

The Science-Policy Interface:

What Is an Appropriate Role for Professional Societies?

J. Michael Scott¹, Janet L. Rachlow¹, and Robert T. Lackey²

¹Department of Fish and Wildlife Resources, University of Idaho

²Department of Fisheries and Wildlife, Oregon State University

Citation: Scott, J. Michael, Janet L. Rachlow, and Robert T. Lackey. 2008. The science-policy interface: what is an appropriate role for professional societies? *Bioscience*. 58(9): 865-869.

Email: Robert.Lackey@oregonstate.edu

Phone: (541) 737-0569

Web: <http://fw.oregonstate.edu/content/robert-lackey>

The Science-Policy Interface: What Is an Appropriate Role for Professional Societies?

J. MICHAEL SCOTT, JANET L. RACHLOW, AND ROBERT T. LACKEY

Scientists and their professional societies are seeking to increase their influence in shaping policy decisions. A recent call for natural resource professional societies to endorse position statements on economic growth raises questions about how scientific societies can and should effectively contribute to policy development. Taking a stand on policy issues is akin to serving as a policy advocate. We believe that natural resource professionals can most constructively contribute to policy development by conducting rigorous research that is policy relevant and by effectively conveying the results and policy implications of that research to all parties interested in the issue. By actively engaging decisionmakers and providing information on pressing policy issues, professional societies can increase opportunities to be recognized as sources for reliable, unbiased information about natural resources and their management.

Keywords: advocacy, policy, professional societies, scientists, science

Professional societies in the natural resource disciplines (e.g., American Fisheries Society, Society for Conservation Biology, Ecological Society of America, The Wildlife Society, and Society of American Foresters) have diverse missions and goals, but most include professional development, continued education of members and the public about wise stewardship of natural resources, and promotion of the use of science in policy development. Professional societies represent the collective knowledge of thousands of scientists with expertise to inform decisionmaking on natural resource issues.

More recently, natural resource societies have moved beyond providing information to decisionmakers and have sought to exert greater influence in shaping policy decisions (Brown 2000, Kaiser 2000, Blockstein 2002). Although scientific organizations have a long tradition of engagement in policy matters, their activities have expanded during the last 20 years, which is reflected in the hiring of policy personnel and the establishment of public affairs or policy offices (figure 1). The growth of the American Institute of Biological Sciences (from 21 member societies in 1958 to 196 today), which provides policy services for its member groups, is indicative of greater interest among scientific organizations in influencing policy development.

What is the appropriate role for scientists in shaping policy? Do the roles and responsibilities of professional societies differ from those of individual scientists, and if so, how? In various forms, these questions have been debated for decades (e.g., Noss 1996, Wiens 1997, Rykiel 2001, Scott et al. 2007).

Given the current climate of mistrust among scientists, politicians, and segments of the public, as well as growing competition for scarce natural resources and the emergence of natural resource issues with far-reaching implications for society, these questions are even more pressing today.

Our thinking on this topic was stimulated by a recent essay in *BioScience* (Czech 2007) that called on natural resource professional societies to become more involved in policy and to adopt formal position statements on economic growth. Czech (2007) wrote: "A collective position on economic growth by the professional natural resources societies will empower reform in virtually every relevant venue." We wholeheartedly agree with the call for professional societies to become more relevant to policy discussions that can and should be informed by science, to use science to evaluate policy alternatives, and to share results with all interested stakeholders. These activities, however, are very different from "taking a stand" on a policy issue as Czech urged in his

J. Michael Scott is a senior scientist with the US Geological Survey, Idaho Cooperative Fish and Wildlife Research Unit, and a professor of wildlife ecology in the Department of Fish and Wildlife Resources at the University of Idaho in Moscow. Janet L. Rachlow (e-mail: jrachlow@uidaho.edu) is an associate professor of wildlife ecology in the Department of Fish and Wildlife Resources at the University of Idaho. Robert T. Lackey is a professor of fisheries in the Department of Fisheries and Wildlife at Oregon State University in Corvallis, and is a former senior fisheries biologist with the US Environmental Protection Agency. © 2008 American Institute of Biological Sciences.

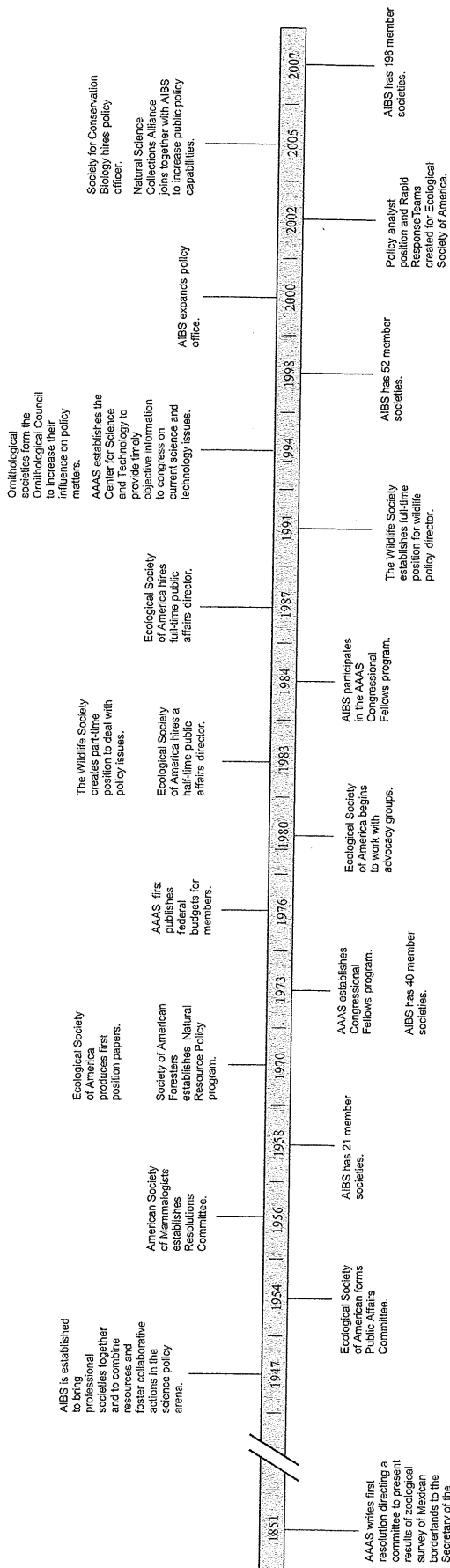


Figure 1. Policy science time line with examples of policy-related actions taken by several professional scientific societies in the natural resource disciplines. Engagement of professional societies in the policy process has expanded markedly during the past two decades.

essay (Czech 2007, Tomasso 2007). In this article, we explore this distinction and argue that it is important for scientists and professional societies to be cognizant of how they can and should engage in policy development. In our opinion, the question is not whether scientists can or should engage in the policy process (they should), but how best to do so effectively and collectively through professional scientific societies.

We restrict our discussion to natural resource issues and professional scientific societies. Some professions—for example, those that advance human health and medicine—have obligations to advocate for human well-being, about which there is little controversy (Lackey 2001, Pielke 2007). An argument could be made that natural resource societies and scientists have similar obligations for their charges (e.g., clean air, endangered species, biodiversity; Noss 1996, Kaiser 2000). We acknowledge that the issue is important, and we will return to the concept of scientific responsibility in the natural resource profession.

Science and policy development

One important point often overlooked in discussions of science and policy is that science alone does not dictate policy (Lackey 2004). In a democracy, decisionmakers create policies in response to competing societal values and interests (Wells 1996, Blockstein 2002). Societal values are translated into policy goals, a policy is selected, management strategies are adopted, and actions are taken. Each step of this process can and should be informed by science. The findings of science help shape societal values on issues as diverse as when life starts, the importance of biodiversity, and how much is enough with respect to conservation actions. But although science can play a significant role in the development of policies (Wagner 2006), it is only one factor that decisionmakers consider, and others—such as economics, religion, and culture—also must be taken into account (Lackey 2001, Tear et al. 2005, Wilhere 2008). For example, recovery goals for endangered species, when met, must result in a determination that the species is “no longer threatened with endangerment over all or a significant portion of its range for the foreseeable future.” If “a significant portion of its range,” “the foreseeable future,” “endangerment,” and acceptable risk are defined, then science can stipulate the minimum number of individuals that meets these requirements. Short of that—as we often are—other factors, such as how much we value the species or how much it conflicts with other interests, will influence recovery goals (Scott et al. 1995, Vuetch et al. 2006). This could explain why the gray wolf (*Canis lupus*) was delisted when it occupied less than 5 percent of its historical range (USFWS 2008), but the bald eagle (*Haliaeetus leucocephalus*) was not delisted until it had reoccupied 100 percent of its historical range (USFWS 2007).

Too often, discussions about how scientists might engage in the policy process are framed as simplified dichotomies; scientists can either act as advocates for particular issues or policies, or they can shun the policy realm and focus only on

science. In fact, this characterization represents the end points of a continuum for how scientists might interact with policy-makers. Pielke (2007) defined four roles that scientists might play when seeking to contribute to policy development. These include the extreme positions at the end points of the continuum as well as two others in the middle ground: one role involves serving as a provider of scientific information on policy-relevant issues when such information is requested, and the other serves to evaluate the full range policy options in light of scientific information and scientific uncertainty.

In contrast, acting as an advocate for a particular issue or stipulating a preferred policy can undermine the value of the distinctive contribution that scientists and professional societies can make toward policy development. Many interests are involved in natural resource policy debates, but scientists and their professional societies are unique among these interests because they can bring what is perceived as relatively unbiased information to the discourse. If scientists stipulate preferred policies, then their scientific data and analyses risk being viewed as biased (Lach 2003, Lackey 2007). Our contribution is then on a par with those of any other special interest group. Pielke (2007) argued that scientists can serve policy development as issue advocates when the issues are noncontroversial, but we argue that natural resource issues are seldom, if ever, so. Although we might agree that species conservation and clean air and water are important, there is likely to be marked disagreement about the acceptable standards, how much human activity should be curbed to meet those standards, and how much risk we are willing to tolerate (Svancara et al. 2005, Tear et al. 2005).

A role for professional scientific societies

Most natural resource societies were founded because of members' interest in a particular group of species or conservation of natural resources. If those members perceive a threat to the survival of species or to the sustainability of resource use, they can and should, as professionals, speak to the issues. Indeed, many scientists have expressed the belief that it is their professional responsibility to do so, especially if their research is supported by public funds (e.g., Noss 1994, Wiens 1997, Safina 1999, Blockstein 2002). By extension, professional societies also share this responsibility, a notion imbedded in the mission statements of many scientific professional societies.

How can we be more effective in influencing policy as scientists? As individual scientists, we can first choose to conduct research that is relevant to factors that threaten the species or resources. We can frame research questions, design studies, gather and analyze data in value-neutral ways, and provide objective, unbiased interpretation of results (Roseau 1992, Wiens 1997). In addition to publishing our work in peer-reviewed venues, scientists could provide white papers or synthesis papers documenting implications of threat factors; forcefully bring that information to the attention of the largest possible number of relevant advocacy groups, decision-makers, and those in a position to reduce or eliminate the

threats; or even take out full-page ads in newspapers to publicize the issue and the available science that informs that issue. For example, one might ask about the consequences of urbanization on genetic diversity, demography, and behavior of a narrowly distributed and endangered species. In discussions of the impact of urbanization on wildlife, research results should be reported in scientific publications and concurrently in other outlets in easily understood language, with policy implications clearly stated, and they should be brought to the attention not only of the National Wildlife Federation (a conservation group that has lobbied extensively on the issue) but also the National Association of Home Builders, the American Planning Association, and the relevant governmental entities such as city councils and county commissions. In other words, the information should be provided to all who have or potentially have an interest in the issue. None of these actions crosses the line between science and advocacy if we are careful to discuss the policy implications of our research without stipulating a preference for a particular policy decision.

The diverse tools that professional scientific societies have at their disposal for contributing to policy development are potentially more powerful than those available to individual scientists (table 1). In addition, professional societies can convene issue-review boards or advisory panels that serve to evaluate science on particular issues and to provide policy-makers with relevant information and analysis of policy options. The recent report by the Intergovernmental Panel on Climate Change (IPCC 2007) provides an example of how professional societies might effectively contribute to policy in this manner (Pielke 2002). One would be hard-pressed to identify a phenomenon with more potential to affect natural resources and society than human-caused climate change. The IPCC report represents the efforts of hundreds of scientists to evaluate the scientific evidence on this policy-relevant issue. The report, which includes data analyses and syntheses and possible outcomes of climate change, also notes the uncertainties associated with those outcomes. The authors of the report do not, however, prescribe what, if anything, should be done to address the issue. Other groups, such as the one organized at the request of the United Nations, use the scientific information to make recommendations (Bierbaum and Raven 2007). In an interview in the *New York Times* (Revkin 2007), Susan Solomon, coleader of the IPCC, shared her views on science and policy, saying that "science does have a duty, when called upon, to provide information that's important to society." She distinguished, however, between making "policy-prescriptive statements" and "policy-relevant statements." This distinction is a key one for both individual scientists and professional societies.

Because natural resource issues are dynamic, the timing of the public's and decisionmakers' engagement can affect the ability of professional societies to influence policy development. Our information is more credible when it is peer reviewed (Faigman 2002), yet scientists can share results early and often using the tools discussed above (table 1).

Table 1. Tools used by professional societies in the natural resource disciplines to contribute to policy development.

Professional society	Congressional visits	Letters or testimony for policymakers	Newspaper commentaries or news releases	Policy briefs or white papers	Policy position statements	Policy office, program, or center	Symposia or forums on science and policy	Resolutions
American Association for the Advancement of Science	X	X	X	X	-	X	X	X
American Fisheries Society	X	X	-	X	X	-	X	X
American Institute of Biological Sciences ^a	X	X	X	X	X	X	X	-
American Society of Mammalogists	-	X	X	-	-	-	-	X
Ecological Society of America	X	X	X	X	X	X	X	-
Ornithological Council ^b	X	X	X	X	X	X	X	-
Society of American Foresters	X	X	X	X	X	X	X	-
Society for Conservation Biology	X	X	-	X	X	X	X	-
Society for Rangeland Management	-	-	-	X	X	-	X	X
The Wildlife Society	X	X	X	X	X	X	-	-

Note: "Congressional visits" are personal visits by individual society representatives with members of Congress or their staff to discuss science and policy issues. "Letters or testimony for policymakers" are letters or written testimony submitted to members of Congress or other policymakers, or oral testimony presented to congressional committees. "Policy briefs or white papers" are summaries of important science and technology issues with references to key resources (e.g., AAAS; www.aaas.org/spp/stmt/docs/). "Policy or position statements" comprise statements of a society's position on important issues that provide scientific background and an evaluation of alternative actions; they may include science-based policy recommendations (e.g., ESA; www.esa.org/pao/policyStatements/; TWS; http://joomla.wildlife.org/index.php?option=com_content&task=view&id=117&Itemid=187). "Policy office, program, or center" are offices or programs that promote science in policy by providing analysis and communication with Congress, nongovernmental organizations, agencies, and the public (e.g., AAAS Center for Science, Technology, and Congress; AIBS Public Policy Office; TWS Government Affairs Program; ESA Public Affairs Office). "Symposia or forums on science and policy" are organized presentations or panels that discuss the interface between science and policy (e.g., Symposium on Advocacy in Conservation Science, 2006; AAAS Annual Forum on Science and Technology Policy). "Resolutions" are statements of a society's views on an issue that tend to be more concise and less analytical than position or policy statements; resolutions are usually written in a formalized style with "whereas" and "therefore be it resolved" statements.

a. The American Institute of Biological Sciences represents a coalition of 196 member societies.

b. The Ornithological Council represents a coalition of 11 ornithological societies.

Additionally, if policymakers or managers are involved in the framing of research questions, information sharing starts before the research is conducted, and channels for communicating results in a timely manner are already open.

Concluding thoughts

Many of the ecological policy issues that our professional societies address are politically contentious and socially divisive, and they need unbiased scientific information. How scientists or scientific societies choose to speak out about issues that threaten resources is critical to their effectiveness in the policy forum. Scientists who provide information to help inform the participants involved in ecological and natural resource policy debates must appreciate the importance of scientific information, but in a democracy, we also must recognize the reality that scientific information is just one element in complex political deliberations. Lack of communication between scientists and policymakers can hinder the use of the best available science in decisionmaking. It is important that both groups strive for better communication through congressional workshops, hearings, informal brown-bag discussions, and other venues at which information can be exchanged.

Professional societies are uniquely situated to serve as bridges between scientists, science, and the policy forum. Scientists and their professional societies can play the strongest possible role for natural resources by doing what they do best: high-quality, policy-relevant science followed by aggressive efforts to bring the results of their work, and the policy and management implications of those results, to decisionmakers and to those who lobby decisionmakers on the issues. By doing so, professional societies can broaden their sphere of influence and, correspondingly, their potential impact on policy decisions.

Acknowledgments

We appreciate the many colleagues with whom discussions have stimulated our thinking on advocacy, policy, and science. The policy tools table was reviewed by Laura Bies, Albert Teich, Robert Gropp, Nadine Lymn, Karen Launchbaugh, Christine Moffitt, and Steve Scheffield. Gina Wilson drafted figure 1. Earlier drafts of this manuscript were reviewed by John Fitzgerald, Dale Goble, Michael Nelson, James Witham, and three anonymous reviewers who all challenged our thinking on these topics.

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doi:10.1641/B580914

Include this information when citing this material.