
WAYNE E. HEIMER - INTRODUCTION TO THE 2ND NORTH AMERICAN WILD SHEEP CONFERENCE

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Management of wildlife in North America has been the outstanding conservation success story of human history. In their 1999 book "Return of Royalty", Toweill and Geist traced the history of this success to a jointly-derived U.S./Canadian principle which bears the name of U.S. President Theodore Roosevelt. Toweill and Geist wrote:

Roosevelt gave a unique twist to the North American philosophy of wildlife conservation, one that bears his name to date: the Roosevelt Doctrine. The Roosevelt Doctrine proclaimed that the management of wildlife was to be based on the best science and scholarship available.

Management has evolved considerably from this simple statement. Nevertheless, this doctrine continues as the implicit, though seldom-stated basis, for modern wildlife management. Today, management decisions are most commonly thought to be driven by management plans which implement management policy. Hence, in modern terms, successful application of the Roosevelt Doctrine requires that the best science and scholarship available (biological research findings and interpretation) must drive policy development, management planning, and ultimately each "on-the-ground" decision. Unfortunately, in the modern management milieu, policy makers, planners, and field managers sometimes lose sight of this basic principle.

Although successful restoration and conservation of North American wild sheep continues, it has occasionally been hindered by loss of accountability to wild sheep biology. The most difficult obstacle for successful sheep management has been the newness of the discipline. Modern sheep

management is barely 40 years old. After the decline of North American wild sheep which accompanied the settlement of the American West (Buechner 1960), scientific management driven by social and legal mandates to provide human benefits derived from hunting eventually brought many populations back to huntable numbers (Trefethen 1975, Hoefs 1985, Toweill and Geist 1999). These population recoveries began with decreased mortality associated with hunting by humans (which coincided with a human-related low in predator abundance [Heimer, this proceeding]). Subsequent increases in more modern times have been accomplished primarily through reintroduction of wild sheep into previously-occupied habitats and continued protection from overharvest by humans (see proceedings of Transplant workshop Northern Wild Sheep and Goat Council 1998 for a review of northern subspecies).

As sheep populations returned to viability, managers sought a balance between protection and use. This meant allowing for harvest, either by hunting or transplant, within the limits of biological safety and herd growth. Unfortunately, then as now, sheep managers lacked access to large, situation-specific data bases for making management decisions. Typically they relied on established principles of wild ungulate management occasionally tempered by local knowledge. Periodically, "new" sheep-specific research findings dramatically influenced management practice. An example was the breakthrough in wild sheep management resulting from understanding sheep behavior based on work by Geist (1971). This breakthrough was used to formulate management guidelines disseminated by Trefethen (1975), and later applied to yield significantly increased Dall ram harvests in Alaska (Heimer and Watson 1990).

Two identifiable associations of sheep managers and researchers arose to meet the need for sheep-specific research and management. The Desert Bighorn Council was organized in 1957, and the Northern Wild Sheep Council began in 1970. In 1971, a small meeting of desert and northern sheep biologists was organized by the Department of Fishery and Wildlife Biology at Colorado State University in Ft. Collins. Transactions of that meeting included 19 papers ranging from status reports through physiology and disease, research techniques, and management problems, procedures and needs (Decker 1971).

Four years later, another more inclusive meeting was organized under the auspices of the Boone and Crockett Club, National Audubon Society, and the Wildlife Management Institute to summarize the status of biology and management of wild sheep in North America. This meeting produced a distribution map of North American wild sheep, as well as a comprehensive review of state and provincial populations for all species of North American wild sheep, and was accompanied by management recommendations (Trefethen 1975). Following that meeting, both the Desert and Northern Councils continued to evolve separately. In 1978, the Northern Council expanded to include mountain goat research and management as well. Both councils continued to meet regularly and publish their region-specific findings in their respective proceedings.

Nevertheless, sheep management has been slow to emerge as a recognized specialty among wildlife educators and managers. Several factors slowed recognition of sheep management as anything beyond a typical application of "ungulate" management principles. Where sheep populations were abundant, and harvest was generally limited to mature rams, there was no attention-demanding management problem. In the contiguous United States, most sheep herds were so small as to be virtually unhuntable. Since there was little to no hunting, managers did not consider sheep a high priority. Consequently, funding was unavailable; research and management effort was focused on higher profile species like deer and elk.

In spite of its low priority, research (some by state and federal agencies, but mostly by academics) on mountain sheep began to rapidly reveal their management-relevant biology. Despite this burgeoning body of knowledge, management decisions in the field continued to flow from the principles of generalized ungulate biology and management (as well as management expedience), more than from sheep-specific biological findings. The failure to broadly recognize sheep management as a specialty was compounded by the mid-1970s emergence of management planning as a specific discipline.

Modern planning, often based on consensus among special interest stakeholders, holds the promise of increasing divergence from the Roosevelt Doctrine and raises the specter of decreasing traditional management success as a result. It is highly unusual for policy makers or planners to be familiar with the specific management-relevant biology for species about which they formulate policies or make plans. This means planning group consensus will outweigh the best science and scholarship extolled by Roosevelt. Additionally, it is rare for field managers to have all the data they need for each management decision. These information deficits raise several potentially dire consequences.

The first consequence is that policies will be formulated outside the envelope of wild sheep biological limitations. Plans to implement these policies are likely to fail biologically.

Secondly, even if policy is biologically grounded, improper management response to management challenges or opportunities may occur. The field manager's response to a sheep management challenge or opportunity is driven by what he or she knows or thinks about sheep biology. If a manager who doesn't happen to be a sheep specialist lacks access to an understandable summary of sheep biology and management, he or she may respond inappropriately.

The third consequence of management-relevant information deficiencies is inefficient and unpro-

ductive use of limited research resources. When research biologists design research, they may or may not be constrained by management applicability, but certainly rely heavily on their mental model of species biology. If researchers are new to sheep biology, or driven by inappropriate management policy or plans, unproductive research may result.

The fourth consequence of inadequate incident-specific information is controversy. When a working model of species biology is not widely understood as such, management actions consistent with the working model in the manager's head may not be understood by the public or peripherally-involved biologists and managers. Controversy seldom increases management effectiveness.

Having seen all of these putative problems in full bloom during 30 years of experience, I suggested development of the 1988 concept of the working management hypothesis as a possible means of mitigating these consequences for the theme of this conference. Program co-chair Amy Fisher and conference co-chairs Kevin Hurley and Rick Brigham graciously agreed.

In 1988, Heimer defined a working hypothesis as:

... a data-based working model of species biology which is relevant to [all] foreseeable species uses or abuses. It should be a predictive statement which integrates the available biological knowledge with management experience and summarizes the known aspects of species biology, management experience, and probable reaction to specific potential management actions or concerns. It should not be thought of as a definitive statement of the natural history of the managed species, and all involved persons should be continually reminded that the hypothesis requires constant testing, reexamination, and modification as management and research proceed. That is, it is just our best guess about how any species will respond to management options.

When the Desert Bighorn Council and the Northern Wild Sheep and Goat Council planned the 2ND North American Wild Sheep Conference, we thought it an opportunity to summarize what has been learned since the last North American Wild Sheep Conference (Trefethen 1975). Additionally, we hoped the established theme of the conference would facilitate making what we do as managers accountable to what we know of sheep biology. In an effort to streamline the information for planners and field managers, we agreed to summarize biological knowledge and management recommendations in the working management hypothesis format.

Consequently, the following synoptic papers on thinhorn, desert, Rocky Mountain, and California bighorn sheep identify what the presenters were able to gather and synthesize into a working management hypothesis for each species and its foreseeable management challenges and opportunities. Status reports and historical data for each state or province with responsibility for management of these sheep are appended to the working management hypothesis for that group.

Following these generalized presentations, the balance of the 2ND North American Wild Sheep Conference was devoted to exploration and discussion of current findings, ideas, and their applications to management. Presented papers and discussions are included. At the end is a series of management recommendations for managers of each general grouping of sheep, and a synthesized summary on management of wild sheep in North America.

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