



# Exotic pet trading and keeping: Proposing a model government consultation and advisory protocol



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## ABSTRACT

Exotic pet trading and keeping raises many concerns regarding animal welfare, species conservation, ecological alteration, invasive species, public health and safety, and other issues. Despite these concerns, the UK Government assigns greater consultation importance to exotic pet trading and keeping stakeholders than to parties that seek to remedy relevant problems, or to independent experts. To help ameliorate the current situation, we propose a model government advisory protocol in which consultation weight is assigned first to independent scientific parties; secondly to animal welfare parties; and thirdly to exotic pet trading and keeping parties. Relatedly, we present two case studies as illustrative examples, that: A. examine UK government and other national approaches to stakeholder consultations; and B. compare differences in scale between stakeholders for the exotic pet trade and hobby, animal welfare, and independent expert sectors based on respective numbers of employees, registered supporters, and social media followers. We conclude that current UK and some other protocols are wrongly skewed towards exotic pet trading and keeping practices, and may be causally-related to the long-standing and growing concerns regarding problematic issues, and that relevant animal welfare parties greatly outweigh exotic pet trading and keeping parties, which further suggests that consultation bias towards the exotic pet trading and keeping sector is disproportionate.

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## Introduction

People choose to acquire pets as companions, curiosities or adornments and, whether an animal truly shares a human home or is simply caged within it, there are widely acknowledged benefits and disbenefits to keepers, as well as affects on animal welfare, species conservation, ecological stability, and agriculture. Occasionally, some animals may 'adopt' their carer by chance encounters that suit both parties, but for most animals, their presence in the home and subsequent care are determined by their keepers. This situation places heavy responsibilities on keepers to provide for the needs and preferences of animals in their care.

Taking this responsibility further, it can be argued that parties such as organizations and experts who represent the interests of animals should also have their roles of responsibility recognized with similar gravitas, whether they directly reflect the animal

keepers' views or the general views of society. Given that in the UK and elsewhere, animal welfare protection is both publicly supported and enshrined in law, it seems inarguable that animal welfare advocates should also be regarded as fundamental components of moral and legal guidance. Relevant British Government policy prioritize public health and safety, animal welfare, societal and related considerations (Defra, 2004), which are echoed and largely also enshrined in law under the Animal Welfare Act (2006). Arguably, because animal welfare and society are stated dominant factors, both the scale of public interest and support are valid considerations for government.

However, in the UK, government consultations and subsequent decision-making on issues affecting pet welfare are routinely based on prioritized information from vested interest animal dealers rather than from animal welfare advocates or independent experts, which represents iniquitous policy. Thus, in this paper we will examine several issues relating to the nature and consequences of pet trading and keeping, provide UK case studies examining apparent decision-making bias by government and the proportionate scale of stakeholders that represent the exotic

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pet trade and hobby sector *versus* stakeholders that constitute animal welfare advocates and independent experts, and offer recommendations for ameliorating current consultation imbalances. We suggest a novel approach to establish greater representative proportionality and balance for future consultations, and for the formal adoption of information and advice. Such reorganization would offer greater objectivity for provision of information and better reflect societal support.

#### *Domesticated and exotic pets*

While several of the issues within this article are common to the trading and keeping of both domesticated and exotic species as pets (e.g., husbandry challenges, breeding-associated problems, and public health and safety), domesticated species in the UK have numerous large and dedicated organizations that directly represent those animals. In contrast, exotic pet species are typically represented by larger organizations as part of general policies and by certain small dedicated groups. Therefore, given their relatively under-represented status, we have focused on exotic pet issues.

Exotic pets have been defined as, for example, 'non-native' or 'non-domesticated' wild animals, regardless of whether having been captive-bred (Décor, 2019). However, while the definition has broad merit, specific scenarios dilute its precision. For example, green iguanas (*Iguana iguana*) that are native to Central America may be locally caught and kept as pets - thus they are not non-native. Similarly, within the UK, it is also theoretically possible that an individual could collect and keep certain native species, with similar terminological caveats. Nevertheless, such examples remain 'wild' animals, and the term 'wild-pet' has been proposed as an over-arching description (Endcap, 2012). For this article, the most relevant species are likely to be genuinely non-native and non-domesticated - 'exotic'- forms, thus we will use this term going forward.

#### *Nature and activities of exotic pet trading and keeping*

The nature and activities of exotic pet trading and keeping includes wild capture, captive-breeding (ranching, farming, and other commercial reproduction situations), storage, handling, transportation, and husbandry across wholesale, retail, private hobbyist, and home environments (Baker et al., 2013; Böhm et al., 2013; Ashley et al., 2014; Warwick, 2015; Moorhouse et al., 2017; Lockwood et al., 2019; Maceda-Veiga et al., 2019; Biondo and Burki, 2020; D'Cruze et al., 2020). Collectively, these elements frequently affect animal welfare, species conservation, invasive alien introductions, public health and safety, antimicrobial resistance, and other issues. Accordingly, a range of government agencies, non-governmental organizations, and independent experts have relevant interests or concerns regarding exotic pet trading and keeping issues, and may legitimately be included in formal advice and policy matters.

While the focus of this report will be animal welfare, various additional sectors, including conservation, public health, and education, are also relevant, and their scale compared with the exotic pet trading and keeping sector also invites future assessment. Below, we summarize various key affects associated with exotic pet trading and keeping to provide general context, as well as introduce the input validity of several sectors.

#### *Animal welfare*

The exotic pet sector has been associated with animal welfare concerns since at least the Victorian era (Larsson, 2016), and scientific reports have increasingly documented many important issues over several decades e.g. (Toland et al., 2012; Warwick et al., 2014;

Grant et al., 2017; Howell and Bennett, 2017; Moorhouse et al., 2017; Warwick et al., 2018, 2019; Alves et al., 2019; Benn et al., 2019; Howell et al., 2020). Stress, high morbidity and premature mortality have headlined welfare concerns, which includes capture mortality (Biondo and Burki, 2020; Millar, 2013; Pouil et al., 2020), intensive captive-breeding conditions resulting in stress and mortality for many animals (Warwick, 2015), transportation casualties Steinmetz et al., 1998; Laidlaw, 2005; general wholesaler mortality, and poor survival in the private home (Toland et al., 2012; Millar, 2013). Multifactorial causes are associated with morbidity and mortality among exotics pets, including poor diet (Whitehead, 2018), poor habitat (Whitehead, 2018), maladaptation syndrome (Cowan, 1980), social deprivation (Mellor, 2016), infection (Frye, 1991), stress (Warwick et al., 2013a; Martínez-Silvestre, 2014), poor compliance with care guidance (D'Cruze et al., 2020; Howell et al., 2020), lack of readily available veterinary care (Whitehead and Vaughan-Jones, 2015), generalized unsuitability of species for pet purposes (Warwick et al., 2018), and misinformation on husbandry challenges and care (Mendyk, 2018; Warwick et al., 2018).

#### *Species conservation*

Many published reports identify the exotic pet business as a significant threat to species conservation (e.g. Böhm et al., 2013; Bush et al., 2014; Rowley et al., 2016; Berkunsky et al., 2017; Alves et al., 2019; Frank and Wilcove, 2019; Scheffers et al., 2019). Wild capture of many species continues to occur (Yan, 2016; Biondo and Burki, 2020). Although captive-breeding is frequently postulated as an alleviating mechanism for pressures on wild populations, conservation- and welfare-oriented captive reproduction programs reportedly have guarded successes (Greggor et al., 2018). Captive-breeding is increasingly being identified as a misrepresentation for illegally wild-caught animals, as an ineffective approach for most species, and as a generator of wild-caught trade (TRAFFIC, 2012; Warwick, 2015; Tensen, 2016). The effectiveness of governmental monitoring and control mechanisms to regulate the wildlife trade has also been critically examined. Biondo (2017, 2018) found that for the Convention on International Trade in Endangered Species (CITES) and Trade Control and Expert System (TRACES) protocols there was a lack of adequate international monitoring. Mair et al. (2019) conducted a general assessment of CITES and found the system to be time-consuming and inefficient. D'Cruze and Macdonald (2016) found incomplete reporting compliance with CITES protocols.

#### *Invasive alien introductions and other ecological issues*

Incidental escapes and intentional releases of unwanted exotic pet animals constitute an important introducer of invasive alien species and associated ecological alterations in which foreign organisms occupy novel environments and prey on, compete with - or even out-compete - indigenous forms (e.g. Kubiak and Pellett, 2018; Patoka et al., 2018; Stringham and Lockwood, 2018; Bevan et al., 2019; Lockwood et al., 2019; Maceda-Veiga et al., 2019; Marra, 2019; Episcopio-Sturgeon and Pienaar, 2020; Toomes et al., 2020). Relatedly, introduced exotic pet species may also harbor atypical regional pathogens, resulting in serious wildlife epidemics and pandemics (González-Hein et al., 2019; Mohanty and Measey, 2019; Patoka et al., 2019).

#### *Public health and safety*

Zoonoses and other infections (Abbott et al., 2012; Hale et al., 2012; Nenoff et al., 2012; Smith and Whitfield, 2012; Smith et al., 2012; Zarecki et al., 2013), antimicrobial resistance

(Rose et al., 2013; Broens and van Geijlswijk, 2018), and injuries and fatalities (Warwick and Steedman, 2012; Schaper et al., 2019) are all known issues of concern linked to exotic pet trading and keeping. Although certain health benefits, as well as positive cost feedback to health authorities, have been associated with human-pet companionships (Clements et al., 2019), these benefits typically refer to life-shares with domesticated dogs and cats, and observation of aquarium fishes.

#### *Species suitability for pets and over diversity*

At least 13,000 species are involved in exotic pet selling and keeping, and many are promoted as ‘easy to keep’ or ‘suitable for beginners’ (Warwick et al., 2018; Jessop et al., in press; Mendyk and Warwick, in press). However, these claims are generally dismissed and evidentially countered by animal welfare organizations as well as independent experts and representatives of the veterinary community, which report significant problems regarding difficult and time-costly husbandry and other issues referred to herein (De Briyne and Iatrudou, 2016; Grant et al., 2017; Howell and Bennett, 2017; Moorhouse et al., 2017; Kubiak and Pellett, 2018; Warwick et al., 2018; Scheffers et al., 2019; Tedds et al., 2020). Various sources have proposed approaches to moderate misleading pro-exotic pet messaging by selling and keeping proponents, and to provide more objective methods for assessing suitability or otherwise of animals for captivity (Schuppli and Fraser, 2000; BVZS, 2014; Schuppli et al., 2014; Warwick et al., 2014; Koene et al., 2016; Wensley et al., 2016; Warwick et al., 2018; Alves et al., 2019; Benn et al., 2019; Jessop et al., in press). Furthermore, a scientific evidence-based ‘pet scoring’ and other guidance services have been recently launched, for example (EMODE Pet Score, 2019; BVA, 2020) to assist informed decision-making.

#### **Model government consultation and advisory protocol**

Given the ongoing and commonly increasing problematic nature of exotic pet trading and keeping, historical and current regulatory practices are clearly dysfunctional. We argue that this dysfunctional situation is significantly linked to some governmental practices that provide exotic pet trading and keeping interests disproportionate opportunities to influence formal policy (see Case studies A and B). Accordingly, we propose a novel model government consultation and advisory protocol to offer more objective and better regulation for the future of exotic pet trading and keeping.

It has become increasingly common for government and other policy making to include input from various stakeholders that hold an interest in, have expert knowledge of, or may be affected by, the subject matter (Brouwer et al., 2013). Stakeholders may typically comprise of government, research, community and industry sectors (Fernandes et al., 2019). Identifying and including key stakeholders in any decision-making is an important process, and this can be done in a variety of ways; and identification and verification by any existing stakeholders or other individual experts is a useful tool (Mayers, 2005). The process of including all those affected by a decision and sharing accurate information improves the likelihood of an effective and well supported decision. Thus, this process infers involvement of all stakeholders without selection bias towards a vested interest party.

While we have thus far organized and discussed the different interest sectors by placing the exotic pet and hobby first, animal welfare second, and impartial experts third, hereinafter we reverse this order because doing so appropriately continues forth to our further discussion and recommendations.

#### *Impartial experts (independent experts and related institutions)*

For the purposes of this report, impartial experts comprise parties with no competing or vested interests in selling, keeping or promoting exotic pets, for example: scientists, biologists, veterinarians, human medics, legal scholars, other academics, related institutions, and particular scientific advisory groups. We adopt the position that this sector can be objectively described as ‘the impartial experts’. This position arises because the broad and overall thrust of the independent sector’s activities is to produce objective research and other information, and whether their actions increase, reduce or eliminate concerns associated with exotic pet trading and keeping is incidental and without competing interests.

The UK government is obliged to make objective decisions, and its civil servants are bound by the Civil Service Code’s core values of “integrity, honesty, objectivity and impartiality” (Civil Service Code, 2015). These principles bind government utilization of information and decision-making to protocols similar to those inferred for independent scientists. Accordingly, governmental and independent scientific objectives are most closely aligned, thus impartial expert parties should be assigned maximum consultative weight. Other governments, for example the European Union, prioritize external experts to evaluate animal welfare and policy (including in relation to pet trading and keeping), in which the external experts lead the stakeholder consultation process (European Union, 2012).

#### *Animal welfare sector (arm’s length interest parties)*

For the purposes of this report, the animal welfare organization sector comprises parties with no direct interests in selling, keeping or promoting exotic pets, for example, individuals or organizations promoting animal welfare issues, veterinary clinics, and representative bodies for the veterinary profession. We adopt the position that the animal welfare organizations sector can objectively be described as ‘the problem ameliorators’. This position arises because whether or not elements exist within this sector that may in some circumstances fail to ameliorate relevant problems, the broad and overall thrust of the sector’s activities is to reduce or eliminate concerns or harms associated with exotic pet trading and keeping. It may be arguable that, for example, animal welfare organizations possess a degree of vested interest in the trading and keeping of exotic pets in that their activities, employment and resources arise from addressing relevant issues. However, it is also plainly arguable that where animal welfare organizations manifest successful remits, they are achieving pyrrhic victories by reducing or eliminating the need for their function; thus any ‘vested interest’ element is low or insignificant.

Similarly, although veterinary clinics benefit from exotic pet trading and keeping clientele, they are not a normal component or promoter of trading and keeping, and formally binding codes of ethics demand priorities for animal welfare and impartiality among registered professionals. While some individual veterinarians are promotionally or commercially involved in trading or recommending exotic animals as pets, this situation is controversial and minimal (Warwick et al., 2013b). Accordingly, we consider that veterinarians and their institutions characteristically possess only very limited or insignificant competing interests, and thus are also examples of arm’s length interest parties. In our view, arm’s length interest parties should be assigned moderate consultative weight.

It should be acknowledged that some organizations that address animal welfare issues also address conservation, ecological, public health, and educational issues. However, there are also numerous separate and distinct organizations dedicated to conservation, ecological, public health, and education issues.

**Table 1**  
Recommended three-tier government consultation and advisory protocol on exotic pet issues.

| Weight assigned to information and advice. | Source of information and advice.     | Composition of consultants and advisors.   |
|--|---------------------------------------|--|
| Tier 1. Maximum                            | Independent impartial expert parties. | No competing or vested interests in selling or keeping exotic pets or promotion thereof; includes individuals or organizations with relevant scientific/academic backgrounds (e.g., biology, science, veterinary medicine, human medicine, law).                 |
| Tier 2. Moderate                           | Arm's length interest parties.        | No direct competing or vested interests in selling or keeping exotic pets or promotion thereof; includes individuals or organizations (e.g. animal welfare, veterinary clinics, public health, ecology, conservation, zoos, representative professional bodies). |
| Tier 3. Low                                | Competing vested interest parties.    | Direct competing or vested interests in selling or keeping exotic pets or promotion thereof; includes individuals or organizations (e.g., industries, businesses, hobbyist, representative professional bodies).   |

#### *Exotic pet industry and hobby sector (competing or vested interests)*

For the purposes of this report, the exotic pet trade and hobby sector comprises parties with direct interests in selling, keeping or promoting exotic pets, for example, individuals or organizations such as industries, businesses, hobbyist societies or groups, and representative professional bodies. We adopt the position that the exotic pet trade and hobby sector can objectively be described as 'the problem originators'. This position arises because whether or not elements exist within this sector that may in some circumstances act to ameliorate relevant problems, the broad and overall thrust of the sector's activities is to maintain or perpetuate exotic pet trading and keeping; thus, inherent negative issues are resolutely promulgated. The exotic pet trade and hobby sector inarguably possesses overriding competing and vested interests in the trading and keeping of animals for their activities, employment and continuance. Accordingly, we consider that the exotic pet trade and hobby sector possesses unlimited competing and vested interests. In our view, competing or vested interests should be assigned low consultative weight.

#### *Umbrella organizations*

In our view, where competing or vested interests are included within umbrella organizations, such overarching groups should also be assigned low consultative weight to minimize risk of biased influences.

#### *Model protocol*

We provide a recommended model government consultation and advisory protocol (Table 1), which seeks to remedy disproportionate mal-representation of information and advice to formal authorities by providing a three-tier structure and process for delivery of guidance that is representationally proportionate and, moreover, rationally-balanced. In this model, independent scientific interest parties (qualified objective scientific institutions and experts - 'the impartial experts') are assigned maximum weight; arm's length interest parties (animal welfare sector - 'the problem ameliorators') are assigned moderate weight; and competing vested interest parties (exotic pet traders and keepers - 'the problem originators') are assigned low weight. Although in this article we focus in particular on animal welfare, the principles and specific guidance protocol may have multi-disciplinary relevance to, for example, species conservation, ecology, public health and safety, and education.

Relevant sections on government websites or other inlets should provide opportunities for any party to register their interest in appropriate subjects, which can be used to form a consultation database. Registering parties should be required to answer specific questions in order to establish their position in the tier system as

independent impartial expert party, arm's length interest party, or competing vested interest party. Announcements for each relevant consultation issue should be made to all parties on the database. Members of the public would have generalized access in line with normal government consultation procedures. We also advocate the input of *ad hoc* committees of scientists and independent people to provide authoritative guidance to government.

#### **Case study A: consultation protocols and potential biases**

##### *Current government consultation and advice structure*

The English Government consultation and advice-seeking on policy and legislation for pet animal welfare issues is managed by Defra, and typically involves drafting of basic consultation criteria and queries consistent with a policy framework, after which specific time-limited consultations are announced. Announcement of consultations is directed at selected interested parties as well as via public notices that allow contributions from other stakeholders who may casually learn of input opportunities. In addition, and regardless of primary consultation exercises, a variety of *ad hoc* consultations are also actioned by Defra, and targeted submissions from outside parties may also be formally processed. Significantly, Defra considers any party outside of government to be independent (Defra 2020, personal communication, 7<sup>th</sup> February), regardless of what vested interest positions or policies such parties may hold.

##### *Consultation bias*

Defra has confirmed that it primarily elicits animal welfare and other advice on exotic pet trading and keeping from within the exotic pet trading and keeping sector (Defra (2019), thus formally assigning greater influential consultation and policy weight to vested interests than to opposing or amelioratory non-governmental organizations, and individual experts.

The exotic pet trading and keeping sector constitutes the originator of the raft of known diverse and frequently serious problematic issues. Therefore, questions can reasonably be raised about governmental agencies affording proportionately greater formal importance to 'problem-causing' stakeholders than to parties that aim to ameliorate relevant harms.

Government selection of interested parties for consultation on matters of animal welfare (for example, the issue of developing husbandry guidance for licensable activities (Defra, 2018)) has in recent years involved two exotic pet trade and hobby representative organizations and one combined general animal interest and exotic pet trade and hobby organization as primary consultation sources (Defra (2019)). In addition, Defra recently announced further restructuring of its consultation process by directly requesting a key exotic pet trade representative to establish a single umbrella

organization that would act as the Government's primary advisory body on animal welfare and husbandry issues (Defra 2020, personal communication, 3rd January; Anon, 2018). Accordingly, the Government selected a partial source to develop the foundations of its consultation base. The contingent of the umbrella organization currently comprises 16 members of which 11 are exotic pet trade and hobby (which includes directly associated subgroups), two are animal welfare parties and the remaining three are of unclear nature (CASC, 2020). Therefore, both the origins and primary composition of the Government's current advisory group are dominated by parties with vested interests in exotic pet trading and keeping. Thus, there has historically been, and remains, strong potential for consultation and information selection bias by the UK Government.

Although organizations other than exotic pet trade and hobby parties may conceivably join the Defra-initiated consultation group, engagement is stated to be minimal (CASC, 2020, personal communication, 5<sup>th</sup> March), which may conceivably be due to inherent composition imbalances towards traders and hobbyists dissuading fuller involvement. Furthermore, Defra's position is that protection of animal welfare must be balanced against negative affects on the exotic pet business sector, which may implicitly include prioritizing commercial over welfare interests Defra (2019).

#### *Incongruous policy*

Defra's policy document (Defra, 2004) includes several important provisions relevant to the consultation process. For example, the four stated reasons for government intervention are to protect public health, to protect and promote animal welfare, to protect society's interests, and to protect international trade. In addition, the document states: "All Government decisions on animal health and welfare will: be consistent with Government's reason for intervention; be based on sound science and evidence (including veterinary advice and surveillance) and guided by the precautionary principle; lead to proportionate action through an assessment of costs and benefits; be based on risk assessment; be made in partnership with key stakeholders; promote long-term sustainable development, including a sustainable food and farming industry; be consistent with EU and international obligations; and seek to promote British interests in the EU and internationally".

Therefore, within this area of policy, animal welfare is a high priority, second only to human health, which highlights its importance. The interests of society are also a major stated priority. Although 'the economy' is a stated factor, this is not prioritized over environment or society, and thus accrues no greater importance. In any event, while formally the financial status of a sector does not elevate its input status, it is unclear whether the value of the exotic pet trade, taking account of alleviating inherent societal and ecological disbenefits, actually exceeds its generated revenue. Relatedly, all sectors (pet trade, animal welfare, veterinary, and independent experts) have economic interests that can be considered co-equal. Trade factors are referred to in the context of disease prevention, but nowhere in government policy is trade sector value stated as a priority above other issues. Thus, financial scale of a sector is not a stated priority in decision-making on animal welfare (Defra, 2004). Indeed, repeated emphases on acting for society infer that all sectors, across society, including organizations and others representing their interests (e.g., animal welfare parties and independent experts), are legitimate inclusions. In addition, there is no provision for stakeholder selection bias, and the precautionary principle (first do no harm) is highlighted. Further, the Government conduct codes for civil servant's demand impartiality and objectivity and forbid bias towards any vested interest party (Civil Service Code, 2015). Accordingly, Defra's

formal policy and responsibilities appear incongruous with its consultation practices regarding pet trading and keeping issues.

#### *Scrutiny of government advisory bodies*

Greater scrutiny of government bodies and their advisory members has been called for in order to prevent regulatory capture by vested interest industry-based sectors for general economic, farm animal, and exotic pet issues with greater involvement of independent experts proposed (FAWC, 2009; Goodfellow, 2016; Holden, 2019; Anon, 2020; McCulloch, 2020; RSPCA, 2020) Failure to properly consider, in particular, objective information has led to governments acknowledging that greater attention should be paid to scientists and scientific evidence (e.g., in reference to the recent coronavirus pandemic and historical warnings), thus this sector can be considered the most valuable consultative division.

#### **Case study B: Comparisons of scale between exotic pet trade and hobby versus animal welfare sectors and independent experts**

A common, although perhaps not scientifically documented, perception is that greater influence of a sector can be justified by its scale and representative voice, as implied by large industrial unions in general. This report will present and juxtapose evidence regarding the actual respective proportionate scales of the exotic pet trading and keeping sector *versus* the animal welfare sector, raising pertinent questions regarding evaluations of vested *versus* amelioratory interests.

As indicated earlier, in Britain, societal and related considerations are drivers of relevant government policy rather than the financial value of a particular sector (Defra, 2004). We considered that the level of support for the exotic pet trade and hobby *versus* the animal welfare sector is significantly expressed via their major representational platforms, including lobbying organizations and social media, and that these markers of relative support reflect societal views. Therefore, we used scale of lobbying organizations and social media (e.g., registered employment and support bases) as comparative measures of proportionate weight for each sector that may reasonably be assigned by government. In addition, we highlight the importance of independent impartial experts in the consultation process.

#### **Methods**

##### *Inclusion and exclusion criteria*

Although all relevant sectors may occasionally converge to collaborate or align policy, for example within certain legal frameworks, the pet trade and hobby and the animal welfare sectors typically hold various conflicting, opposing or other disunified positions. Accordingly, directly juxtaposing pet trade and hobby and the animal welfare sectors is particularly relevant, and general comparisons of all interested sectors is also important.

For this study, three key sectors were considered: *exotic pet trade and hobby parties* (parties with remits or interests in selling, trading and keeping of exotic pets or promotion thereof), *animal welfare parties* (parties with remits or interests in ameliorating welfare issues causally-related to the exotic pet trade and hobby and without promoting the selling, trading and keeping thereof), and *independent experts* (impartial scientists/academics/veterinarians with no competing interests identified under journal declarations). No single register appears to be available containing all relevant parties (representative organizations, individuals and others) across all the aforementioned sectors.

Accordingly, in establishing the methodology for this report, it was important to consider that all relevant parties may not be included in this review because either they were not identified during the stakeholder search or were not referred to by other organizations. Regardless, the sector representatives analyzed in this report constitute the main relevant entities, and can thus be considered to hold the primary external relevance and influence for governmental decision-making. Although there was considerable variation in remits between stakeholders within each sector, we believe that reasonable like-for-like comparisons can be made. For example, we included only those stakeholders from each sector that had direct bearing on the exotic pet trade (whether as generic or dedicated remits), and excluded those that did not. Thus, stakeholders that were dedicated to domesticated animals were excluded.

Parties for the trade and hobby as well as animal welfare sectors were identified via a two-stage process: 1. online search, and 2. recommended contacts. The online search was conducted using Google and the following terms:

'exotic' + 'pet' + 'keeping' + 'hobby' + 'group' + 'organization' + 'uk'

'exotic' + 'pet' + 'industry' + 'hobby' + 'uk'

'exotic' + 'pet' + 'trade' + 'welfare' + 'uk'

The first ten pages of the Google searches jointly identified six pet trade and hobby organizations and 16 animal welfare organizations with exotic pet remits. These organizations were contacted and details requested for any further relevant parties. In total 11 pet trade and hobby and 25 animal welfare entities were identified. To help ensure that the study was UK-centered, foreign organizations were excluded, as were international organizations where dedicated UK staff and supporter bases could not be clarified. Although, numerous potentially relevant organizations are based overseas and have interests in UK issues, these were excluded to avoid importing non-UK-specific data. After exclusion of the foreign and international organizations and non-responders for which online data could not be ascertained, a total of nine pet trade and hobby and 18 animal welfare parties remained.

Both exotic pet trade and hobby and animal welfare sectors were contacted directly and invited to provide information regarding their individual operations, in particular: 1. number of employees, and 2. number of registered supporters or members. These questions establish infrastructural size for each party. Data acquired for number of employees and registered supporters or members were obtained where available from online and other published reports by respective organizations or via direct contact, and thus involved declared responses. Public service provider outlets (pet shops [all licensed sellers of pets] and veterinary establishments [clinics and hospitals]) were also included and obtained separately, and did not require targeted online searches because both groups are subject to formal registration, thus their scale of operation was available (Pet Industry Federation, 2019; RCVS, 2020a). Employee data for veterinary establishments (number of veterinary staff employed within clinics and hospitals) included only registered veterinarians and nurses, and did not include auxiliary staff such as practice managers, technicians and administrators.

Independent experts (scientists - including academics and veterinarians, whether institutional or other) were included based on authorship of published reports over a selected period, because this group constitutes a pertinent advisory reservoir. The number of institution-based or individual scientists was calculated using Google Scholar and search terms: 'animal' + 'welfare' + 'exotic' + 'pet' between 2009 - 2020 (first 10 pages) to locate relevant peer-reviewed scientific published articles. Authors of these papers and also relevant papers cited within

these articles (that were also published between 2009-2020) were collated. Relevant papers included any that covered exotic pets and welfare issues. Temporal limitations were applied to this academic group research element to avoid historical overreach into periods of low or no relevance to current government consultation efforts. Although somewhat arbitrary, we considered a 10 years' timeframe to be a reasonable catchment criterion to numerically document relevant scientists. It was also recognized that not all relevant scientists would be included because electronic search systems and criteria would unlikely identify all published reports. After eliminating authors that were known employees of the included organizations 489 scientists were identified. All data relevant to each sector were relevantly pooled and anonymized.

### Cross-sector entanglement

Exotic pet trade and hobby parties, animal welfare parties, and independent impartial expert parties are considered in this report to occupy specific roles or positions on relevant issues. Reasonably, signatories to, or formal supporters of, exotic pet industry and hobby parties or animal welfare parties may be aligned with and/or represented by those entities. All the stakeholders included have sector representative roles, which include parties that represent trade and/or private individuals, and these include options to 'sign up' as members/supporters. Thus, the stakeholders can be expected to reasonably reflect relevant supporter bases. Accordingly, we feel that it is reasonable to presume that, for example, most supporters of selling and keeping exotic pets are unlikely to also support organizations that oppose their activities (and *vice-versa*) and would largely remain within each relevant sector. However, it is conceivable that some supporters of either sector may also support specific elements of the other; thus, a degree of cross-sector entanglement may occur. Because attaching representative value to individuals subject to cross-sector entanglement is problematic, we have relied on available information regarding stated support bases for each sector. Relatedly, because some members or supporters of an organization may theoretically jointly subscribe to another, it is possible that an unquantifiable element of double counting could occur, although we propose that this is probably minimal. It may be argued that some supporting industries (e.g., regarding products such as animal cages and other associated equipment for the exotic pet trade and hobby sector and drugs and other materials for the veterinary sector) could be factored-in to this study. However, we considered these 'sub-sectors' to be beyond the scope of this analysis.

### Results

This study collated and analyzed information for three key elements with pertinent interests in issues concerning the trading and keeping of exotic pet animals and the amelioration of associated issues. These three groups were: exotic pet industry and hobby sector (competing or vested interests - i.e., representative organizations, pet shops [including online business sellers] and breeders); animal welfare sector (arm's length interest parties - animal welfare organizations, veterinary establishments); and independent experts (scientists/academics/veterinarians with no competing interests) (see Table 1 for fuller working definitions).

Table 2 provides information regarding representative proportionality across all sectors. For the purposes of this report the veterinary profession has been included within the animal welfare sector, because the institution has formal obligations to operate both in favor of animal welfare and to act impartially (RCVS, 2020b). Impartiality is not obligatory for non-veterinary parties in Table 2.

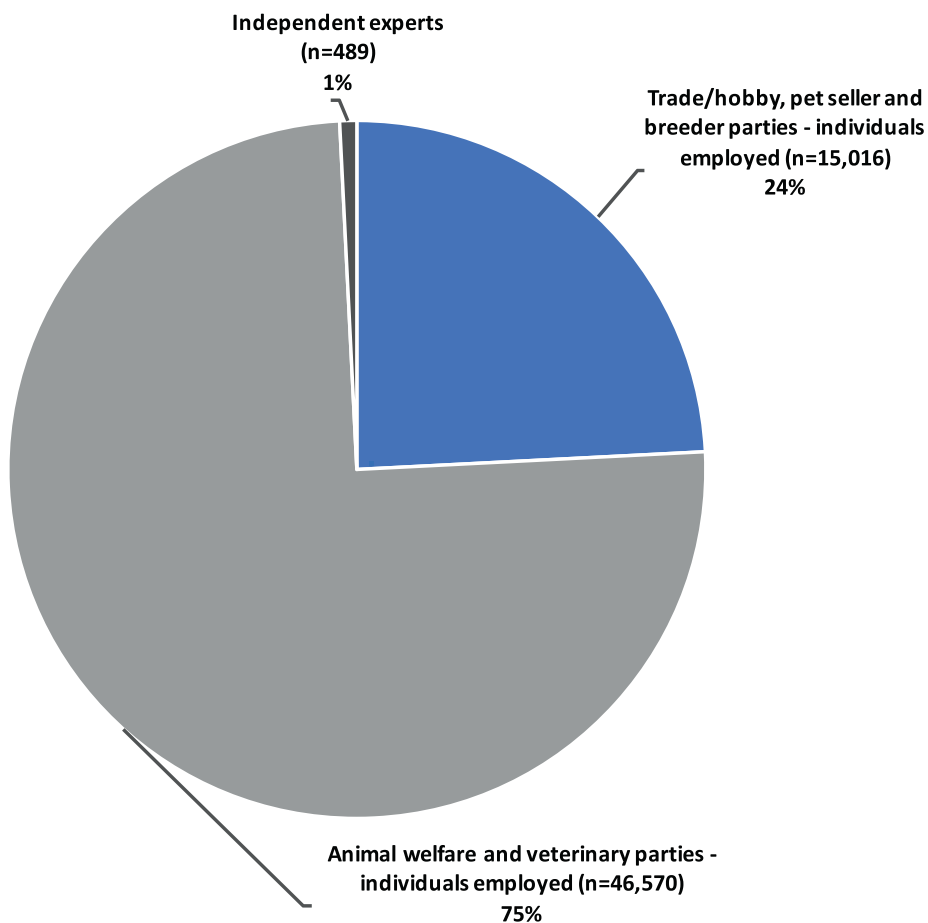


Figure 1. Number of individuals employed in trade/hobby, animal welfare, and independent expert sectors as a percentage.

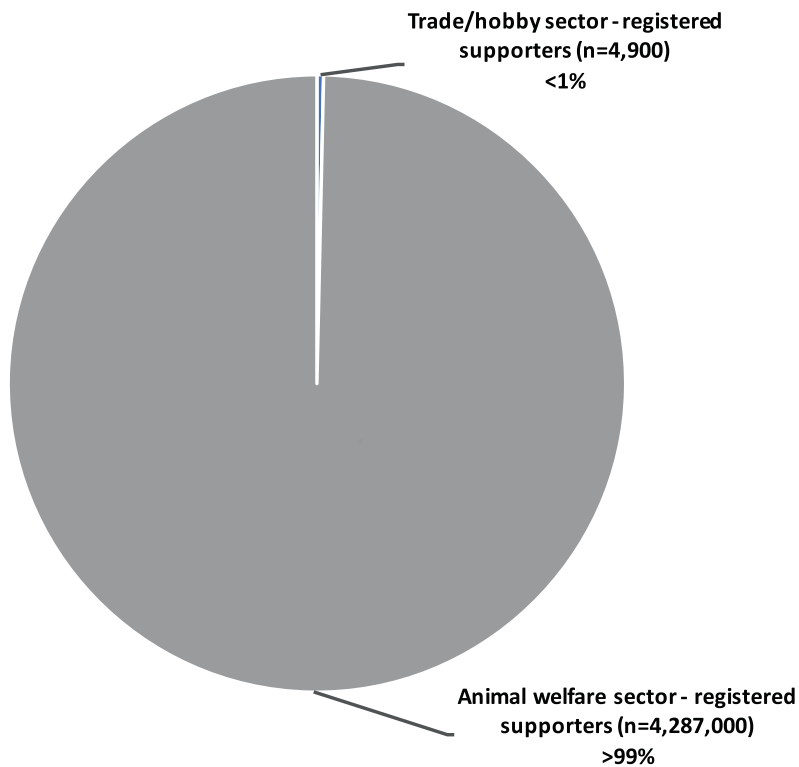


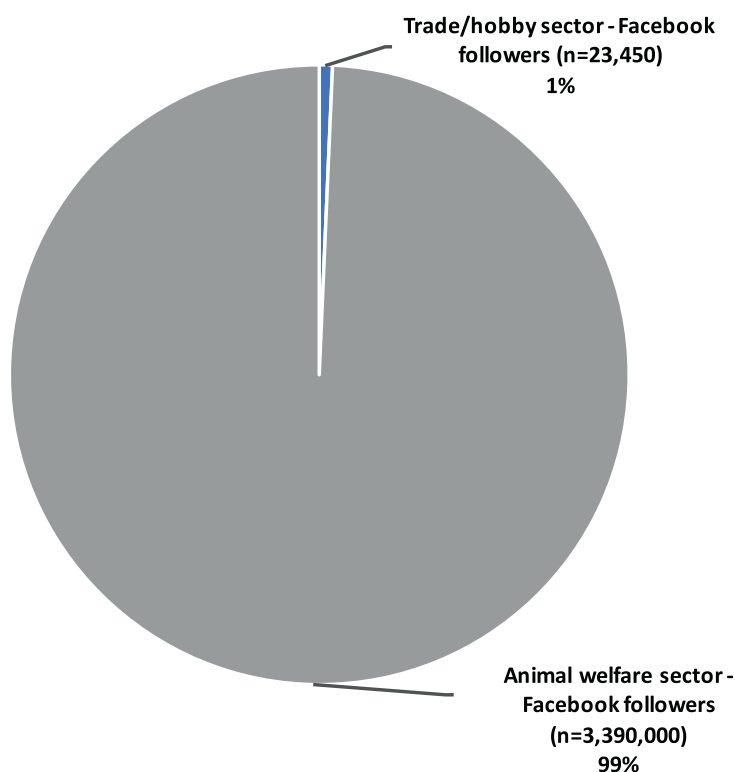
Figure 2. Number of registered supporters in trade/hobby and animal welfare sectors as a percentage.

**Table 2**  
Comparisons of scale between exotic pet trade and hobby versus animal welfare sectors and independent experts.

| Representative organisations (employees, representative support and social media followers)   |                                    |   |                                  |
|---|------------------------------------|---|----------------------------------|
| Sector  | Employed individuals<br><i>n</i> = | Representative supporting individuals<br><i>n</i> = | Facebook followers<br><i>n</i> = |
| <i>Exotic pet trade and hobby</i>   | ~16                                | ~4900   | ~23,450                          |
| <i>Animal welfare</i>   | ~6570                              | ~4,287,000  | ~3,390,000                       |
| Public service provider outlets (pet shops & breeder-suppliers and veterinary establishments) |                                    |   |                                  |
|   | Employed individuals<br><i>n</i> = | Establishments<br><i>n</i> =                        |                                  |
| <i>Pet shops &amp; breeder-suppliers (all licensed sellers)</i>                               | ~15,000                            | ~3500*  |                                  |
| <i>Veterinary establishments (clinics and hospitals)</i>                                      | ~40,000**                          | ≥5700   |                                  |
| Independent experts (scientists/academics with no competing interests)                        |                                    |   |                                  |
| <i>Independent experts</i>  | <i>n</i> = ~489                    |   |                                  |

\* The 3,500 pet shops, other sellers and breeders include those that trade both domesticated and exotic species, thus this figure over-represents the parties selling exotic pets.

\*\* The 40,000 employees at veterinary establishments includes registered surgeons and nurses only, thus this figure under-represents the total number of employees.



**Figure 3.** Number of Facebook followers in trade/hobby and animal welfare sectors as a percentage.

Three comparisons of scale were made between the relevant sector parties. While the scale of employee bases is not a formal consideration for assigning weight to a sector or stakeholder, intuitively, their representational gravitas may potentially hold influence. In any event, for interest reference purposes, we include the relative employment bases for each of the primary sectors. The first comparison presents data regarding the proportion of employees between all sectors and divisions (trade and hobby representative organizations, pet shops, breeders, animal welfare representative organizations, veterinary clinics, and independent scientific/academic/veterinary experts) (Figure 1).

The second comparison juxtaposes data regarding the number of registered or stated supporters or members between the trade and hobby representative versus animal welfare representative sectors (Figure 2).

The third comparison juxtaposes data regarding the number of Facebook followers between the trade and hobby representative versus animal welfare representative sectors (Figure 3).

Animal welfare representative organizations outweighed exotic pet trade and hobby representative organizations in terms of employees, supporters, and Facebook followers by ratio factors of >400/1, >870/1, and >144/1 respectively. Veterinary establishments outweighed pet shops, other sellers and breeders in terms of parties by a ratio factor of >1.4/1, and employees by >2/1.

Comparison of the smallest nine animal welfare parties with the total of nine trade and hobby representative parties (in order to ascertain relatively proportionate maximum versus minimum base scale comparisons) found that animal welfare representative organizations outweighed exotic pet trade and hobby representa-



tive organizations by a ratio factor in terms of employees of 4.7/1 ( $n = 76$  vs.  $n = 16$  individuals), supporters 34/1 ( $n = 170,000$  vs.  $n = 4,903$ ), and Facebook followers 16/1 ( $n = 393,589$  vs.  $n = 23,447$ ). The limited sample regarding the independent impartial expert sector totaled 489 individuals.

## Discussion and conclusions

Despite a vast and rapidly growing reservoir of objective scientific evidence outlining the diverse negative effect of exotic pet trading and keeping, these practices continue to flourish under management protocols by the UK Government. All sector interests, whether objective scientific, organizationally representative or public voice, are reasonably included in governmental consultations and other decision-making processes. However, information obtained for this report indicates that disproportionate influential weight has historically been, and continues to be, assigned by Government to the exotic pet trade and hobby sector regarding advice pertaining to the formation of policy positions. The exotic pet trade and hobby sector has benefited from perceptions that artificially inflate its representation, and Government has in our view, mis-assigned consultative weight in that direction. In comparison, the true overwhelming representational authority of the animal welfare sector, including the veterinary profession, as well as various related parties, and impartial experts, has, again in our view, remained formally under-acknowledged and incalculably under-considered.

There are inherent logical deficits in assigning disproportionately favorable consultation weight to any commercial sector responsible for concern or harm. In our view, it is further illogical to under-represent in decision-making procedures parties that act in their own right or in the public interest to counter-balance concerning or harmful commercial practices. Similarly, there are no rational grounds for under-representing independent experts, when arguably governments ought, above all, to be guided by impartial qualified information and over-arching objectivity.

The exotic pet trade and hobby sector is composed of a small number of representative organizations, which collectively employ a small number of individuals, and provide voice to a modest number of people, with pet shops and breeder-suppliers constituting its largest contingent. In comparison, the animal welfare sector is composed of a greater number of representative organizations, which collectively employ a large number of individuals, provide voice to a very large number of people that - with or without the inclusion of veterinary establishments - substantially outweigh the pet trade and hobby sector. In addition, the impartial experts sector employs many people, and is operational via a network of institutions and other sources, further shifting rational consultation balance away from vested interest pet trade and hobby parties. Accordingly, like-for-like, comparison of primary competitive scaling factors clearly determines that representation of interests and public voice strongly warrants consultation re-assignment in favor of the independent expert and animal welfare sectors in order to properly reflect and address relevant problems as well as meet the public interest.

Existing approaches by government agencies to information acquisition and processing regarding exotic pet trading and keeping issues require urgent major reform. Although this report focuses on UK-related dynamics, governmental consultation biases towards input from animal use vested interests are also reported in Canada, Australia and New Zealand (Dale and White, 2013; Godley, 2014; McCulloch, 2020; RSPCA, 2020) as well as in various anecdotal accounts regarding other countries, for example, Thailand (M.V. Biondo 2020, personal communication, 31st October), Canada (R. Laidlaw 2020, personal communication, 4th November), and

Norway (A. Krag 2020, personal communication, 4th November), thus it is likely that establishing objective representative proportionality of guidance weight to different sectors may be similarly relevant among other nations. Historical and ongoing expansion of multifactorial problems associated with exotic pet trading and keeping may be linked to concurrent and disproportionate quasi-delegation of policy-related advice by Government to the pet trade and hobbyist sector. In addition, subsequent related consultation deficits fail to properly include counter-balance by independent objective scientific input and animal welfare parties. While dedicated conservation, ecological, public health and safety, and educational sectors have not been included in this study, clearly their contributions to consultation processes are also appropriate, and would still further substantially minimize the proportionate representation of the exotic pet trade and hobby sector.

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## Conflicts of interest

The authors declare no conflict of interest.

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