



Human Dimensions of Wildlife

An International Journal

ISSN: 1087-1209 (Print) 1533-158X (Online) Journal homepage: <http://www.tandfonline.com/loi/uhdw20>

Why the North American Model of Wildlife Conservation is Problematic for Modern Wildlife Management

M. Nils Peterson & Michael Paul Nelson

To cite this article: M. Nils Peterson & Michael Paul Nelson (2017) Why the North American Model of Wildlife Conservation is Problematic for Modern Wildlife Management, Human Dimensions of Wildlife, 22:1, 43-54, DOI: [10.1080/10871209.2016.1234009](https://doi.org/10.1080/10871209.2016.1234009)

To link to this article: <http://dx.doi.org/10.1080/10871209.2016.1234009>



Published online: 26 Sep 2016.



Submit your article to this journal [↗](#)



Article views: 170



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 1 View citing articles [↗](#)

Full Terms & Conditions of access and use can be found at
<http://www.tandfonline.com/action/journalInformation?journalCode=uhdw20>

Why the North American Model of Wildlife Conservation is Problematic for Modern Wildlife Management

M. Nils Peterson^a and Michael Paul Nelson^b

^aFisheries, Wildlife, and Conservation Biology Program, North Carolina State University, Raleigh, North Carolina, USA; ^bDepartment of Forest Ecosystems and Society, Oregon State University, Corvallis, Oregon, USA

ABSTRACT

The North American Model of Wildlife Conservation (NAM) is a slippery construct, used both to explain how North American wildlife conservation developed and as a prescriptive framework. We argue both applications of the NAM are problematic. The roots of wildlife conservation in North America are more complex than those associated with the NAM, and minimizing contributions from diverse sources makes building a diverse wildlife conservation community more difficult than it would otherwise be. The NAM is not inclusive enough of diversity among wildlife species or stakeholders. Principles labeled the bedrock foundation of the NAM exist in flux and at the whim of political systems. Belief that the NAM reflects a foundation of laws more stable than the milieu of governance structures shaping wildlife management can encourage complacency among wildlife conservation advocates. Wildlife management exists in systems too complex to be beneficially defined by a terse list of principles.

KEYWORDS

History; management; models; politics; stakeholder; wildlife

Introduction

The North American Model of Wildlife Conservation (NAM) has been depicted in many ways, with the two chief interpretations being alternately a historical description of how wildlife conservation has uniquely unfolded in the United States and Canada, and a prescriptive model of principles guiding how wildlife management should unfold in the United States and Canada. Both interpretations of the NAM are rooted in a similar narrative in which recreational and sport hunters saved wildlife by eliminating market hunting. Some proponents also include self-taxation by hunters, although the models' seven principles are mute on funding. The seven key principles of the NAM evolved over several years and included: (a) treating wildlife as a public trust, (b) prohibiting wildlife commerce, (c) allocating of wildlife by rule of law, (d) allowing hunting opportunity for all, (e) only allowing legitimate killing of wildlife, (f) treating wildlife as an international resource, and (g) giving science a central role in wildlife policy (Geist, 1988, 1995; Geist, Mahoney, & Organ, 2001). The original authors, along with authors from The Wildlife Society, revisited the NAM in a 2012 technical review supported by The Wildlife Society. The report states: "The North American Model of Wildlife Conservation is a set of principles that, collectively applied, has led to the form, function, and successes of wildlife conservation and management in the United States and Canada" (Organ et al., 2012, p. 1).

CONTACT M. Nils Peterson  nils_peterson@ncsu.edu  North Carolina State University, Fisheries, Wildlife, and Conservation Biology Program, Raleigh, North Carolina 27695, USA.

Taken at face value, this statement means applying all seven principles of the NAM has shaped wildlife management, dictated how it operated, and created its successes. This statement is immediately followed by the suggestion that “adding, deleting, or modifying the existing principles will not in itself advance conservation” (Organ et al., 2012, p. 1). The latter statement clearly operates rhetorically to downplay the value of modifying or simply dropping reliance on the NAM, and the careful use of the phrase “in itself” belies an underlying problem with the argument. Specifically, the original NAM “in itself” did not change conservation in any way, but application of it did. Similarly, changing the NAM will not in itself advance conservation, but applying such changes certainly may. Given the incredibly large conservation influence of applying novel versions of wildlife management that diverge from or simply drop the NAM, we endeavor to both examine what the NAM is in practice, and where its principles are inadequate for modern wildlife conservation. We use this review to facilitate comparing implications of each interpretation of the NAM.

Problems with the descriptive NAM

Our critique of the descriptive NAM does not attempt to suggest the seven principles are false representations of history; rather they are simplifications that can be reasonably construed to stymie diversity among stakeholders¹ and generate a dangerous complacency among wildlife managers. The descriptive approach to the NAM appears to be the one advocated by those who coined the term, although virtually every statement implying a descriptive model is accompanied by language alluding to prescriptive use. In the first formal articulation of the NAM, Geist et al. (2001, p. 175) began their essay by stating the NAM was a model for describing what made wildlife conservation in Canada and United States unique—a descriptive NAM, but in the following/second sentence they label the NAM a “system of sustainable development,” and a system of sustainable development cannot operate without prescriptive components (Peterson, Peterson, & Peterson, 2005; Vucetich & Nelson, 2010). In 2012 the same authors who coined the NAM, and additional authors largely representing The Wildlife Society, stated they were using a definition of “model” that reflected “a description of a system that accounts for its key properties” (Organ et al., 2012, p. 1). Again, the definition is descriptive, but hints that normative properties, such as conservation success, might reasonably be associated with the model.

This mixing of the descriptive NAM with allusions to prescription highlights the fact that descriptions of history can undoubtedly shape human actions by framing them, and raises the important issue that conservation failures should be just as attributable to the descriptive NAM as conservation successes. Framing refers to how choices made when communicating can serve to emphasize or deemphasize certain elements of reality (Cox, 2012; Entman, 1993). All accounts of history involve framing, so the choices made in eliminating details, not the act of eliminating them, are where problems may arise. In the case of the descriptive NAM, its authors chose to focus the account on hunting and hunters in their strategic framing. In the original articulation of the descriptive NAM the authors stated that although naturalists did help hunters promote the conservation movement, “it is hunters, however, or, more accurately, *hunting*, that led to development of the components listed above that form the foundation for North American wildlife conservation” (Geist et al., 2001, p. 179 emphasis in original). Indeed the article’s title, “Why

hunting has defined the North American Model of Wildlife Conservation,” leaves little room for doubt that hunters were framed as the central actors in the descriptive NAM. Similarly, the seven principles, which provide a textbook case of framing, themselves include focus on hunters, and no other stakeholders other than the “public” are mentioned.

Those who have written about the NAM, and largely advocated for its use in framing wildlife conservation, have stated that increased diversity among the wildlife conservation community is critical, but have not revised or dropped the historical NAM narrative in ways that emphasize the role of women, minorities, or non-hunters (Organ et al., 2012). One might speculate that such a failure to shift this framing emerged from a history where other groups including non-hunting naturalists, women, and minorities did not play an important role. That assumption would be patently wrong, and we provide key examples here. First, Nelson, Vucetich, Paquet, and Bump (2011) note the historical account of wildlife conservation given by the NAM gives short shrift to groups behind the environmental movement starting in the 1960s that gave rise to the Endangered Species Act of 1973 and the other core environmental legislation of the 1960s and 1970s that profoundly shaped wildlife conservation (e.g., Clean Water Act, Clean Air Act, National Environmental Policy Act [NEPA]). The environmental movement (1960–1990) was fundamentally shaped by non-hunting minorities, underserved communities, and women (Dunlap & Mertig, 2014). Acknowledging the huge impacts on wildlife conservation created by the environmental movement is not only an honest assessment of history, it is a way to place non-hunters, women, and minorities back into the narrative of wildlife management.

The fifth principle of the descriptive NAM provides another example of how a simplified historical account treats white male hunters as the primary actors, despite female naturalists playing a central role. As noted above, the original authors simply stated the whole model relied on hunters with limited influence from other groups (Geist et al., 2001). The more recent TWS technical report on the NAM includes a three page “Historical Overview” for the NAM that does not mention a single woman or mention the Audubon Society, which figured heavily in the movement (Merchant, 2010). This narrative notes that George Bird Grinnell and Theodore Roosevelt co-founded the Boone and Crocket Club in 1887, and they along with other members including congressman John Lacey successfully lobbied for, wrote, and enacted the Lacey Act of 1900, and that wildlife conservation snowballed from there with a host of other important developments including the Migratory Bird Treaty of 1916 and the Endangered Species Act (Organ et al., 2012). One cannot imagine a framing more centered on white male hunters than that contained in this historical overview for the origins of wildlife conservation in the United States and Canada. As noted above, the Endangered Species Act clearly emerged from the fervor of the environmental movement in the 1960s and 1970s, and hunting did not figure prominently in that movement. Further, the one mention of the Audubon Society in the 60-page review simply states it was formed by Grinnell and worked with “other nature groups allied with sportsmen” for legislation to curtail the feather trade (Organ et al., 2012, p. 17). One must note that the history of this period was written in a male dominated context, so the material NAM authors drew from was itself heavily biased toward giving white males positions of power and influence.

Another equally viable historical account of wildlife conservation during this period places naturalists, women, and the Audubon Society at the center of the story (Dunlap, 1991; Merchant, 2010). Although Grinnell did found the original Audubon Society and associated magazine in 1886, both lasted a mere 2 years before Grinnell ended them because they were not financially solvent, and according to Grinnell had failed to engage sufficient women to achieve their objectives (Merchant, 2010). Eight years later in 1896, Harriet Lawrence Hemenway and Minna B. Hall founded the Massachusetts Audubon Society, in 1897 Florence Merriam Bailey founded the District of Columbia Audubon Society, and in 1898 several women founded the Connecticut Audubon Society and elected Mabel Osgood Wright as president (Merchant, 2010). John Muir and Frank Chapman² were two men who openly supported women conservationists at this time, and both were lampooned by the media and depicted as carrying around binoculars and a camera leading similarly outfitted women while criticizing hunters. This second birth of the Audubon society was initiated by women, and mocked for not involving hunting by the media, yet it was the version of the Audubon society that actually persisted. White men eventually took over most leadership roles in this new and much more successful version of the society with women working as vice-presidents and secretaries. This version of history ends with the new Audubon Society partnering with women's organizations (e.g., The General Federation of Women's Clubs) to start the ball rolling for wildlife conservation legislation.

The work of these combined societies was influential in the passage of the Lacey Act of 1900. ... Roosevelt's 1903 establishment of Pelican Island in Florida as a preserve for native birds; the passage by twenty-eight states of the American Ornithologists' Union (AOU) model law by 1905; a Tariff Act in 1913 outlawing the importation of wild bird feathers; the Federal Migratory Bird Treaty Act of 1918; and the success of the campaign to convince women to change their hat styles. (Merchant, 2010, p. 18)

Apologists for the descriptive NAM may argue the model does not deny women or minorities a role, but a model defined by hunting is undeniably defined by a stakeholder group that is at least 90% white and 90% male, and disproportionately rural. Because interest in hunting and trapping, the defining activities within the NAM, resides overwhelmingly among white males in and from rural areas, the NAM quite unintentionally limits the roles of women, minorities, and urban residents. This is particularly problematic in the current context where >80% of people are urban, minorities will soon be majorities, and 50% of people are female (McCleery, Moorman, & Peterson, 2015; U.S. Department of the Interior and U.S. Department of Commerce, 2012).

A key distinction does exist between excluding diversity from the formal NAM narrative, and excluding diversity in constituents. Indeed, NAM proponents have actively attempted to promote diversity of persons through special sessions at conferences,³ subsidized hunter training programs such as Conservation Leaders for Tomorrow⁴ (<http://clft.org/>), and in the scientific literature (Jonker, Muth, Organ, Zwick, & Siemer, 2006; Sanborn & Schmidt, 1995). The content of these programs, especially Conservation Leaders for Tomorrow (which engages women and minorities in hunting), promote the NAM narrative, and some degree of like mindedness about it more than promoting diverse ideas and interpretations. The description of the NAM focused plenary in the 2016 annual conference of The Wildlife Society asks "Can (we) speak with one voice to ensure the relevancy of sustainable use management in a changing society?" These efforts to promote diversity of persons engaged in the NAM,

however, have not clearly extended to changes in the NAM that accommodate, recognize, and prioritize the interests, positions, and history of women and minorities. Although the wildlife management community appears to accept, and even court, engagement by diverse constituents, a narrative that does not highlight the opinions, practices, and roles played by women and minorities is not ideal. Efforts to promote more participation in wildlife management employment and practice could only be helped by a new wildlife management narrative that does not ignore the critical role that women, minorities, and non-hunters have played.

The descriptive NAM may also generate a dangerous complacency among wildlife managers by emphasizing wildlife conservation successes and deemphasizing failures. Every description of the historical NAM we have reviewed includes a description of saving game species from the brink of extinction, and many include consideration of non-game waterfowl saved from the plume trade. The NAM narrative parallels the tendency for nongame species to be excluded from consideration during the first few decades of wildlife management (e.g., Krausman & Cain III, 2013), and the tendency for exotic species to be treated as beneficial when they are hunted and/or introduced for hunting. Response to species including ring-necked pheasants (*Phasianus colchicus*) and chukar (*Alectoris chukar*) provide some evidence for this assertion. Ring-necked pheasants are included in the hunting portion of Conservation Leaders for Tomorrow training, and hunting pheasants on private preserves is rationalized as justifiable in the official 2011–2016 TWS position statement on Shooting Preserves for Game Birds (<http://wildlife.org/position-statements/>) if it involves fair chase. This potentially myopic focus on game species may explain why no accounts of the NAM highlight that the now famous sixth great extinction event in the history of the earth (Barnosky et al., 2011; Soulé, 1986) was occurring at the same time and under the same approach to wildlife management that a select few species were miraculously saved. The NAM obviously did not act as a driver associated with the sixth extinction event, but North America is not exempt from the event, and clearly faces extinction and endangerment threats similar to those seen globally (Myers, Mittermeier, Mittermeier, da Fonseca, & Kent, 2000; Rutledge, Lepczyk, Xie, & Liu, 2001).

Given the artificially optimistic and narrow view of wildlife conservation under the descriptive NAM, it should have come as no surprise that the conservation biology field would splinter from the wildlife management field and then rapidly rival this discipline in terms of professional society membership, and arguably global impact, diversity, and scientific impact (Wagner, 1989).⁵ Despite its geographic and species-related diversity, conservation biology is still sensitive to a potential hegemony of the global north (Mulder & Coppolillo, 2005). Although the species fitting the historical narrative in the descriptive NAM (i.e., game species, vertebrates) have largely fared well, a host of smaller and less hunted species may face extinction in North America, and in other places, as a direct result of activities driven by North American lifestyles (e.g., extinctions driven by land use change) (Peterson, Peterson, Peterson, & Liu, 2007).

The initial description of conservation biology stands in stark contrast to that of the descriptive NAM. First, conservation biology was labeled a “crisis discipline” by its founders because they recognized a growing extinction crisis occurring alongside the conservation successes depicted in the descriptive NAM (Soulé, 1985). Soulé provided a general description but made no reference to foundations, pillars, or other unchangeable aspects of the discipline, and the “postulates” in the description were axiomatic (e.g., species are interdependent) or explicitly described as value expressions (e.g., diversity of

organisms is good, inherently) rather than subjective interpretations of history that specifically highlighted any particular user groups. This left the discipline incredibly broad and largely defined by its objective: addressing the crisis of biodiversity loss. The emergence of conservation biology received critical review from members of The Wildlife Society (Teer, 1988). Jensen and Krausman (1993) noted several prominent wildlife conservation scholars believed conservation biology was merely “old wine in a new bottle” (i.e., a fancy name tacked on the preexisting discipline of wildlife management), but discovered key differences in their review of literature from both disciplines. Notably conservation biology publications reflected a much broader distribution of taxa, far less emphasis on ducks and deer (and game species in general), and more international contributions. Their cleverly titled review—“Conservation Biology’s Literature: New Wine or Just a New Bottle?”—appeared to indicate new wine existed. We, however, contend the NAM was a bottle that conservation biology escaped by viewing the context of wildlife conservation as a crisis rather than a success story, by focusing on nongame species, by removing hunting from the spotlight, and by openly stating the value-laden basis of their discipline. Critics of our argument may suggest the descriptive NAM was not even penned when conservation biology purportedly broke free from the NAM bottle, but one must remember the descriptive NAM was explicitly written as a description of North American wildlife conservation starting around 1900. To the extent this description was accurate, conservation biology was indeed breaking free from the pillars and principles defining wildlife conservation, and in doing so emerged from the complacency inherent to the descriptive NAM’s story of success.

The descriptive NAM may contribute to complacency in another way by suggesting the foundation of wildlife management is more inviolable than it actually is. The metaphors used to describe the historical NAM connote a permanence incongruent with the dynamic political contexts faced by wildlife managers. The rhetoric used to depict the descriptive NAM is rife with terms connoting permanence including “seven sisters,” “pillars” (Mahoney, 2004), a “foundation for wildlife conservation,” “bedrock” (Organ et al., 2012, p. 2), “fundamental policies” (Geist, 1988, p. 15), and having “endured the test of time” (Geist et al., 2001, p. 175). This policy underlying the descriptive NAM, however, has always had exceptions. For instance, markets for fur, herpetofauna, and fish existed before the descriptive NAM, during its proposed tenure, and continue today.⁶ Similarly, policies around North America have been highly dynamic. Those surrounding the captive cervid industry provide a contemporary case. The “Texas Model” wherein white-tailed deer are largely commodified and privatized has flourished for decades, and wildlife biologists in the region have grown more accepting of that approach than those in other regions (Chitwood et al., 2016). Some new policies have pushed back against such privatization and expansion of markets (e.g., State of Montana), but the policy context is dynamic, and the descriptive NAM provides absolutely no protection from legislation that purportedly violates its principles. The fact that some wildlife policies have withstood the test of time (e.g., the Lacey Act) does not provide evidence that any specific policy contrary to commodification will necessarily do so, but the rhetoric of the descriptive NAM could create unrealistic assumptions about the inviolability of such policy. Advocates of the descriptive NAM have attempted to deflect such criticism by making the seemingly contradictory suggestion that the underlying principles should be described, and treated, as bedrock, but be malleable at the same time: “The underlying principles—established to address particular concerns,

some no longer an issue—can serve as bedrock and be applied more broadly, or modified to facilitate expansion to emerging societal needs” (Organ et al., 2012, p. 29). Such word play, however, belies an effort to protect the descriptive NAM’s narrative.

Problems with the prescriptive NAM

Although early advocates of the NAM arguably depicted the descriptive NAM in their writings, a prescriptive version is strongly alluded to in their writings, inherent to the NAM’s fourth and sixth principles, and certainly adopted by many wildlife management practitioners despite any intentions otherwise held by the NAM’s original authors or current advocates. The many assertions that the NAM shaped the current context of wildlife management cannot be fully accepted without accepting the NAM has a prescriptive role. Indeed, every wildlife conservation decision is accompanied with a value-based judgment about what objectives should be manifest (Gregory et al., 2012). That fact aside, prescription is inherent to some principles constituting the NAM.

The fourth (wildlife can only be killed for a legitimate purpose) and sixth (science is the proper tool for discharge of wildlife policy) principles of the NAM are prescriptive by definition. “Legitimate killing” is prescriptive no matter how it is defined because it infers killing *should* occur when it is legitimate and *should not* occur when it is illegitimate. The original articulation of the NAM highlights food, fur, and defense (of people or property) as legitimate (Geist et al., 2001) and the most recent articulation added the sportsman’s desire to pursue game, while suggesting “pot hunters” were not legitimate (Organ et al., 2012, p. 19). In this case, the choice of legitimate use is problematic because it is tautological (defines legitimacy as established by what some hunters consider legitimate), and provides no rational bases for the choices. One might guess that when the NAM was developing, game species were so rare that meat hunting (for commercial purposes or personal consumption) was not possible, but that highlights the inherent and unstated biases underlying the NAM. In this case, the underlying bias is that the small sustainable harvest possible at that time, whatever it was, was serving as higher use in the form of recreational or sport hunting than in the form of hunting motivated by providing meat for personal or commercial use. Such an assertion might be justified, but has not been to date. This subjective use of the NAM is taught across the continent to tens of thousands of students in hunter education classes (e.g., Kalkomey Enterprises, 2012).

Similarly, the principle stating “science is the *proper* tool for discharge of wildlife policy” (emphasis added) is undeniably prescriptive simply because it uses the word “proper” (Geist et al., 2001, p. 179; Organ et al., 2012, p. IX). Decisions can be made without science, and in many cases would be reasonable to make without science. Why should, or even how can, science be used to determine the earliest age at which hunters can be licensed or whether to allow a token harvest of locally rare species constrained primarily by climate (e.g., alligators in North Carolina)? There may be reasons to use science, but they are not value neutral “givens” that can be accepted without prescription being invoked. Further, suggesting the prescriptive NAM is not prescriptive encourages the erroneous belief that decisions can be made in a value-neutral context. Scientifically derived facts cannot dictate choices without the application of values. Any argument for a wildlife policy direction concludes with a prescription for action: we ought to kill brown-headed cowbirds (*Molothrus ater*) to save Kirtland’s warblers (*Setophaga kirtlandii*), or we

ought to shoot barred owls (*Strix varia*) to save the spotted ones (*Strix occidentalis*) (Buchanan et al., 2007; Goodrich & Buskirk, 1995; Livezey, 2010). Conclusions suggesting a prescription for action require two types of premises: factual or empirical premises and ethical or normative premises. Logic demands, therefore, that wise wildlife management be able to thoughtfully formulate and discern between various arguments for various wildlife management policies. Such an approach—grounded in critical thinking and conservation ethics—is essential but largely missing from wildlife-related decision making based on science (Moore & Nelson, 2010; Nelson & Vucetich, 2012). The emphasis of science-driven decision making may actually promote the quixotic aim of “removing politics from decision making” among wildlife conservation practitioners when decision making is politics that may or may not include elements of science (Peterson, Riley, Busch, & Liu, 2007, p. 2500). Those defending the NAM as non-prescriptive may suggest the original authors meant “science should be used when it is valuable to aid decision making,” but that is an extremely weak version of the original principle.

The prescriptive NAM may also help create a tyranny of the minority within wildlife management. The homogenous (white, high social status, male, hunter) stakeholders framed as central actors in the descriptive NAM and the suggestion that legitimate use of wildlife centers around hunting and trapping in the prescriptive NAM clearly contributes to a form of governance where a small minority shapes management impacting everyone. Wildlife conservation leaders, including advocates of the NAM, all agree that more inclusive governance is needed (Decker, Riley, & Siemer, 2012; Organ et al., 2012), but a model myopically focused on an extremely small and biased subset of the population impacted by wildlife management seems unlikely to contribute to such goals. We argue that efforts to promote diversity by inviting women and minorities into wildlife management as defined by the NAM could be improved by changing the NAM to make it welcoming to minorities and women. Some may respond to this assertion by noting disproportionate influence over governance by hunters is linked to disproportionate financial support for wildlife management from hunters (Heberlein, 1991). Enforcing a system of access whereby you must assent to values you do not hold in order to engage in governance, and creating a system that might be rightly seen as a tyranny of the minority, however, might be both un-pragmatic and unethical (Peterson, Peterson, & Peterson, 2016). Building a shared vision with the public and giving the public a voice in wildlife decision-making must come before expecting the public to provide money, work, votes, or political pressure in the name of wildlife conservation (Cox, 2012). Indeed, the much vaunted self-taxation of hunters and anglers started decades after wildlife management was directed at serving their interests (Leopold, 1933; Peterson & Rodriguez, 2012). Those defending the NAM from new narratives may suggest taxation was part of the original wildlife conservation plan even if it came after the regulations that benefited sport and recreation hunters. That critique, however, highlights important issues. First, self-taxation is part of non-consumptive wildlife conservation groups plan and can still come after they gain more access to decision making. Second, self-taxation cannot uncritically be claimed as an altruistic act designed to benefit all wildlife lovers. It happened in concert with regulations and policy formation that forcibly reallocated the wildlife resource from pot and commercial hunters and reserved it for recreational and sport hunters. Those associated with forming the prescriptive NAM paid for power in addition to paying for conservation, and they still have that power. Further, we do not know if historical hunters or current hunters would support such taxes given the option not to adopt them, as that option was not presented to hunters.

Conclusion

If the wildlife conservation community wants to promote diversity among professionals and expand its base of support, the NAM should be replaced by a more comprehensive and inclusive narrative of wildlife conservation, one that acknowledges the fundamental roles of women, minorities, and underserved communities. Similarly, the narrative should expand the myopic focus on hunting, hunters, and legitimate use being focused on killing more or fewer animals. A narrative focused on banning wildlife commerce, promoting hunting, justifying killing, and regulating take by law is undeniably biased toward people and species involved in harvesting wild animals, yet hunting has little to do with management or conservation of most wildlife species in the 21st century.

The Public Trust Doctrine is the only principle in the descriptive NAM that is not axiomatic (e.g., wildlife can be international) or guilty of creating the artificially narrow and constraining narrative described in this essay, and would be strengthened by a new narrative. Further, the Public Trust Doctrine was suggested as the foundation of the NAM by the NAM's authors (Geist & Organ, 2004). If wildlife management authority rests on the public trust, then wildlife managers need to engage the public, and not just a small minority of the public. Engaging the public in wildlife governance not only makes the public trust a more honest assessment of wildlife management, it has the potential to build broader-based coalitions of support for wildlife management, which will be needed in a future of rapid demographic change (Lopez et al., 2005; Peterson, Lopez, Mertig, & Liu, 2011). The latest edition of the *Human Dimensions of Wildlife Management* book notes that wildlife management occurs within an evolving governance structure shaped by worldwide trends in democratization (Decker et al., 2012), and such a context calls for a more nuanced and inclusive form of governance than that depicted in the NAM.

Defining a contemporary narrative for wildlife conservation shared with society at large will prove critical given the dynamic context of modern wildlife management. The days when wildlife management could operate using seven pre-established principles were gone by the 1970s. Further, such an approach conflicts with democratic decision making. Diverse publics now expect to be treated as stakeholders, if not citizens, when wildlife management decisions are made (Decker, Krueger, Baer, Knuth, & Richmond, 1996; Peterson & Rodriguez, 2012), and they rightly expect to be part of the grand narrative of wildlife management. We recognize that NAM advocates have depicted the model as evolving in their most recent work, but the very first page of the same report emphatically states that adding, deleting, or modifying the principles will not impact conservation (Organ et al., 2012, p. 1). This approach to defending the NAM must be recognized for what it is: boundary work (Gieryn, 1995).⁷ Describing the Public Trust as operating as a nested function inside the NAM (Organ, Decker, Stevens, Lama, & Doyle-Capitman, 2014) provides one instance of boundary work that attempts to associate the Public Trust Doctrine and NAM if not portray functions of the Public Trust as internal to the NAM. Similarly attempting to tautologically prevent rejection of the NAM's narrative by suggesting it is evolving, but should not be amended clearly attempts to reinforce the boundaries of the NAM, despite their fragility in modern contexts. It is time for the wildlife conservation community to join conservation biologists in breaking free from the "old bottle" (Jensen & Krausman, 1993) and developing a narrative unrestricted by allegiances to hunting and game species. It is time for the narrative to be rewritten to include the movement's increasingly diverse constituency and complex history.

Notes

1. The limitations on diversity we describe largely stem from interest and participation in hunting and trapping and not willful intent of NAM authors.
2. Frank Chapman was from the American Museum of Natural History in New York, founded *Bird Lore*, a replacement for the failed *Audubon Magazine*, and worked with Mabel Wright to edit it.
3. A plenary session for the 2016 annual conference of The Wildlife Society (TWS) titled “Is Sustainable Use of Wildlife Sustainable?” addresses the issue.
4. This program originated in the same special session of the Wildlife Management Institute’s annual conference as the first formal articulation of NAM (The 66th North American Wildlife and Natural Resources Conference in 2000).
5. Neither detailed descriptions of membership nor metrics for global impact are available for either society but in 2016 The Wildlife Society reported “nearly 10,000 members” (<http://wildlife.org/about/>) and The Society for Conservation Biology reported “more than 5,000 members” (<http://conbio.org/about-scb/who-we-are/>). The ISIS Journal Citation Report for 2015 suggests The Society for Conservation Biology’s two primary publications, *Conservation Biology* (impact factor 4.27) and *Conservation Letters* (impact factor 7.13), have higher scientific impact than The Wildlife Society’s two primary publications, *The Journal of Wildlife Management* (impact factor 1.73) and *The Wildlife Society Bulletin* (impact factor 0.78).
6. Although The Wildlife Society does not typically include fish in the subject matter of its publications, the species are clearly wildlife by all traditional definitions focused on free ranging animals, and even the more narrow versions focused on vertebrates.
7. In the field of science studies boundary work refers to creating, advocating, attacking, and reinforcing boundaries and demarcations between disciplines or fields of knowledge.

Acknowledgments

We thank anonymous reviewers and our Associate Editor for insights on improving the article, and for constructive criticism on earlier drafts.

References

- Barnosky, A. D., Matzke, N., Tomiya, S., Wogan, G. O., Swartz, B., Quental, T. B., ... Maguire, K. C. (2011). Has the Earth’s sixth mass extinction already arrived? *Nature*, 471(7336), 51–57. doi:10.1038/nature09678
- Buchanan, J. B., Gutiérrez, R. J., Anthony, R. G., Cullinan, T., Diller, L. V., Forsman, E. D., & Franklin, A. B. (2007). A synopsis of suggested approaches to address potential competitive interactions between Barred Owls (*Strix varia*) and Spotted Owls (*S. occidentalis*). *Biological Invasions*, 9, 679–691. doi:10.1007/s10530-006-9068-7
- Chitwood, M. C., Peterson, M. N., Bondell, H. D., Lashley, M. A., Brown, R. D., & Deperno, C. S. (2016). Perspectives of wildlife conservation professionals on intensive deer management. *Wildlife Society Bulletin*, 39, 751–756. doi:10.1002/wsb.607
- Cox, R. (2012). *Environmental communication and the public sphere*. Thousand Oaks, CA: Sage.
- Decker, D. J., Krueger, C. C., Baer, R. A. J., Knuth, B. A., & Richmond, M. E. (1996). From clients to stakeholders: A philosophical shift for fish and wildlife management. *Human Dimensions of Wildlife*, 1, 70–82. doi:10.1080/10871209609359053
- Decker, D. J., Riley, S. J., & Siemer, W. F. (2012). *Human Dimensions of Wildlife Management*. Baltimore, MD: JHU Press.
- Dunlap, R. E., & Mertig, A. G. (2014). *American environmentalism: The US environmental movement, 1970–1990*. New York, NY: Taylor & Francis.
- Dunlap, T. R. (1991). *Saving America’s wildlife*. Princeton, NJ: Princeton University Press.

- Entman, R. M. (1993). Framing: Toward clarification of a fractured paradigm. *Journal of Communication*, 43, 51–58. doi:10.1111/jcom.1993.43.issue-4
- Geist, V. (1988). How markets in wildlife meat and parts, and the sale of hunting privileges, jeopardize wildlife conservation. *Conservation Biology*, 2(1), 15–26. doi:10.1111/cbi.1988.2.issue-1
- Geist, V. (1995). North American policies of wildlife conservation. In V. Geist, & I. M. Cowan (Eds.), *Wildlife conservation policy* (pp. 77–129). Calgary, Alberta, Canada: Detselig.
- Geist, V., Mahoney, S. P., & Organ, J. F. (2001). Why hunting has defined the North American Model of Wildlife Conservation. *Transactions of the North American Wildlife and Natural Resources Conference*, 66, 175–185.
- Geist, V., & Organ, J. F. (2004). The public trust foundation of the North American model of wildlife conservation. *Northeast Wildlife*, 58, 49–56.
- Gieryn, T. F. (1995). Boundaries of science. In S. Jasinoff, G. E. Markle, J. C. Petersen, & T. Pinch (Eds.), *Handbook of science and technology studies* (pp. 393–443). Thousand Oaks, CA: Sage Publications.
- Goodrich, J. M., & Buskirk, S. W. (1995). Control of abundant native vertebrates for conservation of endangered species. *Conservation Biology*, 9, 1357–1364. doi:10.1046/j.1523-1739.1995.09061357.x
- Gregory, R., Failing, L., Harstone, M., Long, G., McDaniels, T., & Ohlson, D. (2012). *Structured decision making: A practical guide to environmental management choices*. New York, NY: John Wiley & Sons.
- Heberlein, T. A. (1991). Changing attitudes and funding for wildlife: Preserving the sport hunter. *Wildlife Society Bulletin*, 19, 528–534.
- Jensen, M. N., & Krausman, P. R. (1993). Conservation Biology's literature: New wine or just a new bottle? *Wildlife Society Bulletin*, 21, 199–203.
- Jonker, S. A., Muth, R. M., Organ, J. F., Zwick, R. R., & Siemer, W. F. (2006). Experiences with beaver damage and attitudes of Massachusetts residents toward beaver. *Wildlife Society Bulletin*, 34, 1009–1021. doi:10.2193/0091-7648(2006)34[1009:EWBDAA]2.0.CO;2
- Kalkomey Enterprises. (2012). *Today's hunter: A guide to hunting responsibly and safely*, Wisconsin. Dallas, TX: Kalkomey Enterprises, Inc.
- Krausman, P. R., & Cain, J. W., III. (2013). *Wildlife management and conservation: Contemporary principles and practices*. Baltimore, MD: JHU Press.
- Leopold, A. (1933). *Game management*. Madison: The University of Wisconsin Press.
- Livezey, K. B. (2010). Killing barred owls to help spotted owls I: A global perspective. *Northwestern Naturalist*, 91, 107–133. doi:10.1898/NWN09-37.1
- Lopez, R. R., Lopez, A., Wilkins, R. N., Torres, C. C., Valdez, R., Teer, J. G., & Bowser, G. (2005). Changing Hispanic demographics: Challenges in natural resource management. *Wildlife Society Bulletin*, 33, 553–564. doi:10.2193/0091-7648(2005)33[553:CHDCIN]2.0.CO;2
- Mahoney, S. P. (2004). The seven sisters: Pillars of the North American wildlife conservation model. *Bugle*, 21, 5.
- McCleery, R. A., Moorman, C., & Peterson, M. N. (2015). *Urban wildlife conservation: Theory and practice*. New York, NY: Springer.
- Merchant, C. (2010). George Bird Grinnell's Audubon Society: Bridging the gender divide in conservation. *Environmental History*, 15, 3–30. doi:10.1093/envhis/emq015
- Moore, K. D., & Nelson, M. P. (2010). *Moral ground: Ethical action for a planet in peril*. San Antonio, TX: Trinity University Press.
- Mulder, M. B., & Coppolillo, P. (2005). *Conservation: Linking ecology, economics, and culture*. Princeton, NJ: Princeton University Press.
- Myers, N., Mittermeier, R. A., Mittermeier, C. G., da Fonseca, G. A. B., & Kent, J. (2000). Biodiversity hotspots for conservation priorities. *Nature*, 403(6772), 853–858. doi:10.1038/35002501
- Nelson, M. P., & Vucetich, J. A. (2012). Environmental ethics for wildlife management. In D. J. Decker, S. J. Riley, & W. F. Siemer (Eds.), *Human dimensions of wildlife management* (pp. 223–237). Baltimore, MD: Johns Hopkins University Press.

- Nelson, M. P., Vucetich, J. A., Paquet, P. C., & Bump, J. K. (2011). An inadequate construct? North American model: What's flawed, what's missing, what's needed. *The Wildlife Professional*, 5, 58–60.
- Organ, J. F., Decker, D. J., Stevens, S. S., Lama, T. M., & Doyle-Capitman, C. (2014). Public trust principles and trust administration functions in the North American model of wildlife conservation: Contributions of human dimensions research. *Human Dimensions of Wildlife*, 19, 407–416. doi:10.1080/10871209.2014.936068
- Organ, J. F., Geist, V., Mahoney, S. P., Williams, S., Krausman, P. R., Batcheller, G. R., ... Decker, D. J. (2012). *The North American Model of Wildlife Conservation*. Bethesda, MD: The Wildlife Society.
- Peterson, M. J., Peterson, M. N., & Peterson, T. R. (2016). What makes wildlife wild? How identity may shape the public trust versus wildlife privatization debate. *Wildlife Society Bulletin*, early view.
- Peterson, M. N., Lopez, A., Mertig, A. G., & Liu, J. (2011). Assessing attitudes toward wildlife ownership in United States–Mexico borderlands. *Society & Natural Resources*, 24, 962–971. doi:10.1080/08941920903484271
- Peterson, M. N., Peterson, M. J., & Peterson, T. R. (2005). Conservation and the myth of consensus. *Conservation Biology*, 19(3), 762–767. doi:10.1111/cbi.2005.19.issue-3
- Peterson, M. N., Peterson, M. J., Peterson, T. R., & Liu, J. G. (2007). A household perspective for biodiversity conservation. *Journal of Wildlife Management*, 71(4), 1243–1248. doi:10.2193/2006-207
- Peterson, M. N., Riley, S. J., Busch, L., & Liu, J. (2007). Reconciling wildlife management's conflicted purpose with a land community worldview. *Journal of Wildlife Management*, 71, 2499–2506. doi:10.2193/2007-090
- Peterson, M. N., & Rodriguez, S. L. (2012). Human dimensions of wildlife management. In N. J. Silvy (Ed.), *The wildlife techniques manual: Management* (pp. 1–20). Baltimore, MD: Johns Hopkins University Press.
- Rutledge, D. T., Lepczyk, C. A., Xie, J. L., & Liu, J. G. (2001). Spatiotemporal dynamics of endangered species hotspots in the United States. *Conservation Biology*, 15, 475–487. doi:10.1046/j.1523-1739.2001.015002475.x
- Sanborn, W. A., & Schmidt, R. H. (1995). Gender effects on views of wildlife professionals about wildlife management. *Wildlife Society Bulletin*, 23, 583–587.
- Soulé, M. E. (1985). What is conservation biology? A new synthetic discipline addresses the dynamics and problems of perturbed species, communities, and ecosystems. *Bioscience*, 35, 727–734.
- Soulé, M. E. (1986). *Conservation biology: The science of scarcity and diversity*. Sunderland, MA: Sinauer Associates.
- Teer, J. G. (1988). Book review: Conservation Biology—The science of scarcity and diversity. *Journal of Wildlife Management*, 52, 570–572. doi:10.2307/3801616
- U.S. Department of the Interior and U.S. Department of Commerce. (2012). *2011 national survey of fishing, hunting, and wildlife-associated recreation*. Washington, DC: United States Government Printing Office.
- Vucetich, J. A., & Nelson, M. P. (2010). Sustainability: Virtuous or vulgar? *Bioscience*, 60, 539–544. doi:10.1525/bio.2010.60.7.9
- Wagner, F. H. (1989). American wildlife management at the crossroads. *Wildlife Society Bulletin*, 17, 354–360.