**Evaluating key evidence and formulating regulatory alternatives regarding the UK's Hunting Trophies (Import Prohibition) Bill**

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**Keywords:** ban, CITES, hunting, impact assessment, policy, regulation, threat, wildlife trade

**Running title:** Evaluating the UK Hunting Trophies Bill

**Acknowledgements**

DWSC acknowledges funding from the UK Research and Innovation's Global Challenges Research Fund (UKRI GCRF) through the Trade, Development and the Environment Hub project (project number ES/S008160/1). AD acknowledges funding for this work from the Recanati-Kaplan Foundation and Panthera, and is a consultant for Jamma International. DH receives research funding from Jamma International, WWF Deutschland, and the Luc Hoffmann Institute (now Unearthodox) (Award number ATR04380). AD and DR are members of the Darwin Expert Committee.

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## Abstract

Public policy addressing biodiversity loss is most likely to be effective when it is informed by appropriate evidence and considers potential unintended consequences. We evaluate key evidence relating to the UK's Hunting Trophies (Import Prohibition) Bill. We characterize the UK's role in international hunting trophy trade by analyzing CITES trade data for the periods 2000-2021 and 2015-2021. For CITES-listed species imported to/exported from the UK as hunting trophies in these periods we then use data from the International Union for Conservation of Nature Red List of Threatened Species to determine whether hunting designated as "trophy hunting" is i) likely a major threat contributing to species being of elevated conservation concern, ii) likely or possibly causing localized declines, or iii) not a threat. Finally, we evaluate the UK Government's impact assessment of the bill. In 2000-2021 an estimated 3494 hunting trophies from 73 CITES-listed species and subspecies were exported to the UK involving an estimated 2549 whole organism equivalents (WOEs), i.e., individual animals. Imports involved 158.86 ± 66.53 (mean ± SD) trophies/year (115.83 ± 32.27 WOEs/year). In 2015-2021, 79% of imports were from countries where populations of the hunted species were stable, increasing, or abundant. Critically, legal hunting for trophies is not a major threat to any of the 73 species or subspecies imported to the UK based on Red List data, although it likely or possibly represents a local threat to 9 species. Conversely, this hunting does, or has the potential to, benefit 20 of these species and subspecies. Among other concerns, the impact assessment fails to adequately consider the costs and benefits to local communities, which affect conservation incentives and outcomes, in countries where legal hunting for trophies takes place. Informed by these analyses we discuss more proportionate regulatory options.

## Introduction

Public policy addressing biodiversity loss is most likely to be effective when it is informed by appropriate evidence, is context-specific, and considers potential unintended consequences (Sutherland *et al*. 2020, IPBES 2022). Inadequate consideration of these factors can result in regulatory failure, including perverse impacts and counter-productive policies (Grabosky 1995, Baldwin *et al.* 2012). Overexploitation is a key threat to biodiversity (IPBES 2022) but devising policies to mitigate this threat can be inherently challenging. There is a lack of knowledge of many species, including their population biology, size, and trends, the impact of offtake, and the ecological and evolutionary impacts of harvesting (Smith *et al.* 2011). The most appropriate policies to address overexploitation may also differ between contexts and scales related to ecological, economic, social, and/or governance factors (Cooney *et al.* 2015) meaning that identifying optimal solutions is not straight forward. Further complicating policy formulation regarding wildlife use is the frequently polarized views of diverse stakeholders, especially concerning sentient and charismatic species, with ethical, ideological, and scientific, arguments used to support or oppose potential options (Hammond *et al.* 2022, Mkono 2022). Yet with adequate knowledge of species and the social-ecological systems that they are part of, appropriate policies can be formulated to support species conservation, while simultaneously benefiting local communities (’t Sas-Rolfes *et al.* 2022).

“Trophy hunting” - legal, low-offtake hunting, where hunters pay a high fee to hunt individual animals with particular characteristics (e.g., horn length) and retain all or part of the animal (IUCN 2012) - has emerged as a contemporary conservation policy debate, with widespread media coverage, particularly following the death of Cecil the lion in 2015 (’t Sas-Rolfes 2017, Yeomans *et al.* 2022). This has largely been due to special interest groups arguing that this hunting threatens wildlife populations, disregards animal welfare, is

ostensibly universally reprehensible, and should be further legislated against (Born Free *et al.* 2022). Conversely, evidence indicates that in diverse circumstances across several continents, legal and well-managed hunting for trophies can deliver benefits to local people and support conservation by ensuring that biodiversity is a competitive land use option (IUCN 2016a, Parker *et al.* 2023). Nevertheless, various governments have legislated against the trade in hunting trophies since 2015. Australia and France have banned imports of lion (*Panthera leo*) trophies, the Netherlands has prohibited trophy imports from over 200 species (Ares 2019) and further import restrictions have been proposed in the US (US Congress 2019).

The UK has existing controls on the import and export of hunting trophies but is considering tightening these regulations, largely in response to pressure from lobby groups (Ares 2019). The Wildlife Trade Regulations (WTRs) and EU Wildlife Trade Regulations (EUWTRs) in Northern Ireland list all CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) and some non-CITES species in four Annexes (A–D). Under these regulations, imports of hunting trophies from wild species require an import and export permit for Annex A species and six species in Annex B: the white rhino (*Ceratotherium simum*), common hippopotamus (*Hippopotamus amphibius*, hereafter "hippo"), African elephant (*Loxodonta africana*), argali (*Ovis ammon*), polar bear (*Ursus maritimus*), and lion. For other species in Annex B only an export permit is required, and hunting trophies are treated as personal effects. Import and export permits can only be granted based on positive non-detriment findings (NDFs), to ensure that trade is not detrimental to wild populations.

In 2019 the UK Government issued a call for evidence on the scale of hunting trophy imports and exports and associated impacts and held a consultation on further restricting this trade. In June 2022, a private member's bill proposed to ban the import of hunting trophies to the UK.

The Hunting Trophies (Import Prohibition) Bill (hereafter "the bill") would prohibit the import of hunting trophies from species listed in Annexes A and B of the WTRs, which the Government has stated will protect ~7000 species (UK Government 2021a). The rationale is to ensure that these imports are not placing additional pressure on species of conservation concern and, recognizing that "trophy hunting" is an issue that the British public feels strongly about, it is one the UK can address (DEFRA 2021). Following cross-party support in the House of Commons, in March 2023 the bill passed to the House of Lords.

This rationale assumes that legal hunting for trophies threatens many species, including those imported to the UK as trophies but the evidence to support this is unclear. Here, we evaluate key evidence relating to the bill and the associated policymaking process. We characterize the UK's role in international hunting trophy trade by analyzing CITES trade data for the period 2000-2021 to provide historical context and for the period 2015-2021, which broadly aligns with the UK Government's impact assessment (see DEFRA 2021) (Supp. Material 1). We focus on CITES-listed species because these taxa have been deemed in need of international trade regulation to avoid overexploitation. Import and export data are routinely collected for these taxa in the UK but not for other species. For CITES-listed species imported to/exported from the UK as hunting trophies in 2000-2021 we then use data from the IUCN (International Union for Conservation of Nature) Red List of Threatened Species (hereafter "Red List") to determine whether legal hunting for trophies (as defined) is i) likely a major threat contributing to species being of elevated conservation concern, ii) likely or possibly causing localized declines, or iii) not a threat (Supp. Material 1). Finally, we use quality indicators from the Regulatory Policy Committee (RPC) to evaluate the UK Government's impact assessment of the bill (Supp. Material 1). The RPC is an independent regulatory body, which assesses the quality of evidence and analysis used to inform UK Government regulatory

proposals (Regulatory Policy Committee, n.d.). Informed by these analyses, we discuss alternative policies the UK should consider in regulating international trade in hunting trophies of CITES-listed species.

**International trade in hunting trophies of CITES-listed species and the role of the UK**

Direct trade in hunting trophies of CITES-listed species in 2000-2021 (i.e., over 22 years) involved an estimated 594,335 trophies globally based on exporter-reported quantities (Supp. Material 1). As one animal may produce multiple trophies, the number of trophies does not equate to number of animals killed but converting trade volumes to whole organism equivalents (WOEs) enables estimates of the number of individual animals involved (Harfoot *et al.* 2018, Supp. Material 1). We estimate this trade involved 419,877 WOEs. The top exporters were Canada and South Africa (>130,000 trophies respectively) while the top importer was the US, importing >247,000 trophies (Supp. Material 2). The UK ranked 19/74 exporting countries, exporting an estimated 968 trophies (968 WOEs). Among importing countries, the UK ranked 25/183, importing an estimated 3494 trophies (2549 WOEs), <1% of the global trade in terms of number of trophies and WOEs.

In 2015-2021 (i.e., 7 years) trade globally involved an estimated 199,426 hunting trophies from CITES-listed species (106,005 WOEs). The top exporters were South Africa (53,304 trophies) and Mozambique (47,602) while the top importer was the US (74,107 trophies) (Supp. Material 2). The UK ranked 37/53 exporting countries, exporting only 17 trophies (17 WOEs) and 25/155 importing countries, importing an estimated 951 trophies (738 WOEs).

The UK imported hunting trophies from 73 CITES-listed species and subspecies in 2000-2021, mainly involving mammals (96%) (Supp. Material 2). The top 10 imported species

account for 74% of this trade (2569/3494 trophies), which mainly involved wild specimens (CITES source code W), and include African elephant, American black bear (*Ursus americanus*), and hippo (Table 1). Overall, trade involved an estimated 158.86 ± 66.53 (mean ± SD) trophies/year (115.83 ± 32.27 WOEs/year). For African elephant, the species with the highest number of trophy imports, this involved 24.45 ± 30.23 trophies/year, or 5.66 ± 5.08 WOEs/year. For American black bear and hippo, trade involved 22.04 ± 17.78 trophies (13.95 ± 8.32 WOEs) and 14.45 ± 16.56 trophies (4.12 ± 3.49 WOEs) per year respectively. Most (88%) trade in the top 10 species came from just 6 countries: South Africa (29%), Canada (18%), Zimbabwe (13%), Namibia (13%), Botswana (8%), and Zambia (7%). For 63 species (86%), a mean of <5 trophies were imported annually (Supp. Material 2). Of the 73 species, 50 (69%) averaged imports of less than one trophy (and 1 WOE) a year, and 17 species (23%) had only a single trophy imported over the 22-year period (Supp. Material 2).

Direct exports of hunting trophies in CITES-listed species from the UK in 2000-2021 involved 18 species, including 16 bird species and two (non-native) mammals (the hog deer [*Axis porcinus*] and swamp deer [*Rucervus duvaucelii*]) (Supp. Material 2). 4 bird species (pintail [*Anas acuta*], shoveler [*A. clypeata*], teal [*A. crecca*], and wigeon [*A. penelope*], accounted for 98% of exports (945/968 trophies; 945 WOEs), which were sourced from the wild, and mainly imported by Malta (98%). This trade may not meet our definition of trophy hunting, but we included it here because CITES purpose code H was used, i.e., the specimens were traded as hunting trophies. These species are no longer listed under CITES.

In 2015-2021, the UK imported an estimated 951 hunting trophies (738 WOEs) from 44 CITES-listed species, 95% (903/951 trophies) involving mammals (Supp. Material 2). The top 10 species account for 78% of this trade, which mainly involved wild specimens, and

include many of the same top species for 2000-2021 (Table 2). Changes comprise the absence of leopard and caracal from this list but the inclusion of giraffe (*Giraffa camelopardalis*) and vervet monkey (*Chlorocebus pygerythrus*). Trade amounted to 135.85 ± 47.51 trophies/year (105.32 ± 40.58 WOEs/year). For the top 10 imported species this equates to between 5.57 ± 5.56 (hippo) and 23.85 ± 16.67 (American black bear) trophies/year or 2.64 ± 1.27 (hippo) and 15 ± 10.56 (chacma baboon [*Papio ursinus*]) WOEs/year (Table 2). Lion imports mainly involved captive bred animals, which account for 83% (59 trophies), compared to 48% in 2000-2021, and do not conform with IUCN's definition of trophy hunting (IUCN 2012, 2016b). Trade in wild lion involved 1.71 ± 2.42 trophies/year (1.42 ± 1.71 WOEs/year). For 33 species (75%), a mean of <5 trophies were imported annually and for 36 species (82%) fewer than a mean of 5 WOEs (Supp. Material 2). For 22 species (50%) imports involved 5 or fewer trophies and for 25 species (57%) less than 1 WOE.

22 countries exported hunting trophies to the UK in 2015-2021, and as for 2000-2021, most exports were from a few countries. South Africa, Canada, Namibia, and Zimbabwe exported 94% of trophies in the top 10 species or 73% of all trophy imports to the UK. At least 79% of imports (753/951 trophies) were from countries where populations of the hunted species are stable, increasing, or abundant (Supp. Material 2). For example, the American black bear population in Canada is estimated at 450,000 individuals and is increasing (Garshelis *et al.* 2016). African elephant populations in Zimbabwe and South Africa number 82,000 and ~27,000 animals respectively (Selier *et al.* 2016, CITES 2022). Hartmann's Mountain zebra (*Equus zebra hartmannae*) numbers ~44,000 individuals in Namibia and populations are increasing, as in South Africa (Gosling *et al.* 2019). Populations of lion in South Africa have increased in recent decades and may be at carrying capacity (Bauer *et al.* 2015, 2016).

The UK imported diverse species as hunting trophies, but this trade comprises a small proportion of CITES-listed animal species imported to/exported from the country, and a small fraction of overall trade volumes in CITES-listed animal species involving the UK. For 2000-2021 the UK imported/exported 1929 CITES-listed animal species while species imported/exported as hunting trophies comprised <5% (91/1929 species) (Fig. 1). Combined imports to/exports from the UK in CITES-listed animal species in this period involved an estimated 4.93 million WOEs. The 3494 hunting trophies imported to the UK, involving an estimated 2549 WOEs, comprise <0.1% of UK trade in CITES-listed animal species. The same applies to 2015-2021 with hunting trophies involving <4% of the species traded to/from the UK (44/1154 species) and <0.1% of UK trade in CITES-listed animal species. For comparison, many more species were traded, and trade volumes were greater for commercial purposes, involving 1211 CITES-listed animal species and an estimated 4.85 million WOEs. Similarly, imports to/exports from the UK in animals as pets involved 568 species and an estimated 7752 WOEs, though most of these animals were reportedly from non-wild sources.

**Legal hunting for trophies as a contributor to elevated conservation concern**

Of the species and subspecies imported to/exported from the UK as hunting trophies in 2000-2021, which were, or are, included under CITES, 60% (56/93 species) are categorised as Least Concern (LC) on the Red List, i.e., are not threatened with extinction (Supp. Material 3). We refer to 93 species because the Red List treats urial (*O. aries*) and African elephant as two discrete species respectively (Supp. Material 3). 40% (37 species) can be considered to be of elevated conservation concern (defined by IUCN as species assessed as Near Threatened, Threatened or Extinct in the Wild). 14 species (15%) are categorised as Near Threatened, 14% (13 species) as Vulnerable (VU), 4% (4 species) as Endangered (EN), and 5% (5 species) as Critically Endangered (CR) (Supp. Material 3). One species, the scimitar-

horned oryx (*Oryx dammah*), is Extinct in The Wild (EW) and all trophies from this species originate from ranched populations in the US. Intentional hunting and/or harvesting of aquatic resources is a major or minor threat to 77% of these taxa (Supp. Material 3), which consists of poaching and/or hunting which is illegal or poorly, or not, regulated.

Our analysis of Red List data indicates that legal hunting for trophies is not a major threat to any of the 93 species or subspecies imported/exported from the UK as hunting trophies in 2000-2021 (Supp. Material 3). However, it is likely a local threat (i.e., causing localized declines) to 4% of these taxa (4 species) (Fig. 1). For brown bear (*U. arctos*) evidence suggests that where the species exists in large, contiguous populations, hunting rates for sport are likely unsustainable in the short term, but contribute to population fluctuations rather than driving ongoing declines (McLellan *et al.* 2017). The Siberian ibex (*Capra sibirica*) is subject to regulated hunting for trophies in Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, the Russian Federation, Tajikistan, and Uzbekistan, in all cases targeting only males in the highest age classes so direct impacts on population size are likely negligible (Reading *et al.* 2020a). However, if poorly regulated, as reported for some cases in Kyrgyzstan it can have negative consequences, including an effect on the sex and age composition of populations, but potential impacts are low if hunters only harvest a minor proportion of males (Michel and Rosen 2016; Reading *et al.* 2020a). For Gobi argali (*O. darwini*) evidence indicates that unsustainable legal hunting for trophies comprises a minor localized threat in Mongolia (Reading *et al.* 2020b). The bongo (*Tragelaphus eurycerus*) is threatened by demand for hunting trophies, especially where hunting is poorly regulated (IUCN SSC Antelope Specialist Group 2016a), but this takes place in a small portion of the species' range only (Cameroon and Central African Republic) and comprises a local threat.

227 Our analysis indicates that legal hunting for trophies is possibly a local threat to some
228 populations of 5 species (5% of the 93 taxa) (Fig. 1). For lion, this may have at times
229 contributed to population declines in Botswana, Namibia, Tanzania, Zimbabwe, Cameroon,
230 and Zambia (Bauer *et al.* 2016). For leopard, legal hunting for trophies that over-concentrates
231 on a particular area and targets animals in their prime that are reproductively active can be
232 detrimental to populations (Stein *et al.* 2020). Legal sport hunting of American black bear is
233 well controlled by state and provincial agencies in North America in alignment with
234 management plans and objectives, but this may contribute to population fluctuations
235 (Garshelis *et al.* 2016). The puma (*Puma concolor*) is legally hunted in many western and
236 midwestern US states, which potentially comprises a minor, local threat (Neilsen *et al.* 2015).
237 The Topi (*Damaliscus lunatus*) is hunted for sport, and while there is no overt evidence in the
238 Red List account that this is a threat, we have taken a precautionary approach in flagging it as
239 possibly causing localized declines (IUCN SSC Antelope Specialist Group 2016b).
240
241 For 20 of the species imported to the UK as hunting trophies in 2000-2021, legal hunting for
242 trophies provides, or has the potential to provide, significant benefits (Supp. Material 3).
243 These include revenue generation, monetary and/or non-monetary benefits (e.g., meat and
244 housing) to local people, employment, and enhanced population growth for threatened
245 species. This includes species for which legal hunting for trophies is likely or possibly a local
246 threat. For example, legal hunting for lion trophies has a net positive impact in some areas
247 and is an important tool for conserving wild habitat providing financial resources to
248 governments and local communities (Bauer *et al.* 2016). Legal hunting of blesbok
249 (*Damaliscus pygargus*) generates revenue and provides meat for local people, including
250 subsistence hunters (Dalton *et al.* 2019). For white and black rhino (*Diceros bicornis*),
251 selective hunting of older males can increase population growth rates and provide resources

for protecting the species in situ (Emslie 2020a, b, ’t Sas-Rolfes *et al.* 2022). For bongo, well-regulated hunting for trophies has the potential to provide economic justification for preserving large areas of habitat in remote areas of Central Africa where possibilities for commercially successful tourism are limited (IUCN SSC Antelope Specialist Group 2016a). Well-managed hunting for trophies can also have cascade benefits for other species and habitats in hunting concessions, even though such benefits may not be stated in Red List assessments. For Siberian ibex it is explicitly recognized that banning legal hunting for trophies and associated trade risks removing incentives to prevent poaching and may increase human-caused mortality of the species (Reading *et al.* 2020a). For lion, regulation which reduces the profitability of legal hunting for trophies could result in widespread negative impacts for wildlife-based land use, anti-poaching, and tolerance of lion outside protected areas (Hunter *et al.* 2013 cited in Bauer *et al*. 2016).

**Evaluating the UK Government’s impact assessment of the bill**

Regulatory proposals in the UK must be accompanied by an impact assessment which evaluates the likely risks, costs, and benefits of proposed regulation. We used the RPC’s quality indicators to evaluate the impact assessment for the bill (DEFRA 2021), considering whether assumptions are reasonable and justified, the quality of analysis and evidence, and areas of the assessment that could be improved (Supp. Material 1). We rated all five sections of the impact assessment (policy rationale, costs and benefits, risks and unintended consequences, wider impacts, and post implementation review) as weak because inappropriate assumptions are made, the quality of key analyses is poor, and/or there are areas that could be improved substantially to understand the likely impact of the bill. We discuss major areas of concern here, and the full evaluation is included in Supp. Material 4.

The impact assessment assumes that the proposed regulation will disincentivize legal hunting for trophies of in-scope species by people wishing to import the trophies to the UK. This may or may not be the case but is weakly analyzed. There is little exposition of the actual impact that the proposed policy may have on trophy hunter behavior and little supporting evidence is provided. An exception is reference to ongoing hunting involving cheetah and African elephant by US citizens despite restrictions on importing cheetah and elephant ivory from Zimbabwe to the US (note that cheetah is now no longer hunted in Zimbabwe), suggesting that the proposed regulation may have some, but limited, effect. The assessment would be much improved by robust analysis of the likely impacts of the bill on hunter behavior and whether the assumption that it will disincentivize legal hunting for trophies is realistic, or not.

The impact assessment also assumes that the proposed policy will result in enhanced protection of threatened species with positive knock-on effects for biodiversity and ecosystem services. This may or may not be the case and cannot reasonably be assumed without a full analysis and supporting evidence. The policy may contribute to positive or negative outcomes for species subject to legal hunting and trophy exports, related to various social (e.g., the perspectives of local people), economic (e.g., incentives for legal and/or illegal offtake), and/or governance factors (e.g., the legitimacy of laws and bans/restrictions by importing countries) in areas where hunting takes place. Assuming species will receive enhanced protection presumes that the institutional settings are appropriate where hunting would be impacted and that the resources and revenue streams needed to enhance species protection are readily available, when they may not be, and evidence is not provided.

Although the impact assessment considers costs to UK individuals and businesses (Supp. Material 4), a major limitation is that it fails to adequately consider the costs and potential

benefits to people (e.g., local communities) in countries where legal hunting for trophies takes place and helps sustain livelihoods. This is despite the implication in the assessment that most of the costs associated with the proposed policy will likely be incurred by these people. These costs are mentioned only briefly and are not quantified or monetized (though the price of some hunts are mentioned). The impact assessment would be markedly improved by explicit consideration of these costs, which would enable a more comprehensive characterization of the UK's role in international hunting trophy trade and a better understanding of the likely impacts of the proposed policy.

## Discussion

The rationale for the Hunting Trophies (Import Prohibition) Bill is to ensure that imports of hunting trophies to the UK are not placing additional pressure on species of conservation concern, by prohibiting such imports from a reported ~7000 species (UK Government 2021a). Our analyses indicate that the UK plays a minor role in the global trade of hunting trophies of CITES-listed species. While the UK imported hunting trophies from 73 CITES-listed species and subspecies in 2000-2021 (an estimated 1% of species in the scope of the bill), trade volumes were low. Furthermore, based on data contained in the Red List, legal hunting for trophies is not a major threat contributing to any of these species being of elevated conservation concern (Supp. Material 3). In 2015-2021, at least 79% of trophy imports were from countries where populations of the species hunted were stable, increasing, or abundant. Imports of American black bear, brown bear, and Siberian ibex trophies were imported from countries with healthy populations (Supp. Material 2). Lion imports involved <2 wild animals a year, mainly from countries for which evidence suggests populations are increasing. The leopard is perhaps an exception because although imports were low (<4 animals/year), all were from sub-Saharan Africa where populations are often declining, or

327 their status is unknown (though quotas are typically set by government agencies using more
328 detailed local information). Assuming past trade is indicative of future imports, the argument
329 that the bill will reduce pressure on many threatened species subject to legal hunting for
330 trophies is therefore unfounded. Other threats, notably unregulated hunting, poaching, and/or
331 retaliatory killing, are much greater for most species imported to the UK as hunting trophies.
332 Legal hunting for trophies is likely/possibly causing local declines in 9 species, but there are
333 likely more effective ways of mitigating these declines than the UK banning trophy imports.
334
335 The bill could also undermine conservation efforts that are supported by legal hunting for
336 trophies. More evidence is needed on the potential impacts of the bill (Supp. Material 4), but
337 it could reduce revenue for conservation areas that depend on hunting to support
338 management, including anti-poaching efforts, and thereby mitigate other threats to species. It
339 could have a negative, even devastating, impact on poor communities and indigenous peoples
340 locally who rely on legal hunting for trophies for both monetary and/or non-monetary
341 benefits (e.g., cash income, meat, and employment) (IUCN 2016a, Angula *et al.* 2018, Parker
342 *et al.* 2023). For example, in Namibia conservation hunting generated USD 1.3 million and
343 provided 326,000 kg of game meat in 2021, which were distributed to local residents
344 (MEFT/NACSO 2022). Ultimately, the bill could influence the viability of conservation areas
345 to conserve biodiversity (Lindsey *et al.* 2007, IUCN 2016a). For example, Tanzania
346 (Strampelli *et al.* 2022). In this context, the bill may contravene principles established under
347 the UK Environment Act (2021), specifically that UK policymaking should prevent
348 environmental harm. The bill could contribute to more harm than it prevents. There is also a
349 risk that the UK sets a precedent that other countries follow resulting in even greater harm.
350

351 The rationale for the bill is also to respond to the Government's hunting trophies consultation.
352 84% of respondents to the consultation indicated a preference to prohibit all hunting trophies
353 entering or leaving the UK (UK Government 2021b). However, 67% of responses were
354 linked to lobby group campaigns (UK Government 2021b), and another poll found that fewer
355 than half of Britons wanted a ban if it would harm conservation or local communities
356 (Survation 2021). In democratic societies public opinion should be considered in public
357 policymaking, but critically, it should not be decisive but interpreted with other evidence
358 using appropriate analytical capacity (Howlett *et al.* 2020). Many respondents to the
359 consultation appear strongly opposed to legal hunting for trophies, likely for animal rights
360 reasons and/or because they find it ethically unacceptable. This does not mean that
361 prohibiting imports of hunting trophies is the most appropriate policy. Our analyses indicate
362 that legal hunting for trophies does not contribute to any CITES-listed species imported to the
363 UK as hunting trophies in 2000-2021 being of elevated conservation concern. Thus, the bill is
364 disproportionate, but also unlikely to achieve its intended effects, and risks negative impacts
365 on wildlife and local communities.
366
367 In this context, and recognizing that legal hunting for trophies can benefit species but
368 conversely can have negative impacts if poorly regulated (IUCN 2012), what are alternative
369 policy options? We suggest four options (see also Supp. Material 5), which we argue are
370 more proportionate and targeted than prohibiting hunting trophy imports to the UK:
371
372 1. Do nothing. The UK could continue to implement the WTRs and EUWTRs (Northern
373 Ireland), ensuring that imports and exports of hunting trophies are based on robust NDFs and
374 legal acquisition findings.

2. Remove the personal effects derogation for Annex B species traded as hunting trophies. This would require import permits for all hunting trophies imported to the UK using CITES purpose code H enabling further assessment of sustainability, for example, based on requirements in CITES Resolutions on hunting trophies (Res. Conf. 17.9) and NDFs (Res. Conf. 16.7 [Rev. CoP17]).

3. Do not prohibit trophy imports but adopt EU-style "opinions" on such imports based on prevailing information about species, exporters, and potentially hunting operators, which could be updated periodically (see Supp. Material 5)

4. Implement a Smart ban (Webster *et al.* 2022), which would prohibit the import of hunting trophies from operators that fail to demonstrate an equitable sharing of hunting revenues with local communities, fail to establish and monitor sustainable hunting quotas, fail to invest in the conservation of wildlife and habitat, and/or fall short of established IUCN principles on legal hunting for trophies (IUCN 2012).

Public policy to address biodiversity loss requires context-specific solutions (Ostrom 2007, IPBES 2022). Our analyses suggest that the proposed ban on importing hunting trophies to the UK is disproportionate and may harm biodiversity. Crucially, the UK Government's impact assessment failed to adequately consider the likely impacts of this policy on local people outside of the UK who are expected to incur most of the costs. The UK Government may consider it disproportionate to evaluate such costs, but we argue that if the Government were serious about conserving biodiversity it would refrain from proposing oversimplistic policy solutions to complex biodiversity issues. We recommend that UK Government impact assessments concerning biodiversity internationally go beyond UK people and businesses and consider international impacts. This should involve consultation with relevant countries to examine the costs and benefits of policy options, which would help ensure that future policy

is appropriately evidence-based (Sutherland 2020), and has the greatest likelihood of benefitting biodiversity, while avoiding environmental and social harm.

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**Table 1. Top ten species imported to the UK as hunting trophies in 2000-2021, mean no. of trophies imported a year, WOEs imported, and mean WOEs imported a year.** Source: CITES Trade Database (2023). WOEs=Whole organism equivalent. BW=Botswana, CA=Canada, CM=Cameroon, MW=Malawi, MZ=Mozambique, NA=Namibia, TZ=United Republic of Tanzania, UG=Uganda, US=United States of America, ZA=South Africa, ZM=Zambia, ZW=Zimbabwe. CITES Purpose codes: W=taken from the wild, F=animals born in captivity, C=animals bred in captivity, and R=ranched specimens.

| Rank | Species | No. of trophies | Mean (±SD) no. trophies/year | WOE | Mean (±SD) WOE/year | Exporter(s) | Source(s) |
|---|---|---|---|---|---|---|---|
| 1 | African elephant *Loxodonta africana* | 538 | 24.45 ± 30.23 | 125 | 5.66 ± 5.08 | BW (166), ZW (162), ZA (114), TZ (56), MZ (23), NA (10), ZM (4), CM (3) | W (538) |
| 2 | American black bear *Ursus americanus* | 485 | 22.04 ± 17.78 | 307 | 13.95 ± 8.32 | CA (474), US (11) | W (485) |
| 3 | Common hippopotamus *Hippopotamus amphibius* | 318 | 14.45 ± 16.56 | 91 | 4.12 ± 3.49 | TZ (96), ZM (95), ZW (61), UG (31), ZA (30), MW (2), MZ (2), CM (1) | W (318) |
| 4 | Hartman's mountain zebra *Equus zebra hartmannae* | 260 | 11.81 ± 6.52 | 253 | 11.5 ± 6.48 | NA (219), ZA (41) | W (259), F (1) |
| 5 | Chacma baboon *Papio ursinus* | 250 | 11.36 ± 9.62 | 244 | 11.09 ± 9.39 | ZA (165), NA (48), ZW (34) BW (2), ZM (1) | W (250) |
| 6 | Lion* *Panthera leo* | 173 | 7.86 ± 5.97 | 162 | 7.35 ± 5.60 | ZA (100), TZ (28), ZW (17), NA (13), ZM (10), MZ (5) | W (89), C (83), F (1) |
| 7 | Caracal *Caracal caracal* | 159 | 7.22 ± 5.39 | 159 | 7.22 ± 5.39 | ZA (153), NA (6) | W (158), F (1) |
| 8 | Southern lechwe *Kobus leche* | 148 | 6.72 ± 4.76 | 148 | 6.72 ± 4.76 | ZA (81), ZM (36), BW (25), NA (6), | W (92), F (51), R (5) |
| 9 | Leopard *Panthera pardus* | 122 | 5.45 ± 3.76 | 117 | 5.31 ± 3.49 | ZW (36), NA (23), TZ (21), MZ (15), ZM (15), BW (7), ZA (5) | W (122), C (1), I (1) |
| 10 | Nile crocodile *Crocodylus niloticus* | 116 | 5.27 ± 5.34 | 102 | 4.63 ± 3.45 | ZA (43), ZW (32), ZM (19), TZ (11), MZ (9), NA (2) | W (112), C (4) |

*Imports from the wild involved 4.04 ± 6.03 trophies/year (3.54 ± 5.5 WOEs/year), imports from animals bred in captivity involved 8.42 ± 2.43 trophies/year (8.42 ± 2.43 WOEs/year) and imports from animals born in captivity involved 0.04 ± .021 trophies/year (0.04 ± .021 WOEs/year).

572 **Table 2. Top ten species imported to the UK as hunting trophies in 2015-2021, mean no. of trophies imported a year, WOEs imported,**
573 **and mean WOEs imported a year.** Source: CITES Trade Database (2023). WOEs=Whole organism equivalent. BW=Botswana, CA=Canada,
574 MZ=Mozambique, NA=Namibia, TZ=United Republic of Tanzania, ZA=South Africa, ZM=Zambia, ZW=Zimbabwe. CITES Purpose codes:
575 W=taken from the wild, F=animals born in captivity, C=animals bred in captivity, and R=ranched specimens.
576

| Rank | Species | No. of trophies | Mean (±SD) no. trophies/year | WOE | Mean (±SD) WOE/year | Exporter(s) | Source(s) |
|---|---|---|---|---|---|---|---|
| 1 | American black bear *Ursus americanus* | 167 | 23.85 ± 16.67 | 71 | 10.14 ± 6.33 | CA (167) | W (167) |
| 2 | Chacma baboon *Papio ursinus* | 105 | 15 ± 10.56 | 105 | 15 ± 10.56 | ZA (70), NA (20), ZW (14), ZM (1) | W (105) |
| 3 | African elephant *Loxodonta africana* | 93 | 13.28 ± 12.28 | 34 | 4.82 ± 3.36 | ZW (60), ZA (15), BW (5), MZ (5), NA (4), TZ (2), ZM (2) | W (93) |
| 4 | Hartman's mountain zebra *Equus zebra hartmannae* | 82 | 11.71 ± 6.47 | 75 | 10.71 ± 6.23 | NA (71), ZA (11) | W (82) |
| 5 | Lion* *Panthera leo* | 71 | 10.14 ± 4.29 | 69 | 9.85 ± 3.71 | ZA (61), NA (6), MZ (2), TZ (2) | W (12), C (59) |
| 6 | *Giraffe* *Giraffa camelopardalis* | 50 | 7.14 ± 11.17 | 25 | 3.57 ± 5.34 | ZA (43), ZW (5), NA (2) | W (50) |
| 7 | Southern lechwe *Kobus leche* | 45 | 6.42 ± 5.41 | 45 | 6.42 ± 5.41 | ZA (34), NA (6), ZM (5) | F (32), W (11), R (2) |
| 8 | Vervet monkey *Chlorocebus pygerythrus* | 45 | 6.42 ± 3.55 | 45 | 6.42 ± 3.55 | ZA (41), ZM (2), ZW (2) | W (43), R (2) |
| 9 | Nile crocodile *Crocodylus niloticus* | 44 | 6.28 ± 4.75 | 43 | 6.14 ± 4.37 | ZA (33), ZW (5), MZ (2), NA (2), TZ (2) | W (43), C (1) |
| 10 | Common hippopotamus *Hippopotamus amphibius* | 39 | 5.57 ± 5.56 | 19 | 2.64 ± 1.27 | ZW (15), ZM (12), ZA (8), TZ (4) | W (39) |

577 *Imports from the wild involved 1.71 ± 2.42 trophies/year (1.42 ± 1.71 WOEs/year) and imports from animals bred in captivity involved 8.42 ± 2.43 trophies/year (8.42 ±
578 2.43 WOEs/year).
579

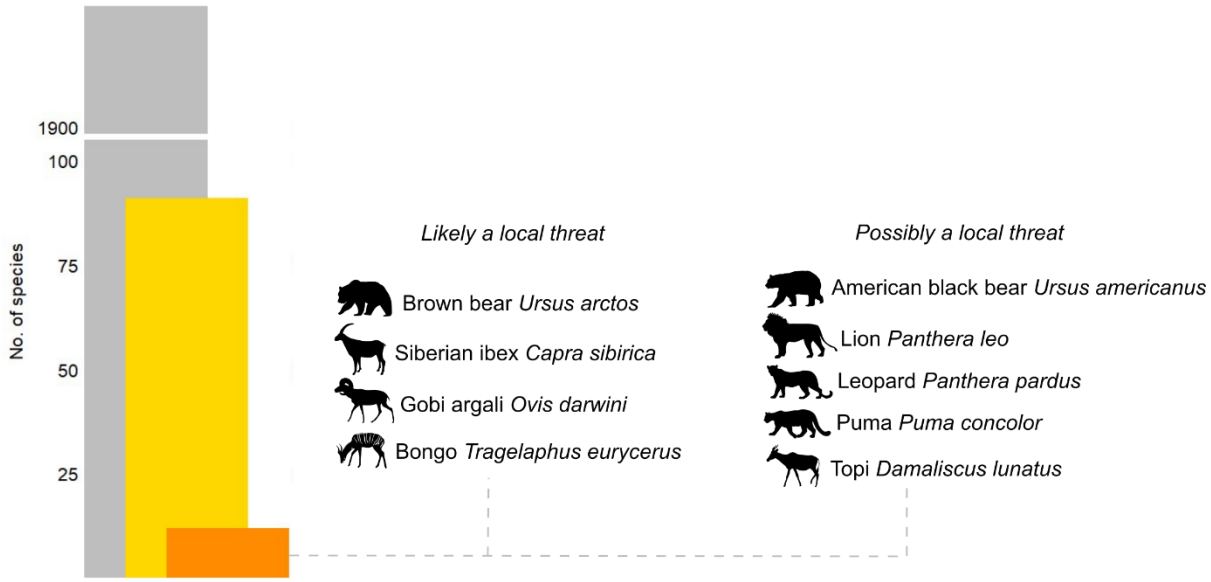


**Fig. 1 | Number of CITES-listed animal species imported to/exported from the UK for all purposes (2000-2021) (grey), number of these species imported to/exported from the UK as hunting trophies in the same period (yellow), and number of these species for which trophy hunting is likely or possibly a local threat but does not contribute to them being of elevated conservation concern (orange). Source: IUCN Red List.**

**Supplementary Material**

**Evaluating key evidence and formulating regulatory alternatives regarding the UK's Hunting Trophies (Import Prohibition) Bill**

## Supplementary Material 1 – Methods

### Analyzing international trade in hunting trophies of CITES-listed species

We downloaded CITES trade data on 22 March 2023 in the form of a comparative tabulation report for the period 2000-2021, recognizing that the latest year of complete data is expected to be 2021, i.e., two years prior to the current year (CITES Secretariat and UNEP-WCMC 2022). We downloaded data for all exporting countries with the UK as the importing country, including all sources, for the purpose of "hunting trophy" (purpose code H), and all trade terms and all taxa. We summarized direct trade using pivot tables in MS Excel and used exporter-reported quantities, precisely because they are often more complete (CITES Secretariat and UNEP-WCMC 2022), to estimate the number of hunting trophies that were exported to the UK or for which permits to do so were granted by exporting countries. This recognizes that exporter reported quantities may refer to permits issued rather than quantities of specimens exported. To estimate the number of hunting trophies in trade we used all trade terms (except "live") and units =blank and number of specimens but not others (gm and kg). We visually inspected the data and added small volumes of trade reported by importers to our summaries where such trade was evidently not reported by exporters being careful to avoid double counting (CITES Secretariat and UNEP-WCMC 2022). We also estimated the number of whole organism equivalents (WOEs) in trade as hunting trophies following Harfoot *et al.* (2018). This entailed converting products in trade to WOEs, for example 5 bodies represent 5 WOEs and 4 feet represent 1 mammal WOE (Table S1). To estimate WOEs we used only those terms included in Table S1 with unit =blank and number of specimens. Our analysis focuses on the species traded, number of trophies, WOEs, exporting countries, and the source

**Table S1. Conversion factors used to estimate WOEs for hunting trophies. Adapted from Harfoot *et al.* (2018).**

| Class | Term | Description | Factor to equate to WOE |
|---|---|---|---|
| Aves | BOD | Bodies | 1 |
| | SKE | Skeleton | 1 |
| | SKI | Skins | 1 |
| | SKU | Skulls | 1 |
| | TAI | Tails | 1 |
| | TRO | Trophies | 1 |
| Mammalia | BOD | Bodies | 1 |
| | FOO | Feet | 0.25 |
| | HOR | Horns | 1 |
| | SKE | Skeleton | 1 |
| | SKI | Skins | 1 |
| | SKU | Skulls | 1 |
| | TAI | Tail | 1 |
| | TEE | Teeth – *Hippopotamus amphibius* only | 0.083 |
| | TRO | Trophies | 1 |
| | TUS | Tusks – *Loxodonta africana* only | 0.532 |
| Reptilia | BOD | Bodies | 1 |
| | CAR | Carapace | 1 |
| | FOO | Feet | 0.25 |
| | SKE | Skeleton | 1 |
| | SKI | Skins | 1 |
| | SKU | Skulls | 1 |
| | TRO | Trophies | 1 |

of specimens (e.g., taken from the wild). To calculate the means and standard deviation for trade in species over time we imported subsets of the data into RStudio Version 1.4.1717.

We repeated the above process for exports of hunting trophies from the UK, downloading data on 7 April 2023 using the same terms as above but with the UK as the exporting country and all other countries as importers. We also repeated the process to estimate WOEs.

To contextualize the UK's role in international trade in hunting trophies of CITES-listed species, we downloaded a comparative tabulation report on 30 April 2023 for 2000-2021 including all exporting and importing countries, all sources, for the purpose of hunting trophies (purpose code H), and all trade terms and taxa. As previously described, we summarized direct trade in the number of hunting trophies based on exporter-reported

quantities using pivot tables in MS Excel but excluding trade using the term “live”. We calculated WOEs for this trade using the terms in Table S1 and units =blank, number of specimens, belly skins, and hornback skins. We subsequently ranked importers and exporters based on reported trade volumes using number of trophies. All our analyses focus on direct trade only because it comprises the majority of trade by volume in the datasets.

To contextualize the number of CITES-listed species imported to/exported from the UK as hunting trophies among animal species traded for other purposes, including associated trade volumes, we downloaded two comparative tabulation reports on 4 May 2023. The first comprised data on all exporting countries with the UK as the importing country, including all sources, purposes, trade terms, and taxa for the period 2000-2021. The second included the same terms but with the UK as the exporter and all other countries as importers. We then calculated the number of species imported to/exported from the UK for the periods 2000-2021 and 2015-2021. To estimate trade volumes we calculated the number of WOEs imported to and exported from the UK for different purposes using the terms in Table S2 and units =blank and number of specimens and then totaled imports and exports as appropriate. To estimate WOEs for trade in pets, we used purpose codes P (personal) and B (breeding in captivity), the terms live, eggs, and eggs-live, and units=blank and number of specimens.

We determined the population status (increasing, decreasing, stable, unknown, or similar) of each species exported to the UK as hunting trophies in the period 2015-2021 by reviewing the available information for each exporting country in the global IUCN Red List assessment for each taxon (using Red List version 2022-2) and/or regional assessments where they were available. We then calculated the proportion of trade (and number of trophies) sourced from countries in which populations of these species are stable, increasing, abundant, or similar.

**Table S2. Conversion factors to estimate WOEs adapted from Harfoot *et al.* (2018).**

| Class | Term | Description | Factor to equate to WOE |
|---|---|---|---|
| Actinopteri | BOD | Bodies | 1 |
| | FIG | Fingerlings | 1 |
| | LIV | Live | 1 |
| | SKE | Skeleton | 1 |
| | SKI | Skins | 1 |
| Amphibia | BOD | Bodies | 1 |
| | LIV | Live | 1 |
| | SKI | Skins | 1 |
| Anthozoa | LIV | Live | 1 |
| | COR | Raw Corals | 1 |
| Arachnida | LIV | Live | 1 |
| Aves | BOD | Bodies | 1 |
| | LIV | Live | 1 |
| | SKI | Skins | 1 |
| | SKU | Skulls | 1 |
| | TRO | Trophies | 1 |
| Bivalvia | BOD | Bodies | 1 |
| | LIV | Live | 1 |
| | SHE | Shells | 1 |
| Cephalopod | SHE | Shells | 1 |
| Dipneusti | BOD | Bodies | 1 |
| | LIV | Live | 1 |
| Elasmobranchii | BOD | Bodies | 1 |
| | FIN | Fins | 1 |
| | LIV | Live | 1 |
| | SKE | Skeleton | 1 |
| | SKI | Skins | 1 |
| | SKU | Skulls | 1 |
| Hirudinoidea | LIV | Live | 1 |
| Hydrozoa | LIV | Live | 1 |
| | COR | Raw corals | 1 |
| Insecta | LIV | Live | 1 |
| Mammalia | BOD | Bodies | 1 |
| | FOO | Feet | 0.25 |
| | HOR | Horns | 1 |
| | LIV | Live | 1 |
| | SKE | Skeleton | 1 |
| | SKI | Skins | 1 |
| | SKU | Skulls | 1 |
| | TAI | Tail | 1 |
| | TEE | Teeth (*Hippopotamus amphibius* only) | 0.083 |
| | TRO | Trophies | 1 |
| | TUS | Tusks | 0.532 |
| Reptilia | BOD | Bodies | 1 |
| | CAR | Carapace | 1 |
| | FOO | Feet | 0.25 |
| | HEA | Head | 1 |
| | LIV | Live | 1 |
| | SKE | Skeleton | 1 |
| | SKI | Skins | 1 |
| | SKU | Skulls | 1 |
| | TRO | Trophies | 1 |

**Trophy hunting as a contributor to elevated conservation concern**

For species directly imported to/exported from the UK as hunting trophies in the period 2000-2021[1], we built a MS Excel database and populated it with data from the IUCN Red List assessments for these species (using Red List version 2022-2) and Species+ (UNEP 2023) for information on the CITES Appendix in which these species are included or if they are not listed under the Convention. The database contains the following fields: class, common name, scientific name, CITES Appendix, date of last assessment, Red List Threat Category, population size, population trend, and whether intentional hunting of the species is a current threat (yes/no) based on the threat codes 5.1.1. (Hunting & collecting terrestrial animals → Intentional use (species being assessed is the target)), 5.4.1. (Fishing & harvesting aquatic resources → Intentional use: subsistence/small scale (species being assessed is the target)), and/or 5.4.2. (Fishing & harvesting aquatic resources → Intentional use: large scale (species being assessed is the target)) having been coded in assessments and/or the accompanying narrative in the threats field of assessments. We also included a field for which of these threat codes had been applied (e.g., 5.1.1.) and the timing of those threats (e.g., past or ongoing).

To determine whether trophy hunting is i) likely a major threat contributing to species being of elevated conservation concern (i.e., to a species meeting, or approximating, the thresholds for listing in any of categories NT [Near Threatened], VU [Vulnerable], EN [Endangered], CR [Critically Endangered] or EW [Extinct in the Wild], as defined by IUCN), ii) likely or possibly causing localized declines, or iii) not a threat to species we read the narrative text in the threats field of each assessment and the Red List justification of each assessment. We interpreted this information with available information on the aforementioned coded threats,

[1] This excludes the Javan langur (*Trachypithecus auratus*) (2 live animals exported to South Africa in 2002) and the tiger (*Panthera tigris*) (1 pre-Convention [source code O] skin exported to Mexico in 2019).

including the timing (e.g., past or ongoing), scope (e.g., minority of the population), and severity (e.g., causing [population] fluctuations or rapid declines) of these threats (where these data were available), to assist in distinguishing between major and minor threats (IUCN 2016). For more information on how the Red List generally defines major threats see IUCN (2023). Our aim was to establish if one or more forms of intentional use is contributing to species being of elevated conservation concern and whether trophy hunting is a significant driver of this threat. We also read the Use and Trade field of assessments for additional context and information on how species are used and/or traded to inform decision-making: the Use and Trade Classification Scheme includes a specific category ("Sport hunting/specimen collecting") which provided a helpful counter-check, noting that there is no direct relation between the use and trade scheme and the threat scheme (i.e., the Use and Trade classification scheme is intended to document use at any level whether a threat or not). The categorization of species was undertaken by one author but to ensure accurate interpretation of the information, the results were discussed with and/or checked by three other authors.

We categorised species as "yes" for whether trophy hunting is likely a major threat contributing to species being of elevated conservation concern where the available evidence indicates that a species has intentional use as a major threat (based on the threats narrative and/or the aforementioned coded threats, including timing, scope and severity), and the threats narrative indicates that trophy hunting (as defined – see main text) is currently a primary factor driving this threat. Where this was not the case, we categorised species as "no". For species categorised as "no", and using the aforementioned information, we then categorised these taxa based on whether there is evidence indicating that trophy hunting is *likely* (i.e., more likely than not) or *possibly* (i.e., stated but uncertain, e.g., "may be" or

724 “potentially” or similar) causing localized declines but it is not a major threat, i.e., not
725 contributing to species being of elevated conservation concern. For species that did not meet
726 either of these criteria, we did not consider them to be threatened by trophy hunting at any
727 level.
728
729 As examples, the giraffe (*Giraffa camelopardalis*) was categorised as “no” for whether
730 trophy hunting is likely a major threat contributing to the species being listed as Vulnerable
731 because while intentional use is a major threat, there is no evidence that this is driven by
732 trophy hunting; indeed, the Red List account makes it clear that the threat is illegal hunting.
733 The Gobi argali (*Ovis darwini*) was categorised as “Likely” for whether trophy hunting is a
734 localized threat because this is stated in the threats narrative in the assessment for this taxon.
735 The lion (*Panthera leo*) was categorised as “Possibly” for whether trophy hunting is a
736 localized threat because the narrative text in the assessment states that trophy hunting “may
737 have at times” contributed to population declines.
738
739 Recognizing that trophy hunting can provide benefits to species and local people, including
740 by contributing to biodiversity being a competitive land use option, in our database we also
741 recorded whether the Red List assessments for species referred to such benefits to inform our
742 discussion. To do so we also read the Conservation Actions section of assessments, and
743 considered species to benefit where this was stated in the selected sections of assessments.
744
745 Finally, we acknowledge that there are limitations to using Red List data to document
746 whether species are used and/or traded, and whether species are threatened by such use
747 and/or trade. These limitations have been extensively discussed and elaborated upon
748 elsewhere for similar purposes (Challender *et al.* 2022, in press; Marsh *et al.* 2022), but can

broadly be categorised as 1) assessments need updating (i.e., older than 10 years), 2) missing information due to information on the use and trade of species being recommended for completion by assessors rather than mandatory, and 3) biases in taxonomic groups that have been assessed for the Red List.

For this study specifically, we acknowledge that our assessment of the degree to which trophy hunting is a major threat or not is based on a direct interpretation of information contained in the IUCN Red List which may not be current or complete. As such we cannot, and do not purport to, definitively state that trophy hunting is not a major threat to any species but based on best available data in the Red List, this does not currently appear to be the case. We also note that for the 93 species in our dataset only one Red List account (Collared peccary *Pecari tajacu*) is outdated though 12 assessments were conducted in 2014 and 8 in 2015.

**Evaluating the UK Government's impact assessment of the proposed bill**

Regulatory proposals in the UK are accompanied by impact assessments, which evaluate the likely associated risks, costs, and benefits of proposed regulation, and impacts on businesses, charities and voluntary organisations, the public sector, and individuals (Regulatory Policy Committee, n.d.). Assessments are based on the ROAMEF policy cycle (Rationale, Objectives, Appraisal, Monitoring, Evaluation, and Feedback) and use cost-benefit analyses (Department for Business, Energy and Industrial Strategy, 2020). Guidance is provided to government departments on conducting impact assessments through the Better Regulation Framework (Department for Business, Energy and Industrial Strategy, 2020) and HM Treasury's Green Book - Central Government Guidance on Appraisal and Evaluation (hereafter "Green Book"; UK Government 2022).

Impact assessments should clearly explain the issue the government is trying to tackle, how they intend to tackle it, and what the effects of proposals will be (Department for Business, Energy and Industrial Strategy, 2020). The Better Regulation Framework and Green Book detail how to appraise potential policy options, including associated justification, and how to make the case for preferred policy options. Key considerations include that policy development should be based on objective evidence; assumptions, where needed, are reasonable and justified by transparent reference to the research on which they are based; that risks associated with the regulation are understood; and, that policy development should consider the impact of proposed regulation on specific groups in society, places, or businesses, including unintended consequences. Where effects of regulation are significant for particular groups, analysis identifying gaining and losing groups and estimates of the effects should be undertaken. The Green Book also states that impacts on natural capital should be considered, including explicit consideration of wildlife and the provision of ecosystem services. The principal focus of risk assessments is impacts in the UK but the Green Book states that it is sometimes reasonable to consider the costs and benefits to people living outside the UK, and where appraisal of Official Development Assistance (ODA) is concerned, this should include the costs and benefits to the recipient countries.

Based on the estimated equivalent annual net direct cost to business (EANDCB) different types of impact assessment are required (Department for Business, Energy and Industrial Strategy, 2020). If the proposed regulation involves EANDCB of £±5 million, full impact assessments are required, adhering to the aforementioned guidance, and scrutiny by the Regulatory Policy Committee (RPC) is required. In circumstances where the EANDCB of proposed regulation is <£5 million, only a proportionate analysis is required (Department for Business, Energy and Industrial Strategy, 2020). The RPC is an independent regulatory body

for the UK Government, which assesses the quality of evidence and analysis used to inform qualifying government regulatory proposals based on the aforementioned guidance but does not provide opinions on policies themselves (Regulatory Policy Committee, n.d.). On evaluating impact assessments, the RPC formally rates them as green (=fit for purpose) or red (=not fit for purpose). Fit for purpose impact assessments are those where there are no significant concerns over the quality of the assessment or there are minor issues that could be improved. Impact assessments that are not fit for purpose, are those where there are major concerns over the quality of the evidence and analysis and the overall quality of the assessment. The RPC recently introduced quality indicators, ranging from *very weak* to *good*, based on a range of criteria, and covering key areas of impact assessments (e.g., "rationale and options") but which are not formally rated (Regulatory Policy Committee 2021).

For proportionate analysis of regulatory impact assessments, guidance indicates that the level of analysis should be proportionate to the problem the regulation is addressing and reflect the scale or impact of the measure(s) (Department for Business, Energy and Industrial Strategy, 2020). This includes proportionate cost-benefit analysis to inform decision-making. For proportional analyses, scrutiny of impact assessments by the RPC is optional.

Using the RPC's quality indicators (Table S3), we evaluated the UK Government's regulatory impact assessment of the Hunting Trophies (Import Prohibition) Bill. The impact assessment for this bill did not qualify for, and was not, scrutinized by the RPC. Guidance on conducting impact assessments states that assessments should focus on the UK but may at times focus on costs and benefits outside of the country. As such we evaluated the impact assessment considering costs and benefits both within and outside of the UK, recognizing the international nature of trade in hunting trophies of CITES-listed species. This decision was

informed by an initial read of the impact assessment prior to analysis, which indicated that such impacts had, at least, been acknowledged. We evaluated each section (policy rationale, costs and benefits, risks and unintended consequences, wider impacts, and post implementation review) by reading it carefully and noting both positive and negative aspects with reference to the criteria (Table S3). We did not provide an overall rating for the assessment. Finally, recognizing calls for researchers to reflect on their position in research (Blair, 2016), we recognize that as an author group, we have engaged in research and policy formulation relating to wildlife management, including trophy hunting specifically, for periods of up to several decades each and therefore have familiarity with the subject area.

836 **Table S3. Quality indicators used to evaluate the impact assessment for the Hunting**
837 **Trophies (Import Prohibition) Bill. Source: Regulatory Policy Committee (2021).**
838

| Quality indicator | Criteria |
|---|---|
| Good | Addresses the issue well. The analysis is sufficiently robust and addresses the issue properly. The analysis is based on good to high-quality, proportionate evidence and uses appropriate assumptions. It could be improved only in minor areas (if at all) and provides good support for decision-making on these aspects of the assessment. |
| Satisfactory | Addresses the issue adequately. The analysis is considered satisfactory. The analysis is based on adequate, proportionate evidence and uses appropriate assumptions. Some improvements could be made, but it provides sufficient support for decision-making on these aspects of the assessment. |
| Weak | Weak analysis of the issue. The analysis is not sufficiently robust to address the issue. Improvements are required in one or a number of areas. It provides inadequate support for decision-making on these aspects of the assessment. |
| Very weak | Very weak analysis of the issue. The analysis is poor and has significant flaws. Significant improvements are required in one or a number of areas. It provides inadequate support decision-making on these aspects of the assessment. |

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## Supplementary Material 2 – Results – International trade in hunting trophies

**Table S4. Top 20 exporters of hunting trophies from CITES-listed species (2000-2021) based on number of trophies.**

| Rank | Exporter | Estimated number of hunting trophies |
|---|---|---|
| 1 | Canada | 140,954 |
| 2 | South Africa | 132,341 |
| 3 | Mexico | 82,568 |
| 4 | Namibia | 45,715 |
| 5 | Zimbabwe | 35,321 |
| 6 | Bulgaria | 33,155 |
| 7 | Zambia | 29,109 |
| 8 | Tanzania | 21,092 |
| 9 | Botswana | 19,190 |
| 10 | Russian Federation | 13,696 |
| 11 | Mexico | 10,789 |
| 12 | Argentina | 7921 |
| 13 | United States | 3972 |
| 14 | Cameroon | 2795 |
| 15 | Kyrgyzstan | 2595 |
| 16 | Romania | 2330 |
| 17 | Central African Republic | 1737 |
| 18 | Mongolia | 1550 |
| 19 | United Kingdom | 968 |
| 20 | Pakistan | 801 |

865 **Table S5. Top 20 importers of hunting trophies from CITES-listed species (2000-2021)**
866 **based on number of trophies.**

| Rank | Importer | Estimated number of hunting trophies |
|---|---|---|
| 1 | United States | 247,353 |
| 2 | China | 41,303 |
| 3 | Italy | 32,646 |
| 4 | South Africa | 32,371 |
| 5 | Spain | 25,771 |
| 6 | Germany | 24,624 |
| 7 | Singapore | 19,829 |
| 8 | France | 18,885 |
| 9 | Denmark | 9349 |
| 10 | Greece | 9085 |
| 11 | Zimbabwe | 8714 |
| 12 | Mexico | 8638 |
| 13 | Japan | 8616 |
| 14 | Austria | 8368 |
| 15 | Norway | 8171 |
| 16 | Slovakia | 8145 |
| 17 | Russian Federation | 7366 |
| 18 | Canada | 6949 |
| 19 | Sweden | 5633 |
| 20 | Republic of Korea | 5530 |

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**Table S6. Top 20 exporters of hunting trophies from CITES-listed species (2015-2021) based on number of trophies.**

| Rank | Exporter | Estimated number of hunting trophies |
|---|---|---|
| 1 | South Africa | 53,304 |
| 2 | Mozambique | 47,602 |
| 3 | Canada | 36,530 |
| 4 | Namibia | 16,433 |
| 5 | Zambia | 14,380 |
| 6 | Zimbabwe | 11,924 |
| 7 | Mexico | 4682 |
| 8 | Tanzania | 2884 |
| 9 | Argentina | 2554 |
| 10 | Kyrgyzstan | 2073 |
| 11 | Russian Federation | 1857 |
| 12 | United States | 1458 |
| 13 | Türkiye | 590 |
| 14 | Botswana | 457 |
| 15 | Mongolia | 414 |
| 16 | Pakistan | 381 |
| 17 | Cameroon | 315 |
| 18 | Ethiopia | 222 |
| 19 | North Macedonia | 123 |
| 20 | Tajikistan | 120 |

**Table S7. Top 20 importers of hunting trophies from CITES-listed species (2015-2021) based on number of trophies.**

| Rank | Importer | Estimated number of hunting trophies |
|---|---|---|
| 1 | United States | 74,107 |
| 2 | China | 39,791 |
| 3 | South Africa | 10,524 |
| 4 | Slovakia | 6794 |
| 5 | Germany | 6501 |
| 6 | Kyrgyzstan | 5391 |
| 7 | Singapore | 5188 |
| 8 | Japan | 4632 |
| 9 | Spain | 4092 |
| 10 | France | 3111 |
| 11 | Denmark | 2991 |
| 12 | Canada | 2987 |
| 13 | Russian Federation | 2943 |
| 14 | Italy | 2737 |
| 15 | Sweden | 2464 |
| 16 | Austria | 2421 |
| 17 | Mexico | 2316 |
| 18 | Norway | 2066 |
| 19 | Hungary | 1922 |
| 20 | Zimbabwe | 1764 |

**Table S8. Species and subspecies imported to the UK as hunting trophies (2000-2021), estimated number of trophies, mean (± SD) number of trophies traded/year, WOEs traded in this period, and mean (± SD) WOEs traded in this period/year, ranked by number of trophies.**

| Rank | Common name | Scientific name | Estimated trophies | Mean ± SD | WOE | WOE (mean ± SD) |
|---|---|---|---|---|---|---|
| 1 | African elephant | *Loxodonta africana* | 538 | 24.45 ± 30.23 | 125 | 5.66 ± 5.08 |
| 2 | American black bear | *Ursus americanus* | 485 | 22.04 ± 17.78 | 307 | 13.95 ± 8.32 |
| 3 | Common hippopotamus | *Hippopotamus amphibius* | 318 | 14.45 ± 16.56 | 91 | 4.12 ± 3.49 |
| 4 | Hartmann's mountain zebra | *Equus zebra hartmannae* | 260 | 11.81 ± 6.52 | 253 | 11.5 ± 6.48 |
| 5 | Chacma baboon | *Papio ursinus* | 250 | 11.36 ± 9.62 | 244 | 11.09 ± 9.39 |
| 6 | Lion* | *Panthera leo* | 173 | 7.86 ± 5.97 | 162 | 7.35 ± 5.60 |
| 7 | Caracal | *Caracal caracal* | 159 | 7.22 ± 5.39 | 159 | 7.22 ± 5.39 |
| 8 | Southern lechwe | *Kobus leche* | 148 | 6.72 ± 4.76 | 148 | 6.72 ± 4.76 |
| 9 | Leopard | *Panthera pardus* | 122 | 5.45 ± 3.76 | 117 | 5.31 ± 3.49 |
| 10 | Nile crocodile | *Crocodylus niloticus* | 116 | 5.27 ± 5.34 | 102 | 4.63 ± 3.45 |
| 11 | Grey wolf | *Canis lupus* | 100 | 4.54 ± 9.74 | 52 | 2.36 ± 2.17 |
| 12 | Brown bear | *Ursus arctos* | 99 | 4.5 ± 3.71 | 99 | 4.5 ± 3.71 |
| 13 | Vervet monkey | *Chlorocebus pygerythrus* | 79 | 3.59 ± 3.94 | 79 | 3.59 ± 3.94 |
| 14 | Hamadryas baboon | *Papio hamadryas* | 75 | 3.4 ± 4.99 | 74 | 3.36 ± 4.94 |
| 15 | Giraffe | *Giraffa camelopardalis* | 50 | 2.27 ± 6.87 | 25 | 1.13 ± 3.32 |
| 16 | Topi | *Damaliscus lunatus* | 43 | 1.95 ± 3.52 | 43 | 1.95 ± 3.52 |
| 17 | Grivet monkey | *Chlorocebus aethiops* | 42 | 1.9 ± 3.08 | 42 | 1.9 ± 3.08 |
| 18 | Bontebok | *Damaliscus pygargus pygargus* | 41 | 1.86 ± 2.18 | 41 | 1.86 ± 2.18 |
| 19 | Afro-Asiatic wildcat | *Felis silvestris* | 38 | 1.72 ± 2.76 | 38 | 1.72 ± 2.76 |
| 20 | Blackbuck | *Antilope cervicapra* | 28 | 1.27 ± 1.57 | 28 | 1.27 ± 1.57 |
| 21 | Yellow baboon | *Papio cynocephalus* | 25 | 1.13 ± 1.95 | 25 | 1.13 ± 1.95 |
| 22 | Southern white rhino | *Ceratotherium simum simum* | 22 | 1 ± 1.66 | 16 | 0.72 ± 1.12 |
| 23 | African civet | *Civettictis civetta* | 22 | 1 ± 1.15 | 22 | 1 ± 1.15 |
| 24 | Puma | *Puma concolor* | 21 | 0.95 ± 1.29 | 21 | 0.95 ± 1.29 |
| 25 | Serval | *Leptailurus serval* | 20 | 0.9 ± 1.06 | 20 | 0.9 ± 1.06 |

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|---|---|---|---|---|---|---|
| 26 | Siberian ibex | *Capra sibirica* | 19 | 0.86 ± 2 | 19 | 0.86 ± 2 |
| 27 | Blue duiker | *Philantomba monticola* | 17 | 0.77 ± 1.34 | 16 | 0.72 ± 1.24 |
| 28 | Maxwell's duiker | *Philantomba maxwellii* | 16 | 0.72 ± 1.3 | 16 | 0.72 ± 1.3 |
| 29 | Egyptian goose | *Alopochen aegyptiaca* | 15 | 0.68 ± 1.32 | 15 | 0.68 ± 1.32 |
| 30 | Scimitar-horned oryx | *Oryx dammah* | 13 | 0.59 ± 1 | 13 | 0.59 ± 1 |
| 31 | Polar bear | *Ursus maritimus* | 12 | 0.54 ± 0.96 | 11 | 0.5 ± 0.85 |
| 32 | Aoudad | *Ammotragus lervia* | 12 | 0.54 ± 0 .73 | 12 | 0.54 ± 0 .73 |
| 33 | Olive baboon | *Papio anubis* | 11 | 0.5 ± 0.8 | 11 | 0.5 ± 0.8 |
| 34 | Spur-winged goose | *Plectropterus gambensis* | 10 | 0.45 ± 0.85 | 10 | 0.45 ± 0.85 |
| 35 | Cheetah | *Acinonyx jubatus* | 8 | 0.36 ± 0.72 | 7 | 0.36 ± 0.56 |
| 36 | Honey badger | *Mellivora capensis* | 8 | 0.36 ± 0.65 | 8 | 0.36 ± 0.65 |
| 37 | Markhor | *Capra falconeri* | 8 | 0.36 ± 0.58 | 8 | 0.36 ± 0.58 |
| 38 | Wild goat | *Capra hircus aegagrus* | 7 | 0.31 ± 0.71 | 7 | 0.31 ± 0.71 |
| 39 | Bighorn sheep | *Ovis canadensis* | 5 | 0.22 ± 0.52 | 5 | 0.22 ± 0.52 |
| 40 | American alligator | *Alligator mississippiensis* | 4 | 0.18 ± 0.5 | 4 | 0.18 ± 0.5 |
| 41 | Argali | *Ovis ammon* | 4 | 0.18 ± 0.39 | 4 | 0.18 ± 0.39 |
| 42 | Canada lynx | *Lynx canadensis* | 3 | 0.13 ± 0.46 | 3 | 0.13 ± 0.46 |
| 43 | Blesbok | *Damaliscus pygargus* | 3 | 0.13 ± 0.46 | 3 | 0.13 ± 0.46 |
| 44 | Gobi argali | *Ovis darwini* | 3 | 0.13 ± 0.46 | 3 | 0.13 ± 0.46 |
| 45 | Urial† | *Ovis aries* | 3 | 0.13 ± 0.35 | 3 | 0.13 ± 0.35 |
| 46 | Sitatunga | *Tragelaphus spekii* | 2 | 0.09 ± 0.42 | 2 | 0.09 ± 0.42 |
| 47 | Bay duiker | *Cephalophus dorsalis* | 2 | 0.09 ± 0.42 | 2 | 0.09 ± 0.42 |
| 48 | Blue sheep | *Pseudois nayaur* | 2 | 0.09 ± 0.42 | 2 | 0.09 ± 0.42 |
| 49 | Eurasian lynx | *Lynx lynx* | 2 | 0.09 ± 0.29 | 2 | 0.09 ± 0.29 |
| 50 | Bobcat | *Lynx rufus* | 2 | 0.09 ± 0.29 | 2 | 0.09 ± 0.29 |
| 51 | Walrus | *Odobenus rosmarus* | 2 | 0.09 ± 0.29 | 1 | 0.04 ± 0.21 |
| 52 | Western tur | *Capra caucasica* | 2 | 0.09 ± 0.29 | 2 | 0.09 ± 0.29 |
| 53 | Bongo | *Tragelaphus eurycerus* | 2 | 0.09 ± 0.29 | 2 | 0.09 ± 0.29 |
| 54 | Cape mountain zebra | *Equus zebra zebra* | 2 | 0.09 ± 0.29 | 2 | 0.09 ± 0.29 |
| 55 | Central African rock python | *Python sebae* | 2 | 0.09 ± 0.29 | 2 | 0.09 ± 0.29 |
| 56 | White-faced whistling duck | *Dendrocygna viduata* | 2 | 0.09 ± 0.29 | 2 | 0.09 ± 0.29 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 57 | Common jackal | *Canis aureus* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 58 | Striped hyena | *Hyaena hyaena* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 59 | North American river otter | *Lontra canadensis* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 60 | Aardwolf | *Proteles cristata* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 61 | Addax | *Addax nasomaculatus* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 62 | Hog deer | *Axis porcinus* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 63 | Wood bison | *Bison bison athabascae* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 64 | Nilgai | *Boselaphus tragocamelus* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 65 | Dama gazelle | *Nanger dama* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 66 | Arabian oryx | *Oryx leucoryx* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 67 | Collared peccary | *Pecari tajacu* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 68 | Blue monkey | *Cercopithecus mitis* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 69 | Guereza | *Colobus guereza* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 70 | Gelada baboon | *Theropithecus gelada* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 71 | Black rhino | *Diceros bicornis* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 72 | Bald eagle | *Haliaeetus leucocephalus* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| 73 | Maro Polo argali | *Ovis polii* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |

*For lion, trophies sourced from the wild totaled 89 (4.04 ± 6.03 trophies/year; 3.54 ± 5.5 WOEs/year), trophies sourced from animals bred in captivity totaled 59 (8.42 ± 2.43 trophies/year; 8.42 ± 2.43 WOEs/year) and trophies sourced from animals born in captivity totaled 1 (0.04 ± .021 trophies/year; 0.04 ± .021 WOEs/year).
†We include *Ovis aries* in this table but in table S12 refer to two species: mouflon (*O. gmelini*) and urial (*O. vignei*) following taxonomic updates on the IUCN Red List.

**Table S9. Species exported from the UK as hunting trophies (2000-2021), estimated number of trophies, mean (± SD) number of trophies trade/year, WOEs traded in this period, and mean (± SD) WOEs traded in this period/year, ranked by number of trophies.**

| Class | Rank | Common name | Scientific name | Estimated trophies | Mean ± SD | WOE | WOE (mean ± SD) |
|---|---|---|---|---|---|---|---|
| Aves | 1 | Comon teal | *Anas crecca* | 287 | 13.04 ± 45.66 | 287 | 13.04 ± 45.66 |
| | 2 | Eurasian wigeon | *Anas penelope* | 238 | 10.81 ± 42.99 | 239 | 10.81 ± 42.99 |
| | 3 | Northern shoveler | *Anas clypeata* | 213 | 9.68 ± 43.41 | 213 | 9.68 ± 43.41 |
| | 4 | Northern pintail | *Anas acuta* | 207 | 9.4 ± 42.80 | 207 | 9.4 ± 42.80 |
| | 5 | Black stork | *Ciconia nigra* | 2 | 0.09 ± 0.42 | 2 | 0.09 ± 0.42 |
| | 5 | Common pigeon/rock dove | *Columba livia* | 2 | 0.09 ± 0.42 | 2 | 0.09 ± 0.42 |
| | 6 | White-chested emerald | *Amazilia brevirostris* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| | 6 | Garganey | *Anas querquedula* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| | 6 | Buzzard | *Buteo buteo* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| | 6 | Black-eared fairy | *Heliothryx auritus* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| | 6 | Red-tailed comet | *Sappho sparganura* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| | 6 | Kakapo | *Strigops habroptila* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| | 6 | Barred owl | *Strix varia* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| | 6 | Fork-tailed woodnymph | *Thalurania furcata* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| | 6 | Peruvian sheartail | *Thaumastura cora* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| | 6 | Crimson topaz | *Topaza pella* | 1 | 0.04 ± 0.21 | 1 | 0.04 ± 0.21 |
| Mammals* | 1 | Hog deer | *Axis porcinus* | 5 | 0.22 ± 0.52 | 5 | 0.22 ± 0.52 |
| | 1 | Swamp deer | *Rucervus duvaucelii* | 4 | 0.18 ± 0.5 | 4 | 0.18 ± 0.5 |

*Excludes 2 live Javan langurs (*Trachypithecus auratus*) exported to South Africa in 2002 and 1 pre-Convention (source code O) tiger (*Panthera tigris*) skin exported to Mexico in 2019.

N.B. Exports of hunting trophies from the UK involved only 17 trophies in 2015-2021. They have not been tabulated but included the following: 5 *A. porcinus* trophies (as per Table S9), 4 of which were from captive sources (source code C) and 1 was a previously seized trophy (source code I); 3 *R. duvaucelli* trophies all from captive sources (source code C), 2 trophies from *C. nigra* (source code W) and single trophies from *A. brevirostris*, *H. auratus*, *S. sparganura*, *S. habroptila*, *T. cora, T. furcate*, and *T. pella* (source code O, pre-Convention) as per Table S9.

**Table S10. Species and subspecies imported to the UK as hunting trophies (2015-2021), estimated number of trophies, mean (± SD) number of trophies traded/year, WOEs traded in this period, and mean (± SD) WOEs traded in this period/year, ranked by number of trophies.**

| Rank | Common name | Scientific name | Estimated trophies | Mean ± SD | WOE | WOE (mean ± SD) |
|---|---|---|---|---|---|---|
| 1 | American black bear | *Ursus americanus* | 167 | 23.85 ± 16.67 | 71 | 10.14 ± 6.33 |
| 2 | Chacma baboon | *Papio ursinus* | 105 | 15 ± 10.56 | 105 | 15 ± 10.56 |
| 3 | African elephant | *Loxodonta africana* | 93 | 13.28 ± 12.28 | 34 | 4.82 ± 3.36 |
| 4 | Hartmann's mountain zebra | *Equus zebra hartmannae* | 82 | 11.71 ± 6.47 | 75 | 10.71 ± 6.23 |
| 5 | Lion* | *Panthera leo* | 71 | 10.14 ± 4.29 | 69 | 9.85 ± 3.71 |
| 6 | Giraffe | *Giraffa camelopardalis* | 50 | 7.14 ± 11.17 | 25 | 3.57 ± 5.34 |
| 7 | Southern lechwe | *Kobus leche* | 45 | 6.42 ± 5.41 | 45 | 6.42 ± 5.41 |
| 8 | Vervet monkey | *Chlorocebus pygerythrus* | 45 | 6.42 ± 3.55 | 45 | 6.42 ± 3.55 |
| 9 | Nile crocodile | *Crocodylus niloticus* | 44 | 6.28 ± 4.75 | 43 | 6.14 ± 4.37 |
| 10 | Common hippopotamus | *Hippopotamus amphibius* | 39 | 5.57 ± 5.56 | 19 | 2.64 ± 1.27 |
| 11 | Caracal | *Caracal caracal* | 36 | 5.14 ± 4.45 | 36 | 5.14 ± 4.45 |
| 12 | Leopard | *Panthera pardus* | 26 | 3.71 ± 2.21 | 26 | 3.71 ± 2.21 |
| 13 | Brown bear | *Ursus arctos* | 20 | 2.85 ± 2.54 | 20 | 2.85 ± 2.54 |
| 14 | Siberian ibex | *Capra sibirica* | 19 | 2.71 ± 2.87 | 19 | 2.71 ± 2.87 |
| 15 | Blackbuck | *Antilope cervicapra* | 15 | 2.14 ± 2.19 | 15 | 2.14 ± 2.19 |
| 16 | Serval | *Leptailurus serval* | 10 | 1.42 ± 1.39 | 10 | 1.42 ± 1.39 |
| 17 | Bontebok | *Damaliscus pygargus pygargus* | 9 | 1.28 ± 1.7 | 9 | 1.28 ± 1.7 |
| 18 | Aoudad | *Ammotragus lervia* | 7 | 1 ± 0.81 | 7 | 1 ± 0.81 |
| 19 | Wild goat | *Capra hircus aegagrus* | 7 | 1 ± 1 | 7 | 1 ± 1 |
| 20 | Olive baboon | *Papio anubis* | 6 | 0.85 ± 1.21 | 6 | 0.85 ± 1.21 |
| 21 | Yellow baboon | *Papio cynocephalus* | 6 | 0.85 ± 0.89 | 6 | 0.85 ± 0.89 |
| 22 | Grey wolf | *Canis lupus* | 5 | 0.71 ± 1.25 | 3 | 0.42 ± 0.78 |
| 23 | Bighorn sheep | *Ovis canadensis* | 4 | 0.57 ± 0.78 | 4 | 0.57 ± 0.78 |
| 24 | Southern white rhino | *Ceratotherium simum simum* | 3 | 0.42 ± 0.53 | 3 | 0.42 ± 0.53 |
| 25 | African civet | *Civettictis civetta* | 3 | 0.42 ± 0.53 | 3 | 0.42 ± 0.53 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 26 | Blesbok | *Damaliscus pygargus* | 3 | 0.42 ± 0.78 | 3 | 0.42 ± 0.78 |
| 27 | Scimitar-horned oryx | *Oryx dammah* | 3 | 0.42 ± 0.78 | 3 | 0.42 ± 0.78 |
| 28 | Blue duiker | *Philantomba monticola* | 3 | 0.42 ± 0.78 | 3 | 0.42 ± 0.78 |
| 29 | American alligator | *Alligator mississippiensis* | 3 | 0.42 ± 0.78 | 3 | 0.42 ± 0.78 |
| 30 | Argali | *Ovis ammon* | 3 | 0.42 ± 0.53 | 3 | 0.42 ± 0.53 |
| 31 | Western tur | *Capra caucasica* | 2 | 0.28 ± 0.48 | 2 | 0.28 ± 0.48 |
| 32 | Bay duiker | *Cephalophus dorsalis* | 2 | 0.28 ± 0.75 | 2 | 0.28 ± 0.75 |
| 33 | Blue sheep | *Pseudois nayaur* | 2 | 0.28 ± 0.75 | 2 | 0.28 ± 0.75 |
| 34 | Polar bear | *Ursus maritimus* | 2 | 0.28 ± 0.75 | 2 | 0.28 ± 0.75 |
| 35 | Honey badger | *Mellivora capensis* | 2 | 0.28 ± 0.48 | 2 | 0.28 ± 0.48 |
| 36 | Hog deer | *Axis porcinus* | 1 | 0.14 ± 0.37 | 1 | 0.14 ± 0.37 |
| 37 | Nilgai | *Boselaphus tragocamelus* | 1 | 0.14 ± 0.37 | 1 | 0.14 ± 0.37 |
| 38 | Cape mountain zebra | *Equus zebra zebra* | 1 | 0.14 ± 0.37 | 1 | 0.14 ± 0.37 |
| 39 | Afro-Asiatic wildcat | *Felis silvestris* | 1 | 0.14 ± 0.37 | 1 | 0.14 ± 0.37 |
| 40 | Striped hyena | *Hyaena hyaena* | 1 | 0.14 ± 0.37 | 1 | 0.14 ± 0.37 |
| 41 | Eurasian lynx | *Lynx lynx* | 1 | 0.14 ± 0.37 | 1 | 0.14 ± 0.37 |
| 42 | Bald eagle | *Haliaeetus leucocephalus* | 1 | 0.14 ± 0.37 | 1 | 0.14 ± 0.37 |
| 43 | Marco Polo argali | *Ovis polii* | 1 | 0.14 ± 0.37 | 1 | 0.14 ± 0.37 |
| 44 | Walrus | *Odobenus rosmarus* | 1 | 0.14 ± 0.37 | 0 | 0 ± 0 |

*For lion, trophies sourced from the wild totaled 12 (1.71 ± 2.42 trophies/year; 1.42 ± 1.71 WOE/year) and trophies from animals bred in captivity totaled 59 (8.42 ± 2.43 trophies/year; 8.42 ± 2.43 WOEs/year).

954
955 **Table S11. Population status of species and subspecies exported to the UK as hunting trophies in 2015-2021 in countries granting the**
956 **export(s).** Species ranked by number of trophies. AR=Argentina, AU=Australia, AZ=Azerbaijan, BJ=Benin, BW=Botswana, CM=Cameroon,
957 CA=Canada, CG=Congo, KG=Kyrgyzstan, MX=Mexico, MZ=Mozambique, NA=Namibia, NP=Nepal, PK=Pakistan, RU=The Russian
958 Federation, TR=Türkiye, TZ=United Republic of Tanzania, UG=Uganda, US=United States of America, ZA=South Africa, ZM=Zambia,
959 ZW=Zimbabwe. Except for CITES (2019, 2022) and Mech & Boitani (2004) all sources are global or regional Red List assessments.
960

| Common name | Scientific name | Exporter | No. of trophies | Population status (e.g., increasing, decreasing, stable or similar) | Is population stable, increasing or similar? | Source |
|---|---|---|---|---|---|---|
| American black bear | *Ursus americanus* | CA | 167 | Increasing (estimated at 450,000 individuals) | Yes | Garshelis *et al.* 2016 |
| Chacma baboon | *Papio ursinus* | ZA | 70 | Population declining globally but common and widespread | Yes | Sithaldeen 2019 |
| | | NA | 20 | Population declining globally but common and widespread | Yes | Sithaldeen 2019 |
| | | ZW | 14 | Population declining globally but common and widespread | Yes | Sithaldeen 2019 |
| | | ZM | 1 | Population declining globally but common and widespread | Yes | Sithaldeen 2019 |
| African elephant | *Loxodonta africana* | ZW | 60 | Abundant, population estimated at 82,630 individuals | Yes | CITES 2022 |
| | | ZA | 15 | Abundant, population estimated at 26,864 individuals and increasing | Yes | Selier *et al.* 2016 |
| | | BW | 5 | Abundant, population estimated at 131,626 individuals | Yes | CITES 2022 |
| | | MZ | 5 | Unknown | Unknown | |
| | | NA | 4 | Abundant, population estimated at 22,754 individuals | Yes | CITES 2022 |
| | | TZ | 2 | Unknown | Unknown | |
| | | ZM | 2 | Stable, population estimated at 7,000 individuals | Yes | CITES 2019 |
| Hartmann's Mountain zebra | *Equus zebra hartmannae* | NA | 71 | Increasing | Yes | Gosling *et al.* 2019 |
| | | ZA | 11 | Increasing | Yes | Gosling *et al.* 2019 |
| Lion | *Panthera leo* | ZA | 61 | Increasing | Yes | Bauer *et al.* 2016 |
| | | NA | 6 | Increasing† | Yes | Bauer *et al.* 2016 |
| | | MZ | 2 | Unknown | Unknown | Bauer *et al.* 2016 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | TZ | 2 | Declining | No | Bauer *et al.* 2016 |
| Giraffe | *Giraffa camelopardalis** | ZA | 43 | Population increased in recent decades, now numbers 37,000 individuals | Yes | Muller *et al.* 2018 |
| | | ZW | 5 | Population increased in recent decades, now numbers 37,000 individuals | Yes | Muller *et al.* 2018 |
| | | NA | 2 | Population increased in recent decades, now numbers 37,000 individuals | Yes | Muller *et al.* 2018 |
| Southern lechwe | *Kobus leche* | ZA | 34 | Extra-limital population | Extra-limital | IUCN SSC Antelope Specialist Group 2017a |
| | | NA | 6 | Some subspecies populations increasing, other declining | Unknown | IUCN SSC Antelope Specialist Group 2017a |
| | | ZM | 5 | Some subspecies populations increasing, other declining | Unknown | IUCN SSC Antelope Specialist Group 2017a |
| Vervet monkey | *Chlorocebus pygerythrus* | ZA | 41 | Global population declining but locally abundant | Unknown | Butynski *et al.* 2022 |
| | | ZM | 2 | Global population declining but locally abundant | Unknown | Butynski *et al.* 2022 |
| | | ZW | 2 | Global population declining but locally abundant | Unknown | Butynski *et al.* 2022 |
| Nile crocodile | *Crocodylus niloticus* | ZA | 33 | Stable | Yes | Turner *et al.* 2017 |
| | | ZW | 5 | Increasing in places, declining in others | No | Isberg *et al.* 2019 |
| | | MZ | 2 | Unknown | Unknown | Isberg *et al.* 2019 |
| | | NA | 2 | Increasing in places, unknown in others | Unknown | Isberg *et al.* 2019 |
| | | TZ | 2 | Unknown | Unknown | Isberg *et al.* 2019 |
| Common hippopotamus | *Hippopotamus amphibius* | ZW | 15 | Stable | Yes | Lewison & Pluháček 2017 |
| | | ZM | 12 | Stable | Yes | Lewison & Pluháček 2017 |
| | | ZA | 8 | Stable in southern Africa and most subpopulations in South Africa have increased in the last decade | Yes | Eksteen *et al.* 2016 |
| | | TZ | 4 | Unknown | Unknown | Lewison & Pluháček 2017 |
| Caracal | *Caracal caracal* | ZA | 34 | Common and expanding into new areas | Yes | Avgan *et al.* 2016 |
| | | NA | 2 | Common and expanding into new areas | Yes | Avgan *et al.* 2016 |
| Leopard | *Panthera pardus* | MZ | 4 | Declining | No | Stein *et al.* 2020 |
| | | NA | 8 | Unknown | No | Stein *et al.* 2020 |
| | | TZ | 7 | Unknown | No | Stein *et al.* 2020 |
| | | ZA | 1 | Declining | No | Stein *et al.* 2020, Swanepoel *et al.* 2016a |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | ZM | 2 | Declining | No | Stein *et al.* 2020 |
| | | ZW | 4 | Declining | No | Stein *et al.* 2020 |
| Brown bear | *Ursus arctos* | RU | 16 | Abundant, population estimated at 100,000 individuals | Yes | McLellan *et al.* 2017 |
| | | US | 4 | Abundant, population estimated at 33,000 individuals | Yes | McLellan *et al.* 2017 |
| Siberian ibex | *Capra sibirica* | PK | 1 | Locally abundant in the north of the country | Unknown | Reading *et al.* 2020a |
| | | KG | 18 | Abundant, population estimated at 70,000 individuals (includes Tajikistan) | Yes | Reading *et al.* 2020a |
| Blackbuck | *Antilope cervicapra* | AR | 14 | Extra-limital population | Extra-limital | IUCN SSC Antelope Specialist Group 2017b |
| | | US | 1 | Extra-limital population | Extra-limital | IUCN SSC Antelope Specialist Group 2017b |
| Serval | *Leptailurus serval* | TZ | 2 | Unknown | Unknown | Thiel 2019 |
| | | ZA | 8 | Stable | Yes | Ramesh *et al.* 2016 |
| Bontebok | *Damaliscus pygargus pygargus* | ZA | 9 | Stable (some subpopulations increasing) | Yes | Radloff *et al.* 2016, 2017 |
| Aoudad | *Ammotragus lervia* | US | 2 | Extra-limital population | Extra-limital | Cassinello *et al.* 2022 |
| | | ZA | 5 | Extra-limital population | Extra-limital | Cassinello *et al.* 2022 |
| Wild goat | *Capra hircus aegagrus* | TR | 7 | Declining (though might have stabilised) | No | Weinberg & Ambarli 2020 |
| Olive baboon | *Papio anubis* | BJ | 1 | Global population stable, widespread and locally common | Yes | Wallis 2020a |
| | | CM | 2 | Global population stable, widespread and locally common | Yes | Wallis 2020a |
| | | TZ | 2 | Global population stable, widespread and locally common | Yes | Wallis 2020a |
| | | UG | 1 | Global population stable, widespread and locally common | Yes | Wallis 2020a |
| Yellow baboon | *Papio cynocephalus* | TZ | 1 | Global population stable, widespread and locally common | Yes | Wallis 2020b |
| | | ZM | 5 | Global population stable, widespread and locally common | Yes | Wallis 2020b |
| Grey wolf | *Canis lupus* | CA | 5 | Stable (population estimated at c.40,000 individuals) | Yes | Boitani *et al.* 2018, Mech & Boitani 2004 |
| Bighorn sheep | *Ovis canadensis* | MX | 4 | Population estimated at 12,655-14,000 individuals and is increasing in many areas | Yes | Festa-Bianchet 2020 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Southern white rhino | *Ceratotherium simum simum* | ZA | 3 | Population declining globally but an estimated 18,064 individuals in South Africa | Yes | Emslie 2020 |
| African civet | *Civettictis civetta* | ZA | 2 | Population estimates suggest healthy populations | Yes | Swanepoel *et al.* 2016b |
| | | ZW | 1 | Unknown | Unknown | - |
| Blesbok | *Damaliscus pygargus* | ZA | 3 | Increasing | Yes | Dalton *et al.* 2019 |
| Scimitar-horned oryx | *Oryx dammah* | ZA | 3 | Extra-limital population | Extra-limital | IUCN SSC Antelope Specialist Group 2016c |
| Blue duiker | *Philantomba monticola* | ZA | 3 | Declining | No | Venter *et al.* 2016 |
| American alligator | *Alligator mississippiensis* | US | 3 | Increasing | Yes | Elsey *et al.* 2019 |
| Argali | *Ovis ammon* | KG | 3 | Population estimated at 16,669 individuals but abundance varies greatly in country | Unknown | Reading *et al.* 2020b |
| Western tur | *Capra caucasica* | AZ | 1 | Unknown | Unknown | - |
| | | RU | 1 | Unknown | Unknown | - |
| Bay duiker | *Cephalophus dorsalis* | CG | 2 | Declining (though stable in places) | No | IUCN SSC Antelope Specialist Group 2020 |
| Blue sheep | *Pseudois nayaur* | NP | 2 | Population in Nepal possibly 1947-10,000 individuals but this is uncertain | No | Harris 2014 |
| Polar bear | *Ursus maritimus* | CA | 2 | Unknown | Unknown | Wiig *et al.* 2015 |
| Honey badger | *Mellivora capensis* | ZA | 2 | Stable or increasing | Yes | Begg *et al.* 2016 |
| Hog deer | *Axis porcinus* | AU | 1 | Trophies were from captive animals | Extra-limital | - |
| Nilgai | *Boselaphus tragocamelus* | US | 1 | Trophies were from captive animals | Extra-limital | - |
| Cape Mountain zebra | *Equus zebra zebra* | ZA | 1 | Increasing | Yes | Hrabar *et al.* 2019 |
| Afro-Asiatic wildcat | *Felis silvestris* | ZA | 1 | Stable (but possibly declining) | Yes | Herbat *et al.* 2016 |
| Striped hyena | *Hyaena hyaena* | TZ | 1 | Unknown | No | AbiSaid and Dloniak 2015 |
| Eurasian lynx | *Lynx lynx* | RU | 1 | Stable in places, declining in others | No | Breitenmoser *et al.* 2015 |
| Walrus | *Odobenus rosmarus* | CA | 1 | Global population likely >225,000 but Canadian population unknown | Unknown | Lowry 2016 |
| Marco Polo argali | *Ovis polii* | KG | 1 | Population estimated at 4013 individuals but abundance varies greatly in country | Unknown | Reading *et al.* 2020b |
| Bald eagle | *Haliaeetus leucocephalus* | CA | 1 | Increasing | Yes | BirdLife International 2016 |

961

962 **Supplementary Material 3 – Results – Trophy hunting as a contributor to elevated conservation concern**

963

964 **Table S12. Species and subspecies imported to/exported from the UK as hunting trophies (2000-2021), CITES Appendix, IUCN Red List**
965 **Threat Category, population size, population trend, and information on intentional hunting/harvesting threats, including whether**
966 **trophy hunting poses a threat to species at different levels, or not.** This table includes 93 species because the Red List treats the urial (*Ovis*
967 *aries*) as mouflon (*O. gmelini*) and urial (*O. vignei*), and African elephant (*Loxodonta africana*) as the African Savanna Elephant (*L. africana*)
968 and African Forest Elephant (*L. cyclotis*) following taxonomic updates.

969

| Common name | Scientific name* | CITES Appendix | IUCN Red List Threat Category | Population size | Population trend | Intentional hunting or harvesting threat | Threat code(s) (timing) | Is TH a major contributor to elevated conservation concern? | Is TH likely or possibly causing localized declines? |
|---|---|---|---|---|---|---|---|---|---|
| Siberian ibex | *Capra sibirica* | III | NT | 170,000-250,000 | Decreasing | Y | 5.1.1. (ongoing) | N | L |
| Gobi argali | *Ovis darwini (Ovis ammon darwini)* | II | NT | 10,000-14,800 (China and Mongolia) | Unknown | Y | 5.1.1. (ongoing) | N | L |
| Marco Polo argali | *Ovis polii* | II | NT | 4000-7000 | Unknown | Y | 5.1.1. (ongoing) | N | L |
| Bongo | *Tragelaphus eurycerus* | NC | NT | 28,000 | Decreasing | Y | 5.1.1. (ongoing) | N | L |
| Brown bear | *Ursus arctos* | I/II | LC | >200,000 | Stable | Y | 5.1.1. (ongoing) | N | L |
| Topi | *Damaliscus lunatus* | III | LC | Unknown‡ | Decreasing | Y | 5.1.1. (ongoing) | N | P |
| Lion | *Panthera leo* | I/II | VU | 23,000-39,000† | Decreasing | Y | 5.1.1. (ongoing) | N | P |
| Leopard | *Panthera pardus* | I | VU | Unknown‡ | Decreasing | Y | 5.1.1. (ongoing) | N | P |
| Puma | *Puma concolor* | I/II | LC | Unknown‡ | Decreasing | Y | 5.1.1. (ongoing) | N | P |
| American black bear | *Ursus americanus* | II | LC | 850,000-950,000 | Increasing | Y | 5.1.1. | N | P |
| Cheetah | *Acinonyx jubatus* | I | VU | 7100 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Addax | *Addax nasomaculatus* | I | CR | <100 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| American alligator | *Alligator mississippiensis* | II | LC | 3,000,000-4,000,000 | Increasing | N | | N | N |
| Egyptian goose | *Alopochen aegyptiaca* | NC | LC | Unknown | Decreasing | Y | | N | N |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| White-chested Emerald | *Amazilia brevirostris (Chrysuronia brevirostris)* | II | LC | Unknown (but common) | Stable | N | | N | N |
| Aoudads | *Ammotragus lervia* | II | VU | 5000-10,000† | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Northern pintail | *Anas acuta* | NC | LC | 7,100,000-7,200,000 | Decreasing | Y | | N | N |
| Northern shoveler | *Anas clypeata (Spatula clypeata)* | NC | LC | 6,500,000-7,000,000 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Eurasian teal | *Anas crecca* | NC | LC | 2,800,000† | Unknown | N | | N | N |
| Eurasian wigeon | *Anas penelope* | NC | LC | 2,800,000-3,300,000 | Decreasing | Y | | N | N |
| Garganey | *Anas querquedula (Spatula querquedula)* | NC | LC | 2,600,000-2,800,000 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Blackbuck | *Antilope cervicapra* | III | LC | 35,200 | Unknown | Y | 5.1.1. (ongoing) | N | N |
| Hog deer | *Axis porcinus* | III | EN | Unknown | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Hog deer | *Axis porcinus* | I | EN | Unknown | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Wood bison | *Bison bison athabascae* | NC | NT (*Bison bison*) | 11,000 | Stable | N | | N | N |
| Nilgai | *Boselaphus tragocamelus* | III | LC | 100,000 | Stable | Y | | N | N |
| Buzzard | *Buteo buteo* | II | LC | 2,038,000-3,463,000 | Increasing | Y | 5.1.1. (ongoing) | N | N |
| Common jackal | *Canis aureus* | III | LC | 150,000†† | Increasing | N | | N | N |
| Grey wolf | *Canis lupus* | I/II | LC | ~130,000** | Stable | N | | N | N |
| Western tur | *Capra caucasica* | II | EN | 4000-5000 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Markhor | *Capra falconeri* | I | NT | 9700†† | Increasing | Y | 5.1.1. (ongoing) | N | N |
| Wild goat | *Capra hircus aegagrus (Capra aegagrus)* | III | NT | 224,400†† | Stable | Y | 5.1.1. (ongoing) | N | N |
| Caracal | *Caracal caracal* | I/II | LC | Unknown | Unknown | N | | N | N |
| Bay duiker | *Cephalophus dorsalis* | II | NT | 725,000 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Southern white rhinoceros | *Ceratotherium simum simum* | I/II | NT | 18,064 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Blue monkey | *Cercopithecus mitis* | II | LC | Unknown | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Grivet monkey | *Chlorocebus aethiops* | II | LC | Unknown | Decreasing | N | | N | N |
| Vervet monkey | *Chlorocebus pygerythrus* | II | LC | Unknown (locally abundant) | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Black stork | *Ciconia nigra* | II | LC | 24,000-44,000 | Unknown | Y | | N | N |
| African civet | *Civettictis civetta* | III | LC | Unknown (generally common) | Unknown | Y | 5.1.1. (ongoing) | N | N |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Guereza | *Colobus guereza* | II | LC | Unknown (but widespread and locally abundant) | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Rock dove/Pigeon | *Columba livia* | NC | LC | Unknown | Decreasing | N | | N | N |
| Nile crocodile | *Crocodylus niloticus* | I/II | LC | 50,000-70,000† | Stable | Y | 5.4.1., 5.4.2. | N | N |
| Blesbok | *Damaliscus pygargus* | II*** | LC | 77,751 | Increasing | N | | N | N |
| Bontebok | *Damaliscus pygargus pygargus* | II | VU | 515-1618† | Stable | Y | 5.1.1. (ongoing) | N | N |
| White-faced whistling duck | *Dendrocygna viduata* | NC | LC | 1,700,000-2,800,000 | Increasing (some decreasing) | Y | | N | N |
| Black rhinoceros | *Diceros bicornis* | I/II | CR | 5,630 | Increasing | Y | 5.1.1. (ongoing) | N | N |
| Hartmann's mountain zebra | *Equus zebra hartmannae* | II | VU | 33,265 | Increasing | Y | 5.1.1. (ongoing) | N | N |
| Cape mountain zebra | *Equus zebra zebra* | II | LC | 3,247 | Increasing | Y | 5.1.1. (past) | N | N |
| Afro-Asiatic wildcat | *Felis lybica* | II | LC | Unknown | Unknown (some stable/declining) | Y | 5.1.1. (ongoing) | N | N |
| Giraffe | *Giraffa camelopardalis* | II | VU | 95,762 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Bald eagle | *Haliaeetus leucocephalus* | II | LC | Unknown | Increasing | N | | N | N |
| Black-eared fairy | *Heliothryx auritus* | II | LC | Unknown (but uncommon) | Decreasing | N | | N | N |
| Common hippopotamus | *Hippopotamus amphibius* | II | VU | 115,000-130,000 | Stable | Y | 5.1.1. (ongoing) | N | N |
| Striped hyena | *Hyaena hyaena* | III | NT | 5000-14,000 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Lechwe | *Kobus leche* | II | NT | 212,000 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Serval | *Leptailurus serval* | II | LC | Unknown | Stable | Y | 5.1.1. (ongoing) | N | N |
| North American River Otter | *Lontra canadensis* | II | LC | Unknown | Stable | Y | 5.1.1. (ongoing) | N | N |
| African Savanna elephant | *Loxodonta africana* | I/II | EN | 415,428‡‡ | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| African Forest elephant | *Loxoonda cyclotis* | I/II | CR | 415,428‡‡ | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Canada lynx | *Lynx canadensis* | II | LC | Unknown | Stable | Y | 5.1.1. (ongoing) | N | N |
| Eurasian lynx | *Lynx lynx* | II | LC | 68,720-69,760†† | Stable | Y | 5.1.1. (ongoing) | N | N |
| Bobcat | *Lynx rufus* | II | LC | 2,352,276-3,571,681 | Stable | Y | 5.1.1. (ongoing) | N | N |
| Honey badger | *Mellivora capensis* | III | LC | Unknown | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Dama gazelle | *Nanger dama* | I | CR | <100-250 | Decreasing | Y | 5.1.1. (ongoing) | N | N |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Walrus | *Odobenus rosmarus* | III | VU | >225,000 | Unknown | Y | 5.4.1. (ongoing), 5.4.2. (past) | N | N |
| Scimitar-horned Oryx | *Oryx dammah* | I | EW | Intensively managed populations remain only | Unspecified | N | | N | N |
| Arabian oryx | *Oryx leucoryx* | I | VU | 1220 | Stable | Y | 5.1.1. (ongoing) | N | N |
| Argali | *Ovis ammon* | II | NT | <107,000 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Bighorn sheep | *Ovis canadensis* | II | LC | 70,000 | Stable | Y | 5.1.1. (ongoing) | N | N |
| Mouflon | *Ovis gmelini* | I (Cyprus) | NT | 26,500 | Unknown | Y | 5.1.1. (ongoing) | N | N |
| Urial | *Ovis vignei* | I | VU | 18000 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Olive baboon | *Papio anubis* | II | LC | Unknown (widespread and locally common) | Stable | Y | 5.1.1. (ongoing) | N | N |
| Yellow baboon | *Papio cynocephalus* | II | LC | Unknown (widespread and locally common) | Stable | N | | N | N |
| Hamadryas Baboon | *Papio hamadryas* | II | LC | 2000 | Increasing | Y | 5.1.1. (ongoing) | N | N |
| Chacma baboon | *Papio ursinus* | II | LC | Unknown (common and widespread) | Decreasing | N | | N | N |
| Collared pecary | *Pecari tajacu* | II | LC | Unknown | Stable | Y | 5.1.1. (ongoing) | N | N |
| Maxwell's duiker | *Philantomba maxwellii* | II | LC | 2,137,000 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Blue duiker | *Philantomba monticola* | II | LC | 7,000,000 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Spur-winged goose | *Plectropterus gambensis* | NC | LC | Unknown | Increasing | Y | | N | N |
| Aardwolf | *Proteles cristata* | III | LC | Unknown | Stable | Y | | N | N |
| Blue sheep | *Pseudois nayaur* | III | LC | 47,000-414,000 | Unknown | Y | 5.1.1. (ongoing) | N | N |
| Central African rock python | *Python sebae* | II | NT | Unknown | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Swamp deer | *Rucervus duvaucelii* | I | VU | Unknown‡ | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Red-tailed comet | *Sappho sparganura* | II | LC | Unknown (but fairly common) | Stable | N | | N | N |
| Kakapo | *Strigops habroptila* | I | CR | 116 | Increasing | N | | N | N |
| Barred owl | *Strix varia* | II | LC | Unknown | Increasing | N | | N | N |
| Fork-tailed woodnymph | *Thalurania furcata* | II | LC | Unknown (but common) | Unknown | N | | N | N |
| Peruvian sheartail | *Thaumastura cora* | II | LC | Unknown (but fairly common) | Stable | N | | N | N |
| Gelada | *Theropithecus gelada* | II | LC | ~4300 | Decreasing | Y | 5.1.1. (past) | N | N |

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|---|---|---|---|---|---|---|---|---|---|
| Crimson topaz | *Topaza pella* | II | LC | Unknown (but uncommon) | Decreasing | N | | N | N |
| Sitatunga | *Tragelaphus spekii* | NC | LC | 170,000 | Decreasing | Y | 5.1.1. (ongoing) | N | N |
| Polar bear | *Ursus maritimus* | II | VU | 26,000 | Unknown | Y | 5.1.1. (ongoing) | N | N |

*Species in brackets are synonyms on the IUCN Red List.
†Number of mature individuals rather than population size.
‡Some estimates (e.g., by region) are presented in the assessment.
**Based on Mech & Boitani (2004).
††Based on sub-regional estimates in the assessment.
‡‡Estimate for continental Africa rather than individual species.
***Subspecies pygargus in Appendix II.

**Table S13. Species and subspecies for which legal hunting for trophies provides, or has the potential to provide, benefits based on information in the threats, use and trade, and conservation actions section of Red List assessments.**

| Common name | Scientific name |
|---|---|
| Aoudad | *Ammotragus lervia* |
| Markhor | *Capra falconeri* |
| Siberian ibex | *Capra sibirica* |
| White rhino | *Ceratotherium simum* |
| Blesbok | *Damaliscus pygargus* |
| Bontebok | *Damaliscus pygargus pygargus* |
| Black rhino | *Diceros bicornis* |
| Hartmann's Mountain zebra | *Equus zebra hartmannae* |
| Cape Mountain zebra | *Equus zebra zebra* |
| Southern lechwe | *Kobus leche* |
| Argali | *Ovis ammon* |
| Bighorn sheep` | *Ovis canadensis* |
| Gobi argali | *Ovis darwini* |
| Marco Polo argali | *Ovis polii* |
| Lion | *Panthera leo* |
| Leopard | *Panthera pardus* |
| Blue sheep | *Pseudois nayaur* |
| Bongo | *Tragelaphus eurycerus* |
| Sitatunga | *Tragelaphus spekii* |
| American black bear | *Ursus americanus* |

999 **Supp. Material 4 – Results – Evaluating the UK Government's impact assessment of the bill**

1000 **Table S14. Assigned quality indicator and associated comments for the Hunting Trophies (Import Prohibition) Bill impact assessment**

| Section | Quality | Assessment comments |
|---|---|---|
| 1. Policy rationale | Weak | The rationale is informed by a recent consultation and call for evidence on "trophy hunting", relevant literature, and other pertinent policy documents, as well as the Conservative and Unionist Party Manifesto 2019. Discussion of the policy options identified also refers to potential unintended consequences of these policies in a cursory manner.<br>However, there are several inappropriate assumptions related to understanding the potential impacts of the proposed legislation. The rationale focuses on imports of hunting trophies to the UK only to characterize the country's role in this trade, but not exports destined for the UK from other countries (exported-reported quantities in the CITES trade database). Exporter-reported data are often more complete, and this ostensibly underestimates the role of the UK as an importer of hunting trophies involving CITES-listed species. Consideration of CITES trade data reported by exporters would have enabled a more comprehensive and accurate characterization of the international trade in hunting trophies to the UK because it captures permits issued for exports to the country.<br>The rationale also assumes that the proposed regulation will disincentivise legal hunting for trophies of in-scope species by people wishing to export hunting trophies to the UK. This may or may not be the case. Empirical evidence referred to in Section 2 suggests that this may not actually be the case and that hunting may continue (though potentially at lower levels). The assessment would be improved by robust analysis of the likely impacts of the bill on hunter behavior.<br>A major limitation of the impact assessment is that it focuses on the regulatory impacts of the proposed policy options on the UK, not internationally (even though there is tangential mention of potential costs to actors abroad in later sections). The analysis could be improved by consideration of such impacts recognising that the impact assessment suggests that the highest costs associated with the proposed regulation can be expected to be borne by actors outside of the UK (e.g., local people and hunting operators abroad).<br>The impact assessment could also be improved by robust analysis of the threats to species that are subject to legal hunting for trophies for import into the UK, including explicit consideration of whether this hunting poses a threat to these species, or not.<br>The impact assessment would also be improved by evidence that major exporting countries have been consulted on the proposed regulations, including insights on the potential impacts of the bill in those countries. |
| 2. Costs and benefits | Weak | This section considers the likely impact of the proposed bill on UK businesses, making reference to the number of businesses likely to be affected and potential, additional obligations that they may need to meet under different policy options. The impact on UK businesses in terms of exports is also considered as are one-off familiarisation costs, including monetary costs. Monetary costs to individuals trading in hunting trophies (e.g., importing them) as a result of the proposed policy options are also evaluated.<br>Potential impacts on the UK's domestic hunting industry are also considered, including the potential to reduce the viability of trophy hunts in the UK. |

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| | | The potential for hunters to shift their attention to out of scope species (a potential unintended consequence) is also explicitly addressed under Option 2a.<br>However, this section suggests that most costs can likely be expected to be borne by actors outside of the UK (e.g., hunting operators in countries where hunting trophies are acquired for import) but potential costs to such businesses are mentioned only briefly and are not quantified or monetised, though reference is made to the costs of some hunts.<br>Similarly, the environmental and societal impacts of the proposed policy options, in particular on countries and peoples beyond the UK, are considered only vaguely. For example, "potential loss of income for communities that rely on trophy hunting" and "wildlife may lose part of its value due to no longer being economically competitive with other land uses, leading to negative conservation outcomes".<br>This section also inherently assumes that benefits will result from a reduction in the acquisition of hunting trophies and subsequent import to the UK as the species involved receive greater protection. This is misleading in a number of ways and is not necessarily the case. This assumes that the UK is importing significant numbers of hunting trophies, which our analyses indicate is not the case (and is also explicitly referred to in the impact assessment). The assumption that reducing legal hunting for trophies will result in enhanced protection of target species also does not hold. This in itself makes large assumptions about the institutional settings and resources available for protecting these species where legal hunting for trophies for import to the UK currently takes place and presumes that alternative revenue streams are readily available to ensure that no harm is done against a baseline of the status quo for which no justification is provided.<br>Under Option 1 this section assumes that some lost custom for hunting trips and trophies could be replaced by other forms of tourism, such as "eco-wildlife tourism" but this makes assumptions that do not necessarily hold. This assumes that areas where species are legally hunted for trophies for import to the UK are suitable for such alternative tourism enterprises, when prevailing evidence suggests that this is not the case for reasons including the remoteness of some areas where this hunting takes place and lack of tourist infrastructure in these areas.<br>As in Section 1, this section relies only on import data to characterise the UK's role in international trade in hunting trophies of CITES-listed species. Consideration of exporter-reported quantities would have enabled a more comprehensive and accurate characterisation of the international trade in hunting trophies into the UK.<br>This section could be much improved by analysis of the international impacts of the proposed bill especially as it recognises that the highest costs will likely be expected to be borne by businesses (e.g., hunting operators) and peoples outside of the UK (e.g., loss of monetary and non-monetary benefits to local communities where trophy hunting occurs).<br>The impact assessment would also be improved by evidence that major exporting countries have been consulted on the proposed regulations, including insights on the potential impacts of the bill in those countries. |
| 3. Risks and unintended consequences | Weak | This section suggests that the proposed policies may disincentivise legal hunting for trophies of certain species because hunters find it more difficult to import trophies to the UK. This assumption does not necessarily hold. As referred to in the assessment of Section 2, empirical evidence suggests that this may not actually be the case and that hunting may continue though potentially at lower levels.<br>The section does explicitly recognise the potential for other countries to implement similar restrictions, which may lead to an increased effect on global hunting activities.<br>The impact assessment would be improved by evidence that major exporting countries have been consulted on the proposed regulation, including insights on the potential impacts of the bill in these countries. |

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| 4. Wider impacts | Weak | This section does consider, though only in brief, conservation concerns about potential impacts on land use change as a result of restricting the import/export of hunting trophies. It also considers human-wildlife conflict and the need for alternative conservation strategies in the absence of, or restrictions on, legal hunting for trophies. It also recognises that there are questions around whether alternatives such as wildlife tourism can effectively replace legal hunting for trophies (seemingly undermining arguments made in previous sections).<br>The section further recognises, but again in brief, that banning the legal movement of hunting trophies could lead to increased illegal wildlife trade and reduce the amount of protein local communities receive as a by-product of legal hunting for trophies (e.g., in Botswana) but doesn't present detail on actual or potential remedial measures beyond suggesting other forms of tourism (e.g., photographic tourism) and "other alternative wildlife management strategies" will be needed.<br>The section considers, in brief, the major arguments for legal hunting for trophies (e.g., it provides financial benefits to local communities and without this hunting these benefits could be lost).<br>However, the section makes assumptions about the potential benefits of the policy options. It assumes that the policy(ies) will disincentivise trophy hunting, which as referred to in the assessment of Section 2 this may or may not be the case. It also assumes that were this to be the case that there could be knock-on effects on species numbers, biodiversity, and ecosystem services. This cannot be assumed because outcomes of the policies could be positive or negative for species subject to legal hunting for trophies related to a range of social (e.g., the attitudes of local people), economic (e.g., incentives for legal and/or illegal offtake), and governance factors (e.g., the legitimacy of local laws and bans/restrictions imposed by importing countries) in areas where this hunting takes place. The proposed benefits are also not quantified or monetised.<br>Relatedly, the section makes assumptions about the actors involved in legal hunting for trophies and their willingness to adapt. For example, suggesting that restrictions on legal hunting for trophies may heighten incentives to find revenues from other "potentially more sustainable" forms of tourism, such as from photographic wildlife tourism and alternative wildlife management strategies. This is misleading because this may or may not be the case and in this context restrictions on legal hunting for trophies could result in positive or negative outcomes for species that are subject to it. No evidence is provided on the ability to, or willingness of, such actors to adapt.<br>The section uses outdated information (from 2004) to estimate the number of species threatened by overhunting in general (not legal hunting for trophies in particular). |
| 5. Post-implementation review | Weak | It is unclear whether the proposed engagement with stakeholders during monitoring and evaluation includes individuals, groups, and businesses internationally (e.g., local communities and hunting operators abroad), which the impact assessment suggests will bear most of the costs of the proposed regulation, or just those in the UK. |

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1002 **Supplementary Material 5 – Discussion**

1003 **Table S15. Non-exhaustive pros and cons of alternative regulatory options**

| Policy option | Details, including additional details for some options | Pros | Cons |
|---|---|---|---|
| Do nothing | The UK continues to implement the WTRs and EUWTRs (Northern Ireland), ensuring that imports and exports of hunting trophies are based on robust NDFs and legal acquisition findings. | No amendments to implementing legislation in the UK are required.<br>Compared to an import ban there is a lower risk of negatively impacting wildlife and/or local communities/indigenous peoples that live in areas where legal hunting for trophies takes place. | No additional test of sustainability or conservation benefit beyond NDFs (sustainability) |
| Remove the personal effects derogation for Annex B species traded as hunting trophies. | This would require import permits for all hunting trophies imported to the UK using CITES purpose code H enabling further assessment of sustainability, for example, based on requirements in CITES Resolutions on hunting trophies (Res. Conf. 17.9) and NDFs (Res. Conf. 16.7 [Rev. CoP17]).<br>Under this option the UK could only allow imports of hunting trophies where i) it can be demonstrated that this hunting contributes significant and tangible conservation benefits for species, and ii) hunting provides benefits to, and is in co-operation with, any local communities and/or indigenous peoples who share the area with the species concerned. | This could readily be achieved by amending the new legislation implementing CITES in the UK.<br>This would enable further assessment of sustainability, conservation benefit, and contribution to human livelihoods regarding hunting trophy imports.<br>Does not risk negatively impacting wildlife and/or local communities/indigenous peoples that live in areas where legal hunting for trophies takes place. | Additional administrative burden on CITES Management and Scientific Authorities.<br>Increased permit costs for hunters who would require both import and export permits, which could disincentivize hunting trips and therefore affect financial flows to areas where hunting takes place. |
| Adopt EU-style "opinions" on imports of hunting trophies. | Under this option the UK could opine on the suitability of importing hunting trophies from particular species-country combinations (and potentially hunting operators) based on prevailing information about the sustainability of this hunting and/or other salient factors.<br>Such a system is currently used by the EU with positive (=trade permitted) and negative (=trade not permitted) opinions formed periodically by the EU Scientific Review Group (SRG) (see EU SRG 2023).<br>As most hunting trophies are imported from a few countries (Canada, Namibia, South Africa, and Zimbabwe) extending this system to include hunting operators may be feasible. | This could readily be achieved by amending the new legislation implementing CITES in the UK.<br>This option would provide ongoing flexibility to managing imports of hunting trophies based on prevailing information about species, countries and/or hunting operators.<br>This option would not risk negatively impacting wildlife and/or local communities/indigenous peoples that live in areas where legal hunting for trophies takes place. | Additional administrative burden on CITES Management and Scientific Authorities. |
| Implement a Smart ban. | This would prohibit the import of hunting trophies from operators that fail to demonstrate an equitable sharing of hunting revenues with local communities, fail to establish and monitor sustainable hunting quotas, fail to invest in the conservation of wildlife and habitat, and/or fall short of established IUCN principles on legal hunting for trophies (IUCN 2012). | This option would incentivize improved management and transparency of hunting operations and encourage reform of bad practice (e.g., canned hunting).<br>It would not risk negatively impacting wildlife and/or local communities/indigenous peoples that live in areas where legal hunting for trophies takes place. | An assessment or certification system would be required for operators, which would likely be time-consuming to establish and scale. |

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