



Featured Invited Commentary

A Call for More Nuanced Dialogues About Trophy Hunting

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ABSTRACT Reported effects of trophy harvest often are controversial. The subject is nuanced and many studies lack details necessary to place their results in context. Consequently, many studies are misunderstood or their conclusions misapplied. We propose that all dialogues about trophy hunting include a definition of how they use the term trophy, details of variables measured and why they were selected, and explanations of temporal and spatial scales employed. Only with these details can potential effects of trophy hunting be understood in context and used for management and policy decisions. © 2021 The Wildlife Society.

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The concept of trophy hunting seems deceptively simple, but it is not. Often it is portrayed as a wealthy, big-game hunter posing with a dead animal, or justified as providing financial contributions to conservation and rural community development. Such simplistic portrayals, however, present an incomplete picture (Thomson 2020, Webster 2020). This dichotomy, in part, has resulted in the absence of balanced objective approaches in some publications on trophy hunting—the hallmark of good science. As we argue here, the topic of trophy harvest requires a nuanced approach, and the benefits and costs often are misrepresented or misunderstood. Our purpose is to emphasize the diverse nature of those nuances, and call for more detailed reporting and policy debates on this controversial topic. We hope this commentary will encourage a more complete understanding of the many subtleties inherent in this issue. This, in turn, should lead to more effective conservation actions.

Trophy hunting has become a frequent topic in biological, sociological, and legal journals, with most reports focused on a singular positive or negative aspect. Despite the hundreds of published papers that offer quantifiable details, discussions about trophy hunting almost always are centered on deeply held, contrasting viewpoints often rooted in the normative, rather than the scientific realm, which ultimately devolve into contradictory claims. Confusion about specific facets used to draw conclusions causes others to disagree for

completely different reasons. A typical example is the series of recent exchanges among Batavia et al. (2019a, b), Bauer et al. (2019), Chapron and López-Bao (2019), Dickman et al. (2019), Horowitz (2019), Nowak et al. (2019), and Treves et al. (2019). These impassioned comments and replies highlight the problem: simple statements about complex topics often do not provide information or details adequate to arrive at objective conclusions about this topic *in toto* and, therefore, to generate useful decisions concerning management and conservation issues. The same deficiencies occur in many papers reporting effects of trophy hunting, regardless of length or source. Many such contributions lack critically important details that are necessary to place conclusions in context or to clearly apply them to meaningful conservation actions.

Objectives of applied science, including wildlife management, entail providing data-based conclusions that assist decision-makers and, ultimately, steer policies or actions towards desirable conservation outcomes. Selectively focusing on a singular aspect about trophy hunting, or using inappropriate metrics or scales to bolster arguments falls short of those objectives. For example, arguments involving financial considerations, such as the contribution to national economies versus income to rural individuals, often employ scales or metrics that cannot be compared in any meaningful way. Conversely, broad generalizations that do not account for differences across wildlife populations, ecological systems, political infrastructure, economics, social customs, and temporal or geographic scales, can yield erroneous extrapolations and misleading assumptions.

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Indeed, discussions regarding 1 facet often ignore other factors entirely. For example, the economics of trophy-hunting reveal nothing about the potential or realized effects of trophy hunting on biology or ecology of populations or species.

We identified 3 topics that must be addressed if publications are to assist with understanding the effects of trophy hunting: a precise definition of the term trophy, an explanation of why particular metrics are used to measure effects, and clarification of temporal and geographic scales at which those metrics are examined. These topics must be carefully defined so readers can accurately determine what was studied, what factors were measured, why they were essential, and what results infer for both the context of individual study and in the grander scheme.

WHAT IS A TROPHY?

In the context of hunting, the word trophy has a variety of potential meanings, many of which are not mutually exclusive. The precise meaning(s) of trophy employed by authors frequently is not defined. This omission can lead to misunderstandings and, ultimately, erroneous interpretations of results. Thus, authors must provide unambiguous descriptions or context-specific definitions.

Although typically referring to large mammals (Halse 2003, Lehr et al. 2017, The International Council for Game and Wildlife Conservation 2018), birds (<https://safariclub.org/game-birds-of-the-world/>, accessed 25 Sep 2020), reptiles (Schwabland and Barnhart 2019), or fish (<https://igfa.org/world-records/>, accessed 10 Oct 2020) also may be considered trophies. Importantly, organizations promoting trophy hunting and record books all define trophies differently, and methods of assessing trophies also differ among those organizations (LaSharr et al. 2019a). Likewise, definitions of what constitutes a trophy differ among government agencies. Hence, the term trophy is defined by official regulatory and unofficial vernacular terms.

A simple, and frequently employed, definition of a trophy animal is a mature male (Lehr et al. 2017). Others define a trophy as one taken by a hunter that had paid a fee to kill an animal and subsequently retained some, or all, of the animal's body as a trophy (Batavia et al. 2019a); others have noted that obtaining food is often a secondary goal of trophy hunters (Simon 2016). The term trophy also may refer to an individual animal of exceptionally large body size (e.g., brown bear [*Ursus arctos*], wild turkey [*Meleagris gallopavo*], Atlantic blue marlin [*Makaira nigricans*]), and ungulates or birds exhibiting secondary sexual characteristics (e.g., tusks, horns, antlers, spurs) of above average size.

Other physical attributes also may denote a trophy. Regardless of size, old, post-reproductive males are considered trophies by some hunters, as are individuals of unusual color phases. In addition to physical attributes, relative rarity, either in general or simply in the context of the hunter's experience, also represents a desirable animal beyond any considerations of nutritional sustenance. Although some species may be uncommon, they still may offer a regulated sustainable harvest if managed properly.

Personal experiences or achievements often define a trophy animal, regardless of other factors. The first animal ever harvested is an often-cited example. Collecting an animal eligible for 1 of several record books is a criterion often implied, but rarely specified, for a trophy. Many of these definitions may be applied to a particular situation, and we stress that authors must provide a clear definition of how they use this term.

WHAT METRICS ARE USED?

Studies and opinion papers related to trophy hunting usually rely on a single metric, which often is not stated explicitly (Batavia et al. 2019a, Dickman et al. 2019). Multiple factors must be considered before practical management or policy conclusions can be implemented. These include culture, social norms, ethics, economics, politics, and biological elements.

Sociological factors include cultural and social motivations, ethical or moral arguments, economics, and politics. These rarely are mutually exclusive considerations, and there are subtle degrees of distinction. Cultural and social motivations include traditions or religion (Goldman et al. 2013), personal status, and personal health benefits including nutrition (Gurven and Von Rueden 2006), and others (Strong and Silva 2020). Each of these factors also may vary by age, gender, and other demographic characteristics of hunters (Waylen et al. 2013, von Essen et al. 2019). In addition, ethical considerations often underpin the basis for opposition to trophy hunting. Such arguments also are nuanced (Fischer et al. 2013), and typically employ either deontological or consequentialist views (Macdonald et al. 2016, Webster 2020). Deontology and consequentialism are 2 theories in ethics. Deontological ethics focus on the morality of the actions themselves. Consequentialism focuses on the moral worth of the results of the actions.

Individual or societal beliefs also play a role in human relationships with animals. An urbanite, or a resident of an industrialized country, is unlikely to have the same views as a rural farmer or someone living in the developing world. Still, all are important to consider because such differing views lead to policy decisions at multiple political levels (Batavia et al. 2019b). Further, some decisions have unintended consequences, among which are loss of funding to local communities, decreased anti-poaching efforts, or increased retaliatory killing to reduce crop damage or losses of livestock to predators (Weber et al. 2015, Macdonald et al. 2016, Cooney et al. 2017, Martin 2019).

Regulations on hunting and harvest, including trophy hunting, also are often based on societal goals and cultural values (Gilbert 1978). The North American Model of Wildlife Conservation is primarily based on cultural values (Organ et al. 2012, Mahoney and Geist 2019). Biological considerations also are clearly necessary to design and manage hunting seasons. But biological and societal considerations interact, and neither determines harvest regulations alone (Denny 1978, Connelly et al. 2005). Hunting regulations also only provide the parameters within which the actual harvest takes place. The act of hunting has

many variables not obvious to the casual observer. Researchers and authors should understand differences between poaching, culling, subsistence hunting, recreational hunting, and trophy hunting. These often are conflated in papers, yet all have very different motivations, methods, rules, and potential effects on wildlife. Neither participation in nor approval of hunting is necessary to understand those different motivations, methods, and results. Thus, impartial research on trophy hunting involves understanding rules and regulations regarding trophy harvest and the intricacies of actual hunting and harvest.

Economic studies of trophy hunting focus on international (Lindsey et al. 2006, 2007), national (Humavindu and Barnes 2003, Muchapondwa 2003), local (Jones 2009, Mbaiwa 2018), or industry-level (Saayman et al. 2018) scales. Those studies do not provide data for appropriate comparisons among all situations. Economic returns at a single level may not result in equitable distribution of resources to other segments of society, even within the same jurisdiction or country. Conclusions derived from one economic focus may not accurately represent others.

Political decisions are subject to a multitude of factors. Those choices may be based on or influenced by deep-seated personal beliefs about ethics or morals, constituent demands, funding, perceived well-being of individual persons or states, systems of government, or other issues (Easton 1957). Political decisions also are made at multiple levels, ranging from local to international, and responsible parties range from individuals to legislative bodies.

Considerable research has focused on biological responses to trophy hunting. These include effects on demographics, behavior, phenotype, natural or artificial selection, and whether land is set aside as wildlife habitat or for other uses. Biological effects of trophy hunting can be especially challenging to investigate because populations and ecosystems are dynamic and spatially and temporally diverse (Levin 1998, Benton et al. 2006). Although trophy hunting rarely influences population size, population structure may be altered by the disproportionate removal of animals relative to age or sex (Milner et al. 2007, Mysterud 2012, Lindsey et al. 2013). Additionally, shifts in the proportion of unique phenotypes (Wilfred 2012, Monteith et al. 2013, Rivrud et al. 2013, Coulson et al. 2018, LaSharr et al. 2019b) or behavioral traits (Singer and Zeigenfuss 2002, Leclerc et al. 2019) also may occur. Considerable speculation exists about the biological effects of trophy hunting, but much remains unknown (Harris et al. 2002, Festa-Bianchet and Lee 2009, Festa-Bianchet 2016, Festa-Bianchet and Mysterud 2018).

Natural differences in demographic and environmental characteristics among wildlife populations also dictate the need for caution to prevent over-extrapolation of results from 1 localized study to an entire population, to a species, or to multiple species. Thus, we emphasize the need for researchers to provide detailed information on the relevant biology and regional variation in population characteristics for the species in question. Population-level and individual characteristics and population dynamics of harvested

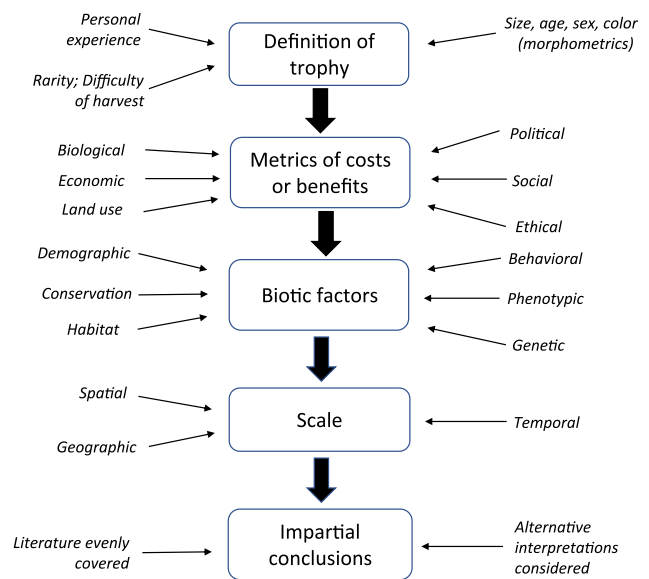


Figure 1. Decision tree showing nuances associated with trophy hunting.

animals also must be addressed because these vary over space and time. Such differences may affect conclusions regarding effects of trophy hunting (Schmidt et al. 2007, Loveridge et al. 2016; Fig. 1).

WHAT SCALES ARE CONSIDERED?

Levin (1992), and most recently Hernandez (2020), have noted that space, time, community structure, and function are critically important to understanding ecological processes. Coupled with biological diversity, those elements necessitate that investigators explicitly state the temporal and spatial scales that were operative during their research. Studies usually focus on a population or a species, and a specific geographic extent, which may include private or community landholdings, harvest management areas, provinces or states, ecoregions, countries, and even continents. Caution is warranted to assure that unique situations in 1 locality are not extrapolated inappropriately to an entire species, or even other taxa. Temporal scales also are necessary to understand the potential effects of trophy hunting. Do demonstrated or anticipated effects occur over the course of a season or are they more long-lasting? Also, are observed effects reversible through a change in management? Are there density-dependent responses? If trophy hunting is cited as a cause for an observed population decline, what scales are being employed to determine the proportion of the population sampled and upon which conclusions are based and the time over which the decline occurred? Defining different spatial and temporal scales is critically important to understanding results, making inferences, and to appropriately extrapolate results (Fig. 1).

MANAGEMENT IMPLICATIONS

Trophy hunting is a complex issue, and a multitude of topics must be considered to render valid conclusions about its effects. These topics include, but are not limited to, a context-dependent definition of the term trophy; use of

appropriate metrics for identifying costs and benefits; information on the biology, population dynamics, behavior, and genetics of the species in question relevant to the specific trophy hunting scenario; and spatial and temporal scales. Without clear and robust definitions, subjectivity can play a large role in reporting or interpreting trophy hunting as positive, neutral, or negative in the context of conservation. No single study can encompass all issues; nonetheless, we strongly advise researchers, authors, reviewers, and editors to acknowledge the complexity of trophy hunting and to embrace these nuances so that conclusions and interpretations are transparent, straightforward, and objective. Moreover, the approach must be impartial with alternative explanations considered and the literature evenly covered. As with all wildlife-management issues, a multitude of factors are important and, depending on the specific situation, some will matter more than others. Explicit definitions, metrics, and scales are essential to elevate future discussions on the collective costs and benefits of trophy hunting. A more nuanced treatment of these issues is the first step in resolving some debates surrounding this controversial topic.

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