Essays of a Peripheral Mind

An Opinion on Policy

By K. M. Havstad

In our offices we have a file of original correspondence dating from 1917 to 1920 between US Department of Agriculture scientists and rangeland managers, including James T. Jardine, the Inspector for Grazing for the US Forest Service (USFS) in Washington, DC and Charles Forsling, the Grazing Examiner in charge of the Jornada Experimental Range in southern New Mexico. These letters served to coordinate the activities and report on the progress of biological assistants working for the Bureau of Biological Survey to exterminate prairie dogs on the Jornada Range. These activities were part of a broader nationwide policy implemented by the Biological Survey (a forerunner to the US Fish and Wildlife Service) to control predators and other "unwanted" animals from the nation's forests and rangelands. The following is an excerpt of one letter from Forsling to USFS officials written in January 1920 regarding the effectiveness of these actions on the Jornada:

> *… an effective campaign to eradicate the prairie dog on the Reserve was undertaken with the Biological Survey in March 1917 … that the eradication of the prairie dog has been beneficial is, of course, obvious … the 2305 acres cleared have been restored to use for grazing purposes where previously the area was of little value for grazing since practically all the forage was consumed by the prairie dog … the prairie dog extermination is a most practical undertaking in management of the range … the kangaroo rat presents more of a problem than the prairie dog…*

There were numerous, initially well-intended reasons for this policy, and they extended beyond the obvious motivations of trying to increase the amount of forage available to grazing livestock in order to increase red-meat production on US lands during the lean years of World War I (in what could be seen as a national security justification for this policy of extermination). As described by Richard Andrews (1999) in his book *Managing the Environment, Managing Ourselves—a History of American Environmental Policy*,[1] a number of aggressive policies were implemented in the mid- to late 19th century to improve food production and safety and control disease vectors in order to increase living standards and to decrease mortality rates in the United States. For example, over a 30-yr period around the turn of the 20th century, infant mortality declined to one-third of prior levels in New York City as a result of intensive, government-driven sanitation measures, including rodent control. Programs to improve public health were commonly viewed as community services during this period, and government's role in these highly engineered social activities, including exterminations, were deemed appropriate and necessary. In fact, science shaped much of the knowledge at the time about disease and food safety, which in turn shaped the public and political opinions that led to policies such as prairie dog exterminations. Granted, these national security, public health, and food production justifications were exploited in the expansion of exterminations from urban rodents to predators (including wolves) to black-tailed prairie dogs in the western United States. Even in the early 20th century there were vocal critics of the programs eventually implemented on sites such as the Jornada Range in 1917. Yet, the strength of public and political opinions based on

the national-level justifications for these policies overwhelmed these criticisms. Fortunately, even these extermination policies saw their ecological and implementation limits, albeit not before several species were completely or nearly exterminated. For example, although the banner-tailed kangaroo rat was noted as a ubiquitous presence across the Jornada Range with detrimental impacts beyond that of the prairie dog, efforts to exterminate this species were quickly abandoned in the 1920s when the simple realities of the widespread presence of this species and the impossible nature of this task became obvious.

This early 20th-century policy of prairie dog extermination was certainly well ahead of any thorough set of experimentally driven observations about the role of prairie dogs in rangeland systems in North America. Yet, like the early 20th-century policies, it is probably not correct to assume that the policies of the early 21st century are any more directly connected to science than those of a century earlier. This may seem to be a disturbing observation. However, 90 yr after the first policy of extermination of prairie dogs we are still arguing about relevant data and subsequent policies. For example, two recent and well-written syntheses of the relevant published science, those of Vermeire et al.[2] and Miller et al.,[3] present often-opposing and often-conflicting conclusions and opinions concerning prairie dogs as keystone species. Granted, the array of policies and resulting management plans concerning prairie dog control (eradication is no longer mentioned) that have surfaced at the beginning of the 21st century are much more enlightened and reflect awareness of the keystone roles of these species in these ecosystems than those seen in 1917. These policies vary from state to state and are still subject to criticism and scrutiny, but now they are cognizant of opinions shaped by a science that emphasizes biological conservation rather than food security and disease control.

We know that science and policy in any natural resource subject area are often poorly linked. Even today, we see a wide range of policies, from those that are well ahead of science (e.g., the use of ecological site descriptions as a policy for land management) to a large body of scientific results poorly connected to policy (e.g., grazing management practices). The question is, can we realistically strengthen the ties between science and policy?

Strengthening the connections between science and policy requires understanding the weaknesses of these connections. Two recent articles in the journal *Environmental Science and Policy* point out key elements of science's disconnections with policy. The first is a subjective analysis by Robert T. Lackey[4] on the difficulties of connecting science to policies related to sustaining stocks of wild salmon in the Pacific Northwest. Lackey lists eight characterizations of this disconnect that are paraphrased here to have more general application than his original emphasis on conserving stocks of wild salmon: 1) nearly everyone claims to support the resource in question (prairie dogs, salmon, wolves, etc.); 2) many competing societal priorities exist, many of which are partially or wholly mutually exclusive; 3) a rapidly growing human population creates increasing pressures on all natural resources; 4) policy stances are often solidly entrenched; 5) society expects science experts to help solve the problem; 6) each of the many sides of the political debate over the future of a particular resource has its own experts and scientific "facts" to bolster its argument; 7) it has proven to be nearly impossible for scientists to avoid being categorized as supporters of a particular policy position; and 8) many advocates of policy positions couch their positions in scientific terms rather than value-based preferences. The realities of these characterizations can be seen in most, if not all, of our debates about natural resource policies.

The second article is an objective study by J. Tribbia and S. Moser[5] that presents analysis of the collection of information by coastal resource managers that can be used in their jobs (Tables 1 and 2). Two nearly opposite observations can be drawn from the data in Tables 1 and 2. Managers are seeking information either from trusted and known sources, usually in face-to-face formats, or from a format that is readily accessible from their desks—the Internet. There is actually little use (never or rarely) of the scientific literature, at least in its published format in journals. This is not surprising given the often-cumbersome and unfriendly nature of scientific literature.

What surfaces from the above observations is that natural resource policy, whether in its historic exploitation/extermination phases of the late 19th century or in its

Table 1. Information sources consulted by California coastal managers (by percent frequency of use by respondents for a particular source of information; adapted from Tribbia and Moser[5])

	Scientific journals	Professional journals	In-house source	Professional list serve	State agency staff	Colleague in other community	Conference or meetings	Local expert	Internet
Do not use	35	7	4	24	5	3	2	12	2
Rarely	35	14	7	23	23	15	12	27	5
Occasionally	22	40	15	25	34	48	54	37	19
Frequently	7	29	40	22	26	24	24	15	42
All the time	0	10	34	6	10	10	7	9	32

Table 2. Perceived usefulness of opportunities to learn more about global warming and to improve understanding and use of technical information (expressed as percent of respondents, $n = 123$; adapted from Tribbia and Moser[5])

	Hands-on training	User manuals	Conferences	Better college training	Web-based clearinghouse	Dedicated list serves	In-house sharing	Other
Not useful at all	2	5	2	2	0	2	10	0
Somewhat useful	25	34	42	38	32	42	39	1
Very useful	47	45	41	44	47	34	29	0
Extremely useful	24	14	14	10	19	16	11	1
Do not know	1	2	2	6	2	7	11	98

current conservation/preservation manifestations of the 21st century, cannot be directly based on science. Policy is primarily based on arrays of opinion and experience, at best. Science shapes some of these opinions, and the opinions most valued and utilized, in the long term, are those that are accessible, readily understood, knowledge-based, transmitted by trusted sources, and untethered to values or advocacies. Strengthening the connection between science and policy is about science being honest and smart about how it can be and is utilized to influence opinions of other scientists, the public, and policy makers. Honest, intelligent, science-based opinions will influence policy.

References

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