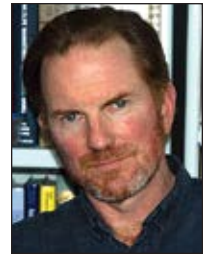


IS WILDLIFE MANAGEMENT SCIENCE-BASED?

SCIENCE BLASTS



JOHN F. ORGAN
B&C PROFESSIONAL MEMBER
Director of the Cooperative Fish
and Wildlife Research Units

A pillar of wildlife management in North America is the notion that it is science-based or science-driven. Indeed, Aldo Leopold, the father of wildlife management, laid the groundwork for this in his 1933 textbook titled *Game Management*. Leopold hearkened back to what he termed the “Roosevelt Doctrine,” the legacy of Theodore Roosevelt, and articulated one of the elements of that doctrine as “science is the proper tool to discharge wildlife policy.” This was captured verbatim in the retrospective reconstruction of the key principles and legal underpinnings that make wildlife conservation in the United States and Canada unique from the rest of the world known as the North American Model of Wildlife Conservation (the Model), first put forward by B&C Professional Member Dr. Valerius Geist.

Many have questioned the wording of the phrase “science is the proper tool to discharge wildlife policy” because it seems to flow awkwardly off one’s lips. Others have questioned whether its meaning truly is representative of how the science-policy interface really works in wildlife management, suggesting it implies science dictates policy, when in fact science is one of many contributing factors decisionmakers consider when developing policy. The latter perspective is closest to reality, and was the intent behind the Model’s assertion, as evidenced in writings by Geist and others, including

this author. A more accurate statement would be “wildlife policy is informed by science.”

My colleague, Dr. Dan Decker of Cornell University and co-author of the *Technical Review of the North American Model* published by The Wildlife Society and the Club, recently breathed some fresh air into the intent behind the original wording. Most readers get caught up over what is meant by “discharge wildlife policy.” Some believe it means policy should be based on science, period, while others say it was an awkward way of saying wildlife policy should be informed by science. Dan pondered how two smart, really articulate, clear-writing people like TR and Leopold could have used a word that causes such consternation. Then it hit him. Discharge of policy means: After you’ve established wildlife policy (which is created with ingredients from science and values and professional judgment and politics), then the work of wildlife management—choosing specific technical alternatives and taking actions—should be guided by best available science. I would hope that students, scholars, and conservationists can appreciate the original wording as being more than paying homage to the two arguably most central figures in the North American wildlife conservation movement—they had it right all along!

Recently an article was published in a mainstream science publication that challenged the notion that wildlife management in the United

States and Canada is guided by science. The authors base their assertion on their evaluation of whether state and provincial management plans meet criteria set forth in four “hallmarks” they developed: measurable objectives; evidence; transparency; and independent review. They conclude that there is limited support for the assumption that wildlife management in North America is guided by science.

Prior to this paper’s release I was provided an embargoed copy of the manuscript by a magazine titled *The Scientist* and asked to comment on it. I was quite interested, because the program I oversee works very closely with state fish and wildlife and federal agencies to help them address their science needs. USGS has around 100 fish and wildlife Coop Unit scientists embedded in the graduate faculty at state land-grant universities whose jobs are to conduct research to address the needs of state and federal natural resource agencies. They also train agency biologists in new science developments and develop the workforce of the future through graduate education

that connects students with agency biologists (see *Fair Chase* Winter 2014), in addition to scores of others at ecosystem science centers across the country. With a current portfolio of over 600 Coop Unit research projects with agencies, I have some knowledge of the science employed in management.

As you can imagine, I was concerned with the authors’ conclusion. My concern grew deeper when I looked at the methodology and underlying assumptions. The authors enlisted one informed non-specialist to search agency websites for all available management-relevant information, such as wildlife management plans. They also sent emails to agency contacts they found on websites and posed questions related to these hallmarks. Based on information derived from these two approaches, they conclude there is limited support that wildlife management is guided by science in the United States and Canada.

An important role of wildlife scientists and managers is to communicate the science in a manner that will resonate with policymakers while maintaining legitimacy as honest brokers of scientific information and insight.

I have major concerns with this paper and its findings. A typical wildlife management system consists of several components, including:

- (1) problem identification, such as can the population sustain a hunt, and to what magnitude, as well as the desires, values, and beliefs of the stakeholders and beneficiaries;
- (2) procurement of knowledge through original research or synthesis of existing science;
- (3) analysis and evaluation of the knowledge relative to the problem or issue;
- (4) development of management recommendations to policymakers;
- (5) development of policy, such as season and bag limits;
- (6) implementation of policy, which is management as put forth in management plans; and
- (7) collection of data after implementation to evaluate the results, improve the science base, and refine the policy recommendations.

The science component of this management cycle is contained within elements 1, 2, 3, and 7, although if decision science is employed, it can be contained within elements 4 and 5. The authors sampled element 6, the one element where science is not asserted explicitly, but is guided by.

The email letters sent to agencies asked the recipients, who may or may not have been the proper addressees, whether their categorization of hunt management based on their criteria were accurate. The letter did not once mention the word “science.” Did the recipients really understand what they were being asked? One might argue that the authors themselves were not transparent and honest with agency staff about the purpose and aims of their study in the emails that were sent!

The authors’ conclusions noted, not surprisingly, that greater science was afforded to big game species. One would expect greater investment in science would be granted to those species, such as elk and bighorn sheep, that have greater harvest pressure relative to population size than species such as eastern cottontails and the eastern gray squirrel. Yet, this is not reflected in the authors’ conclusions.

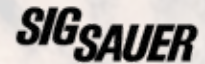
The one conclusion I can draw from this paper is that the authors do not understand wildlife management and where science fits within the management

cycle. Decision-makers at the state, provincial, and federal levels incorporate many sources of information into policy development that ultimately goes forward as management. This includes science (biological and social), economics, direct stakeholder input, political input, and other sources. The degree to which science influences policy is dependent upon many factors, including the perceived relevance, credibility, and legitimacy of the science by the policymakers, the contentiousness of the policy issue at hand, and the perceived risks inherent in their decision. An important role of wildlife scientists and managers is to communicate the science in a manner that will resonate with policymakers while maintaining legitimacy as honest brokers of scientific information and insight.

So what do we make of this recent paper and the authors’ conclusions? They failed to make their case because they confuse the decision process with the science process, and their methods were inappropriate for answering the question they posed. Yet, the authors may have piqued awareness of the role of science in wildlife management, albeit in a flawed way. It reminds us that science is integral to wildlife management, and we must be vigilant in ensuring that science remains a strong component of agency portfolios. Roosevelt and Leopold had it right, even if it twists our tongues a bit. ■




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