

Shooting pheasants for sport: What does the death of Cecil tell us?

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Abstract

1. People hunt and kill animals for sport in many parts of the world. This raises many issues, some of which were brought to the fore when a lion *Panthera leo*, nicknamed Cecil, was killed by a trophy hunter in Zimbabwe in 2015. Cecil's death led to an unprecedented public reaction in Europe and the USA, and a debate in which opponents and supporters of sport hunting advanced different types of argument based on, inter alia, conservation, animal welfare and economics.
2. The reaction to the Cecil event provides a perspective for scrutinizing sport hunting more widely. In this article we explore parallels between lion trophy hunting in Africa (which can involve either wild or captive-bred lions) and shooting of common pheasant *Phasianus colchicus*, a sport which is largely sustained in the UK by the annual release of over 40 million captive-bred birds.
3. These two forms of sport hunting share common themes that are likely to be influential for the future of sport hunting more widely. These include the extent to which sport hunting maintains land for wildlife, and the impacts of intensification (e.g. the extent to which quarry are reared and released). Concern for the welfare of quarry animals is a dominant theme in debates about hunting.
4. These themes are likely to be relevant for the conservation of many species hunted for sport. Increasing distaste for the killing of animals for sport in many countries may lead to the end of some types of sport hunting, with implications for both habitat and wildlife conservation. It would be both prudent and appropriate for conservationists to increase the urgency with which they seek alternative methods for preventing loss of biodiverse land to other uses.

KEY WORDS

animal welfare, common pheasant *Phasianus colchicus*, habitat, land use, lion *Panthera leo*, sport hunting, sport shooting, wildlife conservation

1 | INTRODUCTION

Humans hunt wild animals for sport across the globe. Such hunting, which we define here as the pursuit and/or killing of animals primarily

for recreation (as distinct from hunting primarily for pest control or subsistence¹), raises many issues. Some of these were brought to the fore in the summer of 2015, when our Oxford research group, the Wildlife Conservation Research Unit (WildCRU), was convulsed by

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events following the death of a wild lion *Panthera leo* in Zimbabwe. The lion, nicknamed Cecil, was one of the WildCRU's study animals, and was killed by a trophy hunter just outside Hwange National Park in Zimbabwe. Although not in itself unusual (Loveridge, 2018), the event led to an unprecedented public reaction (Macdonald, Jacobsen, Burnham, Johnson, & Loveridge, 2016). The publicity surrounding Cecil's death led to a debate beyond the question of whether trophy hunting is, on balance, a good thing for conservation or not.

The Cecil event provides a perspective for scrutinizing sport hunting elsewhere. Here we explore parallels between lion trophy hunting in Africa (which can involve either wild or captive-bred lions) and common pheasant *Phasianus colchicus* shooting in the UK. This may appear at first sight to be frivolous; what commonalities are there other than that both involve the death of a sentient² vertebrate in the interests of sport? The Cecil event and its aftermath highlighted a number of ecological, economic and ethical issues that are relevant for sport hunting more widely. In this article, we summarize these in relation to lion trophy hunting, and then, considering the importance of both consistency and context, explore their relevance for pheasant shooting in the UK. The latter is the dominant form of sports shooting in the UK, both geographically and numerically. It is largely sustained by the annual release of over 40 million captive-bred birds. Very different types of argument based on the issues surrounding sport hunting are deployed by its opponents and supporters.³ The ecological impacts are conspicuous and we pay particular attention to these, emphasizing a conservation perspective. The animal welfare ethics of sport hunting are also prominent (and in some views decisive): changing attitudes to its moral status may be the dominant force shaping the future of sport hunting world-wide. There are implications for the land where it currently occurs.

2 | LION TROPHY HUNTING

The background against which lion trophy hunting takes place is not one of conservation success. Lions have declined dramatically over recent decades in both numbers (at least 43% between 1993 and 2014: approximately three lion generations; Bauer, Packer, Funston, Henschel, & Nowell, 2015) and geographic range (they have been extirpated from at least 92% of their historic range; Bauer, Packer, et al., 2015). Throughout the majority of its range the lion meets the IUCN criteria for Endangered status (Critically Endangered in West Africa) but positive trends in southern Africa (notably Namibia and Zimbabwe), have resulted in an overall IUCN classification for the lion of Vulnerable (Bauer, Chapron, et al., 2015). Experts agree that trophy hunting is not responsible for regional or national lion declines: the principal culprits are habitat loss and degradation, livestock encroachment, loss of prey, and conflict with people provoked by livestock depredation (Anon., 2017; IUCN, 2006a, 2006b; Macdonald, 2016).

Trophy hunting of wild lions is currently practised at a significant level in at least 12 African countries, including Namibia and Zimbabwe, as well as countries such as Tanzania, which holds around half of Africa's wild lions, and where they are declining

(Bauer, Chapron, et al., 2015). It generally involves the payment of a fee by a foreign or local hunter for a hunting experience, with a trophy, often the animal's skull and skin, frequently retained by the hunter and taken home. The number of wild lions killed by trophy hunting is not known with great precision; it is likely to be approximately 150–250 per year and almost certainly fewer than 500 per year (Macdonald, 2016). This does not include those raised in captivity in South Africa for 'put and take' hunting (also known as 'canned' hunting). In these hunts, captive bred lions are released into enclosures of various sizes (Lindsey, Alexander, Balme, Midlane, & Craig, 2012), where, at least in the smaller enclosures, they are easily shot (Schroeder, 2018),⁴ being less wary of human proximity than are wild lions. Around 7,000–8,000 lions were estimated to be maintained and bred in South Africa in 2016 for this purpose (African Lion Working Group, 2016; Williams & t Sas-Rolfes, 2019). The number of captive lions killed for trophies therefore far outweighs the number of trophy hunted wild lions, but the ecological and conservation implications of trophy hunting are most relevant to the hunting of wild lions. Most of the 'put and take' lion enclosures are too small to support viable lion populations.⁵

At a local scale, trophy hunting of wild lions can threaten lion populations (Loveridge, Searle, Murindagomo, & Macdonald, 2007).⁶ This is a consequence not only of the direct loss of individuals but also via perturbation of the intricate social system of lions. For example, the loss of a pride male attracts the attention of outside males, intent on infanticide of existing cubs (Loveridge, 2018), and lionesses may move outside protected areas, risking conflict with people (Loveridge, 2018; Macdonald, 2016). Vacant territories in hunting zones can also draw individuals from the safety of adjacent protected areas into the hunting zones, especially when offtake is high (Loveridge et al., 2007). Many of the detrimental effects of trophy hunting on lion conservation can be attributed to lack of effective regulation (Macdonald, 2016). For trophies to be approved for export, CITES currently requires that, at a minimum, hunting can be demonstrated to have no detrimental impact on the sustainability of the lion population. However, local lion declines suggest that these requirements are not always properly applied (Macdonald, 2016).

In the face of a lion conservation crisis, what, then, is the conservation case for tolerating trophy hunting, given the danger that it could have (and has) exacerbated the crisis in some places? One conservation argument made for trophy hunting is that it provides an incentive to maintain land for wildlife which might otherwise be lost to other uses, such as agriculture or livestock (Macdonald et al., 2017). Well over a million km² was estimated to be conserved for trophy hunting in sub-Saharan Africa in 2007, exceeding the area of National Parks in those countries by more than 20% (Lindsey, Roulet, & Romanach, 2007). In areas where wildlife-friendly land-use alternatives such as photo-tourism are not viable (e.g. due to remoteness, inhospitable terrain or distance from other attractions, which discourage tourists more than they do trophy hunters), trophy hunting can generate economic revenues sufficient to reduce the risk of livestock encroachment, agriculture and other land use change (Estes, 2015; Lindsey et al., 2017).⁷ In many African

countries trophy hunting of animals, including lions, is perceived as a crucial part of the so-called wildlife economy—an economy to which African governments increasingly turn for a return on their natural resources⁸ (Somerville, 2019).

There is, however, considerable variation in the extent to which the industry benefits local people, and thereby provides an incentive to tolerate lions (Macdonald, 2016). Some operators make an effort to support local communities, but many do not (Loveridge, 2018).⁹ Some trophy hunted meat, such as elephant or buffalo, is often sold or given to local communities for whom it is an important source of protein (Mbaiwa, 2018) (while lion meat is rarely consumed, either by trophy hunters or local communities, the presence of lion hunting brings with it the hunting of other species which are consumed: P. Coals, E. Droge, A. Loveridge, pers. comm.¹⁰). In short, the conservation case for tolerating lion trophy hunting depends on a number of factors which vary geographically (and as Vucetich et al., 2019 concluded, the case for tolerating trophy hunting is also affected by empirical uncertainty concerning these factors). That case is, from a lion conservation standpoint, strongest where the alternative is that land use change leads to loss of lions.

There is considerable variation between African local communities in their attitudes to coexistence with lions; coexistence is more likely to be fostered where communities receive tangible personal benefits from conservation and conservation education (Western, Macdonald, Loveridge, & Dickman, 2019). Attitudes are, unsurprisingly, affected by whether people benefit from the presence of trophy hunting or not: local communities in Namibia that benefit from hunting tend to oppose hunting bans (Angula et al., 2018). In Mozambique also, people are more negative about wildlife where there are fewer benefits from hunting (Angula et al., 2018; Jorge, Vanak, Thaker, Begg, & Slotow, 2013). Much of the outrage provoked by the trophy hunting of Cecil the lion was outside the country where legal trophy hunting occurs (Macdonald, Jacobsen, et al., 2016). The killing of a lion may be celebrated in African communities (Dickman, 2015; Hazzah, Borgerhoff Mulder, & Frank, 2009), while those who oppose hunting, and advocate coexistence, from outside range states may not appreciate the extent to which lions can endanger local people and their livelihoods (Nzou, 2015). In Zimbabwe, there was surprise at the scale of publicity surrounding Cecil (Chimuka, 2019) and, in the villages close to where Cecil was shot—where predators threaten people and their livelihoods—people were reported to be pleased to hear of Cecil's death (Dube, 2019).

The lion trophy hunting debate raises a number of ethical concerns, in particular the widely noted tensions between the value of the lives and suffering of individual animals, and the values of whole populations and species (Driscoll & Watson, 2019). Ethical questions concerning how individual animals should be treated emerge at least in part from differences in judgements on the extent to which they have intrinsic value. Intrinsic value is a value which is a property of an entity itself, not resulting from its utility¹¹; sentient beings are widely agreed to have intrinsic value (Vucetich, Bruskotter, & Nelson, 2015). It follows that humans should have at least some regard for their welfare. This view is held by most ethicists and is also widespread

among the public. There is no consensus, however, on what amounts to acceptable treatment of individual animals. Across Africa, attitudes towards lions affecting moral judgements vary with ethnicity and economic status (Vucetich et al., 2019). Many conservation philosophers believe that ecological collectives also have intrinsic value, and that this, at least to some extent, underpins conservation biology (Newman, Varner, & Linqvist, 2017). Trophy hunting presents a scenario where, at least sometimes, the interests of both individuals and collectives (lion populations) cannot both be attended to without trade-offs.

How are such decisions to be made? If an individual lion has intrinsic value we are led to the question: is trophy hunting an adequate reason to kill a lion? Questions of this form are inevitably ethical, seeking the 'right' action, in the sense of what is the morally correct thing to do—what 'ought' we to do? There are distinct schools of thought on the appropriate methodologies for dealing with questions of this form in Western ethics. A deontological¹² perspective, closely associated with the 18th century philosopher Immanuel Kant, holds that certain acts are right or wrong in themselves, regardless of their consequences (Edmonds, 2014). A different school of thought, consequentialism, judges whether an act is right or wrong based on the consequences of that action. Kant's contemporary, Jeremy Bentham, is most closely associated with this idea in the form of utilitarianism, a type of consequentialist ethics (Edmonds, 2014). This approach is not tied to particular values—consequentialism could focus on welfare, or on conservation outcomes. In the original form of utilitarianism, Bentham visualized the right action as that which maximized 'pleasure' or well-being. Animal welfare and conservation outcomes cannot be reduced to the same type of units (or 'utiles' as philosophers call them); consequentialism acknowledges that actions may have incommensurable effects (Honderich, 1995). Some conservationists argue that, at least in some places, the benefits of trophy hunting for conservation outweigh the welfare implications for individual lions, and therefore explicitly support a consequentialist view, opting for the 'least bad' available option, acknowledging that opponents of trophy hunting often believe it to be wrong in principle, regardless of whether it benefits conservation (Macdonald, Johnson, Loveridge, Burnham, & Dickman, 2016).

An older ethical framework, traceable to Aristotle's ethics, has recently been invoked to address whether different types of human activity, including hunting, constitute appropriate treatment of animals: Wallach, Bekoff, Batavia, Nelson, and Ramp (2018) promote 'virtue ethics', which strives to identify actions which define a good life or a life well led. Their interpretation of virtue ethics leads them to argue that it is always wrong to kill sentient vertebrates in the interests of conservation.¹³ This perspective has been challenged by Oommen et al. (2019) and by Hayward et al. (2019), who argue it places too much emphasis on individuals over collectives (populations or species) and may also lead to poor outcomes for both welfare and conservation.

With the intention of exposing practically helpful considerations, Vucetich et al. (2019) use a formal tool ('argument analysis')

to explore the ethical basis for tolerating trophy hunting. They draw on both deontology and utilitarianism (and point out that there is no bright line separating these frameworks). In order to conclude with confidence that killing lions in the interests of maintaining their conservation status is legitimate, the truth of several empirical premises has to be established. For example, one of the relevant empirical premises is that the current status of lions is threatened by habitat loss. If this is not true for any given location then the conclusion that trophy hunting should be tolerated at that location to avoid the land being converted to agriculture is invalid. Vucetich et al. concluded that this and other premises could not be established without doubt for many locations. Hence the moral legitimacy of trophy hunting, according to this argument, was shown to be geographically variable. A consequentialist perspective based on conservation goals is difficult to defend where these goals are unlikely to be delivered. Similarly, welfare standards influence whether trophy hunting should be tolerated by virtue of its contribution to conservation. One of the aspects of the Cecil event that provoked public anger was that he was wounded with a compound hunting bow (which is not typical of lion trophy hunting) and not killed until some hours later (Loveridge, 2018).¹⁴ The poor conditions under which captive-bred lions are at least sometimes kept has also attracted welfare concerns (Schroeder, 2018); the status (whether to class them as wild or captive) of these lions has complicated attempts to regulate the 'put and take' ('canned') lion hunting industry in South Africa over the last two decades (summarized by Schroeder, 2018). The number of lions killed is also morally relevant. How death, in contrast with animal suffering, constitutes a welfare issue is debated, but one view is that, even carried out painlessly, the loss of life can be considered welfare-relevant owing to the loss of life span involved (Kasperbauer & Sandoe, Killing as a Welfare issue, in: Višak & Garner, 2016).

So, to summarize, what themes are revealed by lion trophy hunting that are likely to be influential for the future of sport hunting more widely? From an ecological point of view, lions are top predators, declining fast in parts of their range, and trophy hunting is an obvious concern because it involves killing them. While the greatest threats to wild lions across their range are habitat loss, loss of prey, and conflict with people over livestock, the strongest evidence that trophy hunting benefits lion conservation is that it gives lions monetary value, providing an incentive for retaining land for wildlife, even where lions threaten human lives and livestock. But poorly managed trophy hunting can lead to local lion population declines. A particularly dominant theme is the ethical unacceptability to many people of the killing of individuals of a threatened species for sport, and the welfare implications of trophy hunting (of wild or captive-bred lions). There is no consensus on how to make ethical decisions where different values conflict. In the next section, we explore whether these themes are likely to be to be influential for the future of sport hunting more widely by considering sport hunting in an entirely different ecological and socio-economic context. We ask, to what extent are the issues identified as relevant to lion trophy hunting also relevant to the sport shooting of pheasant?

3 | PHEASANT SHOOTING

The shooting of game birds has a long history¹⁵ and is widespread across North America, Europe, and beyond (Mustin et al., 2018; Mustin, Newey, Irvine, Arroyo, & Redpath, 2011; Rashkow, 2015). Orders of magnitude more pheasants than lions are killed annually by sport hunters. In the UK, there are about 23,000 providers of driven game shooting, the majority of whom shoot pheasants (PACEC, 2014). Because pheasant populations in the UK cannot be sustained at levels sufficient to meet the high demand for shooting, most estates are almost entirely dependent on releasing captive-bred birds (this 'put and take' system has something in common with that of captive-bred lions in South Africa). Typically, eggs from captive pheasants are artificially incubated and the young birds raised to 6 weeks of age indoors. During the summer, the young pheasants are reared in open-topped woodland pens (at varying densities: Sage, Ludolf, & Robertson, 2005, recorded a mean stocking density of 2,250 pheasants/ha of pen in ancient semi-natural woodland) before being released from pens for the shooting season, which runs from the beginning of October to the end of January (PACEC, 2006; Parkes & Thornley, 1997). Releases of pheasants have increased almost 600% over the last 50 years, with an estimated 47 million pheasants released in 2016 (Aebischer, 2019). Even 30 million pheasants would represent a biomass of around 41,000 tonnes, 16 times greater than any other bird species in the UK (Bicknell et al., 2010); the biomass of this release exceeds that of the entire breeding avifauna (Blackburn & Gaston, 2018). To support these birds during the winter, around eight tons of feed per 1,000 pheasants released are dispensed annually into the countryside (Game & Wildlife Conservation Trust, 2018b).

What are the ecological effects of this sport shooting, and the implications for conservation? Can game bird shooting in the UK be evaluated using a similar argument to that advanced for lion trophy hunting, that is, that it maintains wildlife habitat that might otherwise be lost? There is some support for this case. In the 1970s and 1980s, plummeting numbers of another game bird, grey partridge *Perdix perdix*, was an important driver for improvements in the conservation management of farmland in the UK (Potts, 1986; Sotherton, Aebischer, & Ewald, 2014) and a wealth of game bird research has been instrumental in informing agri-environment policy (Aebischer & Ewald, 2012). Game bird management has motivated the creation, retention and maintenance of many lowland woodlands, especially in agricultural landscapes: 'A multitude of groves is maintained for shooting and hunting' (Rackham, 1986). The management of such woodlands for game birds can be compatible with management for wider biodiversity: for example, pheasants require scrubby growth and open glades (Robertson, Woodburn, & Hill, 1993), the same habitats favoured by birds such as warblers (Draycott, Hoodless, & Sage, 2008), and some butterflies and moths (Robertson, Woodburn, & Hill, 1988). Managing land for game birds can promote planting and management of hedgerow on farmland (Draycott, Hoodless, Cooke, & Sage, 2012; Oldfield, Smith, Harrop, & Leader-Williams, 2003), the creation of conservation headlands

(outer edges of cereal fields which receive lower pesticide and fertilizer inputs to encourage insect and plant communities: Sotherton, Boatman, & Rands, 1989) and the sowing of game cover crops and bird seed mixtures (Henderson, Vickery, & Carter, 2004; Wilson & Bradbury, 2015). These habitats have benefits for the conservation of wildlife including pollinators (Holland, Smith, Storkey, Lutman, & Aebischer, 2015), passerines (Draycott et al., 2008; Stoate, 2002), small mammals (Tew, Macdonald, & Rands, 1992) and hares (Meichtry-Stier, Jenny, Zellweger-Fischer, & Birrer, 2014; Petrovan, Ward, & Wheeler, 2013). In their literature review of the effect of different forms of game bird management on non-target species in Europe, Mustin et al. (2018) found that 85% of the effects of habitat management for game birds in lowland agricultural landscapes were positive. However, there were few studies of the effects on non-game species of rear-and-release and supplementary feeding of game birds. Moreover, many conservation management practices are now widely incorporated into government-funded agri-environment scheme agreements for purposes other than game bird management, such as to promote wider farmland biodiversity (Mustin et al., 2018). As is the case for lion trophy hunting areas, more work is needed on how sport hunting and shooting currently motivate landscape management (Lund & Jensen, 2017).

The reliance on large-scale releases of captive-bred pheasants in recent years for shooting, and how they and their habitats are managed, has led to increasing concerns about the conservation value of the sport over at least some of the land where pheasants are shot.¹⁶ Conserving pheasants (unlike conserving lions) is not a biodiversity goal in itself. Pheasants are not endangered, and indeed occur in large numbers owing to the scale of release. At low density they have no obvious negative effects. Some would argue that their 'invasive' status is influential (we return to this question below). The pheasant's principal merit to British conservation is the umbrella it may afford to other wildlife. The quality of that umbrella has, however, been questioned: 'Unfortunately there is a perversion of gamekeeping that breeds pheasants like battery chickens... with this comes cutting back the undergrowth, reducing a wood to a scatter of timber over ... grasses and sedges' (Rackham, 2006). The environmental impacts of large-scale pheasant releases are not well understood, but it is known that they can have impacts on biodiversity in woodland (Neumann, Holloway, Sage, & Hoodless, 2015; Sage et al., 2005), grassland (Callegari, Bonham, Hoodless, Sage, & Holloway, 2014) and hedgerow (Sage, Woodburn, Draycott, Hoodless, & Clarke, 2009). Supplementary feeding of released pheasants may increase the risk of disease transmission among wildlife at feeders (Lawson et al., 2012), attract rats (Sanchez-Garcia, Buner, & Aebischer, 2015) and drive ecological change in wildlife populations (Robb, McDonald, Chamberlain, & Bearhop, 2008). The dynamics of trophic interactions may also be affected by predator management (Lees, Newton, & Balmford, 2013). The upward trend in pheasant releases in recent years, and their supplementary feeding, coincides with wider declines in small seed-eating farmland passerines, and there are plausible mechanisms for a link (Larkman, Newton, Feber, & Macdonald, 2015). Conversely, supplementary

feeding for pheasants may benefit some farmland birds (Sanchez-Garcia et al., 2015). Foxes, corvids and mustelids are heavily controlled by gamekeepers (Mustin et al., 2018) and ground-nesting birds such as skylark *Alauda arvensis* and lapwing *Vanellus vanellus* (Bolton, Tyler, Smith, & Bamford, 2007) may thrive in the absence of these predators (although levels of predator control associated with game bird releases may be less influential than the positive effects on predators of providing more resources in the form of released game birds: Pringle, Wilson, Calladine, & Siriwardena, 2019). More controversially, buzzards *Buteo buteo*, protected birds of prey, may, in some instances, be killed under licence in order to protect pheasants (Parrott, 2015).

For both lion trophy hunting and pheasant shooting, the environmental impact of the sport on species and habitat conservation is dependent on its intensity and how it is managed. In the UK, the law allows the legal shooting of pheasants outside their close season (during which shooting is illegal). The guidelines for delivery of sustainable shooting are set out in a Code of Good Shooting Practice. This is a comprehensive document for 'shoot' managers, guns, gamekeepers and their employees, which sets standards and provides advice on all aspects of shoot management. For pheasants, the Code provides recommendations based on the Game and Wildlife Conservation Trust's sustainable releasing guidelines for the maximum number of birds per hectare that should be released: no more than 1,000/ha of pen, or 700 per pen in ancient, semi-natural woodland (Anon, 2018). The Code prescribes as a 'golden rule' that shoot managers should endeavour to 'enhance wildlife conservation and the countryside' (Anon, 2018) and it requires that game husbandry must be undertaken with all due consideration to health and welfare and all legal requirements for pest and predator control should be followed. Shooting, the Code acknowledges, is under increasing and detailed scrutiny and shoot management practices should be conducted to high standards to help protect the future of the sport. However, there is no requirement for shoots to sign up to the Code and, since adherence to the Code is voluntary, there is no mechanism to deal with shoots that do not follow the standards. There are no published data on the proportion of shoots that maintain good practice.

In common with trophy hunting of wild lions, the economic significance of game bird shooting is closely linked to the land use protection argument and is part of the case made in its support. A report (commissioned by the British Association for Shooting and Conservation and 15 other shooting and countryside organizations) estimated the value of shooting sports (live quarry shooting, clay pigeon shooting and target shooting) providers and their suppliers, as measured by Gross Value Added, to be worth 2 billion pounds in 2012/2013 and to generate the equivalent of 74,000 full time jobs (PACEC, 2014). A specific figure was not given for pheasant shooting, but driven game was the most widespread of live quarry sports shooting (57% of providers), with around 13,000,000 pheasant and 4,400,000 partridge shot across the UK (PACEC, 2014). A recent review of the economic benefits of driven grouse moors in Scotland estimated their total Gross Value Added contribution to be worth

£23 million to the Scottish economy and highlighted the importance of shooting and related activities to some remote and fragile local economies (Thomson et al., 2018). An important issue is the balance between profit-making and accruing capital—often sporting estates operate at a loss (at least in terms of shooting itself) but the value of the land may be tied to shooting bags. Cultural capital is also important, such as the prestige of running a good shoot (K. Mustin, pers. comm.). Shooting sports provide other social benefits, including access to training and skills, engagement between providers and the local community and benefits to well-being (PACEC, 2014). Consideration of alternative land uses would need to take into account the full range of environmental and social costs and benefits.

The 'non native' status of pheasants has been part of the debate about shooting them for sport—which is clearly not so for lions. Species which occur beyond their natural range as a result of human activity, whether accidental or deliberate, can cause considerable problems for native fauna, including extinction (Macdonald, King, & Strachan, 2006). People may perceive them to be an unnatural element of the environment and a potential risk, as was shown in a survey in the Netherlands (Verbrugge, Van den Born, & Lenders, 2013). This could affect judgements about sport hunting. The pheasant was deliberately released in the UK; other released species include fallow deer *Dama dama*, rabbit *Oryctolagus cuniculus* and zander *Stizostedion lucioperca* (Manchester & Bullock, 2000). The management of pheasants, which were probably originally brought to the UK by the Normans in the 12th century for the table (Rackham, 1986), invites some comparison with the management of other species that have appeared relatively recently. Species deemed to be 'non-native' or 'invasive' are regularly controlled, particularly where they cause economic damage or pose a threat to human health or native biodiversity. This control is ultimately based on a preference for 'natural' processes, and the definition of native is largely cultural (Macdonald et al., 2006). Some conservationists argue that conservation is premised on nativism, and that native species are of more value to their ecosystems than are non-native species (discussed in Hayward et al., 2019). Without further qualification, this is probably over-stating this case. It has recently been argued that management decisions should be based on the impacts that species have, rather than their origins (Thomas, 2017). The ecological impact of the millions of annually released, captive-bred pheasants (which make by far the greatest contribution to the abundance, biomass and population energy use of non-native bird species in Britain: Blackburn & Gaston, 2018) is likely to be rather distinct from that of the somewhat fewer individuals of established, wild-living non-native species, such as fallow deer, that can now also be reasonably considered to be 'ecological citizens' (Macdonald & Burnham, 2010). From an animal welfare perspective, it is clear that there is no morally relevant distinction between the killing of individual members of native and non-native species, all else being equal.

One difference between pheasants and other nominally non-native species concerns the law. Despite being a non-native species, the common pheasant, for reasons that appear to be related to its status as a quarry species (rather than the potentially adverse

ecological effects motivating the inclusion of other species), is not listed on Schedule 9 of the Wildlife and Countryside Act of 1981.¹⁷ Controls on its release therefore do not apply.¹⁸ Before their release, captive reared pheasants are classed as livestock, similar to poultry (Defra, 2009). As soon as the birds are released, they become legally wild.¹⁹ While the protection of wild birds in the UK is covered by the Wildlife and Countryside Act 1981, game birds are (for most purposes) not covered by this Act, being covered instead by the Game Act 1831, which allows them to be shot. Furthermore, if a shoot manager wishes to capture with nets any game birds which survive the shooting season, for breeding, this is permitted during the open season. Other wild birds cannot be caught in this way for this purpose (Natural England, 2012). The eggs of game birds also have limited legal protection compared to other wild birds, and their nests have no protection. Other non-native birds living in the wild in the UK, for example, the ring-necked parakeet, are protected by law, and, in England, can only be controlled where the birds pose a serious threat to conservation or are causing damage of some kind (RSPB, 2018).

As with lions, welfare is a dominant theme surrounding pheasant shooting. Similar to the unclear status of captive-bred lions, the peculiar legal status of the pheasant is relevant in that welfare standards for wildlife are not the same as those for farmed animals; standards are more rigorous for the latter (Fraser, 2008). The Code of Practice for the Welfare of Game birds Reared for Sporting Purposes (Defra, 2009) provides practical guidance in relation to Section 9 of the Animal Welfare Act 2006 (the Act), affecting birds bred and reared under controlled conditions for the purpose of release for sport shooting, together with birds retained for breeding purposes, in the UK. For pheasants, particular welfare concerns relate to the use and quality of laying cages (Defra, 2012²⁰), the conditions under which birds are reared before release (Matheson, Donbavand, Sandilands, Pennycott, & Turner, 2015) and the use of anti-pecking bits and spectacles in pheasants (Butler & Davis, 2010). Madden, Hall, and Whiteside (2018) and Madden and Perkins (2017) highlight the susceptibility of released birds to starvation, disease, predation and road kill. Some pheasants are wounded rather than killed outright (wounding was one of the issues highlighted by the Cecil event, and is frequently raised by critics of trophy hunting). The sport's Code of Good Shooting Practice (Anon, 2018) prescribes that wounded birds should be rapidly and humanely despatched (and also that shooting should not occur where wounded birds cannot be retrieved). The proportion of released pheasants that are shot has declined from around 50% to 35% over the period 1960–1990 (Robertson et al., 2017), raising the question as to the fate of the birds that evade the guns (a question which is not relevant for either wild or put and take ('canned') lion trophy hunting). High levels of predation (see also Sage et al., 2018), linked to genetic and behavioural changes, were suggested as a plausible explanation for this. Such loss of natural defence behaviour clearly has welfare implications. Recent work to address this is investigating how to encourage roosting behaviour in captive-bred pheasants, to improve their post-release survival (Game & Wildlife Conservation Trust, 2018a).

Ethical issues dominated the public discourse following Cecil's death. The motivation for the widespread public outrage varied, but tended to centre on the unacceptability of killing an animal purely for sport, particularly when that animal is a threatened species. It is clear that moral arguments play an extremely important role in the views of the legitimacy of hunting practices (Fischer et al., 2013). One striking aspect of the debate about the merits of sport hunting is how judgements differ depending on the species that is hunted. The shooting of game birds has not received anything like the media attention that lion trophy hunting has, and this is likely to be at least partly attributable to emotional responses to different species (Nelson, Bruskotter, Vucetich, & Chapron, 2016). Baker et al. (2013) found a bias towards mammals in their literature review of animal welfare impacts reported in the wildlife trade; they attributed this at least partly to the greater affinity that humans feel for mammals compared with other taxa. Feber, Raebel, D'Cruze, Macdonald, and Baker (2017) showed that media reporting of wild animal welfare issues in the UK reflected a greater interest in wild animal welfare issues that involved mammals. People may prefer species with which they have affinity and familiarity; this is linked to perceived charisma (Macdonald et al., 2015). Kasperbauer (2018) summarizes a number of studies exploring the factors that affect human attitudes to acceptable use of animals; people tend to be more negative about consumptive use of animals to which they attribute higher mental states, and this is linked to their physical characteristics. The more attributes animals have in common with humans, the less likely people are to approve of them being consumed. The number of these attributes an animal has is likely to be a poor indicator of cognitive ability—many birds have more complex brains than predicted for their brain size compared with mammals (Olkowicz et al., 2016).

It is clear that attitudes to sport hunting and sport shooting differ widely with human culture and demography. For example, more farmers than urban dwellers in the UK approved of foxes being killed for sport with hounds, viewing fox-hunting as a countryside tradition (Macdonald & Johnson, 2015). In Denmark, older, rural residents have more positive attitudes to hunting than do younger urban residents (Gamborg & Jensen, 2017). Motive is also important in judgements on the morality of hunting (Fischer et al., 2013) and different emotional responses are elicited by sport hunting compared with acquiring food (Nelson et al., 2016). An online survey of 825 U.S. residents found that, overall, 87% of respondents agreed that it was acceptable to hunt for food, but only 37% agreed that it was acceptable to hunt for a trophy (Byrd, Lee, & Widmar, 2017). Focusing on the consequences of actions may deflect attention from a closer link between ethics and motivation. The importance of motive in judgements on the acceptability of hunting indicates a public tendency towards a deontological perspective, rather than the one based on consequentialism. Gamborg, Jensen, and Sandoe (2018) showed that where hunters' motives related to, for example, wildlife management or enjoyment of the natural world, they tended to have more positive connotations among the general public than motives related to, for example, sport and killing. Attitudes can also be affected by the origin of the quarry. Hunting wildlife that is reared and

released to be hunted may be less acceptable to some than the hunting of a natural wildlife 'surplus' (Gamborg, Jensen, & Sandoe, 2016); indeed, recreational hunting has been advocated as a morally defensible means of managing problematic wildlife populations (Williams, Balsby, Nielsen, Asferg, & Madsen, 2019). Some philosophers defend hunting as a legitimate means of human self-realization, arguing that the quarry species, while deserving respectful treatment, are owed qualitatively different moral significance as a result of their having no moral awareness themselves (Scruton, 2000).

The ethics of killing millions of animals for food in modern intensive farming is attracting increasing scrutiny, but rather less attention compared with hunting, particularly if the hugely different numbers of animals affected are taken into account,²¹ reflecting the widely perceived moral superiority of killing animals for food rather than for sport. Pheasant shooting can no more plausibly be defended as principally being aimed at providing food than can lion trophy hunting. Where hunted animals are consumed, hunting is more likely to be judged acceptable (Herzog, 2011; Ljung, Riley, & Ericsson, 2015; Ljung, Riley, Heberlein, & Ericsson, 2012). The reported burying of pheasant carcasses attracted condemnation from both shooting organizations and the public.²² Perhaps in part acknowledging the possible influence of game meat being eaten on the perceived acceptability of the sport, a charity (The Country Food Trust <http://www.thecountryfoodtrust.org/>) seeks to promote the consumption of game meat, and is aimed particularly at tackling food poverty. However, the regulations for supplying game meat for human consumption²³ may be too onerous for many shoots to make the selling of the meat worthwhile. There are also increasing concerns regarding the adverse effects on human health (and wildlife) of ingested lead (Lead Ammunition Group, 2015; Newton, 2019), and the risks in particular of the consumption of lead shot in small game.²⁴ Lead levels in pheasants are particularly high (EFSA, 2012). Nonetheless, improving game meat marketing is one of the priorities of the UK's Countryside Alliance Campaign for Shooting (<https://www.countryside-alliance.org/news/2017/12/the-lobby-securing-the-future>) and a new body to act as the official marketing board for the UK game industry, the British Game Alliance, was launched in 2018.

4 | CONCLUSIONS

Species around the globe are hunted for sport; they include fish, reptiles, birds (especially waterfowl and game birds) and mammals—quarry vary from wild boar in Europe to Houbara bustard in Arabia, to cougar and racoons in the USA, leopards and wildebeest in Africa and crocodiles and camels in Australia. Here we have highlighted some of the issues surrounding two forms of sport hunting, which differ most conspicuously in the species hunted, the scale of the hunting and where it occurs. In one, a relatively few individuals of a large charismatic carnivore are killed annually by trophy hunters in Africa. In the other, tens of millions of individual birds are shot in the UK. We find that both common themes and inconsistencies in attitudes

to these sports emerge. Conspicuous questions for both are whether sport hunting maintains land for wildlife, and what are the impacts of intensification (e.g. associated with rearing and releasing, or quotas). Inconsistencies particularly appear to surround societal views of sport hunting. These observations are likely to be relevant for many species hunted for sport, for their conservation and the protection of habitats in which they live.

Recent years have seen increasing concern for the welfare of wild animals (George, Slagle, Wilson, Moeller, & Bruskotter, 2016), greater resistance to the killing of animals for sport (Lindsey, Alexander, Frank, Mathieson, & Romanach, 2006) and increasing interest in other forms of engagement with wildlife, such as wildlife watching (U.S. Dept. of the Interior, 2016). Attitudes to animal welfare and the acceptable use of animals may be continuing to shift, at least in some parts of the globe (George et al., 2016; van Eeden, Dickman, Ritchie, & Newsome, 2017). Hampton and Teh-White (2019) speculated that recreational hunting may be one of the wildlife use industries vulnerable to the loss of its 'social licence', a form of unwritten community consent, which can bring about regulatory restriction. Similarly, Kasperbauer (2018) drew attention to evidence for a global trend in increased legal protection for animals (and to constraints on this trend, including economic forces). These trends may well lead to the end of some types of sport hunting in the not too distant future (Macdonald, Jacobsen, et al., 2016). Macdonald, Jacobsen, et al. (2016) also raised the possibility that history might judge harshly, much as it now does utilitarian defenders of slavery, those biologists who, with the best of intentions, sought to justify lion trophy hunting on a consequentialist profit and loss account. Indeed, Macdonald (2019) notes that, while people have been hunting lions for sport for about 3,000 years, it may soon be judged an inappropriate activity under the mores and understanding of the 21st century. In the face of increasing hostility among both non-specialists and conservation scientists alike (Batavia et al., 2019), it may therefore be appropriate and prudent for conservationists to be looking for replacements to deliver whatever conservation benefits hunting might hitherto have provided (Macdonald, 2016). Over 2 years following the Cecil incident in 2015, some major importers in Europe and the United States suspended or tightened restrictions on trophy imports (Bauer, Nowell, Sillero-Zubiri, & Macdonald David, 2018) and 42 airlines announced or reaffirmed bans on wildlife trophy shipments on their carriers. In the UK, numerous celebrities have twice signed open letters urging the Government to ban the import of trophies into the UK. A cross-party Early Day Motion, signed by more than 159 MPs, also calls on the UK government to stop trophy hunting imports of endangered species. If such measures lead to hunting concessions becoming not viable,²⁵ conversion of land to other uses may follow, with unintended consequences for wildlife and communities (Di Minin, Leader-Williams, & Bradshaw, 2016; Dickman, Cooney, Johnson, Pia Louis, & Roe, 2019; Mbaiwa, 2018)²⁶. In the UK, hunting has also come under public pressure. The Hunting Act 2004 made it an offence to hunt wild mammals with dogs, making

fox-hunting illegal, except under some closely prescribed conditions, a change which was largely driven by public distaste for killing animals in the pursuit of sport—there is little evidence that the negative consequences for conservation that were predicted by supporters of fox-hunting have come to pass (Macdonald & Johnson, 2015). However, the contexts of wild lion trophy hunting and rear-and-release pheasant shooting are very different, and the consequences for habitat maintenance of their loss cannot be predicted with any confidence. In this article, we have drawn attention to some aspects which may affect the risks.

There are many people (in the UK) who would like to see pheasant and other game shooting, as currently practised, go the same way as fox-hunting. YouGov opinion polls (commissioned by an activist organization, Animal Aid) found, in 2014, that 77% of respondents opposed the use of cages to breed partridges and pheasants for 'sport' shooting²⁷ and, in 2016, that 48% of respondents would support a ban on grouse shooting, compared with 28% who would oppose a ban.²⁸ Shoots are reportedly less optimistic about the long-term future of driven game shooting than they are about their short-term prospects, and this appears to be linked to wider concerns, including public opposition (Savills, 2018).

The consequences for land use of loss of sport hunting, and the viability of alternative wildlife-friendly land uses are not well studied. A report commissioned by the UK government in response to the Cecil event highlighted considerable knowledge gaps in understanding how wildlife might be affected where the future of trophy hunting is uncertain (Macdonald, 2016; Macdonald et al., 2017). This is likely to be equally true for many of the diverse forms of sport hunting that occur around the world. Evidence as to whether hunting meets acceptable environmental and welfare standards is frequently sparse. There is of course no necessary connection between these—hunting could be run with low quotas but poor welfare standards, and therefore be unacceptable from a welfare perspective while delivering conservation goals. Transparency in both areas is likely to promote acceptability across a range of interest groups. For pheasant shooting, one possibility is that some form of certification based on the sport's Code of Good Shooting Practice (Anon, 2018) could be introduced; the need to develop effective self-regulation is a priority for the UK's Countryside Alliance Campaign for Shooting (<https://www.countryside-alliance.org/news/2017/12/the-lobby-securing-the-future>). Beyond self-regulation, there is inevitably a great deal of variation in the extent to which hunting practices are prescribed by law. In the UK, the current system where agricultural payments are contingent on sound conservation management could be adapted for shoot operators to link quotas to good practice. Recognizing that public attitudes to hunting may depend on how well they are run,²⁹ a recent initiative by the International Council for Game and Wildlife Conservation (CIC) has sought to compile a database of national hunting legislation. The initiative aims to promote best practice around the world and thereby to improve the image of hunting.

Initiatives like these may not be enough to ensure the future of hunting in the face of changing attitudes, and the possible, perhaps

probable, triumph of a normative, deontological rejection over a consequentialist tolerance. One prominent UK environmentalist has speculated (Quinn, 2017) that the public outrage provoked by the Cecil incident, and increasing use of social media, led to a surge of interest in conservation in the UK, and incredulity that tolerating the sport hunting of animals is consistent with their conservation. Where hunting is likely to be stopped, would alternative land uses be less desirable for conservation? For both pheasants and lions, the economic forces that prevail in different places are not well understood (Macdonald et al., 2017). The magnitude of the risk of land conversion to other uses depends on many factors and is difficult to predict for any location. With some exceptions (e.g. driven grouse shooting in the UK), there is rather little research or, perhaps, even thinking, on these questions. It would clearly be desirable to remedy this. Formal methods for risk analysis and quantifying uncertainty serve as one possibility. The implications for conservation world-wide if the Cecil moment does indeed lead to a Cecil movement (Macdonald, Jacobsen, et al., 2016) are as yet not understood. Sport hunting around the globe is very diverse both ecologically and socially. There are likely to be both threats and opportunities for conservation where the future of hunting is uncertain. Arguably, the worst case for conservation is that loss of hunting leads to landscapes that are less hospitable to wildlife. But with sufficient attention to risk analysis, the opportunity exists for conservationists to identify and deploy effective land management options that are threatened neither by an uncertain future for hunting, or by future failures in its regulation.

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CONFLICT OF INTEREST

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AUTHORS' CONTRIBUTIONS

R.E.F., P.J.J. and D.W.M. conceived the ideas for the manuscript, wrote the manuscript and gave final approval for publication.

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This paper does not include any data.

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ENDNOTES

¹ It may be difficult to disentangle different motives for some forms of hunting – UK foxhunting, for example, was defended both as a method for controlling pests, and as a recreational activity with social benefits (Macdonald & Johnson 2015).

² Some may question the extent of non-human sentience. Most philosophers (and people in general) do not. David Hume commented 'Next to the ridicule of denying an evident truth, is that of taking too much pains to defend it; and no truth appears to me more evident than that beasts are endowed with reason and thought as well as men'. In a Treatise on Human Nature (1739), cited by King (2004).

³ Characterizing the debate in binary terms is tending towards oversimplifying it—intermediate perspectives include opposing the practice in principle but tolerating its persistence in the short term, based on a judgement that the consequences of a ban are currently insufficiently known and at risk of being unacceptably damaging to conservation (Macdonald, Johnson, et al. 2016).

⁴ Captive-bred lions are hunted in smaller areas than wild lions ($49.9 \pm 8.4 \text{ km}^2$ compared to $843\text{--}5,933 \text{ km}^2$, depending on the country: Lindsey et al. 2012).

⁵ It is possible, of course, that these areas have conservation value for other taxa if, in the absence of 'canned' hunting, they would be converted to less wildlife-friendly uses. Shroeder (2018) observes that many of them occupy land previously used for agriculture. Coals, Burnham, Johnson, et al. (2019) and Coals, Burnham, Loveridge, et al. (2019) explore possible consequences of captive breeding of lions for wild lion conservation.

⁶ Other forms of anthropogenic killing, such as poisoning or other retaliatory killings, may have similar or greater impacts, particularly as females are killed more often in non-trophy hunted mortalities (A. Dickman, pers. comm.).

⁷ An account of these issues in Tanzania is provided by Paolo Strampelli in a guest blog: <https://markavery.info/2019/10/24/guest-blog-trophy-hunting-is-not-all-black-and-white-by-paolo-strampelli/>.

⁸ The degree to which this is being taken seriously by African countries is reflected by the attendance of Heads of State and government ministers from across Africa at a meeting convened in 2019 by the United Nations Environment Programme (UNEP) and the African Union (AU) (<https://www.unenvironment.org/news-and-stories/press-release/wildlife-economy-summit-launch-african-led-vision-conservation>).

⁹ That local people may not benefit financially from the presence of trophy hunting is frequently cited by its opponents. It is less frequently invoked for photo-tourism, which also relies on local tolerance of lions, and where local people also do not always benefit from its presence (Dickman et al., 2018).

¹⁰ Although trophy hunting is clearly not a requisite for the hunting of species for meat.

¹¹ The concept of intrinsic value is understood as its independence of its 'serving the ends, purposes or goals of others' (Newman et al., 2017). Newman et al. discuss different conceptions of intrinsic value. These vary, for example, according to whether the intrinsic value of an entity depends on subjective human valuation or is in some sense objective.

¹² From the Greek 'dei', 'one must'.

¹³ It has been argued that the taking of wildlife trophies in particular is a potential source of ethical discomfort (Batavia et al., 2019).

¹⁴ Retaliatory killing of lions (e.g. poisoning by local communities whose lives and livelihoods are threatened by lions), poaching and snaring also have welfare impacts. Trophy hunting may incentivize communities to tolerate lions (Macdonald, 2016).

¹⁵ Pheasants were scarce at the start of the 18th century (Griffin, 2008). Artificial rearing became a commonplace following the Rearing

of Pheasants (Revocation of Prohibition) Order in 1949, and increased greatly as wild game declined.

¹⁶ At the time of writing, a not-for-profit company called Wild Justice is seeking to mount a legal challenge against Defra, citing its failure to assess environmental impacts of the release of non-native game birds into the wild each year as being in breach of the EU habitats directive: <https://www.theguardian.com/environment/2019/jul/18/release-of-non-native-game-birds-to-be-challenged-in-court>.

¹⁷ Four species of pheasant are listed, including the closely related Golden Pheasant (*Chrysolophus pictus*) and Lady Amherst's pheasant (*Chrysolophus amherstia*). <https://www.legislation.gov.uk/ukpga/1981/69/schedule/9>.

¹⁸ Similarly, lions can legally be released for 'canned' hunting in South Africa, where wildlife is held to be private property.

¹⁹ Natural England's new General Licence GL26 (published April 2019) further complicates the legal status of pheasants by permitting the killing or taking of Carrion Crows to prevent serious damage to livestock, where livestock are defined as including reared game birds, including released birds while they are 'kept'. 'Kept' animals are defined as either fenced or penned or unconstrained but remaining significantly dependent on people. For example, where a game bird is dependent on food put out by the gamekeeper then it may be regarded as livestock, even if it is free-living.

²⁰ The report commissioned by Defra investigated the impacts of different types of laying cages and their enrichment on pheasants. It did not investigate alternatives to laying cages.

²¹ Globally, 3 billion mammals and 57 billion birds were reported by the Food and Agriculture Organisations (FAO) of the United Nations to be farmed for food in 2008. The numbers of fish caught commercially for food are particularly striking—estimated at of the order of a trillion in 2008, and with very poor welfare effects. <https://www.ufaw.org.uk/animal-welfare-journal-reports/-volume-19-issue-4---november-2010-report>.

²² <https://www.shootinguk.co.uk/news/shooting-organisations-united-to-condemn-dumped-pheasant-video-104660>.

²³ <https://www.food.gov.uk/sites/default/files/media/document/wild-game-guide.pdf>.

²⁴ <https://www.food.gov.uk/safety-hygiene/lead-shot-game>.

²⁵ This appears to be happening in Tanzania (Mantheakis, 2018).

²⁶ Impacts of the USA lion trophy import suspension on the captive breeding of lions for hunting in South Africa have been reported, which could potentially lead to land conversion and biodiversity loss (Williams & t Sas-Rolfes, 2019).

²⁷ <https://www.animalaid.org.uk/new-poll-reveals-overwhelming-opposition-battery-cages-game-birds/>. Accessed 15/10/2018.

²⁸ <https://www.animalaid.org.uk/nearly-half-poll-respondents-want-grouse-shooting-banned/>. Accessed 15/10/2018.

²⁹ <http://www.cic-wildlife.org/divisions/policy-law/core-working-field-s/hunting-laws-and-policies/> 'the non-hunting public often has a higher regard for well-thought out and well-regulated hunting, the opposite is true where hunting legislation is practically inexistent, absent or poorly implemented and regulated'.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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