

---

---

# CANADIAN WILDLIFE BIOLOGY & MANAGEMENT

---



CWBM 2018: Volume 7, Number 2

ISSN: 1929-3100

---

Point to Ponder

---

## North American Model of Wildlife Conservation: Empowerment and Exclusivity Hinder Advances in Wildlife Conservation

Thomas L. SERFASS<sup>1</sup>, Robert P. BROOKS<sup>2</sup>, and Jeremy T. BRUSKOTTER<sup>3</sup>

<sup>1</sup>Department of Biology and Natural Resources, Frostburg State University, Frostburg, Maryland, 21532 USA. Email: [tserfass@frostburg.edu](mailto:tserfass@frostburg.edu)

<sup>2</sup>Department of Geography, The Pennsylvania State University, University Park, Pennsylvania 16802, USA. Email: [rpb2@psu.edu](mailto:rpb2@psu.edu)

<sup>3</sup>School of Environment and Natural Resources, The Ohio State University, 2012 Coffey Road, Columbus, Ohio, 43210 USA. Email: [bruskotter.9@osu.edu](mailto:bruskotter.9@osu.edu)

### Abstract

We argue that the North American Model of Wildlife Conservation (NAM) as currently promoted is an overly narrow construct, used both to explain how North American wildlife conservation developed historically, and as a prescriptive framework for applying a hunting-focused form of wildlife conservation. We argue both constructs are problematic in that the complexities of traditional and historical roots of wildlife conservation in North America are portrayed inadequately and selectively to overemphasize hunters' contributions. We raise issues and concerns about the rhetoric used to promote NAM and its associated form of wildlife conservation both within the wildlife profession and to the public. Portrayals of NAM have repeatedly emphasized the important role of hunters and hunting, largely failing to provide attribution for contributions made by other stakeholders or through other forms of interest in wildlife. The North American Model of Wildlife Conservation does capture some of the traditional policies and practices within wildlife management in the United States of America (USA), and to some extent Canada, but in our opinion, it has not evolved to fully represent wildlife conservation efforts of the past, nor point the way toward broader, more inclusive approaches to conserve species, communities, and ecosystems into the future. We offer 5 premises with evidence to support our assertions and probing questions as a basis for initiating a call to critically analyze NAM's

*Correspondence:* Thomas L. Serfass, Department of Biology and Natural Resources, Frostburg State University, Frostburg, Maryland, 21532 USA. Email: [tserfass@frostburg.edu](mailto:tserfass@frostburg.edu)

structures, functions, and purposes. Briefly, the premises focus on NAM as a hunter/hunting-focused form of wildlife conservation that serves to empower hunters and marginalize non-hunting wildlife conservationists in decision making pertaining to wildlife policy, ultimately hindering development of a more holistic, progressive form of wildlife conservation.

**Key Words:** Hunting, North America, North American Model of Wildlife Conservation, Wildlife Conservation, Wildlife Management.

## INTRODUCTION

Over the last 15 to 20 years the North American Model of Wildlife Conservation (hereafter NAM or North American Model) has been widely portrayed and interpreted as both a historical account of how wildlife was conserved in North America, and as a prescriptive model for how wildlife should be conserved in the future (Peterson and Nelson 2017). The North American Model is comprised of 7 primary elements variously portrayed as “components” (Geist *et al.* 2001), “sisters” (Mahoney 2004), “pillars” (Mahoney *et al.* 2008), and “principles” (Organ *et al.* 2012) (Table 1). These elements are a compilation of selectively chosen concepts pertaining to the development and application of recreational hunting (hereafter, hunting) as a basis for wildlife conservation in the United States of America (USA) and Canada. The term “North American Model” is a misnomer in that it aligns most closely with the state-agency-focused portion of the wildlife conservation system that developed in the USA beginning in the late 1800s and early 1900s, but less so with provincial approaches in Canada, federal approaches in general, and has little relevancy to wildlife conservation in Mexico – hence, the focus of our critique largely pertains to the wildlife conservation system that developed in the USA, although much of the discussion has application for Canada. The elements of NAM are not particularly new or novel in themselves, but the progenitors were the first to synthesize them into a single concept to define wildlife conservation, with a combined emphasis on hunting.

The North American Model and its 7 elements have been repeatedly portrayed in a manner that justifies, supports, and promotes hunting, managed by public, state-level conservation agencies, as the “cornerstone” of wildlife conservation in North America (Heffelfinger *et al.* 2013). A paper by Geist (1995) in the Transactions of the First International Wildlife Congress seems to represent the written origins of NAM, with this early version establishing 5 of the 7 core elements. A special, full-day session (“The Changing Role of Hunting in North American Conservation”) at the Wildlife Management Institute’s 66th North American Wildlife and Natural Resources Conference in 2001 appears to have been the primary catalyst for

expanding and promoting NAM, with the current title and 7 elements firmly established through an article published in the Transactions of this conference, “Why hunting has defined the North American Model of Wildlife Conservation” (Geist *et al.* 2001). Fundamental concepts of NAM have since become ingrained in wildlife management culture through ongoing and numerous portrayals of common messages communicated in various types of media and forums:

- popular articles (e.g., Mahoney 2004);
- commentaries (e.g., Prukop and Regan 2005);
- book chapters (e.g., Geist 2006);
- “White House Conference on North American Wildlife Policy” (Mahoney *et al.* 2008);
- articles derived from presentations at a dedicated session on NAM at the 74th North American Wildlife and Natural Resources Conference (Crane 2009; Decker *et al.* 2009; Organ 2009; Schildwachter 2009; Walker 2009; Williams *et al.* 2009);
- websites of state-wildlife agencies and hunting-based conservation organizations (e.g., Arizona Fish and Game Department (undated); Boone and Crockett Club (undated); National Wild Turkey Federation (undated); and Rocky Mountain Elk Foundation (RMEF; undated); Association of Fish and Wildlife Agencies (AFWA undated);
- educational programs such as “Conservation Leaders for Tomorrow” (CLfT) – designed to instruct non-hunting university students enrolled in wildlife programs and natural resource professionals about the role of hunting in conservation, focusing on principles of NAM (CLfT undated);
- a special issue of The Wildlife Professional (Moore 2010), a magazine published by The Wildlife Society (TWS);
- DVD: “The Story of the North American Model for Wildlife Conservation – Opportunity for All” – a cooperative project by the RMEF (undated) and Conservation Visions (undated) in 2006, with an introduction contributed by TWS in 2012;
- a technical review by TWS (Organ *et al.* 2012);

Table 1. Interpretation of the 7 elements comprising the North American Model of Wildlife Conservation (NAM).

<b>Element<sup>1</sup></b>	<b>Interpretation<sup>2</sup></b>
<i>Wildlife as public trust resources</i>	Establishes that certain natural resources, including wildlife, have value to all citizens, are thus inappropriate for subjugation through private ownership, and should be conserved through public ownership, with the government serving as the trustee of the resources (see Sax [1970] for a review of the “Public Trust Doctrine” (PTD); Geist <i>et al.</i> [2001], Batcheller <i>et al.</i> [2010] and Organ <i>et al.</i> [2012] for suggested application specifically to wildlife based on NAM; and Treves [2015] for a critical review of the PTD as portrayed by proponents of NAM).
<i>Elimination of markets for wildlife</i>	Establishes that commercialized use of wildlife should be prohibited, based largely on the reduction of game populations caused by market hunting during the 1800s and the subsequent transition to recreational hunting beginning in the late 1800s (Trefethen 1975).
<i>Allocation of wildlife by law</i>	An indication that recreational hunting should be regulated by seasons and bag limits.
<i>Wildlife can only be killed for a legitimate purpose</i>	This element is extremely subjective and open to various interpretations. Geist <i>et al.</i> (2001) consider use for food, fur [a contradiction to the second element], self-defense, and protection of property as legitimate uses of wildlife.
<i>Wildlife are considered an international resource</i>	Focuses on the importance of international cooperation in conserving migratory species. The management of migratory birds, particularly waterfowl, in North America is the most featured example (Trefethen 1975; Organ <i>et al.</i> 2012).
<i>Science is the proper tool for discharge of wildlife policy</i>	Decision-making regarding wildlife conservation should be informed through scientific inquiry.
<i>Democracy of hunting</i>	All citizens have the right and should be afforded the opportunity to hunt.

<sup>1</sup>The terms used to describe each of the elements were derived directly from Geist *et al.* (2001).  
<sup>2</sup>Interpretations are based on our perception of the 7 elements from review of Geist *et al.* (2001) and Organ *et al.* (2012).

- 2 special issues of the International Journal of Environmental Studies focused on hunting as an approach to conservation in North America (Brett-Crowther 2013, 2015); and
- a plenary presentation at the V<sup>th</sup> International Wildlife Management Conference co-hosted by TWS (Miller 2015).

An internet search on the “North American Model of Wildlife Conservation” reveals dozens of web sites on the topic, mostly devoted to espousing the virtues of hunting in wildlife conservation. Collectively, these examples represent perhaps the most widely disseminated, unified, and

concerted messaging ever undertaken to convey a specific and narrow aspect of wildlife conservation in North America.

With the exception of 2 thought-provoking articles in *The Wildlife Professional* (Dratch and Khan 2011; Nelson *et al.* 2011), NAM had been disseminated virtually without challenge within the USA wildlife profession. These initial arguments established concerns that NAM’s focus on game species, hunting, and hunters has hindered the development of holistic approaches required to address modern conservation challenges such as loss of biodiversity (Dratch and Khan 2011; Nelson *et al.* 2011). Others have since made the case that NAM’s focus on hunting and hunters’ interests

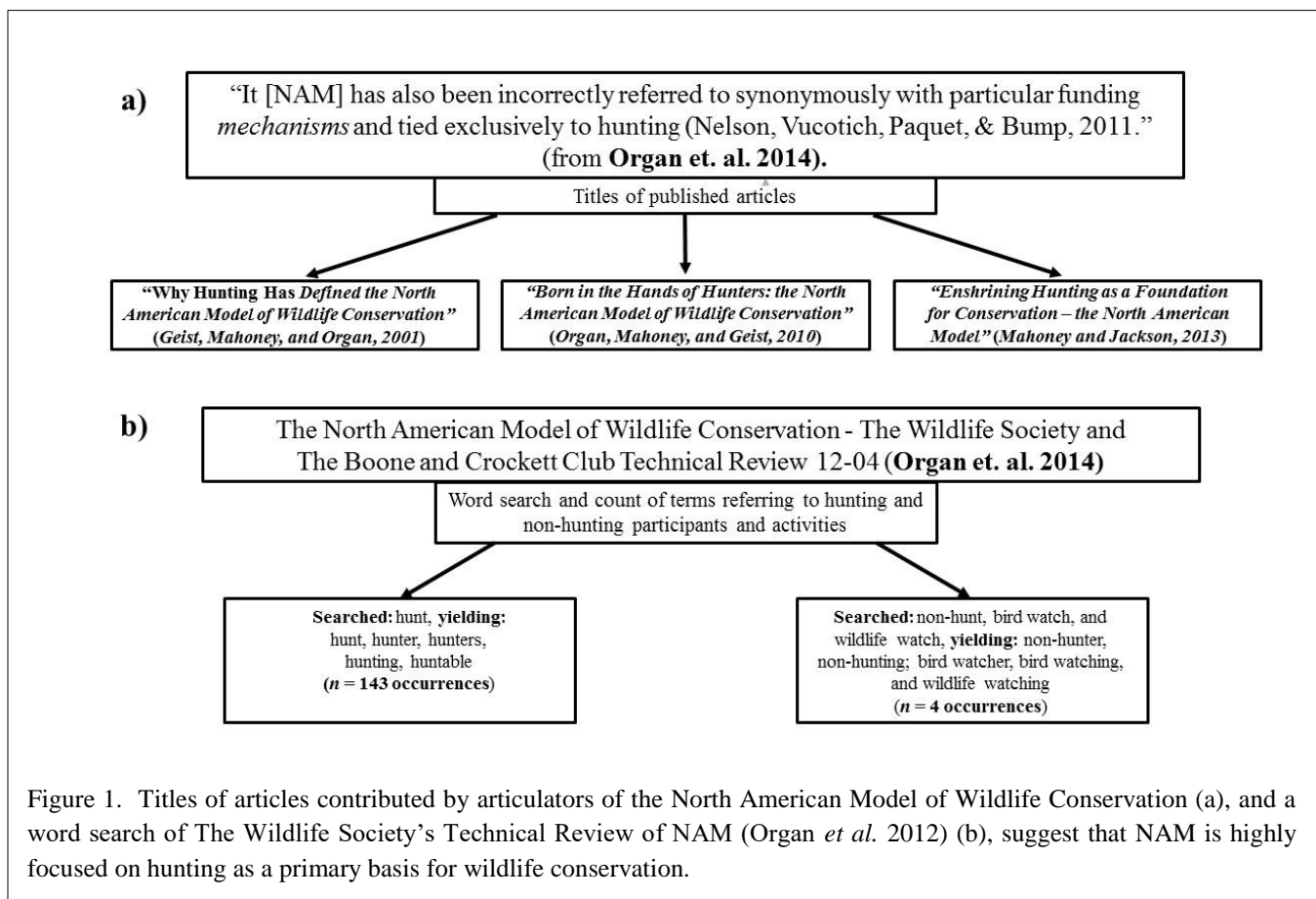
have further marginalized the interests and opinions of non-hunting wildlife enthusiasts (Feldpausch-Parker *et al.* 2017; Peterson and Nelson 2017), thus serving as a polarizing force within the wildlife conservation community by championing a wildlife-conservation system that values the interests of hunters over those of non-hunting wildlife enthusiasts. Further, Clark and Milloy (2014), Vucetich *et al.* (2017), Elbroch *et al.* (2017), and Serfass *et al.* (2017), respectively, voiced concerns pertaining to the legitimacy of rationale used by the wildlife conservation system associated with NAM to justify consumptive-use as part of conservation strategies for carnivores, in general, with the gray wolf (*Canis lupus*), bobcat (*Lynx rufus*), and river otter (*Lontra canadensis*) as specific examples.

The intent of this opinion paper is to provide background on the primary, underlying purpose of NAM, and examples of how NAM has hindered the development of a more progressive, inclusive form of wildlife conservation. We structured this critique around 5 premises intending to show that NAM serves to promote a hunting-focused form of wildlife conservation and related practical and ethical concerns pertaining to such an agenda.

## PREMISES

### Premise 1: NAM is primarily aligned with the hunting community

Clarifying the primary purpose of NAM is necessary as a basis for meaningful critique. The perception of a close alignment with hunting has been the catalyst for all negative critiques of NAM. However, John Organ, one of the original articulators of NAM, and co-authors dispute such an interpretation, stating in Organ *et al.* (2014:408): “*The Model has often been interpreted to be more than its original articulators’ intention to describe key components of the philosophy and approach to wildlife conservation that developed in North America. It has also been incorrectly referred to synonymously with particular funding mechanisms and tied exclusively to hunting (Nelson, Vucotich, Paquet, & Bump, 2011). Because of these unintended interpretations, the Model has been criticized for being narrowly applied only to wildlife taxa of value for hunting and trapping and for benefitting only stakeholders interested in those values (Decker, Organ, & Jacobson, 2009).*” Unchallenged, this statement serves to obfuscate the validity of criticisms of NAM as being closely aligned with hunting.



In contrast to Organ *et al.*'s (2014:408) contrary assertion, a cursory review of article titles and other depictions of NAM reveals an inordinately close affiliation with hunting (Figure 1a), and funding mechanisms for wildlife conservation (e.g., AFWA undatedb). A search for key words in TWS's Technical Review of NAM (Organ *et al.* 2012) pertaining to various wildlife-related recreational activities (e.g., hunting and bird watching) likewise lends credence to our contention that NAM predominantly represents a hunting-focused form of wildlife conservation (Figure 1b). In fact, these hunting-centric portrayals have evolved into an accepted and acceptable description of NAM throughout the professional wildlife community, regardless of the intention of original articulators. For example, the Rocky Mountain Elk Foundation demonstrated acceptance of this description by associating NAM with a list of "25 Reasons Why Hunting is Conservation" (RMEFc). These and numerous other depictions support notions that NAM is prescriptive (Peterson and Nelson 2017), serving as a basis for promoting and advocating a hunter/hunting-centric form of wildlife conservation. Thus, those with views opposing a form of wildlife conservation focused on hunting are justified in critiquing NAM on such a basis. Through the near absence of scrutiny and critical review, especially from within the wildlife profession, NAM's rhetoric has become an accepted paradigm (to many) for what constitutes wildlife conservation. The widespread acceptance of NAM in general absence of diverse critique should be of concern to all wildlife professionals, regardless of opinions about the role of hunting in wildlife conservation.

**Premise 2: NAM overstates the financial support contributed by hunters for wildlife conservation, generally failing to recognize contributions of the non-hunting public**

Promotion of hunters and hunting are evident throughout rhetoric directly and indirectly associated with NAM (see Figure 1), particularly in portrayals of financial support contributed by hunters for wildlife conservation. The North American Model is based on a "user-pay, user-benefit" concept (Organ *et al.* 2012:9), whereby users (hunters) pay (e.g., by purchasing hunting licenses and guns) for the opportunity to hunt wildlife. Funds derived from sale of hunting licenses and through the Federal Aid in Wildlife Restoration Act (often referred to as the Pittman-Robertson [P-R] Act) are commonly used as examples of contributions made by hunters in support of conservation (e.g., AFWA Undatedb; Williams 2010). Organ *et al.* (2014:408) dispute the association between NAM and any particular sources of funding for wildlife conservation, correctly arguing Geist *et al.* (2001) do not mention funding in the original articulation

of NAM. However, many subsequent portrayals either directly or indirectly promote an association with NAM and funding derived through hunting. For example, funding contributed by hunters is prominent in the portion of the Association of Fish and Wildlife Agencies' (AFWA) web page devoted to NAM: "*Hunting and angling are the cornerstones of the North American Model with sportsmen and women serving as the foremost funders of conservation* (emphasis added) [through excise taxes and hunting license fees they pay]" (AFWA Undatedb).

Non-hunting-derived contributions that directly or indirectly support wildlife conservation are seldom or incompletely depicted in portrayals of NAM, serving to elevate the role of hunters as conservationists and, through omission, undervaluing contributions made by non-hunters. Examples of these omissions include: 1) contributions made by members of early versions of the National Audubon Society in establishing important wildlife legislation, such as the Lacey Act of 1900 (Peterson and Nelson 2017); 2) contributions of dedicated members of non-hunting-focused private conservation organizations in promoting wildlife and habitat conservation (e.g., Defenders of Wildlife, National Audubon Society, The Nature Conservancy, and The Wilderness Society); 3) contributions of the National Park Service in conserving wildlife (especially large carnivores) through a largely preservationist mandate; 4) important environmental legislation not based on hunting that has contributed extensively to wildlife conservation (e.g., Clean Air Act, Clean Water Act, Endangered Species Act); and 5) financial contributions supporting the public land system and associated benefits to wildlife conservation. Regardless, the concepts of how someone contributes to conservation and what constitutes a conservationist are much more complicated than implicating that hunters (and anglers) are uniquely responsible in "...*Paying for Conservation*" (e.g., Izaak Walton League of America *et al.* 2018), or attributing such virtues to any individual or group simply based on financial contributions.

We briefly explore 3 specific issues as examples of the complexity related to funding wildlife conservation, especially in relation to revenues contributed by hunting: 1) financial support for conservation through tax revenues generated by purchasing guns and ammunition (i.e., Pittman-Roberson Funds in the USA); 2) acquisition and management of public lands; and 3) equating financial contributions to philosophical support for conservation. Our intent is not to exhaustively review these topics, but to use them as a basis for establishing examples of the types of questions that should be asked when critiquing assertions associated with NAM's 7 elements.

*Pittman-Robertson Act*

Since 1939, the P-R Act has contributed >\$10 billion US to state agencies through a federal excise tax on hunting/shooting-related equipment (i.e., guns, ammunition, and archery equipment) for wildlife restoration projects, land acquisition, and other wildlife-management activities (see McDonald 2012 for a comprehensive review). Hunters have been a primary source of funds derived through the P-R Act, but seldom mentioned is the substantial degree to which non-hunting shooters and archers contribute to P-R funds. For example, about 43% of almost 19 million Americans participating in shooting sports reportedly did not hunt (Responsive Management/National Shooting Sports Foundation 2008). The Wildlife Society's technical review of NAM (Organ *et al.* 2012:23) expressed concerns about gun legislation diminishing hunting opportunities and funding for wildlife conservation: "*Without secure gun rights, the average person's ability to hunt would likely be compromised, along with indispensable sources of funding for implementation of the Model.*" This position has subsequently been adopted by TWS (2017) as a "Final Position Statement." Such a position places NAM and TWS into the USA national gun control debate and provides tacit recognition that P-R funds are derived from purchases not necessarily related to hunting. The contribution of non-hunting shooters to P-R funds recently has been more generally acknowledged by Duda *et al.* (2017).

Funds from the P-R Act are a clear example of how funds derived from expenditures by hunters contribute to wildlife conservation (McDonald 2012). However, meaningful discussions about the relative benefits to wildlife conservation derived through hunting cannot take place without first reviewing and acknowledging the entirety of contributions (fiscal and otherwise) made by both hunters and non-hunters, an obvious shortcoming in most depictions of NAM. Those acknowledgements must go beyond hunting-related contributions, and include, for example, societal and conservation benefits derived directly or indirectly from expenditures related to birding and other wildlife watching, outdoor photography, and hiking (United States [U.S.] Fish and Wildlife Service [USFWS] 2016); mechanisms for funding the acquisition and management of public lands; and support for environmental legislation that benefits wildlife.

*Public Lands*

From our perspective, placing lands into the public domain represents the most substantial, long-term contribution to conservation. Details of how public lands are acquired, and costs for their administration are seldom included in discussions of NAM. Also, largely absent in NAM's state-

wildlife-agency focus is recognition of the enormous benefits derived for wildlife conservation and outdoor recreation on public lands managed by federal conservation agencies, or that funds from hunting have contributed relatively little in financing the acquisition and administration of public lands, especially at the federal level (Smith and Molde 2015). This lapse is particularly disconcerting given the broad spectrum of recreational benefits that citizens (hunters and non-hunters alike) derive from public lands, and the emphasis being placed on increasing "access" to public lands for hunting (and other forms of outdoor recreation) by organizations such as American Wildlife Conservation Partners, "a consortium of 47 organizations that represent the interests of America's millions of dedicated hunter conservationists, professional wildlife and natural resource managers, outdoor recreation users, conservation educators, and wildlife scientists." (AWCP 2017).

Public lands in the USA are managed among various jurisdictional levels (e.g., local, state, federal, and Native American tribal). The majority of these public lands are owned and managed at state and federal levels, collectively comprising about 35% (320 million ha) of the total land area (Natural Resources Council of Maine 2017). Of this land, the vast majority is in federal ownership (~235 million ha), with most managed by 4 federal agencies (National Forest Service, USFWS, Bureau of Land Management, and National Park Service) (Gorte *et al.* 2012), with management costs paid by general tax revenues. Smith and Molde (2015) estimated that the non-hunting public contributed (through general tax revenues) about 95% of an annual \$18.7 billion USA cost associated with federally-managed public lands.

A multitude of approaches have contributed to acquisition of lands entered into the federal public lands system (Alexander and Gorte 2007; Vincent *et al.* 2012). With the exception of the National Wildlife Refuge System, funds derived from hunting-related activities generally have not contributed to the acquisition or management of federal public lands. The Migratory Bird Hunting and Conservation Stamp Act of 1934 (commonly referred to the "Duck Stamp Act") is a highly touted and appropriate example of contributions made through hunting for acquiring land for entry into the National Wildlife Refuge system and for other forms of wetland-focused habitat protection (USFWS December 15, 2017). Receipts from the sale of "duck stamps" has contributed substantially to the Migratory Bird Conservation Fund, which funded the purchase of about 1.1 million ha (3%) of the National Wildlife Refuge System (USFWS October 15, 2015). Although funds from the "Duck Stamp Act" have been an important source of revenue

for conserving habitat for waterfowl, the vast majority of lands in the National Wildlife Refuge System was acquired through means not related to hunting.

Funds from the P-R Act have contributed to the acquisition or management of about 1.6 million ha of state public lands (TWS July 2017). However, funding through the P-R Act does not represent the entirety of approaches used to acquire and support management activities on state public lands (USFWS-Southeast Region Undated). The USA state of Pennsylvania provides an excellent example of the complexity of how state public lands are acquired and managed. The Pennsylvania Game Commission (Pennsylvania's wildlife management agency) manages approximately 550,000 ha of State Game Lands, intended primarily to provide hunting opportunities, but which also contribute to other outdoor recreational activities such as hiking and birding. Many of these lands were acquired through the agency's "Game Fund" (funds derived from hunting license fees) and P-R funds, but also through funds provided by state bond issues and the Land and Water Conservation Fund (LWCF) (Dattisman 2009). Pennsylvania also has 900,000 ha of State Forest Lands within 20 districts and over 113,000 ha comprising 120 State Parks managed by agencies within the PA Department of Conservation and Natural Resources. Neither State Forests nor Parks were acquired or managed through funding derived from hunting-related activities, but hunting is allowed on almost all State Forest Lands, and at least some portions of many State Parks. Hunting also is allowed in most of the 200,000-ha Allegheny National Forest and portions of the 28,000-ha Delaware Water Gap National Recreation Area (managed by United States Forest Service and National Park Service, respectively), and neither were obtained or administered by hunting-derived funds. Hunters have without a doubt contributed to the public land system within Pennsylvania, but also benefited immensely by having access to public lands acquired and managed through means not related to hunting.

Recently, the concept of "user-pay, user-benefit" has morphed into the slogan "hunters-pay, public benefits" (e.g., King 2018), implying that hunters uniquely contribute financially to wildlife conservation. However, as shown above, federal (and often state) public lands in the USA typically were obtained and managed through funds disproportionately provided by the non-hunting taxpayer (only about 5% of USA citizens are hunters; Responsive Management/National Shooting Sports Foundation 2008). Thus, hunters derive enormous benefits from access and use of a public lands system largely financed by the non-hunting public. For example, although acquisition and management

of Bureau of Land Management and USFWS lands (39% and 14% of all federal lands, respectively) are not financed by hunting, about 95% of these lands are open to hunting (Gorte *et al.* 2012). The slogan "hunters-pay, public benefits" is another example of a factually incomplete notion about wildlife contribution fostered through the NAM-based system of wildlife conservation.

**Premise 3: Financial support for wildlife conservation does not necessarily equate to philosophical support**

Funds derived through hunting have undeniably contributed substantially to sustaining the state-wildlife management system in the USA. However, do funds derived from user fees paid by hunters equate to philosophical support for conservation that extends beyond hunting? Available evidence suggests that hunters are not a homogenous group (Kellert 1978; Decker and Connelly 1989), with motives to hunt that are diverse and inconsistent with simplistic slogans suggesting "hunters support conservation." The notion that hunters represent a uniform group uniquely dedicated to conservation is another example of claims implied by NAM's supporters (e.g., RMEF undateda) that has not undergone meaningful scrutiny from within the wildlife profession. A few fundamental questions could address this deficiency:

1. What proportion of hunters is aware that an excise tax is paid when shooting-related equipment is purchased, and is attribution of support for conservation (i.e., paying a tax) appropriate for those not aware of the tax?
2. Does paying a tax necessarily mean that the payer supports the purpose of the tax? Specifically, even if knowing a tax is paid and its purpose, if given the option, what proportion of hunters would support paying an excise tax that would generate funds dedicated for use in wildlife conservation, even if taught to know?
3. Do hunters disproportionately (in contrast to the non-hunting public) support environmental legislation that benefits wildlife conservation (e.g., LWCF, Endangered Species Act, and Clean Water Act), and vote disproportionately for politicians supporting this type of legislation and other non-hunting conservation initiatives?

Generalizations implying that hunters provide fiscal support for wildlife conservation and are thereby conservationists are commonly implied or directly asserted among various portrayals of NAM. In the absence of critical examination of the relationship between financial and philosophical support provided by hunters for conservation, the validity of generalizations that hunters represent a

uniform group dedicated to wildlife conservation should be regarded as no more than a collection of untested hypotheses.

**Premise 4: NAM has evolved into a marketing effort designed to promote hunting**

In reviewing the history and content of NAM we are left wondering – Is the intent to promote a legitimate discussion about wildlife conservation or an effort to expand and generate acceptance for hunting as a conservation strategy? The sustained manner in which NAM and its 7 elements have been cast in various media by a small group of authors apparently supporting the state-based wildlife conservation system in the USA, resembles a focused marketing effort. Consider, for example, these titles from a special session on NAM at the 2009 North American Wildlife and Natural Resources Conference: 1) "Making the North American Model More Relevant to More Americans" (Organ 2009); 2) "Why Should all Americans Care About the North American Model of Wildlife Conservation?" (Decker *et al.* 2009); 3) "How to Make People Care About the Model" (Walker 2009); and 4) "A Policy to Sustain the North American Model of Wildlife Conservation" (Schildwachter 2009). In that session,

Walker (2009) described a marketing approach for application in promoting NAM. Such a promotional effort aligns with the first and second statements in TWS’s Standing Position on the NAM: “*Promote and support adherence to the seven core components [of NAM], ...*” and “*Foster educational opportunities to increase societal awareness of the model*” (TWS undated), and demonstrate promotional aspects of NAM.

Ultimately, given the manner by which hunting and NAM are interwoven, then promoting one seemingly serves to promote the other. We do not object to promoting hunting, but are concerned if the underlying purpose of NAM is an unstated effort to serve that promotional effort. In particular, we have ethical concerns related to public servants – the preponderance of wildlife professionals – either directly or indirectly engaging in the promotion of a concept to a naïve public, especially if the primary purpose is masked by accompanying, selective portrayals of benefits provided by hunters and hunting to wildlife conservation. Ultimately, if marketing efforts are successful, will newly recruited hunters contribute heightened or diminished support for progressive

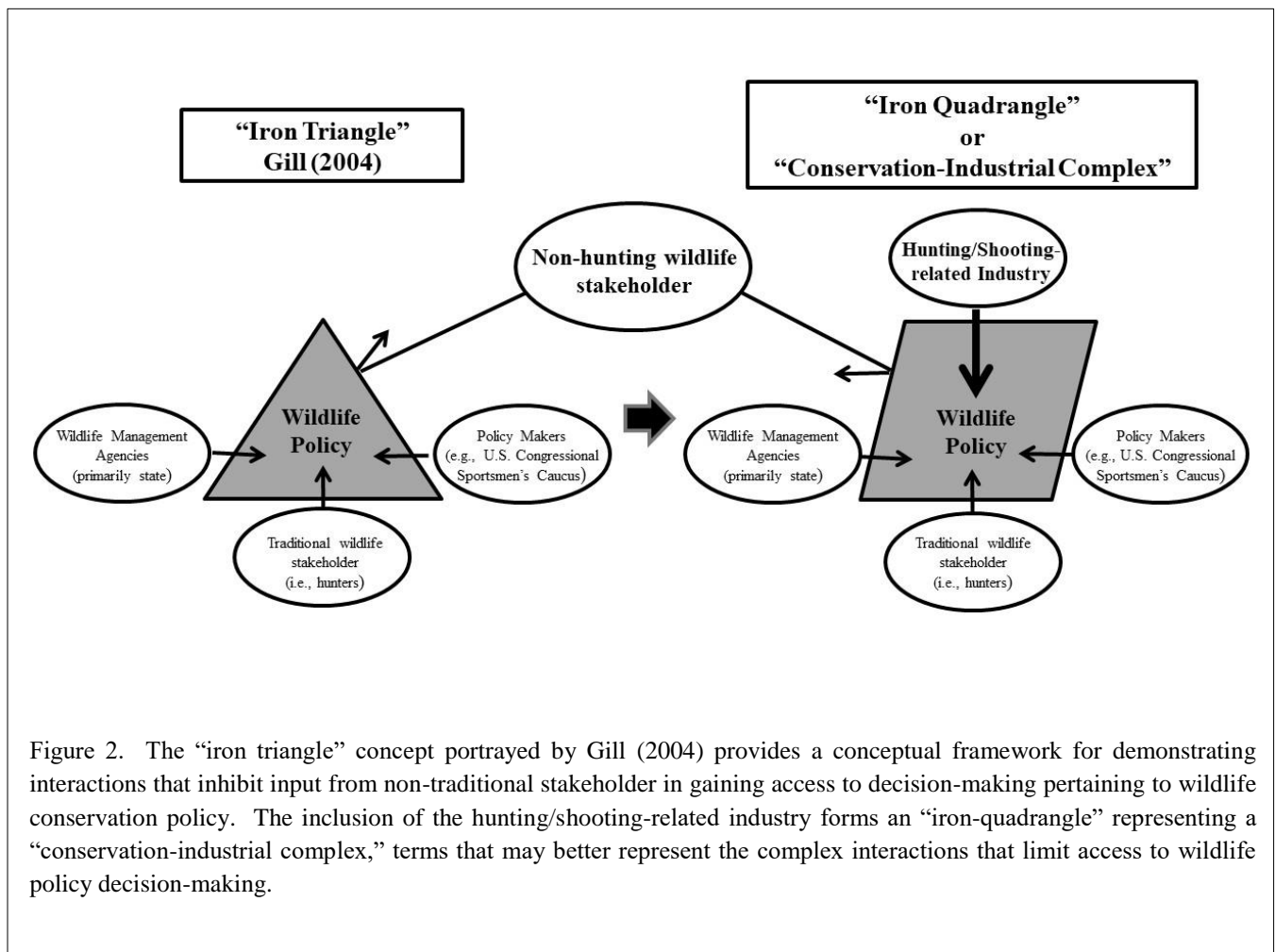


Figure 2. The “iron triangle” concept portrayed by Gill (2004) provides a conceptual framework for demonstrating interactions that inhibit input from non-traditional stakeholder in gaining access to decision-making pertaining to wildlife conservation policy. The inclusion of the hunting/shooting-related industry forms an “iron-quadrangle” representing a “conservation-industrial complex,” terms that may better represent the complex interactions that limit access to wildlife policy decision-making.



wildlife conservation? A recent investigation by Manfredo *et al.* (2017) offers insight, with outcomes suggesting that state-wildlife agencies are likely to experience “fight back” from traditional stakeholders against efforts that would alter the wildlife governance system to represent a broader constituency and offer a more holistic, biodiversity-focused approach to wildlife conservation that extends beyond managing game species for hunting.

Declines in hunter numbers and support for hunting is understandably a concern for the fiscal solvency and general support for state-wildlife conservation agencies. Efforts to promote support and interest for hunting should, therefore, be expected under the current scheme for wildlife conservation – see “Hunter Heritage Action Plan-Concept Paper” developed by the Wildlife Management Institute (WMI 2007) and “R3: Recruitment, Retention, and Reactivation” (DJCase and Associates undated) as examples of efforts currently underway to promote retention and recruitment of hunters. Such promotional efforts based on the system championed by NAM will likely perpetuate the isolation experienced by non-hunting wildlife enthusiasts pertaining to access to wildlife-policy decision making, ultimately serving to constrain the development and implementation of more contemporary approaches for conserving wildlife.

**Premise 5: NAM hinders development of a more progressive system of wildlife conservation**

*Challenges and prospects for progress*

Inertia for development of a more progressive wildlife conservation system is understandable given the primary constituents of the current system, which are firmly entrenched within an “iron triangle” described by Gill (2004) to metaphorically represent barriers imposed (by the sides of the “iron triangle”) that restrict access of non-traditional stakeholders (e.g., non-hunting wildlife enthusiasts) to decision making pertaining to wildlife conservation policy. Entities inferred to impose barriers under the “iron triangle” concept are represented as wildlife management agencies (primarily state), traditional user groups (primarily hunters), and policy makers (e.g., [U.S.] Congressional Sportsmen’s Caucus undated) (Figure 2). The manufacturers of hunting/shooting equipment and associated paraphernalia also should be included, making this arrangement more appropriately referred to as an “iron quadrangle” (Figure 2). Because of this interdependency, state-wildlife agencies are not only beholden to the interests of hunters, but also to the industries and NGOs linked to hunting. The Fish and Wildlife Business Summit (2017), serves as such as example of such interdependency, being described as “...a consortium of federal and state wildlife management

*agencies, industry representatives, and conservation partners...,”* with a mission intending “to foster and enhance these relationships, discuss important legal and legislative issues, and share ideas on how the partners can better work together to ensure the future of hunting, shooting, angling, and boating...”. Such a system would predictably value and promote the virtues of hunters, the dependent stakeholders – “Hunters pay for conservation” – and undervalue the interests and contributions of non-hunting wildlife and outdoor enthusiasts (Feldpausch-Parker *et al.* 2017).

The Society for Conservation Biology (SCB) was organized in 1985 partly because of concerns that the existing system of wildlife conservation was too focused on vertebrates (particularly game species) and was not adequately addressing the entire range of conservation needs, particularly related to biodiversity conservation. Teer (1988) argued that the new organization was not necessary in that TWS and the system of wildlife management in the USA were well positioned to address the entire range of conservation challenges facing modern society. However, over 3 decades since the formation of SCB, the full breadth of the state-wildlife conservation system is still confronted with funding issues, remains predominantly focused on game species and promotion of hunting, and has yet to embrace a holistic approach for conserving wildlife biodiversity or to integrate the diversity of human interests in wildlife that extend beyond hunting. TWS’s technical review of NAM did recognize the legitimacy of progressive elements championed by SCB, stating that “*Broad, stable, and equitable funding would enable greater focus on biodiversity conservation and landscape approaches*” (Organ *et al.* 2012:26), but fails to acknowledge SCB in promoting a more holistic approach to wildlife conservation.

Challenges associated with advancing the wildlife conservation system have been recognized since the Fish and Wildlife Conservation Act of 1980 (FWCA; “Nongame Act”) (Legal Information Institute undated), which was intended to foster a more holistic approach to wildlife conservation. The state-wildlife conservation system, federal partners, and others actively supported aspects of the “Nongame Act,” particularly the promotion of funding for non-game wildlife. Unfortunately, an important goal of FWCA – to achieve a reliable funding source to support nongame wildlife conservation comparable to the Federal Aid in Wildlife Restoration Act with an excise tax on outdoor-related items and equipment, including backpacks, binoculars and bird seed through the “Teaming with Wildlife” initiative has yet to be achieved. The State Wildlife Grant program did emerge from these efforts and provides federal funds administered by the USFWS to every USA state and territory through

annual appropriations for important use in preventing animals from becoming endangered, vulnerable, threatened, or endangered (see USFWS 2 February 2018, AFWA and USFWS undated).

Recently, the funding goals of FWCA have been revived through a progressive action by AFWA in convening a “Blue Ribbon Panel on Sustaining America’s Diverse Fish and Wildlife Resources” to address limitations in current funding related to what the panel considers to be a “Fish and Wildlife Crisis” (Blue Ribbon Panel 2016). The Panel emphasized the importance of funding derived from hunters, but their depiction of a “Fish and Wildlife Crisis” acknowledges the limitations of a NAM-based approach for achieving holistic fish and wildlife conservation: “*Although core constituencies like hunters and anglers will continue to be key allies, there is a need to broaden stakeholder representation to ensure fish and wildlife conservation remains relevant and supported by people from all walks of life*” (Blue Ribbon Panel 2016:9). The Panel called on Congress to provide \$1.3B USA in permanent, dedicated funding, and the Panel would examine how programs and agencies can transform to engage and serve broader constituencies. These both are refreshing recommendations for advancing wildlife conservation.

#### *Insertion of NAM limits prospects for progress*

Discussions pertaining to the Public Trust Doctrine (PTD – Batcheller *et al.* 2010; Decker *et al.* 2014) and “Transformation of Wildlife Agencies” (Decker *et al.* 2011) would seem to provide additional optimism for a more progressive trend in the future direction of wildlife conservation in the USA. Batcheller *et al.* (2010) provided a synopsis of the PTD in TWS’s technical review of the topic, but this portrayal is closely aligned with NAM’s concepts, emphasizing the rights of the public to have access to game species for hunting. The authors also created a fallacious argument pertaining to the PTD, seemingly intended to marginalize segments of the public oriented towards an animal rights philosophy in decision making pertaining to wildlife conservation: “*If the animal rights philosophy was to become law (whether adopted by legislative bodies or by referenda), wildlife would no longer be property, and would therefore fall out of the public trust*” (Batcheller *et al.* 2010:20). Such an argument would seem the antithesis of the inclusiveness that should be fostered under the PTD. Treves *et al.* (2015) identified and reviewed concerns pertinent to the application of public trust responsibilities by state-wildlife agencies, specifically pertaining to the conservation of predators. Preeminent among these concerns is the narrow and preferential focus on consumptive use of

wildlife embedded in the version of PTD portrayed by NAM’s proponents.

Organ *et al.* (2012) discussed the importance of using the PTD to enhance broader involvement of the public in wildlife policy, establishing the importance of trustees and trust managers (professional staff of wildlife agencies) avoiding favoritism in executing management of the wildlife trust. Implicit is that trustees and trust managers should and will consider the opinions of all citizens in an unbiased manner. Given efforts to promote acceptance of NAM’s hunting-focused form of conservation within the wildlife profession, there is reason to suspect that negative biases towards the non-hunting public will persist, especially towards the subset of non-hunters that are anti-hunters. A recent example from a regional fish and wildlife conference where a presentation overviewing the process of developing a variant of NAM for a state-wildlife agency serves as an example of such bias. The presentation acknowledged valid criticism of NAM as being too focused on hunting, and that a more diverse set of stakeholder values needs to be considered. Also stated in the presentation was that those opposed to hunting (“antis”) were using elements of NAM against the agency, apparently suggesting that the revised model was being developed in part to ameliorate criticism, rather than improve wildlife conservation. Such hubris supports biases against groups possessing different value sets for wildlife conservation from those represented within a state-wildlife agency, and is of particular concern given the presenter was comfortable that such a statement would be well received by the audience, which was comprised primarily of state-agency and academic wildlife professionals.

Karns *et al.* (2018) established concerns relevant to the above example in relation to potential bias among wildlife professionals in assessing support for delisting grizzly bears (*Ursus arctos horribilis*) from protection under the Endangered Species Act, stating that “*...social expectations from one’s peers may be amplified when leaders of one’s peer group seek to sway opinion – as when an organization with which one affiliates issues a position statement.*” Extensive promotion of NAM from within the traditional wildlife conservation system offers potential to likewise generate additional peer pressure for wildlife professionals to conform to a form of wildlife conservation centered on hunting, thereby restricting objective consideration for developing alternative, more diverse and representative forms of wildlife conservation.

Current discussions to “transform” state-wildlife agencies were initiated in part based on recognition that support for

the wildlife conservation system championed by NAM is declining and will further diminish without expanding the constituent base (e.g., Decker *et al.* 2011). Achieving more balanced representation has most recently been directed towards improving wildlife governance by applying Public Trust Thinking (PTT) (Decker *et al.* 2016). Public Trust Thinking is an applied extension of the Public Trust Doctrine, whereby all citizens are considered beneficiaries of the wildlife trust, should expect to benefit from wildlife conservation, and opinions of various stakeholders should be given consideration in establishing and administering wildlife conservation policy (Decker *et al.* 2016). Clearly, improving the wildlife governance system is needed if wildlife conservation is to progress during the 21st Century—as Decker *et al.* (2016) acknowledge: “*Wildlife conservation is losing ground* [under the current system].” Unfortunately, discussions to “transform” the wildlife conservation system are largely “nested” within a construct framed by NAM, which seemingly would enhance the likelihood of internal biases hindering the development of a more inclusive form of wildlife conservation. Ironically, efforts to transform state-wildlife agencies for achieving a more holistic form of wildlife conservation coincide with efforts by those agencies to develop strategies to promote acceptance of hunting to the general public (e.g., “How to talk to the public about hunting: research-based communication strategies”; Responsive Management 2015) and to recruit hunters. This juxtaposition of purposes demonstrates the challenges of transforming and diversifying from within the wildlife conservation system.

Retrenchment of traditional views and philosophies, and expansion of connections among wildlife agencies, traditional user groups, industry, political connections suggests the “iron quadrangle” is not rusting, but instead galvanizing into what seems an integrated effort to promote traditional aspects and elements of wildlife conservation (i.e., consumptive use), rather than evolving with more progressive elements. The group American Wildlife Conservation Partners serves as an example of the iron quadrangle concept, being an amalgam of organizations representing the wildlife-management profession (e.g., TWS, WMI, AFWA); hunting-focused NGO’s (e.g., Safari Club International, Conservation Force, National Wild Turkey Federation); hunting and shooting-related outdoor industries (e.g., Archery Trade Association, National Rifle Association, Professional Outfitters and Guides of America); groups with a mission to lobbying and/or promoting hunting (e.g., Congressional Sportsmen’s Foundation, Council to Advance Hunting and the Shooting Sports, Sportsmen’s Alliance); and off-road vehicle recreation (Tred Lightly!). The North American Model is endorsed and referred to by AWCP

(2017:6) as “...*the most successful program of its kind in the world*”, seemingly an indication of the organization interest in wildlife conservation system focused on hunting. Collectively, this partnership offers enormous potential through financial resources and political activism to effectively promote values and interests of affiliates, including support for NAM.

The recent ban on using lead ammunition and fishing lures in National Wildlife Refuges implemented in 2016 (Cirino 1 February 2017) brought outrage from many within the hunting community, resulting in rapid repeal of the ban (U.S. Department of the Interior [USDOI] March 2, 2017a), and lends support for concerns pertaining to the influential nature of the state-focused wildlife conservation system symbolized by the “iron quadrangle” concept. In another example, a statement by AFWA (January 20, 2017) registering “utter dismay” of a federal agency’s ban on use of lead ammunition and fishing lures in National Wildlife Refuges (federal public land managed by USFWS) to protect wildlife from lead poisoning, stating: “*It [the lead ban] does a disservice to hunters and anglers, the firearms and angling industries, and the many professionals on staff with the USFWS who desire a trusting and transparent relationship with their state partners.*” The statement affirms the wildlife conservation system’s allegiance to primary constituents, industry aligned with AFWA, and consumptive activities, but ignores potential toxicity concerns for wildlife (not mentioned in any of the statements) and concerns about adding lead to the environment (e.g., Center for Biological Diversity March 2, 2017). Fourteen of 19 individuals accompanying the Secretary of the Interior during signing of the order to repeal the lead ban, represented affiliates of AWCP (USDOI March 2, 2017b), demonstrating access to decision making at the highest level of government pertaining to natural resource conservation. Such an alliance demonstrates reasons for the concern originally expressed by Gill (2004) about the “iron triangle,” and our concern about a wildlife conservation too focused on hunting.

## **CONCLUDING THOUGHTS – WHY NAM IMPEDES PROGRESSIVE WILDLIFE CONSERVATION**

Debate on the issue of “what constitutes conservation?” has gone on since the foundational phases of the conservation movement that developed during the late 1800s and early 1900s in the USA, exemplified by disagreements between Gifford Pinchot and John Muir pertaining to use of lands within the public domain. Pinchot, as first director of the United States Forest Service, was devoted to the sustainable

use of publicly owned natural resources, particularly the commercial use of timber products, and applied the term "conservation" to define this sustainable-use philosophy (Meyer 1997). Unlike Pinchot, Muir abhorred the commercialization of nature and was deeply committed to preserving portions of lands (and associated flora and fauna) within the public domain with no or limited human intervention through management, a position pertaining to natural resources that became referred to as "preservation." These philosophical differences contributed to fracturing of the conservation movement between those aligned with Pinchot's position of sustained use (conservationists) and those standing with Muir, advocating wilderness preservation (preservationists). Hence, intellectual tensions and debate over how best to conserve natural resources have persisted since the origins of the conservation movement. Ultimately, Pinchot's concept of conservation became the accepted paradigm for managing some wildlife species (i.e., game species), a concept embodied as the core of the system of wildlife conservation promoted by NAM. The insertion of NAM into the discussion arguably has contributed to further fracturing among groups with opposing perspectives about the role of hunting in wildlife conservation.

Hunting has been the focus of the wildlife conservation system that developed in the USA and championed by proponents of NAM. Nelson *et al.* (2011) were the first in a peer-reviewed paper to raise concerns about NAM, questioning the adequacy of a hunting-based construct as a prescription for advancing wildlife conservation in the 21<sup>st</sup> Century. Feldpausch-Parker *et al.* (2017) and Peterson and Nelson (2017) further established concerns that the wildlife conservation system represented by NAM has served to exclude the interests and opinions of some non-hunting wildlife enthusiasts (and their legitimacy as stakeholders) from the process of establishing and implementing policy for wildlife conservation. We concur with the entirety of concerns expressed by these authors, and have added other practical and ethical concerns pertaining to the promotion and widespread acceptance of NAM within the wildlife profession.

1. *Obfuscation of purpose* – We have provided evidence that portrayals of NAM predominately serve to highlight the virtues of hunting as the foundation for wildlife conservation in the USA. In contrast, Organ *et al.* (2014:408) argue that NAM is misinterpreted when the focus on hunting is criticized, citing Nelson *et al.* (2011) as propagators of such misinterpretation. Such confusion of purpose obfuscates criticism over concerns about NAM. Critiques of NAM as a hunting-focused approach to wildlife conservation are justified, and should be encouraged and welcomed before the 7 elements of NAM are further promoted as a prescriptive basis (see Peterson and Nelson 2017) for advancing wildlife conservation through the 21<sup>st</sup> Century.
2. *Exclusivity* – Depicting support and dedication to wildlife conservation as primarily within the domain of hunting establishes hunters as a unique, preferred class of conservationists, serving to accentuate NAM's exclusivity (e.g., One can only become a conservationist by becoming a hunter?), factual completeness (e.g., Are all hunters conservationists?), attribution (Have non-hunters not contributed to wildlife conservation?), and empowerment (e.g., Do hunters deserve preferential consideration in how wildlife is managed because they "pay for conservation?"). Preferential treatment of hunters serves to inhibit the development of a more inclusive and holistic form of wildlife governance by fostering "tribal" polarization between hunting and non-hunting wildlife stakeholders.
3. *Homogenization* – Muth *et al.* (2006) expressed concern about new recruits into the wildlife profession (i.e., those with "...non-traditional wildlife management backgrounds, such as women, ethnic minorities, non-hunters and non-trappers, and urban residents" in the context that these groups may be less inclined to support consumptive use of wildlife than their older counterparts. To overcome such perceived liabilities the program "Conservation Leaders for Tomorrow" was developed (and has evolved concurrently with NAM) to instruct non-hunting university students (enrolled in wildlife-related degree programs) and natural resource professionals about the virtues of hunting in wildlife conservation (CLFT undatedb). We believe that wildlife conservation professionals must be aware of the history and role hunting has and continues to serve in wildlife conservation, but are concerned by any effort designed to foster uniform acceptance of hunting as foundational to conserving wildlife. Promoting uniform acceptance of consumptive use as the underlying basis for wildlife conservation in the absence of an open and diverse vetting process should be a concern for those in the wildlife profession interested in advancing a more inclusive system of wildlife conservation. In fact, we are convinced that advancements in any discipline are hindered when wrapped in a cloak of homogenized thinking. Such concerns of homogenized thinking are elucidated in

Karns' *et al.* (2018) in relation to decision making pertaining to removing grizzly bears from protection under the Endangered Species Act.

4. *Marketing* – The repetitiveness by which NAM has been portrayed in numerous and varied forums suggests a conscious marketing effort to promote a particular brand of wildlife conservation to both conservation professionals and the general public. Foundations for such marketing efforts are anchored in social surveys conducted by private organizations that conduct public opinion surveys for state-wildlife agencies about hunting and trapping, and include outcomes such as “How to Talk to the Public About Hunting: Research-Based Communication Strategies” (Responsive Management 2015). Marketing as a tool is not inherently harmful or unethical if messages are complete, balanced, and designed to inform decision making. When used to promote a value system for a legitimate but narrow form of wildlife conservation to naïve audiences, then these efforts stray into the realm of influencing, not informing. Such promotional efforts raise various ethical and practical concerns, and in the end could constrict the capability of the current wildlife conservation system to encompass a much broader range of taxa, issues, and stakeholders.
5. *Empowerment* – Feldpausch-Parker *et al.* (2017) contend that NAM’s rhetoric has discouraged non-hunting wildlife enthusiasts, policy-makers, and wildlife professionals from more actively engaging in the process of developing policies pertinent to wildlife conservation. The user-pay, user-benefit system of wildlife funding undoubtedly empowers hunters to have expectations of being the primary beneficiaries of wildlife conservation policies. Treating hunters as primary beneficiaries inappropriately narrows the constituent base actually served under the Public Trust Doctrine (Treves *et al.* 2015), thereby inhibiting development of a more inclusive form of wildlife conservation, where the opinions of all stakeholders receive equitable consideration.

Conserving wildlife in the 21<sup>st</sup> century is a daunting task, one that absolutely demands the involvement and support of a much broader constituency of wildlife enthusiasts than just hunters. As several proponents of the NAM stated, “...*the Model of the future must be sculpted cooperatively and ensure meaningful engagement of diverse interests in wildlife conservation*” (Decker *et al.* 2009). However, the quality of such sculpting is restricted by embracing a system that at its foundation values hunters over non-hunting

wildlife conservationists, and is embedded in an “iron quadrangle” that limits access to decision making by those not involved in hunting and the associated infrastructure. In our opinion, the progressivity needed to advance state-wildlife agencies, and the wildlife profession in the USA (and Canada), is severely constrained by a wildlife management system restrictively characterized by the founding 7 elements of NAM, and now embraced by many members of the wildlife profession. The North American Model needs to be amended or replaced based on input of a broad spectrum of wildlife professionals and enthusiasts. Ultimately, we are perplexed for the need of a simple, idealistically based “model” to define the complexities of wildlife conservation, especially one narrowly focused on hunting.

## ACKNOWLEDGEMENTS

We are grateful to the 2 anonymous reviewers for numerous insightful and constructive criticisms that contributed immensely to improving this manuscript. We likewise appreciate guidance and insight provided by the Editor throughout the review process.

## LITERATURE CITED

- Alexander, K., and R. W. Gorte. 2007.** Federal land ownership: constitutional authority and the history of acquisition, disposal, and retention. Congressional Research Service Report No. RL 34267. <https://opencrs.com/document/RL34267/>. Accessed 4 June 2017.
- American Wildlife Conservation Partners (AWCP). 2017.** Wildlife for the 21<sup>st</sup> Century, volume V. Making public lands public. [https://www.boone-crockett.org/pdf/W21\\_Volume\\_5\\_final.pdf](https://www.boone-crockett.org/pdf/W21_Volume_5_final.pdf). Accessed 29 September 2018.
- Arizona Fish and Game Department. Undated.** North American model of wildlife conservation – managing today for wildlife tomorrow. <https://web.archive.org/web/20170827180653/> and [http://www.azgfd.gov/h\\_f/northamericanmodel.shtml](http://www.azgfd.gov/h_f/northamericanmodel.shtml). Accessed 26 September 2018.
- Association of Fish and Wildlife Agencies (AFWA). Undateda.** North American model of wildlife conservation. <https://www.fishwildlife.org/landing/north-american-model-wildlife-conservation>. Accessed 26 September 2018.
- Association of Fish and Wildlife Agencies (AFWA). Undatedb.** Investing in America’s conservation legacy. <https://web.archive.org/web/20171111175627/http://www.>

- [fishwildlife.org/index.php?section=north\\_american\\_model\\_of\\_wildlife\\_conserv](http://fishwildlife.org/index.php?section=north_american_model_of_wildlife_conserv). Accessed 26 September 2018.
- Association of Fish and Wildlife Agencies (AFWA). January 20, 2017.** Statement from the Association of Fish and Wildlife Agencies Regarding U.S. Fish and Wildlife Service Director's Order 219. <https://www.fishwildlife.org/landing/blog/statement-association-fish-and-wildlife-agencies-regarding-us-fish-and-wildlife-service-directors-order-219>. Accessed October 14, 2018.
- Association of Fish and Wildlife Agencies (AFWA). December, 15 2017.** Statement from the Association of Fish and Wildlife Agencies supporting the introduction of the Recovering America's Wildlife Act. <https://www.fishwildlife.org/landing/blog/statementassociation-fish-and-wildlife-agencies-supporting-introduction-recovering-americas-wildlife-act>. Accessed June 28, 2018.
- Association of Fish and Wildlife Agencies and U.S. Fish and Wildlife Service (AFWA and USFWS). Undated.** State Wildlife Grants: five-year accomplishment report. [http://teaming.com/sites/default/files/SWG%205%20Year%20Accomplishment%20Report\\_2.pdf](http://teaming.com/sites/default/files/SWG%205%20Year%20Accomplishment%20Report_2.pdf). Accessed 4 June 2017.
- Batcheller, G. R., M. C. Bambery, L. Bies, T. Decker, S. Dyke, D. Guynn, M. McEnroe, M. O'Brien, J. F. Organ, S. J. Riley, and G. Roehm. 2010.** The Public Trust Doctrine: implications for wildlife management and conservation in the United States and Canada. Technical Review 10-1. The Wildlife Society, Bethesda, Maryland, USA.
- Blue Ribbon Panel. 2016.** The future of America's Fish and Wildlife: a 21st Century Vision for investing in and connecting people to nature. [http://www.fishwildlife.org/files/Blue\\_Ribbon\\_Panel\\_Report2.pdf](http://www.fishwildlife.org/files/Blue_Ribbon_Panel_Report2.pdf). Accessed 4 June 2017.
- Boone and Crockett Club. Undated.** The North American model of wildlife conservation, Sportsmen, and the Boone and Crockett Club. [http://http://www.boone-crockett.org/conservation/conservation\\_NAM.asp](http://http://www.boone-crockett.org/conservation/conservation_NAM.asp). Accessed 30 June 2018.
- Brett-Crowther, M., editor. 2013.** Conservation and hunting in North America. *International Journal of Environmental Studies* 70 (3).
- Brett-Crowther, M., editor. 2015.** Conservation and hunting in North America, II. *International Journal of Environmental Studies* 72 (5).
- Center for Biological Diversity. 2 March 2017.** Get the lead out. [http://www.biologicaldiversity.org/campaigns/get\\_the\\_lead\\_out/](http://www.biologicaldiversity.org/campaigns/get_the_lead_out/). Accessed 26 September 2018.
- Cirino, E. 1 February 2017.** New federal lead rule will have hunters and fishers looking for safer alternatives. Audubon. <http://www.audubon.org/news/new-federal-lead-rule-will-have-hunters-and-fishers-looking-safer-alternatives>. Accessed 4 June 2017.
- Clark, S. G., and C. Milloy. 2014.** The North American model of wildlife conservation: an analysis of challenges and adaptive options. Pages 289–324 in S. G. Clark, and M. B. Rutherford, editors. *Large carnivore conservation – integrating science and policy in the North American West*. University of Chicago Press, Chicago, Illinois, USA.
- Conservation Leaders for Tomorrow (CLfT). Undateda.** The history of CLfT. <https://web.archive.org/web/20161021052346/http://clft.org/history>. Accessed 26 September 2018.
- Conservation Leaders for Tomorrow (CLfT). Undatedb.** Conservation Leaders for Tomorrow. <https://mcgrawconservation.org/wp-content/uploads/McGraw-report-FINAL-email.pdf>. Accessed 30 June 2018.
- Conservation Visions. Undated.** North American model of wildlife conservation. <http://conservationvisions.com/topic/north-american-model-wildlife-conservation>. Accessed 30 June 2018.
- Corn, M. L., E. H. Buck, and K. Alexander. 2012.** Hunting, fishing, recreational shooting, and other wildlife measures: S. 3535. Congressional Research Service Report No. R42751. Retrieved from <http://www.fas.org/sgp/crs/misc/R42751.pdf>. Accessed 4 June 2017.
- Crane, J. 2009.** Closing remarks. *Transactions of the North American Wildlife and Natural Resources Conference* 74: 46–47.
- Dattisman, J. 2009.** The history of State Game Lands acquisition. *Pennsylvania Game News* 80 (7): 25–26.
- Decker, D. J., and N.A. Connelly. 1989.** Motivations for deer hunting: implications for antlerless deer harvest as a management tool. *Wildlife Society Bulletin* 17: 455–463.
- Decker, D. J., A. B. Forstchen, J. F. Organ, C. A. Smith, S. J. Riley, C. A. Jacobson, G. R. Batcheller, and W. F. Siemer. 2014.** Impacts management: an approach to fulfilling public trust responsibilities of wildlife agencies. *Wildlife Society Bulletin* 38: 2–8.
- Decker, D. J., C. A. Jacobson, and J. F. Organ. 2011.** Transformation of state fish and wildlife agencies: ensuring the future of conservation in a rapidly changing world. Cornell University, Human Dimensions Research Unit, Ithaca, New York, USA.
- Decker, D. J., J. F. Organ, and C. A. Jacobson. 2009.** Why should all Americans care about the North American model of wildlife conservation? *Transactions of the North*

- American Wildlife and Natural Resources Conference 74: 32–36.
- Decker, D. J., C. A. Smith, A. B. Forstchen, D. Hare, E. F. Pomeranz, C. Doyle-Capitman, K. Schuler, and J. F. Organ. 2016.** Governance Principles for Wildlife Conservation in the 21<sup>st</sup> Century. *Conservation Letters* 9: 290–295.
- DJCase and Associates. Undated.** R3: recruitment, retention, and reactivation. <https://djcase.com/hunting-fishing-shooting-recruitment-retention-reactivation-r3>. Accessed 30 June 2018.
- Dratch, P., and R. Kahn. 2011.** Moving beyond the model. *The Wildlife Professional* 5 (2): 61–63.
- Duda, M. D., T. Beppler, and J. Organ. 2017.** The growth of sport shooting participation: what does this trend mean for conservation revenue? *The Wildlife Professional* 11 (2): 38–41.
- Elbroch, L. M., L. Robertson, K. Combs, and J. Fitzgerald. 2017.** Contrasting bobcat values. *Biodiversity and Conservation* 26: 2987–2992.
- Feldpausch-Parker, A. M., I. D. Parker, and E. S. Vidon. 2017.** Privileging consumptive use: a critique of ideology, power, and discourse in the North American model of wildlife conservation. *Conservation and Society* 15: 33–40.
- Fish and Wildlife Business Summit. 2017.** <http://www.fwbusinesssummit.org/program.html>. Accessed 4 June 2017.
- Geist, V. 1995.** Wildlife conservation American style creates biodiversity and wealth. Pages 279–281 in J. A. Bisonette, and P. R. Krausman, editors. Integrating people and wildlife for a sustainable future. Proceedings of the First International Wildlife Management Congress, The Wildlife Society, Bethesda, Maryland, USA.
- Geist, V. 2006.** The North American model of wildlife conservation: a means of creating wealth and protecting public health while generating biodiversity. Pages 285–293 in D. M. Lavigne, editor. Gaining ground: in pursuit of ecological sustainability. Limerick, Ireland, International Fund for Animal Welfare, Guelph, Canada, and University of Limerick.
- Geist, V., S. P. Mahoney, and J. F. 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.
- Gill, R. B. 2004.** Challenges of change: natural resource management professionals engage their future. Pages 35–46 in M. J. Manfredo, J. J. Vaske, B. L. Bruyere, D. R. Field, and P. J. Brown, editors. Society and natural resources: a summary of knowledge, Modern Litho, Jefferson City, Missouri, USA.
- Gorte, R. W., C. H. Vincent, L. A. Hanson, and M. R. Rosenblum. 2012.** Federal land ownership: overview and data. Congressional Research Service Report No. R42346. <https://www.fas.org/sgp/crs/misc/R42346.pdf>. Accessed 4 June 2017.
- Heffelfinger, J. R., V. Geist, and W. Wishart. 2013.** The role of hunting in North American wildlife conservation. *International Journal of Environmental Studies* 70: 399–413.
- Izaak Walton League of America, National Wildlife Federation, Theodore Roosevelt Conservation Partnership, and Trout Unlimited. 2018.** Hunters and anglers: fueling our Nation’s economy and paying for conservation. <https://www.nwf.org/~media/PDFs/Water/WOTUS%20Econ%20fact%20sheet%203252014.pdf>. Accessed 11 September 2018.
- Karns, G. R., A. Heeren, E. L. Toman, R. S. Wilson, H. K. Szarek, and J. T. Bruskotter. 2018.** Should grizzly bears be hunted or protected? Social and organizational affiliations influence scientific judgments. *Canadian Wildlife Biology & Management* 7: 18–30.
- Kellert, S. 1978.** Attitudes and characteristics of hunters and antihunters. *Transactions of the North American Wildlife and Natural Resources Conference* 43: 412–423.
- King, M. 2018.** The American system of conservation funding – what’s it going to look like? *Outdoor News Bulletin* 72 (9): <https://wildlifemanagement.institute/outdoor-news-bulletin/september-2018/american-system-conservation-funding-whats-it-going-look>. Accessed 26 September 2018.
- Legal Information Institute. Undated.** 16 U.S. Code Chapter 49 – fish and wildlife conservation. <https://www.law.cornell.edu/uscode/text/16/chapter-49>. Accessed 4 June 2017.
- Mahoney, S. P. 2004.** The seven sisters: pillars of the North American wildlife conservation model. *Bugle* 21(Sept/Oct): 141–144.
- Mahoney, S. P., V. Geist, J. Organ, R. Regan, G. R. Batcheller, R. D. Sparrowe, J. E. McDonald, C. Bambery, J. Dart, J. E. Kennamer, R. Keck, D. Hobbs, D. Fielder, G. DeGayner, and J. Frampton. 2008.** The North American model of wildlife conservation: enduring achievement and legacy. Pages 7–24 in J. Nobile and M. D. Duda, editors. Strengthening America’s hunting heritage and wildlife conservation in the 21<sup>st</sup> century: challenges and opportunities. White House Conference on North American Wildlife Policy. Sporting Conservation Council. [http://www.fws.gov/whhcc/doc/2009-29110-16517\\_Report\\_2009-10-13-17-19-00.pdf](http://www.fws.gov/whhcc/doc/2009-29110-16517_Report_2009-10-13-17-19-00.pdf). Accessed 4 June 2017.

- Mahoney, S. P., and J. J. Jackson. 2013.** Enshrining hunting as a foundation for conservation the North American model. *International Journal of Environmental Studies* 70: 448–459.
- Manfredo, M. J., T. L. Teel, L. Sullivan, and A. M. Dietsch. 2017.** Values, trust, and cultural backlash in conservation governance: the case of wildlife management in the United States. *Biological Conservation* 214: 303–311.
- McDonald, J. 2012.** Cornerstone of U.S. conservation: the Pittman-Robertson Act celebrates 75 years. *Wildlife Professional* 6 (3): 74–78.
- Meyer, J. M. 1997.** Gifford Pinchot, John Muir, and the boundaries of politics in American thought. *Polity* 30: 267–284.
- Miller, D. A. 2015.** The North American model of wildlife conservation: past, present, and future (abstract). <http://www.abstractsonline.com/Plan/ViewAbstract.aspx?mID=3758&sKey=c636b750-c8e0-476f-b9f0-294e93bd4d5&cKey=8ac1b720-51ed-4342-8eb5-5daf44a4ab59&mKey=65ecfd94-42fb-4a0a-b76e-e0a372351e4e>. Accessed 30 June 2018.
- Moore, L. M., editor. 2010.** The North American model of wildlife conservation. *The Wildlife Professional* 4 (3): 1–100.
- Muth, R. M., R. R. Zwick, M. E. Mather, J. F. Organ, J. J. Daigle, and S. A. Jonker. 2006.** Unnecessary source of pain and suffering or necessary wildlife management tool: attitudes of conservation professionals toward outlawing leghold traps. *Wildlife Society Bulletin* 34: 706–715.
- National Wild Turkey Federation. Undated.** More than a model, it's our foundation. <http://www.nwtf.org/conservation/article/north-american-model-conservation>. Accessed 30 June 2018.
- Natural Resources Council of Maine. 2017.** Public land ownership by state. <http://www.nrcm.org/documents/publiclandownership.pdf>. Accessed 30 June 2018.
- Nelson, M. P., J. A. Vucetich, P. C. Paquet, and J. K. Bump. 2011.** An inadequate construct? North American model: what's flawed, what's missing, what's needed. *Wildlife Professional* 5 (2): 58–60.
- Organ, J. F. 2009.** Making the North American model more relevant to more Americans. *Transactions of the North American Wildlife and Natural Resources Conference* 74: 25–26.
- Organ, J. F., D. J. Decker, S. S. Stevens, T. M. Lama, and C. Doyle-Capitman. 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.
- Organ, J. F., V. Geist, S. P. Mahoney, S. Williams, P. R. Krausman, G. R. Batcheller, T. A. Decker, R. Carmichael, P. Nanjappa, R. Regan, R. A. Medellin, R. Cantu, R. E. McCabe, S. Craven, G. M. Vecellio, and D. J. Decker. 2012.** The North American Model of Wildlife Conservation. Technical Review 12-04. The Wildlife Society, Bethesda, Maryland, USA.
- Organ, J. R, S. Mahoney, and V. Geist. 2010.** Born in the hands of hunters: the North American model of wildlife conservation. *The Wildlife Professional* 4 (3): 22–27.
- Peterson, M. N, and M. P. Nelson, 2017.** Why the North American model of wildlife conservation is problematic for modern wildlife management. *Human Dimensions of Wildlife* 22: 43–54.
- Prukop, J., and R. J. Regan. 2005.** In my opinion: the value of the North American model of wildlife conservation—an International Association of Fish and Wildlife Agencies position. *Wildlife Society Bulletin* 33: 374–377.
- Responsive Management/National Shooting Sports Foundation. 2008.** The future of hunting and the shooting sports: research-based recruitment and retention strategies. Produced for the U.S. Fish and Wildlife Service under Grant Agreement CT-M-6-0. Harrisonburg, Virginia, USA.
- Responsive Management. 2015.** How to talk to the public about hunting: research based communication strategies. [http://www.responsivemanagement.com/download/RM\\_E\\_News/\\_RM\\_HuntPublic\\_newsletter.pdf](http://www.responsivemanagement.com/download/RM_E_News/_RM_HuntPublic_newsletter.pdf). Accessed 26 September 2018.
- Rocky Mountain Elk Foundation (RMEF). Undateda.** The North American model of wildlife conservation. [http://www.rmef.org/Conservation/HuntingIsConservation/North\\_American\\_Wildlife\\_Conservation\\_Model.aspx](http://www.rmef.org/Conservation/HuntingIsConservation/North_American_Wildlife_Conservation_Model.aspx). Accessed 26 September 2018.
- Rocky Mountain Elk Foundation (RMEF). Undatedb.** 25 reasons why hunting is conservation. <https://www.rmef.org/>. Accessed 26 September 2018.
- Rocky Mountain Elk Foundation (RMEF). Undatedc.** 25 reasons why hunting is conservation. <http://www.rmef.org/Conservation/HuntingIsConservation/25ReasonsWhyHuntingIsConservation.aspx>. Accessed 26 September 2018.
- Sax, J. L. 1970.** The public trust doctrine in natural resource law: effective judicial intervention. *Michigan Law Review* 68: 471–566.
- Schildwachter, G. 2009.** A policy to sustain the North American model of wildlife conservation. *Transactions of*



- the North American Wildlife and Natural Resources Conference 74: 42–45.
- Serfass, T. L., L. Wright, K. Pearce, and N. Duplaix. 2017.** Animal welfare issues pertaining to the trapping of otters for research, conservation, and fur. Pages 543–571 in A. Butterworth, editor. *Marine mammal welfare*. Springer International Publishing, Cham, Switzerland.
- Smith, M. E., and D. A. Molde. 2015.** Wildlife Conservation & Management Funding in the U.S. <http://www.nrw.org/wildlife-management-funding-in-the-u-s/>. Accessed 6 July 2018.
- Teer, J. G. 1988.** Book review: Conservation biology – the science of scarcity and diversity. *Journal of Wildlife Management* 52: 570–572.
- The Wildlife Society (TWS). Undated.** Standing position: the North American model of wildlife conservation. [http://wildlife.org/wp-content/uploads/2016/04/SP\\_NorthAmericanModel.pdf](http://wildlife.org/wp-content/uploads/2016/04/SP_NorthAmericanModel.pdf). Accessed 29 September 2018.
- The Wildlife Society (TWS). 2017.** Final position statement – firearms. [http://wildlife.org/wp-content/uploads/2017/11/112117\\_PS\\_Firearms.pdf](http://wildlife.org/wp-content/uploads/2017/11/112117_PS_Firearms.pdf). Accessed 29 September.
- The Wildlife Society (TWS). July 2017.** Policy brief– Federal Aid in Wildlife Restoration Act /Pittman–Robertson Act. [http://wildlife.org/wp-content/uploads/2014/11/Policy-Brief\\_P-R\\_FINAL.pdf](http://wildlife.org/wp-content/uploads/2014/11/Policy-Brief_P-R_FINAL.pdf). Accessed 30 September 2018.
- Trefethen, J. B. 1975.** *An American crusade for wildlife*. Winchester Press, New York, New York, USA.
- Treves A, G. Chaprom, J. V. López-Bao, C. Shoemaker, A. R. Goeckner, and J. T. Bruskotter. 2015.** Predators and the public trust. *Biological Reviews* 92: 248–270.
- U.S. Congressional Sportsmen’s Caucus. Undated.** <http://sportsmenslink.org/caucuses/congressional>. Accessed 4 June 2017.
- U.S. Department of the Interior (USDOI). March 2, 2017a.** Day one: Secretary Zinke signs orders to expand access to public lands. <https://www.doi.gov/pressreleases/day-one-secretary-zinke-signs-orders-expand-access-public-lands>. Accessed 30 June 2018.
- U.S. Department of the Interior (USDOI). March 2, 2017b.** Order No. 3346 – revocation of the United States Fish and Wildlife Service Director’s Order No. 219 (use of nontoxic ammunition and fishing tackle). [https://www.doi.gov/sites/doi.gov/files/uploads/order\\_no\\_3346.pdf](https://www.doi.gov/sites/doi.gov/files/uploads/order_no_3346.pdf). Accessed 30 June 2018.
- U.S. Fish and Wildlife Service (USFWS). 2016.** 2016 national survey of fishing, hunting, and wildlife-associated recreation. [https://wsfrprograms.fws.gov/subpages/nationalsurvey/nat\\_survey2016.pdf](https://wsfrprograms.fws.gov/subpages/nationalsurvey/nat_survey2016.pdf). Accessed 28 June 2018.
- U.S. Fish and Wildlife Service (USFWS). October 15, 2015.** National Wildlife Refuge System: how long has the federal government been setting aside lands for wildlife? <https://www.fws.gov/refuges/about/acquisition.html#hunters>. Accessed 26 September 2018.
- U.S. Fish and Wildlife Service (USFWS). December 15, 2017.** History of the Federal duck stamp: conserving habitats for birds and people. <https://www.fws.gov/birds/get-involved/duck-stamp/history-of-the-federal-duck-stamp.php>. Accessed 26 September 2018.
- U.S. Fish and Wildlife Service (USFWS). February 2, 2018.** State Wildlife Grant Program – Overview. <https://wsfrprograms.fws.gov/subpages/grantprograms/swg/swg.htm>. Accessed 3 June 2017.
- U.S. Fish and Wildlife Service-Southeast Region. Undated.** Federal Aid Division – the Pittman–Robertson Federal Aid in Wildlife Restoration Act." <http://www.fws.gov/southeast/federalaid/pittmanrobertson.html>. Accessed 10 August 2014.
- Vincent, C. H., L. B. Comay, L. M. Corn, and K. Hoover. 2012.** Federal land ownership: current acquisition and disposal authorities. Congressional Research Service Report No. RL 34273. <https://www.fas.org/sgp/crs/misc/RL34273.pdf>. Accessed 3 June 2017.
- Vucetich, J. A., J. T. Bruskotter, M. P. Nelson, R. O. Peterson, and J. K. Bump. 2017.** Evaluating the principles of wildlife conservation: a case study of wolf (*Canis lupus*) hunting in Michigan, United States. *Journal of Mammalogy* 98: 53–64.
- Walker, D. 2009.** How to make people care about the model. *Transactions of the North American Wildlife and Natural Resources Conference* 74: 37–41.
- Wildlife Management Institute. 1973.** North American Wildlife Policy 1973 and the American Game Policy 1930. *Transactions of the North American Wildlife and Natural Resources Conference* 38:152–181.
- Wildlife Management Institute (WMI). 2007.** Hunter heritage action plan-concept paper. <http://www.ihea-usa.org/assets/documents/huntingheritageplan.pdf>. Accessed 30 June 2018.
- Williams, S. 2010.** Wellspring of wildlife funding: how hunter and angler dollars fuel wildlife conservation. *The Wildlife Professional* 4 (3): 35-38.
- Williams, S., T. Decker, and S. Mahoney. 2009.** North American model of wildlife conservation and the American system of conservation funding. *Transactions of*

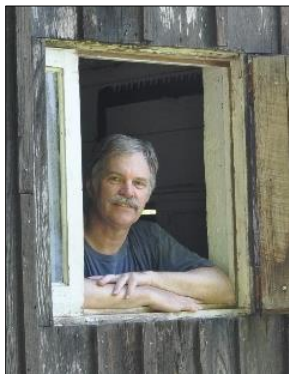
the North American Wildlife and Natural Resources Conference 74: 27–31.

## ABOUT THE AUTHORS

**Tom Serfass** is Professor of Wildlife Ecology in the Department of Biology and Natural Resources at Frostburg State University, and Adjunct Professor at the Appalachian Laboratory – University of Maryland (College Park) Center for Environmental Science. A large portion of his research and conservation activities have focused on the design, implementation, and evaluation of wildlife restoration programs and recovering wildlife populations – particularly mesocarnivores. He obtained a PhD in Wildlife and Fisheries Science at The Pennsylvania State University.



**Robert P. Brooks** is Professor Emeritus of Geography and Ecology, and Founder and Director Emeritus of Riparia at the Pennsylvania State University. He is a practicing wetland scientist and wildlife biologist certified by the Society of Wetland Scientists and The Wildlife Society, respectively. His research and outreach emphasize science, conservation, and restoration of wetlands and streams, and riparian wildlife. He was elected a Fellow of the Society of Wetland Scientists in 2017.



**Jeremy Bruskotter** is an associate professor in the School of Environment and Natural Resources at The Ohio State University. His research is centered on understanding how people make conservation-related judgments and decisions, and the intersection of human judgment and decisions with conservation policy.



*Received 8 August 2018 – Accepted 7 October 2018*