frontiers | Frontiers in Conservation Science

TYPE Perspective
PUBLISHED 28 April 2025
DOI 10.3389/fcosc.2025.1554025

OPEN ACCESS

EDITED BY
Jorge Tobajas,
University of Cordoba, Spain

REVIEWED BY
Emily Pomeranz,
Michigan State University, United States
Carlos Javier Durá Alemañ,
International Center for Environmental Law Studies, Spain

*CORRESPONDENCE
Jennifer R. Ballard
jennifer.ballard@arkansas.gov

RECEIVED 31 December 2024
ACCEPTED 02 April 2025
PUBLISHED 28 April 2025

CITATION
Ballard JR and Booth AT (2025) A literal act of congress: reconciling conservation science and policy. *Front. Conserv. Sci.* 6:1554025. doi: 10.3389/fcosc.2025.1554025

A literal act of congress: reconciling conservation science and policy

Jennifer R. Ballard* and Austin T. Booth

Arkansas Game and Fish Commission, Little Rock, AR, United States

Modern conservation is a complex intersection of biological, physical, and social sciences applied to balance ecological needs and human interests within a defined regulatory framework; developing comprehensive policy recommendations that account for this complexity is challenging. New policy recommendations should be presented with adequate consideration for their scientific justifications, social implications and legal applications. Policy proposals that are not adequately contextualized risk undermining public trust and missing opportunities for advocacy; two examples are provided. Greater collaboration across the research and applied conservation disciplines, increased representation of environmental law and conservation policy expertise, and partnerships between schools of law and biological sciences could facilitate the advancement of more comprehensive policy proposals.

KEYWORDS

conservation policy, social science, interdisciplinarity approach, federal authority, state authority

Introduction

Conservation scientists generally strive to effect positive change regardless of whether their primary focus is research, advocacy or application (Laurance et al., 2012). Despite their shared interests, representatives of these varied sectors don't always agree on the best path forward, and dynamic exchanges abound. There is a solid argument to be made that these tensions benefit the development of policy by challenging convention and incorporating intellectual diversity (Bartunek and Rynes, 2014). Modern conservation is an increasingly complex blend of biological, physical, and social sciences applied to balance ecological needs and social interests within an obligatory funding and regulatory framework. It is understandably difficult to put forward paradigm-shifting policy recommendations that effectively address all aspects of this complex system, and yet, that is the standard for which we must strive if we are to influence meaningful change.

It may be tempting for those deeply invested in conservation research to put forward policy recommendations with well-developed scientific justifications that lack equal attention to their social and political feasibility (Bennett et al., 2017b). Without accurate recognition of the status quo, reform-minded policy proposals—however well intended—

inevitably fall short of their purpose and highlight a profound disconnect across conservation disciplines. Herein, we explore two examples of policy recommendations put forward in refereed journals that were incongruent with the corresponding jurisprudence that would dictate their feasibility. We describe the shortcomings of each, explore the broader ramifications of such recommendations and offer suggestions for the development of more comprehensive policy proposals.

Examples of incongruent policy recommendations

A call for federal leadership in deer management

In a recent article in *Frontiers in Conservation Science*, an extensive biological argument was laid out for the ramifications of ecological imbalance due to overpopulation of native ungulates (Blossey et al., 2024). The authors cited a litany of concerns including negative impacts on forest regeneration, impaired adaptation of native flora, increased disease risks and economic losses. The cause, according to the authors, is the broad overpopulation of multiple cervid species due to ineffective state-led management; the solution, in their opinion, would be a transition to a federally-led management framework. Although thought provoking, the proposal did not accurately or sufficiently account for the legal frameworks that govern management of these species. Though the merits of state versus federal governance in conservation could be debated *ad nauseam*, proposals of this magnitude cannot be fully evaluated if they are not adequately contextualized.

Central to the policy proposal by Blossey et al. (2024) was the existing complexity of state and federal jurisdictions over fish and wildlife resources and a lack of trust in state conservation agencies. The authors asserted that the latter have neither the will nor the authority to enact comprehensive trust resource management and that their workforce lacks a conservation ethic inclusive of non-game species. They further implied that state jurisdiction over fish and wildlife resources is arbitrary or exaggerated. For example, the authors stated: "State Wildlife Agencies have well established historical responsibilities over wildlife management within their borders and federal agencies have traditionally deferred to the states regarding hunting, fishing, or trapping seasons and bag limits." Inherent to this statement is an assumption that state authority results from voluntary federal deferments specific to game species, which is incorrect. The existing patchwork of state and federal authorities for wildlife is the result of a complicated history of federalism and systematic preemption of reserved powers, which has been detailed elsewhere (Baier, 2022). State conservation agencies do not derive their authorities from a deference of federal authority; they are instead determined by the distribution of reserved powers within each state's governance structure. As a result, these agencies can vary in their respective authorities and priorities, but they often retain broad jurisdiction over game and non-game species and employ biological staff with diverse specialties.

The touchstones of U.S. federalism are Article I of the U.S. Constitution, which contains the enumerated powers of Congress, and the Bill of Rights' Tenth Amendment, which states: "[t]he powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people." But this seemingly simple division of power was best described by Chief Justice John Marshall in *McColloch v. Maryland, 17 U.S. 316, 404 (U.S. 1819)*:

> "This [federal] government is acknowledged by all to be one of enumerated powers. The principle, that it can exercise only the powers granted to it, [is] now universally admitted. But the question respecting the extent of the powers actually granted, is perpetually arising, and will probably continue to arise, as long as our system shall exist…"

The U.S. Constitution does not enumerate management of fish, wildlife or other natural resources as a federal power, and therefore, these matters were historically considered to be among the reserved powers of state government (Baier, 2022). Over time, passage of the Lacey Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act, and Endangered Species Act (ESA) slowly abrogated state authority through preemption (16 U.S.C. §§ 668–668d, 703–712, 1361–1407, 1531–1544, 3371–3378). More specifically, Congress has relied on the Commerce and Treaty Clauses of the Constitution as justification for expanding federal wildlife authority through legislation.

The precise scope of federal authority following legislative preemption has not only been a matter of significant debate but has also evolved considerably since the New Deal era of the 1930s. Current jurisprudence on the subject, known as the *Rice* Doctrine, holds that in order for states' authorities to be preempted by federal law, Congress must expressly state in legislation that it is acting with the intent to preempt the states. However, when Congress fails to expressly preempt the states, the courts will assume Congress intended federal and state authorities to exercise jurisdiction *concurrently*. There is no current legislation preempting state jurisdiction over cervids, excluding those listed under the ESA; and therefore, the *Rice* Doctrine favors state authority over these species along with other non-imperiled, non-migratory, native wildlife. The proposed transition of deer management from state to federal oversight could not be implemented without the passage of additional legislation—a literal act of congress. Moreover, in order to fully realize federal control as the authors suggest, Congress would have to clearly and expressly state their intent to abrogate state autonomy through that process.

To further controvert the validity of state wildlife jurisdiction, the authors referenced long-standing debate over the stewardship of wildlife on federal lands; however, the applicability of this example is limited. Federally managed public lands account for approximately 28% of U.S. land area, and the proportion of each state affected is highly variable (0.3%–80.1%). Federal supremacy for wildlife resources in these areas is considered an enumerated power afforded by the Property Clause of the Constitution which has no implication for wildlife authorities elsewhere (U.S. Const. Art. 4, § 3, cl. 2; Baier, 2022).

The stewardship of federal lands is also divided between the U.S. Departments of Agriculture (USDA), Defense and the Interior; and the priority given to wildlife varies according to the organic legislation that founded each system (Fischman, 2003; Baier, 2022). Concurrent authorities for wildlife on public lands have been recognized in some cases, and federal agencies often rely on collaboration with their state counterparts to overcome chronic underfunding for federal lands and conservation programs.

In fairness, the authors never expressly proposed statutory preemption but instead ambiguously suggested "federal leadership." However, the only reasonable inference from such language—and the inference in much of the responsive commentary—is that the authors intended some level of mandatory, statutory or regulatory federal preemption. They proposed a task force to develop a plan, assign responsibilities and determine "what additional legislation might be necessary." This reversal of implementation before legislation begs the question of which federal agency would lead this effort and how it would be funded since agency appropriations are closely linked to given authorities. Additionally, the recent U.S. Supreme Court decision withdrawing Chevron Deference, a previously held legal doctrine deferring to the expertise of federal agencies in the interpretation of vague statutes, signals a judicial atmosphere that opposes federal agencies acting outside of their statutorily defined purviews. In light of that decision, it seems unlikely that federal directives on cervid management made without preempting legislation would be upheld.

A call for importation restrictions

Another example of a well-intentioned, science-based policy proposal that was incongruent with pertinent legal frameworks came from a 2015 article in *Science* entitled "Averting a North American biodiversity crisis" (Yap et al., 2015). In it, the authors outlined the threat of an emerging wildlife disease affecting European salamander populations (*Batrachochytrium salamandrivorans*, Bsal) and called on the U.S. Fish and Wildlife Service (USFWS) to place "an immediate ban on live salamander imports" until mitigation measures could be established. However, the recommendation was infeasible because the USFWS does not have the authority to implement immediate importation restrictions on species that are not formally recognized as either imperiled or injurious.

The authors made a compelling scientific argument for emergency restrictions by modelling the cumulative risks of Bsal habitat suitability, amphibian biodiversity and patterns of wildlife importation. USFWS is authorized by the Lacey Act of 1900 to regulate "[importation] or shipment of injurious mammals, birds, fish (including mollusks and crustacae), amphibia, and reptiles" considered injurious to "human beings, to the interests of agriculture, horticulture, forestry, or to wildlife and the wildlife resources of the United States" (*see* 18 U.S.C. §§ 42–43). Injurious listings can be made on the basis of disease risk but the language precludes direct listing of pathogens. The American Rescue Plan Act also mandated that the USFWS use this authority to prevent the introduction of zoonotic diseases (*H.R. 1319, Section 6003.3*). However, the Lacey Act does not include emergency authorities allowing immediate action and listing species as injurious requires lengthy scientific review, rule writing and public input processes.

Ultimately, the USFWS did list all of the known vertebrate hosts for Bsal (201 species) as injurious in the months following the discovery of the pathogen, though the extended timeline for the process was not ideal. Injurious listings also invoke restrictions on the possession and movement of listed animals and their parts, up to and including genetic material. Such listings do not allow for easy adjustment as new hosts are identified and may complicate the shipment of biological samples for research and surveillance. Emergency authorities to prevent the introduction of pathogens are afforded to the USDA and Centers for Disease Control and Prevention, but the nexuses for invoking those authorities are specific to protecting livestock and human health, respectively (*see* 7 U.S.C. § 8303, 42 U.S.C. § 264). Thus, no federal agency has authority to place emergency restrictions on importation to prevent the introduction of a pathogen if the only threat it poses is to the health of free-ranging fish or wildlife species.

The risks

Policy recommendations that neither fit within existing legal frameworks nor adequately describe their deviations therefrom are unhelpful regardless of scientific merit. Laurance et al. (2012) insightfully noted that "reputable, independent scientists" can exercise tremendous influence in policy arenas and that influence is amplified when "strongly promoted publicly." Both of the scientific publications reviewed herein were highlighted in the popular press (Pappas, 2015; Morales, 2016; Durkin, 2024). When calls for action by respected members of the scientific community are circulated in this manner, they quickly become public expectation. When agencies cannot fulfill these expectations because they do not have the necessary legal authorities, it creates an undeserved impression of willful negligence and undermines public trust.

If implementing a recommended policy will require legislative or regulatory change, those changes are intrinsic to the proposal and should be included in its initial description. Developing sound ecological justifications is a time-consuming process, and those efforts are wasted when paired with final proposals that are incomplete. Blossey et al. (2024) were correct to encourage collaboration at all levels of government and to advocate for conservation approaches that favor biodiversity over single species management. They made valid observations about state conservation agencies needing full jurisdiction over all native species, including invertebrates, where such authorities do not already exist; they also highlighted the need for diversified funding models. The authors touted the potential benefits of the Recovering America's Wildlife Act, a bill introduced to the U.S. Congress six times between 2016 and 2023 yet never passed, that would have provided over $1 billion dollars to state agencies for species of greatest conservation need (*e.g.*, S. 1149, 118th Cong., 2023). Although the authors acknowledged these issues and opportunities, any solutions to better equip state agencies were overshadowed by their more provocative, if somewhat incomplete, call to preempt state authority.

Similarly, the threat of a Bsal introduction to North America highlighted a substantial authority gap for protecting the health of

free-ranging fish and wildlife populations. Yap et al. (2015) were likely correct in their assessment of that threat, but they failed to fully investigate how existing rules could and could not be applied. In doing so, they advocated for an emergency action that could not be implemented, created unrealistic expectations among stakeholders and missed a critical opportunity to champion needed legislation. To date, Bsal has not been identified in the U.S., and the injurious listing of its hosts is arguably a contributing factor. Nonetheless, as globalization continues to move people, animals, and goods around the world at unprecedented rates, the need for emergency action to prevent disease introductions will only increase.

Actionable recommendations

We have reviewed two published policy recommendations that garnered public attention but were not sufficiently reconciled to applicable jurisprudence. While we believe such proposals are counterproductive, we are not suggesting that policy recommendations may only be made if they are feasible within existing legal frameworks. On the contrary, progress will require challenging the status quo. Instead, we propose that a higher standard be upheld for their publication. Conservation policy recommendations should be presented with equal attention to their scientific justification, social implication and legal application.

Greater collaboration among conservation researchers and practitioners can help avoid future pitfalls, but such collaborations may not always be feasible due to agency policies and conflicts of interests. Alternatively, academic institutions could increase representation of faculty with environmental law and policy expertise. This would create opportunities for internal collaboration and expand policy-related curricula to better prepare students for the regulatory aspects of modern conservation careers. In lieu of adding faculty, partnerships between environmental science departments and schools of law could also further these efforts.

Additionally, scientific journals play a critical role in determining the contents and context of published policy recommendations. Through their requirements for submission and acceptance, journals can ensure that published policy manuscripts provide comprehensive and actionable recommendations. Expanding the areas of expertise represented in the peer-review process may also be beneficial. While biological experts are fully prepared to evaluate ecological justifications, policy experts may be better equipped to evaluate the accuracy of nuanced legal content. As in the development and articulation of policy recommendations, the process by which they are published will benefit from an inter-disciplinary approach.

Conclusions

Conservation in a modern world is an exceptionally challenging endeavor. Diverse perspectives are needed to find innovative solutions, and this requires collaboration across a range of biological, physical and social disciplines. There will inevitably be disagreement about the best policies to achieve conservation goals, but publishing sufficiently comprehensive proposals will create transparency, facilitate meaningful discourse and encourage action.

In conclusion, our call for greater representation of legal expertise in the development of policy and the training of conservation professionals is not new; at its core, it is a reiteration of previous calls to increase the use of social science in conservation (Bennett et al., 2017a, Bennett et al., 2017b). As described by Bennett et al. (2017a), political science, history and environmental law are among the classic and applied social sciences that should be included in undergraduate and graduate training programs. As challenging as modern conservation is, its complexity will only increase, and future conservation professionals will need these tools at their disposal.

Author contributions

JB: Conceptualization, Investigation, Writing – original draft. AB: Conceptualization, Investigation, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research and/or publication of this article.

Acknowledgments

The views and opinions expressed herein are those of the authors and do not necessarily reflect the views or policies of the Arkansas Game and Fish Commission.

Conflict of interest

The authors declare that no financial support was received for the research, authorship, and/or publication of this article.

Generative AI statement

The author(s) declare that no Generative AI was used in the creation of this manuscript.

Publisher's note

References

Baier, L. E. (2022). *Federalism, preemption, and the nationalization of american wildlife management* (Lanham: Rowman & Littlefield).

Bartunek, J. M., and Rynes, S. L. (2014). Academics and practitioners are alike and unlike: the paradoxes of academic-practitioner relationships. *J. Manage.* 40, 1181–1201. doi: 10.1177/0149206314529160

Bennett, N. J., Roth, R., Klain, S. C., Chan, K. M. A., Christie, P., Clark, D. A., et al. (2017a). Conservation social science: Understanding and integrating human dimensions to improve conservation. *Biol. Conserv.* 205, 93–108. doi: 10.1016/j.biocon.2016.10.006

Bennett, N. J., Roth, R., Klain, S. C., Chan, K. M. A., Clark, D. A., Cullman, G., et al. (2017b). Mainstreaming the social sciences in conservation. *Conserv. Biol.* 31, 1. doi: 10.1111/cobi.12788

Blossey, B., Hare, D., and Waller, D. M. (2024). Where have all the flowers gone? A call for federal leadership in deer management in the United States. *Front. Conserv. Sci.* 5. doi: 10.3389/fcosc.2024.1382132

Durkin, P. (2024). *Should the feds manage deer in the US*. Available online at: https://www.themeater.com/conservation/wildlife-management/should-the-feds-manage-deer-in-the-us (Accessed June 18, 2024).

Fischman, R. L. (2003). *The national wildlife refuges: coordinating a conservation system through law* (Washington: Island Press).

Laurance, W. F., Koster, H., Grooten, M., Anderson, A. B., Zuidema, P. A., Zwick, S., et al. (2012). Making conservation research more relevant for conservation practitioners. *Biol. Conserv.* 153, 164–168. doi: 10.1016/j.biocon.2012.05.012

Morales, J. (2016). *Biologist's warning leads to federal action to protect salamanders*. Available online at: https://news.sfsu.edu/archive/news-story/biologists-warning-leads-federal-action-protect-salamanders.html (Accessed June 18, 2024).

Pappas, S. (2015). *Scientists want ban on salamander imports to U.S. Due to deadly fungus*. Available online at: https://www.nbcnews.com/science/environment/scientists-want-ban-salamander-imports-u-s-due-deadly-fungus-n401991 (Accessed June 18, 2024]).

Yap, T. A., Koo, M. S., Ambrose, R. F., Wake, D. B., and Vrendenburg, V. T. (2015). Averting a North American biodiversity crisis. *Science.* 349, 6247. doi: 10.1126/science.aab1052