



The challenge of science in the face of polarization around recreational hunting and wildlife management

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Abstract

Science is currently confronting a loss of prestige in the face of the proliferation of subjective “*truths*”. In a world saturated with information, verifiable facts are giving way to personal and collective beliefs that are amplified by biases in the media and on social networks. This undermines confidence in the scientific method and encourages disinformation and social polarization, all of which weaken constructive dialogue among sectors on many key issues. One emblematic case of this disconnection between science and social perception is recreational hunting. This activity is seen by some as essential for conservation, while others view it as harmful and obsolete. Wildlife science is often instrumentalized or delegitimized by both extremes, thus perpetuating a harmful cycle of mistrust and confrontation. In this perspective paper we highlight how this phenomenon reflects a greater problem: the challenge of reconciling science with an increasingly fragmented society that is polarized by post-truth.

Keywords Science · Hunting · Wildlife · Communication · Disinformation · Polarization

Resumen

La ciencia se enfrenta actualmente a una pérdida de prestigio frente a la proliferación de “*verdades*” subjetivas. En un mundo saturado de información, los hechos verificables están dando paso a creencias personales y colectivas amplificadas por los sesgos de los medios de comunicación y las redes sociales. Esto socava la confianza en el método científico y fomenta la desinformación y la polarización social, debilitando el diálogo constructivo entre sectores sobre muchas cuestiones clave. Un caso emblemático de esta desconexión entre ciencia y percepción social es la caza recreativa. Esta actividad es vista por algunos como esencial para la conservación, y por otros como perjudicial y obsoleta. En ambos extremos, la ciencia en torno a la fauna silvestre suele instrumentalizarse o deslegitimarse, perpetuando un ciclo dañino de desconfianza y confrontación. En esta perspectiva, destacamos cómo este fenómeno refleja un problema mayor: el reto de reconciliar la ciencia con una sociedad cada vez más fragmentada y polarizada por la posverdad.

Palabras Clave Ciencia · Caza · Fauna silvestre · Comunicación · Desinformación · Polarización

Introduction

Present-day science, including wildlife science, is confronting an unexpected challenge: the erosion of its prestige in the face of the proliferation of subjective “*truths*” (Druckman 2022). In a world saturated with information, but often lacking in critical thinking, verifiable facts are being relegated to a secondary position by personal beliefs that are reinforced by biases amplified by the media and social networks. This phenomenon not only undermines

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confidence in the scientific method, scientists and scientific institutions, but also fosters disinformation and social polarization, consequently weakening constructive dialogue on key issues regarding sustainable development (Zielinski 2021). An important topic in wildlife science that has been affected by this dangerous division among scientific knowledge, social perception and disinforming public opinion, triggering heated confrontations between extreme positions, is recreational hunting. In countries of the Global North, especially Europe, while it is defended as an unquestionable conservation tool by some, it is condemned as an obsolete, unacceptable and harmful practice by others. Wildlife science is often instrumentalized or delegitimized by both extremes, thus perpetuating a harmful cycle of mistrust and confrontation. In fact, this reflects a greater problem: the challenge of reconciling science with an increasingly fragmented society that is polarized by post-truth.

From prestige to social disregard

Science is the process of approaching reality in a rational manner in order to understand it through the contrast of hypotheses or inductive deductions based on verifiable data, which are obtained, analyzed and interpreted according to certain standards. Over the centuries, science has become a reliable and transformative force of progress with which to provide solutions to humanity's problems. The values of science were integrated into social and educational dynamics, which fostered a scientific culture and a society capable of valuing and trusting in scientific advances (Krishna 2014). Recently, however, the perception of science and its influence on society has undergone a dramatic change owing to the *infoxication* with which the media and social networks overwhelm people daily (West and Bergstrom 2021). To this we must add the psychological biases of a cognitive, emotional and motivational nature that construct "*our truth*": the truth that each person considers to be "*the right one*" based on their beliefs, opinions or ideologies (Druckman 2022). An environment saturated with divergent opinions, denialism, social egocentrism, intentionally biased information and fake news supports a post-truth that ignores verifiable data. In these times of social digitization, information overflow and the decline of a scientific culture, the ability to discredit scientific authority and denigrate or ignore with impunity any information, including scientific findings, that does not fit someone's beliefs, opinions or ideologies, is overwhelming. This results in an increasing social polarization (Diethelm and McKee 2009).

"*The truth*" about hunting

Biases accentuated by disinformation and the decline of a scientific culture also affect themes related to the environment. An important socio-environmental issue that is polarized by the delegitimization of scientific evidence is recreational hunting and its management (see e.g. Di Minin et al. 2021; Evans et al. 2022). Recreational hunting can be broadly defined as the pursuit and killing of animals primarily for leisure and enjoyment purposes, although it may also be motivated by reasons such as acquiring meat and trophies, social and cultural reasons, and the desire to be part of nature and contribute to wildlife population management (Di Minin et al. 2021). Recreational hunting has become a permanent battlefield on which the biases of both the most pro-hunting and the most anti-hunting extremes play a fundamental role. Fundamentalist positions thrive in both "worlds", in which people position their discourses with an almost religious conviction because of emotion and interest and use disinformation and polarization to meet their goals (Table 1). People in these extreme positions disregard what science establishes about the different aspects of recreational hunting, its management and its positive or negative impacts in different scenarios (social, environmental, health, etc.). Science is delegitimized and ignored by both sides when its results do not fit their agendas, even if these results originate from studies that are benchmarks of the scientific method and have passed a meticulous review process carried out by independent peers.

The claim that recreational hunting is a saving force of ecosystems and biodiversity, that it is the remedy by which to avoid the overabundance of certain species or to prevent the spread of diseases and damage to agriculture, or that hunting is at the forefront of the fight against rural abandonment, are some of the popular messages of the pro-hunting extreme in many countries of the Global North, especially Europe, that easily permeate into certain sectors of society. On the other hand, some examples of the polarized arguments that are forcefully wielded, with uncritical naivety, by the anti-hunting extreme include that hunting is always harmful to the environment and have no justification today; that predators are sufficient to ensure the population balance of prey species, even in environments highly modified by human; that recreational hunting can never be a sustainable activity, or that it causes the mass extinction of species. This situation, in which vague claims and exaggerated simplifications are used as arguments (see some examples in Table 1), is further accentuated by the courtesy prevailing in the debate, especially when it takes place on social networks (see e.g. Evans et al. 2022). It is not uncommon to read there hateful expressions and disparaging remarks

Table 1 Some of the polarized discourses of the pro- and the anti-hunting extremes that are commonly used as vague claims and exaggerated simplifications, but which are not supported by science, to defend “the truth” about recreational hunting

Polarized arguments, not supported by science, commonly used to defend “the truth” about recreational hunting	
Pro-hunting	Anti-hunting
“Hunting is essential for nature conservation” ¹	“Hunting is incompatible with biodiversity” ³
“Hunting generates money in places where, if it were not for hunting, they would be doomed to poverty” ¹	“An example of the negative impact of hunting is the overpopulation of wild ungulates, encouraged by releases and supplementary feeding” ³
“Banning hunting is harmful to the environment” ¹	“Hunting is not compatible with society’s enjoyment of nature” ³
“Hunting is necessary for the balance of nature” ²	“Even when unusual natural occurrences cause overpopulation, natural processes work to stabilize the group” ⁴
“Hunters are the regulators of nature” ²	“Hunting disrupts wildlife migration and hibernation patterns and destroys families” ⁴

¹Revista Jara y Sedal. Online resource published on February 24, 2024. Last visited in December 2024

²La Dépêche. Online resource published on September 5, 2022. Last visited in December 2024

³Ecologistas en Acción. Online resource published on December 12, 2017. Last visited in December 2024

⁴PeTA. Online resource visited on December 16, 2024. Last visited in December 2024

toward researchers and scientific institutions based on the supposed alliance of their scientific results to one or the other side. But the role of scientists is not to blindly support either of the sides –there are already countless associations, federations, foundations, platforms and initiatives for that. The role of scientists should mainly be to provide independent scientific evidence, regardless of whether it supports or goes against preconceived ideas, with which to facilitate informed decision-making.

Hunting as a recreational activity is confronting growing social rejection by an increasingly urban society, and stirs up ethical debates (Di Minin et al. 2021). This is partially related to the societal changes concerning the perception of animal welfare and the use that we make of animals: although the evolutionary success of the *Homo* genus is at least partly explained by our development as hunters, empathy for animals has led to a stronger consideration of animal welfare and thus a rejection to animal killing.

However, regardless of these societal changes, recreational hunting is a regulated activity based on the use of renewable natural resources. Although recreational hunting directly impacts wildlife populations and varies in its level of invasiveness across the vast areas where it is practised, when guided by scientific principles and data it can be a sustainable practice. Properly managed, it can contribute positively to wildlife management and ecosystem conservation. Its existence is currently part of the balance that a democratic society must maintain between individual freedom, tradition and cultural diversity, economic and environmental interests, and legislative processes (Arnett and Southwick 2015). On the other hand, recreational hunting is sometimes influenced by longstanding traditions, customs and beliefs, rather than on evidence. In this regard, scientific knowledge

is essential to integrate diverse and sometimes conflicting objectives into hunting regulations. In this context, research on recreational hunting from a sociological and environmental point of view, including from a One Health perspective, and considering hunting as an ecosystem service, is of great interest to ensure its sustainability in all the dimensions of the term (social, environmental, economic and cultural). Thus, obtaining reliable information on the different processes related to recreational hunting, its analysis using scientific criteria, as well as transferring this knowledge into practice should be cornerstones on which to articulate the discussions and meeting points between sectors with different standpoints on the subject. Recent scientific studies suggest that the future of hunting as a recreational activity, including trophy hunting, might depend on it becoming fully sustainable, socially accepted or at least understood, and based on adaptive management (see e.g. Crossmary et al. (Crossmary, et al., 2015), Di Minin et al. 2021). European regulations are already moving in this direction (Linares et al. 2024b). Research also points out that recreational hunting may indeed be useful as an environmental management tool with which to ensure the conservation of ecosystems and biodiversity when considering the ecological reality of Europe in the 21 st century (see e.g. Arnett and Southwick 2015; Carpio et al. 2024). On the other hand, factors such as the lack of specialized technical training among parts of the hunting sector, a certain distance from the academic world (which is not doing enough to transfer scientific knowledge outside academia), or the weight of social and identity dynamics within the sector may also pose challenges for the effective integration of scientific advances into hunting management (see e.g. Manfredo et al. 2020; Arroyo et al. 2022; Linares et al. 2024a).

Not everything depends on “how you look at it”

As occurs with many other activities, “*the truth*” of recreational hunting should not be based on “*how you look at it*”, but on scientific evidence. The same science that provides technological improvements and extends our life expectancy is that applied to the study of hunting and wildlife management. There may be no universal truth about recreational hunting, but not all “*truths*” are interchangeable, and they do not deserve equal consideration. Nor is “*the truth*” an exclusive asset of any extreme. The pro-hunting extreme should constructively accept the studies that show those cases in which recreational hunting is not contributing to ecological balance, along with the suggestions offered by science to improve sustainability and social acceptance (see e.g. Moreno-Zarate et al. 2024). The anti-hunting extreme should accept the results of studies that point out that recreational hunting, when carried out and managed on the basis of scientific knowledge and within the legal framework, brings socioeconomic and environmental benefits, can be practiced in a sustainable manner, and serves as a tool for the management and conservation of ecosystems (see e.g. Carpio et al. 2024). Although all scientific results are debatable, which is part of the scientific process, they constitute a transparent starting point with which to initiate dialogues. Science is not the problem, but can be part of the solution, and is a key to reconciliation.

A sensible and constructive majority of society recognizes the valuable contributions made by science. But on its fringes, anti-science positions hinder a balanced, fair and educated dialogue. For science to regain its place as a reliable guide for society, it is necessary to strengthen scientific education, enhance efforts to disseminate scientific results, battle against disinformation and promote a transparent and accessible dialogue between science and society (Iyengar and Massey 2019). This is particularly true in the case of controversial topics such as hunting and, more generally, the multiple conflicts related to wildlife management. In this context, education of hunters and hunting professionals (managers) as well as society at large in the latest advances in ecology, wildlife, and conservation biology is essential to dispel misconceptions, move beyond outdated dogmas, and enable professionals to distinguish credible science from disinformation, so they can effectively pass this knowledge on to the sector and the public. Both specialized and general media have much to contribute by pursuing a rigorous, responsible and well-informed scientific outreach that promotes critical thinking. Scientists must, in turn, improve their efforts of knowledge transfer from science to practice more efficiently and effectively, reaching policymakers and relevant stakeholders (including practitioners and

professionals) to enhance the likelihood of science-based decision-making. In addition, scientists must critically recognize their own prejudices (including financial biases) and act with ethical integrity so as not to compromise the independence and objectivity of their research. Reviewers, also scientists, play a crucial role in this process by being able to demand transparency, ethical rigor and recognition of biases, thus ensuring the credibility and reliability of the scientific endeavor. Ultimately, science should be perceived as a means of promoting constructive dialogues and minimizing confrontation between opposing positions regarding recreational hunting.

Scientists, hunters, managers, policymakers and society at large should strive to reduce the biases of noisy and ill-intentioned extremist minorities and flee from political, economic and ideological interests that seek a convenient polarization of opinions about recreational hunting. Decision-makers but also commenters on media and social media should focus on verifiable facts, not opinions. People should also aim to get informed before releasing unfounded opinions against science and scientists in social networks. We all should learn, collectively, to distinguish science from hoaxes and scientists from charlatans who claim to be in possession of “*the truth*” about hunting.

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Declarations

Ethical note No animals were handled during the realization of this study, and no ethical clearance was necessary.

Competing interests Christian Gortázar is the Editor-in-Chief of this journal; Pelayo Acevedo is Associate Editor of this journal.

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References

Arnett EB, Southwick R (2015) Economic and social benefits of hunting in North America. *Int J Environ Stud* 72(5):734–745

Arroyo B, Caro J, Delibes-Mateos M (2022) Social and economic aspects of red-legged partridge hunting and management in Spain. In: Casas F, García JT (eds) The future of the Red-legged Partridge. Wildlife Research Monographs 6. Springer, Cham. Pp. 275–295

Carpio AJ, Laguna E, Pascual-Rico R, Martínez-Jauregui M, Guerrero-Casado J, Vicente J, Soriguer RC, Acevedo P (2024) The prohibition of recreational hunting of wild ungulates in Spanish National parks: challenges and opportunities. *Sci Total Environ* 926:171363

Crosmaray W-G, Côté SD, Fritz H (2015) The assessment of the role of trophy hunting in wildlife conservation. *Anim Conserv* 18:136–137

Di Minin E, Clements HS, Correia RA, Cortés-Capino G, Fink C, Haukka A, Hausmann A, Kulkarni R, Bradshaw CJA (2021) Consequences of recreational hunting for biodiversity conservation and livelihoods. *One Earth* 4(2):238–253

Diethelm P, McKee M (2009) Denialism: what is it and how should scientists respond? *Eur J Public Health* 19(1):2–4

Druckman JN (2022) Threats to science: politicization, misinformation, and inequalities. *Ann Am Acad Polit Soc Sci* 700(1):8–24

Evans LC, Greenwell MP, Boult VL, Johnson TF (2022) Characterizing the trophy hunting debate on Twitter. *Conserv Biology* 37:e14070

Iyengar S, Massey DS (2019) Scientific communication in a post-truth society. *Proc Natl Acad Sci USA* 116(16):7656–7661

Krishna VV (2014) Changing social relations between science and society: contemporary challenges. *Sci Technol Soc* 19(2):133–159

Linares O, de la Peña E, Serrano E, Soliño M, Carranza J, Martínez-Jauregui M (2024a) Exploring the influence of intensive management practices on recreational Hunter satisfaction: a case study of red deer trophy hunting in Spain. *Human Dimensions of Wildlife*, pp 1–19

Linares O, Martínez-Jauregui M, Carranza J, Soliño M (2024b) Bridging sustainable game management into land use policy: from principles to practice. *Land Use Policy* 145:107269

Manfredo MJ, Teel TL, Don Carlos AW, Sullivan L, Bright AD, Dietsch AM, Bruskotter J, Fulton D (2020) The changing sociocultural context of wildlife conservation. *Conserv Biol* 34(6):1549–1559

Moreno-Zarate L, Arroyo B, Morales-Reyes Z, Delibes-Mateos M (2024) Unravelling discourses about the management of a migratory declining game species: the case of European Turtle-dove (*Streptopelia turtur*). *Ecosystems People* 20:2391461

West JD, Bergstrom CT (2021) Misinformation in and about science. *Proc Natl Acad Sci USA* 118:e1912444117

Zielinski C (2021) Infodemics and infodemiology: a short history, a long future. *Pan Am J Public Health* 45:e40

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