

Title: The Prohibition of Keeping and Release of Live Fish (Specified Species) (England) Order 2014 IA No: Defra0093 Lead department or agency: Department for Environment, Food and Rural Affairs Other departments or agencies: Cefas, Environment Agency	Impact Assessment (IA)		
	Date: 07/05/2013		
	Stage: Final		
	Source of intervention: Domestic		
	Type of measure: Secondary legislation		
Contact for enquiries: Emma Boyd 020 7238 3149 emma.boyd@defra.gsi.gov.uk			

Summary: Intervention and Options	RPC Opinion: Awaiting validation of EANCB
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Cost of Preferred (or more likely) Option			
Total Net Present Value	Business Net Present Value	Net cost to business per year (EANCB on 2009 prices)	In scope of One-In, Measure qualifies as One-Out?
Un/Non-monitored	Un/Non-monitored	£0.01m or less	Yes IN

What is the problem under consideration? Why is government intervention necessary?

Non-native species pose a significant threat to native species and habitats, and Government has a strategy to prevent the introduction and spread of such species. Threats to GB from non-native fish species have for many years been greatly restricted by national fish health legislation. Following the harmonisation of fish health rules under European Commission Directive 2006/88/EC, the national criteria that controlled trade in almost all temperate species have been lost. Government has to consider amending the existing specific controls on non-native freshwater fish species under ILFA to maintain control on the risk that such species pose to native species and habitats. While it is important that we protect native species and environments from the impact of non-native species, it is also important to protect established trade in such species and facilitate new trade where the assessed threat is minimal.

What are the policy objectives and the intended effects?

A recent report estimated the current cost of invasive non-native species to the British economy at approximately £1.7bn per year. Therefore, the primary policy objective is to protect native species in England; and by extension, the biodiversity of habitats, ecosystems and commercial and recreational fishery waters from the introduction of potentially damaging, invasive alien species. The secondary objective is to prohibit the keeping and release of specified species of non-native freshwater fish in England except under licence. This process will also simplify the legislative landscape as we will revoke the 1998 and 2003 ILFA Orders in relation to England and consolidate regulation into a single 2014 Order.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

Baseline - Do nothing. Maintain current rules that prohibit the keeping and release of specified non-native freshwater fish species.

Option 1 - Introduce amendments to the existing 1998 and 2003 ILFA Orders on an ad hoc reactive basis following a risk assessment of all individual non-native fish currently not listed and any newly traded in England.

Option 2 - Replace the existing 1998 and 2003 ILFA Orders to include a schedule of fish at the taxonomic level (rather than at an individual species level). Licences issued will facilitate free trade in tropical and sub-tropical species currently considered to pose a low risk. Licences for new species capable of surviving in UK waters will be issued only following an assessment of the risk they pose to native species and habitats.

Option 2 is the preferred option

Will the policy be reviewed? It will be reviewed. If applicable, set review date: 05/2018					
Does implementation go beyond minimum EU requirements?			No		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	Micro Yes	< 20 Yes	Small Yes	Medium Yes	Large Yes
What is the CO ₂ equivalent change in greenhouse gas emissions? (Million tonnes CO ₂ equivalent)			Traded: NA		Non-traded:

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Minister: _____ **George Eustice** _____ Date: 23/1/2014

Summary: Analysis & Evidence

Policy Option 1

Description: Introduce amendments to the existing ILFA Orders for individual non-native species that have newly entered trade into England following a full risk assessment on an ad hoc basis.

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2013	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: Optional	High: Optional	Best Estimate: Non Monetised?

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional	Optional	Optional
High	Optional	Optional	Optional
Best Estimate	£9.33	£0.10	£10.30

Description and scale of key monetised costs by 'main affected groups'

Total cost to Government: £9.4m (includes costs of risk assessments = £9.3m transitional; £0.09m per annum; licensing admin costs = £0.01m per annum; costs of advising business = £0.002m per annum). Total cost per annum to industry is £0.0033m (admin costs and cost for site inspection). Benefit is non monetised and so it is not possible to calculate net cost to business. However, assuming benefit is '0', EANCB figures at 2009 prices for option 1 is £0.003m. EANCB are expected to be negative as there are clear but non monetised benefits to businesses.

Other key non-monetised costs by 'main affected groups'

Government would incur some costs in monitoring relevant industries to detect the presence of new non-native species. Government would face the cost of making further amending Orders as new species requiring some form of control entered trade. There would also need to be sufficient new species in trade to justify the expense of creating a new Order, and the need to put in place controls for high risk species before they are released to the wild. Producing a single definitive Order would require an assessment for over 20,000 species, of which, at least one third would require full risk assessment. It is impractical to assess such costs at present.

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional	Optional	Optional
High	Optional	Optional	Optional
Best Estimate	non-monetised	non-monetised	Non-monetised

Description and scale of key monetised benefits by 'main affected groups'

Other key non-monetised benefits by 'main affected groups'

This option requires a reactive, rather than pre-emptive approach, with substantial risks that damage would be done before measures were in place. It would provide much better regulatory protection than that afforded by voluntary codes of conduct that have already been easily circumnavigated. Option 1 could prevent some costs associated with future eradication and control of invasive non-native species. However, as this option provides no restriction on the keeping and release of live non-native species *before* completion of a risk assessment, it is a reasonable assumption these costs could increase.

Key assumptions/sensitivities/risks

Discount rate (%)

3.5

The predominant risks are that non-native species could be introduced or escape to the wild before individual risk assessments can be completed; leading to increased expenditure for government on the implementation of control and eradication programmes. If species are listed only when proven to pose a significant threat, then this option will fail to meet our international obligations to adopt a precautionary approach to the control of potentially invasive species, as it is inevitable that for many species there will be insufficient data to illustrate their true potential to become established in UK waters.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: £0.003m	Benefits: non-monetised	Net: optional	YES	IN

Summary: Analysis & Evidence

Policy Option 2

Description: An amended ILFA Order based on a list at the taxonomic Order level prohibiting the keeping and release of specified fish species until they have been assessed on their risk of invasion and potential harm.

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2013	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: Optional	High: Optional	Best Estimate:

COSTS (£m)	Total Transition (Constant Price) Years		Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional	1	Optional	Optional
High	Optional		Optional	Optional
Best Estimate	0		£0.004	£0.40

Description and scale of key monetised costs by 'main affected groups'

Total cost to Government: £0.03m (includes costs of rapid risk assessments = no transitional costs, £0.005m per annum; licensing admin costs = £0.02m per annum; costs of advising business = £0.003m per annum). Total cost per annum to business: £0.014m (cost of full risk assessment, admin costs and cost for site inspection). Benefit is non monetised and so it is not possible to calculate net cost to business. However, assuming benefit is '0', EANCB figures at 2009 prices for option 2 is £0.01m. EANCB are expected to be negative as there are clear but non monetised benefits to businesses.

Other key non-monetised costs by 'main affected groups'

Government would incur some costs in reviewing the list of tropical species subject to general licence, because of the longer term effects of global warming but these are likely to be negligible in the period over which the legislation will be reviewed.

Business would face the cost of any full risk assessment required. There will be small increased costs to industry associated with the risk assessment of any new temperate species. However, these are considered to be appropriate and proportionate in relation to the costs of testing and imports as covered in other industries.

BENEFITS (£m)	Total Transition (Constant Price) Years		Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional		Optional	Optional
High	Optional		Optional	Optional
Best Estimate	Non-monetised		Non-monetised	Non-monetised

Description and scale of key monetised benefits by 'main affected groups'

Other key non-monetised benefits by 'main affected groups'

This option provides for the continuation of the current trade of non-native live fish and provides flexibility for new imports, whilst offering a more robust system of protection against the introduction of potentially dangerous non-native species. This would also ensure Government would be meeting key national and international obligations. Government benefits financially from this Option, as the large costs of full individual species risk assessments are eliminated; This option provides immediate protection for UK species, habitats and business from introductions of potentially damaging non-native species.

Key assumptions/sensitivities/risks (%)

Discount rate

3.5

It is assumed that the immediate licensing of existing trade in tropical species and rapid system for adding new tropical species to the licensed list will allow the traditional ornamental trade to operate without hindrance. We also assume that there will be few applications to keep such live fish species for the food market. The ornamental industry will be sensitive to the risk that their future business opportunities are reliant on the maintenance of a general licence to freely trade a large range of tropical fish species. However, it is highly unlikely this licence will be revoked by administrative action.

BUSINESS ASSESSMENT (Option 2)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: £0.01m	Benefits: non-monetised	Net: optional	YES	IN

Evidence Base

Introduction

1. The spread of non-native fish species can have far-reaching and undesirable ecological consequences for animal and plant communities in rivers and lakes. Introduced non-native fish can have direct effects on native species through predation, or can upset the natural balance that operates between native species. Non-native species can also introduce and spread novel diseases and parasites to which our native species may have little or no resistance. It is vital if we are to meet key national and international obligations to protect native species, their habitat, and conserve the unique diversity of animal and plant life in our rivers and stillwaters, that we are able to effectively regulate the keeping and release of non-native fish species and restrict the spread in the wild of those species that would be particularly damaging for native biodiversity.
2. Invasive non-native species of fauna and flora are considered to be the second biggest threat to biodiversity worldwide after habitat loss and destruction². Releasing such species into the wild or having inadequate measures to prevent their release or escape can be particularly serious given that the control or eradication of an invasive species, once established in the wild, can be difficult and costly. A Defra commissioned CABI report in 2010 estimated the current cost of invasive non-native species to the British economy around £1.7 billion per year¹. In most cases, full eradication is unachievable. Past introductions of non-native species have commonly occurred with little prior assessment or knowledge of the potential consequences. While not all introduced non-native species will become invasive, they can still have adverse impacts on native biodiversity. In addition, the true extent of the threat that alien species pose has become much better understood in recent times. It also needs to be recognised that their precise impact can be unpredictable; therefore, a precautionary approach would be appropriate and proportionate for managing the keeping and release of such species.
3. On 28 May 2008, Defra launched the Invasive Non-Native Species Framework Strategy for Great Britain jointly with the Welsh Assembly Government and the Scottish Government:



Acrobat Document

4. The Strategy delivers against one of the main Member State measures in the EU action plan for the 2010 biodiversity target. It provides a high-level framework within which the actions of all stakeholders, including Government Departments and their related bodies can be better co-ordinated and made more effective in minimising the risks posed, and reducing the negative impacts caused by invasive non-native species in Great Britain.
5. The Strategy sets a key objective to minimise the risk of invasive non-native species entering and becoming established in GB, and to reduce the risks associated with the movement of species outside their natural range within GB. It recognises that prevention and early intervention are the most successful and cost-effective approaches for controlling the spread and impact of non-native species, and thus focuses efforts around the three-pronged approach agreed

¹ Williams et al, 2010; The Economic Cost of Invasive Non-Native Species in Great Britain; CAB/001/09

under the Convention on Biological Diversity – i.e. prevention measures, early detection and then carefully considered appropriate action. The Strategy also recognises the crucial need for greater awareness of the issues across all stakeholders, including the public, to achieve this.

Existing Arrangements

6. The key measure in controlling the spread of non-native fish has been the Prohibition of Keeping or Release of Live Fish (Specified Species) Order 1998 (as last amended in 2003), made under The Import of Live Fish Act 1980 (ILFA) This Order makes it an offence for anyone to keep or release any of the species listed therein, in any water (including tanks and ponds), without a licence.
7. There were a range of criteria by which the various species were listed under this Order. Some were species that had become established in waters in England and Wales that were now considered to be harmful to native species, or undesirable in UK waters, and warranted the imposition of appropriate controls. Others were species considered to pose a high risk to native species, which could be sourced from the small number of areas able to meet UK fish health requirements. Some of these species were already traded as ornamental animals, whereas others were considered unsuitable for entry into open trade because of the degree of risk they pose to native species. A full list of the fish species / genera currently covered under ILFA is provided at Annex 1.
8. The licensing system under ILFA allows the placement of any conditions the Minister considers appropriate for the management of the listed species. This provides the flexibility to enable listed species to be kept; for particular purposes; in facilities with specific levels of bio-security; according to the risk they pose to native environments and; according to the risk of fish release posed by a given industry sector. As a consequence, while some of the listed species would only be licensed into isolated, bio-secure research facilities or public aquaria, others are allowed to be used in aquaculture with appropriate containment measures in place, or stocked to enclosed waters for angling purpose. A number of the listed species can be kept under general licence as ornamental animals providing they are kept in suitable facilities. Such facilities may be heated aquaria or enclosed garden ponds, according to the stated licence conditions. Licences can be issued to an individual, or to a business, and typically such licences state which species may be kept, at which place they may be kept and under what conditions. Such licences have been used routinely to allow the keeping of certain listed species in farms and fishery waters. Alternately Defra may issue a general licence, which allows any person or business to keep named species for the purpose stated in the licence, in line with the conditions imposed by that licence. General licences have been issued allowing any member of the public to keep particular listed species as ornamental animals in suitably secure facilities.
9. The introduction of Council Regulation (EC) No 708/2007 concerning the use of alien and locally absent species in aquaculture and the Alien and Locally Absent Species in Aquaculture (England and Wales) Regulations 2011 (SI 2011, No.2292) resulted in the dis-application of ILFA with regard to the keeping of fish for aquaculture. This Regulation introduced EC wide rules which require Member States to ensure, by means of a risk assessment process, that aquaculture of non-native species poses no risk to the biodiversity of natural waters or other aquatic environments within the EU. Where there is insufficient

data available to carry out a full risk assessment the regulation requires MS to adopt the precautionary approach and avoid establishing aquaculture of alien species in open environments. This Regulation establishes for the aquaculture industry the degree of control of the risks posed by non-native species, which it is hoped to achieve for all other industry sectors through the introduction of a new ILFA order.

10. Defra also proposes new controls relating to fish movements which will, once in place, replace ILFA as a means of regulating the use of non-native species in open waters. This proposal will result in a single administrative system for the introduction of any fish to such waters, and reduce burdens on industry. Therefore, depending on the timing and implementation of these other measures, the Import of Live Fish Act 1980 would then only regulate non-native species in those trades which do not involve the deliberate release of stock to the wild, but which have been responsible for the inadvertent release of non-native species that have become established in UK waters (i.e. the ornamental sector). Without appropriate controls on all such trades the EU aquaculture Regulation and proposed domestic fish movement legislation are unlikely to result in any major reduction in the long term risk of non-native fish becoming established in UK freshwaters.
11. The current list of fish controlled under ILFA consists of approximately 100 species. These were the only temperate species likely to appear in trade to GB at the time the Order was implemented, because strict national fish health legislation required such fish to be sourced from isolated fully health tested sources. The harmonisation of fish health rules under European Commission Directive 2006/88/EC, removed the requirement for fish to originate from such health tested sources, other than where the fish are known to be susceptible to diseases controlled under that legislation. As a consequence industries in England now potentially have free access to almost all of the world's 12000+ freshwater fish. While many of these species originate from tropical or other climatic zones which would render them less likely to survive or become established in UK waters, there are potentially several thousand species which could pose a significant risk to our native species and environment.
12. Therefore, it is evident that existing controls under ILFA no longer afford the degree of protection for native species and habitats that the UK government is required to implement under the international statutes discussed earlier. Government is keen to update the Orders made under ILFA in order to re-establish an appropriate level of control on the risk of introduction of non-native freshwater fish species.

The need for amended controls

13. It has been illustrated above that the existing arrangements for the control of the keeping and release of non-native fish species under ILFA do not provide protection against the majority of species now available to the various industries. Therefore, we cannot satisfy our obligations in our National GB framework or meet our international obligations as regards the control of potentially invasive species. There is sufficient evidence from historic and recent practice to illustrate that a failure to take appropriate safeguard measures in respect of keeping will result in non-native species being released to and becoming established in UK waters.
14. There are clear examples of historically introduced ornamental species, such as pumpkinseed and bitterling being introduced into natural waters in England and establishing populations. The introduction of the current ILFA Order has resulted in these species being brought under a range of controls that has

restricted the possibility of their further spread. Over the last 20 years there has been an increasing trend for fishery owners to stock their waters with coldwater ornamental species, which have been able to establish self sustaining populations (e.g. goldfish, orfe, koi carp). The introduction of goldfish poses a direct threat to populations of our native crucian carp, with which it readily hybridises. Many of these deliberate introductions have been carried out illegally, most notably with respect to the introduction of sturgeon species, a relative newcomer to the ornamental trade.

15. The Environment Agency has had to take action under ILFA against persons illegally keeping sturgeon in fishery waters. There is also substantial evidence that some hobbyists dispose of unwanted fish into local ponds and streams. While the numbers discarded in such cases probably are too low to result in the regular establishment of populations, it is clear that a precautionary approach is warranted with regard to the introduction of new coldwater species to the ornamental trade, as these pose the greatest risk of becoming established once released. Some introduced aquatic species have become invasive (e.g. topmouth gudgeon, sunbleak, the “killer shrimp” (*Dikerogammarus vilosus*), American signal crayfish); the topmouth gudgeon was introduced to a farm with the intent to supply the ornamental trade. The species was never popular in that trade, but its inadvertent transfer from the original farm site with other farmed fish has resulted in the species invading a number of waters in England. This species has a direct negative impact on native fish populations and it is subject to a systematic eradication programme by the Environment Agency, details of which inform much of the protected cost of impact of an invasive fish species in this impact assessment.

16. These examples serve to illustrate that the risk posed by further uncontrolled fish introductions is quite high. Established, non-native species have been shown to compete with native species for food, territory and breeding sites, carry novel parasites and otherwise impact on aquatic ecosystems. There is scientific evidence that where certain non-native fish species have been able to establish themselves they have caused serious damage to aquatic ecosystems:

<http://www.environment-agency.gov.uk/homeandleisure/recreation/fishing/108294.aspx>

<http://www.environment-agency.gov.uk/homeandleisure/recreation/fishing/99055.aspx>

17. Many of the species now readily available to industry will primarily be of interest to the ornamental and aquatic trade, and hobbyists who buy and keep these species. However, non-native fish, particularly larger species, are also of increasing interest to the food trade, and to anglers seeking to fish for more exotic species. Previous experience has indicated that where such species are readily available from ornamental outlets, they inevitably end up released into inland fishery waters. While there may be fewer motives to stock the smaller species for angling purposes, there is clear evidence that small ‘ornamental’ species can also prove highly invasive and seriously impact on native species and ecosystems should they escape or be released. Thus, controls need to be applied across all the sectors that have an interest in the use of non-native fish species. There is also emerging evidence that invasive species, and the eradication methods required upon discovery, can have a significant impact on business operation and, therefore, affect profitability:

<http://www.bbc.co.uk/news/uk-england-devon-17222412>

<http://www.thisisdevon.co.uk/Lake-owners-devastated-alien-fish-removal-op/story-15432301-detail/story.html>

<http://www.environment-agency.gov.uk/news/143000.aspx?month=9&year=2012&coverage=South+Wales>

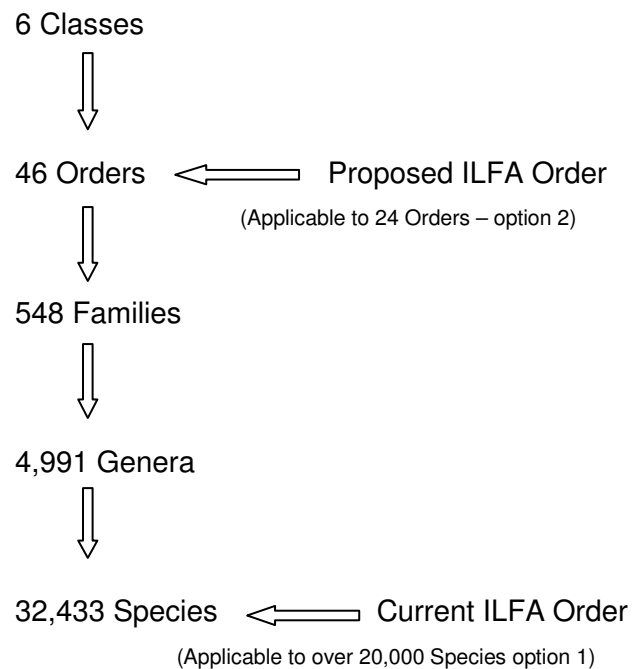
Scale of the affected industries

18. The ornamental and aquatic fish trade is represented by the Ornamental and Aquatic Trade Association.
19. The exact number of ornamental fish hobbyists in the UK is not known, but it is estimated that over half a million aquaria are sold each year with some 3 million households owning an aquarium or a pond, and about 140 million pet fish kept, with an average number of 22 fish per household (Source: OATA).
20. There are believed to be around 3 million anglers in the UK (Source: Environment Agency). The number of (freshwater) rod licences sold in England and Wales has increased by about 10% over the last decade and currently stands at around 1.4 million. The majority of licences (typically 750,000 – 850,000) are sold to coarse fish anglers, and this group commonly fish at stillwater sites where non-native species are sometimes present. Average annual expenditure by coarse anglers (on fishing permits, tackle, travel, accommodation and other costs directly associated with their fishing outings) is estimated at £859 per angler, although the distribution is vastly uneven with the median value being £314 per angler. The average expenditure per trip is estimated at £17 (median £10). Should dedicated angling sites be affected by outbreaks of an invasive species or be closed down as a result of an eradication exercise, this could have adverse impacts on local businesses and economies.

Policy Aim

21. The aim of the new measure is to enable the regulatory authorities (Defra, the Environment Agency and Cefas) to licence the keeping and release of live non-native fish in England in order to safeguard business against fishing stock depletion/degradation and site closure while clean-up occurs; and indirect costs to the local economy and businesses as users would stay away from affected areas; also to preserve native species and ecosystems, and to minimise the risk of potential damage due to the release of such species.
22. We are seeking to maintain a precautionary yet flexible approach. The ornamental trade has been made aware of this position, and the major businesses have co-operated with our request to not open trade in new temperate species pending any decision as regards to new legislation. However, there has been a small increase in the number of temperate species being traded.
23. The difficulty we have in amending existing controls, in light of the changes outlined above, is that we are dealing with thousands of individual species of fish. Administratively for Government, it would be impractical to introduce measures that require species to be listed, risk assessed and managed on an individual basis. Therefore, we have developed a proposal to create an amended list of 24 taxonomic Orders of fish (from a total of 46 Orders) to provide comprehensive coverage of all freshwater temperate fish species.

24. To avoid listing thousands of individual species, the listing of species collectively by taxonomic Order, which for freshwater fish involves only 24 of the total 46 taxonomic Orders of fish. Accompanied by a list of exempted native species, the use of a 'Taxonomic Orders' list will only involve a change to the manner with which species are listed in the annexes to the legislation and will not involve any change in provisions for species already subject to existing ILFA legislation.
25. The principle in operation is that taxonomic classification allows organisms to be grouped at different levels according to the degree of biological relatedness that it is necessary to differentiate. Thus there are 32,433 species of fish listed on the FISHBASE database, which are grouped into 4991 different genera. These in turn are grouped into 548 families. These families are allocated to 46 biological Orders, all of which can be placed in just 6 Classes. At the next taxonomic level (Phylum) these 6 classes of fish are grouped with other vertebrate animals such as birds, reptiles and mammals. The most appropriate level at which we can both separate freshwater fish from marine species, and keep the number of listed categories low is the biological Order level. Therefore, it is proposed to create an ILFA Order which lists all freshwater fish belonging to 24 of the 46 named biological Orders of fish. This will subject more than 20,000 species to control and also ensure that newly discovered species will be subject to control without the need to amend the Order, as would be the case if we were to list individual species or genera:



26. The comprehensive listing of all freshwater non-native species provides a fully precautionary approach to their management. Additionally, it allows existing industries to thrive under this regime, it is necessary to operate a very flexible risk assessment and licensing system, in particular, to protect trade in low risk species for the ornamental trade.

Options Considered

27. In assessing risks associated with non-native species, it should be recognised that this goes beyond the ability of an individual species to become highly invasive. The invasiveness of a species depends on its ability to reproduce,

spread and establish. However, species that establish poorly, or that do not breed successfully, can still have damaging and unwelcome impacts through competition, predation and the introduction of novel diseases and parasites. Such species are not 'invasive' *per se* but as non-native species their potential adverse impacts on the environment are undesirable. Full risk analysis requires that other factors such as the numbers in trade, movement pathways and the extent of different stakeholder interests are taken into account, as well as the ecological factors. Any prior knowledge or management experience gained with a species outside its native range can be of particular value in assessing likely impact.

28. In line with our international obligations for biodiversity, it is important that we adhere to the precautionary approach when assessing risk. The precautionary principle describes a way of approaching policy and decision making in the absence of full scientific certainty. It is discussed in both the Rio Declaration and Convention on Biological Diversity (CBD).

- I. Rio Declaration Principle 15

"In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

- II. CBD preamble:

"Where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimise such a threat."

29. While a number of options were considered, the favoured option for effectively controlling the keeping and release of non-native species was considered to be a new ILFA Order based on listing 24 taxonomic Orders of fish. Details of the various options are outlined below:

Baseline: 'Do nothing' Take no new actions to protect against the introduction and spread of non-native fish

30. As mentioned above the key measure in controlling the spread of non-native fish has been the Prohibition of Keeping or Release of Live Fish (Specified Species) Order 1998 (as last amended in 2003), made under ILFA. The current list of fish controlled under ILFA consists of approximately 100 species.
31. Council Directive 2006/88/EC has been enacted in England and Wales law through the Aquatic Animal Health (England and Wales) Regulations 2009 which have made most temperate non-native fish species easily available to trade. This option, where Government effectively takes no further action to control imports or subsequent keeping of novel non-native species beyond those 100 listed, would be popular with some hobbyists and parts of industry. A greater variety of species would be available to keep and sell with no control or responsibility requirements once they enter England, other than in respect of release to the wild.
32. The value of this increased diversity in fish species for the ornamental trade cannot currently be calculated, although this should be viewed against a reported decreasing trend in levels of trade over recent years. It could be speculated that any new species would replace trade in existing species, rather than add to it. Cefas have reported enquiries from those wishing to experiment with importing new species potentially freed up by the changes to wider EU

Directives and Decisions. Some anglers may also perceive advantages in having novel species available to introduce to fishery sites (experience indicates that introductions are likely to occur, regardless of legal controls, if fish are readily available for sale). However, following our public consultation in 2010, the majority of respondents stated they are in favour of further regulation of invasive non-native species.

33. This option does not concur with the Government's current policy position with regard to non-native species. Once established, invasive non-native species are very costly and difficult to eradicate or control. Indeed, removal may well be impractical. Failure to act in the short term could mean that action to eradicate at a later date could be expensive and costly to business and ultimately, ineffective. A recent report estimated the current cost of invasive non-native species to the British economy at approximately £1.7bn per year.
34. For example, topmouth gudgeon is an extremely invasive non-native fish species that was been introduced to UK waters accidentally but subsequently was available in the ornamental trade for a limited period. It poses considerable health risks to native species, including disease transmission and disruption of natural reproduction. As such, it can have adverse impacts on aquatic ecosystem functions through declining native fish reproduction and consequent changes in food-web structure. With the exception of a single small eradication incidence of fathead minnow; topmouth gudgeon is currently the only non-native fish species that the Environment Agency is expending resources to eradicate. Case studies² of topmouth gudgeon eradications indicate that on average it costs £2 per m² to eradicate the species. Example costs are £61k, £50.8k and £18.1k at fisheries in Cumbria, the West Midlands and North Yorkshire, with the most expensive operation (£194k) having been recently undertaken in Devon.
35. In terms of potential wider economic consequences of species invasions to local economies, the only known estimate relevant to the UK is in terms of ecosystem services. A recently published Natural England study³ indicates that if investment (i.e. amenity income) to a drainage basin is restricted (e.g. due to a decrease in an amenity's attractiveness to visitors), then for every £1 not spent in that catchment (e.g. in eradicating the offending species), society stands to lose £5.20. And where an investment is made to restore the catchment (e.g. eradicate the offending species), then for each £1 spent, society benefits by £2.96. Further economic consequences related to the effects on the angling sector could be estimated in terms of the figures given in paragraph 20.
36. The 'do nothing' option poses a high risk of damage to native species and ecosystems. When taking into account Government's policy targets and obligations under national and international frameworks and given the high cost and likely effectiveness of controlling or eradicating species after their introduction versus the cost of prevention, this is not an effective or robust option.

Option 1: Introduce amendments to the existing 1998 and 2003 ILFA Orders on an ad hoc reactive basis following a risk assessment of all individual non-native fish currently not listed and any newly traded in England.

² Britton et al. 2008; *Aquatic Conserv: Mar. Freshwat. Ecosyst.* 18: 867–876.

³ Harlow et al. 2012. Valuing land-use and management changes in the Keighley and Watersheddles catchment. Natural England Res. Report, No. 044.

37. This option involves the creating of a new or amending ILFA Order(s) following the formal risk assessment of species already in trade and any new species of freshwater fish that enter trade into England. Under this option species would be listed only where they are shown by risk assessment to pose a significant risk to native species or environments, which warranted the placement of specific restrictions on their keeping and release in England.
38. This option is broadly the same as the current ILFA controls, whereby listed ILFA species would be allocated to a number of categories, for which progressively more restrictive controls apply, dependent on the perceived level of risk (or uncertainty).
39. This approach will require detailed and costly individual risk assessments. The 5000+ species currently available to the ornamental trade would have to be subject to what is termed a rapid risk assessment, with any seen to pose significant risk having to be subject to a further full risk assessment. Full risk assessments would be required for all new species that enter trade. This option ultimately leaves Government with no control over the number of risk assessments that may be required for new species, leading to a reactive approach which would be highly dependent on available resources at any given time. This could lead to serious and lengthy delays for species being cleared for use in the ornamental trade. All costs for risk assessment would fall to the government.
40. Another disadvantage of this approach is that, in the absence of evidence to demonstrate that a species poses a risk to native species or habitats, then that species would not be listed. Should an unlisted species then prove to be problematic, an amending order would be required each time to make it subject to appropriate controls. This could potentially lead to numerous legislative amendments, depending on the number of species being traded.
41. This option also fails to address the risks posed by species *before* they appear in trade. As a consequence, there is considerable risk that new species would be imported, be released and become established in the wild before risk assessments could be completed.
42. In order to prevent such problems, it would be necessary to carry out full risk assessments for around 5000 temperate species; a similar number of rapid risk assessments for tropical and sub-tropical species would also be required, prior to the introduction of the new Order, which would be prohibitive both in cost terms and as regards the resources available to carry out this work.
43. Based on figures available for established plant and animal risk analysis procedures, the cost for a full fish risk assessment is estimated at £0.009m (Source: NNRAP Secretariat). This figure includes all National Insurance, superannuation and overheads but is exclusive of VAT.
44. Any type of voluntary agreement in this instance is judged to be insufficient given new fish have entered the country despite an existing voluntary agreement in place with the major trade suppliers. It is also worth noting that the recent eradication exercise at the Clawford Fishery was originally brought to the attention of the Environment Agency as this business was actively advertising the presence of a restricted non-native species as an angling opportunity. Although, this species was not found (other restricted non-native species were); this can be taken as evidence that if a business has no concern advertising species currently subject to restrictions, they would not be particularly concerned about advertising a potentially invasive non-native species not currently subject to restrictions.

45. On balance, this approach would not be cost-effective to pursue. It is a reactive system which relies on the retrospective completion of detailed risk assessments before species are allocated to an appropriate group. Any controls applied, would fail to provide adequate protection and carry the substantial risk that species would become established before any measures were in place.
46. As well as being potentially costly to administer, such an approach would also be inconsistent with the precautionary principle as required under international framework agreements. This approach is considered ineffective as the costs and risks would be disproportionate and fundamentally, it would be unable to provide a sufficient level of protection. Following the consultation exercise, the majority of respondents were against this option.

Option 2: Replace the existing 1998 and 2003 ILFA Orders to include a schedule of fish at the taxonomic level (rather than at an individual species level). Licences issued will facilitate free trade in tropical and sub-tropical species currently considered to pose a low risk. Licences for new species capable of surviving in UK waters will be issued only following an assessment of the risk they pose to native species and habitats.

47. This option takes a full precautionary approach and proposes the immediate regulation of specified non-native freshwater fish. The amended ILFA Order will prohibit the keeping and release without a licence of specified non-native fish species belonging to 24 different taxonomic Orders. This option is consistent with the GB Non-native Species Strategy and follows the principles used in Council Regulation (EC) No. 708/2007, which prohibits the introduction of alien or locally absent species into EU Member States for their use in aquaculture, until they have been subject to an assessment of their risk of invasion and potential harm to the environment of the receiving Member State. Therefore, it creates a more consistent approach to the keeping and release requirements of non-native fish species. Costs to Government would be reduced, and this also provides a more flexible mechanism by removing the requirement to update legislation at regular intervals, which is in line with current Government legislative policy.
48. Fish will be listed at the taxonomic Order level as this provides the most convenient method of ensuring that all relevant species are captured by the legislation, without having to list them individually, which is unrealistic. It is proposed to list 24 out of a possible 46 taxonomic orders of fish; as opposed to a potential 20,000+ individual species as would be the case under option 1. Other legislative Orders made under ILFA have adopted a similar approach, for example the Order relating to non-native crayfish regulates all species by reference to just three crayfish families.
49. By subjecting all temperate non-native fish species to regulation, there is a requirement for the government to immediately address the requirements of established trade and minimise the impact of this regulation wherever possible. The ornamental fish industry worldwide is believed to trade in around 5,500 species at present and significant proportions are tropical species readily available to UK companies. It is recognised that there is an extensive history of the keeping of tropical fish in the UK ornamental trade without such animals become established or invasive in natural waters (though they are often discarded into such waters by hobbyists). Therefore, it is appropriate to minimise the impact of the proposed Order on this sector of industry.

50. Defra has instigated a review of the published Ornamental Fish International's list of traded ornamental species to determine which should remain available for unrestricted trade within England. This review considers any history of benign trade; the geographic origin of the traded species and the native range of related species. It is proposed that the reviewed list of freshwater tropical species would immediately be placed on a general licence permitting their keeping as ornamental animals under appropriate conditions. Any new species that the industry wished to introduce into trade would be immediately subject to the same risk assessment, and if considered low risk would be added to the list of species held under general licence. This will minimise any delay in bringing low risk species into trade.
51. Where the initial assessment suggests that the species, by origin, relation or proposed use, may pose a risk of survival in natural waters in GB then the potential importer would be required to instigate and fund a more thorough risk assessment for that species should they wish to pursue trade in that species. Following that risk assessment, the species may be added to the general licence, may be subject to individual licence or may be considered not suitable for licensing into the ornamental trade. This process transfers the major costs of risk assessment from government to industry, such that those costs can be directly assessed against the anticipated economic benefits to the industry of their introduction to trade. This will happen if the economic benefits will exceed the costs of the full risk assessment. However, it will be for industry to decide the most appropriate way forward based on the principles of market supply and demand.
52. At present, there is only a small industry holding non-native species live for direct sale as food. It is considered that regulation of any proposed expansion in this trade would closely follow that proposed for the ornamental fish trade, with low risk species being subject to general licence and high risk species being prohibited from such trade. Again, the industry would face the cost of risk assessment where they wished to establish trade in a species from which there was inadequate existing information about the potential risks posed by the escape or release of such fish from this sector.
53. In addition, it is proposed that a general licence will be issued to allow the keeping of existing temperate species for ornamental use as per current arrangements; and that the specific licensing provisions under the current ILFA Order would remain unchanged. Licensing policy for any new temperate species proposed for use in any trade would be determined following a full risk assessment of its potential damage to native species and habitats. Industry would be responsible for funding risk assessments for novel species they wish to introduce into England.
54. Having considered the various options outlined above, together with Cefas, the Environment Agency (EA) and Defra lawyers, revoking the existing legislative Order and replacing it with an amended one as outlined above represents the most effective option. This would enable us to alter the scope of existing controls on the keeping and release of potentially invasive non-native species. It would also provide the ornamental trade with scope to expand into new species with as little regulatory interference as possible, whilst ensuring that UK biodiversity is given a proportionate and manageable level of protection. As with current ILFA measures, the species covered by the amended legislative Order would be subject to a licensing policy that reflects their suitability for use across a range of industries, and which places appropriate conditions on the facilities in which they are kept. Following the consultation, this is the preferred option from the majority of respondents. The proposed measure will apply to

England and Wales, but will be implemented through separate Statutory Instruments. Scotland implemented their own legislation under The Wildlife and Countryside Act 1981 (Keeping and Release and Notification Requirements)(Scotland) Amendment Order 2012.

Costs and Benefits

Costs

Baseline: 'Do nothing' (Take no new actions to protect against the introduction and spread of non-native fish)

55. There would be no direct costs from a do nothing approach. However, at present, there would be an ongoing risk of possible introduction of new non-native species. These would be potentially damaging to native species and ecosystems and a risk to existing fishing opportunities and biodiversity. There would be costs involved with any subsequent control and eradication programmes resulting from having insufficient controls on the keeping and release of new non-native species. A recent report has estimated the current cost of invasive non-native species to the British economy at approximately £1.7 billion per year (see paragraphs 33 and 34 for further detail).

Option 1: Introduce amendments to existing ILFA Orders on an ad hoc basis following a full risk assessment of any non-native species that have newly entered trade into England

56. There are more than 5,000 species currently utilised by the ornamental trade. These would need to be subject to rapid risk assessment, with an estimated 50 (temperate species) having to be further subject to a full risk assessment. Cefas has advised that approximately 50 species have entered the ornamental trade since the change in fish health legislation, which would need to be assessed for the initial Order. The estimated costs are £0.0018m for a rapid risk assessment for 5,000 species and £0.009m for a full risk assessment for 50 species, giving a total initial cost of £9.33m⁴.
57. Should new species be deemed appropriate for ILFA listing following risk assessment, their subsequent keeping and/or release would be subject to site-specific licensing requirements. Therefore, potential licensees will have to complete an application form, and may have to have their premises inspected, as part of the process. It is difficult to predict the possible number of such applications; however, based on experience, Cefas estimate that this is unlikely to exceed 50 in any one year.
58. Based on estimates by Cefas, the following table summarises key costs for option 1 (and also for option 2). Assumptions for option 1 to derive cost at the licensing stage are
- a. 50 new species added to ILFA, all with immediate trade implications
 - b. Species with significant trade will be managed under general rather than individual licences. Former add no significant cost to government.
 - c. Industry will not pursue trade in coldwater species for ornamental use, where this requires individual licensing. (Safe assumption given

⁴ All costs in document are rounded unless specified otherwise. Cost based on estimates from Non-native Risk Analysis Panel (NNRAP) Secretariat and Cefas.

history with previous enforcement incidents involving invasive non-native species)

- d. Costs are additional to those for species subject to the existing ILFA Order
- e. Fish Health Inspectorate (FHI) estimates a need for 50 new licences per annum, and a further 100 responses to enquiries about the keeping of listed species.

Table 1: Initial cost and cost per annum for option 1 and option 2

	Description of Costs	Option 1	Option 2
Risk Assessments	Numbers estimated under each option	50 full RA per annum, 5000 rapid RA for the first year	1 full RA, 3 rapid RA per annum
Licences	Numbers estimated under each option	50	75
Enquires	Numbers estimated under each option	100	150
Total Cost to Government			
Initial cost	Cost to Government for risk assessments	£9.33m	None
Cost per annum	Cost to Government for risk assessments	£0.09m	£0.005m
Advisory costs	0.5 hours each at Cefas for staff	£0.002m	£0.003m
Licensing costs	4 hours for site inspection and 1 hour admin cost	£ 0.013m	£0.02m
Total Cost to Business			
Initial cost /License fee		None	None
Cost per annum	Cost to business for risk assessments	None	£0.009m
Admin Costs	@£45/ hour and 0.25 hours per application	£0.002m	£0.003m
Cost during inspection	@£20/ hour and 2 hours for staff to accompany enforcement officer for inspection	£0.001m	£0.0015m

Note: (1) Unit cost for licences for option 2 is low due to economies of scale as the total number of licences is higher than option 1 (2) Cost based on estimates from Non-native Risk Analysis Panel (NNRAP) Secretariat, Cefas and Environment Agency (EA). (3) Labour costs include NI, employer pension contributions and overheads. Estimated labour costs from CEFAS and EA are used instead of the ONS Annual Survey of Hours and Earnings (ASHE) as the agencies have experience working in this area and a good idea about costs to this fisheries sub-sector (4) Site inspection costs at lower hourly rate than administration costs due to wage difference between company owner/office manager and manual site staff.

59. Should the current legislation be amended to take into account option 1, Government and industry would have to potentially deal with thousands of individual species that have been freed-up by changes to wider EU legislation. We have been informed by industry that it is likely there will be considerable interest in expanding trade into new species of non-native species as a result. Therefore, there is also the risk that the number of risk assessments required per annum has been under-estimated, which would have a significant impact on cost projections.
60. Under this option, the full cost of risk assessment both for species in trade and for newly traded species falls on government. There is also a cost associated with the detection and reporting of the presence of new species in trade, though much of this cost will be reduced by having appropriate agencies report any such occurrences that they become aware of in their routine operations. Dependent on the rate at which species enter trade there will be costs associated with the need to seek further amendments of the ILFA Order. While it is impossible to predict when a new amending Order should be required, it is estimated by Cefas that there have been approximately 50 new ornamental species of concern introduced to GB since 2008, despite the main importers operating a voluntary ban on such imports pending the proposed amendment of the ILFA Order.
61. It is also possible that, since this would operate on a reactive basis, this approach could result in a risk that new species would be imported and could become established in the wild before risk assessments and new legislative Orders made to control their keeping and release could be completed. The costs associated with the control and eradication of a non-native species that arrives prior to controls being implemented are difficult to estimate, but are likely to exceed the costs of the risk assessment work required to list species under this Option.
62. The total direct cost of Option 1 is estimated at £9.33m to create the initial amending Order. There are likely to be ongoing costs in risk assessing newly traded species, which we estimate to be around ten per year, at a cost of £0.09m. There will also be an additional cost of £0.01m (see table 1) per annum for licensing and advice services. There is likely to be significant cost in seeking further amendments to the Order to provide keeping controls in respect of those new species for which the Risk assessment process has demonstrated significant risk.

Option 2: Revoke and replace the 1998 ILFA Order and its 2003 amendment with a 2014 Order using a list at the taxonomic Order level that prohibits the keeping and release of specified non-native freshwater fish species except under licence until they have been assessed on their risk of invasion and potential to harm the environment.

63. The new ILFA Order would initially impose very little cost on the industries affected. The species that comprise much of the current ornamental fish trade will be subject to general licences which will enable unimpeded trade. There will be some reduction in the opportunity to introduce novel temperate fish species into the ornamental trade, but it is believed that this will not affect the overall size or profitability of the industry.
64. This option will impose a cost on other industries, where individual licences are required, for example to keep live fish in the food sector or for educational and research purposes in institutions such as zoos, public aquariums and

universities. Costs for this option are presented in table 1 above. These are estimated by Cefas under the following assumptions

- a. Species with significant trade will be managed under general rather than individual licences. Former add no significant cost to government.
 - b. Industry will not pursue trade in coldwater species for ornamental use, where this requires individual licensing. (Safe assumption given history with previous enforcement incidents involving invasive non-native species)
 - c. Costs are additional to those for species subject to the existing ILFA Order
 - d. Modest growth in live fish keeping for the table market, requiring individual licensing.
 - e. Research and public aquarium demand for species remains stable
 - f. FHI estimates 75 licences per annum and a further 150 responses to enquiries
65. For option 2, there is no requirement for initial assessments similar to option 1. This can be done on an as needs basis. Based on scientific advice from Cefas only a limited number of species will require risk assessments and assumed to be maximum of three per annum. Assuming three rapid assessments at an average cost of £0.005m for Government and 1 full risk assessment at a cost of £0.009m for industry, this represents an annual combined cost of £0.014m.
66. Should a new temperate species be approved following risk assessment, their subsequent keeping and/or release will be subject to site-specific licensing requirements (unless the species is covered by the general licence). Potential licensees will have to complete an application form, and may have to have their premises inspected as part of the process. The costs of these are presented in table 1 above.

Benefits and Drawbacks

67. The baseline option could provide some hobbyists and parts of the trade with a greater variety of species to keep and sell. It is not currently possible to put a value on this increased diversity in fish species for the ornamental trade, although this should be viewed against a reported decreasing trend in levels of trade over recent years. It is likely that any new species may replace trade in existing species, rather than add to it.
68. Benefits for the options are non monetised. The proposed ILFA amendment will enable the government to control ornamental fish species and will reduce costs to manage the environment. Recent cost examples to control alien species are discussed in previous sections. Benefits for the options are non monetised and so net present values are not presented here.
69. Option 1 provides minimal restriction on the development of new trade, and provides protection for native species through the imposition of controls on non-native species that have been shown by risk assessment to pose a significant risk to native species and environments.
70. The major drawbacks of option 1 are that it is reactive system which will impose regulatory controls only after trade in a problematic species has already started, and it would not control species for which there was insufficient evidence that they could cause environmental problems in GB. It is also highly

dependent on the availability of limited resources at any given time. This Option is the most expensive option for government.

71. Option 2 provides the most comprehensive, practical regulation of the risks posed by non-native freshwater fish. It meets government obligations to adopt a precautionary approach to the management of non-native species, without creating obstacles to existing industry. It should, for example, allow the traditional trade in both tropical fish, and long established coldwater species, to continue without any burden being placed on industry, but allow for very rapid control of any problems arising from this industry by simple administrative action, because all the species traded will be subject to the regulatory options available under the amended ILFA order.
72. A significant advantage of the proposed option is that it provides controls on all species that might pose a risk, yet provides quick and affordable mechanisms for authorising exceptions of those species that will clearly present no risk. Thus, new tropical species could be added to ornamental trade lists by a very simple and quick assessment process, entailing minimal cost. Such a process has operated for a number of years under previous national fish health controls and the modest costs in administering this are not expected to increase substantially as a result of the new measures. This option will allow businesses immediate access to new, benign species without the need to create a new ILFA order and thereby, improve access to trade.
73. This option minimises the financial burden on government, and transfers the costs of assessing new business opportunities to the businesses that wish to exploit them. Businesses will be able to seek the development of new opportunities, both in the ornamental and food sectors, with a risk assessment being used to determine whether such trade should be allowed, and if so under what conditions. Licensing under the ILFA Order provides the flexibility to facilitate reasonable trade while ensuring an appropriate degree of environmental protection.

Equivalent Annual Net Cost to Business (EANCB)

74. Taking the figures from table 1 and the associated calculations, EANCB figures are calculated using the methodology proposed in the guidance for OITO⁵ and uses the EANCB calculator to derive the figure. Benefit is non-monetised and so it is not possible to calculate net cost to business. However, assuming benefit is '0', EANCB figures at 2009 prices and 2010 PV base year for option 1 is £0.003m and for option 2 is £0.01m. The figures i.e. EANCB are expected to be negative as there are clear but non monetised benefits to businesses, more for option 2 as more applications for licences are expected for option 2 than in option 1. The non-monetised benefits are decreased risk from, and increased safeguards against invasive species compared to the baseline of do nothing.

Competition Assessment

75. There are around 6,700 retail outlets that have some involvement with the ornamental fish trade⁶. Of these, around 950 are wholly dedicated outlets, the remaining being aquatic garden centres and pet shops dealing in a number of domestic species.

⁵Better Regulation Framework Manual; cost has been adjusted to 2009 prices using the latest HMT GDP deflator available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/190847/gdp_deflators.xlsx; the guidance and the deflator last viewed online 17 June 2013.

76. In 2004, employment in the sector ranged from 6,160 to 9,940 (these are jobs involved in all stages of industry from importers, producers and retailers) and total retail turnover ranged from £273m to £474m. The total value of employment ranged from £83m to £248m. The UK is reported to be the largest importer of ornamental species in the EU with a value of around £16m (based on 2004 figures) (Source: OATA).
77. Another key source of information has been provided by OATA. In 2008, the value of imports was £15.554m for freshwater ornamentals (Source: HMRC); £2.705m for saltwater ornamentals (Source: HMRC) and £2.5m for invertebrates (e.g. corals) (Source: OATA estimate). OATA estimated that the UK production of ornamental fish, mainly coldwater ornamentals, was in the region of £2m in 2008.
78. The total value of live fish entering trade has been estimated to be approximately £23m with a total retail value ranging from £115m to £460m per annum.
79. The number of pet shops selling live animals in the country is estimated in the region of 4,000; of these, around 2,000 sell fish. Total employment in pet shops selling live animals has been estimated in the region of 8,000. Employment generated in pet shops selling aquatic dry goods but not fish (e.g. garden centres, hardware stores) has been estimated in the region of 2,000, whilst employment in importers, wholesalers, dry goods manufacturers and distributors is in the region of 2,000. Hence, total employment in the ornamental sector is in the region of 12,000.
80. The fact that the proposals will have minimal impact on current arrangements will mean that any changes as a result of the proposal being implemented are not likely to have significant impact in the supply or trade of non-native ornamental fish species. The proposals will not impose additional licensing costs (Cefas do not charge for issuing licences) or administrative burden for the trade. There will be small increased costs to industry as they will need to fund a full risk assessment estimated at one per year. However, the costs are considered to be appropriate and proportionate in relation to the value of the industry and are equivalent to the costs of testing and imports as covered in other industries.
81. Traders and suppliers previously had no access to the species that were freed up by the Council Directive 2006/88/EC and the proposal will restrict the number of species available to traders and suppliers in a similar way. The proposal will provide flexibility in that new non-native species could be made available to businesses in the UK, if they are assessed to have a minimal impact on native species and ecosystems.
82. It is assumed that the proposal will not limit the number or range of suppliers, nor is it expected that the proposal will indirectly limit the number or range of hobbyists. Any increase in the range of species available is unlikely to increase the number of suppliers. Demand for non-native species/ornamentals is assumed to be fairly constant, with any new species made available only likely to lead to a reduction in spending on species currently purchased. The addition of new species is unlikely to increase the average number of pet fish kept (thought to be around 22) or the number of aquaria purchased annually (thought to be around 500,000). New hobbyists are unlikely to take up collecting ornamental species simply because of new varieties being available. As a result, the spending on non-native fishes/ornamentals is unlikely to increase due to a greater variety of species being available.

83. It is unlikely that the addition of new species would lead to specialisation or expansion of the sector. The expectation is that any increase in the availability of species would be handled by existing traders and suppliers, with no likelihood of any increase in numbers.
84. It is not thought that the proposed way forward will limit the ability of suppliers to compete. As the proposal is essentially maintaining the status quo, the ability of traders and suppliers to compete with each other will essentially remain unchanged. There are many thousands of species already available and the proposed measures will not restrict use of new tropical species (assuming these are not subject to other restrictions). Further, as discussed above, the introduction of new species is unlikely to lead to an increase in trade. It is important that any increased availability is balanced against the risks of any new species being released or escaping into the wild and the potential damage to business and ecosystems.
85. Equally, the proposal is unlikely to reduce suppliers' incentives to compete vigorously. Competition between traders and suppliers is considered to be healthy; the proposal is not likely to alter that position, nor is the competition situation likely to improve if there was an increase in the availability of species.

Small Business Assessment

86. The ornamental trade generally consists of small businesses, with only a very few likely to be considered medium sized businesses of over 10 employees. As the proposed way forward essentially maintains current arrangements, the impact will affect small and large businesses equally, with no likely additional impact on small businesses.

Consultation

87. A total of five responses were received during the consultation period, which ran from 19 January 2010 to 13 April 2010.
88. Four of the five responses explicitly supported the preferred option 2 as described in the consultation document. The fifth respondent broadly supported the need for more control relating to non-native species, but did not explicitly state support for any particular option. The majority of respondents recognised the key advantage of the proposed change in requiring temperate non-native species to be risk assessed prior to their use, thereby reducing the risk of potentially invasive new species becoming established. The majority of respondents further recognised that the proposal represented an improvement on the current measures where species have to be specifically listed before any controls can be applied.
89. The proposals for a new ILFA Order to list freshwater fish at the taxonomic order level is not seen as a substantive change to the principles by which the use of such non-native species are regulated. This is a pragmatic and effective means to avoid the individual listing of thousands of fish species for which controls may be applicable, and of having to respond retrospectively to emerging or perceived threats. A significant advantage of the proposed option is that it provides controls on all species that might pose a risk, yet allows affordable mechanisms for authorising exceptions, such as new tropical species.

90. The original respondents were contacted in May 2013 and asked to reconfirm their views on the proposal. OATA, Angling Trust and Environment Agency all confirmed their views remained unchanged. There were no comments received from the other 2 respondents.

Justice Impact

91. It is not expected that this measure will have any increased impact on the Courts. Under the current ILFA 1998 and 2003 Orders, only around 5 cases have been referred for prosecution over a period of fifteen years. Cefas, the enforcement body responsible for ILFA, have advised that Order infringements are usually dealt with under the enforcement regime of the scheme itself. The vast majority of infringements are either accidental occurrences or are not serious infringements, whereby an official warning letter is issued and sanctions are imposed (destruction of fish, suspension of ILFA licence etc.), without the need to refer to the Courts. Cefas have advised these existing penalties are typically robust enough to resolve any infringements they discover. Referrals to the Crown Prosecution Service are extremely rare and are reserved for only the most serious offences or any incidence of a repeat offence.
92. Under the new arrangements, Cefas will deal with any infringements as they do under current circumstances. The amended Order is not imposing an enforcement regime change to the way business is conducted for current species available to trade. The Ornamental sector is static and established, with few newcomers; therefore, Cefas expect the risk of any increase in serious or repeat offences to be negligible. Should industry wish in the future to trade in new non-native species not currently used in trade; these species will be unavailable for trade until they have been cleared for entry by a risk assessment. Therefore, the risk associated with future trade infringements is also negligible and not expected to place extra burdens on the Courts.

Annex 1. List of fish species covered by the current ILFA Orders

<i>COMMON NAME</i>	<i>SCIENTIFIC NAME</i>
Asp	<i>Aspius aspius</i>
Barbel species (excluding tropical barb)	species of the genus <i>Barbus</i> (excluding the native <i>Barbus barbus</i>)
Bass species (including striped bass, white bass and their crosses e.g. hybrid striped bass)	species of the genus <i>Morone</i>
Bighead carp	<i>Aristichthys nobilis</i>
Bitterling	<i>Rhodeus sericeus/Rhodeus amarus</i>
Blacknose dace	<i>Rhinichthys atratulus</i>
Blageon	<i>Leuciscus souffia</i>
Blue sucker	<i>Cycleptus elongatus</i>
Blue bream	<i>Abramis ballerus</i>
Burbot	<i>Lota lota</i>
Catfish	species of the genera <i>Ictalurus</i> , <i>Ameiurus</i> and <i>Silurus</i>
Charr species (including American Brook Trout)	species of the genus <i>Salvelinus</i> (excluding the native <i>Salvelinus alpinus</i>)
Chinese black or snail-eating carp	<i>Mylopharyngodon piceus</i>
Chinese sucker also known as Zebra Hi Fin or banded shark/sucker	<i>Myxocyprinus asiaticus</i>
Common white sucker	<i>Catostomus commersoni</i>
Danubian bleak	<i>Chalcalburnus chalcoides</i>
Danubian salmon and Taimen	species of the genus <i>Hucho</i>
Dragon fish also known as Pale chub or Freshwater minnow	<i>Zacco platypus</i>
Eastern mudminnow	<i>Umbra pygmaea</i>
European mudminnow	<i>Umbra krameri</i>
Fathead minnow (roseys)	<i>Pimephales promelas</i>

Grass carp	<i>Ctenopharyngodon idella</i>
Landlocked salmon	non-anadromous varieties of the species <i>Salmo salar</i>
Largemouthed (black) bass	<i>Micropterus salmoides</i>
Marbled trout	<i>Salmo marmoratus</i>
Nase	<i>Chondrostoma nasus</i>
Northern redbelly dace (common minnow)	<i>Phoxinus/Chrosomus eos</i>
Pacific salmon and trout (excluding rainbow trout but including steelheads)	species of the genus <i>Oncorhynchus</i>
Paddlefish	species of the genera <i>Polyodon</i> and <i>Psephurus</i>
Perch species	species of the genus <i>Perca</i> (excluding the native <i>Perca fluviatilis</i>)
Pikeperch (including zander)	species of the genus <i>Sander</i> (formerly <i>Stizostedion</i>)
Pike species	species of the genus <i>Esox</i> (excluding the native <i>Esox lucius</i>)
Red shiner (Rainbow dace)	<i>Cyprinella/Notropis lutrensis</i>
Rock bass	<i>Ambloplites rupestris</i>
Schneider	<i>Alburnoides bipunctatus</i>
Silver carp	<i>Hypophthalmichthys molitrix</i>
Snakehead, Northern or Chinese	<i>Channa argus</i>
Small-mouth bass	<i>Micropterus dolomieu</i>
Southern redbelly dace (common minnow)	<i>Phoxinus/Chrosomus erythrogaster</i>
Sturgeon or sterlet	species of the genera <i>Acipenser</i> , <i>Huso</i> , <i>Pseudoscaphirhynchus</i> and <i>Scaphirhynchus</i>
Sunbleak, also known as Sundace, Belica or Motherless Minnow	<i>Leucaspis delineatus</i>
Sunfish, (including Pumpkinseed, basses, crappies and bluegills)	Species of the genus <i>Lepomis</i>

Topmouth Gudgeon (Clicker barb)

Pseudorasbora parva

Toxostome or French nase

Chondrostoma toxostoma

Vimba

Vimba vimba

Weather fish

Misgurnus fossilis

Whitefish species

species of the genus *Coregonus*
(excluding the native *Coregonus lavaretus* and *Coregonus albula*)

Annex 3. Freshwater and diadromous fish species native to England and Wales that fall within the listed taxonomic Orders but which, by definition, are not covered by the new Order.

Taxonomic Order	Common name	Species name
Cypriniformes	European barbel	<i>Barbus barbus</i>
	Bleak	<i>Alburnus alburnus</i>
	Common bream	<i>Abramis brama</i>
	Silver bream	<i>Blicca bjoerkna</i>
	Chub	<i>Leuciscus cephalus</i>
	Crucian carp	<i>Carassius carassius</i>
	Dace	<i>Leuciscus leuciscus</i>
	Gudgeon	<i>Gobio gobio</i>
	Spined loach	<i>Cobitis taenia</i>
	Stone loach	<i>Noemacheilus barbatulus</i>
	European minnow	<i>Phoxinus phoxinus</i>
	Roach	<i>Rutilus rutilus</i>
	Rudd	<i>Scardinius erythrophthalmus</i>
	Tench	<i>Tinca tinca</i>
Salmoniformes	Brown Trout / Sea trout	<i>Salmo trutta</i>
	Atlantic salmon	<i>Salmo salar</i>
	Grayling	<i>Thymallus thymallus</i>
	Arctic char	<i>Salvelinus alpinus</i>
	Vendace	<i>Coregonus albula</i>
Perciformes	Powan / Schelly / Gwyniad	<i>Coregonus lavaretus</i>
	Eurasian perch	<i>Perca fluviatilis</i>
Esociformes	Ruffe	<i>Gymnocephalus cernuus</i>
Esociformes	Northern pike	<i>Esox lucius</i>
Gasterosteiformes	Threespine stickleback	<i>Gasterosteus aculeatus</i>
	Ninespine stickleback	<i>Pungitius pungitius</i>
Anguilliformes	European eel	<i>Anguilla anguilla</i>
Petromyzontiformes	Sea lamprey	<i>Petromyzon marinus</i>
	Brook lamprey	<i>Lampetra planeri</i>
	River lamprey	<i>Lampetra fluviatilis</i>
Scorpaeniformes	Bullhead	<i>Cottus gobio</i>
Clupeiformes	Allis shad	<i>Alosa alosa</i>
	Twaite shad	<i>Alosa fallax</i>

Other native fish species occurring in (but not breeding in) fresh waters of England and Wales

Osmeriformes	Smelt	<i>Osmerus eperlanus</i>
Perciformes	Sea bass	<i>Dicentrarchus labrax</i>
	Common goby	<i>Pomatoschistus microps</i>

Annex 4. List of non-native freshwater fish species established in England and Wales or exempted from ILFA control by virtue of their special status

Taxonomic Order	Common name	Species name
Cypriniformes	Common carp ¹	<i>Cyprinus carpio</i>
	Goldfish ²	<i>Carassius auratus</i>
	Ide ³	<i>Leuciscus idus</i>
Salmoniformes	Rainbow trout ⁴	<i>Oncorhynchus mykiss</i>

Notes:

¹ Includes all varieties of the same species (e.g. ghost carp, leather carp, koi carp, ogen koi).

² Includes all varieties of the same species (e.g. brown, golden, lion's head, London shubunkin).

³ Includes all ornamental varieties of the same species (e.g. golden orfe, blue orfe).

⁴ Excludes the anadromous steelhead.

N.B. Common carp, goldfish and golden orfe/ide have been present in the UK and in common usage for a long period – i.e. ordinarily resident.