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CODE OF CONDUCT ON COMPANION ANIMALS AND INVASIVE ALIEN SPECIES (INCLUDING ORNAMENTAL FISH) IN EUROPE

DRAFT VERSION

April 2011 – Working Draft

Report prepared by
Mr Keith Davenport and Mr Jim Collins

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Comment [S1]: This sub section. Items below the internet heading are seperate and not directly related to the internet issue.

CODE OF CONDUCT ON COMPANION ANIMALS AND INVASIVE ALIEN SPECIES (INCLUDING ORNAMENTAL FISH) IN EUROPE

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INTRODUCTION

Invasive species have been considered a main direct driver of biodiversity loss after habitat destruction[1]. It has been claimed that invasive alien species (IAS) may cost the world economy as much as 5% of global GDP (Pimental *et al* 2005). The cost to member states of the EU may be 12 billion €s[2] annually. The costs accrue from a wide range of types of harm caused including, but by no means limited to, competing with and displacing native species, causing populations of native species to be depleted or even become extinct, causing disease and reducing the value of the ecosystem services of any area.

Companion animals (which includes "pets"- see Appendix I for scope of these terms) have been kept by man for millennia. Half the households in Europe currently keep animals as companions or pets. A large number of species from a wide range of taxa (including vertebrates-mammals, birds, reptiles, amphibians, fish and both aquatic and terrestrial invertebrates eg molluscs, crustaceans and insects) are kept as pets or companion animals Keeping companion animals provides significant welfare, economic and social benefits to individuals and communities throughout Europe.

1. Rationale for a Code

Among the 27 Members States of the EU, even where controls apply to the import, ownership and release to the wild of animals (including companion animals) there is no single coherent or consistent approach (Miller *et al* 2006) .There is no evidence of a different scenario in the other European states. This Code will assist in establishing a single common standard.

A small number of the thousands of species kept as companion animals have become invasive in Europe. The DAISIE study (see also Annex VI) reported:

- 9% of fish invasions were associated with the introduction of ornamental varieties.[3]
- 15 bird species and 9 amphibians/reptiles listed as pets[4]
- 10% of mammalian invasions originated from the escape of pets,[5]

Whether or not the specimens that became invasive were companion animals or were kept for other purposes might be debated. However it would have been better they were not released and given the opportunity to become invasive in the first place. This code is intended to help to raise public awareness, and provide practical guidance to reduce further the chances of companion animal species becoming invasive in Europe.

The Convention on Biological Diversity (CBD) has paid particular attention to pets as potential invasive alien species. Most recently an *ah*TEG Expert group met in February 2011with the task of "addressing the risks associated with the introduction of alien species as pets, aquarium and terrarium

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[1] For example - http://www.cbd.int/invasive/

[2] http://ec.europa.eu/environment/nature/info/pubs/docs/brochures/invasive_green.pdf
http://ec.europa.eu/environment/nature/invasivealien/docs/ias_discussion_paper.pdf

[3] Gherardi, F., Gollasch, S., Minchin, D., Olenin, S., & Panov, E.Alien Invertebrates and Fish in European Inland Waters. In: DAISIE, Handbook of alien species in Europe. (eds DAISIE)Pp. 81-92. Springer, Dordrecht.

[4] Kark, S. Solarz, W., Chiron, F., Clergeau, P., & Shirley, S (2009) Alien Birds, Amphibians and Reptles of Europe. ,In: DAISIE, Handbook of alien species in Europe. (eds DAISIE)Pp. 105-118. Springer, Dordrecht.

[5] Genovesi, P., Bacher, S., Kobelt, M., Pascal, M. & Scalera, R. (2009) Alien Mammals in Europe. In: DAISIE, Handbook of alien species in Europe. (eds DAISIE)Pp. 119-128. Springer, Dordrecht.

species, as live bait and live food" (hereafter referred to as "the *ah*TEG") This code seeks to incorporate the key deliberations of the *ah*TEG. [6]

The *ah*TEG discussed live bait which defined as "animal species transported live for use in recreational fishing. The trade in these in the USA[7] is very large, in excess of 1.9 billion fish recorded by 2005 Census of Aquaculture leave alone any informal capture and use. Live bait is also used to a lesser degree in Europe**.** The ruffe (*Gymnocephalus cernuus)* has been introduced by anglers using them as bait to Loch Lomond in Scotland. [8]. If it exists (and even if it is a very tiny fraction of the bait fish used for angling in Europe) the use as bait of fish imported or bred for ornamental purposes should be extremely strongly discouraged.

The *ah*TEG defined live food as "Species that are not considered pests of of plants, introduced as food for animals or human consumption, whose threat to biodiversity is not adequately considered in other regimes, excluding the farmed species as livestock under proper management". Live foods are used in certain sectors, for instance reptiles, of pet keeping. The provisions of this code can be applied *mutatis mutandis* to the import production or use of live foods wherever and whenever it is used.

The *ah*TEG carefully considered matters with regard to global issues and thus considered provisions of the World Trade Organisation (WTO) Sanitary and Phytosanitary agreement, the Convention on International Trade in Endangered species (CITES), the International Plant Protection Convention (IPPC) and the World Animal Health Organisation (OIE) However while bearing such agreements, and the obligations they require of governments, in mind they should not be regarded as an impediment to the development and support of voluntary measures such as industry codes of conduct at a regional, national or local level. The release of pets to the wild can be accidental or deliberate and means by which the behaviour patterns that make such events less likely to occur should be encouraged.

2. The history of the keeping of companion animals in Europe

Animals (both those native to the region and those imported from far away) have been kept in Europe for companionship for many centuries. (See Appendix II for additional information).

3. The social significance and economic value of the companion animal industry and hobby in Europe

Approximately half of all households in Europe own a pet or companion animal of some kind. The industry supplying these animals and the equipment, feeds and other goods to look after them turnsover several 10's of billion €s annually. There are significant health benefits identified for owners keeping companion animals. (see Appendix III for additional details).

4. The range of keepers and animal species kept as companions

Keepers can vary from those with a single goldfish, hamster, mouse or other animals in indoor aquaria or cages through to those with thousands of individual animals of species in large outdoor enclosures housing large animals. Some of these enthusiasts specialise in one group, others maintain many groups of animal.

The following observations on the number of species of each group of animals owned as companion animals throughout Europe, are based on the experience of the authors of the Code:

- **Mammals**: private keepers hold many hundreds of species in captivity in Europe. The species vary from those owned relatively commonly eg hamster, mouse and domestic rat through to giraffe and snow leopard.

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6 http://www.cbd.int/doc/meetings/ais/ahteg-ias-02/official/ahteg-ias-02-03-en.doc accessed 14 April 2011

7 http://www.agcensus.usda.gov/Publications/2002/Aquaculture/aquacen2005_12.pdf http://www.agcensus.usda.gov/Publications/2002/Aquaculture/aquacen2005_11.pdf both accessed 13 April 2011

8 http://www.scottish.parliament.uk/business/committees/environment/inquiries/aqua/env-aqua-LLTNPA.pdf accessed 13 April 2011 –see reference to the introduction of the ruffe to Loch Lomond as bait

- **Birds**: though the import of wild birds to the EU has been banned it is estimated by the authors that there may be as many as 1000 species kept. These vary from humming birds to ostriches and include wild fowl collections.
- **Reptiles and amphibians:** 2000 species.
- **Freshwater fish (Mainly tropical) :** 1000 species.
- **Tropical marine fish :** 1000 species.
- **Aquatic invertebrates:** (hard corals, soft corals, crustacean and molluscs) 1000 species.
- **Terrestial invertebrates:** at least 500 (including scorpions, whip scorpions and solifugids but also including beetles, stick insects, praying mantis, land crabs, land snails and at least 200 spider species).

Thus almost 10,000 species may already be owned, some for a considerable period, by households as companion animals in Europe.

5. The origin of European companion animals

Companion animals are both imported and bred within Europe.

Most tropical fish (both marine and freshwater) are imported from a wide variety of countries outside of Europe. They are subject to many controls under both veterinary and fish health rules[9],including extensive health certification and physical examination at the point of import[10]. The Czech Republic is a very significant producer of tropical freshwater ornamental fish.

Coldwater fish for garden ponds are produced both in the EU and imported. The two most common species in trade are koi (coloured varieties of *Cyprinus carpio*), and the goldfish (*Carassuis auratus*). *C. carpio* (the wild types not ornamental varieties such as koi) is used extensively in aquaculture and has become naturalised over vast areas of Europe over many centuries. *C. auratus* is closely related to *C. auratus gibelo* which is a species native to parts of Europe.

Some species of small mammals, birds, reptiles and amphibians are imported into Europe but most individuals are captive bred within its boundaries. Conversely most species of reptiles, amphibians and fish are imported.

Intra-European Community movements are, as and when required, subject to TRACES[11] alerts and additional health certificates as specified for each relevant animal group.

6. Where do owners obtain companion animals?

In 2008 the Pet Food Manufacturers Association (PFMA) conducted a survey to determine where owners obtained their pets in the UK. **[12]** The survey included all pet[13] types, the table below is derived from the PFMA study :

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[9] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:328:0014:0056:EN:PDF COUNCIL DIRECTIVE 2006/88/EC of 24 October 2006 on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals (EEA relevant)

[10] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:337:0041:0075:EN:PDF COMMISSION REGULATION (EC) No 1251/2008 of 12 December 2008 implementing Council Directive 2006/88/EC as regards conditions and certification requirements for the placing on the market and the import into the Community of aquaculture animals and products thereof and laying down a list of vector species (EEA relevant)

[11] https://sanco.ec.europa.eu/traces/ registration required alternative source of relevant information http://www.defra.gov.uk/animalh/int-trde/traces/euexports.htm

[12] http://www.pfma.org.uk/images/file/Where%20pets%20were%20from%20_all%20pets_08.pdf

[13] cats, dogs (which are excluded from this Code), indoor and outdoor fish, rabbits, indoor birds, guinea pigs, hamsters, domestic fowl, horses and ponies, tortoises, turtles, gerbils, snakes, lizards and rats

Source	% of owners [14]
Friend /acquaintance/ family gave it to me	29
Rescue Centre	26
Pet shop/garden centre	21
Recommended breeder	10
Private advertisement	10
Breeders advertisement/internet	5
Found it as a stray	3
From farm	1
Other	3
Don't know	4

Though this study was undertaken in a single country it does indicate that the stakeholders to whom the code must be addressed are widely dispersed. Tens of thousands of pet shops may sell a particular species but millions of owners may be keeping, selling or exchanging that species informally.

Cats and dogs are the key species obtained from rescue centres and found as strays. The same may be said, but to a much lesser extent, for the species available from recommended breeders. The survey clearly indicates that a significant number of pets are advertised privately and thus the Code should be addressed to those publications accepting adverts.

An area of concern recently has been the use of the internet as a trade medium. It has been the subject of several reports at global[15] and national level (Parrott and Roy 2009). This code may usefully make some recommendations, albeit the complexities are such that they may not be addressed comprehensively. Also given the rapid changes in the Internet this part of the code may become dated most quickly.

7. Companion animals as invasive aliens in Europe

There is a long history of man introducing animals to the wild outside of their natural range for a variety of purposes. However, companion animals are owned and kept more or less confined for the purpose of enjoying viewing, handling and breeding them and such like. Thus, in general, owners are trying to prevent escapes and releases as this brings to an end their enjoyment of the specimen concerned.

Characteristics of companion animals species

As already stated the range and number of species of companion animals is vast. Their origins range from coral reefs to the tundra of Russia. Some are tolerant of a wide range of habitats and climates while others will tolerate almost no change from the conditions prevalent in their native range.

Within Europe there are a wide range of climate types from sub-tropical to Arctic and from Atlantic Maritime to Continental. There are also many micro climates. Equally there is a wide range of ecosystem types. Only the very most tolerant species would pose a threat of becoming invasive in all climatic and ecological zones. Many would die, for instance tropical species, within minutes of release in a cold climate.

Some species are only likely to "escape" and hence be introduced by carelessness or with the deliberate help of man. Tropical fish in aquaria have no identifiable means of becoming invasive if not by a deliberate act. Other species may be more likely to escape. Mammals or birds in outdoor cages or enclosures are more likely to escape from them if they are poorly maintained.

[14] The total of these figures presumably exceeds 100% because some owners will use more than one source
[15] E-Commerce in CITES-listed species http://www.cites.org/eng/com/SC/58/E58-22.pdf

Propagule Pressure

Presuming there is an environment that is tolerable to a species, propagule pressure (otherwise termed introduction effort) is a key factor determining the likelihood of it becoming invasive. Propagule pressure incorporates "propagule size" - the number of individuals released on a given occasion and "propagule number" -the number of release events there are, (Lockwood *et al* 2005).

Importers, breeders and wholesalers, by their very nature tend to have large numbers of individual animals and in some cases, for instance ornamental fish businesses, individual species present at any time. If an escape occurred from such a site then it could be of a large number of individuals thus of a large propagule size.

By contrast, private keepers usually own individual companion animals or smaller numbers of fewer species but of course there are (for at least some species) millions of owners across Europe. Each release or escape may be of small propagule size ie one or just a few individuals, but there may be a greater propagule number ie many discreet release incidents. In areas of sparse population the small number of individuals released, even into a suitable habitat, might predicate a failure to become invasive immediately because of factors such as the limited likelihood of individuals meeting to breed, predation or, in the longer term, the impact of the low genetic diversity and founder stock effect. Alternatively, small escapes over an extended period may increase the chances of an invasive species establishing itself by mimicking continuing migration of specimens to the given area.

In more well populated urban areas or areas subject to greater visitor number the risk of the releases becoming invasive increases. However, the environment into which any releases occur may be heavily modified and bear little resemblance to a natural ecosystem. Though their introduction is unwelcome and often unlawful, and should be vigorously discouraged, these individuals, even if they reproduce, may cause little harm as there is little or no natural biodiversity in the locality. Rather, in these circumstances, there may be greater concern for the welfare of the specimens released.

Thus, different keepers present different potential risks which themselves differ for each species and locality into which they might be introduced. There is no "one size fits all" solution. The code must be applied in a context and species specific manner and seek to address the practical risks that might occur in each area.

Invasiveness of species and the ease with which habitats can be invaded

For a pet or companion animal to cause ecological problems it must first escape or be released from captivity. Released individuals, even if they don't breed, may compete for territories or resources with native species. To establish and spread any released specimens must meet other individuals (normally of the same species but hybrization can be a threat to native species eg goldfish - *Carassius auratus* and crucian carp - *Carassius carassius* (Copp, 2005) with which they can breed. Those species with the capacity for rapid breeding and population growth, high dispersal rate, human commensals, single parent reproduction, high genetic variability and phenotypic plasticity are most likely to succeed in invading. (Turlings 2001)

In theory any species could invade any suitable habitat if there is a permissive climate, but this does not always happen,. Ecosystems disturbed by man are regarded as the most likely to be invaded, either because there are unused resources available and/or there are few if any competitors or predators, (Perrings 2001, McNeely, J.A. *et al* 2001).

Understanding the problem of invasives in any country involves understanding and influencing human behaviour, (Perrings 2001). This code is designed to help all stakeholders understand the potential impact of IAS and seek to ensure their activities do not have unnecessary and unwelcome consequences to the wider community.

Where are they released?

While companion animals may be released anywhere there is evidence that many are released close to centres of human population or routes widely used by the public. (Bringsøe, H.,2006, Fuller *et al*). This should not be unexpected as the more people there in an area the greater the population of companions is likely to be.

Specimens of the red-eared slider *(Trachemys scripta elegans)* are usually released "in freshwater areas which are frequently visited by humans." (Bringsøe, H. 2006) The author went on to say "Usually they consist of various sorts of ponds and lakes in public urban parks and other recreational parks which are considered of very low biological value." This reflected earlier comments by the same author and others concerning the areas in which this species survived namely "In Europe *T.s. elegans* is mainly released in urban areas and otherwise close to major towns." "These habitats differ from the natural habitats in several ways. Generally they have low biological value." (Bringsøe, H.,2006)

Such releases cannot be ignored as any populations may spread outwards from the area of introduction, either because of the species inherent mobility or in a search for new territories or resources as numbers grow, to adjacent more natural ecosystems.

Rivers and streams are common features in cities and towns in the UK and as such are thought to be likely locations for the release of unwanted pet fish (Arthington et al 1983 quotes in Copp 2005). In Epping Forest near London the nearer a restored pond (one drained of water, all the fish removed and refilled) was to a road or foot path the greater number of ornamental fish were found (Copp *et al* 2005). It was also found that introduction rates were greater in more recently restored ponds. These ponds are presumed to have been cleared of fish and other biota. Thus, when refilled resources were available and competitors were not present.

And By Whom? Companion Animals With Other Pathways Of Release

The Canada goose (*Branta canadensis)* was introduced first as an ornamental by King Charles II in London in 1665 and also in Sweden in 1929. It has since been introduced for hunting in Denmark, Finland , Germany, Norway, Russia and Sweden. In Poland escapees from parks and zoos apparently continue to add to the feral population. Natural dispersal, repeated translocations and introductions have introduced populations in many other countries in Europe, (Jansson et al 2008).

Racoons (*Procyon lotor*) are not very commonly kept as pets but some that are may have escaped. They may also have escaped from fur farms and zoos. However, there have apparently been a number of deliberate releases of this species in the wild. In Russia they were released for the "improvement of nature and reconstruction of nature" and to increase profits from hunting, presumably for their fur. The Racoon is now common in Germany and has spread in France, the Netherlands, Luxembourg, Belgium, Switzerland, Austria, Hungary, Czech Republic, Slovakia, Poland, Belarus and Yugoslavia. In Denmark, Norway and Sweden occasionally racoons, that are likely to be escaped pets, are found in the wild, (Bartoszewicz, M. 2006).

Reproducing populations of the American bullfrog *(Rana catesbeiana)* have been found in Belgium, France, Germany, Greece, Italy, Netherlands, Spain, and the UK.

The populations found in Belgium, Germany, the Netherlands and the UK are thought to have established through escape from garden ponds. Populations in France and Italy were reportedly released to allow populations to thrive to harvest for consumption. In Greece and Spain escapes from frog farms, are thought to be responsible for the populations established in the wild, (Adrados *et al*, 2002).

Fisherman may use ornamental fish as live or dead bait while angling. In the UK, the Ornamental Aquatic Trade Association (OATA) recommends to its members that "No live vertebrate animal should knowingly be sold for use as live food." which would also cover live bait.[16] Stocking of fish, including

[16] http://www.ornamentalfish.org/association/code/Code.pdf accessed 13 August 2009

both exotic ornamentals and ornamental varieties of native species are made by fish keepers but also for cultural reasons and angling purposes.,(Copp, 2005).

Rabbits may be introduced having been either kept as pets (see Helsinki examples below) or farmed for meat or fur. In Iceland escaped farm rabbits are competing for burrows with puffins[17] and in other areas of Iceland there are reports of pet rabbits escaping.

In general owners try to keep their companion animals in captivity. However, the same or similar species of reptiles, amphibians and invertebrates may be imported as "hitchhikers" in commodities such as vegetables and bananas[18]. Such "hitchhikers" can escape at any point of the supply chain.

Impact of domestication and selective breeding

Many companion animals can be regarded as domesticated. They have been bred in captivity for a considerable period. Domestication is the process by which animals are tamed or selected for attributes that allow close continual contact with man such as tolerance of handling. They may lose behavioural attributes that would enhance their fitness and thus their likelihood of survival in the wild. While domesticated individuals may be found in the wild their long term fitness to survive may be questioned. In Spain it was found that captive raised birds do not become established, (Carrete M and Tella J L 2008).

Selective breeding has led, in the case of many species, to the production of a wide range of morphs. Among the changes brought about by selective breeding are changes in conformation (eg ear and fin size, body shape and size) colour and pattern including albino forms and fur length, distribution and type. It might be expected that these would render the individual animals less fit to cope in the wild and possibly more susceptible to predators. Brightly pigmented goldfish are more visible to predators and thus are less likely than brown wild-type varieties to survive. Grey herons are reported to have elevated visual sensitivity to violet and thus more colourful prey items are taken preferentially, (Odeen and Hastad (2003) quoted in Copp (2005)). Thus, though goldfish are highly genetically variable with wide phenotypic expression, if there are appropriate predators they may be preyed upon preferentially. If this applies generally then many less fecund species would struggle to survive let alone invade. However, there are apparently breeding albino king snakes (*Lampropetis getulus)* in Gran Canaria, (Pether J and Mateo JA 2007). It remains to be seen if a local predator will adapt its diet to take advantage of this newly introduced easily spotted resource or if the snake will revert to a more cryptic wild type.

In Helsinki a population of some 10,000 rabbits have become established. The initial population included a number of non wild-type coloured specimens leading to an assumption the population was founded on released pets. For some decades a small population survived the cold winters and bred in the summer only to be reduced during the following winter[19]. A succession of warmer winters seems to have contributed to greater populations surviving to the spring and summer breeding periods. It is noted by several journalists that the population quickly reverted to the wild-type colouration and attracted the attention of local predators. This story attracted sufficient interest that it was covered by the international press as far away as Singapore[20].

In general, the process of domestication and selective breeding has led to many of today's companion animals being less fit, and many are unfit, for life in the wild. By providing an artificial environment their owners are able to ensure they are fit to survive in captivity.

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[17] http://rafflesia.wwf.or.id/library/admin/attachment/clips/2006-08-07-029-0032-001-05-0903.pdf http://valhalla.ulver.com/f126/t4228.html Accessed 13 August 2009

[18] Example -http://news.sky.com/skynews/Home/UK-News/Deadly-Spider-Spreading-Across-UK-The-False-Widow-Spotted-In-Wiltshire-And-Goucestershire/Article/200905315284638?f=rss

[19] http://www.hs.fi/english/article/Wild+rabbits+came+to+the+heart+of+Helsinki/1101981557773

[20] http://www.straitstimes.com/Breaking%2BNews/Tech%2Band%2BScience/Story/STIStory_361151.html

THE CODE OF CONDUCT

A. AUDIENCE AND AIMS

This Code of Conduct is addressed to all stakeholders including governments. It is addressed primarily at industry including importers, breeders, retailers, keepers and owners. However, unless there is active, positive engagement, co-operation between the industry and other stakeholders, especially government agencies its efficacy will be more limited than would otherwise be the case. These same agencies might usefully apply some elements of the Code, especially when permitting the release of non-native species, for angling, mosquito control or fur, in particular those species which may some times also be kept as companion animals.

This code of conduct is designed to raise awareness within the industry and among owners and keepers of pet and companion animals to help alleviate some of the pressures of IAS through:

- Favouring practices which would avoid indiscriminate import of new animal species to be used as companion animals.
- Promoting adherence to best practice, and the avoidance of bad practices which may result in more and new IAS being released into natural habitats.

In the absence of a single common legal framework addressing IAS across Europe this Code is designed to promote a coherent pan-European standard of behaviour.

The Code is voluntary and aims to promote support of its provisions from all stakeholders. The key theme is to engage all concerned as key and valued components of the solution to any existing problems and, in some senses more importantly, in avoiding any future problems.

1. Promote awareness of IAS and the problems they may cause

The issue of alien invasive species has only relatively recently come to the attention of the wider general public. For these purposes the “general public” may be regarded as anyone other than a relatively small group of scientists and administrators. Most people will try to abide by the law if they know what the law is, though there are examples amounting to civil disobedience, outlined elsewhere in this document, where legal measures are thought by large numbers affected by them to be fundamentally flawed or disproportionate. Ignorance of the law is not usually regarded as a defence. Equally there is no defence for not communicating the basic information about the law in a clear and simple manner. Either for conservation or animal welfare reasons it may be best to inform the public that it is generally best that companion animals should not normally be released outside of their premises. It is in the best interests of all concerned that the issues are understood, and, where necessary, appropriate changes in behaviour are induced.

To ensure coherent practical policies are implemented all policy formers must be made aware of the issues and take them into account. Unhelpful mixed messages can be given, such as the release of species the public keep as companion animals eg highly coloured carp, or racoons which are or have historically been released, with the permission of the appropriate government authority in areas the public thinks of as wild. The resulting confusion and lack of coherence makes it much more difficult to convince the public that they too should not release animals in the wild.

The fact that companion animal species occur in the wild outside of their natural range tends to demonstrate that the public are less careful than they might be in housing the species they keep. Alternatively they are unaware that in many countries it is illegal to release them or they are not aware of the possible consequences for the pet or the ecosystem. This code addresses both these issues.

It would probably be impossible for legislation and enforcement action on its own to be effective in preventing releases. Government agencies do not have the resources to night and day patrol every hedgerow, field, road side verge, river bank, pond etc..

Awareness raising should be aimed at making it socially unacceptable to abandon, release or allow companion animals to escape to the wild.

A recent study emphasised the need for awareness by concluding that the most effective management strategy is one that includes general communication, which raises awareness towards environmental issues; and proximate communication, which draws attention to the potential threat of introduced species to the environment, (Teillac-Deschamps *et al* 2009).

The pet industry must play a major role in awareness raising as it has a direct means of communication with many of the 50% of households in Europe that keep companion animals.

Government agencies can facilitate awareness raising by providing advice and support to the industry and pointedly emphasising the role that responsible businesses are playing in helping to provide a solution to the issue of invasive species.

The press and especially the relevant trade and hobby publications should be identified and urged to accept items highlighting both the issues and means to address them as regularly as possible.

2. Promote the message that members of the public should never release companion animals to the wild

Many countries have laws that forbid the release of animals to the wild. In some countries this is a blanket ban in others it depends on the species appearing in this list or that. There have been difficulties over defining what the wild is or is not. Given the conservation and welfare concerns over releases the message from this Code for owners and keepers of companion animals should be that they must presume that no permanent releases outside of their own premises are permitted unless they can legally determine, for themselves, otherwise. Labelling and information at the point of sale eg via care sheets[21] and containers in which pets or live foods are sold, may be an important component of achieving this aim..The aim should be for releasing companion animals to the wild becomes identified in the public mind as socially unacceptable.

3 Promote awareness among stakeholders that releasing companion animals to the wild is not kind but compromises their welfare and may be cruel

Owners of companion animals, especially those which are kept as pets, are generally concerned about the welfare of animals they own. Few would deliberately put them in situations in which they could be harmed. However, if for some reason they can no longer care for them they may release them to the wild to give them their "freedom", believing this to be a "kind" option. However "Life in the wild is hazardous, needs are not always met, and in the context of the survival of the fittest, the less fit frequently face food shortage, injury, disease and lingering deaths, (CAWC 2003).

Though some individuals survive, the fate of the remainder is unlikely to be a kind option and owners should be made aware of this. The pet industry can, and must, be encouraged to, play a key role in communicating this message.

[21] http://www.ornamentalfish.org/caresheets/tropical.php 50 Care sheets each of which contain the printed message:
NEVER RELEASE YOUR AQUARIUM ANIMALS OR PLANTS INTO THE WILD.
Never release an animal or plant bought for a home aquarium into the wild. It is illegal and for most fish species this will lead to an untimely and possibly lingering death as they are not native to this country. Any animals or plants that do survive might be harmful to the environment.

4. Encourage the prevention of unwanted companion animals being released in the wild

It would undoubtedly be best if anyone taking on the responsibility of owning companion animals cared for them until the animals natural death. Good quality information given at the point of sale (as outlined above) can help ensure this is the case. A number of trade associations (see Appendix V) and NGOs have mounted campaigns to dissuade impulse or ill informed purchases taking place. Ownership should be entered into on the basis of an informed choice and not as a matter of chance or whim.

However, even in a perfect world, occasions would arise where pets could no longer be taken care of by the owner for reasons beyond their control eg change of domestic circumstances, old age or illness, for example. Less acceptably, if they have made a fully informed purchase, some owners will just lose interest.

Unwanted pets might then be:

1. Accepted back by the breeder or retailer who made the initial sale. However, this option is not without problems:

- There are bio security risks (which apply in all the circumstances listed but for which different facilities may be available to overcome or in which different attitudes to the risk may be taken) associated with accepting onto a site animals the provenance - and so which diseases or parasites they might have been exposed to - may be unknown. Any diseases present on animals accepted back could infect those present on a site. To insist that breeders or retailers accept back any animals they have sold may in the short term be seen to ensure the welfare of that animal. However, this might be at the cost of the welfare of the many hundreds or thousands of animals already being held by them.

2. Animal shelters and zoos may be interested in caring for and/or rehoming unwanted animals.

3. Rehomed either by resale or by giving away to suitable homes, when adequate information on longevity, care and welfare needs (outlined above for retail sales) should be made available.

4. Owners who have to relinquish their companion animals for whatever reason may have to face the fact that their actions mean the only option available is humane euthanasia. Euthanasia should only be undertaken by vets or other competent personnel. Checks should be undertaken to ensure the proposed method of euthanasia is legal in the area where it is to be undertaken.

In Holland The Platform Verantwoord Huisdierenbezit (Platform for responsible pet- ownership) is working towards a shelter for such pets. They may the be placed with new pet-owners. It will also mediate between pet owners who want something new and new pet-owners. They hope to ensure the welfare of the animals are guaranteed and release into the wild is reduced. (A. Ploeg *pers com*).

5. Promote awareness of which species are native to an area and which are not

Many members of the public may not be aware of what is native to an area and what is not. Some species are so common that it may be thought that they are indeed native though they are not. An example of this is the goldfish, (Copp, 2005). However this message must be secondary to the message not to release any companion animals to the wild. The pet industry should play an active role in raising awareness.

6. Promote awareness of legislation by explaining it in the simplest context specific way to stakeholders to enable compliance

Legislation (See Appendix IV) on the release of animals to the wild is sometimes very complex. Certainly members of the public, and to lesser extent traders, may find them unknown or inaccessible and difficult to interpret. It may be argued that ignorance of the law is no defence for breaking it. While such discussions proceed animals may continue to be released. It is appropriate for this code to advise companion animal owners simply that companion animals should never be released. All stakeholders can play a part in promoting this message.

7. All stakeholders should be encouraged to engage in finding solutions to the problem of IAS

Governments at all levels, NGOs, the private sector and members of the public are encouraged to engage in addressing and remedying the threats posed by invasive alien species. All sectors have contributed to the problem and all sectors should be invited to play their part as equal partners in a solution. This will ensure that as much practical knowledge and experience as well as scientific information informs any programs or initiatives implemented.

To engage with this code must be regarded by all stakeholders positively as a demonstration of a willingness to play a co-operative or proactive part in addressing and resolving IAS issues. It is key to the success of this Code that businesses or individuals engaging positively in applying it are publicly supported and identified as playing a key role in the solution to the invasive species problem. Such positive reinforcement of the favoured behaviours is most likely to bring the outcomes desired

Engaging the press in a constructive manner may prevent stories appearing that precipitate the least desired outcome. Stories that portray pet species that might become invasive in a manner that puts their owners in unnecessary fear for their safety may precipitate the very releases that are best avoided for example recent headlines of "Killer chipmunks could invade UK" [22]

8. Promote reporting and rapid response to companion animals in the wild

The public, and indeed all stakeholders should be encouraged to report sighting companion animals in the wild. When companion animals are first seen in the wild they are usually present in only small numbers. They tend to become a focus of interest to the public or scientists. Examples are the interest shown in the growth of rabbit populations in Helsinki and ring -necked parakeets in London. If the first individuals had been reported to relevant government officials then control might have been possible before some of the public took them to their hearts. Lethal action then becomes increasingly politically difficult as populations grow.[23]

9. Promote awareness of the need for importers, breeders and keepers to know exactly what species they acquire or sell

It is self evident that if you don't know exactly what you are buying an owner is less likely to know the characteristics of the animal bought and take appropriate steps to ensure it remains confined.

10. Know exactly what you are selling or exchanging and ensure your customer knows what they are receiving

Retailers or breeders should provide clear accurate information about the species sold. This should include accurate identification[24], behavioural characteristics of the species sold, care information (including when appropriate information how to keep the animals secure), any hazards they may present eg ability to sting or bite, longevity, adult size, fecundity and an indication of the cost of care. This information will help ensure that only well informed purchases are made. "Spur of the moment" or "impulse" purchases are best avoided as they may well, in time, lead to disillusioned owners.

As far as possible, care should be taken to ensure customers are fully aware of what they are purchasing. Though unlikely, due to the susceptibility to pneumonia following even short periods of low (70^{o}F) temperature (C. Newman *pers comm.)* to become invasive in much of Europe, constrictor snakes can be used as an exemplar. Customers may request a constrictor snake that grows large. Unless they were experienced and confident it would be better to recommend the more docile Burmese Python (*Python*

[22] http://www.thesun.co.uk/sol/homepage/news/2548886/Killer-chipmunks-could-invade-UK.html
[23] http://www.thisislondon.co.uk/news/article-23389796-details/Cull+of+the+parakeets/article.do
[24] This is a requirement for sales items to be "as described" under consumers sales legislation in many countries eg Directive 99/44/EC of the European Parliament and of the Council of 25 May 1999 on certain aspects of the sale of consumer goods and associated guarantees. Already applies for business to consumer sales

molurus bivittatus) than the generally more aggressive Reticulated Python (*Python reticulatus*) both of which can potentially exceed 5m in length when fully grown. The alternative would be the Royal Python (*Python regius*) which is still a constrictor but is docile and grows to less than 2m in length.

Great care should be taken to match specimens of species that will grow to a large size in captivity to owners with experience and facilities to care for them throughout their expected life span. This is especially the case for species that are sold as relatively small juveniles.

It is more likely that pets sold to owner who become disinterested or disillusioned will become unwanted. This will increase the chances that they are either released or allowed to escape because of unwillingness or inability to provide sufficient care. Of course the provision of appropriate information at the point of sale will also help ensure the welfare of the animals.

In a number of European countries it is already a legal requirement to provide information to those purchasing animals in pet shops.[25]

11. Raise awareness of IAS and the internet

Comment [S2]: See comment on index

Trade via the internet is as yet largely unregulated. The following are suggestions for guidance on best practice for all stakeholders.

Key points would be an insistence that websites::

- Identify the country in which they are based and should state (and be able to be able to provide documentary evidence to establish) the country of origin of any animals offered for sale.
- Accurately identify the animals offered for sale.
- Should remind customers that they must check all import rules (eg CITES, health and other controls) in the country to which the animal is taken (if different from the source). Where possible this should be facilitated by drop down menus of official sources of information.
- Ensure that information, as outlined above for retailers, should be made available to customers.

12. Be aware of and use appropriate methods to prevent the escape of pets and companion animals to the wild

Irrespective of species it is axiomatic that if an animal is not permanently released or allowed to escape to the wild it cannot become invasive. This message is encapsulated in EC COM(2008)789 [26]which states "Problems with non-native species will generally only start to arise when they move out of controlled and physically restricted locations. Ornamental plants and animals as well as pets will not cause a problem if they remain in gardens, aquaria or homes."

Thus a key component of this Code is to raise awareness that all owners (both private keepers and traders) should be *mutatis mutandis* encouraged to take great care to ensure that they contain all companion animals securely and do not release them.

Styles of keeping

Where and how animals are kept will determine in large part the measures needed to prevent companion animals from escaping. Companion animals are either kept indoors (usually in cages,

[25] Examples include http://www.prijatelji-zivotinja.hr/index.en.php?id=470 Article 59 (2) Animal Protection Act Croatia,& England and Wales http://www.opsi.gov.uk/acts/acts2006/ukpga_20060045_en_1 Animal Welfare Act ,2006. Norway: http://www.lovdata.no/cgi-wift/ldles?doc=/sf/sf/sf-19850110-0017.html - Sweden: http://www.sjv.se/download/18.b1bed211329040f5080001872/DFS_2005-08.pdf

[26] COM(2008) 789 final - Communication from the commission to the council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions - Towards an EU strategy on invasive species [SEC(2008) 2887 et SEC(2008) 2886] http://ec.europa.eu/environment/nature/invasivealien/docs/1_EN_ACT_part1_v6.pdf

aquariums or terrariums) or outside, mainly in enclosures such as aviaries and pens. It is beyond the scope of this Code to describe in detail all the methods available to prevent escapes.

In the event of an escape owners should be prepared to report them to the relevant authorities to facilitate, as appropriate, a rapid response. By doing so they should be recognised as being part of the solution to a potential problem as long as they in the first place can demonstrate they took all reasonable efforts to hold the animals securely.

If **indoor** companion animals are released from their secure holding units (as appropriate to the species of birds in cages or indoor aviaries, small mammals in cages, reptiles in secure vivaria, amphibians and invertebrates in secure terrariums) then the owner should ensure that openings such as windows, doors, air vents and chimney openings are kept closed or protected by mesh or screens to prevent escape. Owners should remember animals may squeeze through what might seem impossibly small gaps. All groups of animals including mammals, birds, reptiles amphibians, fish invertebrates (eg spiders, stick insects and scorpions) can be kept indoors. Some taxa would find escape relatively difficult in any circumstances eg amphibians are very prone to fatal desiccation which can occur when they crawl across absorbent surfaces such as carpeting. Many of the species kept are tropical and would be unlikely to survive if they did escape especially the further north in Europe they are kept. Additionally:

- Water from aquaria (or ponds for outdoor fish and amphibians in particular) should never be released into natural water bodies. Such water should either be discharged to a foul sewer (not a rainfall run off drain) or tipped on to an area away from any natural water body so that water quickly soaks into the ground.
- When disposing of vegetation, eg from insect collections, great care should be taken to ensure no eggs or larvae are discarded. Waste from such collection is best disposed of in closed bags or containers.

Outdoor companion animals should be held particularly securely as, even if they are provided warmed sleeping areas, they are to some extent partially or wholly pre-acclimated to the local environmental conditions, they also have direct access to the outside environment. Other general points on enclosures include:

- Hutches should be constructed in such a way that escape is prevented. They should be inspected regularly to ensure that damage such as excessive gnawing has not occurred and any mesh, bars or locks remain in good condition.
- Cages and aviaries should be secured with suitable grade mesh to prevent animals escaping. This should take into account both the species that might attempt to break out, and any local predators that might try to break in and leave gaps in fences etc. through which escapes could occur.
- Outdoor enclosures should be built to withstand all local weather conditions that might be reasonably expected eg wind and snow.
- To prevent both escape and breaking-in by wild animals (usually predators and scavengers such as foxes and badgers) the mesh of wire or other suitably resistant material should be buried in a trench (at least 30cm deep) so that it enters the ground vertically and then a section runs outwards from the enclosure parallel to the ground surface for at least 30cmThis will prevent animals just digging down until they get under the wire. Few animals are able to work out that they must dig down away from the fence to get under this arrangement of mesh. Alternatively a hard base material may be used to create the enclosure floor.
- Double doors with a holding space or lobby between them should be used to ensure that least one of them is always closed to avoid inadvertent releases or escapes, especially where quick moving or flying species are concerned.

- The enclosures must ensure climbing or flying animals are not able to escape through the top of the enclosure.

Irrespective of the actual enclosure used all the general conditions listed above must also apply to all species as appropriate and additional measures may be taken for the following species groups.

- ***BIRDS***

Ringing might facilitate the return of birds by identifying their owners and where they live.

Free flight

Some owners allow their birds to fly freely on the assumption they will return to their cage or aviary. They must be prepared to accept the responsibility for any escapes. Allowing mixed sex groups of birds of the same species to fly freely is particularly high risk as they make a ready made breeding group. This practice should be discouraged particularly where it is possible the species concerned could survive the extremes of the local climate whatever they may be. In some countries this practice may already be illegal - if so this fact should be made clearly known.

Restricting the ability to fly

Two methods are commonly used to restrict permanently or temporarily, the ability of birds to fly. By doing this the area the birds are kept in can be much larger as the it has only to be fenced rather than enclosed (ie including overhead mesh covering the whole area) to contain free flying specimens.

Wing Clipping

During this procedure primary flight feathers are cut. The cut feathers are replaced naturally by the bird at the next moult. The procedure need not completely remove the ability to fly but just reduce the height and speed at which a bird may fly. This technique also permits birds to be kept in open enclosures. However as the feathers regrow unless reclipped the birds may once again more readily escape. Care in ensuring regrowth of feathers is monitored and reclipping is undertaken as appropriate is particularly important in collections consisting entirely of, or containing many specimens of, a single species.

Pinioning

Pinioning , the removal of the metacarpal and phalange bones from one wing at an early age is in some countries a controversial method of ensuring birds do not escape from captivity. It is a legal mutilation in some countries eg the UK [27] but not, except in particular circumstances, in others eg Germany[28] but is illegal in other countries. Major conservation groups have very robustly advocated its use to prevent escapes and hence meet diverse national and international legal obligations. They have also stated that the practice is permanent but does not compromise the growth, survival or reproductive capacity of the birds pinioned. [29] [30] [31] These groups believed this method of permanently restricting flight allowed them to meet a range of both domestic and pan-European legislative requirements.

- ***REPTILES***

When reptiles are kept outside they are usually European species kept in enclosures. As such the enclosures need to have smooth sides and an overhang or full top cover.

Tortoise species have a propensity to dig. If because of their sedentary nature they are kept in a fenced garden area the fence line should be checked daily for signs of the tortoises digging underneath.

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[27] http://www.opsi.gov.uk/si/si2007/uksi_20071100_en_1

[28] http://bundesrecht.juris.de/tierschg/
http://www.bmelv.de/SharedDocs/Rechtsgrundlagen/T/Tierschutzgesetz.html

[29] http://www.publications.parliament.uk/pa/cm200405/cmselect/cmenvfru/52/4091509.htm Select Committee on Environment, Food and Rural Affairs Minutes of Evidence

[30] http://www.publications.parliament.uk/pa/cm200405/cmselect/cmenvfru/52/52we57.htm

[31] http://www.publications.parliament.uk/pa/cm200405/cmselect/cmenvfru/52/52we57.htm

Where terrapins are kept in an open pond it should be surrounded by a barrier eg a tough vertical polythene sheet, over which they cannot climb and under which they cannot dig. This barrier should be checked regularly, *not less than weekly,* for breaks and tears.

- ***AMPHIBIA***

When these are kept in a pond it should be fully surrounded by a barrier eg a vertical polythene sheet , over which they cannot climb and under which they cannot dig. This barrier should be checked regularly, *not less than weekly,* for breaks and tears.

- ***FISH***

Ornamental fish should not be stocked:

- in natural ponds, lakes, streams or rivers.
- in garden ponds that have outlets of any kind to natural ponds, lakes, streams or rivers.

Any water removed from ponds containing reptiles, amphibian or fish should be discarded via a foul sewer (not a storm drain) or allowed to soak into ground distant from any natural water body.

13. Where appropriate encourage techniques that reduce the invasive potential of the species kept

Sterile individuals cannot breed. Thus the harm they can cause, if any, should they escape or be released, is considerably reduced because they cannot reproduce. However, it is recommended that advice is sought from the relevant veterinary body in each country as to what is regarded as appropriate best practice. Advice may be different for each species, its physiological state and size and veterinary opinion may change periodically and be different from country to country.

Unless there is an intention to breed a particular species then housing them singly or in single sex groups might be considered. However it will definitely not be appropriate for all species and the welfare of the specimens kept must be given full consideration in making this decision. Veterinary or specialist advice may be required.

14. Influence buying decisions by developing simple questionnaire tools to avoid "new" potentially invasive species for use by traders and keepers

Most of the thousands of species of companion animals in Europe have been kept for decades and some for centuries. They are widely owned in varying numbers. Thus, whether with hindsight this was advisable or not the likelihood of them becoming invasive has been tested practically. Which species enter trade new or otherwise are determined by buying decisions. If those decisions can be influenced by considerations of invasiveness of the new species then new problem species may be avoided.

There are a number of highly sophisticated tools have been developed to predict the likely invasiveness of plants, (eg Pheloung 1999, and the EPPO Guidelines for information required for a Plant Pest Risk Analysis[32])[33] and fish, (Copp, 2005 a).

These detailed tools may be useful where the resources to undertake a full risk assessment are available. However, it may be more appropriate that simple 5-10 question taxon specific risk assessments are developed by stakeholders and used to assess species that businesses consider purchasing for the first time. For instance, a fish species with a requirement for tropical conditions is unlikely to become established in most of Europe. By providing these, traders' buying decisions may be influenced so that no purchase is made and so no further investment in the risk assessment is require. If these tools are

[32] http://archives.eppo.org/EPPOStandards/PM5_PRA/pm5-01-e.doc Guidelines on pest risk analysischeck-list of information required for pest risk analysis (pra) Pm 5/1(1) english

[33] Though both these examples apply to plants there are a number of principles that can usefully be applied in preparing such questionnaires in respect of animal species..

developed co-operatively great understanding and trust will develop. Futhermore such a collaborative process between government agencies and stakeholders will ensure full and effective risk communication is undertaken, without which a risk assessment may remain a theoretical process rather than a practical tool.

15. Promote awareness of global warming and its impact on the invasiveness of species

The Intergovernmental Panel on Climate Change (IPCC) has stated that "Warming of the climate system is unequivocal" and that "many natural systems are being affected by regional climate changes". By analysing datasets gathered during the period 1970-2004 28,115 significant changes in biological systems were note of which an estimated 89% were consistent with warming. Among the consequences predicted in Europe are dryer hotter conditions in the South and glacier and snow line retreat.[34]

Comment [S3]: This para is unchanged just moved it so it comes up on track changes.

Though difficult to predict changes to the Gulf Stream (the North Atlantic Thermohaline Circulation) may lead to slower warming or cooling in some parts of Europe. Research undertaken at the UK Meterological Office shows that the strength of the Gulf Stream could be reduced by 25% by 2100. However global warming is predicted to be greater than any cooling effect. [35]

These changes are likely to mean climatic conditions migrating north. As they do so species will be expected to migrate and in effect therefore, if all the species are able, so will ecosystems. These changes may lead to ecological stresses that enable invasives to become more easily established.

A conclusion in IPCC report mentioned above was that "Responding to climate change involves an iterative risk management process that includes both adaption and mitigation and takes into account climate change damages, co-benefits, sustainability, equity and attitudes to risk." This code should be reviewed regularly and managed adaptively so that it provides a mechanism to respond dynamically to changes either happening or reliably predicted eg by a program as CLIMEX[36].

Comment [S4]: Unaltered just moved

The following points were raised at the *ah*TEG.

16. Customer contract and record cards

Contracts with and records of those to pets have been sold were suggested potentially useful tool enabling contact with them should a problem arise and/or received acknowledgement that relevant species specific information eg care needs, was received at the time of sale.

This approach is adopted in the Local Government Association Standard Pet Shop Licence Conditions in the UK[37]. These require retailers to record the details of those to whom they sell dogs, cats, psittacines and species listed in the Dangerous Wild Animals Act. Some businesses voluntarily try to record the details of all sales.

However it may be prudent to consider the following points if such a policy is compulsorily applied to the sale of all species:

- There are probably in the region of 50 million sales of pet animals each year in the EU and many tens of millions more in the wider European area. If these were kept for an average of three years then there would be immense volume of data recorded about private individuals. Even for a medium sized pet shop this could mean administering in excess of 10,000 records.
- Ensuring the accuracy of the details given by purchasers may be impossible. Members of the public may be antagonistic to giving their name and personal details when for instance buying a tropical fish in Northern Europe.

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[34] Climate Change 2007: Synthesis Report "Summary for Policy Makers" http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf accessed September 24 2009

[35] http://www.idea.gov.uk/idk/core/page.do?pageId=9574626 accessed September 24 2009

[36] http://www.hearne.com.au/products/climex/edition/climex3/

[37] The Pet Animals Act 1951, Model Standards for Pet Shop Licence Conditions, The Local Government Association, LGMB Publications

- The time taken to record, collate, file, retain and retrieve data may be considerable.
- The purpose for collecting this information would need to be made explicit at the point of sale otherwise data protection laws may make its later use problematical
- If such data were gathered and were accurate could an individual animal found in the wild be traced back either to an individual or retail outlet? If not what purpose would the data serve? The volume of an individual species in trade could be gathered from pet shop purchase records (invoices).

17. Permits and licences

Permits are another potential method by which species ownership may be traced. There are a variety of schemes in place to trace the ownership of species eg the Article 10 requirements applied on going trade in species listed on Annex A of the Wildlife Trade Regulations in the EU. The Import of Live Fish Act in the UK requires both the retailer and any member of public owning certain species to have a licence – trade in such species has reduced to zero. The reasons for listing species on ILFA are generally understood by traders and the concerned public administered, as it applies to the pet trade, centrally by a single government agency and compliance is high.

The Dangerous Wild Animal Act in contrast included animals that many thought were harmless, was administered by hundreds of district councils all applying different standards and political views on its administration. Widespread non compliance was reported and after consultation recognised by the responsible government department[38] and alterations to rectify earlier short comings were made.

These example indicate proportionate measures well administrated to a common standard which are understood by the public will be more likely to achieve the desired policy objectives.

With any permit system there is the certainty of administrative costs whether borne by government agencies or passed on to those requesting them Care might need to be taken in establishing that the costs are proportionate to any identifiable benefits. Permits do not necessarily identify when, where or by whom any specimen was released-especially if the scheme is applied to any species popular in trade or among pet keepers. There is some evidence that when such schemes are applied to currently owned animals some may be released by their owners rather than face the problems associated with administrative process (see Appendix V).

18. Certification

A variety of certification schemes have been made concerning the capture, care and supply of ornamental aquaic organisms, for instance the Marine Aquarium Council[39], over the last decade. It is unclear how such a certification scheme could easily apply in the context of invasive non-native species. To be effective it might require that exporters certify the pet organisms they export could not become invasive in any of the countries to which they might be exported.

[38] http://archive.defra.gov.uk/wildlife-pets/wildlife/protect/dwaa/review.htm accessed 14 April 2011
[39] http://www.aquariumcouncil.org/ accessed 14 April 2011

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APPENDIX I

What are companion animals and pets?

Article 1 of the European Convention for the protection of pet animals[40] states "By pet animal is meant any animal kept or intended to be kept by man in particular in his household for private enjoyment and companionship."

This definition is further elaboratored in the accompanying "Explanatory Report"[41] which states

"The definition of a pet animal covers:

a. animals sharing man's companionship and in particular living in his household;
b. animals intended for this purpose;
c. animals kept to breed animals for this purpose;
d. stray animals and the first generation of animals born of stray animals."

For the purpose of labelling foods "Pet" or "pet animal" is defined as a non-food producing animal belonging to species, fed, bred or kept but not normally consumed by humans. [42]

The definition of Companion Animals used in the Animal Protection Act in Croatia is: any animal kept by man for companionship, protection, assistance or interest;.[43]

The Companion Animal Welfare Council[44] in the UK described the relationship between human and animal their reasoning in moving from the term pet to companion animal thus: "Though, for example, a stick-insect or a tortoise cannot be as expressive as a cat or dog in its relationship with an owner, there must be clear stewardship established and accepted for the welfare of each animal and it must be treated as a companion animal rather than merely as a status symbol, an ornament or plaything."

Hence the phrase 'companion animals' covers the whole spectrum of species which might otherwise be considered as 'pets'."

Thus for the purposes of this report companion animals and pets have the same meaning. Only in the last decade has the term companion animals instead of pets been widely used.

Included in the scope of this report will be a range of birds and small mammals kept in cages and aviaries as are live foods used to feed them.

What animals are not covered by the code

The European Convention explanatory notes state that

"Excluded from this definition are, for instance, animals kept for the production of food, wool, skin or fur or for other farming purposes, those kept in zoos and circuses for exhibition and those kept for experimental or other scientific purposes. However, it is always open to parties to cover working dogs, for instance, in their domestic legislation."

This code is not intended to be applied to:

- Dogs and cats
- Horses
- Birds of prey used for hunting

[40] http://conventions.coe.int/treaty/en/Treaties/Word/125.doc
[41] http://conventions.coe.int/treaty/en/Reports/Html/125.htm
[42] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0124:FIN:EN:PDF
[43] http://www.prijatelji-zivotinja.hr/index.en.php?id=470
[44] http://www.cawc.org.uk/companion-animals accessed 6 April 2009

- The use of animals other than for companionship eg ferrets in hunting, rabbits for meat or fur, racoons for fur, brent geese to be hunted, ornamental carp varieties or live bait used for angling.
- GMO's[45]
- Known and/or potentially disease causing pathogens and parasites carried by or infecting pets elsewhere controlled eg by OIE standards
- Live bait

[45] Conclusion of the *ah*TEG

ANNEX II

A brief history of the keeping of companion animals in Europe

Man has long been associated with keeping animals for food, fur and companionship (for example Roots, 2009).

- ***Mammals***

Evidence of the keeping and domestication of food animals, such as goats and sheep, can be found in the Middle East as early as 8,000BC. Reindeer may have been herded and semi-domesticated far earlier.

As early as 12,000 BC evidence has been found of the domestication of wolves in North America. Cats seem to have become domesticated between 7,500 and 2000BC. Both species might first have had a practical function as herders or in protecting flocks or granaries from predators and rodents respectively. Latterly, the majority of dogs and cats have been kept as companions with little or no other intention. No more will be said of these species as they are not the subject of this code.

Guinea pigs (*Cavia porcinus*) are thought to have been introduced from South America (where they had been domesticated since 500BC) to Europe by Spanish explorers during the 1500s. Queen Elizabeth I of England (1533-1603) was reputedly an early owner.

European rabbits (*Oryctolagus cuniculus*), still used as food animals, started to be kept as pets during the 19th Century, by which time they had been introduced into areas beyond their natural range.

The Golden Hamster (*Mesocricetus auratus*) was first discovered in 1839 and has only became popular as a pet since the 1950s. Rats (*Rattus norvegicus)* were recorded as being kept as pets in the 19th century.

Many species kept as pets such as chipmunks guinea pigs, rats, rabbits and hamsters have been selectively bred to produce many colour and conformation morphs.

- ***Birds***

The Alexandrine Parakeet (*Psittacula eupatria)* and the Ring-necked or Rose-ringed Parakeet (*Psittacula krameri)* were probably first introduced to European and Mediterranean countries as pets approximately 350BC.

The mandarin duck was imported into Britain from China in 1745. The Canada goose (*Branta canadensis)* was introduced first as an ornamental by King Charles II in London in 1665 and also in Sweden in 1929.

The budgerigar (*Melopsittacus undulates)* a native Australian species was first introduced to Europe in 1840. Selective breeding has enabled the production of a wide range of colour morphs. The cockatiel *(Nymphicus hollandicus)* was introduced to Europe in the middle of the nineteenth century since when a wide range of colour morphs of this species have also been bred.

- ***Fish***

Common carp (*Cyprinus carpio)* were first kept for food in China around 3000BC. The first colour mutants that would eventually give rise to the highly coloured variants known as koi were first recorded in Japan in the 1820s.

The first golden fish, which were the antecedents of the modern goldfish (*Carassius auratus)* were recorded in China in the Chin Dynasty (265-420AD). They were widespread in Chinese monasteries by the Tang Dynasty (618-907). Keeping goldfish in glass jars for purely ornamental purposes was established in the Ming Dynasty (1368-1644). The first goldfish were imported into Europe (Portugal) in 1611 (it was first recorded in the wild in Portugal on the Azores in 1792). By the mid eighteenth century aquariums containing fish and plants were developed in Europe.

The ornamental golden morph is very different from the natural greenish brown wild type. Further selection produced many other colour and body shape varieties. Often these variants are further and further removed from the wild-type, more domesticated, more dependent on man and less capable of survival in the wild.

The guppy (*Poecilia reticulata)* native to northern South America, Trinidad and Barbados was first discovered in mid 1800s. The first specimens were imported into Europe in the early 1900s. Since their discovery they have been bred in a myriad of colour and body morphs significantly different from the wild type.

A number of species have been used for a variety of other purposes which have necessitated their release to the wild in significant numbers e.g. the guppy for bio control of mosquitoes, the carp for both food production and angling (the latter has led to appropriate government authorities sanctioning by permit the release of highly coloured koi as well as wild type specimens).

ANNEX III

Social and economic significance of companion animal ownership in Europe

Companion animals are an important part of the social and economic fabric of Europe.

Ownership in Europe

The European Pet Food Industry Federation (FEDIAF)[46] in 2004 estimated that pets are owned by 62 million homes across the EU. They estimate there are 60 million dogs, 56 million cats, 35 million birds and 40 million other pets (excluding ornamental fish). Approximately 9 million homes owned aquaria-no estimate of garden pond ownership was made.

In 2008 it was estimated that almost 240 million pet animals (excluding fish and reptiles) were owned in just 18 countries (Russia, France, Italy, Germany, Great Britain, Spain, Turkey, Poland, the Netherlands, Poland, the Czech Republic, Hungary, Denmark, Portugal, Sweden, Switzerland, Austria and Norway).[47]

In Germany[48] during 2008 it was estimated that there were 8.2 million cats, 5.5 million dogs, 6.2 million small mammals, 2 million aquaria, 2.3 million garden ponds and 0.4 million terrarium kept by pet owners.

In France[49] during 2008 it was estimated 51.2% of households owned a pet. There were 10.7 million cats, 7.8 million dogs, 3.5 million birds and 3.2 million small mammals.

In 2008 in the UK the Pet Food Manufacturers Association (PFMA)[50] estimate that over 11 million households owned 23 million pets (excluding fish) including 8 million dogs and the same number of cats, 2.3 million small animals (including 1 million rabbits and 0.5 million guinea pigs), 1.6 million birds and 2.7 million other animals. 10% (2.6 million) of households own aquaria and 8% (2.1 million) own a garden pond. The English Housing Survey[51] undertaken during 2001 indicated there may be in excess of 3 million garden ponds in England alone.

Companion animal owners vary from those owning a single animal eg a budgerigar, a goldfish, a golden hamster or such to those who own many animals (sometimes thousands of individuals of a considerable number of different species) and are expert in keeping and breeding.

- ***Economic value***

Euromonitor quoted by the German trade association ZZF[52] estimated the retail turnover in pets and related products (in the 18 countries identified above) as 19.3 billion €s during 2007. During this period the UK National Office of Statistics' report on Family Spending[53] indicated that £4.264 billion (€6.233 billion) was spent on pet related items. Similarly data from Sweden for 2008 indicates a turnover of €800 million , (Mats Danielsson, ZOORF (Swedish Trade Association) *pers. com.*). The various surveys may be measuring different activities.It is not the purpose of this report to exhaustively investigate the economic base of the industry but is quite clear that the economic activity associated with companion animal ownership is many 10s of billion €s. A significant proportion of this economic activity being

[46] www.fediaf.org accessed on 9 April 2009
[47] http://www.zzf.de/dateiarchiv/ZZF_Marktdaten_Europa_2008.pdf
[48] http://www.zzf.de/dateiarchiv/Rangliste_Heimtiere_2009.pdf accessed 13 July 2009
[49] http://www.facco.fr/- Population-animale- accessed 13 July 2009
[50] www.pfma.org.uk accessed on 9 April 2009
[51] http://www.communities.gov.uk/documents/corporate/pdf/145283.pdf pg 102 - 2377 of 17139 households asked said they had a pond with theaim of attracting wildlife.
[52] http://www.zzf.de/dateiarchiv/Ausgaben_Heimtierbedarf_Europa_2007.pdf
[53] http://www.statistics.gov.uk/downloads/theme_social/Family_Spending_2006/FamilySpending2007_web.pdf

generated by the sales of both the animals, that are the subject of this code, and associated dry goods (cages, food, aquariums, terrariums, pondliners, etc.).

FEDIAF estimates the European pet food industry alone employs 21,000 people directly and as many as 30,000 indirectly. PFMA in the UK estimates 7,900 people are employed in this sector in the UK alone. In the UK LANTRA[54] estimates the animal care sector employs almost 50,000.

Many companion animals are sold via pet shops. These often require official authorities' permission to trade and if successful are visited by many members of the public every day. Thus the trade is for the most part highly visible to all concerned. However, the highly visible nature of the trade should not always be directly interpreted as being high volume.

- ***Health and Social benefits of companion animals***

Many studies have demonstrated considerable health and social benefits associated with keeping pets. For instance it has been estimated that keeping pets reduced the burden of treatments in the National Health Service in the UK by £1 billion during 1999.[55] Extensive lists of the benefits of pet ownership including child development, the welfare of the elderly and in physical and psychological health, for example, are available.[56] [57] Though most papers refer to the ownership of dogs and cats the benefits accrue even from such activities as watching fish swim in an aquarium (which lowers blood pressure).

[54] http://www.lantra.co.uk/businesses/animal-care/industry-information/
[55] http://news.bbc.co.uk/1/hi/health/441483.stm - Pets could save NHS £1bn a year Accessed 12 August 2009
[56] http://www.propetsgroup.org.uk/PDFs/FINAL%20-%20Pro%20Pets%20Benefits%20of%20pet%20ownership%20April08%20mods.pdf and http://www.propetsgroup.org.uk/PDFs/ProPets%208%20page%20booklet.pdf Accessed 12 August 2009 –though OATA is a member of ProPets this list of benefits is referenced.
[57] http://www.deltasociety.org/Page.aspx?pid=333 a bibliography

APPENDIX IV
LEGISLATION

International

Measures to prevent and control the entry of invasive alien species are covered by a variety of legislation including:

- Specific legislation covering the import or release of species.
- Animal welfare legislation-it being presumed that releasing domesticated animals may not provide for their welfare.
- Animal health legislation –diseases and parasites of animals are usually dealt with as a separate issue to invasive species. However the *ah*TEG considered them within scope.

World Trade Organisation (WTO)

Under the Sanitary and Phytosanitary Agreement (SPS)[58] WTO members may take trade restrictive measures to protect plant, animal and human life or health or to prevent or limit damage to their territory from the entry, establishment or spread of pests. These measures must comply with the principles of the SPS ie be science based, transparent, applied only to the extent necessary and not discriminate between areas where identical conditions exist. The WTO SPS recognises the Codex Alimentarius, the World Organisation for Animal Health (OIE) and the International Plant Protection Convention (IPPC) as relevant international standards setting bodies. If any member feels the SPS has been breached they may challenge another member.

World Organisation for Animal Health (OIE)[59]

The OIE developes standards on animal health and international trade which are published in its Terresterial and Aquatic Animal Health Codes and Manuals.[60] Each of the Codes identifies serious diseases, and the pathogens causing them) of concern in international trade, how they may be identified, which species are susceptible to them, the product that may act as carriers certification standards and the methodology by which countries, zones or compartments may declare themselves free of a pathogen.The pathogens range from viruses, bacteria and fungi to multicellular organisms such as *Gyrodactlus salaris*, a fluke found particularly on Atlantic Salmon.

These standards may be used to control the entry of listed pathogens to a country. If a country chooses to apply controls to prevent the entry of a particular pathogen it also applies controls to the species listed as being susceptible to them.

A range of diseases relavant to the pet trade are included in the lists eg Spring Viraemia of Carp (SVC) to which a range of cyprinid ornamental fish species are susceptible, White Spot Syndrome Virus (WSSV) to which all species of crustacea are susceptible and *Batrachochytrium dendrobatidis* which affects amphibians. Thus the movements of animals may be restricted where controls of listed diseases are applied.

Many of the diseases listed by the OIE are controlled (or not) as appropriate via legislation such as the Aquatic Animal Health Directive (EC 2008/66)[61].

[58] http://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm - accessed 5 April 2011
[59] http://www.oie.int/ accessed 5 April 2011
[60] http://www.oie.int/international-standard-setting/overview/ accessed 5 April 2011
[61] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:328:0014:0056:en:PDF accessed 5 April 2011

International Plant Protection Convention (IPPC)

As a standing setting body recognised by the WTO the IPPC may develop standards to permit countries protect themselves from anything that is harmful to plants or plant products. These standards may be used as the basis of restrictive import controls.

Convention on Biological Diversity

Article 8(h)[62] of the text of the CBD states "each party shall as far as possible and as appropriate prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species. COP decision VI/23[63] introduced "Guiding principles for the prevention, introduction and mitigation of alien species that threaten ecosystems, habitats or species" (referred as the Guiding Principles hereafter).

The Guiding Principles define "invasive alien species" as "species, subspecies or lower taxon, introduced outside its natural past or present distribution; includes any part, gametes, seeds, eggs, or propagules of such that might survive and subsequently whose introduction and/or spread threaten biological diversity."

Among a large number of other pathways Guiding Principle 11 identifies the pet industry as a pathway for the unintentional introduction of species outside of their natural range.

Decision VIII/27[64] welcomed a report from an ad hoc Technical Expert Group on Gaps and Inconsistencies in the International Regulatory Framework in Relation to Invasive Alien Species. It further identified a number of pathways on which attention might be directed. In considering "Pets, aquarium species, live bait, live food and plant seeds" it encouraged awareness raising, development of codes of practice (especially with respect to discarding and disposal of unwanted pets) and the control on imports or introduction to the wild of known invasive species. Decision IX/4[65] further elaborated these issues and called for examples of best practice in addressing "the introduction of alien species as pets, aquarium and terrarium species…"

The Guiding Principles establish a three stage hierarchical approach namely prevention, eradication and control. This current Code will reflect this hierarchy in its content.

CBD COPVI/23 part IV(a) para. 10 urges parties and other governments devising "National invasive alien species strategies and action plans" IV (a) to among other actions to (d) enhance co-operation between, (e) promote awareness of the threats and (f) facilitate the involvement of all sectors. The public, the private sector, indigenous people and all sectors of government are specifically mentioned.

An *ad hoc* Technical Expert Group[66] (*ah*TEG) reported among others that it identified gaps and inconsistencies in international regulatory framework with regard to "Pets, aquarium species, live bait and live food". Subsequently a further ahTEG "addressing the risks associated with the introduction of alien species as pets, aquarium and terrarium species, as as live bait and live food"was convened and met 16-18 February 2011 in Geneva (draft report for peer review[67]). Key points raised and conclusions reached by the *ah*TEG have been incorporated as appriate in the text of this code.

[62] Text of the Convention at http://www.cbd.int/convention/convention.shtml
[63] http://www.cbd.int/decision/cop/?id=7197 Annex
[64] http://www.cbd.int/decision/cop/?id=11041
[65] http://www.cbd.int/decision/cop/?id=11647
[66] http://www.cbd.int/doc/meetings/sbstta/sbstta-11/information/sbstta-11-inf-04-en.pdf Report of the Ad Hoc Technical Expert Working Group on Gaps and Inconsistencies in the International Regulatory Framework in Relation to Alien Invasive Species held in Auckland , New Zealand 16-20 May 2005
[67] http://www.cbd.int/doc/meetings/ais/ahteg-ias-02/official/ahteg-ias-02-03-en.doc

Council of Europe

The Bern Convention[68] at Article 11 2.b. states Each Contracting Party undertakes to strictly control the introduction of non-native species.

EC

Companion animals are owned and therefore someone's property. As such, in many countries, owners have a right to the peaceful ownership of the animals concerned. Owners can only be deprived of their property if it is in the public interest[69].

Article 17 of the EU Human Rights legislation concerns the Right to Property and states:

"Everyone has the right to own, use, dispose of and bequeath his or her lawfully acquired possessions. No one may be deprived of his or her possessions, except in the public interest and in the cases and under the conditions provided for by law, subject to fair compensation being paid in good time for their loss. The use of property may be regulated by law insofar as is necessary for the general interest"

Article 36 of the Treaty of Rome does not preclude prohibitions or restrictions on imports or exports or goods in transit if such measures can be justified on among other reasons "the protection of health and life of humans, animals or plants". However such measures must not "constitute a means of arbitrary discrimination or a disguised restriction on trade between Member States."[70]

Artificial barriers to trade are generally prohibited both within the EU and more widely. However the WTO Sanitary and Phytosanitary agreement permits member to protect themselves from animal and plant diseases and pests of concern. Similarly Article 36 allows EU Member States to protect species or strains from threats to their viability. A dispute arose between apiarists and the Danish government over an infringement of Danish legislation prohibiting the keeping on the island of Læsø of bees other than those of the subspecies *Apis mellifera mellifera* (Læsø brown bee). Criminal proceedings were first brought at the Kriminalret i Frederikshavn (Denmark),eventually the dispute was considered by the EU Court of Justice[71]. The ruling found against the continued keeping of the Italian bee on the island because of the threat it posed to the brown bee.

"Measures to preserve an indigenous animal population with distinct characteristics contribute to the maintenance of biodiversity through ensuring the survival of the population concerned; their aim is thus to protect the life of those animals.

From the point of view of the conservation of biodiversity, it is immaterial whether the object of protection is a separate subspecies, a distinct strain within any given species or merely a local colony, so long as the populations in question have characteristics distinguishing them from others and are therefore judged worthy of protection either to shelter them from the risk of extinction, or, even in the absence of such risk, to serve a scientific or other interest in preserving the pure population at the location concerned." This case concerned the rights of several apiarists in a small area and the costs incurred were significant. If action were taken where a species was owned by a vast number of people across a vast area how much greater would the cost be?

[68] http://conventions.coe.int/Treaty/EN/Treaties/Html/104.htm - Convention on the Conservation of European Wildlife and Natural Habitats
[69] http://ec.europa.eu/justice_home/unit/charte/en/charter-freedoms.html
[70] http://eur-lex.europa.eu/en/treaties/dat/11992E/tif/JOC_1992_224__1_EN_0001.pdf
[71] Judgment of the Court (Fifth Chamber) of 3 December 1998
http://eurlex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexplus!prod!CELEXnumdoc&numdoc=61997J0067&lg=en

In a recent report (Miller *et al* 2006)[72] it was stated that of the 27 EU member states :

- 20 had some provisions in place regarding imports or exports of IAS.
- 16 (Cyprus, France, Germany, Greece, Ireland, Ital, Lithuania, Luxembourg, Malta, The Netherlands, Portugal, Slovakia, Slovenia, Spain, Sweden and the United Kingdom) have provisions, which vary widely in scope and purpose, concerning the possession and/or trade of potential IAS (Miller *et al* 2006). It was noted that not all Member States had such controls and that the controls that existed were not coherent and in adjacent states were not consistent.
- 26 (Greece being the exception) have controls preventing the control of the release of IAS to the wild. There are inconsistencies between each Member State included (but were not limited to) the range of species covered and of the exemptions made, differing levels between aquatic and terrestrial species and whether or not they included accidental or negligent releases. This code will provide a common coherent standard across Europe, namely that no pet species should be released in the wild.
- And 19 had measures to address statutory control and eradication.

This is not always achieved at national level but at regional or local level. While release of animals to the wild is generally controlled it must be questioned as to how well known these laws are and well they are understood by the public.

The EU Wildlife Trade Regulation [73] permits controls to be placed on Article 4.6 d. **"**species in relation to which it has been established that the introduction of live specimens into the natural habitat of the Community would constitute an ecological threat to wild species of fauna and flora indigenous to the Community". Four species are banned from being imported under this measure namely the Ruddy Duck (*Oxyura jamaicensis)*, the red eared terrapin (*Trachemys scripta elegans)*, the painted turtle (*Chrysemys picta)* and the Bullfrog (*Rana catesbeiana).*[74]

Greater care and stakeholder involvement in the decision making progress might have identified that the terrapin species likely to replace *T.scripta elegans* in the market might be more aggressive and grow larger. Stakeholders might also have pointed out that banning a species' import can increase the interest and the activity of domestic breeders.

Article 22.b)of The EC Habitats Directive[75] states Member States shall: ensure that the deliberate introduction into the wild of any species which is not native to their territory is regulated so as not to prejudice natural habitats within their natural range or the wild native fauna and flora and, if they consider it necessary, prohibit such introduction. The results of the assessment undertaken shall be forwarded to the committee for information.

The Water Framework Directive requires members states to achieve good ecological status for surface waters. This requires that disturbance by man is only slight. Inturn this requires the chemical, physicochemical and hydromorphological conditions necessary to support an appropriate species range be maintained. Invasive species may make this difficult or impossible to attain.[76]

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[72] http://ec.europa.eu/environment/nature/invasivealien/docs/2006_06_ias_scope_options.pdf

[73] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31997R0338:EN:NOT
Council Regulation (EC) No 338/1997 of 9 December 1996 on the protection of species of wild fauna and flora by regulating trade therein

[74] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1992L0043:20070101:EN:PDF
COMMISSION REGULATION (EC) No 359/2009 of 30 April 2009 suspending the introduction into the Community of specimens of certain species of wild fauna and flora

[75] http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:110:0003:0026:EN:PDF - Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

[76] http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:327:0001:0072:EN:PDFDirective 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy

Under Article 11 of the Birds Directive[77] Member States shall see that any introduction of species of bird which do not occur naturally in the wild state in the European territory of the Member States does not prejudice the local flora and fauna. In this connection they shall consult the Commission.

National

Controls on releasing companion animal species to the wild may be addressed either through animal welfare or conservation laws. Each approach is illustrated by exemplars; the following is not intended to be an exhaustive or comprehensive description of all the legislation in Member States of the Council.

For some groups of animals, for instance fish, because of their great long established economic value there is extensive legislation in many countries both in the wild and aquaculture. That said some of the species used extensively in angling eg the carp *(Cyprinus carpio)* and Rainbow Trout (*Onchorynhchus mykiss)* are not native.. At least historically, even highly coloured koi have been used in fisheries with the permission of appropriate authorities. It may help awareness raising if authorities avoided sending mixed messages-thus it is either OK or not OK to release ornamental varieties of animals to the wild.

The Croatian Animal Protection Act[78] is an example of how elements of both animal welfare and conservation are intertwined to convey a very simple clear message that normally no pet animal should be released to the wild.

Article 5 of the Act states:

The owner of an animal must not:

1. abandon a domestic animal, companion animal or raised wild animal or other animal kept under his control,

2. expose a raised or cultivated wild animal to the wild or settle it in the wild, unless prepared for survival in such environment, in accordance with special regulations,

3. inflict pain, suffering or injury upon animals during their training

The Scottish Government is currently investigating incorporating a similar general presumption against release of species to the wild.[79]

Both English[80] and Scots[81] law requires owners to meet the needs of the animals in their control. This includes their need for a suitable environment, diet, and protection from pain, suffering injury and disease. As stated elsewhere it is likely that the majority of pets released to the wild encounter conditions they are not able to tolerate or predators they are unable to evade. Either way they meet an untimely and sometimes lingering death.

PERVERSE OUTCOMES

While seductively simple in concept, bans on ownership may have perverse outcomes, especially if the species has been a companion animal for a period of time and is widely kept.

A great deal of time, cost and resource could be incurred in legal challenges to ownership of certain animals or conversely ownership bans that might be better spent in more practical activities. Better communication may avoid such scenarios.

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77 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31979L0409:en:NOT Council directive 79/406/EEC conservation of wild birds

78 http://www.prijatelji-zivotinja.hr/index.en.php?id=470

79 http://www.scotland.gov.uk/Publications/2009/06/17133414/0 - Wildlife and Natural Environment Bill - Consultation Document

80 http://www.opsi.gov.uk/acts/acts2006/pdf/ukpga_20060045_en.pdf - Animal Welfare Act 2006 see Articles 4 and 9

81 http://www.opsi.gov.uk/legislation/scotland/acts2006/pdf/asp_20060011_en.pdf Animal Health and Welfare (Scotland) Act 2006 See Part II Articles 19 and 24

Large numbers of owners may, and have in the past, ignored the law concerning the ownership of animals. The measure then has little practical effect and brings the law into disrepute. In the UK the Department of Environment Food and Rural Affairs (Defra) for instance recorded "compelling circumstantial evidence to support claims of levels of non-compliance" with the Dangerous Wild Animals Act 1976 (DWAA). Many members of the public felt that the purpose of the Act had been subverted to cover species for which there might be welfare concerns rather than concerns regarding public safety. In 2008 a review was published in which the list was amended "to limit it [the Act] to those species which the expert panel thought presented a genuine threat to the public".[82]

There is circumstantial evidence that in the 1970's and 80's some species listed on the Act were released to the wild. Big cat sightings in the UK countryside increased following the introduction of the DWAA. While hard evidence is relatively sparse jungle cats (*Felix chaus*) have been run over in traffic accidents.[83],[84]

Since 1977 Norway has banned the ownership of reptiles. However, there remain increasing sales of products that are used by keepers to care for reptiles in pet shops. Open borders with Denmark and Sweden, as well as domestic production through hobbyist breeding, have allowed those wishing to own reptiles to obtain specimens. The hobby has "gone under ground" and has become much less visible to the relevant authorities. The Norwegian Pet Trade Association (S. Fossa, *pers. com*.) estimates the total of reptiles in Norway as above 100,000. This figure is commonly quoted by the media.

Experience therefore indicates measures that are regarded as inappropriate by keepers because of inadequate explanation or otherwise disproportionate may lead to an increased number of deliberate releases or illegal keeping of the species of concern.

[82] http://www.defra.gov.uk/wildlife-countryside/protection/dwaa/
[83] http://www3.hants.gov.uk/museum/biology/curiosities.htm
[84] http://scienceblogs.com/tetrapodzoology/2009/01/the_hayling_island_jungle_cat.php

APPENDIX V

EXAMPLES OF CURRENT INITIATIVES

Government

The whole of the Great Britain policy was reviewed by a group containing representatives from government, its agencies, NGO's and representative trade associations from the private sector and there are excellent non native species country and specifically tasked working groups. This has ensured regular contact between government agencies and stakeholders over an extended period. There have been full and frank exchanges of views and though complete agreement is not always possible confidence between participants has grown. This has enabled agreements and identified common understandings between the various participating organisations that might have seemed impossible several years ago.

A non native species secretariat has been formed which is responsible to a cross governments Program Board.

From the authors direct experience it is a model well worth reviewing by other countries.

The Invasive Species Ireland project is a joint venture between the Northern Ireland Environment Agency and the National Parks and Wildlife Service to implement the recommendations of the 2004 Invasive Species Ireland Report. It is an inclusive project that seeks to engage stakeholders in practical aspects of managing IAS.[85]

Trade

Various trade associations have produced a number of initiatives to inform the public about the invasive alien issue over the past decade.

In the UK the OATA produced posters with the message " Pet fish belong…" [86]. This emphasised that the place for pet fish was in domestic ponds and aquaria never natural rivers and lakes. They also produced a poster entitled "Keep your pond plants in the garden!!" [87] which emphasised the need to carefully dispose of any excess plants removed from a pond. Latterly, the following message has been printed on the plastic bags used to transport purchased organisms home "The ornamental fish and plants bought in this bag should never be released to the wild". In the last year for which records are available over 2 million bags were sold. OATA also make freely available on line care sheets for most of the important species groups of ornamental fish. Each contains the text :

NEVER RELEASE YOUR AQUARIUM ANIMALS OR PLANTS INTO THE WILD.

Never release an animal or plant bought for a home aquarium into the wild. It is illegal and for most fish species this will lead to an untimely and possibly lingering death as they are not native to this country. Any animals or plants that do survive might be harmful to the environment.

In North America the Pet Industry Joint Advisory Council in the USA work with government agencies to develop a project with the title Habitattitude[88]. This promoted the message "Protect our Environment – Do not release fish and aquatic plants". The program has now been expanded to encompass other potentially invasive non native species groups.

The title was chosen to highlight that Habitats can be saved by positive, or potentially destroyed by negative, Habits and Attitudes of aquarium and pond keepers.

PIJAC Canada has a similar program in place.[89]

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[85] http://www.invasivespeciesireland.com/
[86] http://www.ornamentalfish.org/aquanautconservation/petfishbelong.php
[87] http://www.ornamentalfish.org/aquanautconservation/invasiveplants.php
[88] http://www.habitattitude.net/□□
[89] http://www.habitattitude.ca/en/habitats/legislation/□□□□□□

OATA has produced a set of self assessment questionnaires and accompanying information to help prevent the spread of diseases. “Biosecurity-Future proofing the industry” is available to OATA and Ornamental Fish Industry (OFI) members.

Ornamental Fish International have also produced a book on biosecurity, (Ploeg *et al*).

PIJAC USA is responsible for establishing the The National Reptile Improvement Program[90] and the Bd-Free 'Phibs Campaign[91] (designed to reduce the spread and impact of *Batrachochytrium dendrobatidis* (or "*Bd*" for short which causes chytridiomycosis).

The Norwegian Pet Trade Association (NZB) is currently working on a project on informing the trade and publication on the issues concering release and invasives. It is modelled part on OATA and part on PIJAC's Habitattitude, and involves both posters, leaflets and a web site. The project is financed by the Directorate for Nature Management. (S. Fossa, *pers com*)

[90] http://www.pijac.org/projects/project.asp?p=28
[91] http://www.pijac.org/projects/project.asp?p=26

ANNEXE VI

Commentary on DAISIE (Delivering Alien Invasive Species Inventories for Europe)

List of Species Alien in Europe and to Europe

The activities undertaken under the DAISIE auspices have been developed with support from the European Commission and provide a one-stop-shop for information on biological invasions in Europe.

The DAISIE list comprises some 130 pages in total with the vast majority of entrants being vascular plants and invertebrates not utilised as companion animals. The list can be seen as a compendium of plant and animal species that have ever been recorded outside their natural range in Europe irrespective of whether or not the species has the potential to become invasive. Hence, some species that can be kept as companion animals by specialist collectors are listed that have no realistic possibility of becoming invasive in most, if not all, European countries, examples would include : Cuban crocodile (*Crocodylus rhombifer*), South African penguin (*Spheniscus demersus*), American bison (*Bison bison*), dhole (*Cuon alpinus*) and Senegal bush baby (*Galago senegalensis*).

To a considerable extent the list is dominated by species that occur in one part of Europe naturally but have also been recorded outside their natural range elsewhere in Europe.

Whether or not these have arrived 'artificially' or 'naturally' elsewhere in Europe would be a matter of conjecture in the majority of instances but several are popular species in terms of companion animals e.g. European fire-bellied toad (*Bombina bombina*), common chameleon (*Chamaeleo chameleon*), European pond turtle (*Emys orbicularis*), green lizard (*Lacerta viridis*), Hermann's tortoise (*Testudo hermanni*), red-crested pochard (*Netta rufina*), greenfinch (*Carduelis chloris*), edible dormouse (*Glis glis*), common hamster (*Cricetus cricetus*), and small-spotted genet (*Genetta genetta*).

The DAISIE list also includes animal and plant species that have long been commensal with mankind and are cosmopolitan in distribution irrespective of where they originated e.g. house mouse (*Mus musculus*), brown rat (*Rattus norvegicus*) and black rat (*Rattus rattus*) both of which are highly popular companion animal species.

Looking at each of the Vertebrate classes in turn in respect of the DAISIE list and companion animal species:

Mammals

Nine species are listed in the top 100 invasive species out of 89 mammal species listed. One of the species is a natural human commensal found throughout the world (brown rat) for which, although they are very popular pet species, the pet industry has no realistic impact upon the species' distribution and 'wild' population. The fur trade is widely implicated in another five of the species, these species being the raccoon (*Procyon lotor*), raccoon dog (*Nycteruetes procyonoides*), musk rat (*Ondatra zibethicus*), coypu (*Myocastor coypus*) and American mink (*Mustela vison*). All of these five species are kept by private hobbyists around Europe but only one – the raccoon – is a relatively commonly kept species.

Of the remaining three species the sika deer (*Cervus nippon*) was in almost all cases purposefully released to augment deer populations in the wild and/or escaped from deer parks and the homes of landed gentry. They remain a popular species in such places as well as being kept in paddock-type enclosures by some private keepers. Nowadays the 'wild' populations are such that, much like Ring-necked Pheasants, any odd escape makes little or no impact on the 'problem' as it may exist.

The eastern grey squirrel (*Sciurus carolinensis*) was a favoured target for intentional and officially sanctioned release in Victorian times. They are kept – illegally – in the U.K. as pets (normally as 'rescued' animals) and more so in some Continental European countries, perhaps most notably nowadays in Italy.

It's clearly a species that, if kept at all, should be done only by specialists with proven accommodation, safety hatches, etc. that virtually preclude the possibility of escape.

This then leaves the Siberian chipmunk (*Eutamias sibiricus*) which is one of the most popular of small mammal pet species and is widely available from pet stores, nursery centres and directly from a multitude of breeders. Its popularity is universal throughout Europe and, again, like the ring-necked parakeet, has reached a height of popularity now being bred in a multitude of colour mutations (albinos, straight whites, cinnamons, beige, etc.). Escapes from pet owners has undoubtedly partly contributed to the now established 'wild' populations but most have prospered as a result of larger scale escapes from importers premises. It is this kind of situation where attention is best focused although the situation has at least partly self-rectified since the amount of captive-breeding within Europe has lowered prices to such an extent that the incentive to import from the wild has largely, if not completely, disappeared.

Birds

The list of species numbers 172 in total, of which only four feature in the top 100 list of invasive species, these being: Canada goose (*Branta canadensis*), North American ruddy Duck (*Oxyura jamaicensis*), ring-necked parakeet (*Psittacula krameri*) and sacred ibis (*Threskiornis aethiopicus*). Of these only one – the ring-necked parakeet – is primarily a companion animal and has its pathway to being invasive usually through private collections (and, secondarily, from zoos). The two waterfowl species have almost, if not exclusively, derived from zoos and specialist waterfowl collections open to the public. Furthermore, at least in the case of the Canada goose, animals have been purposefully released with official sanction in the past. Likewise, the sacred ibis is a very popular zoo exhibit with a few specialist private keepers also maintaining the species.

The ring-necked parakeet is extremely popular as a companion animal species and is bred in numerous colour mutations much along the lines of the budgerigar and features widely in specialist exhibition events as well as being a standard pet species in the normal sense of the word 'pet'.

Reptiles

Again only one species is listed in the list of the top 100 invasive species – out of 72 reptile species listed in total. This species is the familiar red-eared slider (*Trachemys scripta elegans*). In common with the American bullfrog this species is banned from importation into the EU under the EU's CITES Regulations. The sole source of 'introduction' has been the pet trade and companion-animal keeping. Nevertheless, it has been established that in northern Europe the species cannot breed due to the summers being insufficiently warm and not long enough in duration. Hence they cannot be termed to be invasive in the normally accepted use of the term. However, they could quite feasibly be determined to be so in say southern Portugal or in Cyprus. This species is, therefore, a good example of one size not fitting all in terms of recommended outcomes or controls.

The red-eared slider is also just a good example of a species for which prohibition would lead to more not less problem with released specimens. The reaction to prohibition in many cases would be for owners to release them to the wild.

Amphibians

Only one species features in the top 100 list of invasive species, namely *Lithobates catesbiana* (formerly known as *Rana catesbiana*), the American bullfrog, constituting one species out of the 35 amphibian species listed overall. This species is banned from importation under EC CITES Regulations. Undoubtedly some of those now found in the wild derived from released 'pet' animals imported by the aquarium trade as tadpoles but this pathway for introduction is completely outweighed by that of escapees from commercial farms specifically operated to supply frog's legs for human consumption. It is in these circumstances where truly invasive occurrences have occurred i.e. when hundreds escape in the same general vicinity and often over an extended period of time.

Fish

No freshwater or marine fish that appear in the ornamental aquatic trade or hobby appear in the Daisie- 100 of the Worst list. We note the presence of the freshwater clicker barb (*Pseudorasbora parva*) in the list which was rarely kept as an ornamental several decades ago. It has mainly spread along waterways and as a contaminant in consignments of small native coarse fish.

Ornamental aquatic organisms (including use for ornamental purposes in lakes on private estates, small garden ponds and indoor aquaria) were identified as responsible for 9% of all imported aquatic animal alien species range expansions. 30% were caused by extensive fish culture and sport fishing, 27% by intensive aquaculture, 25% by passive transport on vessels. 1% were caused by the introduction and subsequent movement of *Gambusia* spp.

Ornamental use was responsible for 6% of introductions between European states.

Invertebrates

None of the 100 worst are invertebrates that play any significant part, if any at all, in companion animal trade or hobby.