote an undergraduate thesis on macrophyte primary production of the Fort River. This led to his first publication, and a genesis of the ecosystem perspective that has guided his research ever since. In 1974, Steve entered the graduate programs in Botany and in Oceanography and Limnology at the University of Wisconsin-Madison, joining Mike Adams's study of littoral zone ecology, one of the projects spawned by the US-IBP. Carpenter's thesis, completed in 1979, showed that invasion of littoral zones by the exotic Eurasian water milfoil caused fundamental changes in the phosphorus cycle, by increasing recycling from sediments to the overlying water, thereby increasing eutrophication. Native macrophyte species were much more conservative of phosphorus. Another publication deriving from his thesis work described the "invasion wave" that is commonly seen as yet another exotic sweeps across the continent, rises to high local abundance, and then recedes to some lower, but continuing, presence. Connections between organismic and ecosystem ecology are a thread visible through much of Carpenter's research.

Steve was a student in my graduate course that centers around a field trip to Sapelo Island, Georgia. One goal of the course is to teach students how to plan for and conduct individual research projects in an unfamiliar setting. Steve's exceptional planning capabilities became immediately apparent. First, he successfully conducted his primary project in a very short time, then proceeded to complete his back-up project, then moved on to develop an 18-page key and guide to Sapelo vegetation for future class members. Second (and more important in some views), he planned for the contingency of a crisis. There are no convenience stores on Sapelo Island. The hand-carried provisions of social-use-only ETOH were soon depleted. Late in the week and on the occasion of an evening bonfire on the beach, Steve proved his planning skills, his vision, and his worth to the common good by producing a large bottle of Jack Daniels he'd carefully stashed in the Hach kit. Yes, planning and vision are among his unique skills. In this case, and in many to follow, science and society are better for that.

Immediately after completing his Ph.D., Steve drove what remained of his Ford Pinto to South Bend, Indiana, and joined the Biological Sciences faculty at the University of Notre Dame. He taught Biostatistics each year, and an assemblage of other courses including Aquatic Botany, Plant Physiology, and Advanced Aquatic Ecology. During these years, he was involved in a field course at the University of Notre Dame Environmental Research Center near Land o' Lakes, Wisconsin, and began to build a research program in the lakes of UNDERC. He was promoted to the rank of Associate Professor in 1985.

In 1982, Steve, Jim Hodgson, and I began a collaboration based on our complementary interests in dynamics of lake ecosystems. This effort—the Trophic Cascade Project—is now in its 18th field season, and is planned as an ongoing effort to learn about ecosystem dynamics through large-scale experimental manipulation of lakes. During the first few years, we tested the trophic cascade idea by exchanging the top predators of lakes with contrasting food webs. Later, we conducted other whole-lake experiments in studies designed to reveal the causes, magnitude, and limits of variance in lake food webs. Since 1990, we have collaborated with Jon Cole and Mike Pace of the Institute of Ecosystem Studies in experiments to study the interaction of nutrient and food web controls of lake productivity. Most recently, we applied whole-system stable isotope additions as a way to discern the sources of carbon that fuel lake food webs.

A rite of spring in the early years was the annual migration of groups from Notre Dame, Wisconsin, and St. Norbert to the northern lakes field station, where we would rendezvous for the beginning of the field season. The Notre Dame migration typically involved one van packed with gear, laboratory supplies, etc., and Steve's little station wagon filled to the ceiling with empty milk jugs. The jugs were to be that year's supply for all the things limnologists mark with, moor to, or attach at, a float. Many suggestions and much complaining was typically associated with the volume required by each year's supply of milk jugs (offset by the family's relief at again having access to their garage). One of the more memorable events in this collaboration occurred when we offered Steve solutions to the problem in the form of a choice: get a bigger car or find a way to make the milk jugs last more than

one season. Ever cost-conscious, he preferred the latter.

Steve and our technician at that time (Jim Elser, now at Arizona State) took the well-intended advice of a colleague and set about making longer lasting floats by filling each milk jug with a big dose of that miraculous, new spray styrofoam insulation product called Great Stuff. On the shore of Paul Lake, they created a huge pile of milk jugs and approached their task equipped with a full case of giant, economy-size cans of Great Stuff. History has taught us that this event should be labeled as a learning trial. Learning included the fact that spray nozzles on a can of Great Stuff would sometimes, often, or always stick in the open position. That created a continuous stream of sticky, liquid styrofoam that filled the jug, covered the hand, the arm, the leg, overflowed onto the shoes, the ground, nearby flowers, slow-moving frogs, and so on. These developments caused a great deal of vocalization by Carpenter and Elser, which was soon directed toward others who happened to be diligently working in a nearby boat. The phrases need not be repeated here. The learning continued as Great Stuff, released from its pressurized container, swelled to several times its original volume, and shortly thereafter set into solid form, just like it says in the TV ad! That solid form refuses to be removed from skin, clothing, or flowers by any of the solvents known to science—a characteristic not featured in the TV ad. In addition, Great Stuff absorbs water when placed in a lake, and that causes milk jugs to sink.

More than one field camp story centers on this important learning experience. They usually conclude with suggestions about where and how someone could apply Great Stuff to maximum advantage. Steve is particularly creative in these discussions. In fact, I believe that some of the original case remains in storage at the field station, and imagine he would be willing to share this resource. If you're interested, inquire at <srclake@macc.wisc.edu>.

Steve returned to Wisconsin in 1989 as the Bassett Research Professor, a new position endowed to the Center for Limnology for study of the Madison lakes. He quickly established a leadership role in the Lake Mendota biomanipulation project, and developed time series models that built on the rich history of limnological data for these lakes. Steve and collaborators at the Wisconsin Department of Natural Resources established a multilake experimental program to study the effects of macrophyte harvesting on fish growth and food web dynamics. More recently, he has developed a program of research on nonpoint pollution that integrates ecology, economics, and sociology. Lake Mendota is at present the focus of the most ambitious nonpoint pollution management program in Wisconsin's history. Steve is now the Halverson Professor of Limnology and a Professor in the Department of Zoology. He owns a relatively new and fuel-efficient, mid-size station wagon.

Carpenter is justifiably proud of his advisees—undergraduate, graduate, and postdoctoral. He has always encouraged students to consider a broad range of possible careers, and generously offered them his advice about the suite of choices that make the best of a big, diverse educational environment. This is reflected in the assemblage of positions now occupied by his students, including a corporate CEO, positions in state and federal management agencies, and faculty appointments that range from small colleges to major universities. His conceptual and analytical skills make him one of the most valuable members of committees. He is regularly sought for advice and counsel in matters that range from basic limnological methods, to those that allow him to contribute his uniquely important blend of statistical approaches and simulation modeling. He is unselfish in the latter, as evidenced by the range of issues expressed in his publication record and those of his collaborators.

Carpenter's service contributions are now growing exponentially. He and Jim Brown organized the ESA-AERC workshop that crystallized the vision for the National Center for Ecological Analysis and Synthesis, and Steve served as Chair of the Science Advisory Board in the formative years of the Center. The initial growth and success of NCEAS owe much to his leadership. In 1997, Steve Carpenter and Monica Turner launched the new journal *Ecosystems*, a successful and growing outlet for papers that integrate the many kinds of ecosystem ecology and link ecosystem science with socioeconomic sciences. These are but two selections from an extensive list of positions on boards and panels of numerous journals and organizations. Honors to Carpenter include a Pew Fellowship, a mid-career research award from the University of Wisconsin Graduate School, the Per Brinck Award in Limnology from Lund University, the Hutchinson Award of the American Society of Limnology and Oceanography, the MacArthur Award from ESA, and membership in the Ralf Yorque Society.

In 1999, Carpenter assumed leadership of the North Temperate Lakes LTER site. This collaboration of more than 20 principal investigators, from seven academic departments and two agencies, studies long-term lake dynamics, land–water interactions, plus the interactions of people with lakes in rural and urban regions throughout the state.

So, Steve Carpenter now ascends to the leadership of ESA. I am honored to offer this preamble to his term of office. His experience and accomplishments clearly demonstrate his ability to provide the vision and guidance we expect of our leaders. His organizational skills and even-handed approach will guarantee a productive and substantial growth in the Society's activities. In short, I believe that we are in for a year of really great stuff.

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