The Exotic Pet Trade An unnecessary luxury in need of regulation



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Nature Needs More works on tackling the key systemic enablers of the illegal wildlife trade, including unconstrained consumer demand for wildlife products and the significant deficiencies in the legal trade system under CITES. To stop the extinction crisis we need to form a new relationship with the natural world.

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Foreword from the CEO

All of Nature Needs More's reports, investigations and projects have revolved around our concerns of the unchecked exploitation of wild species for profit. Nowhere is this more critical than in the legal trade in live animals. Just one component of this legal trade in endangered and exotic species is the exotic pet trade (EPT). Perhaps more than any other commercialisation, the EPT lays bare our fractured relationship with wildlife and the natural world.

With much of this trade is either poorly regulated or not regulated at all, there is ample evidence of high mortality rates in supply chains together with deaths because of inappropriate care by ignorant owners. The lack of business investment to solve this means that the sickness, trauma and deaths of animals for the exotic pet trade is simply considered a cost of doing business. And, the exotic pet trade is big business with no proof of ecological sustainability.

The predatory nature of the exotic pet trade is highlighted by the fact that species newly identified by science, and with very little known about them, can enter the EPT within a year of first being documented. Rarity value and newness appeal to collectors and contribute to profits.

The understanding of the predatory nature of business is nothing new. In 1871, Ferdinand V. Hayden published the Hayden Geological Survey of the region that would later become Yellowstone National Park. He warned that if the park wasn't created, there were those who would come and "*make*





beautiful specimens", continuing, "the vandals who are now waiting to enter into this wonder-land, will in a single season despoil, beyond recovery, these remarkable curiosities".

Numerous schemes, treaties, conventions and institutions have achieved nothing to curb the vandalism in the 150 years since Hayden's prediction. Currently they perpetuate the myth of inexhaustibility so the elites can benefit from the overextraction, overproduction and overconsumption of the little that is left.

Only when we are collectively ready to make an informed choice about the global systems needed to save the remaining wonders can we ensure that wild species are seen as more than merchandise. The EPT is a good place to start, as this trade is also an entirely unnecessary luxury trade. Nobody needs to own an exotic pet.



Too few people consider the words of Henry Beston, writer and pioneer of the modern environmental movement, who said, "*The creatures with whom we* share the planet and whom, in our arrogance, we wrongly patronize for being lesser forms, they are not brethren, they are not underlings, they are other nations, caught with ourselves in the net of life and time, fellow prisoners of the splendour and travail of the Earth".

Beston retreated into nature to recover from his traumatic experiences during WWI. He served as an ambulance driver including at The Battle of Verdun, which lasted for 302 days, one of the longest and costliest in human history. Immersing himself in nature to heal, he wrote, "Nature is part of our humanity, and without awareness of that divine mystery, man ceases to be man". An insight certainly lost on those who desire to profit from the luxury trade in wild species, easily done given its consumers' fragile egos and pursuit of status at all costs.

While many people retreat into nature for their personal wellbeing, their focus is nearly always 100% self-centred, never considering what they are contributing to nature. This is highlighted in how little private donations go to saving the natural world and how easy it is for governments to sell out nature to their economic growth agenda together with their increased focus on prosecuting the small percentage of people who protest.

When it comes to the trade in live species, with this report we have chosen to investigate the legal exotic pet trade. Why? Because the nature of the trade would assume that its stakeholders, traders and especially customers, care and are interested in the live animals they choose to spend their time with. The assumption being that this trade, maybe more than any other, is done well and with care. Yet, it is not.

There is ample research available showing that as we become wealthier, we become less empathetic to those outside our peer group or the peer group we aspire to be a part of. Too often the tone from the top is the belief that "empathy for individuals is costly to the collective", with Elon Musk saying "We've got civilizational suicidal empathy going on. The fundamental weakness of Western civilization is empathy.". Empathy, he said, has been "weaponized' [1]. Making it OK to be less empathetic to other people, goes some way to explaining why it is OK to not consider the needs of non-human species.

The EPT clarifies that humanity is deluded in thinking that we have made any progress in our relationship with wild species, in working towards ecological sustainability and stemming biodiversity loss. While we allow ourselves to feel good about rewilding projects (which Nature Needs More supports) that appear to 'raise the ceiling' of our humanity, we conveniently ignore that fact that we aren't 'raising the floor'. In fact the floor is collapsing further, as already non-existent 'green tape' regulation is weakened.

Lina Khan, when she was Chair of the US Federal Trade Commission, was right when she said, "*First companies become too big to fail, then too big to jail, then too big to care*". Yet too many policy makers are in denial that companies have been allowed to evolve to the point where they become too big to fail and too big to jail. The lack of action in constraining companies in both size and behaviour creates a system where companies don't need to care about even the biggest threats to our collective survival – biodiversity loss and climate change. Changing the behaviour of all actors in the EPT would be a great start to reverse course.

Dr Lynn Johnson, Founder & CEO





Section 1 Introduction

The exotic pet trade serves as an excellent example for what is wrong with the trade in wild species and the way it is 'regulated' today. Whilst in dollar terms the exotic pet trade is only a very small part of the overall wildlife trade, the fact that the species are traded live and are (mostly) relatable to people provides an opportunity to explore many of the assumptions underlying the trade in exotic and endangered species and the way the current regulatory system has been set up.

Our main aim with this report is to explore the suitability of using positive lists (which legislate the species that are allowed to be traded and owned) to better regulate the exotic pet trade. There is a strong push underway in Europe to switch to positive lists and a number of countries in the EU have implemented at least partial positive lists. Animal welfare and conservation charities are leading this push, and they predictably use animal welfare and environmental impact arguments to facilitate the change.

Unfortunately, there is little evidence that these organisations have a good understanding of regulatory frameworks and what it takes to craft legislation that can and will be enforced. They have campaigned for what we shall call 'basic' positive lists, that is a framework for creating lists of animals that can be kept as pets and the scientific criteria used for inclusion on the list.

They have failed to realise that without the creation of dedicated monitoring and enforcement capacity and associated funding, these positive lists will not be enforced, and their effort to bring in the legislation will have been wasted.

We will detail what additional measures need to be included in legislation to give it the best chance

to succeed in curtailing the legal exotic pet trade and the illicit trade it enables.

There is no agreed upon definition of 'exotic pets', but based on a draft policy currently considered by the Australian Veterinary Association [2] we will consider any live animal that would be "considered unusual or uncommonly kept in a home and would in general be accepted to be a wild species rather than domesticated" as an 'exotic' pet.

The vast majority of exotic pets being traded are birds, reptiles, and ornamental fish. There are also quite a number of mammals being sold for the pet trade, such as mice, rats, hamsters etc. all the way to cheetahs and monkeys. We exclude 'hobby' animals (goats, donkeys, horses etc.) from this discussion, as they are mostly kept outside and not in the house.

In the last 20 years social media has had a profound impact on exotic pet preferences and trade channels. Social media can create sudden demand for a particular species, often as a result of it being showcased in popular movies. For example, the animated movie Zootopia sparked a demand spike for fennec foxes and Finding Nemo a demand spike for clownfish. We will look further into this phenomenon in relation to understanding the nature of the demand for exotic pets. Understanding the demand is crucial to getting the regulations right for curtailing the trade and for creating demand reduction campaigns, which we will also explore in this report.

It would be nice if we had a clear picture of which species are being traded as pets, in what quantities and between which countries, but there



is no data source that can provide the answers to those questions. All the data sources we have are incomplete and even if they do go down to the species level, such as the CITES trade database, there is often no way to distinguish between the exotic pet trade and other uses. For example, the tokay gecko and the yellow-spotted river turtle are two of the most-traded species under CITES, but both species are also used for food and the tokay gecko is also used in traditional Asian medicine.

Whilst the lack of useful trade data is common to the overall trade in wild species, what does make the exotic pet trade such an interesting example to analyse is that the species are traded live, are (mostly) relatable to humans and that we have a clear understanding what motivates the purchase of exotic pets. We will focus here mainly on the international trade, as obtaining data for domestic trade is practically impossible in most instances. That does not mean that the domestic trade is irrelevant, it just means that any data sources are basically non-existent.





Most of the international trade in wild species is without question a luxury trade. Even the biggest component of the trade by value, seafood, includes a large number of species and products that are clearly harvested or bred for luxury consumption. Examples include tuna, sharks, salmon, sturgeon (caviar), crustaceans, abalone, mussels, clams, octopus, sea cucumber, and many, many more. The exotic pet trade falls into the same category – it is entirely a luxury trade, and all luxury consumption is motivated by gaining and maintaining social status.

Hence, what motivates the purchase of exotic pets is the same desire for status that motivates the purchase of crocodile skin handbags, python skin shoes and any other luxury products that contain parts or derivatives of wild species. The distinction between the type of luxury goods being consumed lies in the reference group, that is who the purchaser is trying to impress, and the price point, not in the motivation.

As we will be exploring the need for better regulation of the exotic pet trade, the argument could be made that the keeping of 'exotic' pets and luxury consumption of wild species are nothing new really. This is certainly worth looking into, as birds have been kept as pets going back four or five thousand years and hares, mice, weasels, fawns, goats, cicadas, and turtles were kept as pets in ancient Greece and Rome. The problem, as with all luxury consumption based on wild species, lies in the number of people with the means to acquire the luxuries compared to the numbers that can be sustainably harvested from the wild or captively bred.

Industrial society enabled by fossil fuels has not just dramatically increased the human population, but also the affordability of luxuries for a far larger slice of the population than in historical times. This process accelerated greatly in the 1990s with China, India and Russia embracing (free-market) capitalism. Regulatory interventions will need to consider the massive scale of the trade today compared to both the size of wild populations and the habits of past (non-industrial) societies.

It is in the nature and scale of the demand that we find that current regulations are completely inadequate. This starts with the unsustainable exploitation of wild populations, the crazy number of losses (deaths) during transport and continues with the ignorance of exotic pet owners which leads to large numbers of exotic pets dying or being abandoned, often within 12 months of purchase.

When a trade in living beings is allowed to function by the rules of the throw-away consumer society, then we have a serious problem. We are not gods, we are animals. We rely on nature for everything that our society is based on. Our willingness to disregard and disown our animal nature so that we can justify our appalling behaviour towards nature (and the basis of our existence) is nothing short of insane. We delude ourselves that we are rational beings and that our decision making is rational, yet undermining the basis of our existence is anything but rational.

Whilst the exotic pet trade might not be the worst example of this abuse and excess, it is relatively easy to understand and differentiated from subsistence consumption. Nobody is likely to advance an argument that keeping exotic pets is a human right or a necessity to sustain the human population. Instead, it is, to use an old term, a folly.

Sure, some people genuinely appreciate the companionship of their exotic pet and don't feel the same way about cats or dogs. But by and large this 'companionship' is likely a social construct and ultimately a cover for gaining status. And what is a better illustration of a folly than any acquisition solely for status gain? It is only the collective worship of wealth and status in our late-stage capitalist system that makes this behaviour seem OK, instead of being seen as akin to a mental illness and to be acknowledged as the core problem of our current society.

Following these lines of reasoning we will present regulatory interventions that need to be urgently considered by governments and international treaties such as CITES to better regulate the trade in live animal species, to reduce deaths during transport and due to the ignorance of owners, and to reduce the sheer number of invasive species created from exotic pets being abandoned.



The Exotic Pet Trade Section 1 - Introduction

The primary regulatory intervention we favour in line with many other NGOs in this space is the transition to positive lists, that is regulating what is allowed and the expected behaviour of all actors in the supply chain, not what is forbidden. Positive lists drastically curtail the trade and the complexity of regulation. They can be designed in such a way that the lack of suitability for widespread ownership (and ignorant owners) is used as a criterion for listing. In much the same way, transport 'losses' due to the inevitable focus on profits instead of animal welfare can be used as listing criteria to exclude many species from the trade.

There are more than 40,000 species listed under CITES (which uses the opposite approach blacklisting) of which over 10,000 are traded regularly. That it is practically impossible to effectively manage the restrictions, permits, quota etc. for such a huge number of species - many of which have look-alike species that only experts can tell apart - is obvious. The exotic pet trade equally involves somewhere around 13,000 species, most of which really have no place in a cage, terrarium or aquarium.

The way to eliminate all the problems and shortfalls associated with the current total lack of regulation (for non-CITES species) and the blacklisting model adopted by CITES is to transition to positive lists for the international exotic pet trade (or for all trade in live animals considered wild fauna). We will explore both the benefits and the practical implications of going down this path in this report. We will also cover additional interventions that should be considered, such as demand reduction campaigns.

At the heart of our argument for positive lists are not the animal welfare or sustainability concerns, we consider this trade a prime example for a completely unnecessary luxury trade that has far too many negative side effects to be allowed to continue to exist in its current form. Hence the major pain point ought to be the fact that this trade is a folly, solely in existence to allow unscrupulous entities, i.e. businesses, to make a

profit and for consumers to fulfill their irrational need for social differentiation.

Having distanced ourselves from nature through living in cities and staring at screens to the point where a large majority of humans today probably believe in our god-like power and status, there is an urgent need to make a U-turn before it is too late. This obviously applies on a much larger scale to our overexploitation of nature, but the exotic pet trade could be used as the proverbial canary in the coal mine and become the first step in a new direction.





Section 2

Overview of the Exotic Pet Trade

In order to analyse the current regulatory situation of the exotic pet trade we first need to understand its historical origins and how these origins compare to the current scale of the trade. This comparison is necessary to highlight the differences between past customs and today's global trade in exotic pets. It allows us to derive the stark implications of the differences in scale, for the animals being traded, their human owners, and the ecosystems they are taken from and abandoned into.

We also need to take a look at how the trade in exotic pets is currently conducted, as it differs in its nature from other wildlife trades. Conservation and animal welfare NGOs habitually focus on animal welfare issues and the impact on wild populations but usually neglect to examine the motivations and roles of the different actors in the wildlife trade. This approach is not just flawed, it is highly likely to lead to favouring less effective and efficient regulatory interventions.

What is interesting about the exotic pet trade in this respect is that conservation NGOs have arrived at the same preferred regulatory model – positive lists – from the animal welfare/ environmental impacts angle as one would arrive at from looking at ownership motivations and the commercial structure of the supply chain and trade platforms (retail, online shops, markets, social media, pet shows, auctions etc.).

We believe that this ability to promote positive lists for the exotic pet trade from both angles makes it a unique test case for the adoption of positive listing as a regulatory model for the trade in wild flora and fauna.

History and Ownership Motivations

If we accept that pets are animals kept in the home purely for companionship and pleasure, and not for food, clothing or to do a job, then it becomes immediately obvious that keeping pets requires two enabling factors – wealth and free time. Hence pet keeping used to be the domain of the rich and was seen as an extravagance, that is a way of demonstrating superior status.

That's why the examples of historic pet ownership and the varied nature of the pets that were kept across different cultures, which are often used to justify the practice of owning exotic pets today, are really not relevant in today's context. Today, by historical standards, anyone living in a wealthy country is 'wealthy' enough to own a pet and has the necessary free time.

To make matters worse, in our globalised, industrial society the act of obtaining exotic pets is trivial – click on a link and buy. Equally, obtaining the cage, aquarium or terrarium is just as easy as is obtaining the right food. None of these were easy before the advent of fossil fuels and cheap long-distance transport. These are the main reasons why (exotic) pet ownership did not really become commonplace until after the Second World War.

We can use Google's Ngram Viewer to see this pattern by analysing the frequency of the word "pet" in books published in the United States between 1800 and 2022.

The dramatic change in the social status of owning pets becomes obvious. After holding steady for over a century, mentions of "pet" shot up between 1947 and today, reflecting the new prevalence for keeping pets at home.



Section 2 - Overview of the Exotic Pet Trade



Mentions of 'exotic pets' don't really take off until the mid-1980s, not coincidentally the neoliberal era is what really set off the trend in owning exotic pets today. This is related to one of the key reasons for keeping exotic pets – social signalling and status differentiation. It was not really until the 1980s that the uniform 1950s ideal in the West of a home with a yard and 2.5 children was replaced with endless variations on consumer goods and services, predominantly used to signal belonging to particular (status) group.

Groups seeking (social) status differentiation are subject to fads and crazes and this has been no different in relation to pet ownership. As Herzog [3] writes: "Fads for different types of pets can sweep across a culture. Monkeys were popular in Europe in the 13th century. As pet-keeping spread from the aristocracy to the middle class in the 16th century, popular pets included tortoises, squirrels, otters, and hedgehogs (Thomas, 1984). In the 18th century, mice and other "pocket pets" became popular as did bats and toads. At the turn of the 20th century, the most common pets among the American middle class were caged song birds, a trend that in the 1920s was followed by a craze for aquarium fish (Grier, 2006).

A "beetle boom" spread through Japan in the 1960s when department stores began selling giant stag and rhinoceros beetles and paraphernalia for their care and housing (Laurent, 2000). Over the last five decades, short-lived enthusiasms for creatures such as baby turtles, horned toads, miniature pigs, and even "pet rocks" have swept through American culture."

Hence any analysis of the regulatory framework for the trade in exotic pets needs to be based on these new realities: buying exotic pets is easy, affordable for vast numbers of people and an avenue to gain social status in the eyes of a suitable peer group.

The questions of environmental impact of the trade, animal welfare issues, potential implications for the health of exotic pet owners and the invasive species problems created by abandonment are all important and valid and

need to be considered, but they should not form the starting point of any argument for changing the regulatory framework. The starting point should be the fact that exotic pet ownership only becomes a problem once very large numbers of people have the means and desire to own such pets purely for status differentiation purposes.

Whilst undeniably in their own mind exotic pet owners derive 'pleasure' and companionship from keeping their pets, it is much more likely that this pleasure is subconsciously derived from the perceived status gain and the companionship is basically 'made up' by projecting human traits on animals that are clearly not capable of reciprocating their owners' affection.

All animals respond to external stimuli and these responses are subject to being subjectively interpreted. Whether a fish in a tank or a tortoise or even a parrot is really responding 'affectionately' to their owner is going to be largely in the eye of the beholder. Yet the affection that owners may feel towards their exotic pets clearly has a very low limit. This is obvious from high rates of death and abandonment of exotic pets compared to cats and dogs.

The estimates of death within the first year of ownership have only been done for a handful of exotic pet categories and vary considerably. One study interviewing reptile owners at pet shows in the UK found a mortality rate of 8.5% for lizards and 2.3% for snakes [4] whereas another study in the UK based on the numbers entering the trade each year vs. the numbers kept in the home estimated reptile mortality at 75% [5]). Numbers reported for pet fish range from 10% to 98%, depending on the species and how mortality is measured [6].

Regardless of the actual numbers, death and abandonment rates for all exotic pets are much higher than for cats and dogs and reflect a different attitude of their human owners towards their status as a companion animal. The importance is not in the individual beliefs held by the owners of such pets, it is in the revealed preferences when looking at their behaviour. We will dive into those in later sections, suffice to say that owner ignorance and (benign) neglect are widespread and that exotic pets are clearly seen as disposable by far too many owners.

Collectors do not fit this picture; they often display great knowledge and care for their animals. The problem with collectors is not ignorance or neglect, it is greed. They lust after rare and newly discovered species, putting pressure on wild populations that we know next to nothing about.



The Scale of the Trade in Exotic Pets

Given the difficulty of finding suitable data sources, it is not easy to get a handle on the scale of the trade in exotic pets. All available trade data sources are incomplete and usually do not distinguish between the eventual use of the animal being traded. The trade in the 40,000 species protected under CITES (Convention on the International Trade in Endangered Species of Wild Flora and Fauna) will be recorded in the CITES trade database, but apart from looking for animals traded live and with a commercial or personal purpose, it is not possible to establish if the particular shipment was for the pet trade or another use (such as gourmet food).

In addition to CITES, the EU has TRACES (the trade control and expert system) and the US has the LEMIS (law enforcement management information system) wildlife trade database. Most other jurisdictions either do not collect data beyond COMTRADE (UN commodity trade statistics database), which lacks the granularity of the other data sources mentioned, or they don't provide any public/academic access. CITES, TRACES and LEMIS all have major flaws in what information is (not) recorded, the quality of the data, the lack of consistency and the timeliness in recording it.

Despite this lack of suitable trade data, estimates derived from samples have ranged between 10,000 and 13,000 species being traded as exotic pets. For reptiles alone a recent study found nearly 4,000 species traded, which equates to 35% of all known reptile species [7]. Further, three quarters of these reptile species are not covered by any form of international trade regulation.

The volumes are equally staggering, with around 2 million reptiles imported into the EU annually and with a total population of reptiles in the EU of around 8 million. North America (US and Canada) is the other major market for the reptile pet trade, with a population of around 10 million [8].



This picture is far worse for ornamental fish species, the vast majority of which are not protected or regulated in any way. Only 0.5% of fish species are CITES listed and the available data are often contradictory or insufficiently granular to derive useful information. CITES commissioned a study of the trade in non-listed marine ornamental fish recently [9], which found over 2,000 species being traded.

A recent literature review [10] found that based on published data somewhere between 13 million and 35 million marine ornamental fishes are traded globally every year. However, because the overall trade in ornamental fishes is estimated to be 1.5 billion, and marine fishes are said to make up 10% of this figure, this would indicate 150 million marine ornamental fishes are being traded annually. Either way, the quantities are staggering and most likely completely unsustainable. With no population data to compare to, the exploitation for trade benefits from a lack of interest by both regulators and NGOs. The total population of ornamental fishes in the EU has been estimated at 300 million, at 150 million in the US [11] and at 11 million in Australia. Marine ornamental fishes are of higher concern in the pet trade than freshwater varieties, as basically all marine ornamental fishes are wild caught.

For example, the Banggai Cardinalfish is described as "inhabiting a small area on the Indonesian Banggai Archipelago, has a silver body, marked with vertical black stripes." Conservationists have been trying since 2007 to have trade restrictions imposed for the Banggai Cardinalfish under CITES; as 2007 was the year that the IUCN first listed the fish as endangered. Yet when consumption is driven by status, excess is the logical consequence. A tank in Lagos, Nigeria, created as a dance floor with integrated disco lights, and stocked with marine fish, includes 60 Banggai Cardinalfish [12].

The trade in birds is equally huge, with some 37 million pet birds kept in the EU, 20 million in the US and nearly 4 million in Australia [13]. Keeping songbirds in cages is also very popular in Southeast Asia, South America and parts of West Africa, but the lack of available data makes it very difficult to assess the true scale.

As with reptiles and fish, it is difficult to know how many different bird species are being traded, but an estimate by Birdlife International from 2017 arrived at 4,000 species (out of a total of around 11,000 known species). CITES admitted that millions of songbirds are taken from the wild every year, but as they only comprise 1.4% of the species listed on its appendices it has very little data to contribute [14]. CITES does list all parrots but has never shown much interest in the songbird trade.

Because a lot of the trade in songbirds takes place domestically, the data situation is even worse than for most other exotic pet species. Researchers counted 340,000 songbirds for sale in markets in Indonesia, 92% of which were native species. Similar situations would arise in other countries with highly active markets for songbirds, such as Thailand, China, Viet Nam and Brazil. Conservationists have mainly focused on cataloguing the species in trade but have very little data on the quantities being traded [15].

It should be clear from the above that despite a massive deficiency in the data sources for the exotic pet trade, we do know that the trade is both massive in volume and in the diversity of species being traded. We also know that only a small percentage of the species traded are covered by existing trade regulations.

It is at this point that we should remind ourselves that this is purely a luxury trade, for the pleasure of people who can afford it, which is far too many compared to the numbers that nature can sustainably supply.



Trade is a Bigger Risk Than Climate Change

Because of the lack of available trade data on the exotic pet trade and the lack of baseline population data on most of the animals extracted from the wild, it is basically impossible to assess the total environmental impact of the trade.

An attempt to ascertain the sustainability of the legal wildlife trade [16] found that:

- Without data to inform population management or understand the impacts of wildlife harvest, contrary to general perception, a large portion of legal trade is likely to be unsustainable, and
- Most countries do not record most wildlife exports and imports at species level, if they fall outside of CITES Appendices. Offtakes are often unregulated, without information on status and trend of the targeted population,

impact on ecosystem, and/or role of other threats, preventing development of mechanisms to ensure sustainability. In short, the removal of species from their native ecosystem is often based on ignorance of relevant parameters for monitoring the sustainable viability of a species.

This is the same conclusion reached by two major studies conducted by the IPBES. In its first Global Assessment Report [17] the IPBES established that trade is the most important extinction risk for marine species and the second most important extinction risk for terrestrial and freshwater species (see image from the report below).

This was ahead of the risk from climate change and from invasive species. For terrestrial species only the risk posed by land use change (resulting in habitat loss) was larger than the risk from trade.



Figure SPM (2) Examples of global declines in nature, emphasizing declines in biodiversity, that have been and are being caused by direct and indirect drivers of change.

The Exotic Pet Trade Section 2 - Overview of the Exotic Pet Trade

The second major study conducted by the IPBES [18] was commissioned by CITES to explore the sustainability of the wildlife trade. Essentially the conclusion of the IPBES experts was that local and cultural trade rarely pose a problem for sustainability, but the international trade leads to unsustainable practices as a result of the "inequities between communities and companies" and "the lack of effective regulation".

Specifically, the report found that:

"...global trade in wild species also decouples the consumption of wild species from the place of origin, introduces structures and dynamics that are different from those that govern local trade relations and practices, and can shift governing strategies from collective action to individualbased strategies. Without effective regulations operating across the supply chain (from local to global), global trade in wild species generally increases pressure, leading to unsustainable use and sometimes to wild population collapses (e.g., shark fin trade). This is in line with similar, previous academic studies on the impact of trade on species populations."

This difference between local/cultural trade and international trade lies both in the nature of the demand and the actors and their motivations involved in the supply chain, which we explore further below.

Supply Chain Structure, Actors and Motivations

The IPBES report on sustainable use in the wildlife trade goes to great length to highlight how much humans depend on the exploitation of wild species, especially of fish (for food) and tree species (for construction and firewood). It dedicates many of its points to the fact that billions of people utilise wild species for their subsistence and have done so for a very long time.

We don't dispute this at all, the problem lies in the fact that the term 'sustainable use' is utilised both for local/cultural/subsistence use AND for the industrial scale, international trade. Thus, what is being conflated are practices that involve different actors with very different motivations, power and resources.

In the case of subsistence use, local actors generally have control over the resources utilised and have established management schemes / customs to prevent unsustainable use. The actors – communities and their members – are intrinsically motivated to keep the exploitation sustainable in the face of natural variations in supply and threats from external factors (illegal exploitation, climate change, invasive species etc.). Their livelihoods depend on the wild resources they exploit and that means that generational equity tends to be fully taken into account when creating and refining management schemes.

The exploitation for the international trade involves completely different actors with completely different motivations. The trade is conducted by businesses for profit, which is a short-term consideration. Nobody involved in the international trade in wildlife has any interest in generational equity, when one resource has been exhausted, they move on to the next. The relationships between the actors are transactional and based on their relative power, in sharp contrast to the community approach for subsistence use.

This setup means that the intrinsic motivation of the actors in the international, industrial scale trade runs counter to sustainable use. It is for this reason that subsistence / cultural use should never be conflated with international trade, the two have literally nothing in common other than that they might be using the same species. Subsistence use is typically arranged around a commons approach whereas businesses involved in the international trade will typically use their power to seek exclusive rights to a 'resource' and aim to exclude all other actors from exploiting it via legal means (licences, direct private ownership, access agreements with governments etc.).

Whilst all international trade in wild species is conducted by businesses, there are also power discrepancies between the often local/small businesses involved in the early part of the supply chain and the (often massive, often listed) companies and conglomerates in the importing countries that sell the final products. Some trades are highly concentrated, for example the trade in python and crocodile skins ultimately all ends up in a tiny number of luxury conglomerates (LVMH, Kering etc.) in France, Italy, and Spain that sell handbags, shoes, clothes and accessories made from the skins at exorbitant prices [19].

Other trades, like the exotic pet trade, are less concentrated. The exotic pet trade is much more fragmented than many other wildlife trades, involving small businesses, sometimes powerful wholesalers and often a plethora of trade channels. Exotic pets are sold via many different avenues – retail outlets, markets, online shops, breeders, pet shows, social media platforms, and online marketplaces. There is no Amazon or LVMH for exotic pets, the retail side of this trade is highly fragmented.

This fragmented nature means that 'consumer pressure' cannot be applied to improve trade practices and 'self-regulation'. Most of the companies involved in the exotic pet trade are not listed, they are privately held and hence free from public scrutiny. They don't just fly under the radar, there simply is no radar. They do not have to make any attempt to behave ethically or improve their animal welfare practices because nobody knows who they are and nobody cares.

We need to recall at this point that even for CITES listed species nobody cares, as CITES does not regulate businesses directly, all regulation is carried out by national authorities. Given the minuscule resources, power and status of national CITES authorities in basically all signatory countries, they will not waste their time on taking on businesses trading in exotic pets. We should further recall that 85 of the 184 CITES signatory countries do not even have a dedicated enforcement authority [20] and indeed that an enforcement authority isn't even mandatory under CITES.

CITES is known for being unable to comprehensively monitor the trade in listed species, the CITES trade database lacks crucial information (such as shipment value) and is full of inconsistencies and contradictions [21]. Massive loopholes enable the laundering of illegal products/specimens into legal supply chains, distorting the data even further. CITES cannot reconcile reported imports with exports and in far too many cases the source country information is plain wrong (being a country that has no wild or captive populations of the species exported). CITES also only covers a small part of the species involved in the global exotic pet trade.

To summarise, the exotic pet trade is basically unregulated (either not regulated or regulations are not enforced), is conducted by businesses for profit, is characterised by very fragmented and often long supply chains and none of the actors involved in the trade have any interest in sustainability, and too few have any interest in animal welfare.



Impact of Online Trade and Social Media

The exotic pet trade also differs from other wildlife trades in the nature of the demand and the multitude of trade platforms and channels. Since the advent of the social media age the ability to influence the demand for exotic pets and to trade them via online platforms has grown massively.

There are basically no restrictions on trading in live animals on these platforms, or if they do exist, trade can easily move to closed groups (like on Facebook). The platforms have no incentive to restrict or police the trade in live animals, they profit from any engagement by users and from paid advertising. Again, with the lack of regulation and enforcement it would be silly to presume that lobbying the social media giants and online trade platforms would have any effect on their behaviour when it comes to the selling of exotic pets.

This can be seen from the complete failure of the Coalition Against Wildlife Trafficking Online. Launched in 2018, the coalition has three conservation organisations, WWF, TRAFFIC and IFAW, as the convenors of the coalition. The businesses include Facebook (Meta), Google, ebay, Etsy, Instagram, Microsoft, TikTok, Alibaba and many more: Early after its launch, the coalition stated its goal was to cut the illegal online trade by 80% by 2020 [22]. Then their 2021 progress report [23] states that, as a group, they removed 11 million posts and listings of illegal wildlife for sale but did not say what percentage of the total illegal online trade that amounts to. An update in 2024 [24] stated: *"Since our last progress update in 2021, companies have blocked an additional 12.5 million sales and accounts for prohibited wildlife, bringing the total since 2018 to 24.1 million."*

The 2021 and 2024 updates provide zero information on how these numbers are in any way connected to the goal of 'cutting the illegal online trade by 80%'.

The trade is not just rampant on social media platforms, there are also innumerable online shops catering to exotic pet enthusiasts and impulse purchasers alike. A recent study [25] into the online trade in tarantulas and scorpions (which are surprisingly popular as exotic pets) looked at the number of websites selling these animals. The researchers found more than 100 websites by doing the most basic search – "tarantulas/ scorpions for sale" – in 9 languages on Google.





Another study [26] looked at the number of online ads for illegally traded species. That study identified more than 100,000 suspicious ads online over a 7-year period, on the basis of a literature review (which likely provides a substantially incomplete picture). Of those over 100,000 ads more than 75% were for birds and 21% for reptiles, giving the exotic pet trade a 96% share of the total illegal online wildlife trade. Again, the lack of comprehensive and ongoing monitoring means that these numbers are very likely to be based on incomplete information but it is clear that the exotic pet trade is a major contributor to the illegal wildlife trade.

Other studies found that potential and new exotic pet owners exhibited a preference for colourful and patterned species [27] whereas more experienced owners show a desire to own rare or newly described species [28]. This diversity of ownership motivations is catered for by an industry attuned to the fact that such preferences exist and can be exploited for profit, be it through legal or illegal channels.

A study looking at an exotic pet market in Germany [29] noted that rarity of a species generally raised its value in the marketplace. But of real concern was that it found 43 species not listed with CITES and, "only recently described, but have already entered the European pet trade.". It is alarming that species are traded before any real knowledge on them had been established. For example, "Sylvia's tree frog (Cruziohyla sylviae) and the golden bug-eyed frog (Theloderma auratum) were both scientifically described for the first time in 2018 and traced by the authors for the first time in the European pet trade in 2019.". It takes on average 12 years for a species to get a listing on CITES [30] but it seems it takes less than a year to get a listing on an exotic pet website!

The industry also knows that these preferences can and will be influenced by fads and consumer crazes. The obvious examples are the craze for clownfish after Finding Nemo was released by Pixar and the craze for fennec foxes after the release of the film Zootopia. Sometimes these crazes are present in only a small number of countries and sometimes they can reach global proportions.

The craze for owning pet otters and for otter cafes in 2017/18 was a uniquely Japanese phenomenon [31], and the country, which is a major demand country for exotic pets, still has many 'cafes with adorable animals' like otters, micro-pigs, owls, snakes, capybaras and even penguins [32]. The Exotic Pet Trade Section 2 - Overview of the Exotic Pet Trade

What matters in relation to the nature of the demand for exotic pets is that it is extremely diverse, influenced by traditional advertising and social media and subject to social signalling to both in- and out-groups. The latter can be seen on a daily basis on Instagram with exotic pet owners showcasing their animals and their lives with them. What gets followers and likes will be copied by others, used by influencers and by traders alike.

All of this is driven by status gain and differentiation, by status competition and the desire to belong. Social media acts as a massive amplifier, providing a global platform for these age-old social processes. Humans want to belong to (in-)groups, differentiate from other (out-)groups, gain status in the eyes of their peers, fit in with the groups they are part of or be noticed by the groups that they seek entry to. If their in-group or the group they aspire to suddenly develops a liking or follows a fad for, say, owning a parrot or tarantula, then peer pressure means more members of the group will go along and acquire such animals.

What this implies is that the nature of the demand is mostly unthinking and subject to impulse purchasing decisions. This consumer behaviour is bad enough when people are buying cheap clothes on Shein or Temu, it should matter a lot more when live animals are being subjected to abuse as a result. The questions of adequate care for their new exotic pet might be only an afterthought, after the purchase has already been made. Traders have no incentive to provide such information to consumers; from a profit perspective a high mortality rate is good for business [33].

It should be self-evident from this discussion that the market in exotic pets cannot be left unregulated, but that is exactly what we have in place globally and nationally in most countries. The reason is the lack of affinity with and compassion for non-human species and pets that aren't cats or dogs (which have gained nearhuman status given the level of care afforded to them by most owners, at least in wealthy countries).

We have distanced ourselves so far from our animal nature that we have forgotten to consider the needs of the rest of the animal world. Our need for pleasure and instant gratification is enough to put animals in peril, to wipe out populations of suddenly popular species, and to disregard their needs during transport and husbandry. This is just as appalling as it sounds, but completely normalised in our current, capitalist consumer society.





Section 3 The Problems With Current Regulations

Before we look at the specific failures of the current (lack of) regulations in the exotic pet trade, it is highly beneficial to make a detour into the history of environmental laws under capitalism. Even before we go into that, lets remind ourselves that nature used to be a commons, usually under the stewardship of one or several deities (from Gaia to ancestral spirits and so on).

Private ownership of land (and the natural resources on or under it) only became important with the enclosures starting in Europe in the 15th century and with colonial conquest. This process occurred in tandem with a profound change in the perception of humans in relation to gods.

As part of the enlightenment in the West a long, slow process began to shift both the perception of God and humans in the guiding theology. This process elevated humans above nature and it shifted the primary attribute of God from love to power (God is omnipotent).

The gods' role was no longer to watch over all of nature (including humans) and to provide an explanation for natural processes. Instead, humans decided that we could both understand nature and replicate its secrets and processes and hence assume god-like powers.

These two processes shifted in tandem and, as capitalism evolved and became dominant, so the idea of humans 'owning' nature and being able to 'rule' and 'exploit' nature at will became generally accepted (at least by the intellectual class). The result was that it elevated humans above all other animals – which is why later Darwin's theory of evolution became such a bone of contention.

The Underlying Assumptions of Current Laws

Once humans started to realise in the mid-19th century that unchecked exploitation of nature would lead to irreversible damage and potential extinction of species, moves were made to add protections and limits on the exploitation of biodiversity.

Yet these laws and regulations were based on the same set of assumptions – that humans are above animals, that humans are superior and exceptional, that we are closer to gods than animals and that we have dominion over nature.

Therefore, the laws and regulations were always designed to benefit humans first, not humans as part of nature and not the planet that contains all of nature, including humans. Hence all environmental laws to this date reflect a distinct separateness between humans and nature.

According to Jan Laitos and Lauren Wolongevicz our history of environmental laws under capitalism can be broken into four eras [34]:

In Era I, the "Use" Era, humans assumed that resources were largely inexhaustible and nonpollutable, and an ethic of resource use for immediate human benefit pervaded the laws.

In Era II, the "Conservation" Era, lawmakers began to comprehend the importance of maintaining resources for future generations, although the prevailing attitude—that natural resources should be used by humans—was still the dominant belief, even as laws aimed to manage and conserve resources for later human use.

The laws shifted from a resource and conservation focus to an emphasis first on resource preservation (**Era III**) and then environmental protection (**Era IV**). The laws in Era III were aimed at preserving certain lands and species, such as wilderness, parklands, and endangered wildlife that we realized were disappearing. And the laws in Era IV were directed at protecting environmental goods, like air and water, which were fast becoming polluted. Nevertheless, in both Eras III and IV, laws were still anthropocentric and based on notions of human separateness from nature.

The problem with the laws of all four eras is the underlying assumption of human separateness and superiority over nature. Hence what we have aimed to do with these laws is to preserve our superior status, to preserve nature for our benefit.

These wrong assumptions have helped to ensure the failure of basically all of the laws that humans have put in place to 'address' human harm done to the environment. This includes the laws of Era IV, which started in the 1960s and which culminated in treaties such as CITES and the Convention on Biological Diversity.



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Despite such 'achievements', every single nature related measure has shown continuing decline since the advent of the fossil fuel era and some of the trends are still accelerating, like greenhouse gas emissions and extraction of biomass for trade.

In addition, we have used the same unrealistic assumptions in our relationship to nature that we have used in our economic theory – that nature is a self-regulating system that will always achieve a stable state (equilibrium) if left alone and that humans are rational actors. These assumptions date back to 19th century physics and have not been updated despite physics having moved on from them a long time ago. The reason is the need to continue to prop up an outdated belief system, because capitalism does not work without it.

In reality, and as is well-known to science, nature, like the global economy, is a complex-adaptive system, which means it is never in equilibrium. Nature constantly evolves in response to changes within the system and external forcing (like changes in solar irradiance due to sunspot variations or changes in earth's orbit around the sun). That means that the whole concept of 'sustainability' is flawed from the outset and will inevitably lead to poor policy choices. Nature does not sustain anything, it evolves. Humans want to sustain, namely their dominion over nature and their perceived superiority.

Throughout history a few people have tried to remind us of our place in nature, such as Henry Beston, writer and pioneer of the modern environmental movement, who said, *"The creatures with whom we share the planet and whom, in our arrogance, we wrongly patronize for being lesser forms, they are not brethren, they are not underlings, they are other nations, caught with ourselves in the net of life and time, fellow prisoners of the splendour and travail of the Earth".*

Yet despite warnings such as this over the decades and centuries, the human superiority presumption has clearly won the day.

It is worth bearing these assumptions in mind when looking at the specific failures of our current regulations of the exotic pet trade, which we discuss below.

The Lack of Regulation and Monitoring

As we alluded to earlier, the vast majority of the exotic pet trade has no regulatory framework whatsoever. There is a patchwork of international agreements like CITES, some domestic regulations and some regulations at state level in federal jurisdictions like the US, Canada and Australia. But there is no specific regulatory framework for the exotic pet trade. Everything that is in place was either motivated by other concerns – like CITES or domestic environmental protection laws or was designed to regulate dogs and cats and has then been expanded to other species at local or state levels in some countries.

The reason the data situation on the exotic pet trade is so patchy is a result of this lack of regulation. What the lack of regulation and data point to is what we discussed above, the basic assumption is that we have dominion over nature and if we want to keep animals as pets, we have every right to, since we are superior beings. To gods, all animals are inferior and expendable, so why would we need to regulate our 'pleasure'?

As we mentioned earlier, exact figures on the number of species traded as exotic pets are difficult to determine. Warwick [35] compiled evidence to suggest that more than 13,000 species are likely traded worldwide in the exotic pet trade. This includes:

- 6,650 marine and freshwater species for the aquarium trade,
- 4,000 bird species,
- more than 280 mammal species,
- more than 550 species of reptiles,
- 170 species of amphibians and
- 860 invertebrate species

Later research found at least 3,400 reptile species in trade [36], so it seems safe to say that at least

15,000 species of live animals are being traded solely for human pleasure and 'companionship'.

The only way to not consider this situation completely crazy is to elevate ourselves above all other animals and to ignore their rights as being part of the same planet, same biosphere and sharing the same basic building blocks (carbohydrates, DNA, microorganisms).

This attitude explains both the lack of regulation and the lack of interest in all the specific problems that arise through the lack of monitoring of animal welfare, the ignorance of the owners, the impact on wild populations and the biosecurity and invasive species risks associated with the trade.

We will cover these issues briefly here as well, but they are the result of the underlying human attitude, they are not the fundamental problem with the exotic pet trade.



Section 3 - The Problems With Current Regulations



Lack of Owner Knowledge and Care

Inherent to the nature of the Exotic Pet Trade is that the species traded are not naturally adapted to the environments into which they are being traded. This places greater importance on the need for these animals to be transported, held, distributed and then housed in a manner sympathetic to their individual natural needs. In theory this would require that the husbandry and care standards for 15,000+ species must be understood, documented and readily available.

Many of the species traded have specialised needs and retain more of their innate wild behaviour making it very difficult to provide the level of husbandry required. Society is generally well versed in the standards of care expected with regard to traditional domesticated species such as dogs and cats. In the case of exotic pets this level of knowledge is invariably lower or completely absent.

In relation to housing alone, many species have requirements related to temperature, hydrological needs and diet that are either poorly understood or difficult to meet. Especially reptiles "*possess few pre-adaptive features and are hard-wired with innate biological, behavioural and psychological needs that preset them to life in nature.*" [37]. Unless owners are keenly attuned to the individual needs of each species and invest the time to understand them, it is highly likely that poor husbandry outcomes will occur.

Toland [38] reported a 75% mortality of reptiles in the UK within a year of being purchased, although the paper does not provide a detailed breakdown of the methodology of how they arrived at that figure. Their assumption that 80% of reptiles entering the UK market actually make it to the consumer is a bit questionable, given that the problems in the wholesale and distribution network are well known.

An investigation of a major international wholesale distributor of exotic pets [39] found a mortality rate of 72% during a 6 week "stock turnover," period. When prosecuted, part of the defence given by the company suggested this was in line with accepted industry standards of a 70% mortality rate.

Further, the large majority of species kept as exotic pets are by necessity caged in some manner. Yet, "caging any animal, especially where exotic forms are concerned, effectively involves restricting an animal in an atypical challenging environment that is difficult to maintain and is usually under the arbitrary management of caretakers with little or The Exotic Pet Trade Section 3 - The Problems With Current Regulations

no relevant biological knowledge beyond 'normal' practices of pet keepers." [40].

In light of the numbers of species involved and the inherent poor understanding of their natural behaviour, it is inevitable that appropriate living environments cannot be supplied by owners. Even the basic understanding that a caged environment is rarely self-sustaining and there is invariably an ongoing need for careful and regular cage management is often overlooked.

In addition, knowledge around normal behaviour of a species may be poor and may not be considered in the keeping of a pet. Many species have complex social structures that are forgotten in their being kept as pets. The example of birds illustrates the difficulty in recreating in captivity what would be generally agreed normal avian behaviour. Most birds spend large periods of the day in flight, often over a wide area, and often in flocks or social groups. Evidence suggests that the space restriction and social isolation that invariably occurs with keeping of birds as pets is linked to stereotypical behaviours (such as plucking out feathers) and decreased welfare.

Veterinarians are the primary information providers in relation to the health of animals kept

as pets. A study from Ireland [41] highlights that in the case of exotic pets, even this source of knowledge may be limited. The authors found that the 80% of veterinarians who treated exotic pets had concerns with regard to "the lack of owner knowledge as well as the lack of veterinary knowledge and accessible resources."

This lack of knowledge was affirmed in a Portuguese study [42] that surveyed 220 reptile owners around four essential husbandry basics: temperature, lighting, diet and refuge. In this survey only 15% of respondents supplied all 4 basics with the study noting, "that many pet reptiles in Portugal live in, at best, 'controlled deprivation' and are at risk of suffering poor welfare throughout their lives."

The same findings have been repeated in numerous studies across the globe and across all types of animals kept as exotic pets. What makes matters worse is that experienced owners and collectors are attracted to rarity [43] and newly discovered species. It is reasonable to assume that the knowledge base relating to rare and newly discovered species and how to care for them in captivity would be very slim indeed.



Animal Welfare Considerations

Welfare risk exists at all stages of the exotic pet trade from capture to final destination. This is blatantly true for the illegal trade when transport is invariably done in a covert manner. For example, in the case of reptiles, mailing in package delivery systems is commonly used due to their ability to tolerate short periods of starvation. There are many visual examples of reptiles being stuffed in socks or packaged inside toys or other goods for shipping.

Thus, the illegal trade inherently suffers from high risks of mortality, or as a minimum, inadequate conditions to allow individuals to achieve the normal basic expectations of life, such as access to food and water and to be housed in a clean environment.

Unfortunately, the same significant concerns apply to the legal trade as well, showing that the rules governing the trade are completely inadequate. While it is accepted that standards of care vary across the legal trade, a 2014 report [44] found that a major international exotic pet wholesaler (the facility was carrying more than 26,400 individual animals) experienced a mortality rate of 72% in which, "Causes of morbidity and mortality included cannibalism, crushing, dehydration, emaciation, hypothermic stress, infection, parasite infestation, starvation, overcrowding, stress/ injuries, euthanasia on compassionate grounds, and undetermined causes."

This equated to an estimated 872 animal deaths a day and yet, "during judicial proceedings against the dealer, part of the trader's defence cited expert evidence confirming that those mortalities were in accordance with wholesale companion animal industry standards of 70%."

When considering the issue of animal welfare there are 5 basic freedoms as outlined in the following table: The Five Freedoms

- Freedom from hunger and thirst: Animals should have access to clean water and a diet that supports their health
- 2. Freedom from fear and distress: Animals should not be subjected to fear or distress
- **3. Freedom from physical discomfort**: Animals should have a comfortable environment with shade and shelter
- 4. Freedom from pain, injury, and disease: Animals should have access to preventative measures, diagnosis, and treatment
- 5. Freedom to express normal behaviour: Animals should have the space, enrichment, and social needs that are appropriate for their species



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Numerous studies have repeatedly found that these 5 basic welfare pillars cannot be met in the exotic pet trade and exotic pet keeping. Some of this is inherent in the nature of the animals being kept, if birds cannot fly and socialise, their welfare will suffer. It may also occur because of injury or stress during capture or transport, which is especially true for ornamental fish species. Prioritising profit over welfare inevitably results in fish being shipped in containers with insufficient water (transport costs scale with weight and volume and water is very heavy), so they are exposed to lack of oxygen and a polluted environment. Mortality and injury rates are exceptionally high in the ornamental fish trade [45].

Whilst potentially not as extreme as in the case of ornamental fish, viewed in relation to the 5 freedoms nearly all exotic pets will be confronted by inappropriate housing, husbandry, environmental conditions, poor hygiene, disease, or lack of or inadequate provision of food and water during both distribution and owning. This equally applies to breeding facilities of the few species that are being captively bred to supply the trade.



Even 'fringe' species, such as hermit crabs, suffer from these problems. Where a natural life may see these crabs live more than 10 years, poor husbandry often means a life expectancy far less when kept as a pet. Indeed, the most common health problems for many exotic pets, including reptiles and aquarium species, regularly relate to poor husbandry, inappropriate housing, stress or poor diet.

An article on exotic pet suitability from 2018 [46] states, "The prospects for exotic species in domestic environments without the relative benefits of professional management and facilities are highly concerning, and several studies demonstrate that poor husbandry is common placed even for commonly traded and kept species." The same authors quote unpublished data suggesting more than 90% of aquarium fish die prematurely.

Increasingly research suggests that sentience is not just the domain of humans. From fish to frogs to reptiles there is evidence [47] too many of us have likely underestimated their awareness of their environment. Research into the play habits of animals found all these animals exhibited evidence of play behaviour. If we must persist in feeling superior to non-sentient beings, maybe we can at least recognise that sentience is far more widespread among animals and should preclude the type of abuse we unwittingly subject them to.

Based on this insight we should then include consideration of the fact that many exotic pet species would naturally be found in complex social structures and may have variable behaviour based on seasonal or daily rhythms. These considerations would have an immediate impact on the keeping of Australian species such as budgerigars and reptiles such as shinglebacks that mate for life, and many, many others. When we further consider the still prevalent keeping of iconic species such as primates and big cats in tiny cages, it becomes self-evident that there must be strong concerns as to how often we are delivering on the 5 Freedoms.

Impact on Wild Populations

There can be little doubt that the growing trade in animals for the exotic pet trade poses a real and increasing risk to biodiversity and individual species popular in the market. This risk is twofold: the overexploitation of wild populations to meet market demand and the establishment of invasive species through the accidental release, escape and abandonment of exotic pets in destination countries. We will cover the latter risk later in this section.

As we established in Section 2, trade has been recognised as one of the two most important extinction risks for wild species and international trade has been recognised as being unsustainable and leading to population decline. In theory CITES should prevent unsustainable exploitation of wild species present in the international trade but in practice CITES only covers about 60% of species threatened by trade [48] and its provisions are not sufficiently monitored and enforced in most countries due to a lack of resources [49].

In relation to the exotic pet trade what makes this picture worse is that CITES suffers from species biases and the semi-political nature of its listing process (which requires a 2/3 majority vote of signatory countries at a Conference of the Parties). CITES has largely stayed away from listing marine fish species, because of the power discrepancies between CITES national authorities and national and international fishing authorities [50]. This flows through to ornamental fishes, which are underrepresented in the CITES appendices. The same applies to songbirds, although the reluctance to list them on CITES is less obvious given that CITES lists all parrot species.

When we then turn our attention to the risks to biodiversity on a global basis as a result of trade, the available data is alarming. Evidence presented in a meta-analysis of available studies [51] showed that the wildlife trade globally resulted in a 61.6% decline in species abundance and was worse for endangered species.

The paper states, "Species classified as least concern or near threatened do not suffer significant declines, whereas endangered species suffer significant trade-induced declines of 81.2%." Yet the authors found that local trade poses a relatively small risk to species abundance, but this cannot be said for national and international trade. In this case the evidence shows a 76.3% and 65.8% reduction in species abundance when traded further from source.



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This the authors note, "distant demand pressures cause disproportionate losses to target species and highlights the need for more effective and transparent documentation of trade volumes."

Some examples will be illustrative of the impact of the exotic pet trade on wild populations. Between 2015-2019 Hong Kong was the largest importer of CITES listed live specimens [52]. As noted before, CITES and other trade data do not distinguish between the exotic pet trade and other uses in the live animal trade. Of the 4 million exotic animals from over 700 different species imported into Hong Kong, more than 70% were CITES listed. This fact clearly implies that in the case of Hong Kong, the large bulk of species traded for the live animal trade are to some degree under population survival pressure (or they wouldn't have been listed on CITES). It would seem reasonable to suggest this can be extrapolated to the international trade in live animals more broadly.

Numerous species present in the exotic pet trade have been shown to be harvested from the wild at unsustainable levels. The African grey parrot and the Australian shingleback lizard are often cited examples. For the grey parrot, CITES records show that approximately 1.2 million wild sourced birds have been traded since the 1980s [53]. In some source countries such as Ghana the decline in wild populations has been more than 90%. The grey parrot was moved to Appendix I on CITES in 2017, meaning all commercial trade is now prohibited, but the illegal trade is still going on.

The limited supply of Australian species and in many cases their uniqueness, compared to other species available in the pet trade, makes them popular targets. This was highlighted in a 2021 study [54] which looked at the trade in the Australian shingleback lizard. By investigating seizure data and online trade sites, it was shown that despite Australia's strict laws prohibiting export of native species for commercial purposes, trade for the exotic pet trade could be demonstrated in Asia, Europe and North America. Of concern is that two of the subspecies are found in very small colonies in a restricted area of Western Australia, making any trade a risk to their survival.

In addition to the overexploitation due to the popularity of species as exotic pets, the impact maybe as a result of the scarcity of the source. As mentioned previously, rarity sells. The emerald horned pit viper is *"extremely vulnerable to any threat in its limited range,"* which is known to be *"restricted to humid windward slopes of Sierra Madre Oriental in eastern Mexico."* [55]. There is no legal commercial export permitted of this snake and yet it appears in the European market in 2020 for 1,700 Euro with the description, "one of the rarest venomous snakes and a crowned jewel of any collection.".

The study found 43 species only recently scientifically recognised and not listed under CITES. In the case of Sylvia's tree frog and the golden bug-eyed frog, both were scientifically described for the first time in 2018 and yet the authors found evidence of them being traded in the European pet trade in 2019. The article notes that in light of the timing of description of the species there is no possibility that these species have been, "assessed by the International Union for Conservation of Nature (IUCN) Red List of Threatened Species nor are they covered by international legislation." This means that the trade would seem inherently risky with regard to the potential for species decline or loss.



Invasive Species Risk

In the exotic pet trade not only are the species traded generally non-domesticated, but they are generally a foreign species to the locality in which they are kept. The increasing scale of the exotic pet trade, due to the ready access through online sales and increasing profit potential, directly increases the risks associated with the inadvertent introduction of alien species into natural habitats. This happens through three possible avenues: abandonment, escape and accidental release. All three are the direct result of keeping pets that are unsuitable and lack of owner care/knowledge.

There are many potential negative ecological consequences of invasive pet species. Invasive species often outcompete native species for food, space, and other resources. They may lack natural predators in the new environment, which allows them to thrive and spread unchecked. Furthermore, invasive species can alter the structure of ecosystems by modifying habitats, spreading diseases, or disrupting food chains.

The exotic pet trade has a number of "poster pets" in this regard, such as the Burmese python in

southern Florida and the red-eared slider turtle which has established populations in a broad array of countries around the world [56]. Both cases have created a disaster for native species.

The Burmese python ranges from India and China to the Malay peninsula. It became a popular exotic pet in the US and through escape and release from the pet trade has established a massive population throughout Florida including in the Florida Everglades National Park. First identified in the Everglades in the 1990s the current population estimate by Florida Fish and Wildlife is between 100,000 and 300,000 snakes.

Burmese pythons are known to consume a wide range of vertebrate species including mammals, birds and alligators. Their presence in Florida has been directly linked to severe declines in native mammal species with an 85-100% decline in populations for raccoons, Virginia opossums, bobcats and two species of rabbit. One study demonstrated that Burmese pythons consume 76 different species!



Commodification of Invasive Species in Florida

Pythons

Pythons have been commodified in Florida at both ends of life cycle, first as exotic pets and then hunted as an invasive species in the Florida Python Challenge, sponsored by a leather company.

The rules of the Florida Python Challenge state, "You will be disqualified from the competition if you are found to have inhumanely killed a python.". There is no indication of how this is monitored or enforced [57].

The leather company sponsor, Inversa Leathers, states on its website, "Unchecked invasive species cause \$423B in annual damages around the planet. Non-native species management restores indigenous species populations by up to 70% and enhances carbon sequestration and water purification, ultimately strengthening global environmental and human health." [58]

There you go, killing is doing good! But how did the pythons get there in the first place?

Iguanas

In 2022, Miami Beach Mayor Dan Gelber said the budget for iguana removal had gone from \$50,000 to \$200,000. Commissioner Kristen Rosen Gonzalez raised the idea of putting a bounty on the reptiles. "I don't know - dead or alive. But if we pay per iguana we're going to get more iguanas," she said. "People are going to go out and hunt them for money. I think that's a better use of our money." [59]

In 1966, the first scientific report on invasive iguanas in South Florida was published. It seems likely that many individuals reached the Floridian peninsula by stowing away on boats and in shipping crates.

America's booming pet industry sure didn't help. In 1995 alone, more than 1.14 million iguanas were imported into the United States [60]. Although it's possible to buy captive-bred specimens nowadays, wildcaught babies are still being shipped to the U.S. en masse.

The red-eared slider turtle originates from the Southern USA. It is known to have spread to every continent other than Antarctica, primarily from the pet trade but also because of its use as a food source and for religious purposes. They are considered one of the most invasive species in the world. As an invasive species their primary impact is on local turtle species via competition, predation, and habitat alteration. They mature earlier, grow quicker, are more aggressive and more fecund than many other turtle species in locations where they have invaded. Our track record in preventing invasive species in general, not just in the exotic pet trade, is of course completely abysmal. Australia provides plenty of evidence: rabbits, foxes, camels, cane toads and now deer have all wreaked havoc on a fragile ecosystem unsuited and unaccustomed to their massive presence. Whilst historic examples such as the introduction of rabbits (as pets) and foxes (for hunting) may be blamed on ignorance, today the main reason is lack of care. The environmental disaster of a small number of deer escaping from captive breeding facilities (for the

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venison trade) turning into a million strong wild population was entirely foreseeable but happened anyway.

If we look more widely again at the scale of the artificial migration of fish species around the world as a result of the exotic pet trade the numbers are quite staggering. For instance, the majority of 800 species of fish breeding in Florida are not native. Studies have shown many individuals escape captivity at all levels of trade, including during transport and at wholesale facilities. At the end of the chain, pet owners may release pets when they become too difficult to care for due to size, age, behaviour or cost.

Indeed, in the case of fish it has been documented that 2-10% of fish owners deliberately released fish [61]. Similarly, when looking into pet bird escapes in Australia in became clear that escape was far more frequent than acknowledged and that, "Accidental introductions have been overlooked as an important source of animal incursions." [62].

There is no shortage of evidence, right up to the present, to suggest that the trade of wildlife, of which the exotic pet trade is an integral part, poses a significant risk for the introduction of invasive species. A summary of published data in this regard [63] suggests that the historical pet trade is:

- Linked to nearly 85% of the 140 non-native reptile and amphibians introduced to Florida
- Attributed as the source of 70% of the nonnative mammal species in Brazil in the last 30 years
- The primary source of non-native species to the EU of amphibians, reptiles, mammals and birds
- The source of at least 100 species of freshwater fish introduced to North American freshwater bodies, resulting in 40 which have established populations and 33 species of

marine fish introduced as pets have been introduced to US coastal waters.

• The most likely origin of the rise of invasive marine species in the EU

Remember the scale of the exotic pet trade is enormous around the world. In the years 1996-2012 it is thought that 18.8 million CITES listed reptiles were imported into the EU – an astounding figure when you consider that 75% of reptiles are not listed on CITES. While the US alone is thought to import more than 11 million aquarium fish annually representing more than 2,300 species. The risks of upsetting the natural order of things seems substantial!

Once established as invasive species, we all pick up the tab for the inevitable need to mitigate the damage. A study in 2016, The economic cost of managing invasive species in Australia [64], put the conservative existing cost of managing invasive species in Australia at \$13.6billion in 2011-2012. That's the figure for one country and one year. Is that a risk worth taking for an unnecessary luxury trade?



Biosecurity and Public Health Issues

Exotic species kept as pets can pose a potential health and safety risk for their keepers, other animals they are kept with and native wildlife when released or escaped [65].

Exotic animals can be carriers of diseases such as rabies, mpox and salmonella. The public health consequences may be severe, a famous example being the outbreak of mpox in the United States as a result of human's close contact with prairie dogs sold as pets. In the UK there are approximately 6,000 cases of reptile related salmonella infections annually [66] and around 27% of all hospitalised salmonella infection cases among children under five are from reptile pets [67]. The US fares no better, there are approximately 74,000 cases of salmonellosis in pet reptile owners annually.

Australia is renowned for its border security efforts with regard biosecurity. Yet a report in 2023 [68] found, "high rates of trade in: (i) threatened species, (ii) non-native species, (iii) and species not permissible for live import," offered for sale online in Australia. Included were, "667 nonnative species for sale within Australia from 03/12/2019 to 20/03/2020.". It concludes that despite Australia's best efforts on biosecurity our, "management of non-native pets falls short of a system that comprehensively reduces known and/or identifiable risks."

Certain exotic species, such as venomous snakes, primates and large cats can pose a serious safety risk to humans from their predatory, aggressive or poisonous nature. There are numerous documented examples of large cats escaping from private zoos and enclosures in homes and having to be put down by public authorities because of the substantial risk to nearby residents.

Beyond the immediate health concern for pet owners and their families, there is also a substantial biosecurity risk associated with the trade in live animals. All animals are potentially carriers of disease vectors, many of which are unknown or at least present an unknown risk to humans. In the era of COVID19 the concerns around public health and the trade in wildlife are easily illustrated if we accept the generally held




view that this infection arose from a wet market involving the trade of wildlife.

The emergence of new zoonoses (diseases that can be spread from animal to human) is an ongoing issue. Other than COVID19, other examples include SARS–CoV-1 in the early 2000s which was thought to have emerged from palm civets in the wildlife markets of Guandong and in Australia, Hendra virus, which is spread to humans from horses and arising from a bat reservoir.

A recent article [69] highlights this and states, "The years since 1980 have seen outbreaks of new infections at a rate of one every eight months in hot zones from Brazil to central Africa to southeast Asia, most of them viral. They include the catastrophes of HIV and Ebola, as well as Sars and H5N1 bird flu. The routinisation of long-distance trade in animals has speeded up the pace of these contagions."

Outside the now very apparent risk of pandemics that may be associated with the close human contact that occurs through live wildlife markets there are also inherent risks throughout the supply chain. Before sale through the market, wildlife is sourced from wild populations or captively bred. There is increasing evidence that human impact on the biosphere is speeding up the emergence of zoonotic disease from these sources, while at the consumer end there is also significant risk to the handler.

It would seem reasonable to suggest that as the scale of the exotic pet trade grows then the potential for events such as the emergence of new zoonoses and potentially another pandemic, and the frequency of occurrence of more individual zoonoses is highly likely to increase. It is estimated that 75% of emerging infectious diseases in humans are of animal origin and it is thought that at present there are at least 70 infectious zoonotic diseases related to companion animals of which approximately 40 are associated with amphibians and reptiles. The costs on a social and economic basis of COVID alone were staggering and there is certainly a case to contend that the costs associated with better regulation of the international trade in live wild animals may be a very wise investment in mitigating future risk.

Blacklisting Cannot Work

We should remind ourselves at this point that the few existing regulations we have in place on the exotic pet trade tend to be based on blacklisting, that is spelling out what is forbidden, NOT how people and businesses should behave (which is called whitelisting or positive lists or reverse listing in the context of CITES). CITES appendix listings are the primary example, but it equally applies to other import/export restrictions enacted in some jurisdictions (like for live birds).

Blacklisting is normally used in the context of criminal law, our criminal code is designed to prohibit certain behaviours – like theft, burglary, assault, murder – which are seen to be incompatible with social norms. The underlying assumption of all laws based on blacklisting is that 1) people are intrinsically motivated to follow the social norms and obey the laws, and 2) the number of violations and people who deviate from the norm is very small. This is clearly the case for most criminal laws (illicit drug use and domestic violence being obvious exceptions), but the assumptions do not hold for the trade in wildlife. Using a blacklisting approach to regulate the trade in wild species is unworkable from the onset. Any long-distance trade is conducted by businesses (not people) and businesses are NOT intrinsically motivated to follow the laws. Businesses are social constructs designed to make profit and to ignore externalities (like the impact on the environment or the people they deal with), at least that is how they have been legally codified under capitalism. So, the first assumption cannot hold.

The second assumption is not quite as obvious, as we need to look at both the number of actors and the number of potential offences involved in the trade. Blacklisting a couple of hundred species (such as when CITES started in 1975) may still be considered workable, but simple practicalities make this impossible for 40,000 species (as listed on CITES today) or 15,000 species in the exotic pet trade.

Neither customs officers nor the police have the time or inclination to learn to identify all the possible species that would need to be inspected or confiscated to follow our current laws.



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Lookalike species are just as much of a problem as subtle morphological differences that only experts are aware of. Telling wild from captive bred animals is impossible without DNA testing and a comprehensive DNA database.

This is also about what governments are willing to spend. As conservation is pushing for more investment in dealing with wildlife crime, the reality is that governments in wealthy countries are reducing the budgets. For example in the UK, in 2024 the Metropolitan Police's wildlife crime unit, which had been at the forefront of the fight against illegal trafficking for the past 20 years, redeployed the unit's detectives [70].

The number of actors involved in the exotic pet trade is also huge. Tens or even hundreds of thousands of businesses are involved in the trade and hundreds of millions of people buy exotic pets. The level of awareness of potential norms or legal violations in all these actors is somewhere between low and non-existent, simply because the laws are rarely enforced and because trade and consumption of exotic pets, including rare and extremely vulnerable species, has been normalised within society and in peer groups like collectors. If there are no repercussions for the high mortality rate during transport. Letting animals die through neglect, improper care or abandonment are equally socially acceptable.

Hence the starting point for the proper regulation of the exotic pet trade must be based on a whole different set of assumptions:

- **1.** Humans are animals and as such we are part of nature, not separate or superior
- 2. Humans are dependent on nature and nature and humans are also interdependent
- 3. Nature is a complex-adaptive system, and humans are embedded in the change processes that are occurring at all times
- 4. Humans are not rational actors; they behave BOTH rationally and emotionally / intuitively





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As we have shown above, the current regulatory framework for the exotic pet trade is completely inadequate. It leaves millions of animals open to abuse, neglect, unsuitable environments, social deprivation and premature death. This should be enough to prompt a complete rethink of the exotic pet trade, which is a luxury trade solely for the pleasure of humans. But as we discussed, the presumption that humans are separate from nature and superior to all other animals has normalised the unchecked exploitation of nature for human benefit.

We believe that the starting point in rethinking the trade in live wild animals (which includes the exotic pet trade, animals for medical research, gourmet (sea)food, and ceremonial use) has to be that humans are part of nature and that we exist in interdependent relationship with it. We are animals, not gods. We cannot exist on Mars, no matter how much Elon Musk dreams of colonising it. Without breathable air, potable water and the biosphere we cannot live. We can establish outposts in inhospitable areas (such as Antarctica), but only because we can easily supply them from the habitable parts of Earth. The dream of colonising the solar system or even the galaxy, so prevalent in science-fiction, is simply an obsession with furthering our self-awarded god-like status.

If we can get back down to Earth and look at nature as kin, not just a resource, then the exotic pet trade (like most wildlife trades) makes absolutely no sense. Killing animals for the 'pleasure' of owning them, even if only inadvertently or through neglect, is not how you treat your kin. We have created a small number of suitable, domesticated pet species over time, and that ought to be enough for our need for 'pleasure' and 'companionship'.

The correct regulatory intervention based on this line of thinking is to start from scratch and restrict the exotic pet trade to just those species which:

- 1. Can be bred in captivity in an ethical and species-appropriate manner
- 2. Are fully suited and adapted to live in a home environment
- 3. Can be assured to experience the 5 freedoms in their life as pets
- 4. Do not pose any risks to human health or to other animals
- 5. Can be assured of their welfare along the whole supply chain
- 6. Do not pose an invasive species risk (taking into account humans are not always rational)
- 7. Are easy to monitor in the trade (tagging, identification, welfare monitoring etc.)
- 8. Can be treated by the veterinary profession just as well as cats and dogs

This consequence of enacting this list would likely exclude all birds, most reptiles, most or even all marine fishes, most mammals and all amphibians from the exotic pet trade. Because it is completely inconceivable to get to this approach in one step from where we are at now, there will need to be a transition.

We believe that starting with positive lists as the basis of the regulation for both the international trade and the domestic trade in all countries is the best way to go. But it requires that advocates for positive lists, such as conservation and animal welfare charities, embrace the need for laws that include effective monitoring and enforcement mechanisms, not just the creation of a list. This further means the need for secure funding streams for monitoring and enforcement.

We will discuss potential models for effective positive lists in both the national and international context and what they would need to entail to be compatible with current (Era IV) environmental laws such as CITES and the CBD Kunming-Montreal Global Biodiversity Framework in the rest of this section.



Better Regulation of Trade via Positive Lists

Positive lists describe a regulatory approach to codify what is allowed, but beyond that there is a wide range of possible ways to implement them. In their simplest form they would just constitute a list of species which are allowed for the exotic pet trade. All other considerations beyond the criteria for inclusion – like holding businesses and owners directly accountable – would be left to other laws and regulations (or lack thereof).

The simplest form would provide a list of criteria for inclusion on or exclusion from the list, typically by using scientific criteria for animal welfare, biosecurity, invasive species risk, human health concerns etc. It would also include a mechanism for establishing the species-specific risks, reviewing/altering listing criteria and a process for reviewing/submitting new evidence to list or delist species. This means that positive lists in themselves do not constitute a departure from the Era IV environmental laws, they are still fully compatible with the assumption of human superiority and dominion over nature.

If this simplest form of a positive list is used, as is currently the case in most countries that have them, then very little has been gained. The behaviour of all actors in the supply chain, like in relation to animal welfare, sourcing, traceability, legality, is still left unaddressed. The behaviour of the consumers is also left unaddressed, they can still be ignorant, engage in impulse purchasing, neglect the animals, release or abandon them and so forth.

What has been gained is clarity for law enforcement purposes – the burden of proof has been shifted onto those who trade. In a blacklisting environment the presumption of innocence applies because we assume that all actors are inherently motivated to adhere to the laws. That means the burden of proof for illegal conduct lies with law enforcement (in international trade that's mostly customs), which is impossible if 15,000 species are traded and 40,000 are listed for trade restrictions.

Even under the most basic positive listing model the burden of proof is reversed, and therefore any species/animal that cannot be readily identified as being on the list of allowed species is illegal by default. It is up to the traders (importers, exporters, wholesalers, retailers etc.) to provide evidence that the animals for sale are in compliance with the positive list.

What has also been gained is the (attempted) exclusion of animals from the exotic pet trade for reasons of unsuitability as pets. At least that is currently the most important listing criteria used for list inclusion/exclusion. We added the 'attempted' qualifier because using a positive list does not stop the illegal trade without much more far-reaching changes, especially to the behaviour of traders and law enforcement.



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In the EU, where these basic positive lists have been adopted in a number of countries, this is an even bigger concern, as the whole EU is a freetrade zone. What that means is that a trader in say, Poland, can advertise animals that are prohibited in say, Belgium, on a website and ship them there. With no customs checks and the behaviour of transport companies not being codified, the positive list enacted in Belgium becomes irrelevant.

This implies that basic positive lists are not a regulatory panacea, they constitute little more than a statement of intent. Adopting them in the exotic pet trade means accepting that humans are not always rational actors and that businesses are not intrinsically motivated to protect wild species. This is much closer to the starting point for regulations we outlined above, which is why we believe that any form of positive lists for the live wild animal trade is better than what is in place today.

At the same time, we must point out that basic positive lists are just one, small, positive step to better regulating the trade in live wild animals. To truly change the behaviour in the supply chain and the behaviour of the eventual pet owners, the regulation would need to go much further than simply stating which animals can be sold and kept as pets. Expanding this into a comprehensive regulatory framework includes additional steps such as:

- Directly regulating all the businesses involved in the trade (through licensing and registration)
- Enacting specific legislation to regulate social media sites (making them liable for all live animals traded on their sites)
- 3. Making business pay the cost of regulation (in an equitable way)
- 4. Demanding full traceability in the supply chain (from source to final destination)
- Assigning the burden of proof for the legality and welfare of an animal to the businesses in the supply chain
- Creating a dedicated monitoring and enforcement framework (via new agencies and/or funding for existing agencies)

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- Establishing a dedicated body to create listing criteria, review listings and to assess listing applications
- 8. Mandatory pet registration at point of sale and death reporting
- 9. Owner licensing (for some species)
- 10. Involving the veterinary profession in maintaining care standards
- 11. Assigning responsibility for released/escaped/ abandoned animals to traders
- 12. A mechanism for the voluntary surrender of pets under grandfathering provisions

Many of these additional steps should be relatively uncontentious, as they are commonly used in the regulation of other industries. Specific approaches to implement such steps can therefore be adapted from existing regulatory frameworks.

Pharmaceuticals, medical implants, aircraft components, pesticides and herbicides and many other industries have used quite comprehensive positive lists for regulation for decades. The problem in bringing these to the table with governments lies more in the current degree of ignorance of animal welfare and environmental charities when it comes to commercial trade and its regulation. At present these organisations tend to be too focused on animal welfare and environmental impact and lack the broader knowledge of commercial realities, regulatory frameworks and the consumer demand side of trade.

This will need to change to produce regulations that can achieve real-world outcomes for wild species. All existing regulations and 'targets' (like the CBD Aichi Targets and the UN Sustainable Development Goals), have comprehensively failed to arrest the decline in wildlife [71].

We will take a quick detour into the current state of positive lists for the exotic pet trade before looking at the practicalities and benefits of implementing the additional steps beyond a basic positive list we outlined above.



Current Status of Positive Lists in the EU

Several countries in the EU already have a positive list [72], as shown in the image below. Belgium, Luxembourg, Cyprus, Italy and most recently, Lithuania have both a legal provision on a positive list and the actual list of permitted species in place. France, Spain, the Netherlands and Slovenia have enshrined the positive list into law but are still working on finalising the actual list of permitted species. positive list, which builds on the experiences gained by those Member States who have implemented this system" [73].

This position paper was supported by the vast majority of member states at the May 2022 Council of the EU meeting on Agriculture and Fisheries. The European Parliament also expressed its support [74] for the Commission to establish a Positive List in the European Parliament Report

on the EU Biodiversity Strategy [75].

Eurogroup for Animals and others have argued that such a step is compatible with EU free-market regulations and with the relevant WTO agreements (General Agreement on Tariffs and Trade (GATT), Agreement on Technical Barriers to Trade, and the Agreement on the Application of Sanitary and Phytosanitary Measures). The question of WTO compliance is becoming less of an issue now that the WTO's appellate body has been effectively neutralised by the US refusal

Given the nature of the EU free-market and its aversion to internal trade restrictions, it is important to note that according to the European Court of Justice, a positive list is a legally valid means to restrict the intra-EU trade in wild animals kept as pets.

There has been an ongoing attempt by Eurogroup for Animals and Animal Advocacy and Protection to get the European Parliament and the European Commission to legislate for positive lists on an EUwide basis. This culminated in a 2022 position paper in which Cyprus, Lithuania, Luxembourg and Malta call on the *"European Commission to explore the potential benefits of an EU wide* to appoint new judges (which dates back to the first Trump administration) and with every new round of tariffs imposed by the current US administration (which contradict GATT).

It is quite possible that the EU will adopt a positive list for exotic pets in the near future, which would provide some momentum and a precedent for such a move in international agreements. At the same time, as we explore further in later sections, the current positive list laws in the EU fail the test of being effective legislation as they omit far too many of the 12 steps we outlined above.



Implementing Positive Lists via CITES

To establish a positive list for the international trade in exotic pets, it would be necessary to either change the CITES articles of the convention, which is highly unlikely in the present international climate, or to add an amendment / protocol to the convention text. The latter is contested as CITES came into force before UN conventions were set up with a protocol mechanism for future amendments, so the convention text does not cater for adding protocols to CITES.

During the COVID19 pandemic many civil society, animal health and environmental organisations pushed for a better regulation of the trade in live animals to reduce future zoonotic pandemic risks. As a result, it was investigated if CITES could be amended using a protocol specific to the trade in live animals only. Legal scholars came to the conclusion that because CITES is a UN convention, the possibility of adding a protocol would exist [76].

At the same time, the CITES Secretariat firmly rejected any push to get involved in public health related considerations, as the original mandate of CITES exclusively talks about the ecological sustainability of the wildlife trade [77]. This is certainly true but does not change the fact that neither the World Health Organization (WHO), the United Nations' Food and Agriculture Organization (FAO), or the World Organization for Animal Health (OIE) have any ability to regulate the trade in live wild animals, they simply lack the organisational structure and processes to do so. In contrast, CITES has 50 years operational experience in regulating the wildlife trade.

Short of negotiating an entirely new UN Convention on Pandemic Prevention, which seems utterly unlikely now that the zoonotic origin of the COVID pandemic has been questioned in certain quarters, amending CITES is the only viable option. Because CITES does not regulate business directly, it cannot distinguish for which purpose an animal is traded and it cannot directly set up a business registration and licensing scheme.

This would likely mean that a protocol to establish positive lists for the exotic pet trade would need to cover all CITES trade in live animals. Whilst this



expansion in scope might make the process of adopting such a protocol even more challenging, it would also mean that both those interested in the prevention of future zoonotic disease outbreaks and those lobbying for positive lists in the exotic pet trade could make common cause to get CITES amended to cover both areas. There are overlapping public health concerns between both causes in any case.

There are many benefits for the wildlife trade that could be gained from such an amendment to CITES to regulate the live animal trade based on positive lists. CITES permitting and trade monitoring are currently still stuck in a precomputer, or at least pre-Internet era. Many countries still use CITES paper permits or issue them from stand-alone applications that do not integrate with customs. As of early 2025, only 20 of 184 signatory countries have implemented electronic permitting systems that meet the minimum requirements set by CITES. Even when such systems are available for immediate implementation, like with the eCITES system offered by UNCTAD since 2019 and the EU-wide system offered by the European Commission since 2023, adoption is slow to non-existent. Of the EU27, only 3 countries have implemented electronic permits to date [78].

Trade monitoring in CITES is restricted to an inherently flawed reporting process – the capture of export permit data, which do not reflect the actual quantities shipped (the permit states the maximum allowed quantity only). CITES encourages reporting of actual shipment data from customs, but this is not mandated.

Import reporting is voluntary and no attempt is made to reconcile quantities and even units between export permits, import permits and customs data. For example, the CITES export permit might be quantified in 'number of specimen' but customs might record weight (kg) instead. That would mean the importing country will report in kg, making any reconciliation impossible. Reporting to the CITES trade database also only takes place once a year, so there is no such thing as real-time trade data.

For ornamental fish, the situation is even less satisfactory. Customs data are in kg, since the weight of the shipment is what matters to transport companies and customs. The actual number of fish might not be reported anywhere and cannot be established from the weight, as they are no legal limits for the number of fish in a given quantity of water.

But even in cases where things should be relatively straightforward, like for live mammals, the reality begs to differ. Macaques are listed on CITES and are mainly used in medical research but are also traded as pets. Individuals will be microchipped for traceability (or at least should be). The UK is a major importer of live macaques because of its large pharmaceutical research base. When an



investigative journalist tried to reconcile the numbers imported into the UK from different sources – CITES trade data, customs records and veterinary data from border force, absolutely none of the data matched [79]. In some cases, there were huge discrepancies between shipment net weight and the number of individual macaques – implying weights for the animals that are simply not feasible.

CITES also has only implemented traceability for a tiny subset of the species it regulates. Microchipping of live animals is mostly only encouraged, not mandatory (even for species where it is possible to insert microchips easily). Tagging and traceability for derivative products only exists for crocodile skins. Despite over a decade worth of feasibility studies and reports, python skins (probably the most valuable singlespecies trade under CITES) are still not tagged or traceable (which is easy to do via image recognition of skin patterns). The underlying problem is that CITES lacks a dedicated funding mechanism to support signatory countries in their enforcement efforts and that industry has no desire to be held accountable.

Both these points illustrate that implementing a positive list for the live animal trade as an amendment to CITES can be used to create infrastructure – electronic permitting and electronic permit exchange, integration with customs, real-time reporting, tagging and traceability of shipments, a better designed trade database etc. – that would go a long way towards addressing some of the major flaws in the overall CITES trade regulation framework as it stands. Once such infrastructure is in place, and paid for by business (see below), it becomes feasible to extend its use to all species traded under CITES.

Directly Regulating Businesses Involved in the Trade

As we alluded to earlier, many industries regulate businesses directly on the basis of positive lists. For example, the trade in pharmaceuticals is regulated by the EMA in the EU and by the FDA in the US. New drugs can only get market approval if the businesses can demonstrate their efficacy and safety to the regulator using an approved process to do so – multi-stage, randomised clinical trials. The EMA and FDA directly regulate the businesses involved in pharmaceutical research and manufacturing, not just the pharmaceutical giants, but also the companies that conduct the clinical trials or are contracted to do manufacturing.

The degree to which such regulation occurs varies between jurisdictions but licensing and registration are commonly used in the direct regulation of businesses where there is justified concern over (usually) human health and safety. That no such scheme exists for the exotic pet trade (or the wider trade in live wild animals) is not a reflection of the lack of risks involved, it is a reflection of the lack of concern for nature and the desire to be seen as separate and superior from nature. The fact that the trade is global is equally no obstacle to implementing licensing and registration schemes, there are plenty of precedents from other industries, such as aircraft components, to draw on.

Regulation based on positive lists should really spell out the expected behaviour of the entities being regulated, usually businesses [80]. This is commonly done through providing detailed guidelines for obtaining and retaining licences to trade and through providing product guidelines and standards in the case of manufactured goods (like car design standards).

The latter does not apply to the exotic pet trade, but the former certainly does. If the expected business behaviour is not codified and not enforced, it is not going to materialise by magic. The intrinsic motivation to follow any restrictions on trade simply does not exist for companies.



Ultimately such schemes should be used both in domestic and international regulation of the exotic pet trade. Businesses of most concern when it comes to animal welfare and public health risks, such as large retailers, wholesalers and transportation companies, would require licensing and mandatory reporting to better monitor the trade and issues such as animal mortality and escape in the supply chain. These businesses would also be subject to (unannounced) inspections by the regulator(s) to ensure their compliance.

The remaining businesses would likely only require registration with national and international regulators, to build a fuller picture of the trade. Registration should also involve some level of reporting, to enable the authorities to better monitor the trade and to inform changes to the positive list.

Special consideration needs to be given to the social media platforms, as they have global reach, act as trading hubs and are widely used by the illegal wildlife trade. Positive lists are useless if no additional steps are taken to tackle any illegal trade. Because outside of China and Russia the social media platforms in question are based in the US and because in the US they are immune from liability for hosted content as a result of Section 230 of the Communications Decency Act, such legislation would need to be enacted in each domestic context. Without making the platforms liable for live animals being illegally traded on their platform, they are not going to make the necessary effort to stop the illegal trade (as evidenced by the failure of voluntary efforts we described earlier).

In all cases licensing and registration would need to be based on a 'business pays' model, meaning that annual licence fees and registration fees are designed to support the work of the regulator.

Licence and registration fees should be set in an equitable way that reflects the value a business derives from the trade, so as to not to unduly penalise small businesses and businesses at the start of the supply chain that usually derive little value. This ought to be a crucial component in making the monitoring and enforcement of positive lists viable from a perspective of shrinking government spending and a reluctance to raise taxes on the wealthy. The Exotic Pet Trade Section 4 - Regulatory Interventions

Businesses are likely to push back on any licensing and registration requirements in conjunction with positive lists. They will also be reluctant to submit trade data to the regulator, as they have been allowed to consider all such data commercial in confidence. This is where governments and regulators need to remember that businesses are not intrinsically motivated to consider either public health risks, animal welfare or environmental impact of their actions, they exist solely to make profits without further regulation.

From our perspective implementing basic positive lists without any licensing and registration requirements put on the businesses involved in the trade is insufficient. The loopholes will be large enough to drive many trucks filled with live animals through.

There are two further considerations in relation to directly regulating businesses as part of implementing positive lists for the exotic pet trade. The first involves CITES. As we outlined above, CITES is really the only international agreement that could be amended to regulate the live animal trade via a positive list. But CITES processes are not currently set up to regulate businesses directly or to run business registration and licensing schemes. CITES relies entirely on national authorities for monitoring and enforcement, which is one of the key reasons the convention has been ineffective in keeping the trade sustainable and legal.

Thus, it would be necessary to set up any such business registration and licensing through national authorities. What CITES would need to do to make this viable is to set the necessary fees and provide the framework for licensing and registration that national authorities have to adhere to. CITES already has a mechanism for collecting the funds and disbursing them (the CITES External Trust Fund).

The second additional consideration is that law enforcement is generally uninterested in the illegal wildlife trade (IWT). Despite the IWT being considered the 3rd or 4th largest transnational crime, the funds dedicated to fighting it are miniscule compared to drug or arms trafficking.

The IWT is not covered by the UN Convention against Transnational Organised Crime and the UN Office on Drugs and Crime does very little in relation to the IWT either (only when there is overlap with other transnational crimes).



What this really means is that getting businesses to pay for the cost of regulation should not just cover the direct expenses related to running a licensing scheme with inspections, collecting data and analysing them and setting rules and standards for businesses to adhere to. It would also need to cover the creation and running of dedicated enforcement authorities in all countries that are implementing positive lists for the exotic pet trade (or all CITES signatory countries if CITES is amended as we discussed).

It would also need to cover the costs of returning and rehabilitating animals seized from illegal shipments. With seizures reaching tens of thousands of animals, local law enforcement and animal welfare charities cannot be presumed to be able to deal with them adequately (instead of euthanising them as is common practice) [81].

Since such fees would become substantial for the businesses involved, they will need to be raised in an equitable way. That means looking at where in the supply chains the biggest gains are being made, which is in the (wealthy) end-consumer countries for the international trade and at the retail and/or wholesale end for the domestic trade. It should not be hard to devise a fee schedule based on retail value and/or values declared to customs. In conjunction with mandatory reporting this should be considered as an essential part of directly regulating businesses in the exotic pet trade.



Dedicated Monitoring and Enforcement Framework

Simply legislating basic positive lists is likely to be ineffective if no steps are taken to tackle the illegal trade. By design, the component of trade that is illegal becomes larger in scope the smaller the number of species on the positive list is. The consumer demand for such species is not going to disappear all of a sudden with the enactment of a positive list law. We will describe consumer demand reduction interventions in a later section, as they will need to become a necessary component of implementing positive lists in individual countries (or groups like the EU). Legislation of a positive list in one country also does not mean that social media won't display ads and user content promoting prohibited exotic pet species. Without dedicated legislation to stop the social media giants from doing this, they have no incentive to restrict displaying such content. In this way consumer demand for prohibited species can be maintained both through the spillover from other countries and through traders from outside the jurisdiction. Examples on how to force the social media giants into compliance with local laws do exist. In Australia, where the largest social



media companies have to implement a suite of new measures to restrict Australian children from accessing adult content online, or face fines up to \$50m, the onus of developing a viable access regime has been put on the industry.

The illegal trade in exotic pets is already well established and can readily adapt to new trade restrictions if they do not involve new and dedicated monitoring and enforcement activities. Establishing new agencies for this purpose or resourcing existing ones is going to cost money which needs to come from somewhere. As outlined above, we believe this money needs to come from business licensing and registration fees.

To enable effective monitoring of the exotic pet trade, there will need to be end-to-end traceability in the supply chain. If businesses do not have responsibility and accountability for the animals they trade in, they will ignore the risks associated with species or shipments of 'questionable' legality. Businesses involved in the international trade know that customs inspections are extremely rare and usually only take place when risk flags have been raised. Businesses operating solely domestically are basically left alone and have no fear of law enforcement turning up unless they are in violation of laws that are rigorously enforced.

As part of enacting a positive list law, such laws also need to include provisions that businesses have to follow to get licenced and to trade in certain species that are on the list. For example, many bird and mammal species can be readily microchipped to enable tracking of individual animals. Most reptiles could be identified using automated image recognition software via detailed photographs taken of their skin or shell. This might also work for some ornamental fish species. For species where automated identification is difficult or costly to establish, the risk of allowing the trade needs to be weighed against the downside of not being able to monitor it in a cost-effective manner.

Issues of traceability also arise if positive lists allow only the trade in captive bred animals or animals sourced from a list of approved origin countries. Such regulations are already part of the exotic pet trade today, but they are not enforceable. Tracking individuals from captive breeding facilities to the end user only works if all such breeding facilities are licensed and regularly inspected for compliance (such as keeping breeding records and mortality data). Individual animals from such captive breeding facilities need to be tagged before they leave the premises, so that laundering wild sourced animals into shipments further down the supply chain becomes more difficult. This necessitates comprehensive data collection during every stage of the supply chain and real-time monitoring by the relevant authorities. That this is currently not the case is amply illustrated by the case of the director of wildlife and biodiversity for Cambodia's Ministry of Agriculture, Forest, and Fisheries in the US recently. US authorities allege that thousands of wild-caught macaques (which are CITES listed) were being illegally certified as captive-bred and used in clinical trials for new drugs and vaccines. He was charged with smuggling wild primates and remains under house arrest, awaiting trial [82].

None of this traceability is new, any Amazon shipment is tracked this way. Barcodes, RFIDs and microchips all provide well-established means of tracking shipments. Global standards, and software applications based on these standards, are readily available for implementation.

Accountability for the legality of shipments and compliance in the whole supply chain do not need to be codified in a positive list law if other avenues exist. The EU recently passed a supply chain due diligence law, which could be easily amended to stipulate compliance with an EU-wide positive list for the exotic pet trade. The problem in this particular case arises from the fact that the current law is restricted to very large companies and most businesses operating in the exotic pet trade would be below the revenue threshold where the law kicks in.

We would also advocate for the creation of dedicated monitoring and enforcement agencies for any type of live animal trade. Neither police forces around the world nor customs are set up to deal with any potentially illegal pet trade. Police do not routinely check retail premises, pet shows or markets for illegally traded species, that would require trained inspectors who have both the inclination and necessary knowledge to find illegal specimens. Other trades that involve licensing have existing arrangements that can be readily copied for this purpose (think health and safety inspectors or inspectors for environmental compliance). The same applies to monitoring online retailers, although some of that task could be automated.

The task of tracking shipments and individual animals throughout the supply chain creates both a vast amount of data and the need for real-time monitoring. Again, some of this can likely be automated, but such systems need to be built and run by an agency that understands the trade and the complexities involved. Ideally such an agency would be created under CITES, as most trades will involve an international supply chain. Domestic agencies would still be required as well, but they might be able to piggy-back on what CITES has put in place (assuming that CITES can be persuaded to adopt positive lists).

It should be clear from the last two sections that legislating a positive list for the exotic pet trade without also legislating for business licensing and registration and a transparent supply chain is not going to achieve very much other than making some of the trade illegal. At the very minimum, strict bans on advertising for prohibited species (including on social media) should be included in any positive list regulation.



From Listing Criteria to a Listing Authority

There is an inherent risk in pursuing the basic positive listing strategy that the list will be static, that it is only created once and then simply left in place. This is a very low-bar, quick and cheap way of going about it, so it would probably be the preferred avenue for the current crop of politicians in most countries. What this will most likely result in is a list that is far too accommodating to demands by current owners or lobby groups, and it will not change as new evidence of poor husbandry, poor supply chain practices, or new scientific research on the species and its habitat/food/social/behaviour needs come to light.

The Netherlands provides a good example of this potential pitfall. The initial positive list for mammals allowed as pets and hobby animals developed by the Dutch government in 2015 was developed by an expert panel but later became subject to lobbying and included animals such as kangaroos, wallabies, squirrels and porcupines [83]. That list was struck down in court because hobby animal owners successfully objected to the assessment method used. It took until 2019 to settle on a completely new assessment method, which was developed by the Scientific Advisory Committee for the Positive List. Published in 2022 and finally enacted in 2024, the new positive list only contains 30 mammal species allowed for keeping as pets and hobby animals in the Netherlands.

We would therefore always advocate for creating a permanent authority tasked with creating listing criteria [84], establishing the initial list, reviewing listings and assessing new listing proposals. Comprehensive scientific frameworks for creating positive lists are now readily available, creating such an authority is more about an ongoing shift in pet keeping practices to purely domesticated species over time. If the aim is to arrive at laws that treat animals and their rights as equals to humans, then advocates should lobby for an institution and a process that can make such a change happen over time. Our pet preferences are



not set in stone, as we illustrated in Section 2, exotic pets only became popular in the West after the Second World War.

If a permanent authority is in place to review the positive list(s), then such an authority can also act on the data collected from businesses licensed to trade in exotic pets, on data from the pet registration database (see below) and on advice from other bodies tasked with protecting biodiversity, maintaining public health and mitigating climate risks (like CITES, CBD, WHO, WOAH, IPBES, WAZA and IPCC).

For example, if the trade data for a listed species consistently show discrepancies in tracking data throughout the supply chain or it can be derived from tracking data that mortality in the supply chain is high, then the listing authority could act on that data and strike the species off the list. Without the data collection, licensing and registration requirements we outlined, such an assessment could not be made. Without a permanent authority to analyse such data, the data collection would simply be a waste.

It is also clear from the history of invasive species and the damage they have done that humans are basically incapable of assessing and mitigating this risk. This equally applies to scientists; it was scientists who recommended and facilitated the (hasty) introduction of cane toads into Australia to control beetle pests in sugar cane plantations in Northern Queensland in the 1930s [85]. The cane toads have spread massively since and created an environmental disaster across Queensland, the Northern Territory, Western Australia and New South Wales. Any attempt to eradicate them has comprehensively failed.

We might think we are more scientifically savvy these days, but there is little evidence. Australia, the supposed beacon of biosecurity, can again provide plenty of examples. The pearl cichlid, also known as the pearl eartheater, is an aggressive freshwater fish native to South America. It is popular in the aquarium trade, so of course it can be imported to Australia, despite its known potential as an invasive species and despite the fact that the release of aquarium fish into the wild is a known, common behaviour of pet fish owners (either accidentally, or deliberately and as a method to get rid of them). This fish now has an established population in NSW waters and is likely to spread from there [86].

If a positive list authority had been in place, the first time an invasive species imported as an exotic pet is discovered, it could be immediately taken off the list. Quite often, the first detection can be dealt with, but if releases continue a population may take hold. The first time fire ants made it to Australia (by arriving as blind passengers on ships), they were quickly eradicated. It was subsequent arrivals that have managed to establish populations.

The same argument applies to all listing criteria that are subject to changing evidence. Zoonotic health risks change over time; a species may not be currently considered a potential carrier or intermediate host for a new or barely known virus or bacterial disease. The impact of harvesting from the wild may be poorly understood or contentious. Some animal populations are basically impossible to count. The question of the impact of the python skin trade on wild populations has been raging for years, it is just not feasible to reliably count snakes living high up on trees in the jungle [87].

The perception of public health risks to animal owners may also change over time. At present the risk of salmonella infection is clearly not considered as significant by reptile pet owners who are also parents of small children (since the infections mainly affect children). This may change in the future, as parents are becoming ever more paranoid over perceived health risks to their kids.

These examples illustrate that all listing criteria in essence are not static, the science changes, public attitudes change and the available data changes as well. It should be self-evident from this discussion that having a permanent listing authority is not optional, but an essential part of establishing effective regulation based on positive lists.



Owner Licensing, Pet Registration and Surrender

Whilst much of the responsibility of adhering to a positive list rests with the businesses involved in the supply chain of exotic pets, it does not end there. Consumers are a crucial element in any trade and if the aim is to reduce demand for unsuitable pet species and to improve animal welfare, habitat, nutrition and ability to engage in innate behaviours, then owners and their motivations play a crucial role in any regulatory intervention.

As we mentioned earlier, the underlying regulatory assumption behind any positive list is to tell those who are being regulated (usually businesses or people) HOW to behave in the regulatory framework in question. A positive list for pharmaceuticals is not just a list of drugs that can be traded. Such regulation also entails:

- How to prove efficacy and safety for approval,
- Who can sell the drugs, in what quantities and where,
- Ongoing data collection (like of adverse effects),

- Prescription and dosage standards,
- Disposal rules, and many more.

In essence, the regulation aims to tell all parties involved in the trade how to behave. This is the complete opposite of criminal laws, which assume people know how to behave and spell out what happens if they don't (blacklisting).

In the case of the exotic pet trade, regulations therefore need to cover the consumer end as well, not just business behaviour. To safeguard animal welfare, owners need to be held accountable to do their part to give the animal an appropriate, healthy and dignified life as pets. That owners are not necessarily inherently motivated to do this is easy to see from rates of abandonment, neglect, accidental and deliberate release, lack of veterinary care, poor husbandry and nutrition, inappropriate housing, inappropriate handling for social media and so on.

The self-centred reasons for wanting an exotic pet were highlighted in 2016 research [88], which confirmed people in the market for an exotic pet cannot be dissuaded from their purchase by being educated about the species being threatened by trade or knowing the animals are likely to suffer at all stages of the supply chain.

Keeping the list of allowed species to a minimum based on taking these risks and current consumer behaviour into account is certainly a good idea, but it does not fully prevent poor owner behaviour in the future. We would therefore also advocate for a number of additional provisions that can be put in place to nudge exotic pet owners towards proper care and responsibility for their animals.

Mandatory pet registration and death reporting ought to be the absolute minimum intervention in this respect. It will greatly improve data collection, mortality statistics and can be used to implement risk flags for certain species or owners that can be acted upon by the listing and enforcement authority.



To ease compliance, the responsibility for pet registration taking place could be put on the retailer as part of their licensing conditions. This would work for physical stores, market stalls, pet shows as well as online stores, so does not pose an undue regulatory burden on any business in the trade. Mandatory pet registration will have privacy implications in some jurisdictions, so will need to be designed in such a way that the data collected are compliant with privacy provisions.

Mandatory death reporting can be achieved in conjunction with ongoing (annual) pet registration fees. This is common practice in many jurisdictions for cats and dogs and because people don't like to pay for animals that are no longer alive, there is an incentive for death reporting. Annual registration fees are also a helpful way to finance the data collection and analysis involved with the pet registration process.

If veterinary professionals are included in the regulation (see next section), then additional data could be collected from vets. That includes both mortality data (if vets put the animals to sleep) and animal health/welfare related information. In either case the vet could be required to check that a pet's registration is up to date in the pet register as part of a consultation. This requirement could also serve as a means to further suppress the illegal trade, if an owner can't take their pet to the vet (because illegal species can't be registered), then that increases the risk involved with purchasing illegal pets and hence reduces demand.

For some species that could be allowed on a positive list but maybe of greater concern to the listing authority, owner licensing rules could also be implemented. This would be no different to business licensing conditions, the owners would have to demonstrate the ability to provide suitable housing, nutrition and care and could be subject to inspections. This would be especially true if the list of allowed pets also includes 'hobby' animals. Positive lists of mammals created in Europe so far tend to include deer, camels and water buffalo, it would seem appropriate to require owner licensing for such species.

The same concerns would likely apply to many bird or reptile species if they are included on a positive list. Norway is one of the few countries with an existing positive list for reptiles, which includes 9 species of snakes, 7 species of lizards and 3 turtle species [89]. The snakes include ball pythons, carpet pythons and boa species, all very large snakes that should only be allowed in conjunction with owner licensing and licensing conditions.

We would further like to highlight again that CITES currently cannot distinguish the ultimate purpose of any live animal trade. Whilst CITES has a list of approved purpose codes [90], it has zero ability to verify that animals will be used as stated once in the destination country. For a start, its 'C' [Commercial] purpose code does not distinguish between use as pet or food (or any other commercial use). The 'Z' [Zoo] purpose code is as vague as the definition of a zoo – if a collector calls himself a zoo, that would be enough in many jurisdictions. The EU has a directive on zoos [91], which demands that a 'zoo' is open to the public for a minimum of 7 days A YEAR! Private zoos exist in most countries, usually without any rules or regulations. The example of the 'ultra-luxurious wildlife sanctuary' created by the son of an Indian billionaire in Vantara makes clear how hollow these regulations are. Ostensibly created to rescue and rehabilitate animals, it looks a lot more like a collector's mega-dream. A German newspaper investigation [92] documented the import of 39,000 animals to the zoo, even though its website claims to have only 2,000. That these animals are not rescues is evident from the fact that hundreds of animals were imported from breeding facilities for big cats in South Africa, including hybrid species of lions and tigers (which only have value to collectors) [93].

This means that owner licensing would be the only avenue to close down the private zoo loophole that currently exists in CITES. CITES is of course fully aware of this loophole, which is often used for trade in species listed on Appendix I (for which no commercial trade is allowed) but has done nothing to close it. WAZA (which technically regulates zoos but is more a lobbying organisation than a regulator) has no mandatory guidelines or regulations for zoos.



Beyond pet registration and owner licensing, proper positive list laws also need to deal with who bears responsibility for escaped/released/ abandoned animals. If mandatory pet registration is in place and if tagging/tracing requirements have been implemented in the supply chain as described earlier, then any released/abandoned/ escaped animal can be identified in the pet registration database (via microchip information or photographic identification). Any species that cannot be uniquely identified this way should really not be allowed in trade (maybe with the exception of ornamental fish).

If such identification requirements are put in place, then assigning responsibility for released or abandoned animals becomes feasible. At the moment the burden of dealing with them falls on animal shelters, which are usually charitable organisations financed by donations and adoption fees. This might still remain the case, but the cost of care could be assigned to the owner or the trader that sold the animal.

As mentioned before, the aim of any positive list based legislation is to change the behaviour of all actors involved in the trade. Abandonment and release are clearly undesirable owner behaviour, so owners should be held accountable. If that doesn't work or is unlikely to work, then traders can be held to account. This would likely mean that they stop selling the species, which could be desirable if release/escape/abandonment rates are higher than what local shelters can deal with. Any positive list being put into place also needs to deal with existing pets, which suddenly become illegal when the list comes into force. Most such legislation contains grandfathering provisions, which means owners are allowed to keep existing pets. Such provisions can be greatly enhanced by mandating pet registration for these animals and offering voluntary surrender procedures to owners. Mandatory registration closes the loophole of abusing grandfathering rules to acquire illegal pets.

Surrender provisions can be made highly effective by offering to pay owners to surrender their pets. The Australian "National Firearms Buyback Program", which ran from October 1996 through September 1997, retrieved 650,000 guns. The 2003 handgun buyback ran for 6 months and retrieved 68,727 guns. Both involved compensation paid to owners for firearms surrendered to the government which had been made illegal by gun law changes [94].

Australia paid for their firearms buyback program by temporarily increasing a levy on all employed citizens, in the case of the exotic pet trade a buyback scheme could be financed by a temporary levy on wholesalers and retailers licensed to trade in exotic pets. It would have to be carefully investigated if the option to repatriate, rehabilitate and rewild exists for surrendered animals, as the large-scale euthanasia of such pets might neither be socially acceptable nor practical.



The Exotic Pet Trade

Section 4 - Regulatory Interventions



Enlisting the Veterinary Profession

Any well-crafted positive list regulation for the exotic pet trade should also seek the engagement and support of the veterinary profession. The profession plays a key role in overseeing welfare issues concerning all animals but particularly pets. Inherently, those in the profession are likely to be engaged with the issues of pet ownership and could be expected to give guidance and direction in matters where legislation impacts animal welfare. Presently small animal vets tend to be educated mostly with a view to treating cats, dogs and other small mammals. The degree of knowledge of exotic pet species will vary from practice to practice based on what animals routinely get brought in by pet owners and it will depend on what is being taught at universities and professional training courses in the country.

There are a number of areas that must be borne in mind when considering how the veterinary profession is engaged. There will be many situations where seasoned exotic pet keepers will know a lot more about the husbandry needs of their animals than the vet will. This is unlikely to endear exotic pet owners to taking their animal to the vet unless the veterinary profession is enlisted to adapt to increase the level and standard of training for the exotic pets on the positive list. In all likelihood this would mean the development of a suitable knowledge base that all vets have access to and fostering of a sufficiently large expert network that vets can fall back onto in cases where they lack the requisite skills and experience.

It is only with adequate and deeper knowledge of the health issues of those pets positively listed that it could be expected that the profession would contribute in a greater way towards issues of welfare and possibly the enforcement of the positive list law. That they should be involved goes without saying and there exists an opportunity to include the profession as a source of data collection to assist with ongoing assessment of the appropriateness of the list over time.

It must be recognised though, that in most situations veterinary clinics are operated as private

businesses. This may influence the willingness to share data or invest time in this or any compliance monitoring matter for which a clinician's time is not financially rewarded. In addition, engaging private practitioners in areas of enforcement or mandatory reporting may lead to resentment not just to the time involved but due to the perception this may risk alienating pet owning clients from whom they rely on for their income. In the case of any mandatory reporting there also exists the concern this may result in pet owners not presenting their pets to veterinary clinics for risk of being exposed with regard welfare issues or on compliance matters.

Finally, the veterinary profession is well placed to influence legislative decision making in relation to the exotic pet trade and appropriately functioning, meaningful positive lists. The creation of position statements, guidelines or similar, such as the one currently being developed by the Australian Veterinary Association, by veterinary professional groups globally, would add guidance to decision making in relation to the exotic pet trade and its management.

The profession plays key roles in all areas that the ownership of exotic pets impacts, be it individual animal health and welfare concerns, issues of biosecurity, management of zoonotic risks and the ongoing development of a One Health approach and as such should be a key touchpoint in decision making. As such stronger engagement with the veterinary profession by decision makers and stronger advocacy by the profession would seem preferable compared to the current seemingly hands-off approach and lack of involvement.

Existing Positive List Laws and Their Implementation

This section has outlined a whole raft of additional regulatory interventions to augment the basic positive lists currently being implemented in EU countries and being advocated for by conservation and animal welfare charities alike. As some positive list laws have been in place for long enough to draw conclusions on their effectiveness, we shall take a look at Belgium and Norway to ascertain if our criticism is warranted.

Norway implemented a positive list for reptiles in 2017, but this was predated by an outright ban on keeping reptiles as pets which had been in place since 1977. Prior to switching to a positive list for reptiles, the Norwegian Food Safety Authority estimated that there are about 100,000 illegal reptiles in the country [95]. Given that Norway displayed no desire to enforce the outright ban, why would it enforce a positive list? This is a valid argument used by the pro-exotic-pet lobby to cast doubt on the effectiveness of positive lists. As per the website of UK lobby group Responsible Reptile Keeping: "I don't like to guess how many people are keeping reptiles illegally, but it's a lot, says Svein Fossa from NZB, a Norwegian pet association that has campaigned against Norway's positive list and bans. Other countries, such as Holland, Belgium and Singapore, have positive lists in place, and they are equally unenforceable as far as we are aware," explained Svein. "What's the point of an unenforceable law? It simply makes law-abiding people into criminals. Sadly, politics isn't always about achieving results. It's often about simply giving the impression that you are doing something." [96].

The website also mirrors our argument that positive lists can't work without mandatory registration: "One of the big problems facing positive-list legislators is that most keepers won't register their animals because they don't want to be on the authority's system," says Jim Collins, Zoological Consultant and Coordinator for the Sustainable Users Network. "Also, finding officials who can identify enough reptile species to enforce the law is impossible. Every positive list that's been made law has been impotent because people simply ignore it. It's just words on paper." [97].

It should be obvious that advocating for laws that cannot or will not be enforced is counterproductive, but so far animal welfare charities and conservation organisations have failed to realise this very basic fact (or ignored it). If the enforcement mechanism isn't written into the law, it doesn't exist.

Both the Belgian and Norwegian law relegate any enforcement tasks to their national Food Safety and Health authorities (although in the case of Belgium this was later devolved to the regional level). The idea that these authorities would suddenly embrace their new mission of enforcing positive lists for pet keeping is just as naïve as it sounds. Unless a dedicated authority or department within such a large government bureaucracy is created, nothing will happen as everyone working there already has plenty of other tasks and isn't looking for more work to do.

Nevertheless, in 2016 Eurogroup for Animals claimed that the implementation of the positive list for mammals in Belgium had been a success.

It is worth reproducing their 'success' arguments in full [98]:

"In total, 46 cases of rescued and confiscated exotic mammals have been recorded in the period 2009-2014, corresponding to 129 animals and an average of 7.7 cases (21.6 animals) per year. 22 cases related to confiscations (92 individuals), while 15 cases related to animals voluntarily handed over to rescue centres (22 individuals, for an average of 2.5 cases per year).15 stray exotic animals have been rescued (average of 2.5 per year).

In total, exotic mammals belonging to 29 species have been confiscated/rescued in Belgium between 2009 and 2014.

Out of the eleven examined websites, only four published illegal advertisements. In total, 12 advertisements were found selling illegal mammals, for a total of 23 animals The most commonly advertised species were the sugar glider (Petaurus breviceps) and the porcupine (Hystrix spp).

The present research demonstrates that the adoption of a Positive List in Belgium has been very effective in regulating the trade of the exotic mammal pets."



So, of the 129 animals rescued and confiscated, 37 were either voluntarily surrendered or found as strays. With no comparison figures for the number of confiscations predating the law provided, it is impossible to judge if the remaining 92 mammals (mostly racoons and macaques) constitute an enforcement success (confiscations also happen for animal welfare reasons or public health reasons, so would predate the positive list law). We are also not provided with baseline figures of mammalian pets in Belgium, either so cannot judge if the 92 mammals constitute 1% or 0.0001% of the pet population.

The argument in relation to illegal advertisements is equally flimsy. The report explicitly states that the Belgian food and safety authority does not monitor the online trade (which is clearly an enforcement failure), so the researchers looked at 11 websites for 2 months and found 12 ads, averaging 6 per month. They compare this to 107 per month found in the UK and 211 per month in Germany and claim this means the law is working.

There are two problems with this comparison. First, they didn't adjust these figures for population, if we do that we get: Belgium: 6/mth, UK: 16/mth and Germany: 26/mth. Second, they do not provide statistics on the number of pre-ban ads in Belgium (because they don't have any). So even with adjusting for population this is not exactly a meaningful comparison between legal advertisements (in Germany and the UK), and advertisements on websites in Belgium where the ads are illegal. Certainly, no conclusions can be drawn from this on the effectiveness of the new law from these data.

It should be obvious from both examples that the risk of creating a purely 'on paper' law with any basic positive list legislation is very high. The Netherlands have gone down the same path, enforcement sits with the national food safety authority. Without a dedicated and effective monitoring and enforcement framework any positive list law will be largely useless. At an absolute minimum any positive list law therefore needs to include:

- 1. Mandatory business licensing and registration
- 2. Mandatory pet registration at point of sale
- 3. A dedicated monitoring and enforcement authority with dedicated funding (from license and registration fees)
- 4. A regular process for reviewing the effectiveness of the law and the content of the list





Section 5

Consumer Interventions to Address Demand

As we outlined at the beginning, the exotic pet trade is a luxury trade, with purchasing mostly being motivated by the perceived status gain in the eyes of a relevant peer group. Demand only started to manifest in the 1980s, as we showed previously.

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This perceived status gain within the overall consumer culture is the 'pleasure' component usually quoted when looking into why humans keep pets. This status gain is inexorably linked to the human superiority presumption, even though the practice of keeping pets long predates the extreme form of human dominion philosophy that emerged with capitalism.

The 'companionship' part of the reason to keep pets is a bit more spurious when it comes to species that behaviourally are far removed from humans and mammals. Whilst most species will respond to stimuli provided by their human owner, that response may be very different from more established companion animals like dogs and cats. Hence the companionship aspect is largely individualised and based on the owner's perception and interpretation of the interactions with their pet.

Because of the human superiority presumption, the question of whether this arrangement suits the animal does not even enter the prospective or current owner's mind. Pleasure is inherently one-sided; it's the owner's pleasure that matters.

Whether the animal experiences pleasure or derives a benefit from the 'companionship' offered by the human owner is irrelevant, their needs are reduced to providing food and habitat. The 5 freedoms, if taken seriously, would preclude any keeping of non-domesticated animals as pets. The ability to express natural behaviours simply does not exist in an aquarium, terrarium or cage.

The consumer demand for exotic pets will therefore persist as long as the human superiority assumption underpins our relationship with nature. Preserving this assumption is essential to capitalism, which relies on the unsustainable, cost-free exploitation of nature and the 'free' waste disposal services it provides. Thus, it is going to remain the dominant ideology for the foreseeable future.

Only once capitalism has brought about its own destruction due to the exhaustion of fossil fuels, biodiversity resources and climate change impacts will the exotic pet trade end 'naturally'. Until then, bringing in legislation based on positive lists is the main avenue for reducing or closing down this unnecessary trade. The other avenue is using demand reduction campaigns. We will discuss the opportunities and limitations of such campaigns in this section and provide examples of campaign ads for the exotic pet trade that we developed based on our prior work in demand reduction for rhino horn in Viet Nam between 2013 and 2019 [99].

Demand Reduction Model and History

Over the years there have been examples of demand reduction campaigns that have changed consumer purchasing decisions and behaviour very quickly. The most broadly recognisable are the anti-smoking campaigns that were utilised in many countries. These graphic campaigns were mostly run on health anxiety, once the link between smoking and cancer had been firmly established both scientifically and in the public's mind.





From a wildlife conservation perspective, maybe the best-known demand reduction campaign is the 1980s Lynx 'Dumb Animal' anti-fur billboard and cinema advertising campaign. These campaigns also used graphic images, but they were based on status anxiety, not health anxiety.



The Exotic Pet Trade

Section 5 - Consumer Interventions to Address Demand

Key to their effectiveness is that they focus on the actual user of the product, the 'rich bitch', not the animal. The consequences for the animal are mostly implied by the use of blood in the ads. They thus conflated a supposedly desirable social status good, the fur coat, with an undesirable social identity, that of a murderer.



When we first started working on rhino horn demand reduction campaigns in 2012, we set out to understand why Lynx's 'Dumb Animal' campaign, which was acknowledged as being highly successful, has been so rarely copied by the conservation sector.

Large conservation organisations run fantastic awareness raising campaigns and good quality education campaigns but largely avoided demand reduction. Even now, over a decade later, too many awareness raising and education campaigns are simply being re-badged and sold to the public (and donors) as demand reduction, and they are not. We developed the simple model in the image below to show the difference between awareness raising, education and demand reduction campaigns. Distinct from awareness raising and

Basic Test to Differentiate Demand Reduction from Awareness Raising and Education



Awareness - Raising campaign targets a **broad, general** population to make them (more) conscious about the (scale of the) problem(s) associated with exotic pet trade and ownership, e.g. animal welfare/cruelty, poaching, lack of supply chain transparency in exotic pet industry, illegal trade, invasive species etc.

Educates general population about how exotic pet trade and ownership is monitored domestically, e.g. laws, fines, custodial sentences etc.

Educates groups that can influence the current owners of exotic pets, e.g. social media users, government officials, vets, police, judiciary, zoos, pet shop owners etc. about the issues associated with exotic pet ownership.

Educates potential exotic pet owners in a way that encourages them not to buy exotic pets, e.g. status/health anxiety specific to the demographic group.

Elicits emotional response in influencer groups in a way they will **challenge**/ reject the people they know who are exotic pet owners (move to action), e.g. loss of status on social media.

Elicits emotional response in the current exotic pet owner groups such that they become conscious of how opposition to their ownership of an exotic pet is **negatively impacting their significance and status** with their peers and in groups they aspire to be a part of.

Elicits emotional response in 1) the current owners to such a level that it triggers them to **never buy an exotic pet again** and they **surrender pet appropriately** if they believe they are not able to ensure its needs can be met, and, 2) those who had been considering purchasing an exotic pet are **no longer interested in buying**. This change in consumer behaviour needs to be done in a timeframe to save species from the threat of extinction in the wild resulting from trade (both legal and illegal). education campaigns, what the Lynx's campaign showed was that knowing and undermining the identity of the target group can trigger emotions that can change purchasing behaviour. This has been known by the advertising industry and marketing departments of companies for over a century, they just use the same insights to make us buy more, not less. Luxury companies have perfected these methods to drive up the desire for unnecessary goods and services, tapping into the universal 'aspirational' mindset of consumerism and our desire to climb the social ladder.

The big difference between using these methods to drive up sales compared to reducing demand is

that the former makes massive profits, while the latter requires government funding or private donations. What we learned from the experts who created the anti-smoking, drink-driving and workplace safety campaigns that used hard-hitting emotional messages that actually do produce behaviour change is that donors and governments don't like being 'responsible' for such messaging.

One of the world's most accomplished behaviour change experts, from the anti-smoking field, told us in private: "*Negative messaging campaigns do the grunt work. Positive messaging campaigns make them palatable for (government) donors to fund*".

Running Demand Reduction Campaigns

To create effective demand reduction campaigns, we need to understand the psychological drivers and influences of the key consumer groups. Specifically, what motivates purchasing and how the purchase is rationalised after. This is the type of data companies get advertising agencies to collect on target groups via focus groups, interviews and surveys.

In undertaking this research, it is critical that the right target consumer group is interviewed. The data gathered will be useless if the wrong target groups are used for interviews and surveys. In 2017, the International Trade Centre (ITC) published a paper titled: *Demand in Viet Nam for rhinoceros horn used in traditional medicine* [100].

The ITC said they conducted a survey of 1,000 consumers of traditional medicine, including 239 people who self-disclosed they used rhino horn. But the salary data they included on their survey group clearly showed that these people were not buying genuine rhino horn, because they couldn't afford it. So, the whole research was likely based on users of fake rhino horn (usually ground-up water buffalo horn), the equivalent of LVMH interviewing buyers of fake handbags to make decisions on future advertising campaigns.

When we researched the users of genuine rhino horn in Viet Nam in 2013/14 it quickly became clear that they are wealthy, top-level executives



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who don't listen to anyone but their peers. They were also all men. They were not concerned about consuming an illegal product, as law enforcement rarely targets the wealthy elites. Their only fears were that the rhino horn could be contaminated (health anxiety) or that their peers would reject the practice (status anxiety).

We based our 7 demand reduction campaigns from 2014 to 2019 on these insights, over 80% of our adverts targeted businessmen, the remaining targeted affluent women; often the wives of the businessmen buyers [101]. To reach the target group, we decided to pay commercial rates for the adverts to ensure that they were in the part of the magazine or newspaper that was read by them.



Other conservation agencies accepted pro-bono advertising slots or spaces (like in elevators) for their campaigns, ceding control over who would actually see the ads to save money. This is not a useful strategy for demand reduction. Even with us paying full commercial rates, several magazines refused to run our ads for fear of alienating their customers, the inflight magazine of Vietnam Airlines being one example.

Health anxiety was the primary leverage in our first two demand reduction campaigns. Rhino horn is simply keratin (the same as fingernails), so consuming it poses no health risk. But at the time some rhino owners in South Africa were injecting horns with first organophosphates and later ectoparasiticites to dissuade poaching, creating a tangible health risk for consumers of rhino horn. Some private owners were even testing putting radioactive tracers in the horns of rhinos. Once horn infusion was successfully demonised by those wanting to export rhino horn, we had to switch our campaigns to status anxiety.

Triggering status anxiety is not the same as triggering the fear of law enforcement (which the users don't have). The approach taken in the ads is to diminish the businessman's reputation in the eyes of his peers and the networks of people he aspires to be a part of. Like all businessmen around the world, our target group is worried about the loss of their brand and reputation, and any resulting loss of career and business opportunities.

In our interviews with the wealthy businessmen in Viet Nam in 2013/14 we found that they were aspiring to the same 'business idols' as business executives in the West, at the time people like Warren Buffett and Bill Gates. That means we had



Your use of thino horn is no longer invisible. Over the last 12 months the world has learnt who the key buyers are and no longer tolerates those few Vietnamese who use it to buy status and favours.

They see men with fragile egos who have to buy influence with rhino horn because they cannot seal a deal on merit.

So if you continue to use rhino horn your business reputation is likely to crash. It's not only global opinion leaders but also forward-looking local businessman who see the use of rhino horn as a sign of weakness and commercial incompetence.

Be warned, your reliance on rhino horn may be your undoing. As business opportunities start to dry up you will come to realise that you are being rejected. Your weakness and desire to impress is polsoning your business brand and your reputation. successfully identified the peer group (which determines behaviour to fit in) and the next level status group (which determines aspirational behaviour).

From these insights into the target group and the fears/anxieties that can be exploited a campaign brief [102] can be developed for an advertising agency to produce demand reduction ads.

The campaign needs to fit the target medium, at the time we used business magazines as the only viable route to reach the target group. In the case of the exotic pet trade, it would most likely need to be narrowly targeted campaigns on social media. In addition, women's magazines could be used for adverts highlighting the risks to children of owning exotic pets. Campaign frequency can be derived from decades of in-depth research into campaign frequency and intensity – Target Audience Ratings Points (TARPs) – based on what was needed to change adult smoking behaviour.

Well-researched and designed demand reduction campaigns do have the potential to trigger behaviour change in consumers and drive down their desire to purchase rare species - but there is a BUT. The demand reduction strategy cannot succeed without an equally important sister campaign aimed at driving down the desire to supply or to stop the supply altogether (like through banning the sale via a positive list). If supply remains legal, a dedicated and well-funded regulator must be in place to monitor, manage and curb commercial exploitation. Campaigning for advertising bans on industry ought to be a primary consideration as part of lobbying for positive lists.

Evaluating the effectiveness of demand reduction campaigns is often very difficult, especially with illegal products. Campaigns need to run for years to have a discernible effect and attributing change to a specific campaign is usually impossible. Rhino poaching began to decline when we started running our campaigns in Viet Nam. Our last RhiNO demand reduction campaign was published in 2019, and rhino poaching has plateaued since. There are far too many other factors in play to claim a correlation between stopping our campaigns and the fact that rhino poaching stopped falling then. We stopped running campaigns because the push to legalise the international trade in rhino horn was relentless in South Africa.

As we mentioned earlier, demand reduction is no panacea, regulatory change needs to be pursued at the same time. We outline the major limitations of demand reduction campaigns in the next section.



RhiNo Campaign running in Viet Nam

Limits of Demand Reduction Campaigns

While consumer demand reduction campaigns are needed, it is critical to be clear about what they can and can't achieve. We outline a number of limitations in running such campaigns below.

Limitation 1: Individual Action vs. Government Action

Individual action is not a replacement for government regulation. The idea that individual consumer choice could keep business in check is frankly ridiculous. Individuals have neither the time nor inclination to base their consumption choices on how the businesses producing these products are behaving in relation the vast array of social and environmental issues that may be of concern to them.

Businesses as currently understood are solely responsible for generating profits for shareholders. This has become a self-reinforcing mantra by linking executive remuneration to profit and stock price performance with the primary vehicle being executive stock options. By making both executive salaries and stock options hugely attractive to the managers most driven by greed and status, other considerations, such as protecting the environment or a social licence to operate, have been swept aside.

To distract from this basic tenet of the current neoliberal order, the responsibility for ethical purchasing has been dumped on the individual consumer. Consumers should not be required to attempt due diligence while at the same time the budgets of regulators are cut, and the corporate governance bar is set incredibly low. Even if customers are prepared to do due diligence, this is an almost impossible task, given the lack of transparency in supply chains.

Limitation 2: The Desire to Supply For Profit

Demand reduction campaigns to reduce the individual's desire to consume also can't compete with the funding available to drive up the desire to supply for profit.

The funding for a demand reduction campaign is pocket change when compared with the budgets of companies who invest to drive up desire (lobbying, marketing, advertising, product placement etc). Luxury companies command marketing and advertising budgets in the billions.



Section 5 - Consumer Interventions to Address Demand



Global advertising spend continues to rise and is projected to reach over US\$1 TRILLION dollars by 2026! The luxury industry is one of the major advertisers; on average, they divert 8% of their turnover into funding advertising initiatives. Of course, the push to increase consumption extends beyond advertising and marketing. It is inherent to much of the social media and entertainment industries. Hence counting advertising dollars alone does not reflect the true scale of 'content creation' to boost consumption.

The major advertisers also wield influence over the ads that their 'media partners' will actually publish. There is no way to guarantee that a publisher, news website or social media company will run demand reduction ads that directly target the products or brand of their biggest advertisers. Again, the fact that all media are privately owned limits the potential for even running demand reduction campaigns.

Even with the option of running demand reduction campaigns in the media, they cannot compete with industry advertising to drive up demand. This is well established from the anti-smoking campaigns. Countries where tobacco advertising was allowed, such as in Switzerland until 2022, show higher smoking rates. In 2022, 23.3% of Switzerland's population (aged 15 and older) used tobacco. Compare this to Australia, where advertisements for tobacco products were prohibited in 1973. The 2022-23 National Drug Strategy Household Survey in Australia found the smoking rate among adults (aged 18 and over) was 11.1% and the daily smoking rate was 8.8%.

The public health messages to the smoking population in both countries would have been similar. The significant difference in smoking rates between Switzerland and Australia shows what results can be achieved when the tobacco industry is prohibited from pushing the opposite messages. Mixed messages create consumer inertia, dilute the demand reduction impact and continue to normalise behaviours that demand reduction is trying to ostracise.

This means that demand reduction campaigns may not be sustainable in the face of industry push back.

Limitation 3: Keeping All Messages Positive

The belief in many circles of conservation is that all messages should be positive, don't upset people and that people only learn and change when they feel positive and are having fun is both naïve and just plain wrong. If this were true, then from a media perspective why don't anti-smoking adverts show happy people playing with their children and saying, "I have much more energy to play with my kids because I don't smoke" or road safety adverts with drivers saying, "Home again safe and sound because I don't drink and drive". Such adverts would do nothing to reduce the smoking rate or the incidences of drink-driving.

Discomfort triggers behaviour change.

One of the fastest ways to trigger a behaviour change in the target consumer group is for a campaign to elicit powerful negative emotions, in the moment. When someone is not intrinsically motivated to change their behaviour, the only option available to trigger a transformation is to make the pain of not changing their behaviour greater than the pain of changing.

The reason most industry advertising uses positive, aspirational messages is because we are all embedded in a social context of 'striving for more'. Industry will readily switch to using real and manufactured fear, like fear of missing out or not fitting in, to drive up demand trying to establish new products or product categories. Historic examples include brushing your teeth with toothpaste and using mouthwash – see the Listerine advert from the 1950s reproduced in the image below.

<complex-block>

Because negative campaign messages are difficult to sell to donors and government, there has been an over-generalisation of the behaviour change model that states don't use fear or negative messages, as this will stop people engaging. Whilst this is true in some contexts, like campaigns to encourage people to go for a health check, there is a misguided notion that this type of approach should also be used with people who are not intrinsically motivated to change.

The reality is, some people are motivated into changing their behaviour for positive reasons, but many need to feel discomfort to trigger them into action to do something different. To drive behaviour change to reduce demand, campaigns need to trigger negative emotions such as status anxiety and health anxiety.

Limitation 4: To 'Not' Conform Requires Massive Willpower

Social status, identity and self-worth are today inexorably linked to consumption. Most luxury consumers link rarity to higher status. Because basically all of the trade in wild species is a 'luxury good' – fashion, jewellery, fragrance, décor, gourmet food, exotic pets – exploring how to trigger status anxiety is usually a good place to start for any demand reduction campaign.

The paradox is that luxury consumption for status gain is both tribal and competitive; the balance of the two differs between cultures around the world. Tribal because meaning is conveyed primarily to the 'in-group', with almost everyone wanting to be seen as equal to their peers consuming the same 'luxuries'. But social differentiation inside the group is also sought after, through the relative level of consumption and types of goods, services and experiences purchased.

When thinking about the potential effectiveness of demand reduction in this context, it must be acknowledged that opting out of the current consumption addiction requires both a secure identity and massive willpower to 'not' conform. At present, there is no status gain from not
consuming these luxuries. To the contrary, not conforming will lead to status loss and potential expulsion from the peer group.

Therefore, demand reduction campaigns in this setting are likely to be ineffective without offering a viable alternative for differentiation and status gain without the risk of being ostracised.

In relation to the luxury consumption of wild species we need to pivot to constructing a status

gain from restoring nature, investing in rehabilitation and rewilding. Whilst there is public demand and appreciation in some circles for 'saving' the environment, it currently does not present an opportunity for status gain in the circles that consume wild species, including the buyers of exotic pets. Without this opportunity, there is no chance of stopping consumption via demand reduction campaigns.

Exotic Pet Trade Demand Reduction

Using the insights from creating and running demand reduction campaigns for rhino horn, we have produced some examples of what demand reduction ads for the exotic pet trade might look like. We have not conducted dedicated, in-depth research into the different target groups yet, but it is clear that both health anxiety and status anxiety are equally important in the exotic pet trade.

There will need to be more granularity in the specific consumer groups to make exotic pet trade ads effective, the motivations of reptile collectors are different from parents buying a pet turtle for their child. Nevertheless, the example ads below can provide a starting point for any organisation willing to invest in demand reduction campaigns. We see three potential target groups when it comes to pet birds: raptor owners, parrot owners and songbird owners. Raptor owners are likely motivated by status and human superiority (hunting). Songbird owners would likely be most interested in pleasure (listening to the birds singing) or simply conforming to cultural norms (like in SE Asia and Brazil).

Parrot owners are likely interested primarily in companionship and to some degree also in human superiority (like when training their birds to talk). We have only created a possible example ad for parrot owners at this stage to show how such ads might be designed.

No, I'm not kissing you, you self-absorbed bitch!

You're addicted to social media 'Likes' of images of us together. Your followers should stop fawning over you because the exotic pet trade is cruel and deadly.

Birds like me, crammed into transport boxes, suffer from stress, rough handling, crushing, asphyxiation, dehydration and more. An estimated 60% of the parrots taken from the wild die before they leave their home country.

Consumer research of people in the market for an exotic pet confirmed they aren't dissuaded by knowing animals are likely to suffer at all stages of the supply chain. Is there any consumer empathy in the exotic pet trade?

Exotic wildlife Trade Honesty Ads



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For reptile owners, we will most likely need to distinguish between 'accidental' owners, dedicated owners, and collectors. Accidental owners are the result of impulse purchases in response to social media influencers, groups or the like. They are also parents giving in to nagging from a child. Dedicated reptile owners are motivated by status and will likely make themselves knowledgeable to impress their peer group. There would be overlap with collectors, but collectors are motivated by rarity and by acquiring species only recently discovered. We have created an example ad for the accidental owners using health anxiety (which works well with parents of small children).

Sick Trade Puts Them Both At Risk

Ownership of snakes, lizards and turtles poses a health risk, especially to children. So why does the pet trade advertise these animals to parents as *beginner pets*, that are *low maintenance*? While they don't need daily exercise, the limited understanding of hygiene need can result in the transmission of diseases.

In the USA there are approximately 74,000 cases of salmonellosis (a bacterial infection) annually in the owners of reptiles. While in the UK, 27% of children under the age of five hospitalised for salmonellosis were from homes with pet reptiles.

If you are considering purchasing a reptile invest the time to understand the risks involved. It could save you a lot of stress and heartache





Whilst not directly related to the exotic pet trade, the same approach also works for the recent reemergence of fur in Gen Z buyers [103]. This goes back to status anxiety but also involves existential angst, which is prevalent in Gen Z. These examples are by no means complete and ready for publishing. They merely serve to provide suggestions on how to approach demand reduction for the exotic pet trade from the knowledge gained from successful anti-smoking and workplace safety campaigns.

Extinction: The Vulgarity of Desire

Growing up amid an escalating environmental crisis, she sought comfort by buying a fur coat—how dumb is that?

The legal wildlife trade is a leading cause of biodiversity loss, and purchasing vintage fur only fuels the demand. Even if it's "second-hand", it's not sustainable because it is driving up desire. Plus, dopamine addiction, in all generations, is driving the unsustainable trade in wild species.

Over 80% of Gen Z report feeling anxious about the planet's future. Yet, research shows Gen Z is driving the re-emergence of fur.

Gen Z, you can't blame older generations for the dumb decisions they made, if you're going to repeat them.







Section 6 Summary and Conclusion

The exotic pet trade serves as a great example to provide insight into the problems with the legal trade in wildlife as it is currently conducted. One might assume that because the exotic pet trade utilises live animals and many of those animals are quite relatable to people, it would be regulated in a fashion to protect these animals from unnecessary harm. This assumption turns out to be wrong, the exotic pet trade is both massive in scale and basically unregulated.

High mortality rates in the supply chain are seen as purely the cost of doing business, not animal cruelty. The lack of empathy for the animals being (mostly) harvested from the wild pervades every part of the trade – suppliers, wholesalers, retailers, online traders, owners, regulators, politicians. The numbers are staggering, even with the little data on this trade that are actually being collected. Hundreds of millions of ornamental fish are traded every year, as well as millions of reptiles and birds. The true scale of the trade in, e.g. songbirds is completely unknown, as both Southeast Asian countries and Brazil have massive domestic markets with zero data collection.

The trade is both completely commoditised and entirely an unnecessary luxury trade.

Nobody needs to own any type of exotic pet, despite the fact that the practice dates back several millennia. Scale is what differentiates past customs from the modern-day exotic pet trade. To afford an exotic pet in ancient Greece or Rome meant being rich, so you could pay for the acquisition and have the time to look after the pet. Today, everyone living in a wealthy country has both the money and time needed and acquisition is just one click away. The Exotic Pet Trade Section 6 - Summary and Conclusion

What underpins the trade is a desire for 'pleasure', 'companionship', and status gain. All of these purported reasons to own exotic pets are based on a common presumption – that humans are superior to all other animals and hence can act like gods and dominate nature for our 'pleasure'. This is what immunises us to the untold suffering of animals in the supply chain and eventually in the care of ignorant owners with unsuitable enclosures or diets. Some species, such as birds and large reptiles, have no chance of expressing their natural behaviours in captivity, but it seems we couldn't care less. It is our pleasure and status that needs satisfying and our late-stage capitalist society has entirely normalised the abuse.

Social media has further turbo-charged the potential status gain of owning exotic pets by creating the perfect platform for showing off to one's peers. It has also turbo-charged the trade, both through the need for new content to be created constantly and by making it easy to both legally and illegally sell and acquire any animal you might want.

The bar for acquisition of even rare or protected species traded as pets is somewhere between very low and non-existent. Whilst some restrictions exist in the international trade through CITES, most of these are either not enforced or easily bypassed by the illegal trade. Most countries have no domestic restrictions. Budgets for monitoring and enforcement of wildlife laws in nearly all countries reflect the priority given to this by politicians, law enforcement and the public – they don't care.

Despite this, animal welfare and conservation organisations have been campaigning strongly on the exotic pet trade. From their perspective, the case is easy to make. The animal welfare issues in the trade are massive and mortality rates in the supply chain have been reported at levels of up to 70%. The environmental impact is equally concerning. Other than freshwater fish and some small mammal species, most animals sold as exotic pets have been harvested from the wild. Nobody knows if any of this extraction is sustainable, as both extraction numbers and baseline population data are mostly unknown.

Despite the best efforts of the animal welfare and conservation organisations to get businesses to care about supply chain mortality and ecological sustainability, this is a futile quest. Businesses in our current system exist to make profit and to



prioritise shareholders, doing anything that reduces profit 'because you care' is not a viable option if executives can get sued for doing so.

At the other end, exotic pet animals are often impulse purchases, with owners ignorant of the needs or longevity of the animals they acquire. This leads to poor husbandry practices, sick or distressed animals and eventually death, release or abandonment. Release (accidental and deliberate) and abandonment can easily reach the scale for invasive species disasters to occur. The case of pythons and iguanas in Florida is probably the most staggering, but there are many more examples that we know about and probably equal numbers that we don't.



It is therefore commendable that animal welfare and conservation charities have pushed for better and more comprehensive regulation of the exotic pet trade, especially in Europe. They realised that under the current system of regulation, nothing can change. The solution they embraced – positive lists – is definitely the right one, but so far, they have failed to understand that solely creating a list of species that are allowed to be owned as pets is insufficient for an effective regulatory regime.

Positive lists are nothing new, whole industries such as pharmaceuticals, pesticides, aircraft and their components are regulated by spelling out what is allowed and how businesses are to behave, not by detailing what is forbidden or restricted (which is how CITES works). What is different in the case of positive lists for the exotic pet trade is that the charities pushing for change seem to believe that once a list has been created using the 'right' scientific criteria, their work is done. That is not how effective legalisation comes into being, as the case of the positive list laws in Belgium and Norway shows.

The starting point needs to be to understand both the commercial realities and the motivations of all the actors involved in the trade, the businesses, the social media influencers, and the owners. Once a positive list comes into force, large parts of the trade become illegal by default, yet the desire to supply and promote does not cease, many people's income depends on it. That means that creating a dedicated and fully funded monitoring and enforcement framework is just as important as creating the positive list.

Belgium, the Netherlands and Norway all handed monitoring and enforcement of their positive list for exotic pets to their food safety authorities and the police. Neither body has any inherent desire or expertise in monitoring retail/online trade or how to deal with exotic pets, and no extra funding was provided in those countries. This regulatory failure is unsurprising; the only way this can be different is if the positive list law includes the creation of a dedicated authority tasked with monitoring and



enforcement and it is funded from licence and registration fees raised from both traders and owners.

Again, none of this is new or unusual. Licence and registration schemes to fund regulators are found in any number of industries, from the ones mentioned above to schemes for certain retailers, licensed trades, sports and many others. We sincerely hope that the animal welfare charities and conservation organisations pushing for positive lists will learn from the early failures in Europe and embrace the need to include licensing and registration schemes at a minimum, with fees raised paying for monitoring and enforcement.

Pet registration needs to be mandatory and happen at point of sale, with traders held liable. Owner licensing should be mandatory for some species and all grandfathered pet species. All businesses selling exotic pets, including social media giants, need to be licenced and monitored/ inspected for compliance. Licensing conditions need to address animal welfare and mortality in the supply chain and ideally be coupled to supply chain due diligence laws.

Domestic successes with the implementation of positive lists in individual countries in the EU will also not solve the problems in the international trade. Better international regulation is only possible via amending CITES, as positive lists are not an option without amending the articles of the convention. This might be possible via adding a protocol instead of reopening the articles for negotiation (which most stakeholders don't currently see as a viable option). Regardless, CITES would also need to embrace a funding mechanism for monitoring and enforcement, which it currently lacks (all such costs are up to signatory countries, which leads to massive inequities between exporting and importing countries).

We also detailed how positive list regulation can and should be augmented with running demand reduction campaigns. Such campaigns are going to be most effective when they utilise negative emotions that directly address the reason(s) for purchase. Given that exotic pets are mostly purchased for status gain and 'pleasure', utilising status anxiety would have to be the go-to negative emotion in the case of exotic pets. We have provided examples of what such demand reduction ads might look like, without having done an in-depth analysis of the different consumer groups and their motivations for acquiring exotic pets.

Utilising negative emotions in demand reduction campaigns is still controversial in the conservation space, despite decades of experience from antismoking campaigns. Animal welfare charities are far more accepting of this practice, so the fact that both types of organisations campaign on better regulation for the exotic pet trade would open the door to running negative campaigns.

We also pointed out that demand reduction campaigns have several limitations, especially if there is no advertising ban in place for the products for which we seek to reduce demand. If positive lists include an advertising ban and such a ban is also enforced, then running demand reduction can be a very effective supplement to the legislation. Such campaigns would be most effective in the transition period, especially in the case of grandfathering provisions for existing pets that are no longer allowed to be owned.

We are unlikely to see effective positive lists for the exotic pet trade being brought into law unless the public/politicians/regulators can be persuaded to drop the human superiority presumption from any such legislation. As long as purchasing live animals for our pleasure is acceptable, we are not going to change our ways. Any trade in live animals should start from the point that humans are animals, not gods, not superior.

From that standpoint, animals are kin, which means they have rights that we ought to respect. It would seem logical that respecting the rights of wild animals means restricting any pet ownership to only domesticated species. Whether reaching this point under capitalism is possible remains to be seen, but we sincerely hope so.



References

- 1. https://edition.cnn.com/2025/03/05/politics/elonmusk-rogan-interview-empathy-doge/index.html
- 2. One of the authors (CM) has co-authored the draft AVA guidelines
- Herzog, H. (2014). Biology, culture, and the origins of pet-keeping. Animal Behavior and Cognition, 1(3), 296-308. doi: 10.12966/ abc.08.06.2014
- Robinson JE, et.al (2015) Captive Reptile Mortality Rates in the Home and Implications for the Wildlife Trade. PLoS ONE 10(11): e0141460. doi:10.1371/journal.pone.0141460
- 5. Toland E, Warwick C, Arena P. The exotic pet trade: pet hate. Biologist. 2012; 59:14–8.
- https://news.mongabay.com/2013/10/98-ofmarine-fish-headed-for-the-aquarium-trade-diewithin-a-year-in-the-philippines and https:// reefs.com/magazine/aquarium-fish-mortalityrates-of-fishes-in-captivity
- 7. NATURE COMMUNICATIONS (2020) 11:4738, https://doi.org/10.1038/s41467-020-18523-4
- Warwick et.al Exotic pet suitability, https://doi. org/10.1016/j.jveb.2018.03.015
- 9. https://cites.org/sites/default/files/documents/E-CoP19-Inf-99_updated.pdf
- Biondo, M.V.; Burki, R.P. A Systematic Review of the Ornamental Fish Trade with Emphasis on Coral Reef Fishes—An Impossible Task. Animals 2020, 10, 2014. https://doi.org/ 10.3390/ani10112014
- 11. See [8]
- 12. https://howtospenditethically.org/the-rippleeffects-of-ornamental-aquariums/
- 13. See [8]
- 14. https://cites.org/sites/default/files/common/ docs/meeting_info/songbirds/ CITES%20Songbird%20Report%20Part%201% 3B%20Overview_0.pdf
- 15. https://www.sciencedirect.com/science/article/ pii/S2352340921003772

- Determining the sustainability of legal wildlife trade, https://doi.org/10.1016/j. jenvman.2023.117987
- IPBES (2019): Summary for policymakers of the global assessment report on biodiversity and ecosystem services. IPBES secretariat, Bonn, Germany. 56 pages. https://doi.org/10.5281/ zenodo.3553579
- IPBES (2022). Summary for Policymakers of the Thematic Assessment Report on the Sustainable Use of Wild Species of the IPBES IPBES secretariat, Bonn, Germany. https://doi. org/10.5281/zenodo.6425599
- 19. https://theecologist.org/2013/jan/08/what-pricesnakeskin-handbag
- 20. http://drtwyatt.weebly.com/uploads/ 2/4/3/1/24317071/executive_summary.pdf
- 21. https://natureneedsmore.org/wp-content/ uploads/2021/06/Modernising-CITES-Web-Version.pdf
- 22. https://static1.squarespace.com/static/ 5b53e9789772ae59ffa267ee/t/ 5d273a1d3c0bb200010f1c7d/1562851869573/ Coalition+One+Pager+June+2019.pdf
- 23. https://static1.squarespace.com/static/
 5b53e9789772ae59ffa267ee/t/
 614c9996d599c17dd162d2b8/1632410006720/
 Coalition+2021+Progress+Update+2+PagerEnglish.pdf
- 24. https://files.worldwildlife.org/wwfcmsprod/files/ Publication/file/6kegy7a4jg_Final_2_Pager_ Editable_Coalition_2024_Report.pdf
- 25. Searching the web builds fuller picture of arachnid trade, https://doi.org/10.1038/s42003-022-03374-0
- Monitoring Online Illegal Wildlife Trade, Global Trend Report June 2024, https://globalinitiative. net/wp-content/uploads/2024/06/Monitoringonline-illegal-wildlife-trade-Setting-the-stage-EcoSolve-GI-TOC-June-2024.pdf
- 27. Exotic pet owners' preferences for different ectothermic taxa are based on species traits

and purchase prices in the United States, https://doi.org/10.3897/neobiota.91.109403

- 28. The Rush for the Rare: Reptiles and Amphibians in the European Pet Trade, https:// www.mdpi.com/2076-2615/10/11/2085
- 29. https://www.mdpi.com/2076-2615/10/11/2085
- 30. https://www.science.org/doi/10.1126/science. aav4013
- Otter Alert: A rapid assessment of illegal trade and booming demand in Japan, TRAFFIC, October 2018
- https://www.klook.com/en-AU/blog/animalcafes-tokyo-japan/
- https://en.wikipedia.org/wiki/Planned_ obsolescence
- 34. Jan G. Laitos and Lauren Joseph Wolongevicz, Why Environmental Laws Fail, 39 Wm. & Mary Envtl. L. & Pol'y Rev. 1 (2014), https:// scholarship.law.wm.edu/wmelpr/vol39/iss1/2
- 35. See [8]
- 36. See [7]
- Warwick et al., Assessing reptile welfare using behavioural criteria, https://doi.org/10.1136/inp. f1197
- 38. See [5]
- Ashley S et al., Morbidity and mortality of invertebrates, amphibians, reptiles, and mammals at a major exotic companion animal wholesaler. J Appl Anim Welf Sci. 2014;17(4):308-21. doi: 10.1080/10888705.2014.918511.
- 40. See [37]
- Goins, M., & Hanlon, A. J. (2021). Exotic pets in Ireland: 2. Provision of veterinary services and perspectives of veterinary professionals' on responsible ownership. Irish Veterinary Journal, 74(1), 13–13. https://doi.org/10.1186/s13620-021-00191-5
- Azevedo, A.; Guimarães, L.; Ferraz, J.; Whiting, M.; Magalhães-Sant'Ana, M. *Pet Reptiles—Are We Meeting Their Needs?* Animals 2021, 11, 2964. https://doi.org/10.3390/ani11102964
- 43. See [28]
- 44. See [39]

- 45. See [10]
- 46. See [8]
- Burghardt, G. M., Dinets, V., Murphy, J. B., Ebensperger, L., & Ebensperger, L. (2015). *Highly Repetitive Object Play in a Cichlid Fish* (Tropheus duboisi). Ethology, 121(1), 38–44. https://doi.org/10.1111/eth.12312 and Burghardt, G. M. (2015). *Play in fishes, frogs and reptiles*. Current Biology, 25(1), R9–R10. https://doi.org/10.1016/j.cub.2014.10.027
- Challender, D.W.S., Cremona, P.J., Malsch, K. et al. Identifying species likely threatened by international trade on the IUCN Red List can inform CITES trade measures. Nat Ecol Evol 7, 1211–1220 (2023). https://doi.org/10.1038/ s41559-023-02115-8
- 49. See [21]
- 50. See [21]
- Morton, O., Scheffers, B. R., Haugaasen Torbjørn, & Edwards, D. P. (2021). Impacts of wildlife trade on terrestrial biodiversity. Nature Ecology & Evolution, 5(4), 540-548. https://doi. org/10.1038/s41559-021-01399-y
- 52. Position paper on the Live Exotic Animal Pet Trade, Sept 2022, ADM Capital
- 53. Trade in African Grey Parrots for Belief-Based Use: Insights From West Africa's Largest Traditional Medicine Market, Front. Ecol. Evol., 04 February 2021, Sec. Conservation and Restoration Ecology, Volume 9 - 2021 | https:// doi.org/10.3389/fevo.2021.612355
- Heinrich, S. et al., Strengthening protection of endemic wildlife threatened by the international pet trade: The case of the Australian shingleback lizard. Animal Conservation, 25(1), 91–100. https://doi.org/10.1111/acv.12721
- 55. See [28]
- Pearson, S. H., Avery, H. W., & Spotila, J. R. (2015). Juvenile invasive red-eared slider turtles negatively impact the growth of native turtles: Implications for global freshwater turtle populations. Biological Conservation, 186, 115– 121. https://doi.org/10.1016/j. biocon.2015.03.001 and Case Study: Red eared slider turtle, Nov 2017, Invasive Species Council, pp 1-3]

The Exotic Pet Trade

- References
- 57. https://flpythonchallenge.org/
- 58. https://www.inversaleathers.com/impact
- 59. https://www.local10.com/news/local/2022/09/15/ miami-beach-commissioner-thinks-puttingbounty-on-iguanas-could-curb-growingpopulation/
- 60. https://www.researchgate.net/publication/ 242539278_Introduced_Iguanas_in_Southern_ Florida_A_History_of_More_Than_35_Years
- Lockwood, Julie L, et al. When Pets Become Pests: The Role of the Exotic Pet Trade in Producing Invasive Vertebrate Animals.
 Frontiers in Ecology and the Environment 17, no. 6 (2019): 323–30. https://www.jstor.org/ stable/26757598
- Romagosa, C. M., & Canning-Clode, J. (2015). Contribution of the Live Animal Trade to Biological Invasions. In Biological Invasions in Changing Ecosystems. De Gruyter Open. https://doi.org/10.1515/9783110438666-010
- 63. See [61]
- Hoffmann, B. D., & Broadhurst, L. M. (2016). The economic cost of managing invasive species in Australia. NeoBiota, 31(31), 1–18. https://doi.org/10.3897/neobiota.31.6960
- 65. Praud, A. and Moutou, F., 2010. Health risks from new companion animals. Eurogroup for Animals
- 66. See [5]
- Murphy, D. and Oshin, F, 2015. Reptileassociated salmonellosis in children aged under 5 years in South West England
- Toomes, A., et al. A snapshot of online wildlife trade: Australian e-commerce trade of native and non-native pets. Biological Conservation, 282, 110040-. https://doi.org/10.1016/j. biocon.2023.110040
- https://www.theguardian.com/world/2023/may/ 13/simon-schama-foreign-bodies-book-extractbroken-relationship-humans-animals
- https://www.bbc.com/news/articles/ cv2g37zn9d5o
- 71. https://natureneedsmore.org/wp-content/ uploads/2020/06/Debunking-Sustainable-Use-Report.pdf

- 72. Positive Lists White Paper, A proposal to regulate the trade in animals destined for life as a pet, AAP and Eurogroup for Animals, 2023
- 73. Position paper on a new EU legislative framework for an EU Positive List for the keeping of companion animals on behalf of Cyprus, Lithuania, Luxembourg and Malta, May 2022
- 74. https://www.eurogroupforanimals.org/news/ victory-animals-european-parliamentadoptedambitious-report-eu-biodiversity-strategy
- 75. https://www.europarl.europa.eu/doceo/ document/A-9-2021-0179_EN.pdf
- 76. Mitigating Zoonotic Risk Through a Protocol to CITES, https://law.lclark.edu/live/files/31079-mitigating-zoonotic-risk-through-a-protocol-to
- 77. https://cites.org/eng/CITES_Secretariat_ statement_in_relation_to_COVID19
- 78. https://cites.org/eng/prog/eCITES
- 79. https://theecologist.org/2023/nov/17/uk-failingmacaques
- 80. Stock market listing rules are a good example of positive listing regulations. See, for example: https://www.aicd.com.au/good-governance/asxcorporate/listing-rules.html
- 81. https://cites.org/eng/news/pr/iccwc-operationthunder-2024
- 82. https://fortune.com/2024/01/27/big-pharma-labmonkey-shortage-crackdown-cambodian-longtailed-macaque/
- 83. https://endcap.eu/restriction-on-exotic-pets-inthe-netherlands/
- 84. See [21]
- 85. https://pestsmart.org.au/toolkit-resource/howdid-the-cane-toad-arrive-in-australia/
- 86. https://www.dpi.nsw.gov.au/dpi/bfs/aquaticbiosecurity/aquatic-pests-and-diseases/ freshwater-pests/freshwater-finfish/pearl-cichild
- Natusch DJD, et al., Jungle Giants: Assessing Sustainable Harvesting in a Difficult-to-Survey Species (Python reticulatus). PLoS ONE 11(7): e0158397. https://doi.org/10.1371/journal. pone.0158397

- https://conbio.onlinelibrary.wiley.com/doi/epdf/ 10.1111/conl.12270
- 89. https://norwaytoday.info/news/tuesday-weekpet-reptiles-become-legal/
- 90. https://cites.org/eng/node/130980
- 91. https://eur-lex.europa.eu/legal-content/EN/TXT/ ?uri=celex:31999L0022
- 92. https://www.sueddeutsche.de/projekte/artikel/ wissen/indien-vantara-riesenzoo-wildtierhandelloewen-e470491/
- 93. https://bigcatrescue.org/conservation-news/ vantara-the-illusion-of-conservation-or-abillionaires-private-zoo
- 94. https://en.wikipedia.org/wiki/Gun_laws_of_ Australia
- 95. https://apnews.com/general-news-6fd57565a6744b70b4f5ef21b3323b70
- 96. https://responsiblereptilekeeping.org/positivelists#:~:text=Unenforceable,

that%20you%20are%20doing%20something. %E2%80%9D

- 97. https://responsiblereptilekeeping.org/positivelists
- 98. EUROGROUP FOR ANIMALS, The implementation of the Positive List for mammal pets in Belgium, May 2016
- 99. https://natureneedsmore.org/btb-campaignexamples/
- 100. https://natureneedsmore.org/a-load-ofbollocks/
- 101. See [99]
- 102. https://natureneedsmore.org/empiricalevidence-shows-the-way/
- 103. https://www.bbc.com/culture/article/20250404-fur-is-back-in-fashion-and-even-more-divisive

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