

Leadership in Species and Ecosystem Conservation

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Leaders who are explicitly skilled in interdisciplinary problem solving will be essential if humanity is to solve the species and ecosystem loss problem. Developing such leaders is one of the most vital and pressing challenges of our time. The broad outline of the biological problem is clear: many species and ecosystems are being destroyed at an accelerating rate because of human practices. These permanent losses threaten to impoverish the planet, and endanger the long-term sustainability of human activities. In this introduction, we briefly examine the problem of species and ecosystem loss and the reasons for its persistence. We also provide a brief overview of a graduate-level course at the Yale School of Forestry & Environmental Studies designed to meet the challenge of developing leaders with strong interdisciplinary problem-solving skills. All of the case studies discussed in the remainder of the Bulletin originated in this course. The course, or variations of it, can be taught elsewhere in workshops, field trips, and in real-world problem-solving situations involving management and policy problems.

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THE SPECIES AND ECOSYSTEM PROBLEM AND ITS SOLUTION

The living environment consists of millions of species, which are organized into ecosystems. The interactions of these species and the productivity and resilience of ecosystems sustain the great biotic enterprise of which humans are a part. Among the factors responsible for the modern loss of species and ecosystems, three stand out: exploitative practices, conventional (narrow) problem-solving approaches, and weak leadership. In this section we discuss exploitative practices and narrow problem-solving approaches, and how they can be understood and effectively addressed through the use of interdisciplinary problem-solving methods. In the next section we discuss how to develop strong leaders who possess such problem-solving skills.

EXPLOITATION VS. SUSTAINABILITY

The significance or meaning of the environment to humans is determined by the goals, or values, that people seek at specific times and places, and by their expectations about the utility of particular environmental resources for achieving their values. If people seek short-term gains (or value accumulation) from the environment and use destructive practices to get those gains, we call that “exploitation.” If they seek long-term benefits through practices that can be carried on without destroying species and ecosystems, we call it “sustainable.” Although many people and most nations seek at least some level of sustainability, exploitation is widespread. Numerous studies document the high rate of degradation and loss of species and ecosystems through unsustainable practices worldwide (see the references at the end of this paper). Collectively, they suggest that, if current trends continue, the future of much of the living environment is in jeopardy. These negative trends, and the conditions under which they are taking place, must be reversed if sustainability is to be achieved.

On the positive side, however, there are also many cases where the living environment is used sustainably. These examples can be understood as “prototypes” that offer lessons for achieving sustainability elsewhere. The lessons can be harvested, diffused widely to other situations, and adapted or refined as appropriate to local circumstances. Learning from prototypes and applying the lessons in other settings is a constructive, practice-based way to overcome diverse problems.

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CONVENTIONAL DISCIPLINARY VS. INTERDISCIPLINARY
PROBLEM SOLVING

Problem solving is merely an effort by an individual or group to think of a way out of a difficult situation. Conventional problem solving draws on ordinary, everyday images, notions, and vocabulary about people, problems, and the process of making decisions. The conventional approach to problem solving, as institutionalized in most organizations, usually involves various levels of conflict and cooperation among participants who are thrown together to address a problem and who often use divergent forms of reasoning, subscribe to different ideologies, and seek diverse goals. This approach, and the ensuing conflict, rarely satisfies anyone or solves problems effectively. Conventional problem solving muddles through one crisis after another without truly understanding the nature of the problems, solving them, or gaining insight into why the process is not effective. Increasingly, this approach is seen as inadequate in dealing with the complexity and conflict of conservation cases.

Biology, ecology, sociology, political science, economics, and many other disciplines can all be invoked in making decisions about the use of living resources. Yet the problem of species and ecosystem losses cannot be reduced to a single disciplinary conceptualization or solution. Moreover,

fundamental problems in the decision-making process cannot be remedied with the addition of new scientific information from ecological, economic, or other single-discipline models alone. The loss of the living environment is a complex, *interdisciplinary* challenge and thus demands *interdisciplinary* solutions from skilled problem solvers and leaders.

Many people see conservation and sustainability issues in terms of plants, animals, and ecosystems, typically drawing on a conventional scientific perspective. This focus on *substance* under-emphasizes the *processes* of social interaction and decision making which determine substantive outcomes. Another way to look at this is to think of conservation as a process of people making decisions about how they will manage themselves in relation to the environment—daily decisions about how they will make a living, which practices they will use, and what policies and programs will guide their activities. Human decisions—whether in Kenya, Costa Rica, Indonesia, Germany, Australia, or the United States—determine whether species and ecosystems will thrive or vanish. Focusing on improving the human decision-making process is therefore key to achieving sustainability. Presently many decision-making processes are not themselves sustainable: they are not reliable, comprehensive, or realistic, and ultimately they fail to be viable, solve problems, or invigorate people to remain involved. The real key to sustainability is to change these processes so that they become sustainable.

Interdisciplinary problem solving is a much more effective way to address problems. It includes “ways and means for blending wisdom and science, for balancing free association and intellectual discipline, for expanding and refining information, and for building a problem-solving culture that balances ‘permanent’ with ‘transient’ membership, thereby remaining open to new participants and to fresh ideas while retaining the capacity for cumulative learning that refines, clarifies, and simplifies” (Burgess and Slonaker 1978: 1). Interdisciplinary problem solving is a kind of disciplined, “higher order” rationality not found in any single discipline or in conventional problem solving. It is a means of organizing knowledge for thought and research and integrating it to solve problems practically.

The first requirement of interdisciplinary problem solving is a framework that can accommodate—conceptually and practically—diverse data, epistemologies, and disciplines. The conceptual categories of such a framework can serve as a “checklist” of variables to address in any conservation problem, thus enabling users to construct a realistic map of the decision process and its context and to use it to define and solve problems. The second requirement is that problem solvers must clarify their own position, or “standpoint,” relative to the problem and the decision process. Finally, they must integrate what is known, make a judgment, and take responsibility for it. The interdisciplinary approach to problem solving described and illustrated in this volume satisfies these requirements. As Brewer and

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deLeon (1983: 22) note, “Other approaches may appear to offer simpler or easier solutions, but each usually turns up lacking in important ways—not the least of these being their relative inability to help one think and understand, and hence to become a more humane, creative, and effective problem solver.”

DEVELOPING STRONG LEADERS: AN INTERDISCIPLINARY COURSE AND PRACTICAL APPLICATIONS

Without appropriate leadership, conservation and sustainability of the living environment will remain only a dream. Although many of the participants in conservation problems have good intentions and the desire to improve conservation practices, few have the skills to integrate knowledge from multiple disciplines and work cooperatively to solve problems. Good leaders know how to effectively address a problem by clarifying social goals, mapping the trends and causal factors that have led to the current state of affairs, making projections into the future, developing and evaluating alternative strategies, and implementing the best strategy to move toward the desired goals. A semester-long course is an effective way to learn interdisciplinary problem-solving methods and leadership. This basic approach is useful to understanding and solving not only conservation problems, but all kinds of policy problems in other arenas.

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THE COURSE

The course at the Yale School of Forestry & Environmental Studies, “Species and Ecosystem Conservation: An Interdisciplinary Approach,” seeks to give students: (1) an interdisciplinary approach to species and ecosystem conservation; (2) a working ability (skill) in applying this approach; and (3) an opportunity to integrate and synthesize their course of study with their own experience. The interdisciplinary approach is both a theory and a conceptual framework which is designed to help students in this class, or professionals in workshops, to see the whole picture or context in problem solving, and to be selective and targeted in finding a solution. Users of this method are required to address the rationality, politics, and morality in any problem setting, clarify their own standpoint relative to their work and its context, and integrate their knowledge into an overall judgment.

PRACTICAL APPLICATIONS

Students in the course learn several ways to apply this interdisciplinary approach and their leadership skills to actual conservation situations. First, “cooperative problem solving” focuses on designing an adequate decision process as a way of helping other people or communities to seek their common interests. Problem-solving exercises can be organized by participants, coordinators, or decision makers to help groups integrate their

knowledge to solve complex problems. This design seeks to explore the problem at hand, its context, and find to enduring solutions in an integrative manner. Second, students learn about “prototyping,” which is a small-scale, experimental change in a social or policy system. The primary goal of experimenting in this way with problems and solutions is to get information on relevant factors and to learn how to solve problems. Thus, these efforts include explicit protocols for learning and integrating lessons across experiences, and later scaling up to pilot studies and full-scale applications. Third, students learn about designing and carrying out “workshops for capacity building.” Workshops seek to improve basic problem-solving knowledge and skills. Diverse people can be involved in workshops, even those at odds with one another. Workshops, if properly structured, can help participants avoid conventional approaches that are overly technical, parochial, or promotional (favoring special interests). The challenge is to teach individuals how to orient to complex problems using knowledge and methods from many disciplines and how to integrate that knowledge for practical purposes. Workshops can help build a shared definition of the conservation challenge, improve cooperation among participants, enhance the capacity of participants to be effective through group action and discussion, establish priorities for conservation, and open up opportunities to experiment and learn.

CONCLUSION

Interdisciplinary approaches offer the best means for successfully resolving conservation problems in the common interest. Leaders who are knowledgeable and skilled in interdisciplinary problem solving are therefore vital to solving the species and ecosystem loss problem. The task of educating these leaders is one of the most important jobs of universities, non-governmental organizations, and government agencies. Leaders must be explicitly versed in interdisciplinary problem-solving concepts and be skilled in critical thinking, observation, management, and technical proficiency. Courses, workshops, and hands-on experience are all opportunities to shape the leadership needed for conservation of the living environment. The materials in this *Bulletin* can aid people familiar with this interdisciplinary problem-solving approach to become more skilled in its use, and help other people currently unaware of this approach to learn about it, use it to address conservation problems of interest, and include it in educational programs of their own. In future years, we expect that this collection of papers will be used in the Yale course, and in the United States and internationally in workshops and ongoing cases, with government managers, non-governmental advocates, and citizens.

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