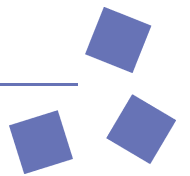


Survey of Attitudes, Knowledge and Behaviour in Relation to Non-native Species

Report of findings



Survey of Attitudes, Knowledge and Behaviour in Relation to Non-native Species

Report of findings

10th July 2018 / Job No. 633 / Version 2

Prepared for:



This project was funded by the Check, Clean, Dry Biosecurity Partnership.

If data or other findings contained in this report are to be extracted and published (i.e. the report is not to be published in its entirety), then these should first be checked with Creative Research. We reserve the right to propose changes to the text in order to ensure that the data published are clear, accurate and not misleading in any way.

Quality Control	Primary author:		SG / MM // /RP	
	Proof read by:	SG / MM SG	Date:	18/06/18 10/07/18
Q/C table totals add up	Checked by:	SG /MM SG	Date:	18/06/18 10/07/18
Q/C labels on figures/charts				
Q/C figures in tables				
Q/C report text – grammar spelling				
Q/C report text – plain English/clarity				

Creative Research



School House, Norbury
Bishops Castle, Shropshire SY9 5EA

Phone: 020 8567 6974
Fax: 020 8567 6979

Email: creative@creativeresearch.co.uk
www.createresearch.co.uk

Contents

1	OVERVIEW	1
1.1	Awareness and Understanding	1
1.2	Behaviour	1
1.3	Support for Controlling INNS	1
2	EXECUTIVE SUMMARY	3
2.1	Background and Research Method	3
2.2	Key Findings: General Public	5
2.3	Key Findings: Exotic Pet Owners	7
2.4	Key Findings: Anglers	8
2.5	Key Findings: Boaters	10
2.6	Key Findings: Revisions to <i>Check, Clean, Dry</i> Communications	12
2.7	Recommendations	14
3	BACKGROUND AND RESEARCH METHOD	16
3.1	Background	16
3.2	Aims and Objectives	17
3.3	Quantitative Research Methods	18
3.4	Qualitative Research Methods	25
3.5	Interpreting the Findings	26
3.6	Other Issues	30
4	ACHIEVED SAMPLES	31
4.1	General Public	31
4.2	Exotic Pet Owners	33
4.3	Anglers	34
4.4	Boaters	36

5	GARDEN AND POND OWNERS	39
5.1	Key Findings	39
5.2	Ownership of Gardens and Ponds	39
5.3	Responsibility for Plants Grown	42
5.4	Sources of Plants and Plant Information	44
5.5	Sources of Information and Advice on Plants to Buy	47
5.6	Disposal of Plants and Animals	49
6	EXOTIC PET OWNERS	52
6.1	Key Findings	52
6.2	Ownership of Exotic Pets	52
6.3	Sources of Exotic Pets, Food and Equipment and Exotic Pet Information	57
6.4	Disposal of Exotic Pets	60
7	ANGLERS AND BOATERS	63
7.1	Key Findings	63
7.2	Frequency of Taking Part in Fishing/Boating in the UK	64
7.3	Location and Number of Sites Visited in the UK	66
7.4	Freshwater vs. Marine	73
7.5	Fishing/Boating Abroad	75
7.6	Biosecurity Behaviour: Anglers	81
7.7	Biosecurity Behaviour: Boaters	88
8	INVASIVE NON-NATIVE SPECIES	97
8.1	Key Findings	97
8.2	Awareness and Understanding of Terms	99
8.3	Awareness of the Meaning of NNS and INNS	102

8.4	Awareness of Specific INNS	107
8.5	Awareness of the Term Biosecurity	119
8.6	Perceived Impact of INNS	121
8.7	Support for Controlling INNS	127
9	COMMUNICATIONS	143
9.1	Key Findings	143
9.2	Publicity about INNS	144
9.3	<i>Be Plant Wise</i>	146
9.4	<i>Check, Clean, Dry</i>	148
9.5	Redevelopment of <i>Check, Clean, Dry</i>	152
	Table 1: Summary of Research Methods	4
	Table 2: Changes in the Definition of Urban and Rural Locations.....	20
	Table 3: Relationship between Margin of Error and Sample Size at the 95% Confidence Level	26
	Table 4: General Public Sample Profile (Government Regions)	32
	Table 5: General Public Sample Profile (Urban/Rural Locations).....	33
	Table 6: Plants and Aquatic Life within Ponds	42
	Table 7: Sources of Plants for Garden and Pond.....	44
	Table 8: Sources of Information and Advice on Plants to Buy	48
	Table 9: Ways of Disposing of Plants from Gardens and Plants and Animals from Ponds.....	50
	Table 10: Ownership of Types of Exotic Pets by Sampling Method	53
	Table 11: Types of Pets Owned	54
	Table 12: Exotic Pet Sources	58
	Table 13: Main Sources of Food and Equipment.....	59
	Table 14: Sources of Information and Advice on Exotic Pets.....	60
	Table 15: Disposal of Exotic Pets	61
	Table 16: Typical Length of Time between Visiting One Site and Another for Fishing	71
	Table 17: Distance Travelled to Fish	73
	Table 18: Ports Used by Anglers and Boaters	79

Table 19: Release of Fish Caught	81
Table 20: Mean Importance Scores (Anglers)	86
Table 21: How Often They Air Dry Their Equipment Such as Nets, Sling and Landing Mat	87
Table 22: Where Boat/Craft is Stored	88
Table 23: Methods Used to Clean Boat/Craft and Boating Equipment.....	92
Table 24: Where Boat/Craft and Boating Equipment Are Cleaned.....	93
Table 25: Mean Importance Scores (Boaters)	94
Table 26: How Often They Air Dry Boat/Craft and Equipment for At Least 48 Hours	96
Table 27: Awareness of Different Terms	100
Table 28: Awareness of Different Terms - Segments of the General Public.....	101
Table 29: Definitions of NNS	105
Table 30: Definitions of INNS	106
Table 31: Definitions of INNS - 2018 Compared to 2008	107
Table 32: Awareness of Different Species and Whether they were Considered INNS Present in Great Britain (General Public)	108
Table 33: Awareness of Different Species and Whether they were Considered INNS Present in Great Britain (Exotic Pet Owners)	114
Table 34: Awareness of Different Species and Whether they were Considered INNS Present in Great Britain (Anglers)	116
Table 35: Top 5 Definitions of Biosecurity	120
Table 36: Degree to Which INNS Were Perceived to be a Threat - General Public vs. Exotic Pet Owners	121
Table 37: Degree to Which INNS Are Perceived to Be a Threat	123
Table 38: Perceived Threat from INNS - Anglers vs. Boaters	124
Table 39: Perceived Threat from INNS - Anglers 2018 vs. 2008.....	127
Table 40: Levels of Support for Controlling INNS - General Public vs. Exotic Pet Owners.....	128
Table 41: Awareness of Terms in Relation to Levels of Support for Managing INNS.....	131
Table 42: Willingness to Help Control the Spread of INNS - Anglers 2018 vs. 2008.....	135
Table 43: Comparison of Response Codes and Scores 2018 vs. 2008 for Willingness to Help Control the Threat of INNS.....	136
Table 44: Mean Behaviour Scores (Boaters)	137
Table 45: Main Message of <i>Be Plant Wise</i>	148
Table 46: Main Messages of the <i>Check, Clean, Dry</i> Campaign	150
Figure 1: General Public Sample Profile (Gender).....	31
Figure 2: General Public Sample Profile (Age)	31

Figure 3: General Public Sample Profile (SEG)	32
Figure 4: General Public Sample Profile (Household Structure)	32
Figure 5: Exotic Pet Owners Sample Profile (Gender)	33
Figure 6: Exotic Pet Owners Sample Profile (Age)	33
Figure 7: Exotic Pet Owners Sample Profile (SEG)	34
Figure 8: Exotic Pet Owners Sample Profile (Household Structure).....	34
Figure 9: Angler Sample Profile (Gender).....	34
Figure 10: Angler Sample Profile (Age)	34
Figure 11: Angler Sample Profile (SEG)	35
Figure 12: Angler Sample Profile (Fishing Locations)	35
Figure 13: Angler Sample Profile (Type of Angler).....	35
Figure 14: Boater Sample Profile (Gender).....	36
Figure 15: Boater Sample Profile (Age)	36
Figure 16: Angler Sample Profile (SEG)	37
Figure 17: Boater Sample Profile (Type of Boating).....	37
Figure 18: Boater Sample Profile (Type of Boater)	38
Figure 19: Boater Sample Profile (Boating Locations)	38
Figure 20: Garden and Pond Ownership	40
Figure 21: Responsibility for Deciding Which Plants Are Grown	43
Figure 22: Extent to Which the General Public Have Considered Bringing Plants/Cuttings Back from Abroad.....	46
Figure 23: Factors Influencing Decision on Whether or Not to Bring Back Plants or Cuttings ...	47
Figure 24: Proportion of Households Owning Exotic Pets.....	53
Figure 25: Where Amphibians and Reptiles Are Kept.....	56
Figure 26: Frequency of Fishing in the UK.....	65
Figure 27: Frequency of Boating in the UK.....	66
Figure 28: Where They Fish	67
Figure 29: Where They Boat	67
Figure 30: Number of Sites Fished at in the UK.....	68
Figure 31: Number of Sites Fished at in a Typical Day	68
Figure 32: Number of Sites Visited to Boat in the UK	69
Figure 33: Number of Sites Visited to Boat in a Typical Day	70
Figure 34: Number of Sites Visited to Fish in a Typical Year	70
Figure 35: Number of Sites Visited to Boat in a Typical Year.....	70
Figure 36: Typical Length of Time between Visiting One Place and Another for Boating	72

Figure 37: Freshwater vs. Marine Activity	74
Figure 38: Number of Trips Overseas to Freshwater Fish in a Year	75
Figure 39: Number of Trips Overseas to Boat in a Year	76
Figure 40: Countries Visited to Fish.....	78
Figure 41: Countries Visited to Boat	78
Figure 42: Modes of Transport Used by Anglers and Boaters.....	79
Figure 43: Whether Anglers Take Their Own Equipment with Them Overseas	80
Figure 44: Whether They Take Their Own Boat/Craft, Equipment & Trailer When Boating Overseas	80
Figure 45: Use of Stink Bag.....	82
Figure 46: Frequency of Washing Angling Equipment	84
Figure 47: Where Angling Equipment is Washed.....	84
Figure 48: Importance of Factors in the Decision on Whether or Not to Clean Angling Equipment	86
Figure 49: Use of Antifouling Paint on Boat/Craft.....	89
Figure 50: Frequency of Cleaning Boat/Craft and Equipment.....	90
Figure 51: Whether They Ever Get Their Boat/Craft Cleaned Professionally	91
Figure 52: Importance of Factors in the Decision on Whether or Not to Clean Boat/Equipment	94
Figure 53: The 7 Key Themes Used in Defining NNS and INNS.....	103
Figure 54: Awareness of the Term Biosecurity - General Public	120
Figure 55: Perceived Threat from INNS - Anglers and Boaters.....	124
Figure 56: Support for Controlling INNS - General Public and Exotic Pet Owners	128
Figure 57: Willingness to Help Control the Spread of INNS - Anglers	133
Figure 58: Willingness to Help Control the Spread of INNS - Boaters.....	137
Figure 59: Whether Seen/Heard Publicity about INNS - General Public (upper chart) and Exotic Pet Owners (lower chart)	145
Figure 60: Where Publicity Was Seen	146
Figure 61: Screen Shot of the <i>Be Plant Wise</i> Landing Page.....	147
Figure 62: Awareness of the <i>Be Plant Wise</i> Campaign.....	147
Figure 63: Screen Shot of the <i>Check, Clean, Dry</i> Landing Page	148
Figure 64: Awareness of <i>Check, Clean, Dry</i> Campaign – Anglers	149
Figure 65: Awareness of <i>Check, Clean, Dry</i> Campaign - Boaters.....	150
Figure 66: Where Poster/Leaflet Seen - Anglers	151
Figure 67: Where Poster/Leaflet Seen - Boaters	151
Figure 68: Generic Posters.....	152
Figure 69: Angler Posters.....	153

Figure 70: Boater Posters.....	154
Figure 71: Angling Abroad Posters.....	155
Figure 72: Boating Abroad Posters.....	155
Figure 73: Logo Options.....	167

1 Overview

1.1 Awareness and Understanding

Since 2008, there has been no change or, on some measures a decrease, in levels of awareness and understanding of the terms 'non-native species' and 'invasive non-native species' among the general public. One in five recalled seeing/hearing publicity about INNS which was the same as in 2008. Only 7% claimed to be aware of *Be Plant Wise* but, on being asked what this was about, only 3 individuals made reference to INNS. There was no change since 2008 in terms of the perceived threat of INNS compared to other environmental threats.

Exotic pet owners demonstrated higher levels of awareness and understanding of terms and recall of publicity about INNS.

Compared to the general public, anglers and boaters demonstrated greater levels of awareness and understanding with levels having increased significantly among anglers since 2008. There was one notable exception: both anglers and boaters were significantly less likely to define INNS in terms of their impact.

INNS were generally perceived to represent a fairly or serious threat by both anglers and boaters. For anglers, threat levels had not changed significantly since 2008.

One in four anglers and a similar proportion of boaters recalled seeing/hearing about Check, Clean, Dry.

1.2 Behaviour

Although the majority of gardeners reported disposing of unwanted plants and aquatic animals appropriately, seven respondents (1%) admitted to disposing of them in an inappropriate manner, such as disposing of plants in the wild. This was on a par with the 2008 survey where 5 individuals reported doing this. Three exotic pet owners (2%) said they would 'let their pets go in the wild' if they could not keep them.

Amongst anglers, there was a significant increase in the use of 'stink bags' especially among pleasure anglers, which represents a potential means of spreading INNS. Although there was a significant improvement in the proportion of anglers who reported washing their equipment after every use (61% up from 44% in 2008), there was also an increase in the proportion that never cleaned their gear (16% up from 2%). The majority were air drying their equipment after every trip (83% compared to 87% in 2008).

The picture among boaters was more mixed with fewer adopting good biosecurity; differences in behaviour may be linked to the type of boating being carried out. Although around half the sample said they cleaned their boat and equipment and air dried it after every use, over 40% cleaned it no more than once every ten trips and either never air dried it or did so very occasionally.

1.3 Support for Controlling INNS

Although there were reasonable levels of support for killing INNS among the general public when they pose a threat, especially to human health, levels of support have fallen significantly across all measures since 2008. Although care is needed in interpreting the data, as it only demonstrates a correlation and not a cause and effect, there was the suggestion that where people are familiar with terms such as INNS and their potential impact, there is greater support for their management.

The majority of anglers and boaters claimed to be already adopting appropriate behaviours. Those who were not often indicated a willingness if they were encouraged to do so. For anglers, there were two possible sticking points: a reluctance among some not

to use a stink bag and/or to wash their equipment after every trip. Those anglers who exhibited greater willingness to adopt appropriate behaviours were significantly more likely to perceive INNS to be a greater threat. Although only a correlation, and not a cause and effect, it suggests that explaining the threat of INNS can motivate anglers to adopt appropriate biosecurity.

For boaters, there was considerable resistance among some to cleaning their boat/equipment with hot water and to using antifouling paint although this will only be relevant to some boaters. Although care is needed in interpreting the data, as they only demonstrate a correlation and not a cause and effect, it suggests that where boaters are familiar with the potential impact of INNS, and understand what they are being asked to do and why, in terms of cleaning their gear, there is greater support for the management of INNS.

2 Executive Summary

2.1 Background and Research Method

In England, responsibility for strategic policy for non-native species lies with Defra. Following a review in 2003, and the establishment of the GB Non-Native Species Secretariat (NNSS), a strategy for tackling invasive non-native species (INNS) was published in 2008¹. Following a further review in 2013, a revised strategy was published in 2015² which provides the framework to support co-ordination of policy and action across Great Britain (GB). The vision is that, through the implementation of the Strategy, biodiversity, quality of life and economic interests in GB will be better protected against the adverse impacts of INNS.

While acknowledging that significant progress has been made in this area, the 2015 review found that the approach lacked the boldness of that adopted in some other countries, and called for evaluation and refinement of existing communication campaigns to target key pathways of introduction, and continued assessment of stakeholder and public attitudes. The NNSS, (part of the Animal and Plant Health Agency) commissioned Creative Research to carry out this research to help them meet this recommendation.





The aims and objectives of the research were to provide the NNSS with information on key stakeholder and public attitudes, knowledge and behaviour for input to policy decisions and to enable comparisons over time, and, as part of this, to evaluate revisions to the *Check, Clean, Dry* campaign among anglers and boaters.

The objectives were addressed using both quantitative and qualitative methods as summarised below in Table 1.

¹ The Invasive Non-Native Species Framework Strategy for Great Britain, 2008 produced by Defra, and the Welsh Assembly and Scottish Governments.

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/455526/gb-non-native-species-strategy-pb14324.pdf

Table 1: Summary of Research Methods

Audience		Research Methods
	General Public	<ul style="list-style-type: none"> In-home interviews with a sample of 604 participants Sample structured and weighted to be broadly representative of English public in terms of gender, age, SEG, region and location (urban vs. rural) Includes sub-samples of those with gardens/ponds.
	Exotic Pet Owners	<ul style="list-style-type: none"> Mix of: <ul style="list-style-type: none"> in-home interviews with general public sample owning an exotic pet (n=38) telephone interviews with exotic pet owners sourced using a combination of snowballing and social media (n=110) Spread of different types of pet (but no quotas set as no basis for doing so) <p>NB sample may not be representative of all exotic pet owners</p>
	Anglers	<ul style="list-style-type: none"> Telephone interviews with 150 anglers sourced using a combination of snowballing, social media and telephoning angling shops Mix of match, specialist and pleasure anglers as well as those who belong to an angling club (but no quotas set as no basis for doing so) <p>NB sample may not be representative of all anglers</p> <p style="text-align: center;">+</p> <ul style="list-style-type: none"> 2 x 2 hour focus groups involving 19 anglers
	Boaters	<ul style="list-style-type: none"> Telephone interviews with 150 boaters sourced using a combination of snowballing, social media and telephoning boating clubs Mix of types of craft (sailors, kayakers, canoers, windsurfers, etc.) as well as those who belong to a boating club (but no quotas set as no basis for doing so) <p>NB sample may not be representative of all boaters</p> <p style="text-align: center;">+</p> <p>2 x 2 hour focus groups involving 20 boaters</p>

2.2 Key Findings: General Public

Achieved sample

- The sample was structured and the data were weighted so it was representative of the English adult population in terms of gender, age, socio-economic group and location (in relation to both government regions and ONS definitions of urban/rural areas).
- Respondents also self-classified the area where they lived as urban, semi-urban/rural or rural. While there was a reasonable overlap between the two classifications, the self-classification proved to be a better discriminator in the sense of statistically significant differences based on locations across more variables compared to the ONS based classification.

Garden and pond owners

- **Ownership of Gardens and Ponds:** there was a **significant decrease** in ownership of garden and ponds which may reflect a decrease in home ownership over the last ten years:
 - Four-fifths (81%) of the sample of the general population had a garden, a **significant decrease** from 90% in 2008; 63% (70% in 2008) were responsible for the plants grown
 - One-sixth (16%) had a pond or water feature, **down significantly** from 22% in 2008. 79% of ponds contained plants, fish or other which was comparable with the 2008 findings where 77% of ponds had plants, fish or other aquatic life.
- **Sources of Plants:** the main sources of plants for their gardens were garden centres (75%), DIY stores (36%), supermarkets (33%), retail nurseries (21%) and friends/relatives (21%):
 - 2018 saw a significant increase in the use of supermarkets (up from 21%), and a significant decrease in the use of DIY stores (down from 48%), friends/relatives (down from 32%) and markets (down from 25%).
- **Plants from Abroad:** 7% of the general population sample reported having ever considered bringing plants or cuttings back from abroad. The key factors which influenced their decision on whether or not to do so were general concern about pests and diseases and signs at ports and airports.
- **Main Sources of Information and Advice:** the main sources of plant information and advice in 2018 were plant labels/information on seed packets (46% and 21% respectively), friends/relatives (39%), garden centre/nursery staff (39%) and the Internet (22%):
 - 2018 saw a **greater reliance** on the Internet (up from 9%) and seed packets (up from 15%) and a **decreased reliance** on gardening books (down from 16%) and magazines (down from 13%).
- **Disposing of Plants and Animals:** the research highlighted two main methods of disposal of garden plants, or aquatic plants and animals, these being council garden waste (51%) and composting (44%). Although disposal in council garden waste is still the most common method of disposal, there was a **significant decrease** in the proportion mentioning this method since 2008, down from 60% to 51%. There were no significant increases in any other forms of disposal.
- A total of seven respondents admitted to disposing of plants/animals inappropriately. Four respondents admitted to disposing of plants into the wild; two flushed live fish or other aquatic animals down the toilet; one admitted to putting aquatic plants into a waterway; one admitted to planting them in the wild. This is directly comparable with the numbers admitting to inappropriately disposing of plants and animals in 2008 where 5 individuals were involved: four admitted to disposing of plants into the wild, two admitted to planting them in the wild and one admitted to putting aquatic plants into a waterway. The option of flushing live fish and other animals down the toilet was not included in the 2008 survey.

NNS & INNS

- **Awareness of terms:** since 2008, awareness of the terms 'alien species' (46% vs. 39% in 2008) and 'invasive alien species' (39% vs. 22%) had **increased significantly**, nevertheless these terms were the least familiar to the public. Two thirds (67%) of the general public were aware of 'invasive non-native species', the same as it was in 2008 but there has been a **significant decrease** in awareness of 'native species' (67% vs 76% in 2008) and 'non-native species' (59% vs. 68%).
- **Understanding of NNS:** participants were asked to explain what they thought the term 'non-native species' meant. Their answers were analysed based on whether they included reference to seven themes (see 8.3 for more details):
 - PLACE: this was the most frequently mentioned theme (where NNS are from/found), mentioned by three-quarters of the sample (74%)
 - all other themes were only mentioned by 1% or less
 - compared to 2008, there were **significantly more** references to PLANTS (most often, Japanese knotweed) and **significantly fewer** references to PLACE, HOW THEY ARE INTRODUCED, and to ANIMALS
 - one in five participants (19%) said they DID NOT KNOW what the term means.
- **Understanding of INNS:** in the same way, participants were asked to explain their understanding of the term 'invasive non-native species':
 - IMPACT: although the most frequently referenced theme it was mentioned **significantly less** often in 2018 compared to 2008 (56% vs. 64%)
 - PLACE: a third of respondents made reference to where INNS are from
 - PLANTS/ANIMALS: whereas in 2008, people referenced PLANTS (11%) and ANIMALS (13%) equally often, in 2018 this had changed, with PLANTS (19%) being referenced more than ANIMALS (8%)
 - HOW INTRODUCED/SPREAD: this was only referred to by 7% of the sample
 - DON'T KNOW: over a quarter of the sample (28% were unable to provide a definition.
- **Perceived Threat of INNS:** INNS were generally perceived to be less of a threat compared to habitat destruction, climate change, pollution and human exploitation. The perceived threat levels had not changed significantly since 2008.
- **Support for Killing INNS:** although there were reasonable levels of support for killing INNS when they pose a threat, especially to human health, levels of support have fallen significantly across all measures since 2008.
 - although care is needed in interpreting the data, as it only demonstrates a correlation and not a cause and effect, there was the suggestion that where people are familiar with terms such as INNS and their potential impact, there is greater support for their management.

Communications

- **Publicity about INNS:** one in five members of the general public recalled seeing/hearing publicity about INNS; there was no change from 2008.
- **Be Plant Wise:** only 7% of the general public said they had heard of *Be Plant Wise*, and when asked about the main message only 3 individuals (0.5%) made reference to INNS.

2.3 Key Findings: Exotic Pet Owners

Achieved sample
<ul style="list-style-type: none"> • Demographics: <ul style="list-style-type: none"> ○ Exotic pet owners were more likely to be female (61% vs. 51%) and younger (52% aged under 35 vs. 31%) compared to population as a whole.
<ul style="list-style-type: none"> • Exotic per ownership: <ul style="list-style-type: none"> ○ pet ownership remained unchanged with half the general public owning a pet (2018: 50%; 2008: 52%) ○ 5% of the general public owned and exotic pet.
<ul style="list-style-type: none"> • Pets Owned: a wide range of different exotic pets were owned including, in particular, lizards (n=38), tortoises (n=33), snakes (n=30), tropical fish (n=24), parrots (n=14), molluscs (n=6), frogs/toads (n=5) and spiders (n=4).
<ul style="list-style-type: none"> • Where kept: the majority were kept in a cage or tank indoors.
Sources of pets, information and advice
<ul style="list-style-type: none"> • Main sources of Exotic Pets: the main sources of exotic pets were local pet shops (38%) and breeders (19%), family/friends (24%), aquatic shops/centres (16%), especially for fish (57%) and online (9%), especially for insects/invertebrates (47%).
<ul style="list-style-type: none"> • Sources of Pet Food and Equipment: the main sources of pet food and equipment were local pet shops (55%), pet chain stores (26%), online/from a website (25%) and aquatic shops / centres (13%), especially for fish (30%).
<ul style="list-style-type: none"> • Main Sources of Information and Advice: the main sources of information and advice were online (61%), especially for amphibians & reptiles (67%), staff in pet shops / aquatic centres (34%), especially for fish (53%), specialist organisations for mammals (40%) and insects/invertebrates (27%), although such organisations were used by only 7% overall.
<ul style="list-style-type: none"> • Disposing of Animals: the key ways of disposing of exotic pets if their owners were no longer able to keep them were giving them to family/friends (66%), local animal shelters (23%) and advertising online (22%). Three pet owners (2%) said they would 'let them go in the wild'.
NNS & INNS
<ul style="list-style-type: none"> • Awareness of terms: Exotic pet owners were significantly more aware of 'native', 'non-native' and 'invasive alien species' compared to the general public; their awareness of 'alien species' and 'invasive non-native species' was the same.
<ul style="list-style-type: none"> • Understanding of NNS: <ul style="list-style-type: none"> ○ PLACE: compared to the general public, exotic pet owners were significantly more likely to make reference to PLACE (86% vs. 74%) ○ all other themes were only mentioned by 16 per cent or less ○ PLANTS/ANIMALS: compared to the public, exotic pet owners were more likely to mention ANIMALS (15% vs. 10%) and made significantly fewer references to PLANTS (3% vs. 15%).
<ul style="list-style-type: none"> • Understanding of INNS: compared to the general public, exotic pet owners were: <ul style="list-style-type: none"> ○ significantly more likely to reference IMPACT (68% vs. 56%), PLACE (50% vs. 34%) and HOW INTRODUCED/SPREAD (19% vs. 7%) ○ they were more likely to couch their definitions in terms of ANIMALS (15% vs. 8%) but less likely to make reference to PLANTS (8% vs. 19%) ○ they were significantly less likely to say they DON'T KNOW what the term means (16%

vs. 28%).

- **Perceived Threat of INNS:** compared to the general public, exotic pet owners were **significantly more likely** to perceive INNS as a smaller threat compared to loss of habitat and pollution.
- **Support for Killing INNS:** although there were reasonable levels of support for killing INNS when they pose a threat, exotic pet owners were **significantly less willing** to support killing INNS that pose a threat to human health compared to the general public.

Communications

- **Publicity about INNS:** one in four exotic pet owners surveyed recalled seeing/hearing publicity about INNS; this was significantly more than the general public.

2.4 Key Findings: Anglers

Achieved sample

- **Demographics:** within our sample:
 - compared to the general public as a whole, anglers were: **more likely** to be male (95% vs. 49%), older (74% vs. 53% aged 45 and above), and from SEGs ABC1 (69% vs. 54%)
 - compared to the 2008 angler sample, the current sample included a **significantly greater** proportion from SEGs ABC1 (69% vs. 37%).
- **Types of anglers:**
 - the majority of the sample (71%) described themselves as 'coarse anglers', which was **lower** compared to the 2008 sample (83%) but the numbers are not directly comparable as the 2008 sample did not include anglers that fished in marine waters
 - six out of ten anglers (60%) described themselves as 'pleasure anglers', just over a third (36%) described themselves as 'match anglers' and a slightly smaller proportion (31%) as 'specialist anglers'
 - compared to the 2008 sample, the current sample included **fewer** pleasure anglers (in 2008 91% of the sample described themselves in this way) and a **greater proportion** of match and specialist anglers (the proportions in the 2008 sample were 15% and 9% respectively).
- **Club Membership:** two thirds (67%) were members of an angling club, which is **significantly more** than in 2008 (49%).
- **Working in the sector:** 30% of the sample worked in the sector (e.g. in fishing tackle and bait shops).

Fishing patterns

- **Frequency of Fishing:** 87% fished at least fortnightly in the UK; this compares with 57% in 2008, although the latter only covered fishing in England, not the UK as a whole.
- **Location and Number of Sites Visited:**
 - 43% mainly fished within a 20-mile radius of home
 - 78% fished at more than 1 site, although the majority (96%) only visited 1 site on any one day
 - the number of different sites visited in a typical year varied considerably, with no one range dominating
 - the length of time that typically elapsed between visiting different sites varied, but was most often between 1-4 weeks (61%)

- three quarters only/mainly fished in fresh water.

- **Fishing Overseas:** a quarter (25%, n=37) fished overseas; of these:
 - most did so on average no more than once a year (n=21)
 - the country most commonly visited was France (n=25)
 - one in four travelled to non-European destinations
 - there was an equal mix in terms of traveling by car ferry (n=17), Eurotunnel (n=16) and plane (n=15), with the most frequently used car ferry port being Dover (n=11)
 - the majority (n=32) always/sometimes took their own equipment with them.

Biosecurity

- **Releasing Fish:** 75% claimed to always release every fish they caught compared to 79% in 2008, although slightly different response categories were used in 2008, so these findings are not directly comparable.
- **Stink Bags:** 40% said that they use a stink bag, this being a **significant increase** from 21% in 2008:
 - there was no significant increase in use among match or specialist anglers; however, there was a **significant increase** in use among pleasure anglers, up from 15% to 29%.
- **Washing Equipment:** 61% claimed to wash their equipment after every use, whilst 16% claimed never to clean their gear; this compares to 44% saying 'after every trip' in 2008 and 2% saying never; however, slightly different response categories were again used in 2008, so the findings are not directly comparable
 - 66% said that they wash their gear when they return home
 - the two most important factors in determining whether or not to clean their equipment were the availability of information about what to do and why they should do it; The implication of this is that if anglers know why and how they should do it, they were more likely to clean their gear.
- **Air Drying:** four-fifths (83%) claimed to air dry their equipment after every trip; this compares with 87% in 2008, although the use of slightly different response categories means the findings are not directly comparable.

INNS³

- **Awareness of terms:** 87% of the anglers in the sample said they were aware of the term INNS. This was **significantly higher** than the general public and exotic pet owners (levels of awareness were 67% and 59% respectively). It also represents a **significant increase** from 2008 (78%)
- **Understanding of INNS:** everyone was able to offer a definition; this was significantly higher than all other audiences:
 - PLACE (83%): they were more likely to mention this theme compared to the all other audiences
 - ANIMALS (45%): not surprisingly, they were also likely to make reference to ANIMALS (often referring to fish in general or to specific species of fish); this was **significantly higher** than either the general public or exotic pet owners
 - IMPACT (33%): although a third of anglers referred to the IMPACT of INNS, this was **significantly lower** compared to both the general public and exotic pet owners (56% and

³ Anglers and Boaters were only asked if they were aware of, and what they understood by, the term Invasive non-native species.

68% referenced IMPACT respectively)

- HOW INTRODUCED/SPREAD (29%): this was **significantly higher** than either the general public or exotic pet owners
- PLANTS (6%): this was **significantly lower** than either boaters (18%) or the general public
- Compared to 2008, anglers in the current survey were **significantly more likely** to know what the term means (87% vs. 78%) and to reference PLACE (83% vs. 66%) and IMPACT (33% vs. 19%). They were **less likely** to reference ANIMALS (45% vs. 59%).

- **Perceived Threat of INNS:** anglers were asked the extent to which they considered INNS to be a threat in relation to six statements. INNS were generally perceived to represent a fairly or very serious threat on all statements. There were no significant differences in the perceived threat of INNS between 2008 and 2018.

- **Willingness to Adopt Appropriate Behaviours:** anglers were asked which of a set of behaviours they already adopt and, for those they were not already doing, how willing they would be to do so in the future:
 - the majority claimed to be already adopting appropriate behaviours. Those who were not often indicated a willingness if they were encouraged to do so. There were two possible sticking points: 15% reported they were probably/definitely not willing to not use a stink bag, while 12% were probably/definitely unwilling to wash their equipment after every trip
 - those anglers who exhibited greater willingness to adopt appropriate behaviours were **significantly more likely** to perceive INNS to be a greater threat, based on their overall threat scores (i.e. summed across all threat statements: 8.01 vs. 6.60 out of 12). Although only a correlation, and not a cause and effect, it does suggest that explaining the threat of INNS can motivate anglers to adopt appropriate biosecurity.

Communications

- **Check, Clean, Dry:** one in four anglers (25%) recalled seeing/hearing about 'Check, Clean, Dry', especially match (31%) and specialist anglers (36%)
 - it was most typically seen at places they go fishing (67%)
 - where recalled, the main message was said to be about checking, cleaning and drying equipment between uses (n=23).

2.5 Key Findings: Boaters

Achieved sample

- **Demographics:** within our sample, compared to the general public as a whole, boaters were: **more likely** to be male (69% vs. 49%), older (52% vs. 31% aged 45-64), and from SEGs ABC1 (85% vs. 54%).
- **Types of boaters:** the sample included
 - a broad cross-section of different types of boating especially canoeing/kayaking, yachting, sailing, motor boating
 - a majority that classified themselves as pleasure boaters (67%) and owned their craft (82%).
- **Club Membership:** just under half the sample (47%) belonged to a boating club.

Boating patterns

- **Frequency of Boating:** two-thirds (68%) went boating at least fortnightly.

- **Location and Number of Sites Visited:**
 - half (51%) went boating at more than 1 site
 - although the majority (77%) only visited one site on any one day, although one in five visited 2-3 sites
 - as with the anglers, the number of different sites visited in a typical year varied considerably from just one to more than twenty
 - the length of time that typically elapsed between visiting different sites varied, but was most often between 1 week to 3 months (62%)
 - 45% were only or mainly freshwater boaters; 41% were only or mainly marine boaters.
- **Boating Overseas:** a quarter went boating overseas (n=41), and of these:
 - most (n=28) had made an average of 1-4 trips a year
 - for those travelling within Europe these trips were most commonly to France (n=24), with a similar number (n=26) having travelled to non-European destinations
 - many travelled by plane (26), with 1 in four (10) using their own/another's craft
 - the most frequently used car ferry port was Dover (n=6)
 - around half always or sometimes took their own boat/craft (n=24) and a similar number (25) other boating gear; trailers were rarely taken (n=6).

Biosecurity

- **Where the boat/craft is Stored:** boaters most typically stored their boat/craft out of the water (65%), at home/at work (40%) or at a marina/boating club (50%)
- **Anti-fouling:** two-fifths (41%) said that they used antifouling paint – in particular, those that go yachting and motor boaters.
- **Cleaning:**
 - half the sample (49%) claimed to clean their boat and equipment after every use, but 42% said that they cleaned it no more than once every 10 trips
 - the main methods used to clean were a hose (61%), manually with a brush (41%) or with a water blaster (33%)
 - half (51%) reported that they cleaned their boat/equipment out of the water, close to where it was used, whilst 30% waited until they got home, and a similar proportion (27%) cleaned it in the water at dockside
 - 8 out of 10 (83%) never have their craft professionally cleaned
 - the two most important factors determining whether or not to clean their equipment were availability of hose/cleaning station and the appearance of their boat.
- **Air Drying:**
 - 55% claimed to air dry their boat/equipment after every use, particularly canoeist/kayakers, 86% of whom claimed to do this
 - 4 out of 10 either never do so (23%) or do so very occasionally (15%), mainly yachters (57%).

INNS

- **Awareness of terms:** 83 per cent of boaters were aware of the term INNS. This was on a par with anglers and **significantly higher** than the general public and exotic pet owners.
- **Understanding of INNS:** boaters definitions included references to:
 - PLACE (65%): they were **more likely** to mention this theme compared to the general

public but **less likely** to do so compared to anglers

- IMPACT (49%): although they were **more likely** to mention this theme compared to anglers, they were **less likely** to do so compared to the general public or exotic pet owners
- HOW INTRODUCED/SPREAD (36%): this was **significantly higher** than either the general public or exotic pet owners
- ANIMALS (31%): this was **significantly higher** than either the general public or exotic pet owners
- PLANTS (18%): this was **significantly higher** than either anglers or exotic pet owners
- only five per cent were unable to offer a definition; this was **significantly lower** than either the general public (28%) or exotic pet owners (16%) but **higher** than anglers (0%).

- **Perceived Threat of INNS:** boaters were asked the extent to which they considered INNS to be a threat in relation to six statements. INNS were generally perceived to represent a fairly or very serious threat on all statements

- compared to anglers, boaters rated INNS as posing a **more serious** threat to native plants (94% rated INNS as a very or fairly serious threat compared to 87% of anglers) however they gave **lower ratings** in terms of the extent to which INNS posed a threat to the future of boating (66% rated INNS as a very or fairly serious threat compared to 86% of anglers who felt INNS represented a threat to the future of angling).

- **Willingness to Adopt Appropriate Behaviours:** boaters were asked which of a set of behaviours they already adopt and, for those they were not already doing, how willing they would be to do so in the future:

- the majority claimed to be already adopting appropriate behaviours. Those who were not often indicated a willingness to do so if they were encouraged to do so. There was considerable resistance to cleaning their boat/equipment with hot water, which probably reflects the lack of hot water at places where boats are used. There was also resistance to using antifouling paint although this will only be relevant to some boaters
- although care is needed in interpreting the data, as they only demonstrate a correlation and not a cause and effect, it suggests that where boaters are familiar with the potential impact of INNS, and understand what they are being asked to do and why, in terms of cleaning their gear, there is greater support for the management of INNS.

Communications

- **Check, Clean, Dry:** one in four boaters (26%) recalled seeing/hearing about 'Check, Clean, Dry', especially canoeist/kayakers (43%).
 - It was most typically seen at boating clubs (45%), places they go boating (39%) and on boating websites (24%).
 - Where recalled, the main messages were given as being about checking, cleaning and drying equipment between uses (n=28) and stopping the spread of INNS (n=21).

2.6 Key Findings: Revisions to Check, Clean, Dry Communications

- **Urgency of message:** the issue of INNS was seen as important enough that communications require a strong warning tone (albeit one that helps the angler/boater do their bit). The revised materials did not convey that urgency as strongly as they might. It also raised questions about how prevalent invasive species are locally – knowing a species is present locally (or even regionally) is ideal for greatest impact.
- **Amount of detail:** there was a disconnect between wanting less information to deliver greater impact and not acting as a deterrent to reading, yet also wanting more detail. Including directions to the website/QR code helped address this although there is a need to say what

might be found there.

- **Visuals:** visuals are vital in conveying the problem and what is required, for example:
 - it might be possible to replace the description of the impact of INNS by showing the scale/impact of the problem visually
 - showing species close-up on equipment was felt to give an idea of their scale, what anglers/boaters are supposed to be looking for and the places to clean
 - photographs and/or realistic illustrations were preferred over cartoons/line drawings.
- **Targeting:** targeting was both:
 - too generic and not generic enough; consideration might be given to whether the generic poster should be aimed at all water users (currently they still refer to angling/boating in the copy) and be more specific about practices that involve the transfer of water/invasive species
 - specific and not specific enough; anglers and boaters comprise diverse populations and practices – while pictures hint at the variety, the copy needs to refer to embracing all forms of the sport (plus more targeted electronic messaging)
 - is there a need to avoid the term 'boaters' – those taking part did not readily identify with this umbrella term?
- **Endorsement:** Defra is key to establishing authority (the Environment Agency was also important especially among anglers but is not currently shown). Other organisations helped to establish relevance but should not have too much prominence (the revised designs were preferred). The posters might also identify their role e.g. 'supported by'.
- **Call to action:** although the quantitative research indicated high levels of awareness of the term, most taking part in the qualitative research had no clear idea what an INNS was or what its impact might be (the quantitative research confirmed that impact of INNS was referred to significantly less often in the definitions offered by both anglers and boaters compared to the general public and exotic pet owners):
 - the general practice being adopted by both anglers and boaters often appeared at odds with the call to action; for example: participants often clean their gear/craft only when they get home and some often only clean some items of equipment.
 - some calls for actions were considered problematic and this can be used to deflect the message; for example: it can be difficult to drain all water from mobile craft after use or the lack of availability of hot water on-site.
 - the call for action can also raise questions; for example: 'Leave any contamination at the water body' – what is meant by contamination? Does it mean returning INNS to the water? Will washing clothes in a machine kill any INNS?
 - some participants wanted more detailed instructions on what and how to clean and dry. Nevertheless, by the end of the discussions, most felt they had a greater appreciation of the issues and claimed they were motivated to be more diligent about their equipment in the future.
- **Terminology:** 'Species' and 'organisms' meant little to many participants – 'invasive animals and plants' were more meaningful. Preventing the spread is about not transferring invasive animals and plants in water or damp places – this raises the question whether the use of 'aquatic' is necessary.

2.7 Recommendations

2.7.1 General public

The findings suggest that little, if anything, has changed as far as the general public are concerned since 2008. Where it has changed, it has resulted in a decrease in support for managing the introduction and control of INNS.

There is a need for a new, more high profile initiative aimed at the general public to:

- improve awareness of the negative impacts of INNS
- increase public support for managing INNS
- educate them about steps they can take to minimise their spread.

2.7.2 Exotic pet owners

Communications aimed at raising awareness, understanding and support among the general public are likely to resonate with owners of exotic pets.

The internet will be a key channel to use to target this audience.

Just as key stakeholders are used on communications with anglers and boaters, organisations that cater for this audience could help increase the impact among exotic pet owners.

2.7.3 Anglers

Overall there were good levels of awareness and understanding of the issues, and good levels of support for preventing the introduction/spread of INNS. Having said this, there is also evidence that a proportion of anglers are not adopting good biosecurity (not cleaning gear after every trip; continuing to use stink bags).

There is evidence to suggest that one way to consolidate the situation with many anglers, and to persuade others to adopt more appropriate behaviours, is to focus on the IMPACT of INNS:

- compared to boaters, anglers were more likely to perceive INNS as a threat to the future of angling
- although there was a significant increase in the proportion making reference to the IMPACT of INNS since 2008, nevertheless only one in three spoke about impacts and this was lower than all other audiences.

Future communications should focus on:

- the potential negative consequences of not adopting good biosecurity
- alternatives to the use of stink bags and quick and easy methods of cleaning equipment (for example, is there a low cost form of disinfectant anglers could dip their gear in at home as an alternative to net dips?) – it is easier to modify rather than stop current practices
- the research suggests that reminding anglers about how and why to clean their equipment are key determinants of their behaviour.

2.7.4 Boaters

Overall there were good levels of awareness and understanding of the issues, and good levels of support for preventing the introduction/spread of INNS. Having said this, there is also evidence that a proportion of boaters are not adopting good biosecurity (not using

antifouling where it is appropriate to do so, not cleaning their craft/gear after every trip; not air drying equipment after every use).

One of the difficulties, both in terms of assessing the findings but also in communicating with this audience is that it is not an especially homogeneous group and not all messages/calls to action are relevant to all types of boaters.

They appeared to have a better grasp of the impact of INNS. Having said this, they were less convinced that INNS threatened the future of their sport.

Future communications should focus on:

- the potential negative consequences of not adopting good biosecurity especially in terms of the impact on the future of the sport
- providing clear guidelines of effective behaviours and targeting messages to different types of boaters to increase the relevance.

2.7.5 Revisions to *Check, Clean, Dry*

The revised designs should be adopted with the following key modifications:

- Generic poster: replace 'Stop the spread.' with 'STOP THE SPREAD'
- Substitute 'invasive aquatic species/organisms' with 'invasive plants and animals' in the copy
- Adopt a hybrid logo:
 - replace 'invasive aquatic species' with 'invasive plants and animals'
 - include 'STOP THE SPREAD' outside the red circle at the top
 - re-position 'CHECK·CLEAN·DRY below the red circle
- Avoid/clarify calls to action that cannot be readily met e.g. use of hot water, not transferring water, antifouling
- Include a stronger message about where to go to find out more, both about invasive plants and animals and their impact, and steps boaters and anglers can take to help stop the spread
 - For example, 'for more information about invasive plants and animals and how you can help stop the spread, visit www.nonnativespecies.org/checkcleandry'
 - ensure the website addresses the issues raised by anglers/boaters as outlined in this report.



Other modifications that should be incorporated if possible:

- Use a more realistic image of waterways
- Develop a range of posters targeting different types of boating (more important) and angling (less important)
- Provide information about INNS present at regional/local level e.g. specific waterways.

3 Background and Research Method

3.1 Background

An invasive non-native species (INNS) is any non-native animal or plant that has the ability to spread causing damage to the environment, the economy, our health and the way we live⁴.

There are some 2,000 non-native species (NNS) established in Great Britain (GB) with 10 -12 new species arriving annually. 10-15% of such species cause significant adverse impacts: environmental (e.g. preying on, out-competing and/or spreading disease among native species), economic (e.g. the annual cost of invasive non-native species (INNS) is at least £1.7 billion in GB), and social (e.g. some species cause problems to human health).

The Convention on Biological Diversity (CBD) provides a major driver for international action – one of its guiding principles calls for national strategies on INNS. In England, responsibility for strategic policy for non-native species lies with Defra. Following a review in 2003, and the establishment of the GB Non-native Species Secretariat (NNSS), a strategy for tackling invasive non-native species in GB was published in 2008⁵. Following a review in 2013, an updated strategy was published in 2015⁶ which provides the framework to support co-ordination of policy and action across GB. The vision is that, through the implementation of the Strategy, biodiversity, quality of life and economic interests in GB will be better protected against the adverse impacts of INNS.

The overarching strategic aim is to minimise the risk posed by, and reduce the negative impacts of, INNS in GB. It follows the CBD hierarchical approach stressing prevention, followed by early detection and rapid response, and finally long-term management and control.

⁴ <http://www.nonnativespecies.org/index.cfm?pageid=64>

⁵ See Footnote 1

⁶ See Footnote 2

Building awareness and understanding of the issues is key to the successful implementation of the updated strategy:

Improved awareness and understanding of the issue of INNS is important in gaining support for relevant policies and programmes, and for engaging the public. It is also vital to ensure behaviour change where activities carry the risk of introduction or spread of INNS.

The 2008 strategy was informed by an extensive programme of research among key stakeholders and the general public carried out by Creative Research.

While acknowledging that significant progress has been made in this area, the review of the 2008 strategy found that the approach lacked the boldness of that adopted in some other countries, and Key Actions 6.1 to 6.4 of the updated strategy called for evaluation and refinement of existing communication campaigns to target key pathways of introduction, and continued assessment of stakeholder and public attitudes. The NNSS (part of the Animal and Plant Health Agency) commissioned us to carry out a further survey to help them meet this recommendation.

3.2 Aims and Objectives

The overall aim of the research is to provide the NNSS with information on key stakeholder and public attitudes, knowledge and behaviour for input to policy decisions and to enable comparisons over time.

The principal objective of the research is to establish current attitudes to, awareness of, and behaviour towards, non-native species among key stakeholder groups and the general public.

A further objective was for the research to be conducted such that the findings were comparable with the previous research where appropriate.

The third key objective was to evaluate revisions to the *Check, Clean, Dry* campaign among anglers and boaters.

The objectives were addressed using both quantitative and qualitative methods.

3.3 Quantitative Research Methods

The quantitative research was conducted using face-to-face, in-home interviews, and telephone interviews.

3.3.1 General Public

Face-to-face, in-home interviews were conducted with a sample of some 600 individual members of the public. This was to ensure comparability with the previous research, as well as accuracy:

- **Comparability:** the general public survey was a key component of the 2008-9 research and the most robust comparison data is achieved using the same approach as that used previously
- **Accuracy:** from our knowledge of the previous survey script, we were aware that many of the questions had lengthy lists of potential response options; reading out a large number of such options to participants over the telephone is not ideal; it is hard for participants to remember all options and can result in less accurate responses. In a face-to-face, in-home interview, showcards can be used to ensure participants are aware of all potential response options.

In determining the most appropriate approach, we also considered using an online survey with the general public. This approach is typically the most cost effective survey methodology, and quotas can be used to ensure that a representative pool of participants is achieved by key demographic, such as age and gender. However, a key requirement of this element of the research is that it is not only representative of key demographics, but also of the English population with respect to urban/rural locations. The latter would be extremely difficult, and potentially impossible to achieve with respect to rural areas, through an online survey, thereby raising the costs per interview considerably and countering the core benefit of such an approach. This, plus our concern to compare like with like between this and the previous survey, means we ruled out using an online approach.

As noted above, it is important to mirror the approach of previous surveys where one of the survey objectives is to compare longitudinal findings. The same applies to sample size, as the number of interviews impacts on the robustness of the data achieved, and it is naturally preferable to be comparing sets of data that share the same levels of robustness. The previous general public survey comprised 600 interviews, providing a very robust overall dataset; we can have 95% confidence of the findings being accurate to within +/- 4.0%. This sample size also allows for relatively robust segmentation for cells with ~300 participants, which will apply for key consumer groups such as ABC1s versus C2DEs and males versus females. It will also result in approximately 120 respondents living in rural locations, in line with the proportion of the population in England.

Again, following the approach used for the 2008-9 survey, a stratified sampling approach was adopted. Interviews were conducted at 100 sampling points, with a target of 6 interviews to be completed at each. Within this, the sample was structured in relation to five variables.

- **Urban/Rural locations**

As a starting point, and to ensure a high degree of comparability with the earlier research, the same sampling locations were selected. However, the ONS published new definitions since the previous survey⁷, and we carried out a review to cross check the Local Authorities selected for the previous study against their 2011 classifications to see whether any need to be replaced in order for us to maintain broadly the same profile. This revealed that there was not a huge difference between the two sets of classifications. The key difference between the definitions we used previously and the 2011 definitions being that the previous Local Authority definitions were based upon either population or % population in different sized urban or rural areas, whilst in the 2011 classifications Local Authority Districts are now classified based on the share of their population that

7

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/591464/RUCLAD_leaflet_Jan2017.pdf

live in rural or ‘rural-related’ areas (i.e. hub towns), and (for urban locations) the presence or not of a conurbation. This is illustrated in Table 2.

Table 2: Changes in the Definition of Urban and Rural Locations

Previous Definitions	2011 Definitions
(MU) Major urban: districts with either 100,000 people or 50% of their population in urban areas with a population of more than 750,000	(UMA) Urban with Major Conurbation: Less than 26% living in rural settlements and hub towns
(LU) Large urban: districts with either 50,000 people or 50% of their population in one of 17 urban areas with a population between 250,000 and 750,000	(UMI) Urban with Minor Conurbation: Less than 26% living in rural settlements and hub towns
(OU) Other urban: districts with fewer than 37,000 people or less than 26% of their population in rural settlements and larger market towns	(UCT) Urban with City and Town: Less than 26% living in rural settlements and hub towns
(SR) Significant rural: districts with more than 37,000 people or more than 26% of their population in rural settlements and larger market towns	(USR) Urban with Significant Rural: At least 26% but less than 50% living in rural settlements and hub towns
(R50) Rural-50: districts with at least 50% but less than 80% of their population in rural settlements and larger market towns	(LR) Largely rural: At least 50% but less than 80% living in rural settlements and hub towns
(R80) Rural-80: districts with at least 80% of their population in rural settlements and larger market towns	(MR) Mainly rural: At least 80% living in rural settlements and hub towns

While the definitions of the first three categories have changed somewhat, the definitions of the last three categories are unchanged. In addition, the six individual categories now fall into three overall categories: predominantly urban (UMA, UMI and UCT) with 66% of the English population living in these locations, urban with significant rural (USR) with 13% of the English population, and predominantly rural (LR and MR), with 21% of the English population.

One further change we needed to look out for was that, following changes in 2009, some Local Authorities in the 2008-9 research no longer exist, or have been merged with others, meaning that some of the sampling points selected in 2008-9 may no longer exist or may now be duplicates of other sampling points. Further

details of how we arrived at a revised set of sampling locations are provided in Volume 2: Appendices, published under separate cover.

The review process resulted in a very similar structure for rural/urban sampling and this was weighted by the known distribution of the six classifications, so that the final data was representative of the rural/urban profile of England.

- Government Official Region**

The 100 sampling points were distributed across the nine Government Official Regions (GORs) and urban/rural locations as shown below.

	South East	South West	London	East of England	East Midlands	West Midlands	York & Humber	North West	North East	Total
Urban	9	8	11	8	8	9	9	9	9	80
Rural	3	3	0	3	3	2	2	2	2	20
Total	12	11	11	11	11	11	11	11	11	100

In order to stratify the sample by key demographic groups, we also set quotas as follows for each sampling point:

- gender:** 3 female/3 male
- age:** one each from the following age bands: 16-24, 25-34, 35-44, 45-54, 55-64, 65+
- socio-economic group (SEG⁸):** 3 ABC1 / 3 C2DE.

The resulting data set was weighted by these five variables (GOR, urban/rural, gender, age and SEG).

⁸ Socio-economic groups are divisions of people by income and occupation. The grades are often grouped into ABC1 and C2DE, these are taken to equate to middle class and working class, respectively. A fuller set of definitions are provided in Volume 2.

3.3.2 Gardeners and Pond Owners

The general public survey was designed to include sub-samples of those who owned, and were responsible for managing, their own gardens and those that were not, as well as those that had a pond containing animals and/or plants and those who did not. Based on our experience in the previous research, we expected the natural fall-out of gardeners in the general public survey to be ~400, of which approximately 100 would own a pond containing animals/plants.

3.3.3 Exotic Pet Owners

A small number of questions were included in the survey with the general public in the 2008-9 survey about pet ownership. Just over half the sample had a pet or companion animal. Moreover, approximately one in five (n=124) owned a pet that was a NNS. If a more restricted definition was applied, whereby mammals such as dogs, cats, rabbits, gerbils, guinea pigs and hamsters were excluded, the numbers of 'exotic pet' owners in the sample was around just 20 people. The current research was targeted at the more restricted definition which meant we needed to find a way of boosting the sample of exotic pet owners to achieve a sample size comparable to anglers and boaters of ~150. With this in mind, we conducted a telephone survey among exotic pet owners. Our intention was to purchase lists of exotic pet owners from which to draw a random sample; the final approach used is discussed in Section 3.3.5. We did not set any quotas on the sample other than trying to recruit a spread of different types of pets, as we did not have any basis for doing so (i.e. no data to suggest what the profile of exotic pet owners should be).

3.3.4 Anglers and Boaters

Telephone interviews were recommended for the quantitative survey with anglers and boaters for the following reasons:

- **Comparability:** anglers were contacted by telephone in the 2008-9 survey and the same approach ensured a greater degree of comparability this time round

- Question style: our knowledge of the types of questions put to anglers in the earlier research, of administration of the survey by telephone, and of the survey duration (which is much shorter than the survey for the general public), meant we were confident that it could be readily understood and digested by participants over the telephone.

150 interviews were achieved with anglers in the 2008-9 surveys, and we aimed to replicate this in the current surveys, with 150 being achieved for both anglers and boaters. Participants in the 2008 angler survey were recruited from lifestyle lists and our intention was to use the same approach for both the angler and boater surveys; the final approach used is discussed in Section 3.3.5. While we aimed to recruit a spread of different types of anglers (match, specialist or pleasure angler) and boaters (sailors, kayakers, canoers, windsurfers, etc.), we did set quotas for these variables as we had no meaningful basis for setting them.

3.3.5 Survey Preparation

Following discussions with the client, we prepared revised questionnaires for the four surveys. The survey with the general public was designed to last 20-30 minutes and the remaining surveys were initially intended to take 12-15 minutes to complete.

The in-home interviews were conducted using computer aided personal interviewing (CAPI) and the telephone interviews by computer aided telephone interviews (CATI). All the questionnaires were programmed in SNAP software⁹ for ease of interviewer administration and to ensure accuracy of completion through automatic routing. The programmed scripts were checked internally by two members of the project team before being sent to the client for sign-off.

As for the 2008-9 survey, we produced showcards for the in-home surveys to enhance the quality of responses and thereby, the findings. The showcards enabled respondents to read descriptions and lists of possible responses rather than having to retain what was being read out to them.

⁹ <https://www.snapsurveys.com/>

The questionnaires and showcards were piloted ahead of the main fieldwork period between 15th and 22nd March 2018. This involved carrying out one interviewer day of in-home interviews, along with 50 telephone interviews among anglers (15), boaters (15) and owners of exotic pets (20). The telephone interviews were conducted using purchased sample lists of anglers, boaters and owners of exotic pets.

The pilot allowed us to check for accuracy and understanding prior to the full launch, as well as likely survey hit rates.

The pilot revealed that the quality of the purchased lists was extremely poor; in fact the pilot was only completed by supplementing the purchased lists with respondents recruited using a combination of snowballing and social media, including signing up to forums and Facebook groups, and asking interested people to get in touch.

Following discussions with the client, the main telephone surveys were conducted with respondents identified using a combination of snowballing and social media, and by interviewers telephoning angling shops and boating clubs, sourced via directories such as Yellow Pages, and asking if anyone in the shop was an angler/in the club was a boater and was willing to take part in the interview. Any members of the boating club management were excluded.

The researchers also emailed family and friends and asked them to spread the word among their families, friends and work colleagues, and provided a link to a web page where exotic pet owners, anglers and boaters could sign up to take part in the research. Stakeholder organisations, The Royal Yachting Association and the Angling Trust, also advertised the research and provided the web link to anyone interested in taking part.

This combined approach to recruiting the samples proved effective and resulted in good cross-sections of exotic pet owners, anglers and boaters. However, it is important to note that, given the recruitment method, we cannot be certain that the resulting samples are fully representative of all exotic pet owners, anglers and boaters.

The other main change following the pilot was that the angling interview was extended to 15-20 minutes to enable all relevant issues to be covered.

Respondents were offered an incentive of £5 for taking part. This was to maximise the take-up rate and to ensure respondents gave their full attention to the interview.

The main surveys were conducted during April 2018¹⁰.

Copies of the questionnaires are provided in Volume 2: Appendices, published under separate cover.

3.4 Qualitative Research Methods

Four focus groups, each lasting up to two hours, were carried out, with two sessions among anglers and two with boaters. One angler and one boater session was convened in Fareham, Hampshire, on 17th April, and the other in Altrincham, Greater Manchester, on 18th April.

Participants were recruited using screening questionnaires to ensure we involved a good cross-section of anglers (e.g. a mix of coarse and game anglers, match, specialist and pleasure anglers) and boaters (e.g. a mix of types of boating carried out, those who take part in competitions and those who are pleasure boaters).

During the discussions, copies of the *Check, Clean, Dry* communication materials were presented to participants without any preamble or contextualisation in order to capture immediate impressions. In one angler and one boater group, the original materials were presented first, followed by the revised materials; in the other groups, the revised materials were presented first, followed by the originals.

Spontaneous reactions were followed up with more specific exploration of: views on the perceived impact of the materials, the messaging, the call to action, at

¹⁰ The NNSO organised an Invasive Species Week which ran from 23-29 March 2018. The pilot was completed just before this initiative. Although it finished just before the main fieldwork was undertaken, it may have had an impact on respondents' levels of awareness of the issues.

whom the materials were felt to be aimed, and the overall look and feel and specific design features.

Copies of the screening questionnaires, topic guides and stimulus materials are provided in Volume 2: Appendices, published under separate cover.

3.5 Interpreting the Findings

3.5.1 Quantitative data

When conducting a sample survey to estimate the percentage of people in a population that have a certain characteristic or opinion, the margin of error measures the reliability of the percentage or other estimate based on the survey data. As Table 3 indicates, the margin of error is smaller when the sample size (n) is

Table 3: Relationship between Margin of Error and Sample Size at the 95% Confidence Level

Sample Size (n)	Margin of Error (M.E.)
50	±14.1%
100	±10.0%
150	±8.2%
200	±7.1%
400	±5.0%
600	±4.1%
1000	±3.2%

larger. However, the table also reveals that there is a diminishing return from taking larger and larger samples. In order to half the margin of error, the sample size has to quadruple. It should also be noted that the margin of error does not provide information about bias or other errors in a survey.

The current survey findings are based on samples of 600 (in-home) and 150 (telephone) respondents and a margin of error of ±4.1% and ±8.2% respectively.

Statistical significance testing was performed as follows:

- **sub-group differences within any given sample (e.g. between men and women in the general public survey)**

The z-test function built into Snap software was used to compare pairs of percentage scores to see if the difference between them was *statistically significant*.

For each row in a table it compares the Break Percent for each column with all other columns. For example, in the cross-tab below, the percentage of respondents aged 16-24 that did not have children (91%) is compared with the percentage of respondents in each of the other age bands that did not have any children (35%, 42% and 62% respectively).

Each cell of the table contains the Break percent and a series of letters and hyphens. This is the output of the z-test and indicates which differences are significant and which are not significant, at the specified confidence levels.

The three possible characters and their meanings are:

- A hyphen, meaning the difference is not statistically significant
- A lower case letter indicating that the difference is statistically significant at the 95% confidence level
- An upper case letter indicating that the difference is significant at the 99% confidence level.

Counts Break % z-test Respondents	Total	Age			
		A. 16-24	B. 25-44	C. 45-64	D. 65+
Base					
Unweighted	604	100	201	203	100
Weighted	604	85	199	187	133
A3 Record whether respondent has any children					
Does not have children	309	77	71	78	83
	51%	91%	35%	42%	62%
		-BCD	A--D	A--D	ABC-
Has 1 or more child aged under 12	136	6	102	28	1
	22%	7%	51%	15%	1%
		-B-d	A-CD	-B-D	aBC-
Has 1 or more child aged 12-16	67	-	37	30	-
	11%	-	19%	16%	-
		-BC-	A--D	A--D	-BC-
Has 1 or more sons/daughters aged 17 or older	150	2	21	78	49
	25%	2%	10%	42%	37%
		-bCD	a-CD	AB--	AB--

The letters and hyphens refer, in order, to the other columns within the variable. In the example above, A refers to the 16-24 age band, B to the 25 to 44 age band, and so on. This indicates that the percentage of respondents aged 16-24 that did not have any children was significantly higher than the percentage of respondents in all other age bands at the 99% confidence level. It also reveals that respondents in the two middle age bands (25-44 and 45 to 64) were significantly less likely to not have any children compared to those in the youngest and oldest age bands, but that the difference between age band 25-44 (35%) and 45-64 (42%) was not statistically significant.

In the same way, where mean scores were computed based on rating scales, the in-built t test function was used to compare each mean with every other mean for any given sub-group.

- **differences between different samples (e.g. between the general public and exotic pet owners or between the 2008 and 2018 anglers):**

Z tests (<http://www.socscistatistics.com/tests/ztest/Default2.aspx>) and t tests (<https://www.maritzcx.com/maritz-stats/ttest/>) were calculated using online tools.

The tables and charts in the report show the percentage of respondents giving each answer. These may add to more than 100 either because of rounding errors or because respondents could select more than one answer. The tables and figures are based on the total sample unless stated otherwise. Colour coding has been used to identify statistical differences. Cells highlighted in green indicate a statistically higher percentage or mean and those highlighted in red indicate a statistically lower percentage or mean.

The tables and charts based on the general public surveys (2008 and 2018) are based on the weighted data.

Thirty eight of the Exotic Pet Owners were included within the General Public sample. This means that the comparisons between these two samples are not entirely independent. Although it would have been possible to remove these 38 respondents from the General Public sample before statistical comparisons were

made, this would have meant the General Public sample may not have been fully representative and the decision was taken to keep the two samples intact.

In the case of the exotic pet owners, anglers and boaters, care is needed when generalising the findings to the wider populations given that the samples may not be fully representative of all exotic pet owners, anglers or boaters.

3.5.2 Qualitative data

The qualitative findings in this report provide insights into the opinions of a small number of anglers and boaters. As such, they are indicative of the broader picture. Nevertheless, great care is needed when trying to generalise to the wider population.

This element of the research reflects the opinions of a relatively small number of individuals that have been explored in considerable depth. Not only is the sample small, it is not necessarily representative of the full range of anglers and boaters.

During the focus groups the researchers used topic guides and supporting stimulus materials to ensure that the relevant issues were covered. They also followed up particular points to ensure the point being made was understood, and may have explored relevant additional points that were made by the participants. Transcripts of the discussions were used to identify the key themes and issues. The views of different participants have been used to 'triangulate' the findings.

With a few exceptions, answers were not recorded in the form of tick boxes or head counts since the aim was to explore the range of opinions expressed and actions taken rather than to 'measure' how many participants had expressed a particular view. One reason for this is that people do not always express their answers in black and white terms. Another reason is that it is not possible to explore every issue in every discussion. Some issues may only have arisen in certain discussions.

In analysing the data, one of the things that has been looked for is where there is a consensus of opinion or a similar view on an issue and this is expressed using language such as 'all', 'most', 'widespread', 'widely held', 'many people', etc.

However, it is also important to look for the range and variety of opinion that is expressed; these might be opinions offered by just 'a few' participants as well as those opinions mentioned by 'some' of the sample (i.e. more than a 'few' but less than 'many'). It is also useful to report things that may only be mentioned by one or two people if these seem to offer relevant and insightful observations. This would normally be made clear by stating something along the lines 'one participant said...'

Use of terms such as 'most' or 'few', etc., relate only to the sample under consideration and should not be taken to imply 'most members of the total population'.

3.6 Other Issues

The project was conducted in compliance with ISO 20252:2012, the international standard for market research.

4 Achieved Samples

4.1 General Public

604 in-home interviews were carried out. The data set was weighted so that it was representative of the adult population of England in terms of gender, age, SEG, GOR and the ONS urban/rural classification. The key sample details are summarised below based on the weighted data.

4.1.1 Gender and Age

Just over half the sample (51%) was female (see Figure 1). In terms of age, 14% were aged 16-24, 17% 25-34, 16% 35-44, 17% 45-54, 14% 55-64 and 22% 65 and above (see Figure 2).

Figure 1: General Public Sample Profile (Gender)

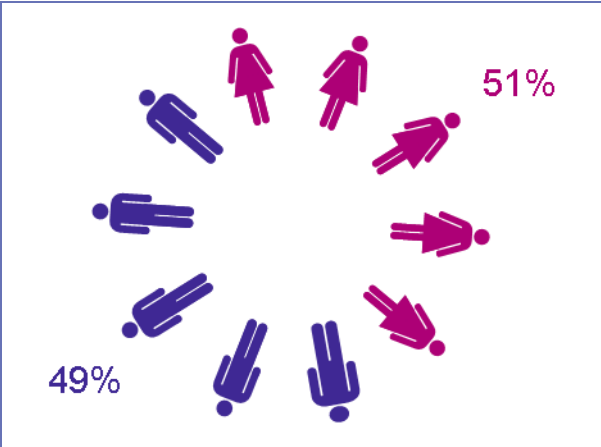
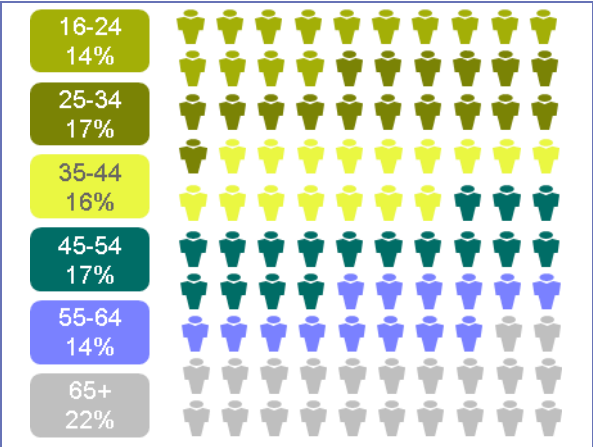


Figure 2: General Public Sample Profile (Age)



4.1.2 Socio-economic group and Household structure

54% of the sample were from SEGs ABC1 and 46% were from SEGs C2DE (see Figure 3). Just over half the sample (51%) did not have any children, 22% had one or more child aged under 12, 11% had one or more child aged between 12 to 16, and a quarter of the sample (25%) had one or more children aged 17 and above (see Figure 4).

Figure 3: General Public Sample Profile (SEG)

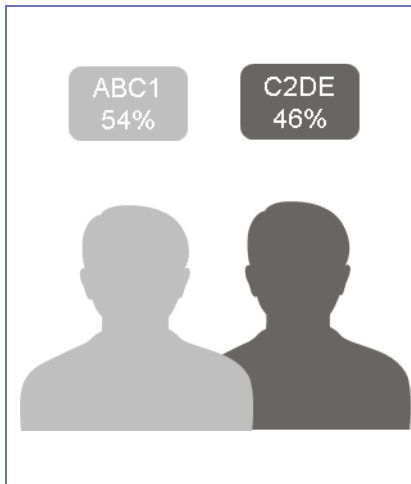
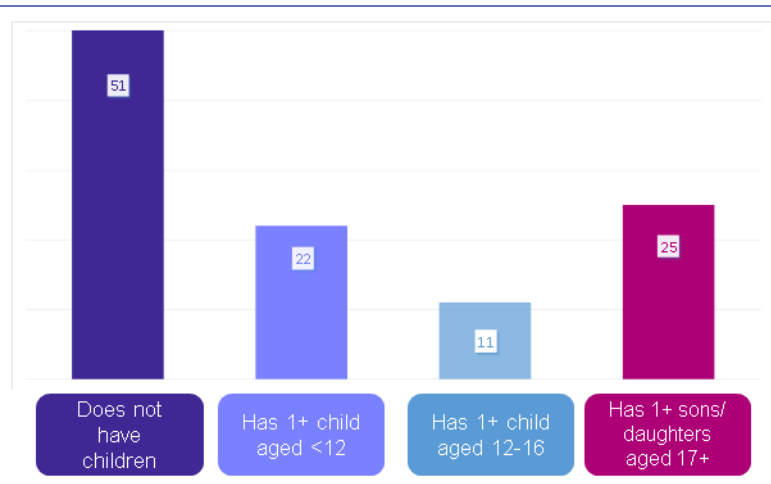


Figure 4: General Public Sample Profile (Household Structure)



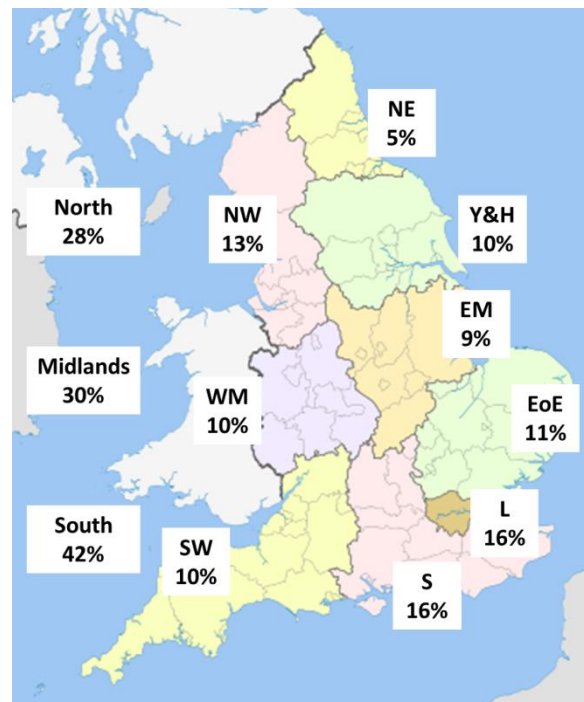
Household structure figures do not sum to 100% as respondents could have children from different age bands.

4.1.3 Location

The sample was drawn from across all nine of the English government regions. In terms of the analysis, these were grouped into North, Midlands and South to enable comparisons based on larger sub-groups (see Table 4).

The 60 sampling locations were selected to be representative of the three main categories that make up the ONS definition of urban/rural areas. In addition, respondents were asked to self-define the nature of the area in which they lived by classifying it as urban, semi urban/rural or rural. Table 5 reveals that, in line with the English population, two thirds of locations met the ONS definition of ‘predominantly urban’ and one in five (21%) met the definition of ‘rural’. Although there was a reasonable degree of correspondence between this classification and respondents’ own classification, only 17% classed the area they lived as ‘rural’. Moreover, 29% of respondents that self-classified as living in rural locations were from locations that

Table 4: General Public Sample Profile (Government Regions)



did not meet the ONS definition of rural. It was notable that in the analysis of the data, there were more statistically significant differences between locations based on self-definitions compared to those based on the ONS definitions.

Table 5: General Public Sample Profile (Urban/Rural Locations)

			Self-defined		
			Urban	Semi-urban/ rural	Rural
	Base (weighted)	601	325	173	103
ONS categories	Predominantly urban	66%	85%	60%	18%
	Urban with sign rural	13%	11%	17%	11%
	Rural	21%	4%	23%	71%

4.2 Exotic Pet Owners

4.2.1 Gender and Age

Exotic pet owners were more likely to be female (61% vs. 51%) and younger (52% aged under 35 vs. 31%) compared to population as a whole (see Figure 5 and Figure 6).

Figure 5: Exotic Pet Owners Sample Profile (Gender)

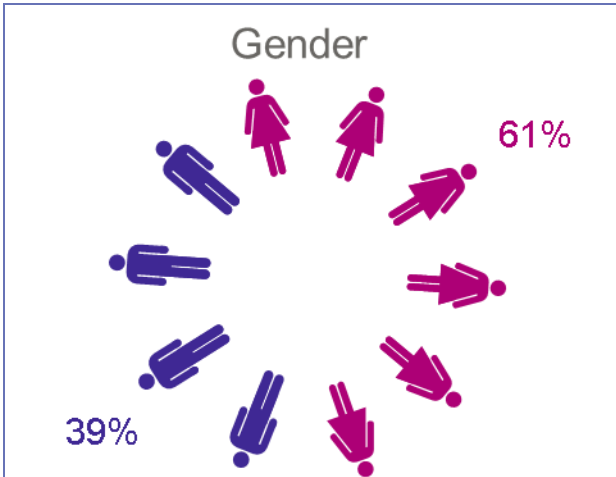
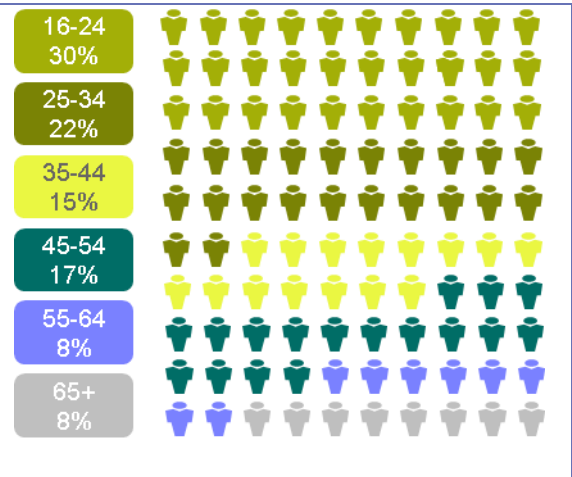


Figure 6: Exotic Pet Owners Sample Profile (Age)



4.2.2 Socio-economic group and Household structure

Although within the general public sample, the profile of exotic pet owners was significantly higher among SEGs C2DE, this was on a small base. Within the dedicated exotic pet owner sample, there were equal proportions of ABC1s and

C2DEs (see Figure 7). The household structure was broadly the same as that of the general public sample (see Figure 8).

Figure 7: Exotic Pet Owners Sample Profile (SEG)

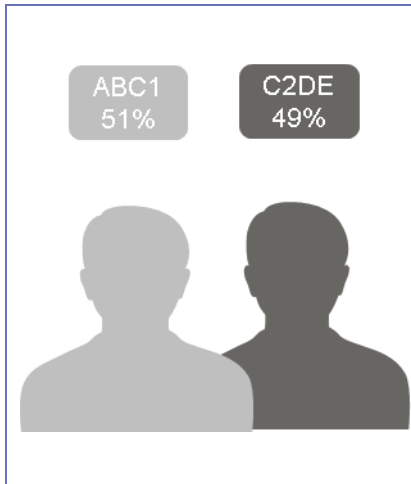
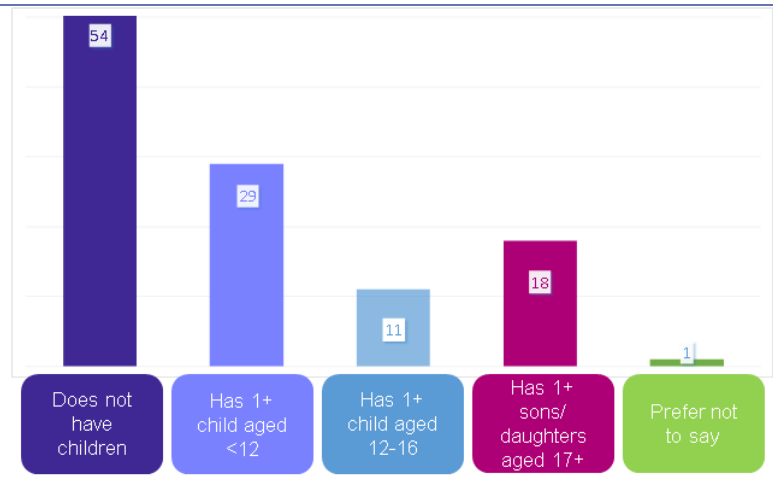


Figure 8: Exotic Pet Owners Sample Profile (Household Structure)



Household structure figures do not sum to 100% as respondents could have children from different age bands.

4.3 Anglers

4.3.1 Gender and Age

Compared to the general public, the angler sample was mainly male (95% vs. 49%) and older (74% aged 45 and above vs. 53%). This is illustrated in Figure 9 and Figure 10.

Figure 9: Angler Sample Profile (Gender)

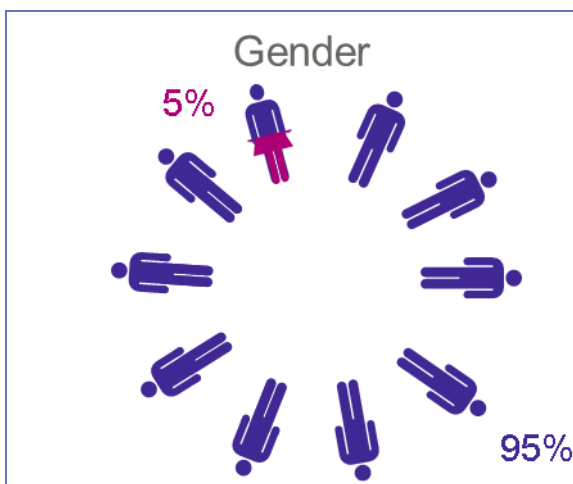
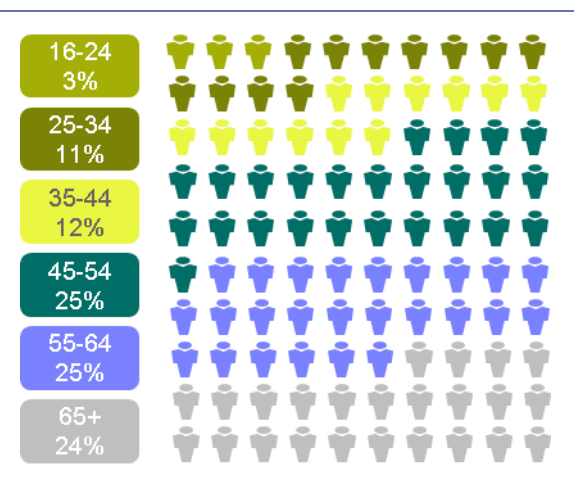


Figure 10: Angler Sample Profile (Age)

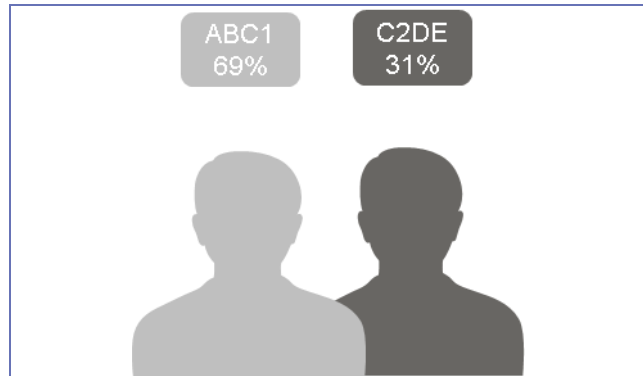


The gender and age split was comparable with the 2008 angler sample (97% male; 73% aged 45 and above).

4.3.2 Socio-economic group

Figure 11 reveals that over two-thirds of the angler sample were from SEGs ABC1; this was significantly higher compared with the general public (54%) and in comparison with the 2008 angler sample (37% were from SEGs ABC1).

Figure 11: Angler Sample Profile (SEG)



4.3.3 Fishing locations and Type of angler

Over half the sample (55%) only fished in freshwater, while only 9% only fished in marine water (see Figure 12).

Figure 12: Angler Sample Profile (Fishing Locations)

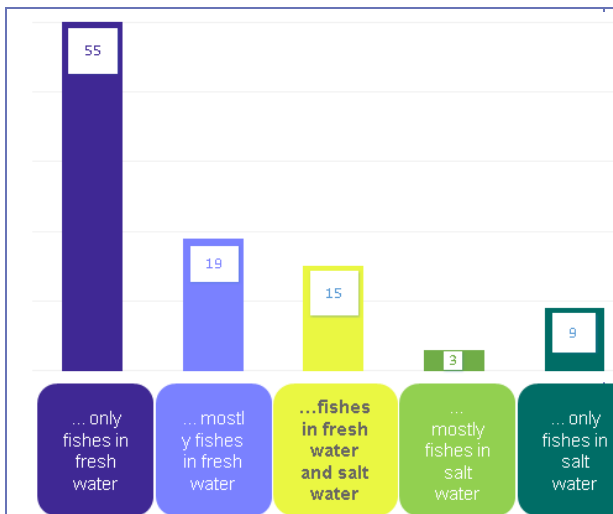
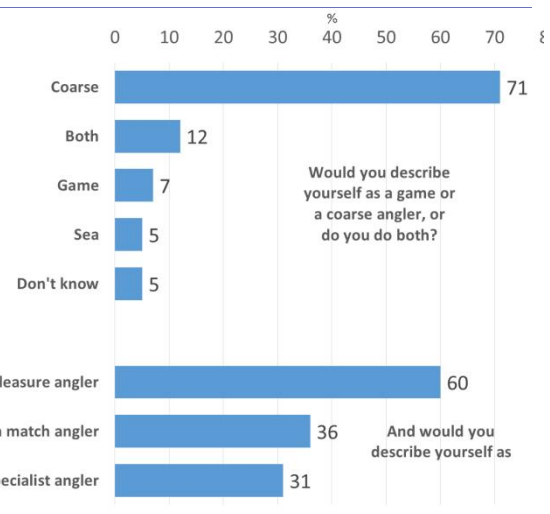


Figure 13: Angler Sample Profile (Type of Angler)



Figures do not sum to 100% due to rounding (fishing locations) or because respondents to select more than one answer (pleasure/match/specialist).

The majority of the sample (71%) described themselves as 'coarse anglers', which was lower compared to the 2008 sample (83%) but the numbers are not directly comparable as the 2008 sample did not include anglers that fished in marine waters. Six out of ten anglers (60%) described themselves as 'pleasure anglers',

just over a third (36%) described themselves as ‘match anglers’ and a slightly smaller proportion (31%) as ‘specialist anglers’. This means that compared to 2008, the current sample included fewer pleasure anglers (in 2008 91% of the sample described themselves in this way) and a greater proportion of match and specialist anglers (the proportions in the 2008 sample were 15% and 9% respectively). See Figure 13.

4.3.4 Angling club members and those working in the sector

Two thirds (67%) of the 2018 sample were members of an angling club, which is significantly more than in the 2008 survey (49%). Three in ten anglers in the sample (30%) worked in the sector, for example, in fishing tackle and bait shops.

Differences between the 2018 and 2008 samples are likely to be due to difference in the approach to sampling.

4.4 Boaters

4.4.1 Gender and Age

Within the sample, and compared to the general public as a whole, boaters were significantly more likely to be male (69% vs. 49%) and aged between 45 and 64 (52% vs. 31%). See Figure 14 and Figure 15.

Figure 14: Boater Sample Profile (Gender)

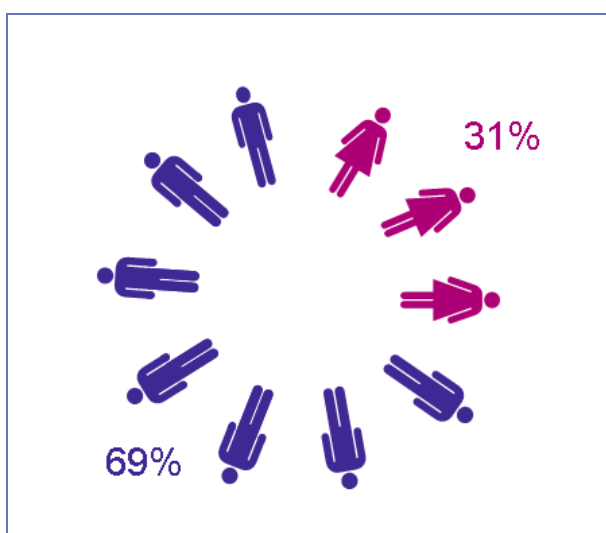
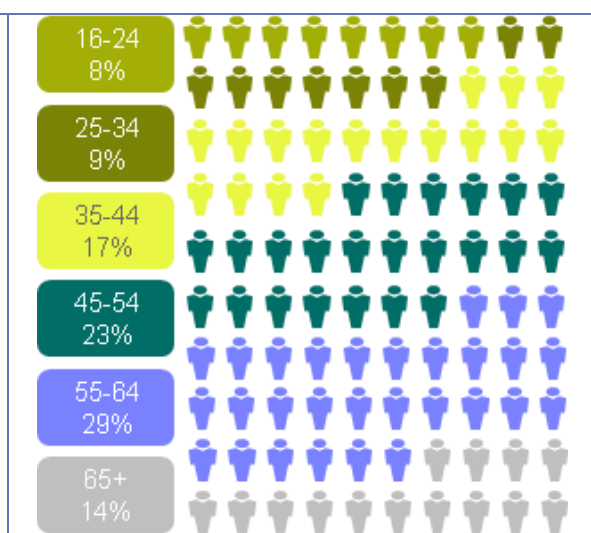


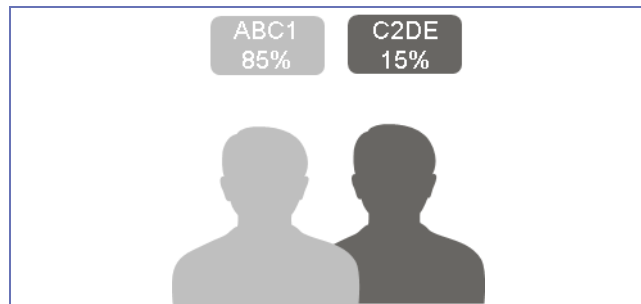
Figure 15: Boater Sample Profile (Age)



4.4.2 Socio-economic group

The majority of boaters within the sample (85%) were from SEGs ABC1 which compares to 54% of the general public as a whole (see Figure 16).

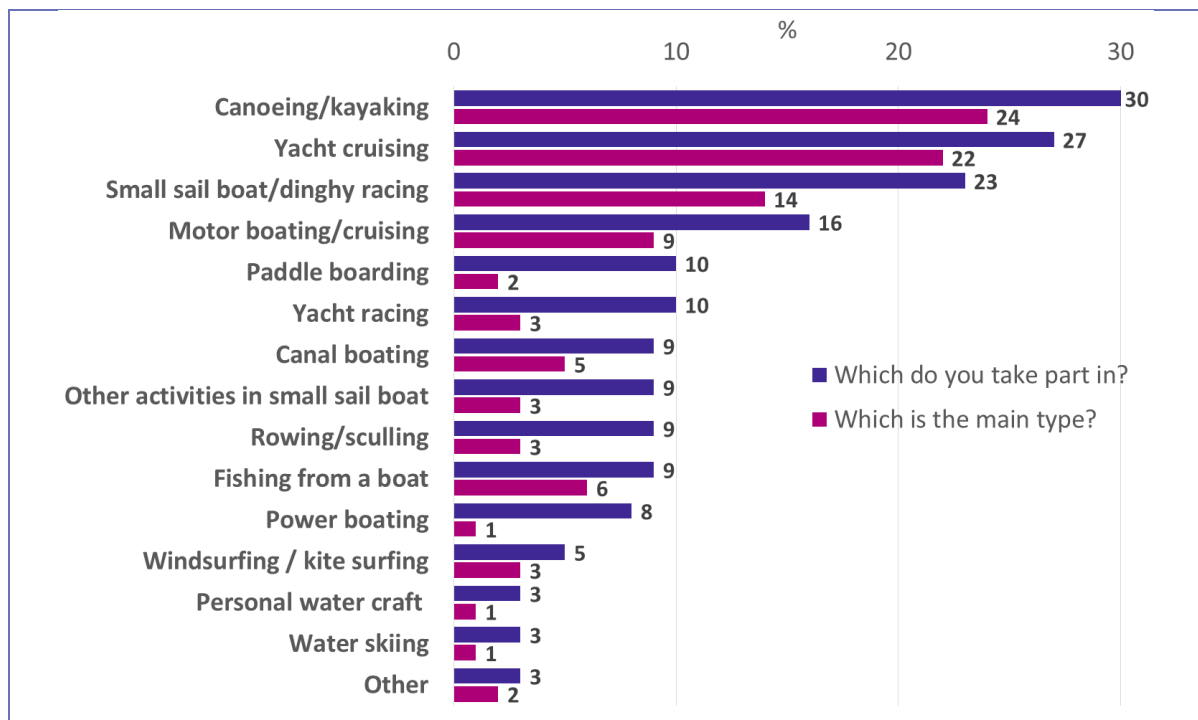
Figure 16: Angler Sample Profile (SEG)



4.4.3 Type of boating and type of boater

The sample included a broad cross-section of different types of boating, especially canoeing/kayaking, yachting, sailing, and motor boating. As Figure 17 indicates, boaters often took part in a number of different types of boating. The 'other' category included forms of boating not covered elsewhere, such as 'dragon boating' and 'tug boats'.¹¹

Figure 17: Boater Sample Profile (Type of Boating)



Base: all boaters – 150. Figures do not sum to 100% because respondents could choose more than one answer (which do you take part in) and because of rounding (which is the main type).

¹¹ The boaters sample was divided into four main sub-groups based on the main type of boating activity they carried out and used in the analysis: yachting (n=37), canoeing/kayaking (n=35), sail/dinghy boating (n=25) and motor boating (n=13). A fifth sub-group labelled 'other' included all other types of boaters (n=38). Two respondents were not asked which type of boating they mainly carried out.

The majority of the sample described themselves as 'pleasure boaters' (67%) although a third also took part in competitions (see Figure 18).

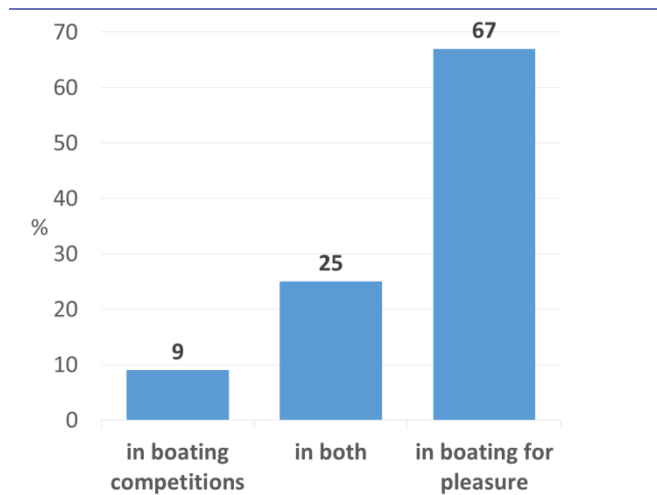
Eight out of ten of the sample (82%) owned their own craft.

4.4.4 Boating locations and Club membership

As Figure 19 illustrates, the sample included an equal mix of those that boated only/mainly in freshwater (45%) as well as those that boated only/mainly in marine waters (41%).

Just under half the sample (47%) belonged to a boating club.

Figure 18: Boater Sample Profile (Type of Boater)



Base: all boaters – 150
 Figures do not sum to 100% because of rounding.

Figure 19: Boater Sample Profile (Boating Locations)



5 Garden and Pond Owners

5.1 Key Findings

The key findings from this area of the research can be summarised as follows:

<ul style="list-style-type: none">• Four-fifths (81%) of the sample of the general population had a garden, a significant decrease from 90% in 2008.
<ul style="list-style-type: none">• One-sixth (16%) had a pond or water feature, down significantly from 22% in 2008. 79% of ponds contained plants, fish or other which was comparable with the 2008 findings where 77% of ponds had plants, fish or other aquatic life.
<ul style="list-style-type: none">• The main sources of plants for their gardens were garden centres (75%), DIY stores (36%), supermarkets (33%), retail nurseries (21%) and friends/relatives (21%):<ul style="list-style-type: none">○ 2018 saw a significant increase in the use of supermarkets (up from 21%), and a significant decrease in the use of DIY stores (down from 48%), friends/relatives (down from 32%) and markets (down from 25%).
<ul style="list-style-type: none">• 7% of the general population sample reported having ever considered bringing plants or cuttings back from abroad. The key factors which influenced their decision on whether or not to do so were general concern about pests and diseases and signs at ports and airports.
<ul style="list-style-type: none">• The main sources of plant information and advice in 2018 were plant labels/information on seed packets (46% and 21% respectively), friends/relatives (39%), garden centre/nursery staff (39%) and the Internet (22%):<ul style="list-style-type: none">○ 2018 saw a greater reliance on the Internet (up from 9%) and seed packets (up from 15%) and a decreased reliance on gardening books (down from 16%) and magazines (down from 13%).
<ul style="list-style-type: none">• The research highlighted two main methods of disposal of garden plants, or aquatic plants and animals, these being council garden waste (51%) and composting (44%). Although disposal in council garden waste is still the most common method of disposal, there was a significant decrease in the proportion mentioning this method since 2008, down from 60% to 51%. There were no significant increases in any other forms of disposal.
<ul style="list-style-type: none">• Four respondents admitted to disposing of plants into the wild; two flushed live fish or other aquatic animals down the toilet; one admitted to putting aquatic plants into a waterway; one admitted to planting them in the wild. This is directly comparable with the numbers admitting to inappropriately disposing of plants and animals in 2008: four admitted to disposing of plants into the wild, two admitted to planting them in the wild and one admitted to putting aquatic plants into a waterway. The option of flushing live fish and other animals down the toilet was not included in the 2008 survey.

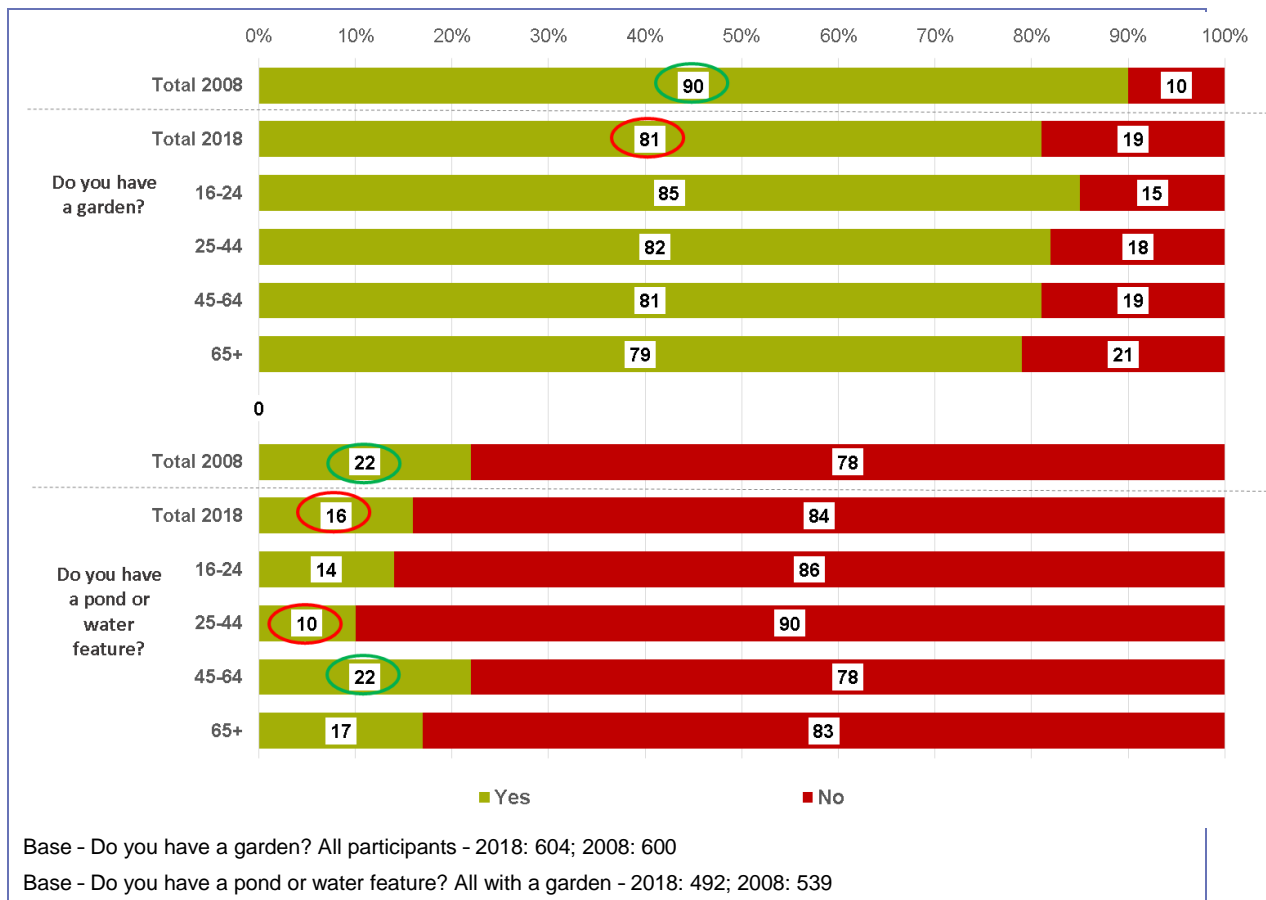
5.2 Ownership of Gardens and Ponds

As shown in Figure 20, four-fifths (81%) of the general population in 2018 stated that they had a garden. This was a significant decrease from 90% in 2008 and may suggest a decline in house ownership and/or an increase in flats or apartments over that period.

One-sixth (16%) of those with a garden had a pond or water feature. This also represents a significant decline since 2008 from just over a fifth (22%).

Figure 20 also shows some notable differences by age group for those having a pond or water feature, although it is only the difference between those aged 45-64 and those aged 25-44 that was significant, the proportion being significantly higher amongst the older age group.

Figure 20: Garden and Pond Ownership



There were also some significant differences in garden and pond/water feature ownership by location, household structure and socio economic group (SEG) not shown in the figure above, namely:

- Location:
 - those in self-defined **semi-rural** and **rural** areas¹² were significantly more likely to have a garden than those in urban areas (89% and 92% respectively vs. 75%)
 - those in self-defined **rural** areas were significantly more likely to have a pond than those in urban areas (23% vs. 13%)
- Household structure:
 - those with **families** were significantly more likely to have a garden (90% vs. 78%)
- SEG:
 - **ABC1s** were significantly more likely than C2DEs to have a pond or water feature (19% vs. 12%).

Four fifths (79%) of those with a pond or water feature had plants, fish or other aquatic life within it, two-thirds (66%) having plants and roughly two-fifths having fish (39%) and other aquatic life (38%).

These results are set out in full in Table 6, which also shows the findings from 2008. The latter were very similar, with no significant differences between the two surveys.

As shown in Table 6, there are a number of significant differences by age group (**nb** low bases), namely:

- those aged **25-44** and those aged **65+** were more likely to have **plants** compared to other age groups

¹² In addition to locations being classified based on ONS definitions, respondents were invited to classify their location as 'urban', 'semi-urban/rural' or 'rural'. We have referred to these in the text as 'self defined', as in 'self defined rural areas', whereas those based on the ONS classification are referred to as 'ONS defined'.

- those aged **25-44** were more likely to have **fish** compared to those aged 45 and above
- those **aged 16-24** and those aged **45-64** were significantly more likely to not have any plants, fish or other aquatic life compared to those aged 25-44 and those aged 65+.

There were also some significant differences of note by self-defined location and awareness of the term INNS (**nb** low bases), including:

- those in self-defined **semi-rural** and **rural** areas were significantly more likely to have plants than those in urban areas (76% and 90% respectively vs. 42%)
- those in **rural** areas were significantly more likely to have other aquatic life than those in urban areas (61% vs. 21%)
- those **familiar with the term INNS** were significantly more likely to have other aquatic life than those unfamiliar with the term (54% vs. 21%).

Table 6: Plants and Aquatic Life within Ponds

	2018					2008
	Total	16-24	25-44	45-64	65+	Total
Base (Weighted)	78	10	16	34	18	117
	%	%	%	%	%	%
plants	66	49	83	49	93	66
fish	39	50	68	30	25	47
other aquatic life	38	25	35	31	58	43
none of these	21	38	4	35	-	23

Base: all with a pond or water feature – 2018: 78.; 2008: 117

Columns add to more than 100% because respondents could select more than one answer.

5.3 Responsibility for Plants Grown

Participants in the general public survey were asked who was responsible for deciding what sorts of plants were grown in their garden.

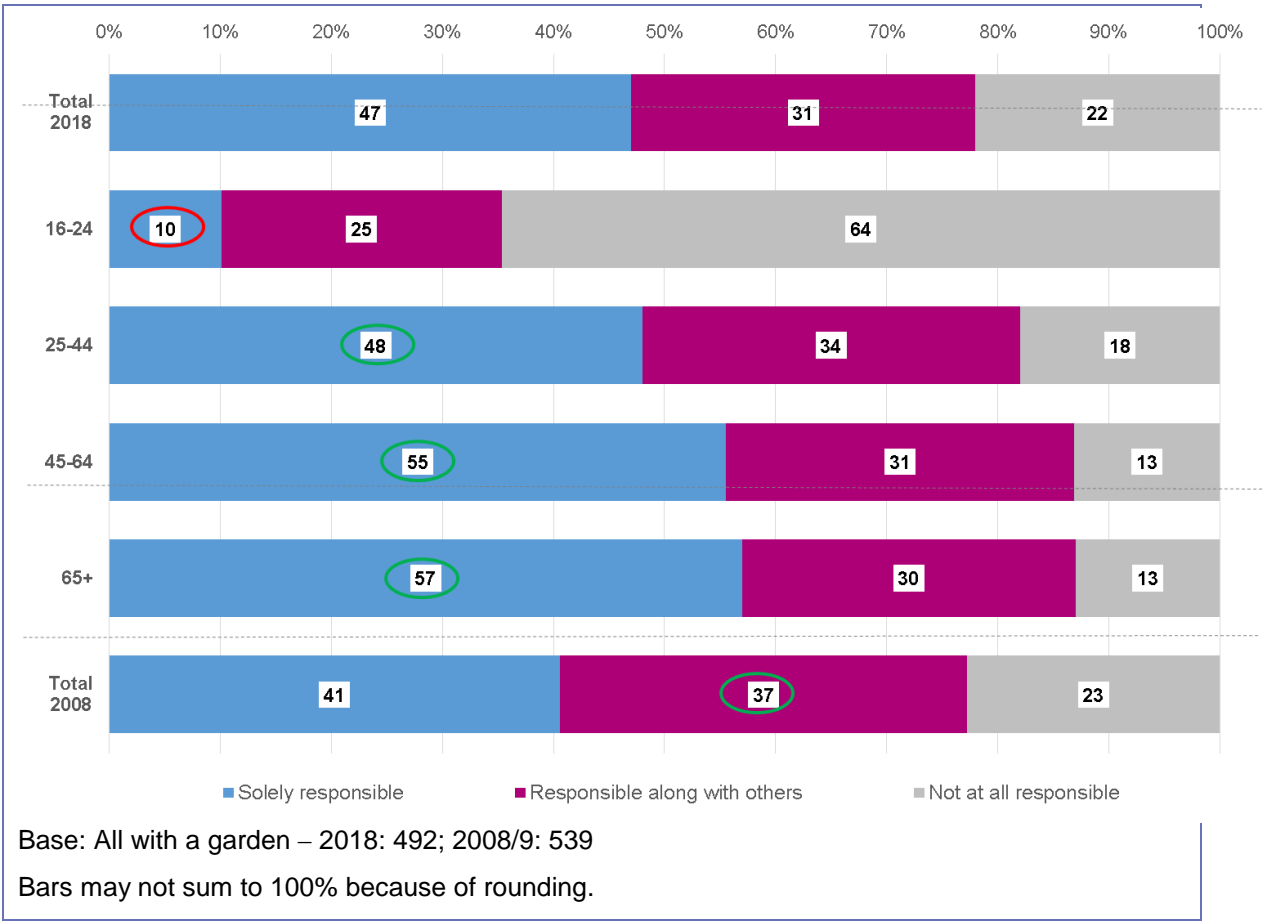
As shown in Figure 21, half of the sample (47%) were solely responsible, with a third (31%) being responsible along with others. One fifth was not at all responsible for the sorts of plants grown in their garden. As the chart demonstrates, these results are similar to 2008, although the number jointly responsible has dropped significantly between the two surveys, from 37% to 31%.

The chart also shows that those aged 25+ were significantly more likely than the youngest age group (16-24) to be solely responsible.

Other significant differences were seen by gender and level of familiarity with INNS, namely:

- **females** were significantly more likely to be solely responsible (55% vs. 38%), as were those familiar with the term INNS (52% vs. 42%)
- those with **families** were significantly more likely to be responsible along with others than those without (39% vs. 27%).

Figure 21: Responsibility for Deciding Which Plants Are Grown



5.4 Sources of Plants and Plant Information

Those with sole or joint responsibility for the sorts of plants grown in their garden were asked where they, or they and other members of their family, got plants for the garden and/or pond.

As in 2008, the majority (75%) got their plants from garden centres (see Table 7). DIY stores, supermarkets, retail nurseries and friends/relatives were also popular sources, although there was a significant decrease in those sourcing from DIY stores (from 48% to 36%) and friends/relatives (32% to 21%). Another source that has seen a decline since 2008 is markets, down from 25% in 2008 to 16% in 2018. By contrast, there has been a significant increase in sourcing from supermarkets, up from 21% in 2008 to 33% in 2018.

Table 7: Sources of Plants for Garden and Pond

	Total	Urban/Rural (self defined)			2008
		Urban	Semi-urban/rural	Rural	
Base (Weighted)	383	187	121	75	411
	%	%	%	%	%
Garden centre	75	74	73	83	79
DIY store	36	44	34	20	48
Supermarket	33	37	29	30	21
Retail nursery	21	15	26	30	22
Been given them by friends/relatives	21	15	19	39	32
Market/market stall	16	13	19	19	25
Mail order (from the UK)	4	4	2	9	6
From wild plants from my local area	4	2	5	5	5
By some other method	3	3	2	5	1
From a website (from the UK)	3	1	-	10	3

Base: all with responsibility for the plants grown in their garden – 2018: 383 ; 2008: 411
Columns may add to more than 100% because respondents could select more than one answer.

As Table 7 demonstrates, those in self-defined urban areas were significantly more likely to source plants at a DIY store than those in self-defined rural areas,

with the latter more likely to source them at retail nurseries (as are those in semi-rural areas), from friends or relatives or from a UK website.

Other significant differences of note include:

- those with **families** were significantly more likely to source plants from a **DIY store** than those without (44% vs. 32%)
- those in the **North**¹³ were significantly more likely to source plants from **supermarkets** than those in the Midlands (44% vs. 27%)
- those in the **North** were also significantly more likely to source plants **from a market stall** than those in the Midlands or the South (29% vs. 10% and 13% respectively)
- those **aged 65+** were significantly more likely to source plants from a **retail nursery** than those aged 16-44 (30% vs. 16-24: 8% and 25-44: 17%)
- those **familiar with the term INNS** were more likely to source plants from a **retail nursery** (26% vs. 17%), **friends/relatives** (27% vs. 15%) or **via mail order** (7% vs. 1%) compared with those who were unfamiliar with the term
- those **with a pond** with plants and aquatic life were significantly more likely to source plants from a **UK website** than those without (8% vs. 2%).

As shown in Figure 22, only 7% had ever considered bringing plants or cuttings back from abroad, with a significantly higher proportion of those with a pond having considered doing so. The latter cannot be said to be indicative of them having considered bringing plants for their pond back, but rather that the types of people that have a pond are more likely to have a tendency to consider bringing plants back from abroad.

The data also highlighted two further significant differences of note, namely:

¹³ 'North' covers the North East, North West and Yorkshire and Humberside government regions; 'Midlands' covers the East, East Midlands and West Midlands regions; 'South' covers London, the South East and South West regions.

- **females** were significantly more likely to consider bringing plants back than males (10% vs. 4%)
- **those in strong support for controlling INNS** were significantly more likely to have considered doing so (10% vs. 4%).

Asked to name the key factors which influenced their decision on whether or not to bring the plants or cuttings back, the greatest numbers (11 participants in each case) cited a general concern about pests and diseases or signs at ports or airports. The full results are shown in Figure 23 which shows the numbers of participants giving each response rather than the percentage due to the small overall base. 'Something else' included concerns about whether cuttings would survive, and transporting them home, as well as a preference for native plants.

Figure 22: Extent to Which the General Public Have Considered Bringing Plants/Cuttings Back from Abroad

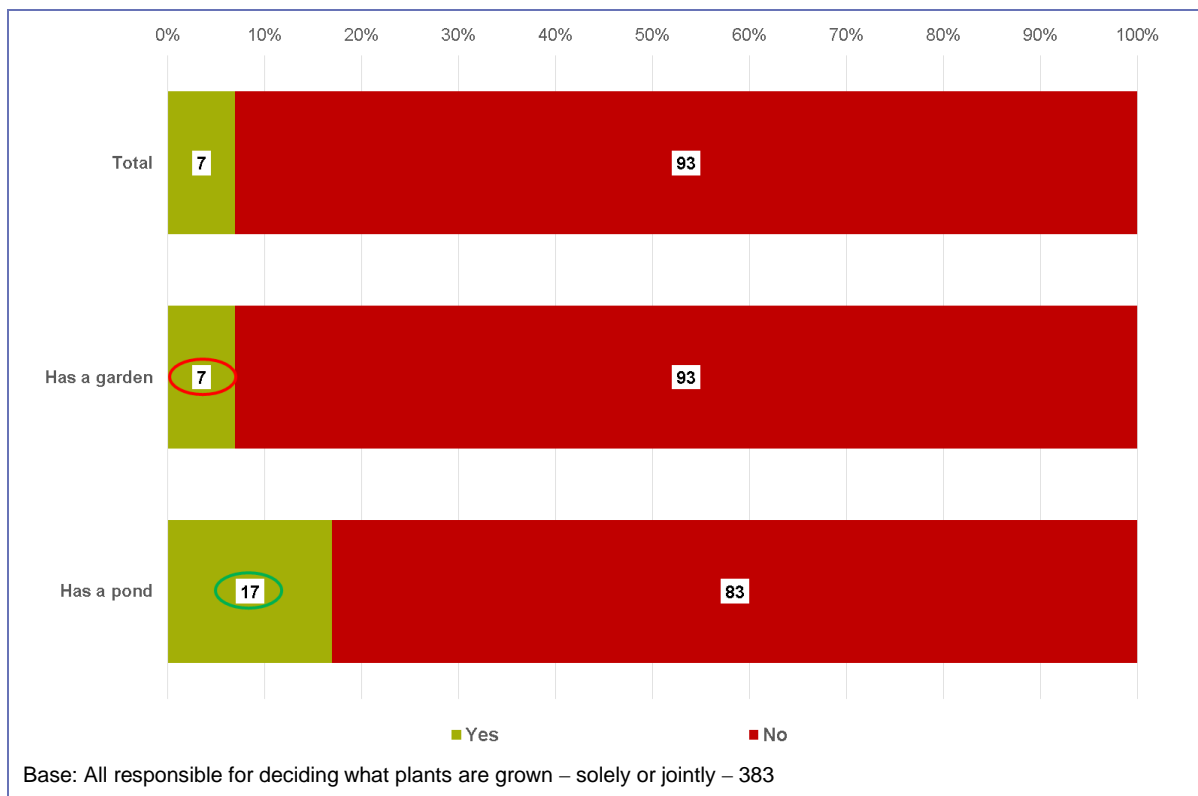
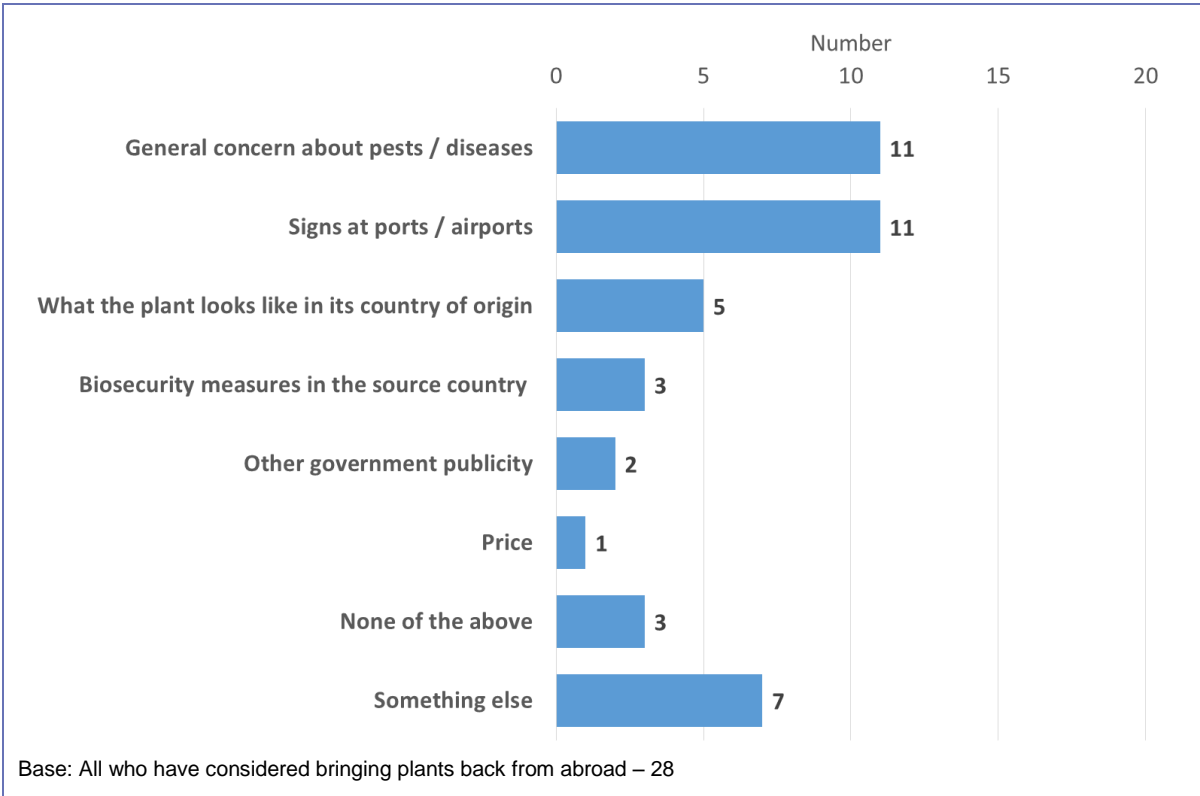


Figure 23: Factors Influencing Decision on Whether or Not to Bring Back Plants or Cuttings



5.5 Sources of Information and Advice on Plants to Buy

Participants in the survey of the general public were asked which, from a given list of potential sources, they used for information and advice to help them decide which plants to buy for their garden or pond.

As shown in Table 8, the information provided by plant labels and seed packets were popular sources of information (46% and 21% respectively). Also popular were friends and relatives (39%), staff in garden centres and nurseries (39%) and the internet (22%).

Comparing the 2008 results with those for 2018 shows a greater reliance on the Internet (22%, up from 9%) and seed packets (21% up from 15%) and a decreased reliance on gardening books (11%, down from 16%) and magazines (6% down from 13%).

Table 8: Sources of Information and Advice on Plants to Buy

	Total	Region			Garden & Pond		2008
		North	Mids	South	Garden	Pond	
Base (Weighted)	383	99	124	161	383	62	413
	%	%	%	%	%	%	%
Labels on plants	46	50	43	46	46	47	47
Friends/relatives	39	32	41	43	39	39	45
Staff in garden centres, nurseries etc	39	41	38	37	39	47	33
Internet	22	21	22	22	22	22	9
Information on seed packets	21	19	20	22	21	23	15
Gardening programmes on TV/radio	19	17	14	25	19	39	20
I don't use any information or advice when buying plants	17	9	18	22	17	10	16
Gardening books	11	13	6	14	11	22	16
Gardening magazines	6	3	3	12	6	9	13
Newspapers	5	2	2	8	5	8	8
Gardening organisations such as RHS, Kew Gardens etc.	4	2	2	8	4	10	3
By some other source of information/advice	1	-	2	2	1	2	1

Base: All responsible for deciding what plants are grown – solely or jointly – 2018: 383; 2008: 413
Columns add to more than 100% because respondents could select more than one answer.

The table also reveals some interesting differences by region and those with ponds:

- those in the **South** were significantly more likely to use **gardening/radio programmes** (25% vs. 14%) and **newspapers** (8% vs. 2%) as sources than those in the Midlands, and were more likely to use **gardening magazines** than those in both the Midlands and the North (12% vs. 3% and 3% respectively). Interestingly, however, they were also more likely than those in the North **not to use any information** (22% vs. 9%)
- those **with a pond** were significantly more likely to use **gardening/radio programmes** and **gardening books** than those with a garden only.

Other significant differences of note which are not shown in the table above include:

- those **aged 65+** were significantly less likely to use **the internet** than those aged between 25 and 64 (7% vs. 25-44: 32% and 45-64: 23%) and significantly more likely **not to use any advice or information** (33% vs. 25-44: 11% and 45-64: 13%)

- those in self-defined **rural areas** were significantly more likely to use **gardening books** than those in semi-rural or urban areas (21% vs. 8% and 9% respectively)
- those **with a family** were significantly more likely to use **plant labels** (56% vs. 40%) and **the internet** (34% vs. 15%) than those without
- those demonstrating **above average support for controlling INNS** were significantly more likely to seek advice from staff in garden centres/nurseries (43% vs. 32%) and on seed packets (24% vs. 15%) compared to those demonstrating below average levels of support
- those **aware of the term INNS** were significantly more likely to use many sources including **friends/family** (44% vs. 34%), **radio/TV gardening programmes** (24% vs. 15%), **gardening books** (18% vs. 5%), **gardening magazines** (10% vs. 3%) and **gardening organisations** (7% vs. 2%) compared with those unfamiliar with the term.

5.6 Disposal of Plants and Animals

As shown in Table 9, the most common means of disposing of plants from the garden, and any plants and animals from ponds, is to put them in the Council garden waste, or to compost them. These were also the top two responses in 2008, although the number using Council garden waste has dropped significantly. There have been no corresponding significant increases in usage of any other means.

Four respondents admitted to disposing of plants into the wild; two flushed live fish or other aquatic animals down the toilet; one admitted to putting aquatic plants into a waterway; one admitted to planting them in the wild. This is directly comparable with the numbers admitting to inappropriately disposing of plants and animals in 2008: four admitted to disposing of plants into the wild, two admitted to planting them in the wild and one admitted to putting aquatic plants into a waterway. The option of flushing live fish and other animals down the toilet was not included in the 2008 survey.

Table 9: Ways of Disposing of Plants from Gardens and Plants and Animals from Ponds

	Total	Region			Garden & Pond		2008
		North	Mids	South	Garden	Pond	
Base (Weighted)	383	99	124	161	383	62	416
	%	%	%	%	%	%	%
Put them in the council garden waste	51	62	59	38	51	35	60
Compost them	44	26	33	62	44	64	40
Take them to the tip/refuse dump/recycling centre	13	7	13	17	13	23	12
Put them in the dustbin/wastebin	13	12	15	12	13	8	13
Burn them	4	6	3	5	4	14	3
Dispose of them in the wild (e.g. throw them into a hedgerow)	1	2	1	1	1	-	1
Flush live fish/other aquatic animals down the toilet	0	0	-	1	0	-	0
Put aquatic plants into a pond, river or lake	0	-	-	1	0	2	0
Plant them in the wild	0	-	-	0	0	1	0
Shred them	-	-	-	-	-	-	1
Something else	1	3	-	-	1	3	0
None of the above	3	3	3	2	3	3	2

Base: All responsible for deciding what plants are grown – solely or jointly – 2018: 383; 2008: 416
Columns add to more than 100% because respondents could select more than one answer.

There were some notable differences by region. Those in the **North** and **Midlands** were significantly more likely to use **Council garden waste** than those in the South (62% and 59% vs. 38%), as were those with a **garden only**, i.e. no pond (51% vs. 35%). Those in the **South** or with a **pond** were more likely to **compost** garden waste (62% and 64%); those in the **South** were also more likely to take it to the **tip/refuse dump/recycling centre** (17%). Those with a **pond** were also more likely to **burn** garden waste than those with a garden only (14% vs. 4%); this is likely to be due to the higher proportion of pond owners living in rural areas, with those in self-defined **rural** areas being significantly more likely to **burn** garden waste than those in urban areas (11% vs. 2%).

There were also a small number of other notable significant differences not shown in the table above, including:

- those **aged 16-24** were significantly more likely to dispose of plants in a **dustbin/wastebin** than those aged 45+ (28% vs. 11% for 45-64 year olds and 10% for those aged 65+)

- those in self-defined **rural areas** were significantly more likely to dispose of them **in the wild** than those in semi-rural or urban areas (5% vs. 0% respectively)
- those **familiar with the term INNS** were significantly more likely to **compost** (49% vs. 38%) and **burn** them (7% vs. 2%).

6 Exotic Pet Owners

6.1 Key Findings

The key findings from this area of the research can be summarised as follows:

<ul style="list-style-type: none">• 5% of the general public owned an exotic pet.
<ul style="list-style-type: none">• A wide range of different exotic pets were owned including, in particular, lizards (n=38), tortoises (n=33), snakes (n=30), tropical fish (n=25), parrots (n=14), molluscs (n=6), frogs/toads (n=5) and spiders (n=4).
<ul style="list-style-type: none">• The majority were kept in a cage or tank indoors.
<ul style="list-style-type: none">• The main sources of exotic pets were local pet shops (38%) and breeders (19%), family/friends (24%), aquatic shops/centres (16%), especially for fish (57%) and online (9%), especially for insects/invertebrates (47%).
<ul style="list-style-type: none">• The main sources of pet food and equipment were local pet shops (55%), pet chain stores (26%), online/from a website (25%) and aquatic shops / centres (13%), especially for fish (30%).
<ul style="list-style-type: none">• The main sources of information and advice were online (61%), especially for amphibians & reptiles (67%), staff in pet shops / aquatic centres (34%), especially for fish (53%), specialist organisations for mammals (40%) and insects/invertebrates (27%), although the latter are used by only 7% overall.
<ul style="list-style-type: none">• The key ways of disposing of exotic pets if their owners were no longer able to keep them were giving them to family/friends (66%), local animal shelters (23%) and advertising online (22%). Three pet owners (2%) said they would 'let them go in the wild'.

6.2 Ownership of Exotic Pets

6.2.1 Proportion of the public owning an exotic pet

The survey of the general public revealed that 5% of the general population in England own an exotic pet. The survey also suggested that ABC1s were significantly more likely 'not to own' an exotic pet than C2DEs (see Figure 24). However, this is based upon a very small overall sample of exotic pet owners in the general public so should be treated with caution, particularly given that our dedicated sample of exotic pet owners was split equally between ABC1s and C2DEs.

As previously noted, the method of drawing the sample for the majority of exotic pet owners means we cannot be sure it is entirely representative of all exotic pet owners (see 3.3.5). One way of checking this is to compare the main types of exotic pets owned by the general public (which is a representative sample) with those owned by respondents sourced in other ways. This information is provided

in Table 10. This reveals that the exotic pet sample contains more owners of amphibians and reptiles, and fewer owners of fish, than we might have expected based on the incidence of these among the general public. This needs to be kept in mind when interpreting the findings of this survey.

Figure 24: Proportion of Households Owning Exotic Pets

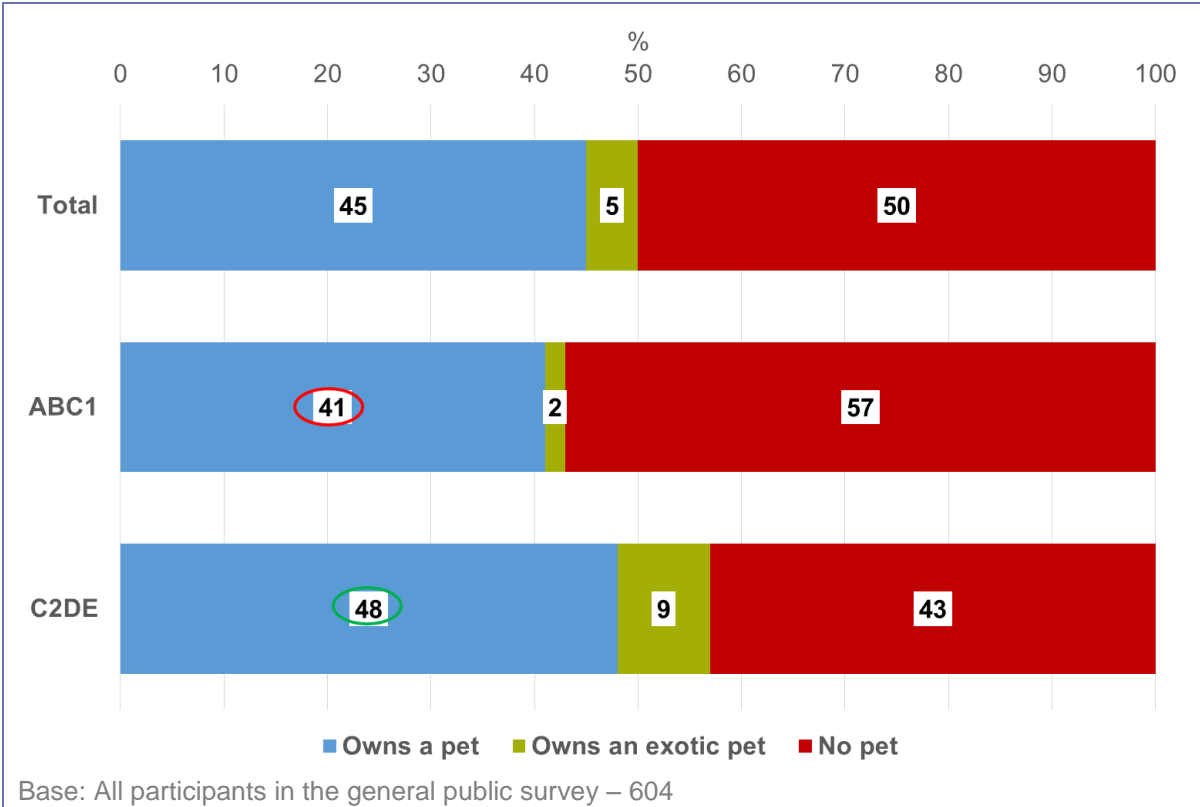


Table 10: Ownership of Types of Exotic Pets by Sampling Method

	Total	In-home interviews	Telephone interviews
Base	148	38	110
	%	%	%
Amphibians and reptiles	62	47	67
Fish	20	42	13
Birds	16	11	17
Insects and invertebrates	9	3	11
Mammals	3	3	4

Base: all exotic pet owners – 148; those interviewed in-home, as part of the general public survey: 38; those recruited by other means and interviewed by telephone: 110

6.2.2 Types of pets owned and where they are kept

A full list of the number of people owning each type of exotic pet is shown in Table 11.

Table 11: Types of Pets Owned

Amphibians & Reptiles		n=92
Lizards		38
	Bearded dragon	22
	Leopard gecko	8
	Gecko (unspecified)	6
	Chameleon	3
	Crested gecko	3
	Chinese water dragon	3
	African fat-tailed gecko, Australian water dragon, Bosc monitor, Hognose lizard, Monitor, Rankin's dragon, Red-headed rock agama, Skink, Webber sailfish dragon	1 each
Tortoises		33
	unspecified	17
	Hermann tortoise	11
	Horsefield tortoise	3
	Brazilian tortoise, Mediterranean spur-thighed tortoise, Russian tortoise	1 each
Snakes		30
	Corn snake	13
	unspecified	8
	Royal python	6
	Boa constrictor	3
	Ball python	2
	Python	2
	Californian king snake	2
	African house snake, Carpet python, Gopher, Rainbow boa, Reticulated python, Snow corn snake	1 each
Frogs/Toads		5
	African clawed frog	2
	Blue poison dart frog, Green tree frog, Poison arrow frog	1 each

Salamanders/Axolotls/Terrapins/Turtles	1
Axolotl, Turtle (unspecified)	1 each
Exotic Fish	n=30
Tropical fish	24
Unspecified	12
Guppies	2
Pleco (cat fish)	2
Puffer fish	2
Jewellery cichlid/cichlid	2
Betta, Clown fish, Clown loach, Goby, Molly, Neon, Piranha, Redline, Tetra	1 each
Freshwater fish	5
Koi carp	2
Unspecified	2
Gouramis	1
Birds	n=23
Parrots	14
Unspecified	6
African grey	6
Blue fronted Amazon, Grey tailed Vasa	1 each
Other birds	9
Parakeet	4
Cockatiel	4
Love bird	1
Insects & Invertebrates	n=13
Molluscs	6
Giant African land snail	5
Snail (unspecified)	1
Arachnids/Spiders	4
Scorpion	2
Chilean rose tarantula/tarantula (unspecified)	2
spider (unspecified)	1
Insects	3
Giant leaf peppered cockroach, Mantis, Stick insect	1 each

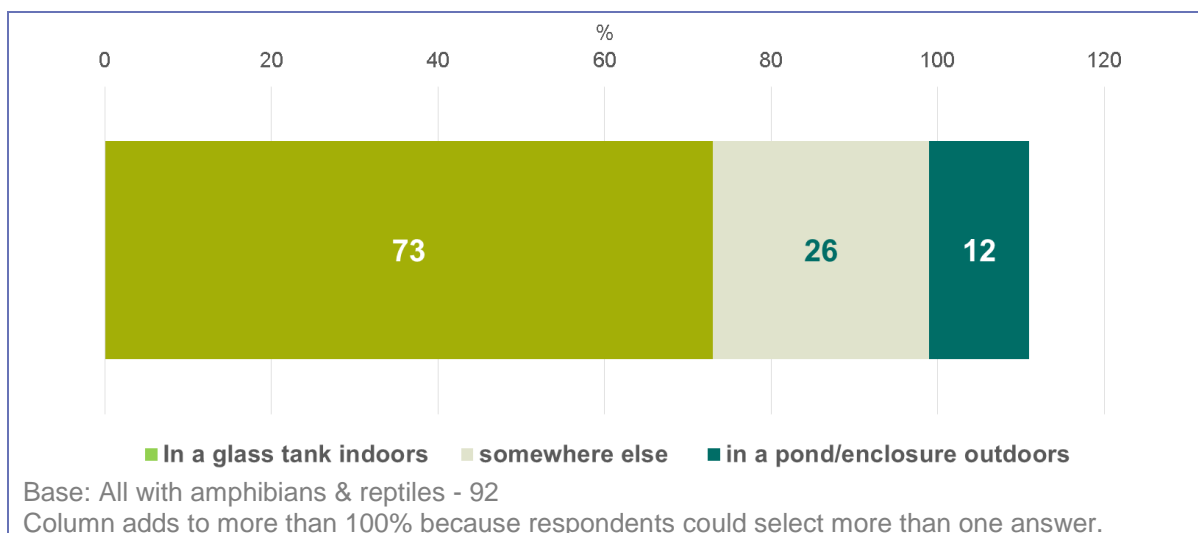
Centipedes/Millipedes	2
Millipede (unspecified)	2
Crustaceans/Shrimps	1
Lobster (unspecified), Shrimp (unspecified)	1 each
Mammals	n=5
African pygmy hedgehog	2
Degu	2
Alpaca, Chinchilla, Chipmunk	1 each

Base: all exotic pet owners - 148

Amphibians and Reptiles

The most common types of exotic pet owned (by 92 of the 148 exotic pet owners; 62%) were amphibians and reptiles, in particular lizards, tortoises and snakes. Bearded dragons were particularly popular, as were Leopard Geckos, amongst those with lizards. The most popular type of tortoise was the Hermann, although half the sample of tortoise owners did not specify a type. Snake owners often had corn snakes, although there were also many types of python owned. The majority of amphibians and reptiles were kept in a glass tank indoors, as shown in Figure 25. 'Somewhere else' included things like tortoise tables and wooden tanks.

Figure 25: Where Amphibians and Reptiles Are Kept



Fish

The second most common type of exotic pet owned was fish, owned by 30 of the 148 exotic pet owners (20%). Most of these (24) had tropical fish, as shown in

Table 11. The majority (n=28) kept their fish in a tank indoors; two kept them in a pond outside.

Exotic birds

Exotic birds were next most popular, owned by 23 of the 148 exotic pet owners (16%). Parrots were most commonly kept (n=14), followed by Parakeets and Cockatiels (n=4 each). All those with exotic birds kept them in a cage indoors.

Insects and Invertebrates

Insects and invertebrates were owned by 13 of the 148 exotic pet owners (9%), most particularly molluscs (n=6) and arachnids/spiders (n=4). Molluscs were most typically Giant African Land Snails, while Arachnids were tarantulas and scorpions.

Insects and invertebrates were typically kept in a tank indoors (n=12), the remainder were typically kept in a plastic enclosure of some type.

Exotic Mammals

Least common in our sample of exotic pet owners were those owning exotic mammals, 5 of whom did so (3%), with the most common being African Pygmy Hedgehogs and Degus, as shown in Table 11. With the exception of the Alpacas, which were kept outside, the exotic mammals were kept in an enclosure indoors.

6.3 Sources of Exotic Pets, Food and Equipment and Exotic Pet Information

Most exotic pets were sourced from local pet shops (38%), family/friends (24%), breeders (19%), aquatic shops/centres (16%) and online (9%), as shown in Table 12.

There were some significant differences in sources by type, but the low bases for some types should be borne in mind when interpreting them. That said, the significant difference for **fish owners** is as one would expect, with this group being more likely to source from **aquatic shops/centres** (57% vs. 10% of amphibians and reptiles and 13% of insects and invertebrates; no mammals or birds were sourced from aquatic shops/ centres). **Insects and invertebrates** were

significantly more likely to have been sourced **online/from a website** than amphibians and reptiles, fish and birds (47% vs. 9% of amphibians and reptiles and 3% of fish; no birds were sourced online).

Table 12: Exotic Pet Sources

	Total	Type of Exotic Pet					Gender	
		Mammal	Bird	Fish	Amphibian / Reptile	Insect / Invertebrate	Male	Female
Base	148	5	23	30	92	15	57	91
	%	%	%	%	%	%	%	%
Local pet shop	38	20	35	30	46	53	40	36
Been given them by friends/relatives	24	40	30	13	26	33	14	30
Local breeder	19	40	30	17	18	20	18	20
Aquatic shop / centre	16	-	-	57	10	13	23	12
Online/from a website	9	20	-	3	9	47	11	8
Pet chain store	7	-	9	17	5	7	9	5
Mail order	1	-	-	-	1	7	-	1
From somewhere else	11	-	13	-	14	7	5	14

Base: All exotic pet owners – 148.
 Columns add to more than 100% because respondents could select more than one answer.

Amongst our sample of exotic pet owners, the table shows that exotic pets were more likely to have been sourced from **family or friends** by **females** than males (30% vs. 14%).

The main sources of pet food and equipment are shown in Table 13, with local pet shops being most popular (55%), followed by pet chain stores (26%), online/from a website (25%) and aquatic shops/centres (13%). It is interesting to note, when comparing the results in in Table 12 and Table 13, the relative popularity of pet chain stores for food and equipment (26%), compared to how few use them to purchase their pets (7%).

Table 13 also reveals one significant difference by type (although, again, the small base sizes should be borne in mind). As with pet sources, food and equipment for **fish** are more likely to be sourced from **aquatic shops/centres** than food and equipment for birds and amphibians and reptiles (30% vs. 4% and 11% respectively). It also shows that younger owners, i.e. those aged **16-24**, were significantly more likely to have got their food and equipment from **friends/relatives** than those aged 25-44 (14% vs. 0%).

Table 13: Main Sources of Food and Equipment

	Total	Type of Exotic Pet					Age			
		Mammal	Bird	Fish	Amphibian / Reptile	Insect / Invertebrate	16-24	25-44	45-64	65+
Base	148	5	23	30	92	15	44	55	37	12
	%	%	%	%	%	%	%	%	%	%
Local pet shop	55	40	65	40	60	60	64	49	49	75
Pet chain store	26	20	26	37	26	20	32	25	16	33
Online/from a website	25	60	13	23	26	33	30	29	16	17
Aquatic shop / centre	13	-	4	30	11	7	9	11	22	8
Supermarket	7	-	4	3	9	7	5	9	3	17
Been given them by friends/relatives	6	20	4	-	9	-	14	-	8	-
Local breeder	3	-	4	3	2	-	2	4	3	-
Mail order	1	-	-	-	2	-	2	2	-	-
From somewhere else	5	20	4	-	5	7	2	4	11	8

Base: All exotic pet owners – 148.
 Columns add to more than 100% because respondents could select more than one answer.

As shown in Table 14, the main sources of information and advice on exotic pets were online (61%), staff in pet shops/aquatic centres (34%) and friends/relatives (18%).

Whilst the small base sizes should once again be borne in mind, Table 14 does suggest those with **amphibians and reptiles** were significantly more likely than those with fish to look **online** (67% vs. 43%), whilst those with **fish** were more likely to go to **staff in pet shops or aquatic centres** than those with birds (53%

vs. 22%). Those with **mammals** and **insects and invertebrates** were significantly more likely to seek information and advice from **specialist organisations** (40% and 27% respectively vs. 7% for the sample as a whole).

Looking at the results by age group shows that **16-24 year olds** were significantly more likely than those aged 45-64 to turn to **staff in pet shops/aquatic centres** (50% vs. 22%) or to **friends/relatives** (27% vs. 5%).

Table 14: Sources of Information and Advice on Exotic Pets

	Total	Type of Exotic Pet					Age			
		Mammal	Bird	Fish	Amphibian / Reptile	Insect / Invertebrate	16-24	25-44	45-64	65+
Base	148	5	23	30	92	15	44	55	37	12
	%	%	%	%	%	%	%	%	%	%
Online/from websites	61	60	52	43	67	73	68	65	54	33
Staff in pet shop, aquatic shop, etc.	34	20	22	53	35	47	50	33	22	17
From friends/relatives	18	20	17	7	23	13	27	20	5	8
Local breeder	11	-	13	7	13	13	16	13	5	-
Specialist magazines	10	20	9	3	13	7	9	11	11	8
Some other source of information/advice	7	-	-	3	11	7	7	9	5	8
Specialist organisations e.g. OATA, REPTA, etc.	7	40	9	3	4	27	9	2	8	17
I don't use any information or advice when choosing an exotic pet	11	20	17	20	7	-	7	7	16	25

Base: All exotic pet owners – 148.
 Columns add to more than 100% because respondents could select more than one answer.

6.4 Disposal of Exotic Pets

The key ways of disposing of exotic pets if their owners were no longer able to keep them were giving them to friends/relatives (66%), giving them to local animal shelters (23%) and advertising them online (22%). These results are shown in full in Table 15 and reveal a number of significant differences by type and age, as well as one by socio economic group (SEG), although the low base sizes for some cells should be taken into consideration when using the findings.

Table 15: Disposal of Exotic Pets

	Total	Type of Exotic Pet					Age				SEG	
		Mammal	Bird	Fish	Amphibian / Reptile	Insect / Invertebrate	16-24	25-44	45-64	65+	ABC1	C2DE
Base	148	5	23	30	92	15	44	55	37	12	75	73
	%	%	%	%	%	%	%	%	%	%	%	%
Give them to friends / relatives	66	-	70	53	73	73	80	64	54	67	68	64
Give them a local animal shelter	23	60	22	27	24	33	36	13	19	33	23	23
Advertise them online	22	40	9	17	26	47	36	13	22	17	31	14
Return to shop/seller/breeder, etc	7	-	-	13	8	7	7	9	5	-	5	8
Let them go in the wild	2	-	9	-	-	7	2	4	-	-	3	1
Something else	7	20	9	13	5	13	5	11	8	-	7	8

Base: All exotic pet owners – 148.

Columns add to more than 100% because respondents could select more than one answer.

Owners of **birds, amphibians and reptiles** and **insects and invertebrates** were significantly more likely to give them to **friends/relatives** than those with mammals (70%, 73% and 73% respectively vs. 0% of mammal owners). Owners of **insects and invertebrates** were significantly more likely to **advertise them online** than owners of birds (47% vs. 9%), whilst owners of **birds** were significantly more likely to **set them free in the wild** than owners of amphibians & reptiles (9% vs. 0%).

16-24 year olds were significantly more likely than 45-64 year olds to give them to **friends/family** (80% vs. 54%) and significantly more likely than 25-44 year olds to give them to a **local animal shelter** (36% vs. 13%) or **advertise them online** (36% vs. 13%).

Those from SEGs **ABC1** were significantly more likely to **advertise them online** than C2DEs (31% vs. 14%).

'**Something else**' included a number of behaviours including two people who said they would not part with their pets, and one who would rather have them 'put to sleep rather than run the risk of it not been looked after properly'. Others said they would try to re-home their pets via a specialist organisation, such as a parrot

sanctuary, a petting zoo, a tortoise protection group. The alpaca owner said she would aim to re-home them to another 'responsible alpaca owner'.

Three individuals said they would let them go in the wild; one had a parakeet, another had an unspecified bird and the third had a Giant African Land Snail.

7 Anglers and Boaters

7.1 Key Findings

The main findings from this section of the research can be summarised as follows:

7.1.1 Anglers: behaviour patterns

<ul style="list-style-type: none">• 87% fished at least fortnightly in the UK; this compares with 57% in 2008, although the latter only covered fishing in England, not the UK as a whole.
<ul style="list-style-type: none">• 43% mainly fished within a 20-mile radius of home.
<ul style="list-style-type: none">• 78% fished at more than one site, although the majority (96%) only visited one site on any one day.
<ul style="list-style-type: none">• The number of different sites visited in a typical year varied considerably, from just 1 to over 20.
<ul style="list-style-type: none">• The length of time that typically elapsed between visiting different sites varied, but was most often between 1-4 weeks (61%).
<ul style="list-style-type: none">• Three quarters only/mainly fished in fresh water.
<ul style="list-style-type: none">• A quarter (25%, n=37) fished overseas; of these:<ul style="list-style-type: none">○ most do so on average no more than once a year (n=21)○ the country most commonly visited was France (n=25)○ one in four travelled to non-European destinations (n=9)○ there was an equal mix in terms of traveling by car ferry (n=17), Eurotunnel (n=16) and plane (n=15), with the most frequently used car ferry port being Dover (n=11)○ the majority (n=32) always/sometimes take their own equipment with them.

7.1.2 Boaters: behaviour patterns

<ul style="list-style-type: none">• Two thirds (68%) went boating at least fortnightly.
<ul style="list-style-type: none">• Half (51%) went boating at more than one site, although the majority (77%) only visited one site on any one day, although one in five visited 2-3 sites.
<ul style="list-style-type: none">• As with the anglers, the number of different sites visited in a typical year varied considerably.
<ul style="list-style-type: none">• The length of time that typically elapsed between visiting different sites varied, but was most often between 1 week to 3 months (62%).
<ul style="list-style-type: none">• 45% were only or mainly freshwater boaters; 41% were only or mainly marine boaters
<ul style="list-style-type: none">• A quarter went boating overseas (n=41), and of these:<ul style="list-style-type: none">○ most (n=28) had made an average of 1-4 trips a year○ for those travelling within Europe these trips were most commonly to France (n=24), with a similar number (n=26) having travelled to non-European destinations○ many travelled by plane (26), with 1 in four (10) using their own/another's craft○ the most frequently used car ferry port was Dover (n=6)○ around half always or sometimes took their own boat/craft (n=24) and a similar number (25) other boating gear; trailers were rarely taken (n=6).

7.1.3 Anglers: biosecurity

<ul style="list-style-type: none">75% claimed to always release every fish they caught compared to 79% in 2008, although slightly different response categories were used in 2008, so these findings are not directly comparable.
<ul style="list-style-type: none">40% said that they use a stink bag, this being a significant increase from 21% in 2008:<ul style="list-style-type: none">there was no significant increase in use among match or specialist anglers; however, there was a significant increase in use among pleasure anglers, up from 15% to 29%.
<ul style="list-style-type: none">61% claimed to wash their equipment after every use, whilst 16% claimed never to clean their gear; this compares to 44% saying 'after every trip' in 2008 and 2% saying never; however, slightly different response categories were again used in 2008, so the findings are not directly comparable.
<ul style="list-style-type: none">66% said that they wash their gear when they return home.
<ul style="list-style-type: none">The two most important factors in determining whether or not to clean their equipment were the availability of information about what to do and why they should do it
<ul style="list-style-type: none">Four-fifths (83%) claimed to air dry their equipment after every trip; this compares with 87% in 2008, although the use of slightly different response categories means the findings are not directly comparable.

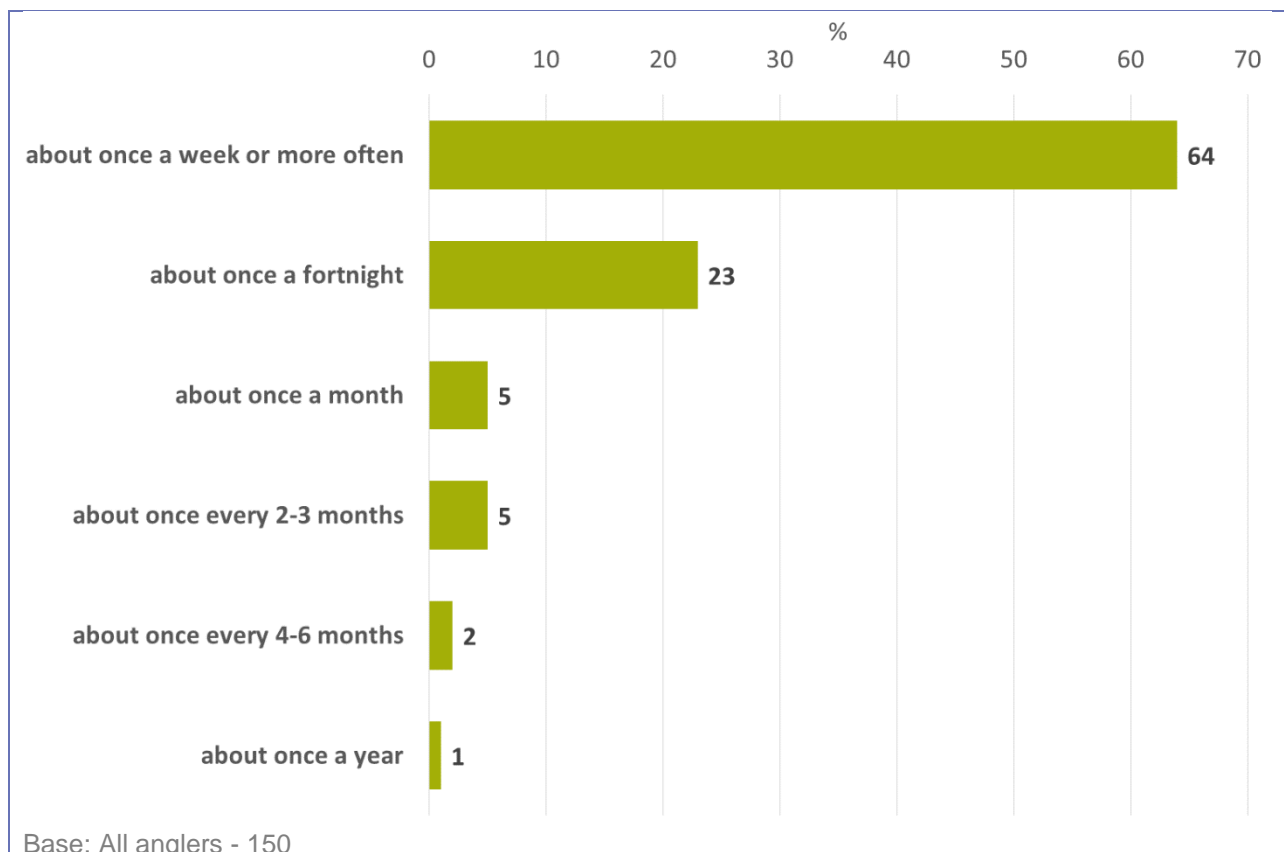
7.1.4 Boaters: biosecurity

<ul style="list-style-type: none">Boaters most typically stored their boat/craft out of the water (65%), at home/at work (40%) or at a marina/boating club (50%).
<ul style="list-style-type: none">Two-fifths (41%) said that they used antifouling paint – in particular, those that go yachting and motor boaters.
<ul style="list-style-type: none">Half the sample (49%) claimed to clean their boat and equipment after every use, but 42% said that they cleaned it no more than once every 10 trips.
<ul style="list-style-type: none">The main methods used to clean were a hose (61%), manually with a brush (41%) or with a water blaster (33%).
<ul style="list-style-type: none">Half (51%) reported that they cleaned their boat/equipment out of the water, close to where it was used, whilst 30% waited until they got home, and a similar proportion (27%) cleaned it in the water at dockside.
<ul style="list-style-type: none">8 out of 10 (83%) never had their craft professionally cleaned.
<ul style="list-style-type: none">The two most important factors determining whether or not to clean their equipment were availability of hose/cleaning station and the appearance of their boat.
<ul style="list-style-type: none">55% claimed to air dry their boat/equipment after every use, particularly canoeist/kayakers, 86% of whom claimed to do this; 4 out of 10 either never do so (23%) or do so very occasionally (15%), mainly yachters (57%).

7.2 Frequency of Taking Part in Fishing/Boating in the UK

As shown in Figure 26, the majority of anglers (87%) fished at least fortnightly in the UK, with the greater proportion of these (64%) fishing once a week or more. This compares with 57% in 2008, although the latter only covered fishing in England, not the UK as a whole, so is not directly comparable.

Figure 26: Frequency of Fishing in the UK



There were some significant differences of note, namely:

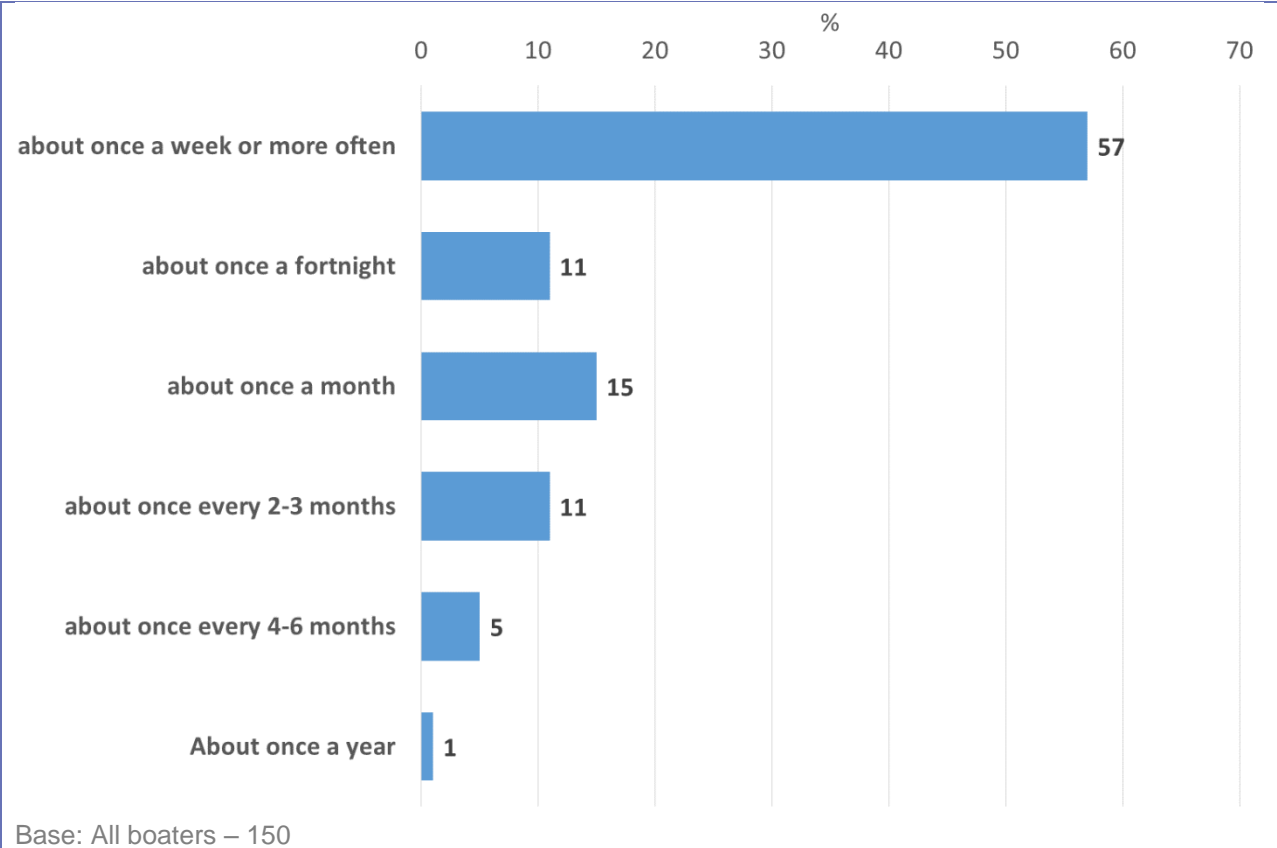
- **members of an angling club** were significantly more likely to fish **once a week or more often** than those who were not club members (74% vs. 43%)
- those who **fish at 11+ sites** per year were significantly more likely to fish **once a week or more often** than those fishing at a fewer number of sites (77% vs. 48%).

Figure 27 reveals that two thirds (68%) of boaters went boating at least fortnightly in the UK, with the majority of these (57% overall) boating once a week or more.

Significant differences of note include that all of the following were significantly more likely to boat **once a week or more often**:

- **those who take part in boating competitions, or both competitions and pleasure boating** (77% and 76% respectively vs. 48% for pleasure boaters)
- **members of boating clubs** (69% vs. 47%)
- **those who own their own boat/craft** (62% vs. 37%)
- **males** (63% vs. 46%).

Figure 27: Frequency of Boating in the UK



7.3 Location and Number of Sites Visited in the UK

The majority of anglers (99%) fished in England (all of the sample were based in England), with Wales (12%) and Scotland (11%) being almost equally popular in second place. As shown in the full results in Figure 28, 26% fished overseas.

Significant differences of note include that:

- **coarse anglers** were significantly more likely to fish in **England** than game anglers (100% vs. 93%)
- **those who fish weekly** as opposed to less than fortnightly were significantly more likely to fish in **England** (100% vs. 89%)
- **game anglers** were significantly more likely to fish in **Scotland** and **Wales** than coarse anglers (28% vs. 10% for Scotland and 34% vs. 11% for Wales).

The majority of boaters also boated in England (again, the sample were all based in England), with Wales (20%) a slightly more popular second UK destination than

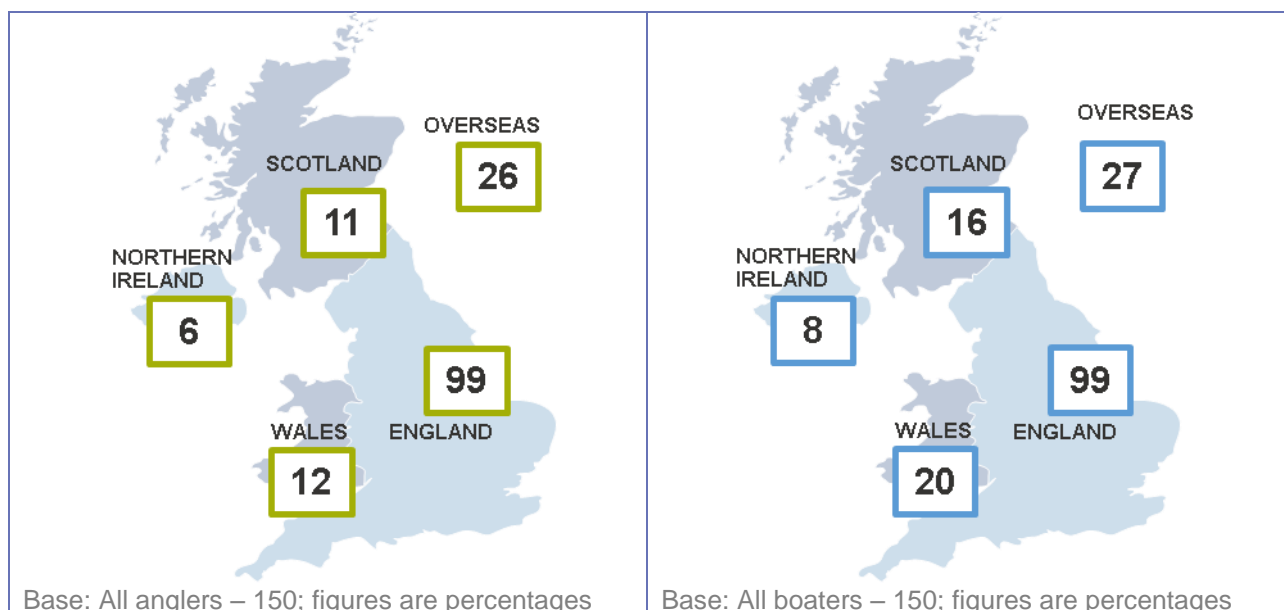
Scotland (16%). Over one quarter (27%) boated overseas, as shown in Figure 29.

Significant differences of note were:

- **yachters** were more likely than those with sailboats/dinghies to boat **overseas** (38% vs. 12%)
- **canoeists/kayakers** were more likely than all other boater types to boat in **Wales** (46% vs. 16% yachters, 8% sailboat/dinghy, 8% motor boating and 13% other); they were also more likely than those with sailboats/dinghies and 'other craft'¹⁴ to boat in **Scotland** (34% vs. 4% and 5% respectively)
- **yachters** were more likely than those with 'other craft' to boat in **Scotland** (22% vs. 5%)
- those that **only/mainly boat in marine waters** were more likely than those that only/mainly boat in fresh water to boat **overseas** (38% vs. 19%)
- **males** were more likely than females to boat **overseas** (33% vs. 15%).

Figure 28: Where They Fish

Figure 29: Where They Boat



Asked whether they always visited the same site or whether they visited different locations to fish, just over three quarters (78%) stated that they fished at more than one site (see Figure 30). As shown in the chart, **members of angling clubs** were

¹⁴ 'Other craft' refers to a range of crafts each of which was being used by a small number of individuals.

significantly more likely to fish at **a number of sites**. However, as shown in Figure 31, the majority of anglers (96%) only visited one site on any one day.

Figure 30: Number of Sites Fished at in the UK

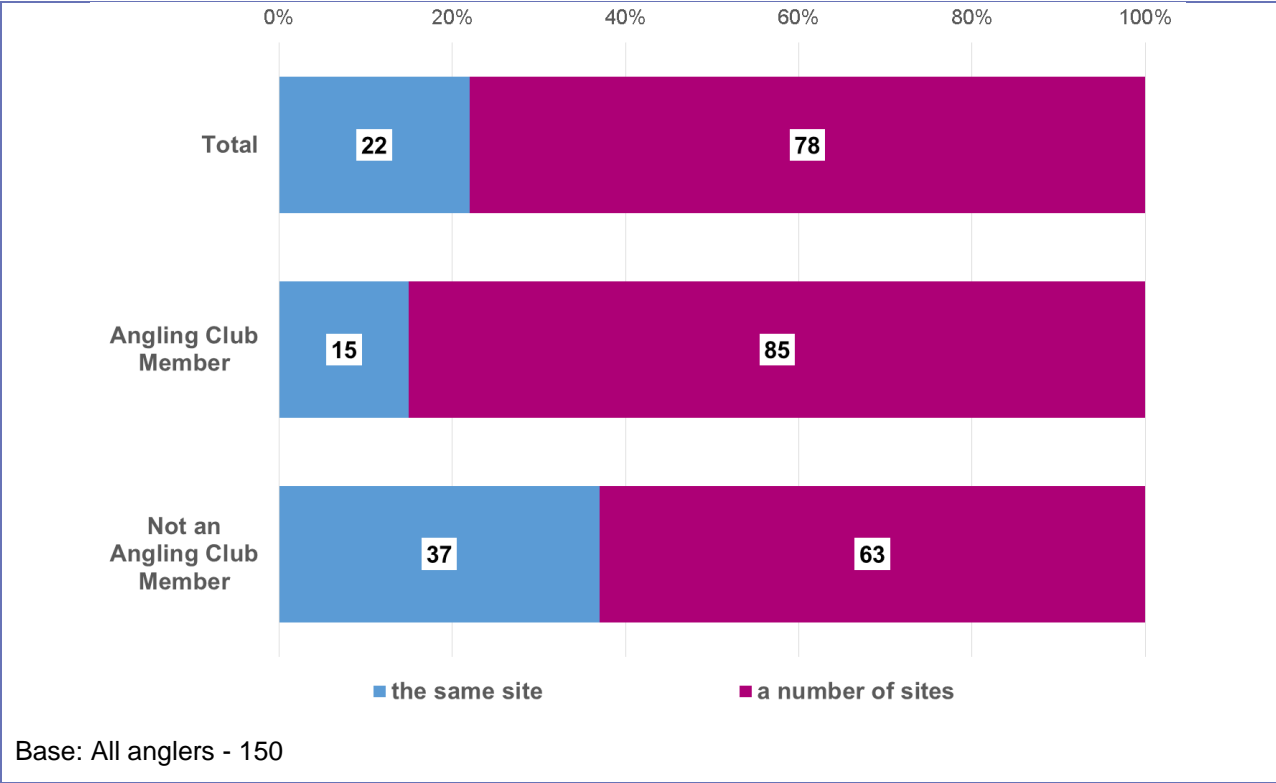
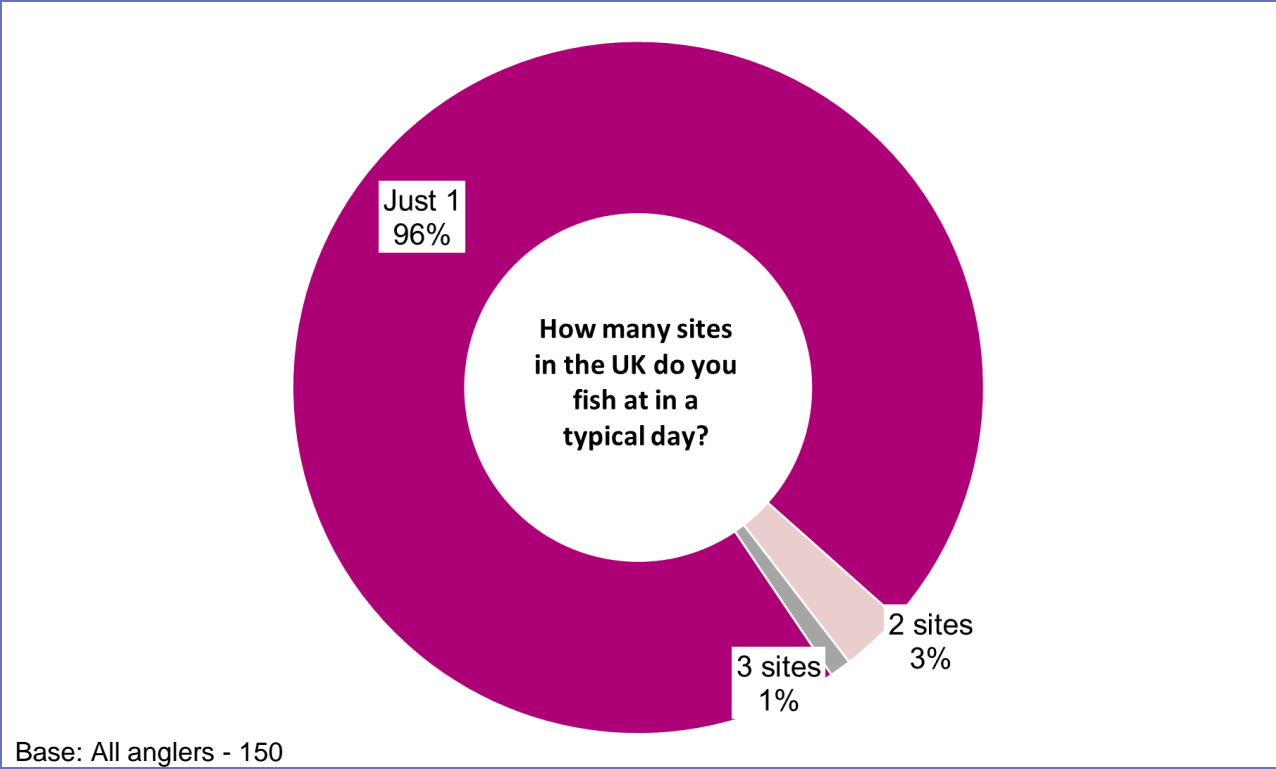


Figure 31: Number of Sites Fished at in a Typical Day



When boaters were asked whether they always visited the same site or whether they visited different locations to boat, half (51%) stated that they visit a number of sites (see Figure 32) although, like the anglers, the majority (albeit a smaller majority of 77%), only visit one site on any one day, as shown in Figure 33. Figure 32 also identifies some significant differences by boat/craft type, namely that those with **yachts**, **sailboats/dinghies** and **motor boats** were more likely to boat **at the same site** than canoeists/kayakers. Other significant differences of note which are not shown in the chart include that:

- **females** were significantly more likely than males to **always visit the same site** (65% vs. 41%)

those that boated in **England** were significantly more likely to **always visit the same site** (48% vs. Scotland: 21%, Wales: 23%, Northern Ireland: 8% and Overseas: 24%).

Figure 32: Number of Sites Visited to Boat in the UK

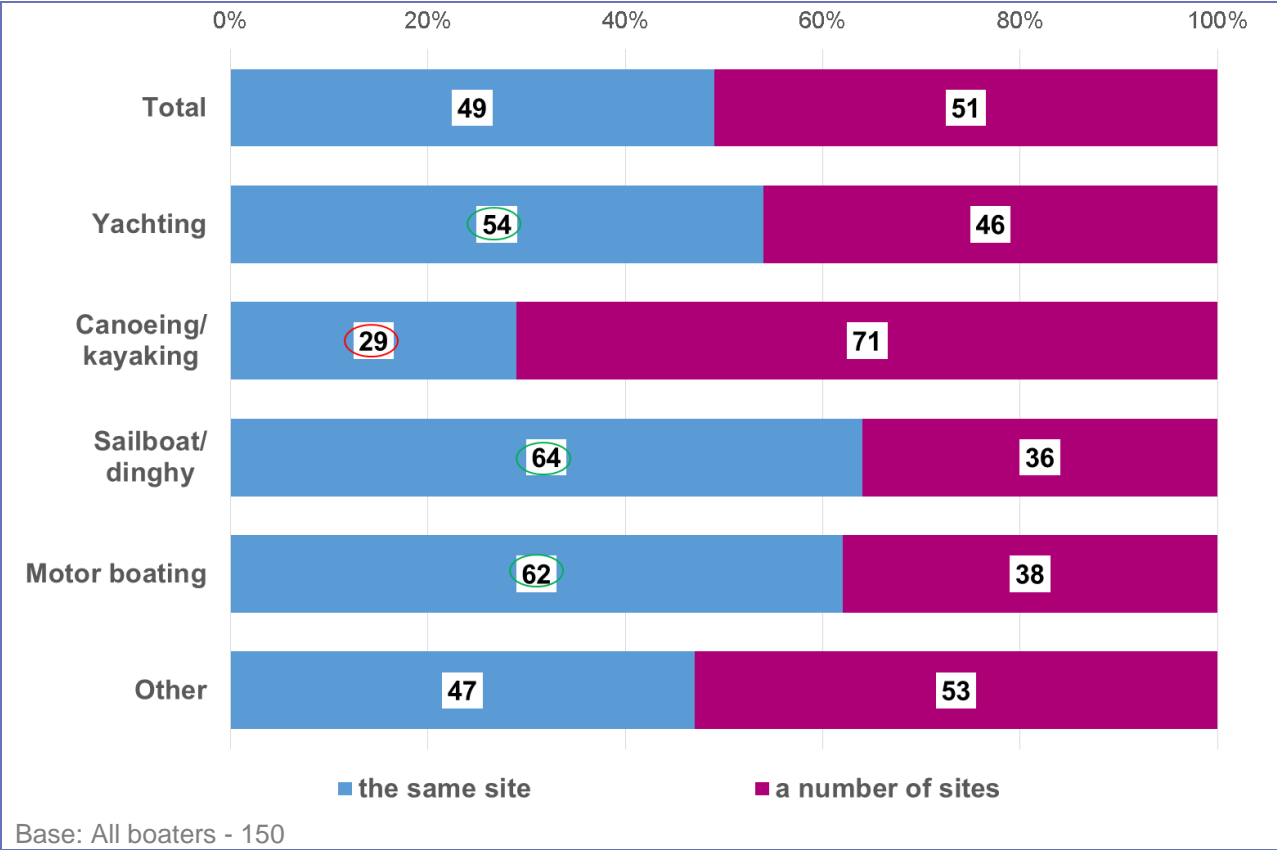
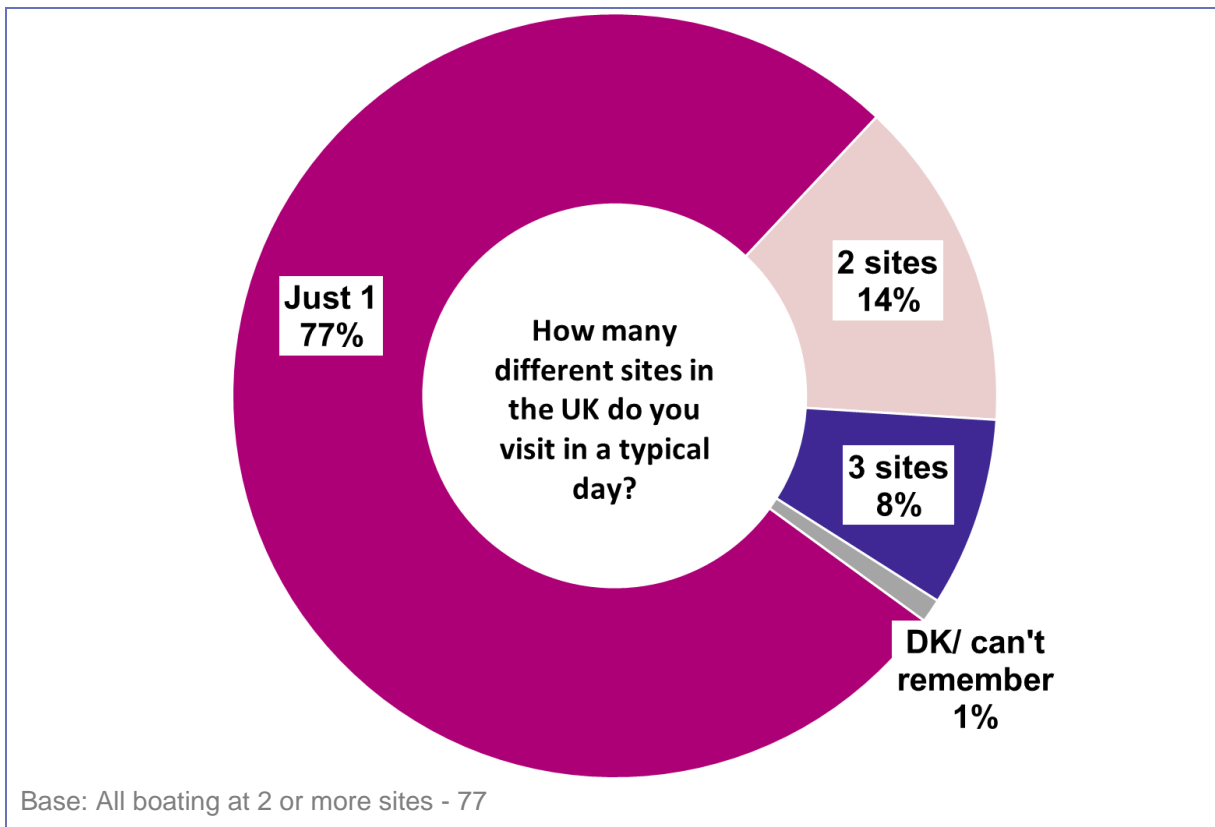


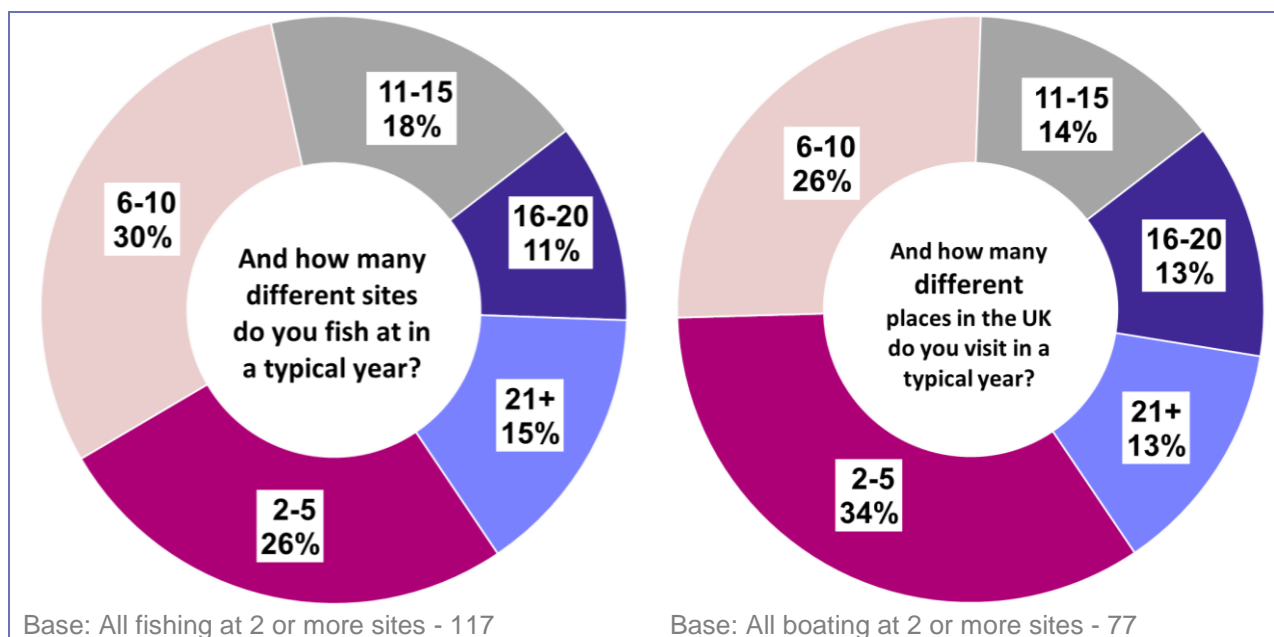
Figure 33: Number of Sites Visited to Boat in a Typical Day



The number of different sites visited in a typical year by anglers or boaters varied considerably, with no one range dominating for either, as shown in Figure 34 and Figure 35, although for most anglers and boaters it was between 2 and 10.

Figure 34: Number of Sites Visited to Fish in a Typical Year

Figure 35: Number of Sites Visited to Boat in a Typical Year



The length of time that typically elapsed between visiting different sites varied for anglers, but was most often between 1-4 weeks (61%), as shown in Table 16.

Match anglers were significantly more likely than **pleasure anglers** to fish about **once a week** (52% vs. 31%), as were those **aged 65+** compared to those aged 45-64 (50% vs. 25%). Those **aged 45-64** were significantly more likely than those aged 16-44 to fish about **once a month** (35% vs 10%). **ABC1s** were significantly more likely than C2DEs to fish about **once a month** (31% vs 11%).

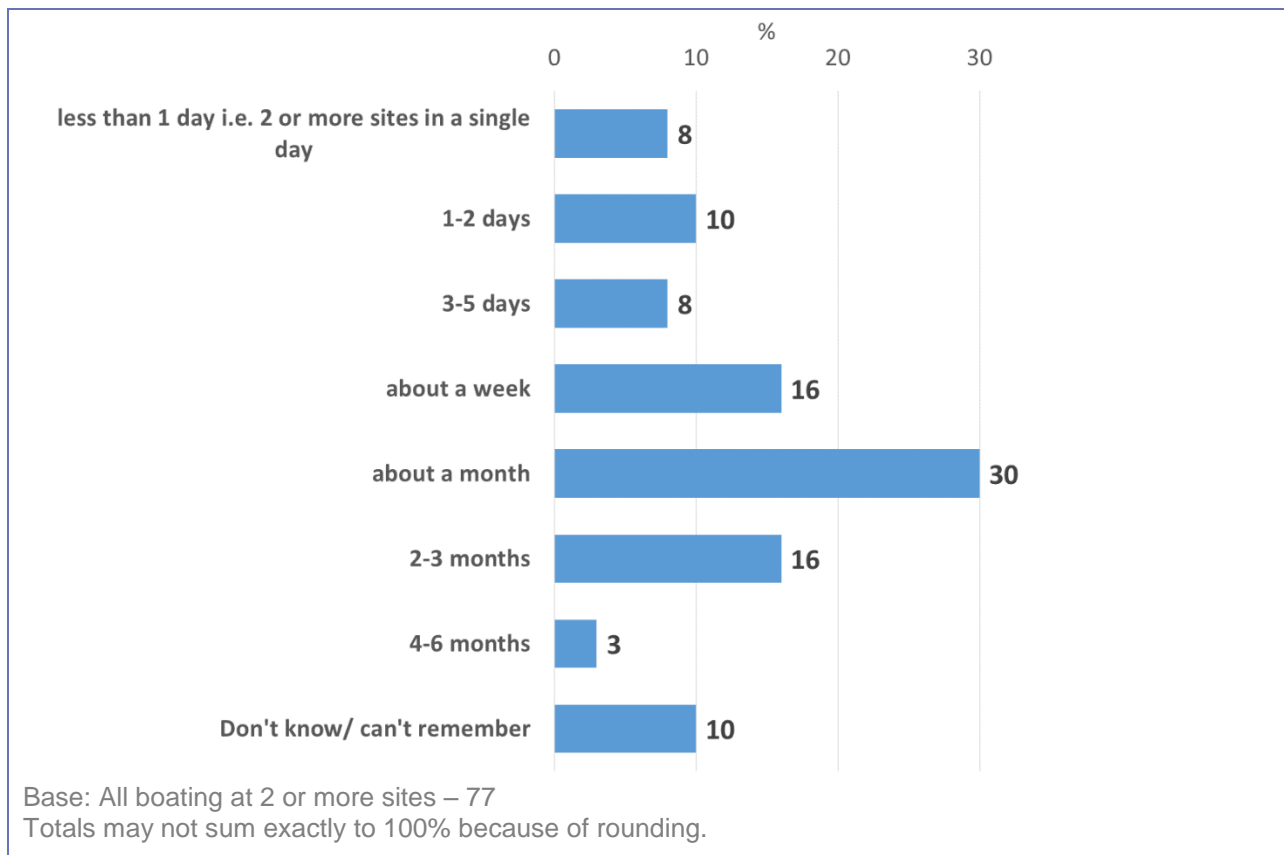
As shown in Figure 36, for boaters the typical time that elapsed between visiting one place and another for boating was most often one week to 3 months (62%), and there were no significant differences by segment.

Table 16: Typical Length of Time between Visiting One Site and Another for Fishing

	Total	Type of angler			Age			SEG	
		Match	Specialist	Pleasure	16-44	45-64	65+	ABC1	C2DE
Base	117	46	39	70	31	60	26	80	36
	%	%	%	%	%	%	%	%	%
1-2 days	9	9	8	9	13	10	4	9	11
3-5 days	10	11	8	7	6	10	15	6	17
about a week	36	52	36	31	45	25	50	38	33
about a month	25	24	33	27	10	35	19	31	11
2-3 months	9	2	3	13	13	10	-	8	11
4-6 months	3	-	3	3	3	-	8	3	3
more than 6 months	1	-	3	-	3	-	-	-	3
Don't know/can't remember	8	2	8	10	6	10	4	6	11

Base: All anglers visiting more than one site – 117.
 Columns may not sum exactly to 100% because of rounding.

Figure 36: Typical Length of Time between Visiting One Place and Another for Boating



The anglers were also asked how far they tended to travel to go fishing in the UK. As shown in Table 17, the greater proportion (43%) mainly fished within a 20-mile radius of home, with one quarter (25%) fishing within a 21-50 mile radius.

The table also shows that **pleasure anglers** were significantly more likely to travel within a **20-mile radius** (56% vs. 35% for match anglers and 28% for specialist anglers). By contrast, they were significantly less likely than **match anglers** to travel within a **21-50-mile radius** (17% vs. 33%).

Those defining themselves as **'sea/other' anglers** were significantly more likely than game and coarse anglers to travel within a **20-mile radius** (75% vs. 28% and 40% respectively), whilst **game anglers** were significantly more likely to follow no particular pattern (48% vs. 22% coarse and 6% sea/other).

As would be expected, those that fish in England were significantly more likely to travel within a 20-mile radius than those that fished in Scotland, Northern Ireland and overseas (43% vs. 12%, 0% and 21% respectively).

One other significant difference of note which is not shown in the table below is that those that fish at fewer sites (<11 sites) were significantly more likely to typically travel within a **20-mile radius** than those that fish at 11+ sites (67% 1 site only and 51% 2-10 sites vs. 17% 11+ sites).

Table 17: Distance Travelled to Fish

	Total	Type of angler			Angler type			Where they go fishing				
		Match	Specialist	Pleasure	Game	Coarse	Sea/Other	England	Scotland	Wales	NI	O/seas
Base	150	54	47	90	29	125	16	148	17	18	9	39
	%	%	%	%	%	%	%	%	%	%	%	%
<20 miles	43	35	28	56	28	40	75	43	12	17	-	21
21-50 miles	25	33	26	17	17	26	13	24	29	28	33	26
>50 miles	11	7	19	8	7	11	6	10	12	11	11	21
No typical pattern	22	24	28	20	48	22	6	22	47	44	56	33

Base: All anglers – 150
 Totals may not sum exactly to 100% because of rounding.

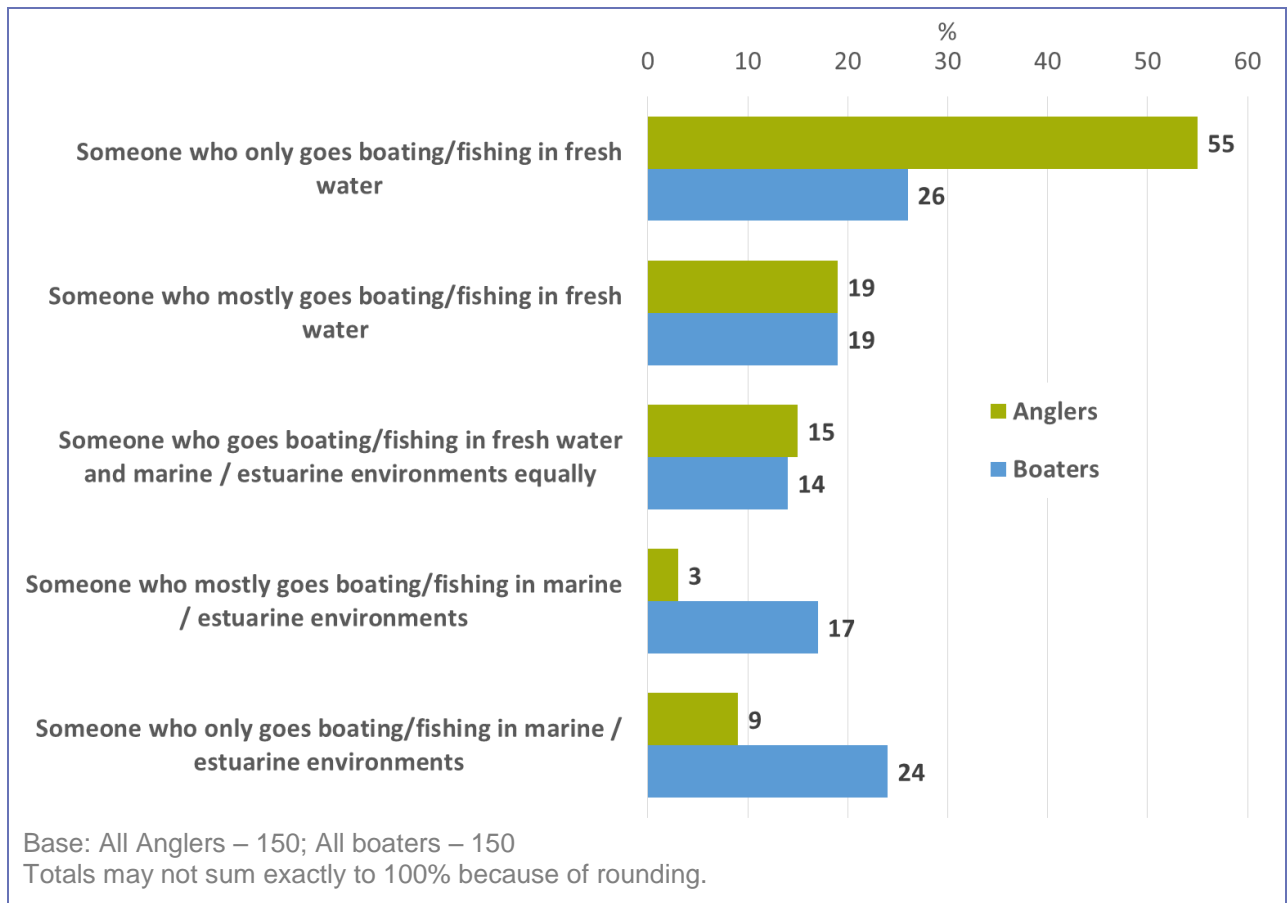
7.4 Freshwater vs. Marine

As shown in Figure 37, three quarters of the anglers only/mainly fished in fresh water. There was a more even split for boaters, where 45% were only or mainly freshwater boaters and 41% were only or mainly marine boaters.

Significant differences of note for anglers include:

- **coarse anglers** were significantly more likely to only fish **in fresh water** than game and sea/other anglers (59% vs. 31% and 19% respectively)
- those **aged 65+** were significantly more likely to only fish **in fresh water** than those aged 45-64 (71% vs. 49%), as were **C2DEs** compared to ABC1s (67% vs. 48%)
- **those that fish in England** were significantly more likely to only fish **in fresh water** than those that fished in Wales (55% vs. 17%), as were those that typically fished at **<11 sites** a year (67% 1 only and 62% 2-10 vs. 38% 11+).

Figure 37: Freshwater vs. Marine Activity



There were also several significant differences of note for boaters, namely:

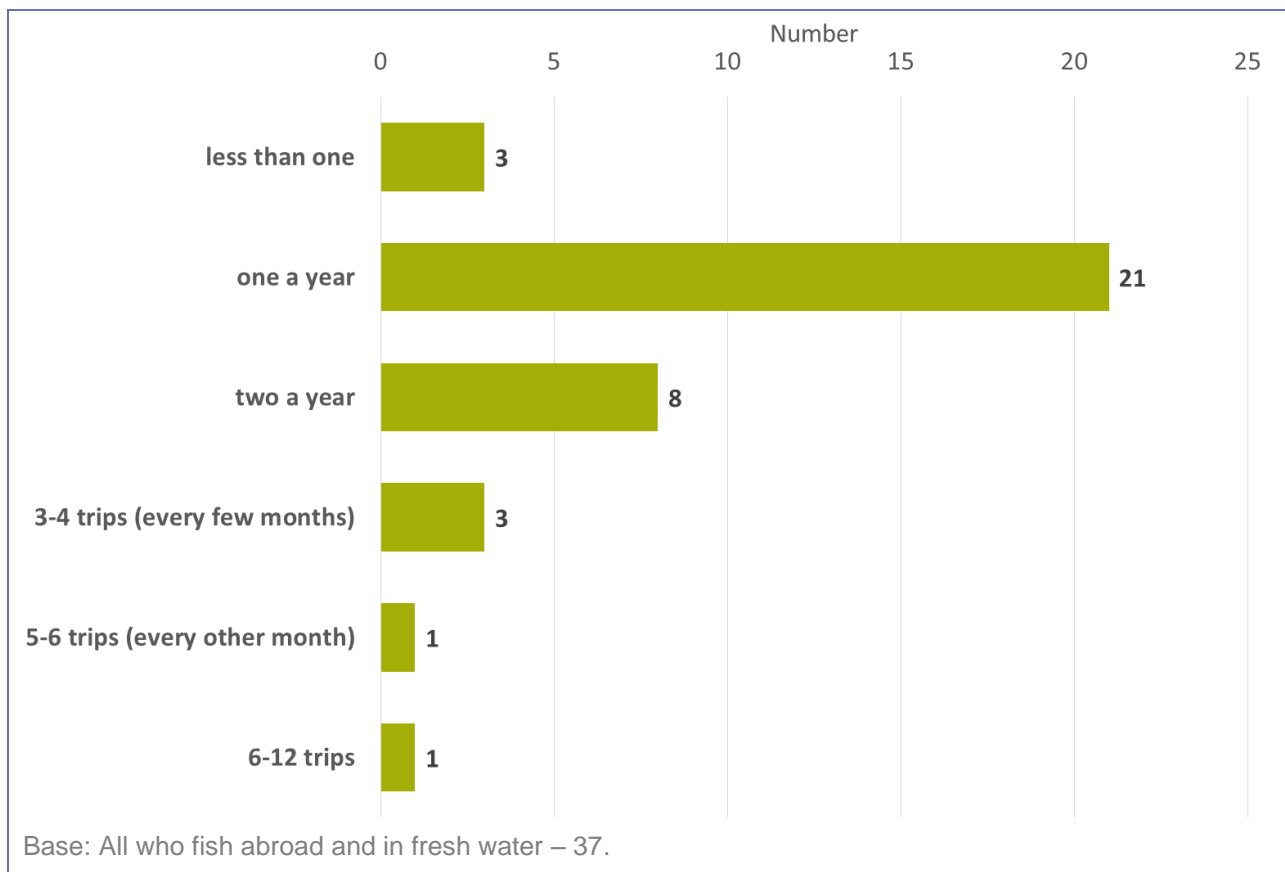
- compared to yachters, those using **sailboats/dinghies** were significantly more likely to boat in **fresh water and marine equally** (24% vs. 5%)
- **yachters** were significantly more likely to boat in **marine waters** than canoeists/kayakers (43% vs. 6%)
- those **boating in England** were significantly more likely to only boat in **fresh water** than those boating in Northern Ireland and Overseas (26% vs. 0% and 10% respectively), and to be more likely to only **boat in marine waters** than those boating in Wales (23% vs. 7%)
- those **boating at the same site** were also significantly more likely to only boat in **fresh water** (37% vs. 16%) compared to those boating at several sites
- those that visit **a number of sites** were significantly more likely to boat in **fresh water and marine equally** (22% vs. 5%)

- less frequent boaters (i.e. **those boating less often**) were also significantly more likely to boat in **fresh water and marine equally** than those boating weekly (23% vs. 10%).

7.5 Fishing/Boating Abroad

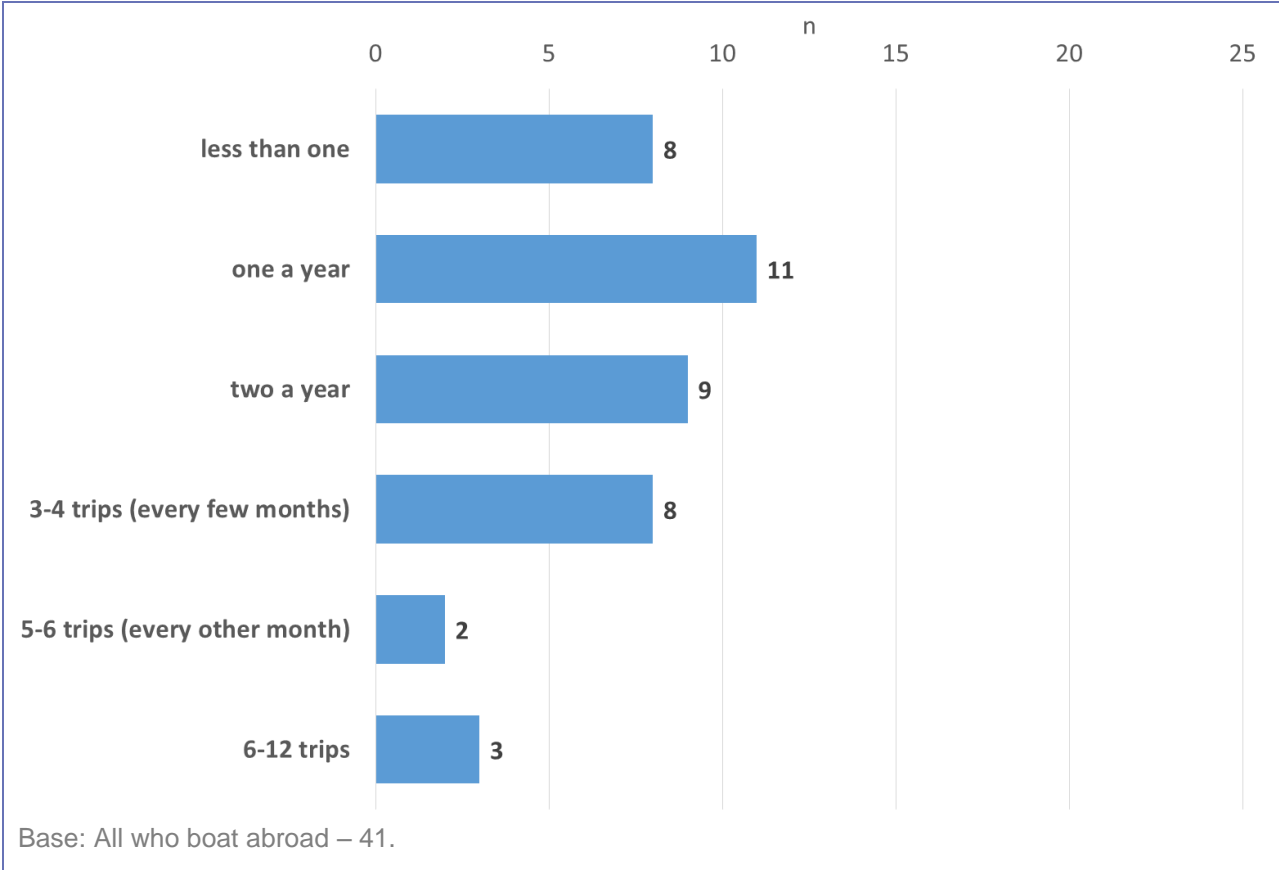
A quarter of the anglers (26%) stated that they fished overseas, with most doing so on average no more than once a year (n=21), as shown in Figure 38.

Figure 38: Number of Trips Overseas to Freshwater Fish in a Year



A quarter of the boaters also stated that they had boated overseas (27%), but, unlike the anglers, the number of trips abroad to go boating averaged 1-4 a year (n=28), as shown in Figure 39.

Figure 39: Number of Trips Overseas to Boat in a Year



It should be noted that the small cell sizes (n=37 for anglers and n=41 for boaters), mean that very few significant differences can be identified for this section of the research findings.

For anglers, those who fished abroad were significantly more likely to be **aged under 65** years old (16-44: 36%, 45-64: 29%, 65+: 9% fished abroad respectively). Those anglers who limited their UK fishing trips to **within a 20 mile radius** of their home (13%) were less likely to fish abroad compared to those who travelled **over 50 miles** from home (50%) or for whom there was **no fixed pattern** (39%). No other significant sub-group differences were noted.

For boaters, **males** (33%) were more likely than females (15%) to go boating abroad, as were **yachters** (38%) compared to sail-boaters (12%). Not surprisingly, those who **mainly/only sailed in marine waters** (38%) were more likely to go boating abroad compared to those who mainly/only boated in freshwater (19%). Finally, those who boated at **more than one site in the UK** (40%) were more likely to go boating abroad

compared to those who boated at a single site in the UK (14%). No other significant sub-group differences were noted.

The country most commonly visited by anglers was France (n=25), with one in four (n=9) having travelled to non-European destinations (see Figure 40).

For those boating within Europe, the most popular destination was also France (n=24), with one in three (n=14) having travelled to non-European destinations (see Figure 41).

For the anglers there was an equal mix in terms of traveling by **car ferry** (n=17), **Eurotunnel** (n=16) and **plane** (n=15). However, as shown in Figure 42, most travelling overseas to boat travelled by **plane** (n=25), with few travelling by **Eurotunnel** (n=6) and with the latter two differences in modes used between anglers and boaters being significant. The most frequently used car ferry port was **Dover** for both anglers (n=11) and boaters (n=6), as shown in Table 18.

Figure 40: Countries Visited to Fish

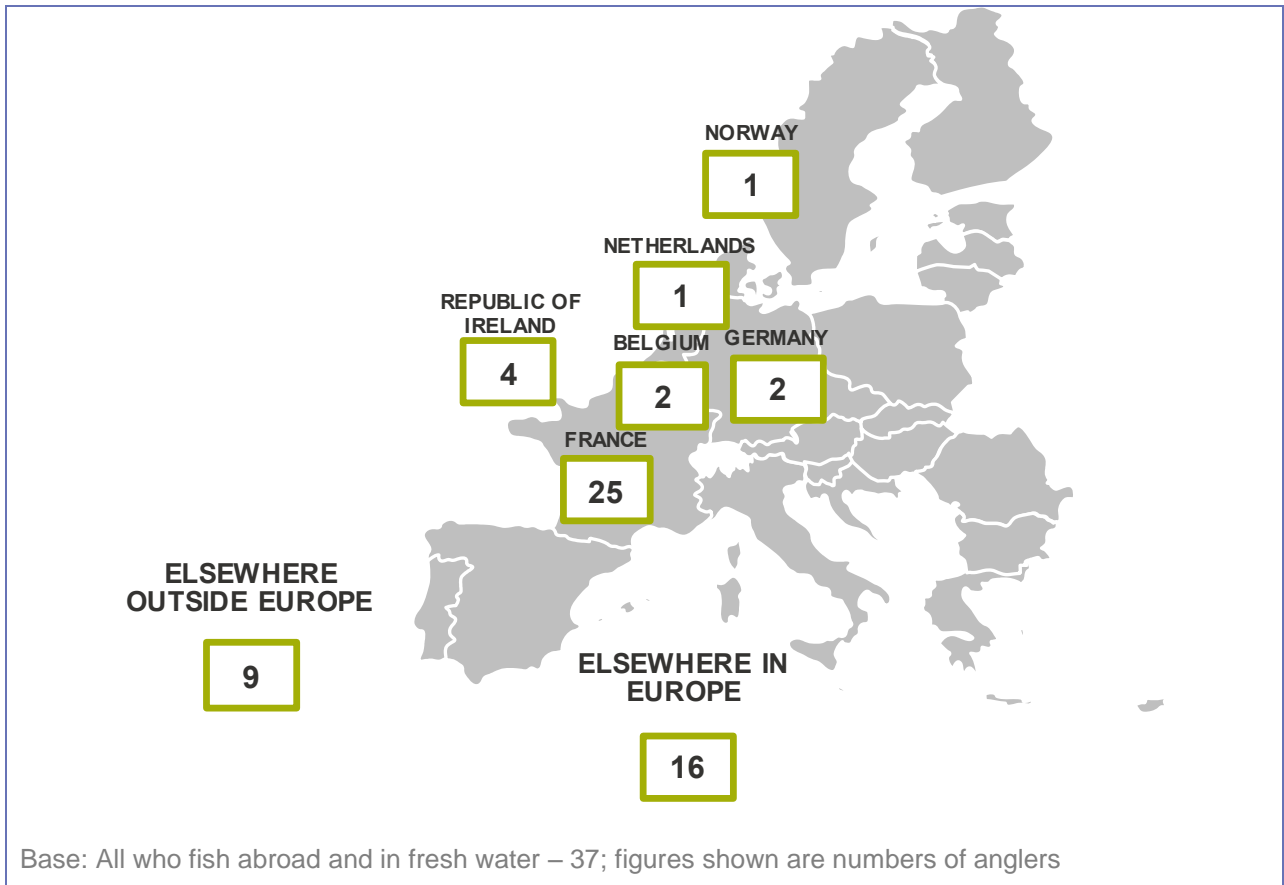


Figure 41: Countries Visited to Boat

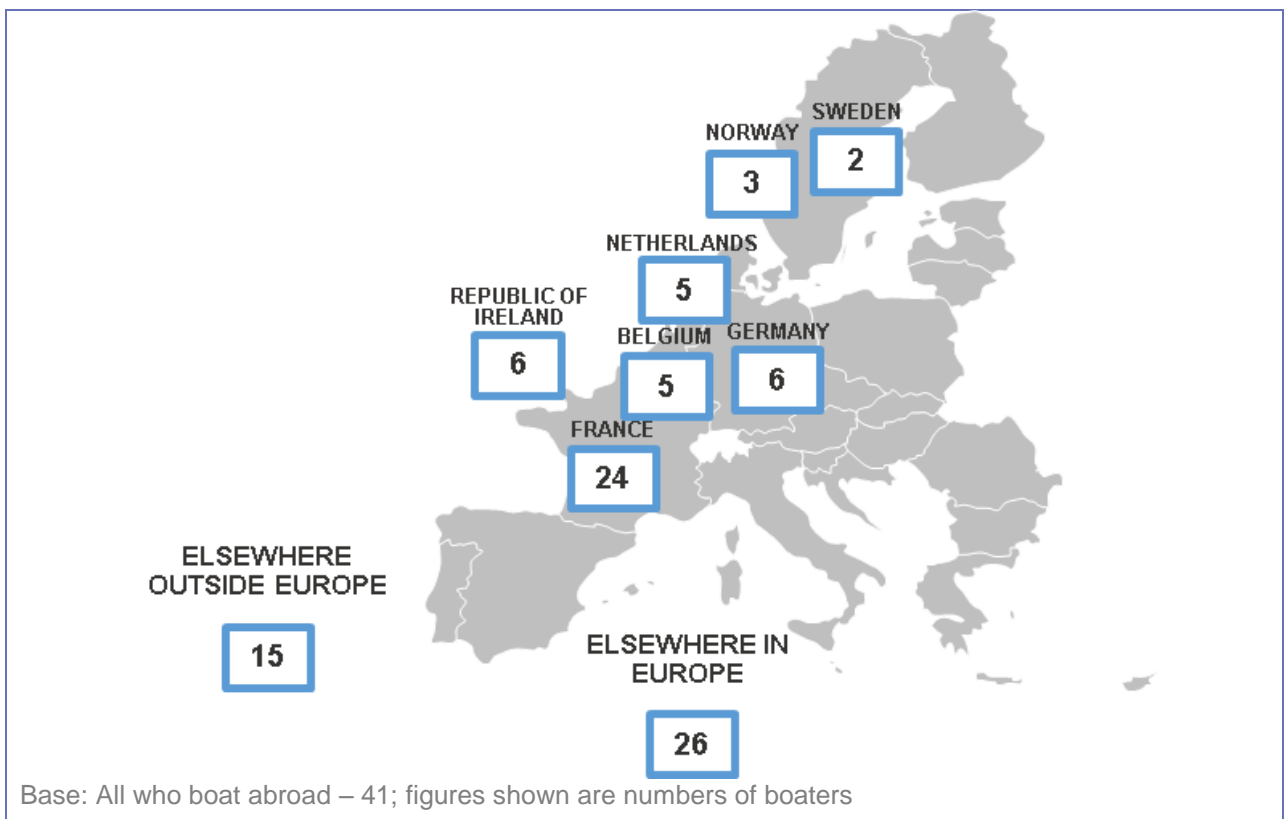


Figure 42: Modes of Transport Used by Anglers and Boaters

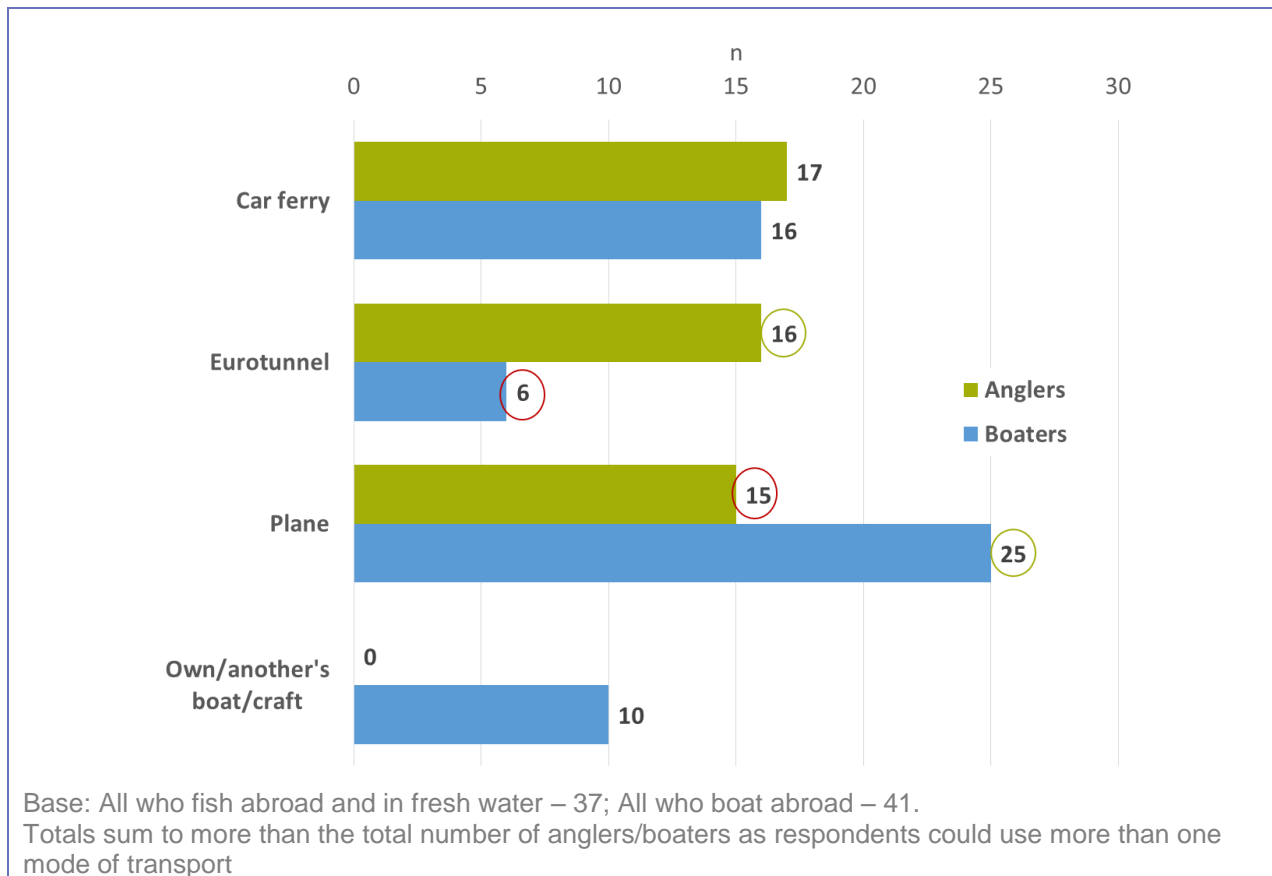


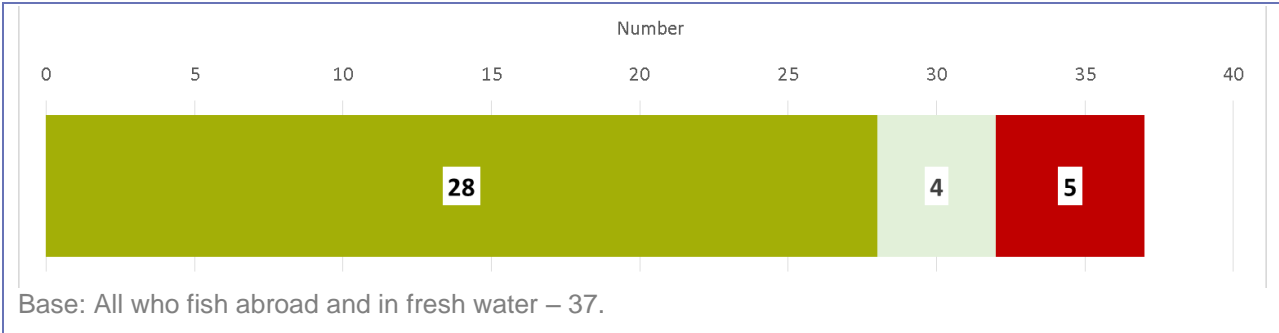
Table 18: Ports Used by Anglers and Boaters

	Anglers	Boaters
Base	17	16
	n	n
Dover (leave & return)	11	6
Hull (leave & return)	2	
Holyhead (leave & return)	3	
Poole (leave & return)	1	1
Pembroke Bay (leave & return)	1	
Folkestone (leave & return)	1	2
Portsmouth (leave & return)		2
Plymouth (leave & return)		2
Harwich (leave & return)		1
Newcastle (leave & return)		1
Portsmouth (leave), Poole (return)		1

Base: All who travel abroad by car ferry; anglers – 17; boaters -16
Columns may sum to greater than n as some may have used more than one port

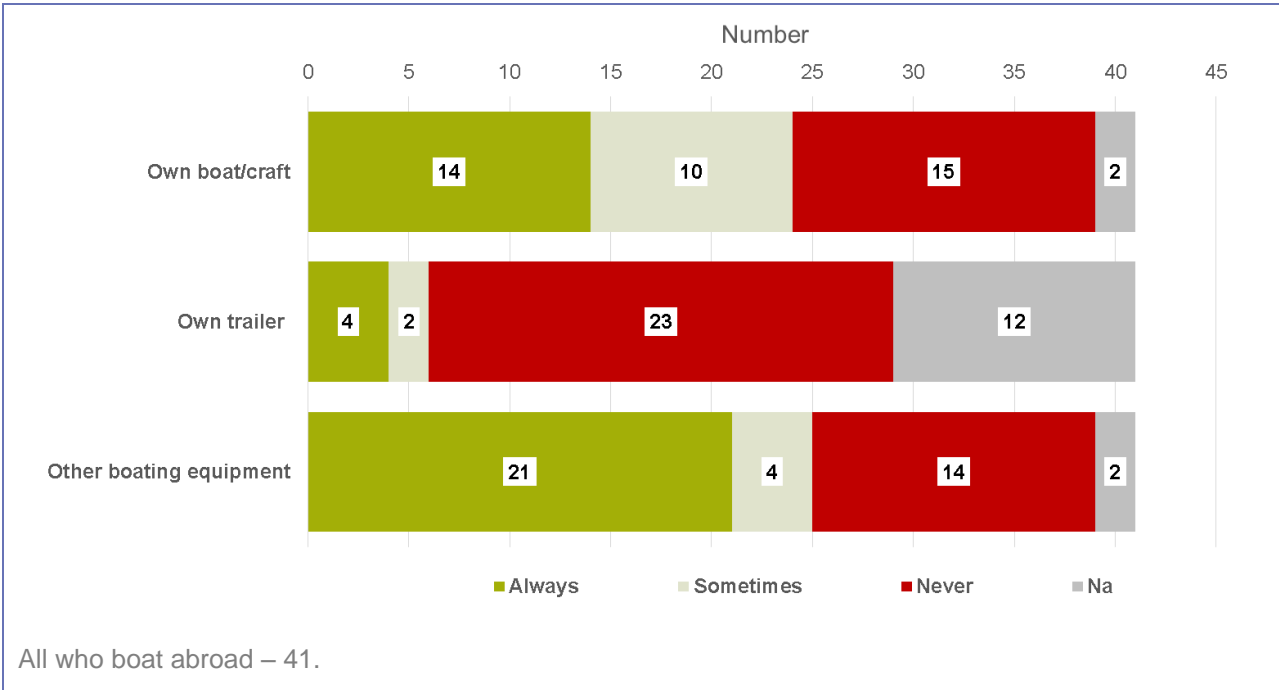
When travelling overseas the majority of anglers (n=32) **always or sometimes took their own equipment with them**, as shown in Figure 43. There were no significant sub-group differences.

Figure 43: Whether Anglers Take Their Own Equipment with Them Overseas



Around half of the boaters **always or sometimes took their own boat/craft** (n=24) and a similar number (n=25) took **other boating gear**; **trailers** were rarely taken (n=6), as shown in Figure 44. Men (65%) were more likely than women (29%) to always/sometimes take their boat with them, as were those who owned their own craft (69% vs 22% of those who did not own their own craft) and those who were members of a boating club (82% vs. 42% of those not belonging to a boating club). Men (68%) were also more likely than women (29%) to always/sometimes take other boating equipment abroad with them. There were no significant sub-group differences.

Figure 44: Whether They Take Their Own Boat/Craft, Equipment & Trailer When Boating Overseas



7.6 Biosecurity Behaviour: Anglers

7.6.1 Releasing fish

Three quarters (75%) of anglers claimed to always release every fish they caught, as shown in Table 19. This compares to 79% in 2008, although slightly different response categories were used in 2008, so these findings are not directly comparable.

Table 19: Release of Fish Caught

	Total	Angler Type			Where fish		
		Game	Coarse	Sea / Other	Only / mostly fresh water	Both equally	Only / mostly marine
Base	150	29	125	16	110	22	18
	%	%	%	%	%	%	%
I always release every fish I catch	75	41	85	31	86	55	28
I usually release every fish I catch	17	45	10	44	9	27	56
I only take up to my take allowance and then I release what I catch after that	5	14	4	13	5	14	-
I occasionally release a fish I catch but I usually keep them	1	-	1	6	-	-	11
I never release a fish I catch unless it is too small or out of season	1	-	1	-	-	5	-
Something else	1	-	-	6	-	-	6

Base: all anglers - 150

Totals may not sum exactly to 100% because of rounding.

There were some significant differences of note, as shown in the table, namely:

- **coarse anglers** were significantly more likely to **always release every fish they caught** than game or sea/other anglers (85% vs. 41% and 31% respectively)
- **game and sea/other anglers** were significantly more likely to **usually release every fish they caught** (45% and 44% respectively vs. 10%)
- those who only/mostly fish in fresh water were significantly more likely to **always release every fish they caught** than those that only/mostly do marine angling or do both equally (86% vs. 28% and 55% respectively)
- those who **only/mostly do marine angling** or **do both equally** were significantly more likely to **usually release every fish they caught** (56% and 27% respectively vs. 9%)

- those who **only/mostly do marine angling** were significantly more likely to **occasionally release a fish** than those that only/mainly fish in fresh water (11% vs. 0%).

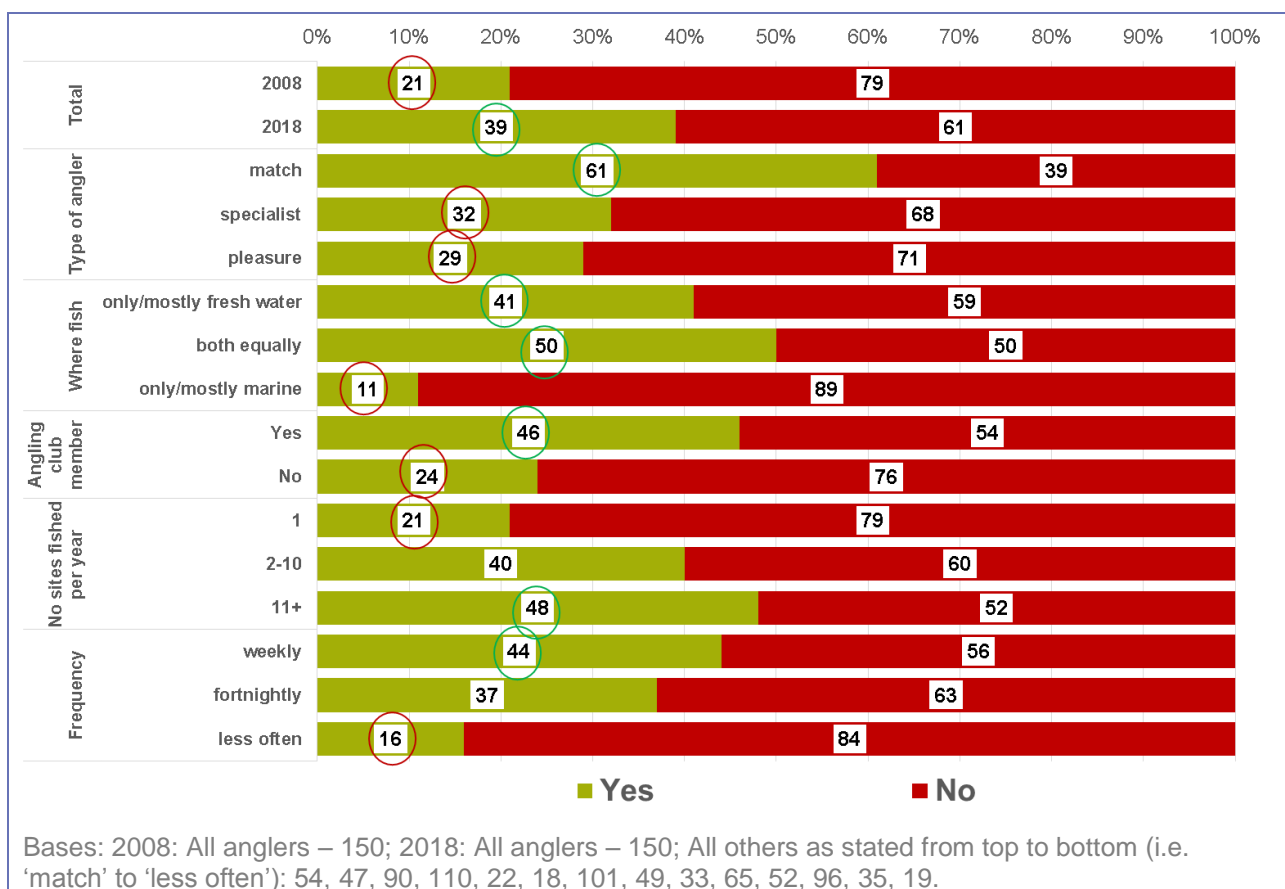
Other significant differences of note which are not shown in the table above include:

- those from SEGs **C2DEs** were significantly more likely to **always release every fish they catch** (87% vs. 69%)
- those that go fishing in **England** and **overseas** were also significantly more likely to **always release every fish they catch** than those that fish in Wales (76% vs. 39%).

7.6.2 Stink bags

Two fifths of anglers (39%) said that they used a stink bag, this being a significant increase from 21% in 2008, as shown in Figure 45. Although there was no significant increase in use among match or specialist anglers between 2008 and 2009, there was a significant increase in use among **pleasure anglers**, up from 15% to 29%.

Figure 45: Use of Stink Bag



Significant differences of note for 2018 are highlighted in the chart, namely:

- **match anglers** were significantly more likely to use a stink bag (61% vs. 32% and 29%)
- **only/mostly marine anglers** were significantly less likely to use a stink bag (11% vs 41% and 50%)
- **members of an angling club** were significantly more likely to use a stink bag (46% vs. 24%)
- those fishing at **11+ sites per year** were significantly more likely to use a stink bag than those fishing at just one (48% vs. 21%)
- those fishing **weekly** were significantly more likely to use a stink bag than those fishing less often (44% vs. 16%).

7.6.3 Washing equipment

Three fifths (61%) of the anglers claimed to wash their equipment after every use, with one sixth (16%) claiming never to have cleaned their gear, as shown in Figure 46. This compares to 44% saying 'after every trip' in 2008 and 2% saying never; however, slightly different response categories were again used in 2008, so the findings are not directly comparable. Nevertheless, it suggests there has been a polarisation of behaviour since 2008, with a majority now claiming to wash their equipment after every use, but with more anglers also stating that they never clean their equipment.

Significant differences of note include:

- **pleasure anglers** were significantly more likely to wash their **equipment every time they used it** than specialist anglers (69% vs. 45%)
- those **not working in the sector** were significantly more likely to **wash their equipment every time they used it** than those that did (68% vs. 47%)
- those with a **high overall behaviour score** (based on willingness to adopt appropriate biosecurity behaviour) were significantly more likely to **wash their equipment every time they used it** than those with a low score (74% vs. 44%).

Figure 46: Frequency of Washing Angling Equipment

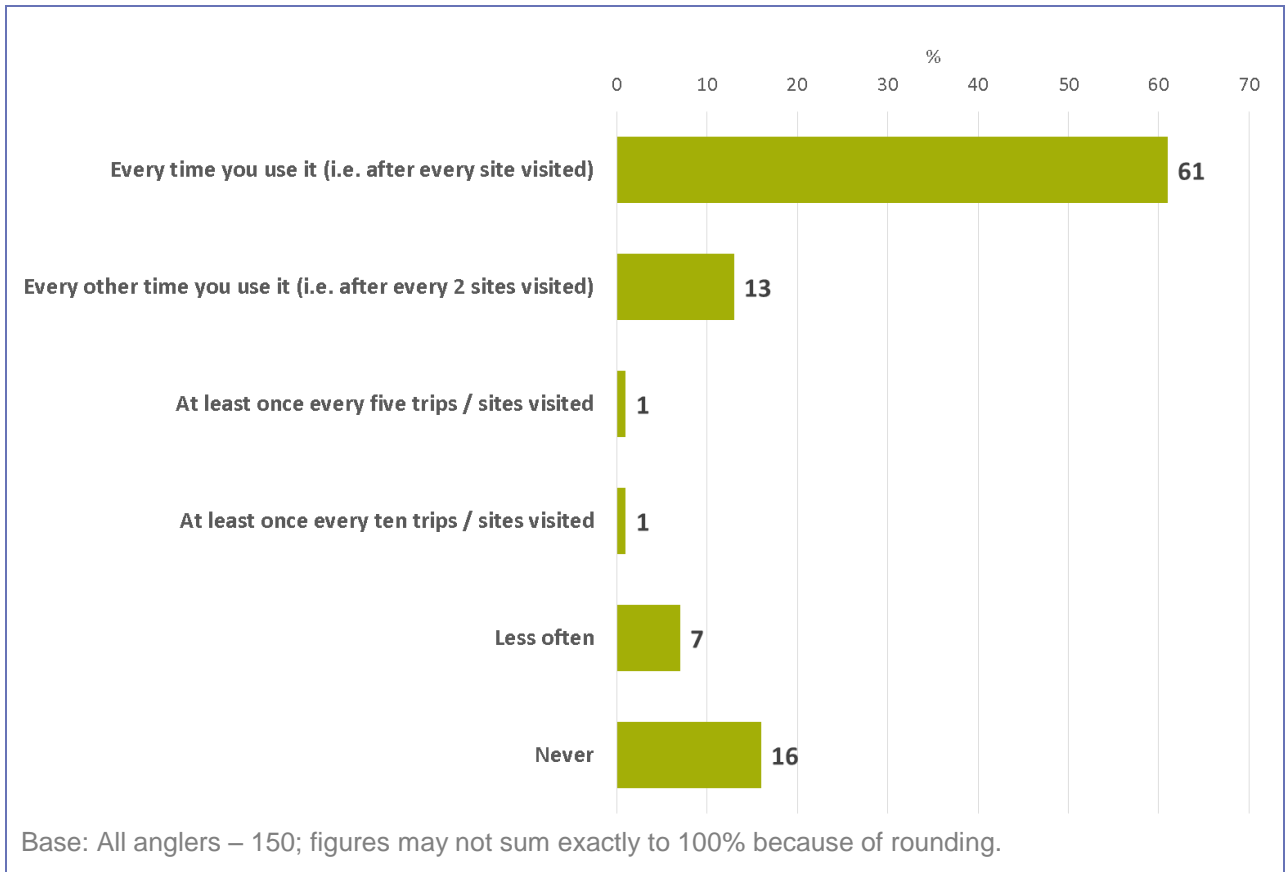
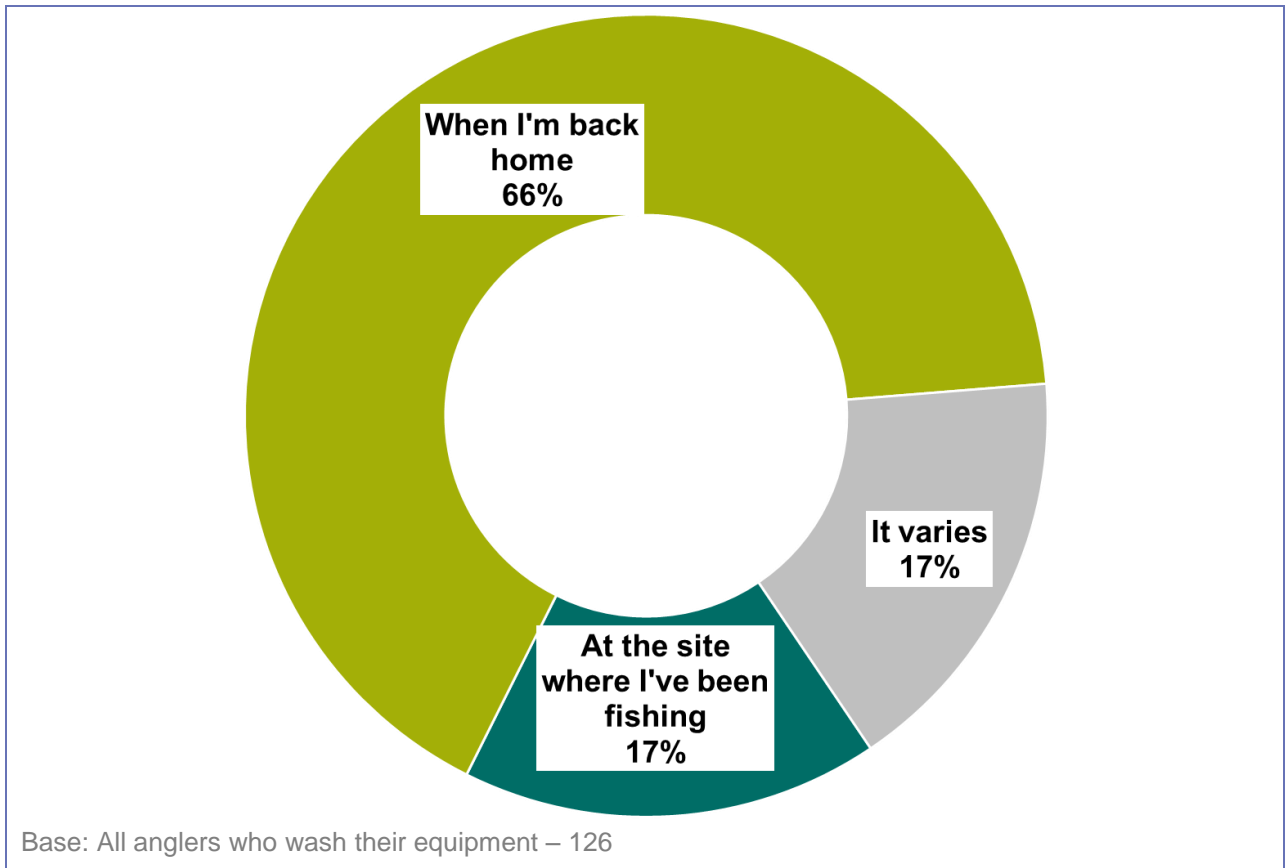


Figure 47: Where Angling Equipment is Washed



Asked where they wash it, two thirds (66%) said that they washed their gear when they returned home, as shown in Figure 47. Significant differences of note included:

- those who were **not angling club members** were significantly more likely to **wash their equipment at the site** than those who were (32% vs. 10%)
- **angling club members** were significantly more likely to **wash them back home** (73% vs. 53%)
- those with a **high overall threat score** (based on their perceived threat of INNS) were significantly more likely to **wash it at the site** (23% vs. 8%).

7.6.4 Factors determining whether or not to clean equipment

The two most important factors in determining whether or not to clean their equipment were **the availability of information about what to do** (mean of 2.42) and **why they should do it** (mean of 2.39). The mean scores are derived from a rating scale of 0 to 4, where 0 = not at all important, 1 = slightly important, 2 = somewhat important, 3 = very important and 4 = extremely important, so the closer the mean to 4 the greater its importance.

Full results, including the proportions selecting each level of importance, the mean scores and the significant differences, are shown in Figure 48 and Table 20. The significant differences highlight the following:

- **the availability of information about what to do** and **the availability of information on why you should do it** were significant more important than all other factors
- **the availability of a hose/cleaning station** and **how clean your equipment looks at the end of your trip** were significantly more important than the cost of cleaning equipment and the time it takes to clean equipment
- the latter two – which include ‘cost’ – were consequently significantly less important than all four other factors.

Figure 48: Importance of Factors in the Decision on Whether or Not to Clean Angling Equipment

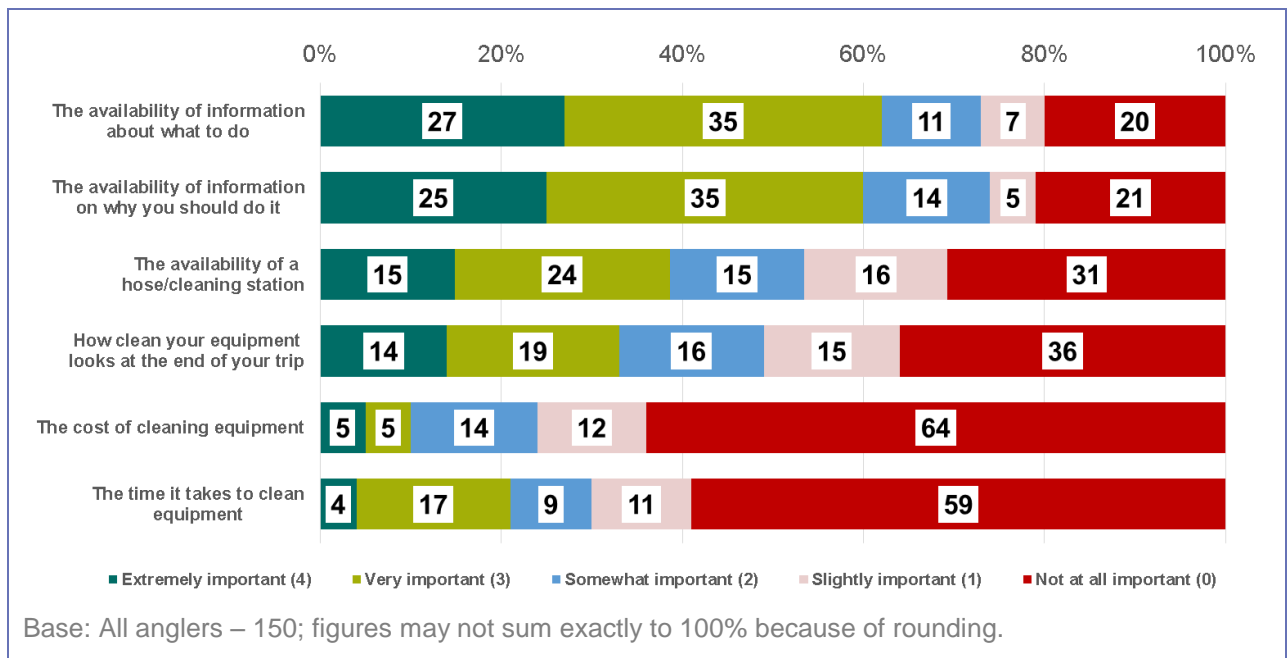


Table 20: Mean Importance Scores (Anglers)

	Mean	Sig Diffs
A. The availability of information about what to do	2.42	Higher than: C, D, E, F
B. The availability of information on why you should do it	2.39	Higher than: C, D, E, F
C. The availability of a hose/cleaning station	1.76	Higher than: E, F Lower than: A, B
D. How clean your equipment looks at the end of your trip	1.59	Higher than: E, F Lower than: A, B
E. The cost of cleaning equipment	0.75	Lower than: A, B, C, D
F. The time it takes to clean equipment	0.97	Lower than: A, B, C, D

Significant differences of note by segment include:

- **the availability of a hose/cleaning station** was significantly more important to **coarse anglers** than sea/other anglers (1.83 vs. 1.19); it was also significantly more important to those that **mostly fish in fresh water** as opposed to those mostly fishing in salt water (1.90 vs. 1.00)
- **how clean the equipment looks** was significantly more important to those **aged 65+** than those aged 16-44 (2.03 vs. 1.10)

- **availability of a hose/cleaning station** (1.29 vs. 1.96) and **how clean the equipment looks** (1.16 vs. 1.78) were significantly less important to **those that work in the sector**
- **importance of information on why you should do it** was significantly more important to those **aged 45-64** than those aged 65+ (2.55 vs. 1.86).

7.6.5 Air drying equipment

Four fifths of the anglers (83%) claimed to air dry their equipment after every trip, as shown in Table 21. This compares with 87% in 2008, although the use of slightly different response categories means the findings are not directly comparable.

Table 21: How Often They Air Dry Their Equipment Such as Nets, Sling and Landing Mat

	Total	Angler Type			Where fish		
		Game	Coarse	Sea / Other	Only / mostly fresh water	Both equally	Only / mostly marine
Base	150	29	125	16	110	22	18
	%	%	%	%	%	%	%
after every trip	83	83	90	38	86	100	39
after most trips	6	10	6	6	6	-	11
after some trips provided you have the time	2	-	2	-	2	-	6
occasionally	1	-	2	-	2	-	-
never	5	7	1	25	4	-	17
do not have any of this equipment	3	-	-	25	-	-	22
something else	1	-	-	6	-	-	6

Base: all angler; figures may not sum exactly to 100% because of rounding.

The table shows significant differences by angler type and where they fish; given the low bases of some of these sub-groups, care is needed when interpreting the results. **Game** and **coarse anglers** were significantly more likely to air dry **after every trip** than sea/other anglers (83% and 90% respectively vs. 38%) and **sea/other anglers** were significantly more likely to **not have such equipment** (25% vs. 0% respectively). Those that **fish only/mainly in fresh water**, or **both equally**, were significantly more likely to air dry **after every trip**, with **only/mostly marine anglers** significantly more likely to **never air dry** than those that do both equally (17% vs. 0%) and to **not have such equipment** compared to those that only/mainly fish in fresh water (22% vs. 0%).

One other significant difference of note which is not shown in the table is that **those with a high overall behaviour score** were significantly more likely to air dry their equipment after every trip (91% vs. 71%).

7.7 Biosecurity Behaviour: Boaters

7.7.1 Where boats are stored

As shown in Table 22, boaters most typically stored their boat/craft out of the water (65%), at home/at work (40%) or at a marina/boating club (50%).

Yachters and **motor boaters** were significant more likely to store their boat **in the water** (73% respectively vs. 6% and 10%) or **at a marina/boatyard/dock** (47% and 36% vs. 6% and 5%) than canoeists/kayakers and those with sailboats/dinghies. **Canoeists/kayakers** were significant more likely to store their boat **at home** than yachters, those with sailboats/dinghies and motor boaters (69% vs. 13%, 35% and 27%).

Table 22: Where Boat/Craft is Stored

	Total	Main Type of Boating				
		Yachting	Canoeing / kayaking	Sailboat / dinghy	Motor boating	Other
Base	123	30	32	20	11	28
	%	%	%	%	%	%
out of the water	65	33	100	90	27	54
in the water	39	73	6	10	73	50
at home	33	13	69	35	27	14
at a marina / boatyard / dock etc	24	47	6	5	36	29
at a club, in a boathouse	15	13	22	25	-	11
at a club, outside	11	17	3	30	-	7
at work	7	-	9	-	-	21
something else	2	-	3	-	-	4

Base: All that own their own boat/craft - 123.
 Columns add to more than 100% because respondents could select more than one answer.

Other significant differences of note that are not shown in the table above include:

- unsurprisingly, those who were **members of a boating club** were significantly more likely to store it **at a club in a boathouse** (25% vs.5%), **or outside** (77% vs.52%), than those who were not

- **16-44 year olds** were significantly more likely to store their boat **out of the water** than those aged 45+ (82% vs. 61% aged 45-64 and 47% aged 65+), as were **those that visited a number of sites** (73% vs. 56%)
- those **aged 65+** were significantly more likely to store it at a **marina/boatyard/dock** than younger boaters (47% vs.18% aged 16-44 and 22% aged 45-64)
- those that **go boating in Scotland and Wales** (67% and 68% respectively vs. 32%), visit **a number of sites** (50% vs.14%) or **go boating less often** (50% less often than fortnightly vs. 25% weekly), were significantly more likely to store their boat **at home**.

7.7.2 Use of antifouling paint

Two-fifths (41%) said that they used antifouling paint (see Figure 49), and this was particularly the case – as would be expected – for those that go yachting (83%) and motor boaters (73%).

Figure 49: Use of Antifouling Paint on Boat/Craft

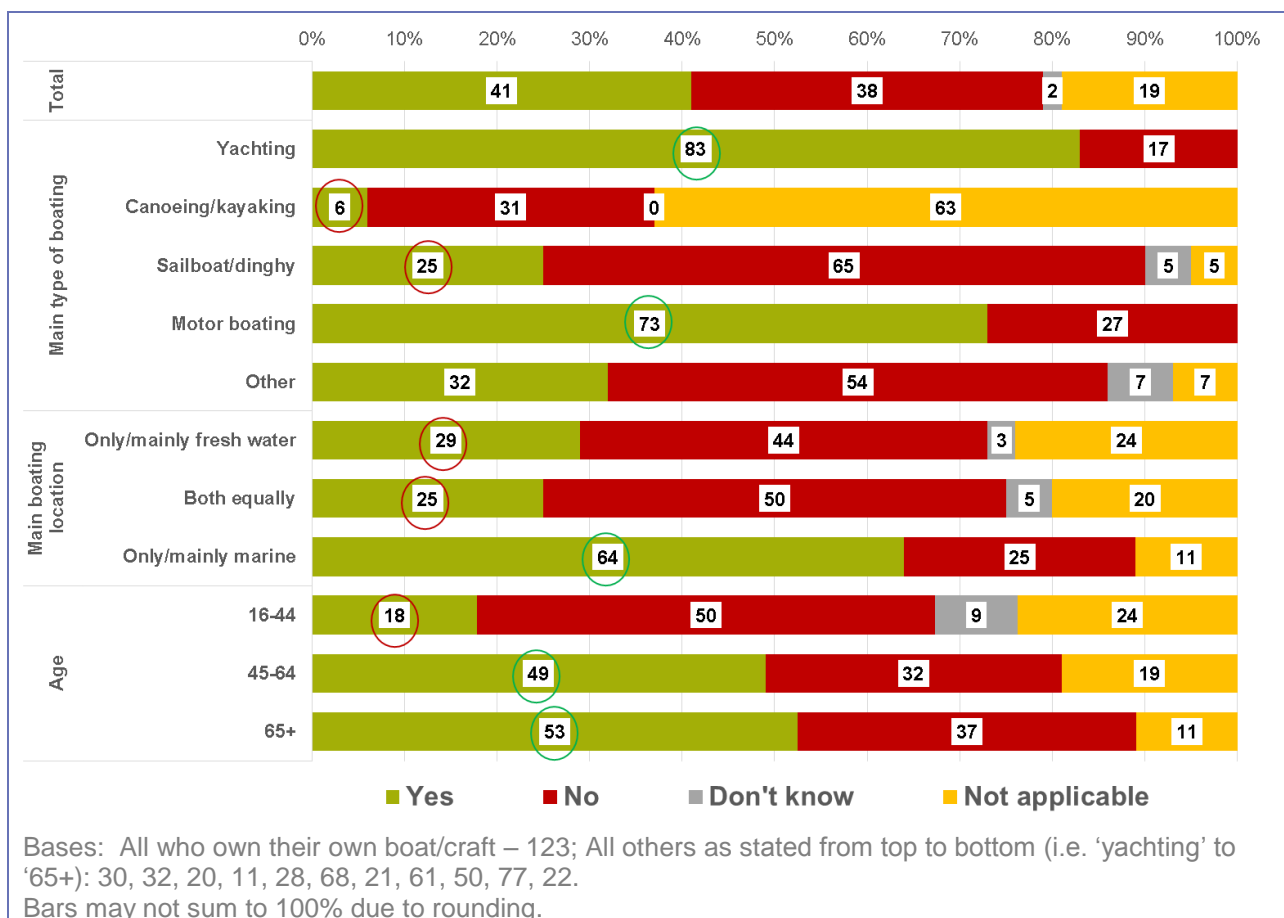
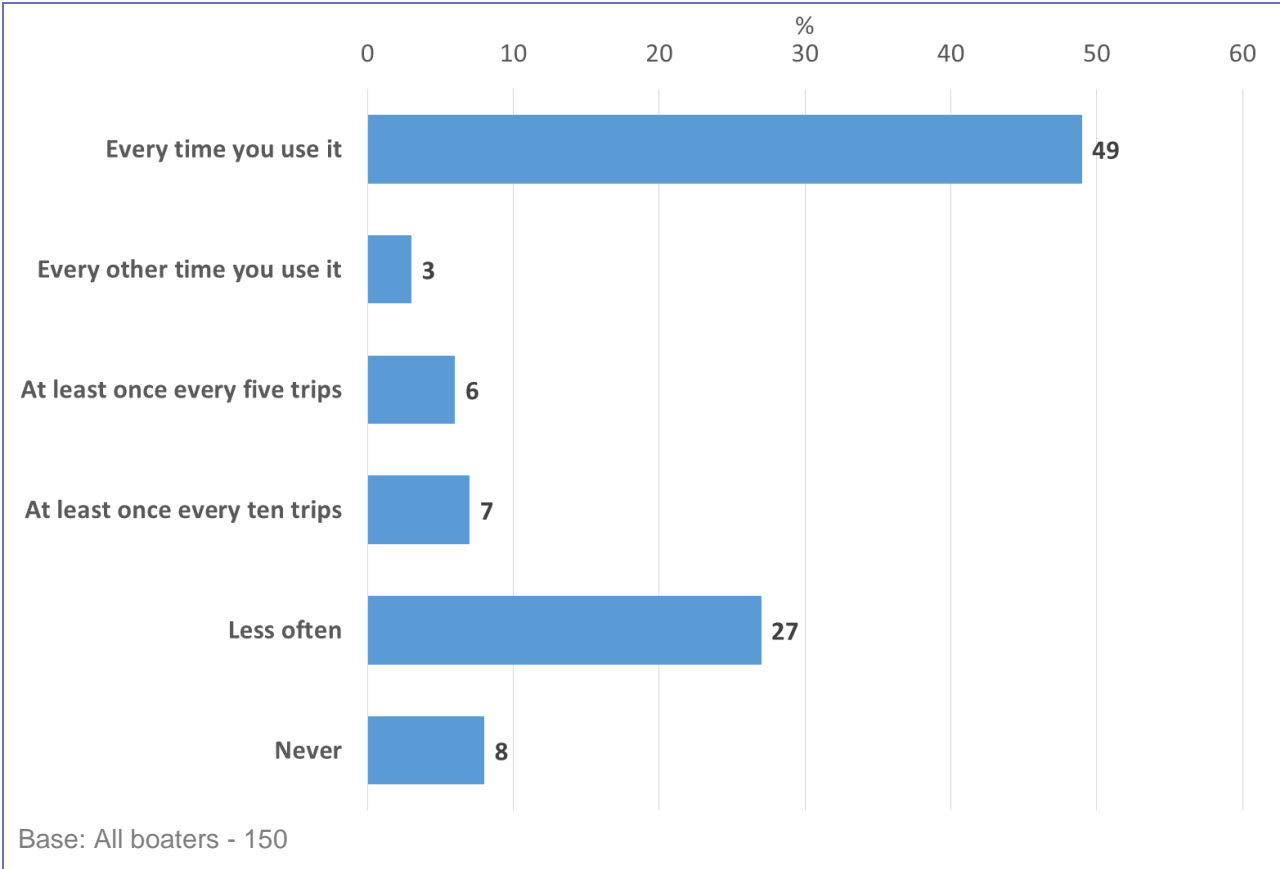


Figure 49 also shows that those that **boat only/mainly in marine locations** were significantly more likely to use antifouling paint than those that boat only/mainly in fresh water locations or both equally (64% vs. 29% and 25% respectively). Those **aged 45-64** and **65+** were also significantly more likely to use antifouling paint than those aged 16-44 (49% and 53% respectively vs.18%).

7.7.3 Cleaning equipment

Half the full sample of boaters (49%) claimed to clean their boat and equipment, or someone else’s boat and equipment that they used, after every use, but 42% said that they cleaned it no more than once every 10 trips, this including 8% who said ‘never’ as shown in Figure 50.

Figure 50: Frequency of Cleaning Boat/Craft and Equipment

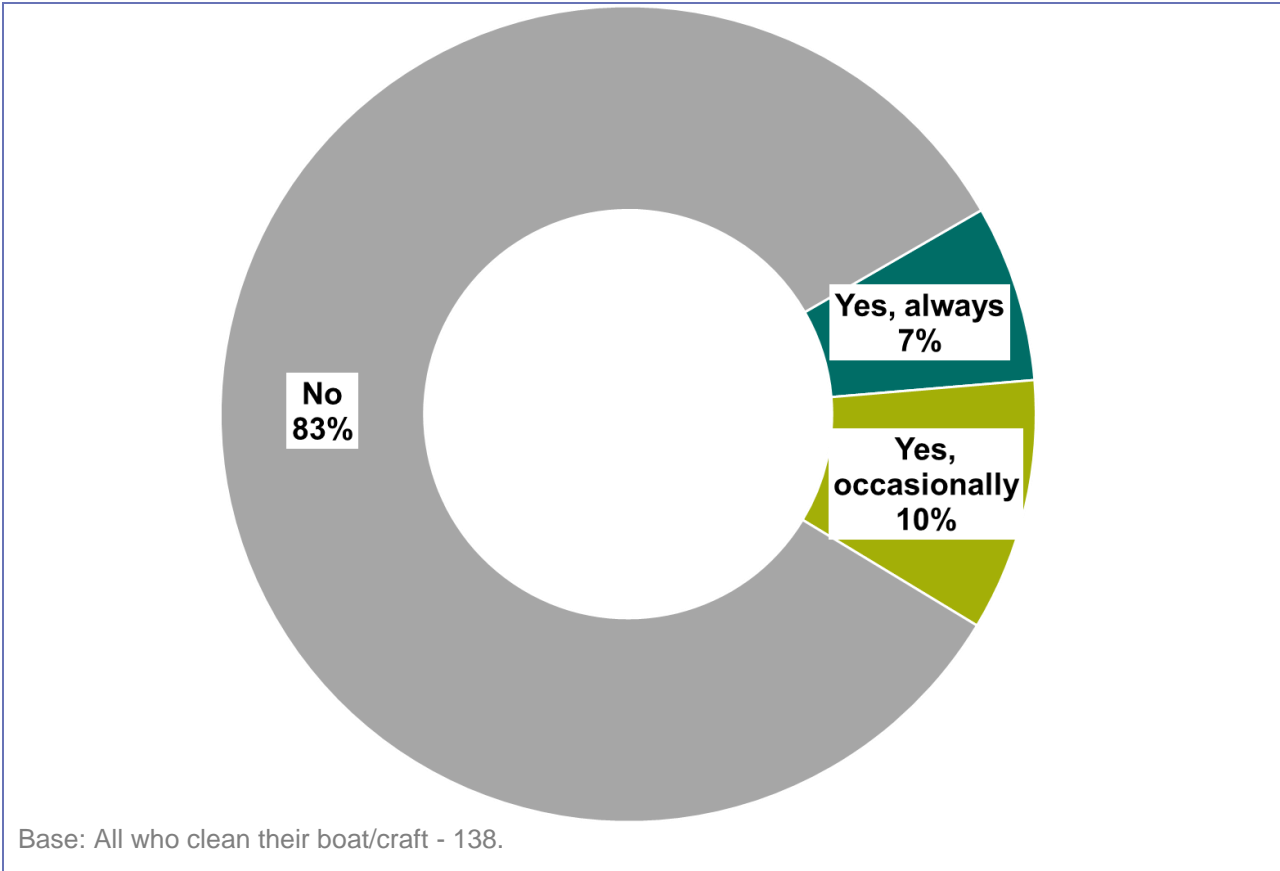


Females were significantly more likely to clean it **every time** than males (63% vs. 43%), as were **those that visit several sites** (58% vs. 40%).

Those who **owned their own boat** were significantly less likely to **never clean it** (3% vs. 30%), whilst **those that go boating less often than fortnightly** were significantly more likely to **never clean it** than those that boat weekly (19% vs. 2%).

The majority (83%) of those who have ever cleaned their boat/craft, or another's boat/craft, have never had their craft professionally cleaned, as shown in Figure 51. **Canoeists/kayakers** and **sailboat/dinghy** users were significantly more likely to **never** get it cleaned professionally than yachters (97% and 92% respectively vs. 69%).

Figure 51: Whether They Ever Get Their Boat/Craft Cleaned Professionally



The main cleaning methods used were a hose (61%), manually with a brush (41%) or with a water blaster (33%), as shown in Table 23 .

Significant differences of note include that:

- canoeists/kayakers were significantly more likely to use a hose than motor boaters (66% vs. 25%), as were those with other boats/craft (60% vs. 25%)

- those with **sailboats/dinghies** were significantly more likely to use **a hose** than yachters and motor boaters (80% vs. 54% and 25% respectively)
- **yachters** and **motor boaters** were significantly more likely to use **a water blaster** than those with sailboats/dinghies (46% and 58% respectively vs.16%)
- **yachters** were significantly more likely to clean **manually using a scraper** than canoeists/kayakers and motor boaters (31% vs. 7% and 0%).

Table 23: Methods Used to Clean Boat/Craft and Boating Equipment

	Total
Base	138
	%
Using a hose	61
Manually using a brush	41
Using a water blaster	33
Manually using a scraper	17
Using other powered/mechanical methods	7
None of these	1

Base: all cleaning their boat – 138; figures sum to more than 100% because respondents could select more than one answer.

Asked where they cleaned their boat/craft and equipment, half (51%) reported that they cleaned it out of the water, close to where it was used, whilst 30% waited until they got home, and a similar proportion (27%) cleaned it in the water at dockside. Table 24 also shows some significant differences by main type of boating as follows:

- those with **sailboats/dinghies** were significantly more likely than those with yachts and canoes/kayaks to **clean out of the water, close to where it is used** (76% vs. 51% and 38% respectively)
- **canoeists/kayakers** were significantly more likely than all other boating types to clean **out of the water, at home** (66% vs.14% yachters, 32% sailboat/dinghy, 17% motor boating and 3% other)
- yachters, motor boaters and users of other boats/craft were significantly more likely than canoeists/kayakers and those with sailboats/dinghies to clean **in the water, at the dockside** (43%, 33% and 43% respectively vs. 0% and 8% respectively).

Other significant differences of note not shown above include:

- those boating **only in marine waters** were significantly more likely to clean their boat **out of the water, close to where it is used** (63% vs. 44% only/mainly fresh water and 38% both equally), as were those **aged 65+** (81% vs. 16-44: 52% and 45-64: 42%) and **those that boat most frequently, i.e. weekly and fortnightly** (57% and 63% vs. 32%)
- those boating **only/mainly in fresh water or fresh and marine equally** were significantly more likely to clean their boat **out of the water at home** (36% and 48% respectively vs. 18%), as were **those that visit several sites** (39% vs. 21%) and who **boat less often than fortnightly** compared to those boating weekly (45% vs. 23%)
- those boating **at the same site** compared to those that boat at several sites (35% vs. 19%), and those that boat **weekly** compared to those who do so fortnightly (30% vs. 6%), were significantly more likely to clean their boat **in the water at dockside**.

Table 24: Where Boat/Craft and Boating Equipment Are Cleaned

	Total	Main Type of Boating				
		Yachting	Canoeing/kayaking	Sailboat/dinghy	Motor boating	Other
Base	138	35	29	25	12	35
	%	%	%	%	%	%
Out of the water, close to where it is used	51	51	38	76	67	34
Out of the water, at home	30	14	66	32	17	23
In the water at dockside	27	43	-	8	33	43
Out of the water, other	8	6	14	8	-	9

Base: all cleaning their boat – 138; columns add to more than 100% because respondents could select more than one answer

7.7.4 Factors determining whether or not to clean equipment

The two most important factors in determining whether or not to clean their boat and equipment were availability of hose/cleaning station (mean of 2.00) and the appearance

of their boat (mean of 1.69), as shown in Figure 52 and Table 25. The figure also shows which factors were significantly more or less important than others, revealing that:

- the first two, i.e. **availability of hose/cleaning station** (2.00) and **the appearance of their boat** (1.69) were significantly more important than all other factors (1.19, 1.22, 1.01 and 0.77 respectively)
- **the availability of information about why you should do it** (1.19) and **the time it takes to clean equipment** (1.22) were both significantly more important than the availability of information about what to do (1.01) and the cost of cleaning equipment (0.77)
- **cost** (0.77) was significantly less important than the top four factors.

Figure 52: Importance of Factors in the Decision on Whether or Not to Clean Boat/Equipment

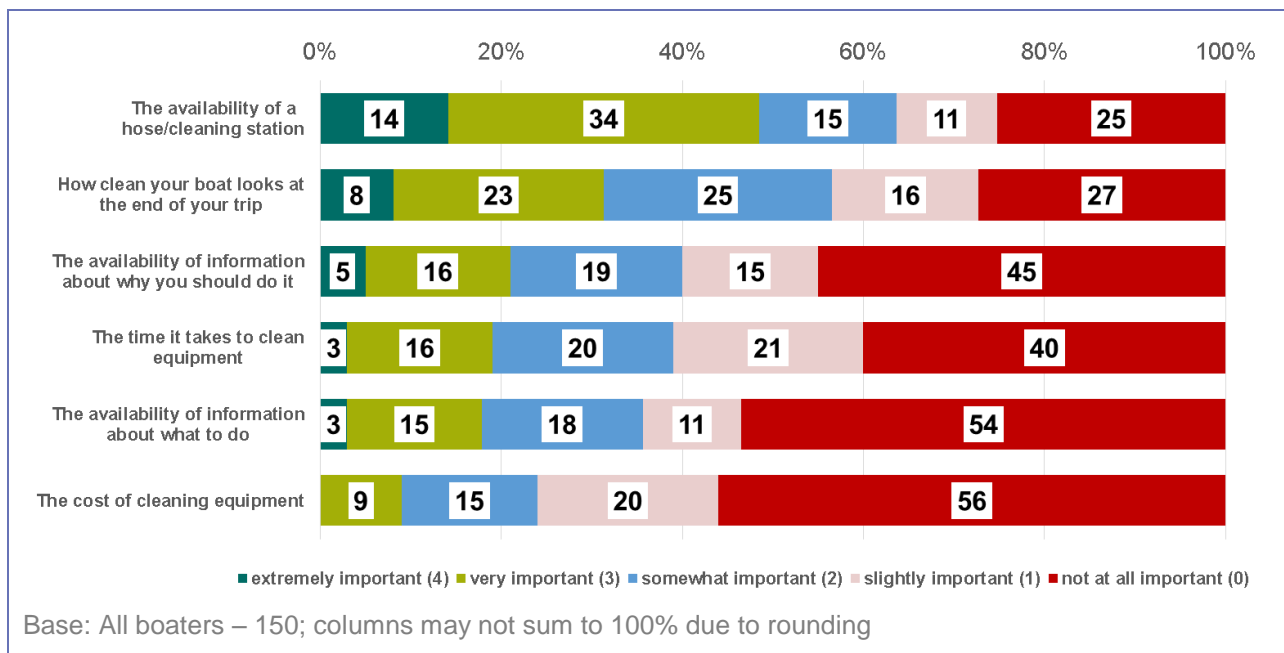


Table 25: Mean Importance Scores (Boaters)

	Mean	Sig Diffs
A. The availability of a hose/cleaning station	2.00	Higher than: C, D, E, F
B. How clean your equipment looks at the end of your trip	1.69	Higher than: C, D, E, F
C. The availability of information on why you should do it	1.19	Higher than: F Lower than: A, B
D. The time it takes to clean equipment	1.22	Higher than: F Lower than: A, B
E. The availability of information about what to do	1.01	Lower than: A, B
F. The cost of cleaning equipment	0.77	Lower than: A, B, C, D

Significant differences of note by segment include:

- the **availability of a hose** was significantly more important to those **aged 16-44** than those aged 45-64 (2.38 vs. 1.81)
- **availability of information on what to do** was significantly more important to **those who mainly boat on fresh water** (1.29 vs. 0.82 only/mainly marine and 0.67 both equally)
- **availability of information on why to do it** was significantly more important to those with **canoes/kayaks** (1.86 vs. 0.78 yachters, 0.96 sailboat/dinghy and 1.03 other)
- **how clean the boat looks** was significantly more important to **those who only boat on marine waters** (2.00 vs. 1.40 only/mainly fresh water), those who are **not members of a boating club** (1.89 vs. 1.46) and those who are **female** (2.07 vs. 1.52)
- **availability of information on what to do** (1.18 vs. 0.77), **why to do it** (1.37 vs. 0.93) and **how clean the boat looks** (1.93 vs. 1.33) were significantly more important to those with a high overall behaviour score.

7.7.5 Air drying equipment

Boaters were also asked how often they air dried their boat/craft and equipment for at least 48 hours. As shown in Table 26, just over half (55%) claimed to air dry their boat/equipment **after every use**. This was particularly true of **canoeist/kayakers** (86%) and users of **sailboats/dinghies** (72%). Four out of 10 either **never do so** (23%) or do so **very occasionally** (15%), this being particularly true of **yachters** (30% less often and 27% never), **motor boaters** (62% never) and users of **other** boat/craft (26% less often and 26% never).

Table 26 also shows that **members of a boating club** were significantly more likely to air dry **every time** than non-members (63% vs. 47%), with **non-members** significantly more likely to **never** do so (32% vs. 14%).

One other significant difference of note was that those that **do not own their own boat or craft** were significantly more likely to **never air dry** the boat/craft they had used.

Table 26: How Often They Air Dry Boat/Craft and Equipment for At Least 48 Hours

	Total	Main Type of Boating					Member of a Boating Club	
		Yachting	Canoeing/kayaking	Sailboat/dinghy	Motor boating	Other	Yes	No
Base	150	37	35	25	13	38	71	79
	%	%	%	%	%	%	%	%
Every time you use it	55	32	86	72	23	45	63	47
Every other time you use it	3	-	3	8	8	3	3	4
At least once every five trips	2	8	-	-	-	-	4	-
At least once every ten trips	1	3	3	-	-	-	3	-
Less often	15	30	3	-	8	26	13	18
Never	23	27	6	20	62	26	14	32

Base: all boaters - 150; columns may not sum to 100% due to rounding.

8 Invasive Non-native Species

8.1 Key Findings

8.1.1 General public

- **Awareness of terms:** since 2008, awareness of the terms ‘alien species’ (46% vs. 39% in 2008) and ‘invasive alien species’ (39% vs. 22%) had **increased significantly**, nevertheless these terms were the least familiar to the public. Two thirds (67%) of the general public were aware of ‘invasive non-native species’, the same as it was in 2008 but there has been a **significant decrease** in awareness of ‘native species’ (67% vs 76% in 2008) and ‘non-native species’ (59% vs. 68%).
- **Understanding of NNS:** participants were asked to explain what they thought the term ‘non-native species’ meant. Their answers were analysed based on whether they included reference to seven themes (see 8.3 for more details).
 - PLACE: this was the most frequently mentioned theme (where NNS are from/found), mentioned by three-quarters of the sample (74%)
 - all other themes were only mentioned by 15 per cent or less
 - compared to 2008, there were **significantly more** references to PLANTS (most often, Japanese knotweed) and **significantly fewer** references to PLACE, HOW THEY ARE INTRODUCED, and to ANIMALS
 - one in five participants (19%) said they DID NOT KNOW what the term means.
- **Understanding of INNS:** in the same way, participants were asked to explain their understanding of the term ‘invasive non-native species’.
 - IMPACT: although the most frequently referenced theme it was mentioned **significantly less** often in 2018 compared to 2008 (56% vs. 64%).
 - PLACE: a third of respondents made reference to where INNS are from
 - PLANTS/ANIMALS: whereas in 2008, people referenced PLANTS (11%) and ANIMALS (13%) equally often, in 2018 this had changed, with PLANTS (19%) being referenced more than ANIMALS (8%)
 - HOW INTRODUCED/SPREAD: this was only referred to by 7% of the sample
 - DON'T KNOW: over a quarter of the sample (28% were unable to provide a definition.
- **Perceived Threat of INNS:** INNS were generally perceived to be less of a threat compared to habitat destruction, climate change, pollution and human exploitation. The perceived threat levels had not changed significantly since 2008.
- **Support for Killing INNS:** although there were reasonable levels of support for killing INNS when they pose a threat, especially to human health, levels of support has **fallen significantly** across all measures since 2008.
 - although care is needed in interpreting the data, as it only demonstrates a correlation and not a cause and effect, there was the suggestion that where people are familiar with terms such as INNS and their potential impact, there is greater support for their management.

8.1.2 Exotic pet owners

- **Awareness of terms:** Exotic pet owners were **significantly more aware** of ‘native’, ‘non-native’ and ‘invasive alien species’ compared to the general public; their awareness of ‘alien species’ and ‘invasive non-native species’ was the same.
- **Understanding of NNS:**
 - PLACE: compared to the general public, exotic pet owners were **significantly more likely to**

<p>make reference to PLACE (86% vs. 74%)</p> <ul style="list-style-type: none"> ○ all other themes were only mentioned by 16 per cent or less ○ PLANTS/ANIMALS: compared to the public, exotic pet owners were more likely to mention ANIMALS (15% vs. 10%) and made significantly fewer references to PLANTS (3% vs. 15%).
<ul style="list-style-type: none"> ● Understanding of INNS: <ul style="list-style-type: none"> ○ compared to the general public, exotic pet owners were significantly more likely to reference IMPACT (68% vs. 56%), PLACE (50% vs. 34%) and HOW INTRODUCED/SPREAD (19% vs. 7%) ○ they were more likely to couch their definitions in terms of ANIMALS (15% vs. 8%) but less likely to make reference to PLANTS (8% vs. 19%) ○ they were significantly less likely to say they DON'T KNOW what the term means (16% vs. 28%).
<ul style="list-style-type: none"> ● Perceived Threat of INNS: compared to the general public, exotic pet owners were significantly more likely to perceive INNS as a smaller threat compared to loss of habitat and pollution.
<ul style="list-style-type: none"> ● Support for Killing INNS: although there were reasonable levels of support for killing INNS when they pose a threat, exotic pet owners were significantly less willing to support killing INNS that pose a threat to human health compared to the general public.

8.1.3 Anglers

<ul style="list-style-type: none"> ● Awareness of terms: 87% of the anglers in the sample said they were aware of the term INNS. This was significantly higher than the general public and exotic pet owners (levels of awareness were 67% and 59% respectively). It also represents a significant increase from 2008 (78%).
<ul style="list-style-type: none"> ● Understanding of INNS: everyone was able to offer a definition; this was significantly higher than all other audiences <ul style="list-style-type: none"> ○ PLACE (83%): they were more likely to mention this theme compared to the all other audiences ○ ANIMALS (45%): not surprisingly, they were also likely to make reference to ANIMALS (often referring to fish in general or to specific species of fish); this was significantly higher than either the general public or exotic pet owners ○ IMPACT (33%): although a third of anglers referred to the IMPACT of INNS, this was significantly lower compared to both the general public and exotic pet owners (56% and 68% referenced IMPACT respectively) ○ HOW INTRODUCED/SPREAD (29%): this was significantly higher than either the general public or exotic pet owners ○ PLANTS (6%): this was significantly lower than either boaters (18%) or the general public ○ Compared to 2008, anglers in the current survey were significantly more likely to know what the term means (87% vs. 78%) and to reference PLACE (83% vs. 66%) and IMPACT (33% vs. 19%). They were less likely to reference ANIMALS (45% vs. 59%).
<ul style="list-style-type: none"> ● Perceived Threat of INNS: anglers were asked the extent to which they considered INNS to be a threat in relation to six statements. INNS were generally perceived to represent a fairly or very serious threat on all statements. There were no significant differences in the perceived threat of INNS between 2008 and 2018.
<ul style="list-style-type: none"> ● Willingness to Adopt Appropriate Behaviours: anglers were asked which of a set of behaviours they already adopt and, for those they were not already doing, how willing they would be to do so in the future: <ul style="list-style-type: none"> ○ the majority claimed to be already adopting appropriate behaviours. Those who were not often indicated a willingness if they were encouraged to do so. There were two possible sticking points: 15% reported they were probably/definitely not willing to not use a stink bag, while 12% were probably/definitely unwilling to wash their equipment after every trip. ○ those anglers who exhibited greater willingness to adopt appropriate behaviours were

significantly more likely to perceive INNS to be a greater threat, based on their overall threat scores (i.e. summed across all threat statements: 8.01 vs. 6.60 out of 12). Although only a correlation, and not a cause and effect, it does suggest that explaining the threat of INNS can motivate anglers to adopt appropriate biosecurity.

8.1.4 Boaters

- **Awareness of terms:** 83 per cent of boaters were aware of the term INNS. This was on a par with anglers and **significantly higher** than the general public and exotic pet owners.
- **Understanding of INNS:** boaters definitions included references to:
 - PLACE (65%): they were **more likely** to mention this theme compared to the general public but **less likely** to do so compared to anglers
 - IMPACT (49%): although they were **more likely** to mention this theme compared to anglers, they were **less likely** to do so compared to the general public or exotic pet owners
 - HOW INTRODUCED/SPREAD (36%): this was **significantly higher** than either the general public or exotic pet owners
 - ANIMALS (31%): this was **significantly higher** than either the general public or exotic pet owners
 - PLANTS (18%): this was **significantly higher** than either anglers or exotic pet owners
 - only five per cent were unable to offer a definition; this was **significantly lower** than either the general public (28%) or exotic pet owners (16%) but **higher** than anglers (0%)
- **Perceived Threat of INNS:** boaters were asked the extent to which they considered INNS to be a threat in relation to six statements:
 - INNS were generally perceived to represent a fairly or very serious threat on all statements. Compared to anglers, boaters rated INNS as posing a **more serious threat** to native plants (94% rated INNS as a very or fairly serious threat compared to 87% of anglers)
 - however they gave **lower ratings** in terms of the extent to which INNS posed a threat to the future of boating (66% rated INNS as a very or fairly serious threat compared to 86% of anglers who felt INNS represented a threat to the future of angling).
- **Willingness to Adopt Appropriate Behaviours:** boaters were asked which of a set of behaviours they already adopt and, for those they were not already doing, how willing they would be to do so in the future:
 - the majority claimed to be already adopting appropriate behaviours. Those who were not often indicated a willingness if they were encouraged to do so. There was considerable resistance to cleaning their boat/equipment with hot water, which probably reflects the lack of hot water at places where boats are used. There was also resistance to using antifouling paint although this will only be relevant to some boaters
 - although care is needed in interpreting the data, as they only demonstrate a correlation and not a cause and effect, it suggests that where boaters are familiar with the potential impact of INNS, and understand what they are being asked to do and why, in terms of cleaning their gear, there is greater support for the management of INNS.

8.2 Awareness and Understanding of Terms

The samples of the general public and of exotic pet owners were asked whether they had come across the terms 'native species' (NS), 'non-native species' (NNS), 'alien species' (AS) and 'invasive alien species' (IAS). Participants in all four surveys were asked whether they had come across the term 'invasive non-native species' (INNS).

The results are shown in Table 27, along with significant differences between the samples and between 2008 and 2018 for the general public and anglers.

Table 27: Awareness of Different Terms

	2018				2008	
	General Public	Exotic Pet Owners	Anglers	Boaters	General Public	Anglers
Base	604 <small>(weighted)</small>	148	150	150	600 <small>(weighted)</small>	150
awareness of terms	%	%	%	%	%	%
native species	e 67	g 87	n.a.	n.a.	76	n.a.
non-native species	e 59	g 76	n.a.	n.a.	68	n.a.
alien species	46	51	n.a.	n.a.	39	n.a.
invasive alien species	e 39	g 46	n.a.	n.a.	22	n.a.
invasive non-native species	a, b 67	a, b 59	g, e 87	g, e 83	68	78

NOTE: letters indicate the sample that the result is significantly higher or lower than – a = anglers, b = boaters, g = general public and e = exotic pet owners. Differences between 2008/2018 are shown with just the 2008 cells shaded red/green

Key findings of note are:

- Although over half of the general public were aware of the terms native species and non-native species in 2018, awareness has dropped since 2008 (from 76% to 67% for NS and from 68% to 59% for NNS); awareness of the terms alien species and invasive alien species has risen significantly however (from 39% to 46% for AS and from 22% to 39% for IAS)
- Awareness of native species and non-native species was significantly higher amongst exotic pet owners than the general public (87% vs. 67% for NS and 76% vs. 59% for NNS); awareness of the term invasive alien species was also higher amongst exotic pet owners (46% vs. 39%)
- Anglers and boaters were significantly more aware of the term INNS than both the general public and exotic pet owners (87% and 83% respectively vs. 67% and 59% respectively)
- There has been no change in awareness of the term invasive non-native species amongst the general public since 2008; however, it has increased significantly amongst anglers (from 78% to 87%).

Table 28 shows the results by key segments of the general public, revealing many significant differences including, for INNS:

- those in self-defined **semi-rural** and **rural areas** were significantly more aware of the term **INNS** than those in urban areas (52% and 62% respectively vs. 41%)
- **males** were significantly more aware of the term **INNS** than females (53% vs. 42%)
- those **aged 45-64** and **65+** were significantly more aware of the term **INNS** than those aged 16-44 (49% and 67% respectively vs. 30%); and those aged **65+** were significantly more aware of the term **INNS** than those aged 25-44 (67% vs. 41%).

Table 28: Awareness of Different Terms - Segments of the General Public

	2018													2008
	Total	Location (self defined)			Region			Gender		Age				
		Urban	Semi-urban/rural	Rural	North	Mids	South	Male	Female	16-24	25-44	45-64	65+	
Base (weighted)	604	325	173	103	169	181	254	294	307	85	199	187	133	600
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
native species	67	62	66	84	56	64	75	72	61	54	61	69	79	76
non-native species	59	55	58	76	52	57	66	65	54	42	56	62	71	68
alien species	46	43	48	50	38	41	55	50	41	34	44	44	58	39
invasive alien species	39	31	44	53	32	36	44	44	33	23	35	40	52	22
Invasive non-native species	67	41	52	62	44	47	50	53	42	30	41 ₆₅₊	49	67	68

Other significant differences of note not shown in Table 28 include:

- **ABC1s** were significantly more likely to be **aware of all terms** than C2DEs (72% vs. 61% NS; 65% vs. 53% NNS; 50% vs. 40% AS; 42% vs. 34% IAS and 52% vs. 42% INNS), as were those that show **high support for the control of INNS** (98% vs. 38% NS; 95% vs. 27% NNS; 74% vs. 20% AS; 71% vs.10% IAS)
- with one exception, there were no significant differences in awareness of any of the terms among those with a garden, those with a pond, and those with neither, or between those who were and were not responsible for deciding what plants to grow. The exception was that those **responsible for a garden** (42% vs. 32%) or

who **had a pond** (51% vs. 37%) were significantly more likely to be aware of the term **invasive alien species**.

There were also a small number of significant differences in awareness of terms by exotic pet owner types (**nb** some of the sub-groups have low bases), namely:

- **males** were significantly more likely to be aware of the terms **non-native species, alien species, invasive alien species** and **invasive non-native species** than females (88% vs. 68% NNS; 74% vs. 37% AS; 65% vs. 34% IAS and 75% vs. 49% INNS)
- those **without a family** were significantly more likely to be aware of the term **native species** compared to those with a family (92% vs. 77%), as were those with **high support for controlling INNS** compared to those with lower levels of support (95% vs. 78%)
- **owners of insects and invertebrates** were significantly more likely to be aware of the term **invasive non-native species** than owners of mammals, birds and amphibians and reptiles (93% vs. 14%, 48% and 62% respectively)
- **owners of amphibian and reptiles** were significantly more likely to be aware of the term **invasive non-native species** than owners of mammals (62% vs. 14%).

There were also a couple of significant differences in awareness of the term invasive non-native species amongst anglers, namely:

- those **aged 45-64** were significantly more likely to be aware of the term **INNS** than those aged 65+ (93% vs. 71%)
- **ABC1s** were significantly more likely to be aware of the term **INNS** than C2DEs (91% vs. 78%).

There were no significant differences in awareness of the term invasive non-native species amongst the boater segments.

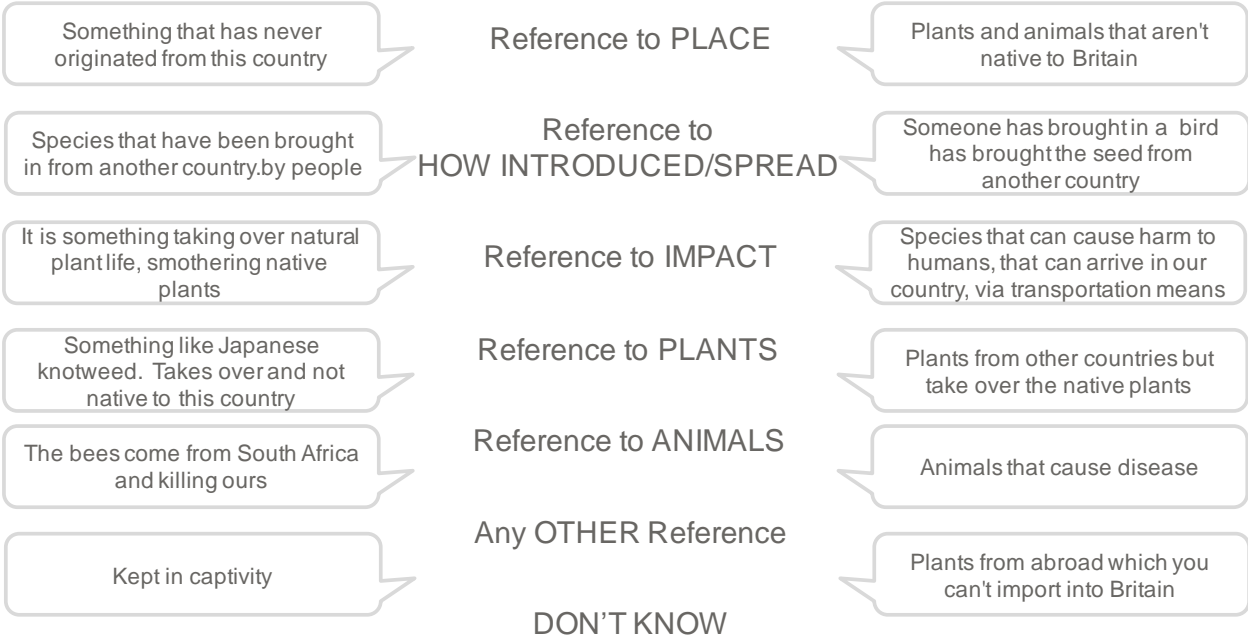
8.3 Awareness of the Meaning of NNS and INNS

Participants in the general public and exotic pet surveys were asked to say what they felt was meant by the terms non-native species and invasive non-native species.

Participants in the angler and boater surveys were asked to say what they felt was meant by the term invasive non-native species only. The open ended definitions that

participants gave were initially coded based on a code frame of 41 different categories. These were then further grouped according to 7 key themes, with the 2008 data then recoded using the same code frames to ensure comparability. The 7 key themes used, along with examples of what these included, are shown in Figure 53.

Figure 53: The 7 Key Themes Used in Defining NNS and INNS



8.3.1 Reference to PLACE

This theme was largely reflected in answers that used terms that are synonymous with 'foreign' / 'not from this country'. In addition, some respondents spoke about things that:

- were not from here/this area or that were new to the area, etc.
- were not normally/originally/naturally found here/in our environment, etc.
- were not bred/born here/grown here, etc.
- shouldn't be here/don't belong here, etc.

A small number mentioned specific locations that a NNS is not from, such as the UK. Some answers implied respondents assumed the term related to species that come from this country or that they are species which are not found in the wild in this country.

8.3.2 Reference to HOW INTRODUCED/SPREAD

This theme was reflected by reference to pathways by which the plants and/or animals in question got into the UK; most were very general comments, such as being brought in by people. Some respondents spoke about accidental introduction or animals arriving here under the own volition.

8.3.3 Reference to IMPACT

This theme was largely expressed either by reference to the negative qualities of the animals and/or plants (such as invasive, taking over, aggressive, destructive, etc.) and/or by reference to their negative impact, often with regards to native species. Indeed, when describing the impact of NNS/INNS respondents mainly focused on the environmental impact. There were only a few references to the social impact (such as damaging buildings or gardens or their nuisance value and the difficulty of controlling them). It was noticeable across all the audiences, including both 2008 and 2018, only two individuals mentioned the economic impact of INNS.

8.3.4 References to PLANTS and ANIMALS

Some respondents included in their definitions references to specific plants and animals while others spoke generically without naming particular species. Some spoke about organisms and species without differentiating between plants or animals.

8.3.5 OTHER references

This category was used for references that were only mentioned by a handful of respondents, including use of the term 'alien', 'rare', 'exotic', 'endangered' or 'extinct' species, and to the occasional reference to time periods, such as 'the ice age'. It was also used for answers that were vague or non-specific and did not fit into any of the other categories.

8.3.6 Definitions of NNS

The most common theme used by the general public and exotic pet owners to define non-native species (NNS) was 'reference to PLACE'. This is shown in Table 29, which also highlights the following:

- compared with 2008, members of the general public in 2018 were significantly less likely to make references to PLACE (74% vs. 81%) or how NNS are SPREAD (11% vs.19%)
- members of the general public in 2018 were also significantly less likely to make references to ANIMALS (10% vs.17%), but more likely to make references to PLANTS (15% vs.10%)
- exotic pet owners were more likely than members of the general public to make references to PLACE (86% vs. 74%) and ANIMALS (15% vs.10%) and less likely to make references to PLANTS (3% vs.15%) and not to know (7% vs.19%).

Table 29: Definitions of NNS

	2018		2008
	General Public	Exotic Pet Owners	General Public
Base	604	148	600
	%	%	%
Reference to PLACE	74	86	81
Any reference to HOW INTRODUCED/SPREAD	11	16	19
Any reference to IMPACT	2	3	4
Any reference to PLANTS	15	3	10
Any reference to ANIMALS	10	15	17
Any OTHER references	5	4	4
Don't know	19	7	15

Columns sum to more than 100% as respondents' answers often included two or more themes.

8.3.7 Definitions of INNS

The definitions of INNS given by the four survey groups are summarised in Table 30.

Overall:

- the general public were more likely to reference PLANTS or DON'T KNOW what it means and less likely to reference PLACE, HOW INTRODUCED/SPREAD or ANIMALS

- exotic pet owners were more likely to reference IMPACT and less likely to reference PLANTS
- anglers were more likely to reference PLACE, HOW INTRODUCED/SPREAD or ANIMALS and less likely to reference IMPACT or PLANTS
- boaters were more likely to reference HOW INTRODUCED/ SPREAD and PLANTS.

Table 30: Definitions of INNS

	General Public	Exotic Pet Owners	Anglers	Boaters
Base	604	148	150	150
	%	%	%	%
Any reference to PLACE	34 e, a, b	50 a, g	83 g, e, b	65 a, g, e
Any reference to HOW INTRODUCED/SPREAD	7 e, a, b	19 a, g	29 g, e	36 g, e
Any reference to IMPACT	56 e, a, b	68 g, a, b	33 g, e	49 e, a
Any reference to PLANTS	19 e, b	8 g, b	6 g, b	18 e, a
Any reference to ANIMALS	8 e, a, b	15 a, b, g	45 g, e, b	31 g, e, a
Any OTHER references	2 a, b	3	6 g	7 g
Don't know	28 e	16 g, b	g, e	5 g, e

NOTE: letters indicate the sample that the result is significantly higher or lower than – a = anglers, b = boaters, g = general public and e = exotic pet owners.
Columns sum to more than 100% as respondents' answers often included two or more themes.

There were a number of significant differences that just applied to one or two of the sample groups and these are indicated by the lowercase letters below the percentages: a indicates that the finding is significantly higher or lower than for anglers, b indicates that the finding is significantly higher or lower than for boaters, g indicates that the finding is significantly higher or lower than for the general public and e indicates that the finding is significantly higher or lower than for exotic pet owners. So, for example, the 50% of exotic pet owners making reference to PLACE is significantly lower than the 83% of anglers doing so and significantly higher than the 34% of the general public doing so.

Table 31 compares the definitions of INNS given in 2008 against those given in 2018. This highlights some significant differences as follows:

- in 2018 the general public were more likely to reference PLANTS (19% vs.11%) and less likely to reference IMPACT (56% vs. 64%) or ANIMALS (8% vs.13%)
- in 2018 anglers were more likely to know what the term means (0% saying 'don't know' vs.17%) and to reference PLACE (83% vs. 66%) and IMPACT (33% vs.19%); they were less likely to reference ANIMALS (45% vs. 59%).

Table 31: Definitions of INNS - 2018 Compared to 2008

	2018		2008	
	General Public	Anglers	General Public	Anglers
Base	604	150	600	150
	%	%	%	%
Any reference to PLACE	34	83	35	66
Any reference to HOW INTRODUCED/SPREAD	7	29	10	40
Any reference to IMPACT	56	33	64	19
Any reference to PLANTS	19	6	11	3
Any reference to ANIMALS	8	45	13	59
Any OTHER references	2	6	2	1
Don't know	28	-	25	17

Columns sum to more than 100% as respondents' answers often included two or more themes.

8.4 Awareness of Specific INNS

Members of the general public and exotic pet owners were asked to name any invasive non-native species that they were aware of in Great Britain. They were then shown a list of 20 species (including some that were native species) and asked which ones they were aware of, irrespective of whether or not they were INNS. They were then asked, of the species on this list that they were aware of, which ones they knew to be INNS that are present in Great Britain.

8.4.1 General Public

Their answers are summarised in Table 32.

Table 32: Awareness of Different Species and Whether they were Considered INNS Present in Great Britain (General Public)

Shaded cells are significantly higher (green)/lower (red) in 2018 compared to 2008 for species considered to be INNS based on spontaneous and prompted answers.
Species with * against them are native species; although there have been some sightings of the Asian hornet, it is not yet established in GB. All of the others are INNS that are found in GB.
X fastidiosa is a plant health pest.

	2018				2008			
	Aware of	Considered INNS in GB			Aware of	Considered INNS in GB		
		Spont	Spont + prompted (all)	Spont + prompted (those aware of)		Spont	Spont + prompted (all)	Spont + prompted (those aware of)
Base (weighted)	604	604	604	variable	600	600	600	variable
	%	%	%	%	%	%	%	%
Grey squirrel	82	28	59	72	95	37	68	72
Red squirrel*	73	10	21	29	82	1	13	16
Red deer*	60	5	15	25	78	0	12	15
Japanese knotweed	57	33	52	91	47	19	40	85
Ragwort*	45	8	27	60	56	0	23	41
Colorado beetle	36	4	20	56	na	0	na	na
American mink	29	4	19	66	44	10	28	64
Asian hornet	28	5	19	68	na	0	na	na
Harlequin ladybird	24	4	16	67	na	1	na	na
Water primrose	18	1	6	33	24	1	3	13
American/Signal crayfish	17	5	12	71	32	10	21	66
Ruddy duck	15	1	4	27	23	3	6	26
Floating pennywort	13	2	6	46	na	0	na	na
Killer shrimp	12	3	6	50	na	0	na	na
Hornbeam*	11	-	3	27	19	0	2	11
Citrus/Asian longhorn beetle	9	1	5	56	12	1	5	42
Chinese mitten crab	7	2	5	71	16	2	9	56
Quagga mussel	4	1	2	50	na	0	na	na
Zebra mussel	4	1	3	75	na	0	na	na
<i>Xylella fastidiosa</i> #	2	-	-	-	na	0	na	na

Columns sum to more than 100% as respondents' were typically aware of two or more species.

The first column labelled 'aware of' indicates the proportion of the general public sample that was aware of each species (irrespective of whether they considered it to be an INNS). Thus 82% were aware of the grey squirrel. The next column shows the proportion of the public that spontaneously identified each as an INNS; thus, 28%

spontaneously identified the grey squirrel as an INNS. The next column displays the proportion of the public that considered each species an INNS after being prompted; that is, it is the combined spontaneous and prompted level of response. Thus after prompting, 59% of the public considered the grey squirrel to be an INNS. The fourth column shows the same thing but this time as a percentage of those aware of the species. Thus, of the 82% that were aware of the grey squirrel, nearly three quarters (72%) considered it to be an INNS.

The next four columns shaded light blue present the same data from the 2008 survey; where a cell entry is 'na' this is because respondents were not prompted for these species in 2008. Shaded cells are significantly higher (green)/lower (red) in 2018 compared to 2008 for species considered to be INNS based on spontaneous and prompted answers.

The table shows that in 2018 only two species, the grey squirrel and Japanese knotweed, achieved levels of awareness over 50%. Seven species were considered to be INNS by between one in four and one in seven people. These included the Colorado beetle (20%), American mink (19%), Asian hornet (19%) and the Harlequin ladybird (16%) but they also included three of the four native species included on the list: Red squirrel (21%), Red deer (15%) and Ragwort (27%).

There were a large number of significant differences in terms of which species were/were not consider to be INNS across the various sub-groups based on the combined spontaneous and prompted levels of awareness.

Location

- Those living in **ONS defined rural locations** were:
 - more likely to consider as INNS Japanese knotweed (62% vs. 48%), American mink (30% vs. 15%), and Colorado beetle (28% vs. 17%) but less likely to consider the Chinese mitten crab (1% vs. 6%) compared to those living in **predominantly urban locations**
 - were less likely to consider the Citrus/Asian longhorn beetle an INNS compared to those living in **predominantly urban locations** and those

living in **urban with significant rural locations** (0% vs. 5% and 4% respectively).

- Those living in **ONS defined predominantly urban locations** were more likely to consider both Water primrose (8% vs. 1%) and Red squirrel (25% vs. 12%) as INNS compared to those living in **urban with significant rural locations**.
- Those living in **self-defined rural locations** were:
 - significantly more likely to consider several species as INNS compared with those living in both **urban and semi urban/rural locations**: Grey squirrel (72% vs. 59% and 53% respectively), Ragwort (45% vs. 21% and 26%), American mink (34% vs. 17% and 13%), Colorado beetle (34% vs. 16% and 17%), Harlequin ladybird (24% vs. 15% and 11%)
 - significantly more likely to consider Red deer (23% vs. 12%) and Floating pennywort (13% vs. 5%) an INNS compared to those living in **urban locations**
- Those living in **self-defined urban areas** were significantly less likely to consider Japanese knotweed an INNS compared to those living in **semi-urban/rural** and **rural** locations (42% vs. 61% and 67% respectively)
- Those living in the **Midlands** were:
 - significantly more likely to consider certain species as INNS (Colorado beetle (25% vs. 15%), Hornbeam (6% vs. 1%) and Ragwort (32% vs. 23%)) and significantly less likely to consider the Chinese mitten crab an INNS (2% vs 7%) compared to those living in the **South**
 - significantly more likely to consider certain species as INNS compared to those living in both the **South** and the **North** (Japanese knotweed (64% vs. 40% and 51% respectively), Red deer (21% vs. 13% and 13%))
- Those living in the **South** were significantly more likely to consider the Harlequin ladybird an INNS compared to those living in the **North** (19% vs. 10%)

- Those living in the **North** were significantly less likely to consider both Japanese knotweed (40% vs. 64% and 51%) and the Red squirrel (15% vs. 23% and 26%) INNS compared to those living in the **Midlands** and the **South**.

Demographics

- **Men** were significantly more likely to consider the following INNS compared to women: Grey squirrel (64% vs. 54%), American mink (25% vs. 14%), Colorado beetle (25% vs. 15%) and the Chinese mitten crab (7% vs. 3%)

There were a number of age related differences with older respondents typically demonstrating higher levels of awareness:

- those **aged 65+** were:
 - significantly more likely than **all other age groups** to consider the American mink an INNS (33% vs. 16-24:13%, 25-44: 15%, 45-64: 16%)
 - significantly more likely than those **aged under 45** to consider as INNS: Colorado beetle (30% vs 16-24: 6%, 25-44: 16%), Floating pennywort (12% vs 16-24:0%, 25-44: 5%)
 - significantly more likely than those **aged 16-24** to consider the Red deer an INNS (20% vs. 9%)
- those **aged 45 and above** were:
 - significantly more likely to consider the Harlequin ladybird an INNS compared to those **aged 16-24** (45-64: 18% and 65+: 18% vs. 8%) and significantly more likely to consider Japanese knotweed an INNS compared to those **aged under 45** (45-64: 60% and 65+: 67% vs. 16-24: 24% and 25-44: 47%)
- those **aged 25-44** were:
 - significantly less likely to consider the signal crayfish an INNS compared to those **aged 45-64** (7% vs. 17%) and significantly less likely than **all**

other ages to consider the killer shrimp an INNS (1% vs. 16-24: 5%, 45-64: 9%, 65+: 7%)

- those **aged 16-24** were significantly less likely than all other age groups to consider the following as INNS: Grey squirrel (42% vs. 25-44: 56%, 45-64: 65% and 65+: 65%), Japanese knotweed (42% vs. 25-44: 47%, 45-64: 60% and 65+: 67%), Ragwort (10% vs. 25-44: 23%, 45-64: 30% and 65+: 37%), Colorado beetle (6% vs. 25-44: 16%, 45-64: 23% and 65+: 30%), Floating pennywort (0% vs. 25-44: 5%, 45-64: 7% and 65+: 12%)
- those from SEGs **ABC1** were significantly more likely to identify Japanese knotweed as an INNS compared to those from SEGs **C2DE** (59% vs. 44%).

Garden/Pond Ownership

- Members of the public who had **a pond** (66%) were significantly more likely to identify Japanese knotweed as an INNS compared to those with **a garden** (54%); both these groups were significantly more likely to do so compared to those with **neither a pond nor a garden** (42%). This latter group were significantly more likely to identify the Chinese mitten crab as an INNS compared to those with **a garden** (9% vs. 4%)
- Those with **responsibility for their garden** were significantly more likely than those without this responsibility to consider the following as INNS: Japanese knotweed (58% vs. 41%), Ragwort (31% vs. 19%) and Water primrose (8% vs. 3%)
- Those with **a pond containing plants/animals** were significantly more likely than those without to consider the following as INNS: Japanese knotweed (68% vs. 50%), American mink (30% vs. 18%), Colorado beetle (30% vs. 19%), Ruddy duck (10% vs. 3%), and Hornbeam (8% vs. 3%)

INNS

- Those **familiar with the term INNS** were significantly more likely to consider all but six (including two native species) of the named species as INNS compared to those **unfamiliar with the term**

- Those with **above average levels of support for controlling INNS** were significantly more likely to consider several species as INNS compared to those with **below average levels of support**: Grey squirrel (63% vs. 54%), Japanese knotweed (61% vs. 39%), Ragwort (33% vs. 17%), Asian hornet (23% vs. 13%), Signal crayfish (14% vs. 8%), Killer shrimp (7% vs. 3%) and Citrus/Asian longhorn beetle (6% vs. 2%).

Based on the combined spontaneous and prompted answers for the total samples, compared to 2008, members of the public in 2018 were **significantly more likely** to consider Japanese knotweed and Water primrose to be INNS (52% and 6% vs. 40% and 3%). They were also significantly more likely to incorrectly consider the red squirrel an INNS (21% vs. 13%). However, they were significantly less likely to consider a further four species to be INNS: the grey squirrel (59% vs. 68%), American mink (19% vs. 28%), American crayfish (12% vs. 21%) and the Chinese mitten crab (5% vs. 9%).

8.4.2 Exotic Pet Owners

The results for owners of exotic pets are set out in Table 33. Shaded cells are significantly higher (green)/lower (red) compared to the general public for species considered to be INNS based on spontaneous and prompted answers. This reveals that higher proportions of exotic pet owners correctly identified seven species as INNS: the Grey squirrel (76% vs. 59%), American mink (29% vs. 19%), the Harlequin lady bird (24% vs. 16%), American crayfish (23% vs. 12%), Floating pennywort (14% vs. 6%), Zebra mussel (9% vs. 3%) and *Xylella fastidiosa* (2% vs. 0%). However, exotic pet owners were also significantly more likely to incorrectly consider hornbeam an INNS (7% vs. 3%).

There were a number of significant differences in terms of which species were/were not consider to be INNS across the various sub-groups based on the combined spontaneous and prompted levels of awareness:

- those owning either an **amphibian/reptile** or an **insect/invertebrate** were significantly more likely than those owning a **bird** to consider American mink an INNS (35% and 53% vs. 9% respectively); *this needs treating with caution as some of the sub-groups are small*

- **men** were significantly more likely than **women** to consider Signal crayfish an INNS (33% vs. 16%)

Table 33: Awareness of Different Species and Whether they were Considered INNS Present in Great Britain (Exotic Pet Owners)

Shaded cells are significantly higher (green)/lower (red) compared to the general public for species considered to be INNS based on spontaneous and prompted answers.
Species with * against them are native species; although there have been some sightings of the Asian hornet, it is not yet established in GB. All of the others are INNS that are found in GB.
X fastidiosa is a plant health pest.

	Aware of	Considered INNS in GB		
		Spont	Spont + prompted (all)	Spont + prompted (those aware of)
Base (weighted)	148	148	148	variable
	%	%	%	%
Grey squirrel	95	44	76	72
Red squirrel*	93	11	21	23
Red deer*	81	5	12	15
Japanese knotweed	70	27	58	83
Ragwort*	66	9	29	44
Colorado beetle	45	1	23	51
American mink	47	9	29	62
Asian hornet	45	6	24	53
Harlequin ladybird	45	4	24	53
Water primrose	32	1	8	25
American/Signal crayfish	34	8	23	68
Ruddy duck	32	1	7	22
Floating pennywort	23	3	14	61
Killer shrimp	21	3	10	48
Hornbeam*	24	0	7	29
Citrus/Asian longhorn beetle	14	0	5	36
Chinese mitten crab	14	1	6	43
Quagga mussel	6	0	2	33
Zebra mussel	17	3	9	53
Xylella fastidiosa#	3	1	2	67

Columns sum to more than 100% as respondents' were typically aware of two or more species.

- those **aged 45 and above** were significantly more likely than **younger exotic pet owners** to consider the Colorado beetle an INNS (45-64: 41% and 65+: 58% vs. 16-24: 9% and 25-44: 16%)

- those **aged 45-64** were significantly more likely than those **aged 16-24** to consider the following INNS: Japanese knotweed (76% vs. 41%), Ragwort (41% vs. 16%) and Floating pennywort (24% vs. 5%)
- those **aged 65+** were significantly more likely to consider red deer an INNS (42%) compared to **16-24 year olds** (11%) and **45-64 year olds** (8%)
- those with a **family** were significantly more likely to consider Water primrose an INNS (23%) compared to everyone else (2%)
- those **familiar with the term INNS** were significantly more likely to consider several species as INNS compared to those **unfamiliar with the term**: Grey squirrel (89% vs. 57%), Japanese knotweed (69% vs. 42%), American mink (40% vs. 13%), Asian hornet (33% vs. 12%), Harlequin ladybird (33% vs. 10%), Signal crayfish (33% vs. 8%) and Killer shrimp (16% vs. 3%).

8.4.3 Anglers¹⁵

A slightly modified approach was adopted among anglers who were asked if they could firstly name any INNS that are present in Great Britain without prompting. They were then shown a list of 26 species and asked which ones they considered to be INNS that are present in GB. The results are presented in Table 34. The first column shows the proportion of anglers who spontaneously identified each species as an INNS while the second column sets out the total proportion, either spontaneously or once prompted, who identified each species as an INNS. The next two columns shaded light blue provide the same data from the 2008 survey.

This indicates that 8 INNS were correctly identified by at least half the sample when prompted: Japanese knotweed (84%), American (84%) and Signal (81%) crayfish, Mink (74%), Red clawed crayfish (63%), Chinese mitten crab (60%), Asian hornet (59%) and Wel's catfish (52%). A further 12 of the species were also correctly identified as INNS by over 25% of anglers.

¹⁵ Boaters were not asked if they could name any INNS.

Table 34: Awareness of Different Species and Whether they were Considered INNS Present in Great Britain (Anglers)

Shaded cells are significantly higher (green)/lower (red) in 2018 compared to 2008 for species considered to be INNS based on spontaneous and prompted answers. Species with * against them are native species; although there have been some sightings of the Asian hornet, it is not yet established in GB. All of the others are INNS that are found in GB.

	2018		2008	
	Spont	Spont + prompted (all)	Spont	Spont + prompted (all)
Base (weighted)	150	150	150	150
	%	%	%	%
Signal crayfish	43	81	17	87
American crayfish	23	84	34	87
Zander	16	49	35	65
Japanese knotweed	16	84	20	65
Mink	13	74	11	na
Red clawed crayfish	11	63	4	na
Wel's catfish	8	52	8	57
Himalayan balsam	7	47	2	38
Zebra mussel	5	48	1	na
Killer/demon shrimp	5	45	0	na
Floating pennywort	5	40	0	30
Topmouth gudgeon	5	30	1	27
Chinese mitten crab	4	60	10	65
Common carp	4	27	7	35
Pumpkinseed	3	30	2	25
Goldfish	2	32	1	41
Asian hornet	1	59	0	na
Orfe (aka ide)	1	29	1	37
Quagga mussel	1	24	0	na
Bitterling	1	19	1	11
Water fern	1	17	0	19
Roach*	1	8	0	19
Ragwort*	0	36	1	36
Rainbow trout	0	27	1	29
Sunbleak	0	21	0	17
Water primrose	0	16	0	17

Columns sum to more than 100% as respondents' were typically aware of two or more species.

Levels of total recall had changed very little since 2008. There was significantly greater awareness of Japanese knotweed (84% vs. 65%), however, significantly fewer anglers correctly identified Zander (49% vs. 65%) or Common carp (27% vs. 35%) as INNS. There was a significant decrease in the proportion of anglers incorrectly classifying Roach as an INNS (8% vs. 19%).

There were a number of significant differences in terms of which species were/were not considered to be INNS across the various sub-groups based on the combined spontaneous and prompted levels of awareness:

- **specialist anglers** were significantly more likely than **pleasure anglers** to consider both Wels' catfish (64% vs. 40%) and Sunbleak (30% vs. 14%) INNS
- **pleasure anglers** (18%) were significantly less likely to consider Topmouth gudgeon an INNS compared to both **match** (48%) and **specialist anglers** (36%)
- **game anglers** were:
 - significantly more likely to consider killer/demon shrimp an INNS (69%) compared to both **coarse** (45%) and **pleasure** (31%) **anglers**
 - significantly more likely to consider Signal crayfish (97% vs. 80%) and American crayfish (100% vs. 82%), but significantly less likely to consider Common carp (10% vs. 28%), INNS compared to **coarse anglers**
- **pleasure anglers** were significantly less likely to consider both Goldfish (6% vs. 41% Game and 33% Coarse) and Topmouth gudgeon (6% vs. 48% Game and 33% Coarse) compared to other anglers
- **angling club members** were significantly more likely to consider the following species INNS compared to non-members: Zebra mussel (56% vs. 31%), Killer/demon shrimp (50% vs. 33%), Topmouth gudgeon (36% vs. 16%), Orfe (aka Ide) (36% vs. 14%) and Quagga mussels (30% vs. 14%)
- those **aged 16-44** were significantly more likely to consider Wel's catfish an INNS compared to **all other age groups** (69% vs. 45-64: 48% and 65+: 43%)
- those **aged 45-64** were:

- significantly more likely than those **aged 16-44** to consider Mink (80% vs. 59%), Himalayan balsam (55% vs. 33%) and Common carp (33% vs. 15%) as INNS
- significantly more likely than those **aged 65+** to consider Signal crayfish (89% vs. 66%) and Chinese mitten crab (69% vs. 46%) as INNS
- those aged **65+** were
 - significantly less likely than **all other age groups** to consider Goldfish an INNS (17% vs. 16-44: 38% and 45-54: 36%)
 - significantly more likely than those **aged 16-44** to consider Ragwort an INNS (49% vs. 26%)
- anglers from SEGs **ABC1** were significantly more likely than those from **C2DE** to consider the following INNS: Asian hornet (65% vs. 46%), Killer/demon shrimp (52% vs. 30%), Topmouth gudgeon (35% vs. 17%), and Sunbleak (26% vs. 11%)
- there were a number of significant differences for certain species based on which countries anglers fished; however, as the bases are small for all countries except England, and the sub-groups all overlap with those fishing in England, these are not reported here as they may not be especially meaningful
- anglers that **typically travel more than 50 miles** from home to go fishing were significantly less likely than **all other anglers** to consider American crayfish an INNS (56% vs. <20m: 81%, 21-50m: 95%, no typical pattern: 91%)
- anglers who go fishing **weekly** were:
 - significantly more likely than those who go fishing **fortnightly** to consider Japanese knotweed (89% vs. 69%), Mink (79% vs. 57%) and Zebra mussel (56% vs. 31%) as INNS; in contrast, they were less likely to consider Common carp an INNS (22% vs. 40%)

- significantly more likely to consider Topmouth gudgeon an INNS compared to those who fish **less frequently than once a fortnight** (36% vs. 11%)
- those with an **above average overall threat of INNS score** were significantly more likely than other anglers to consider Japanese knotweed (90% vs. 76%), American crayfish (89% vs. 77%) and Floating pennywort (49% vs. 29%) as INNS
- those with an **above average overall behaviour score** (i.e. they were either already adopting or were more willing to adopt appropriate biosecurity measures) were significantly more likely than other anglers to consider as INNS: Signal crayfish (87% vs. 73%), Asian hornet (66% vs. 49%), Killer/demon shrimp (53% vs. 33%), Floating pennywort (49% vs. 27%), Topmouth gudgeon (39% vs. 16%) and Sunbleak (28% vs. 13%).

8.5 Awareness of the Term Biosecurity

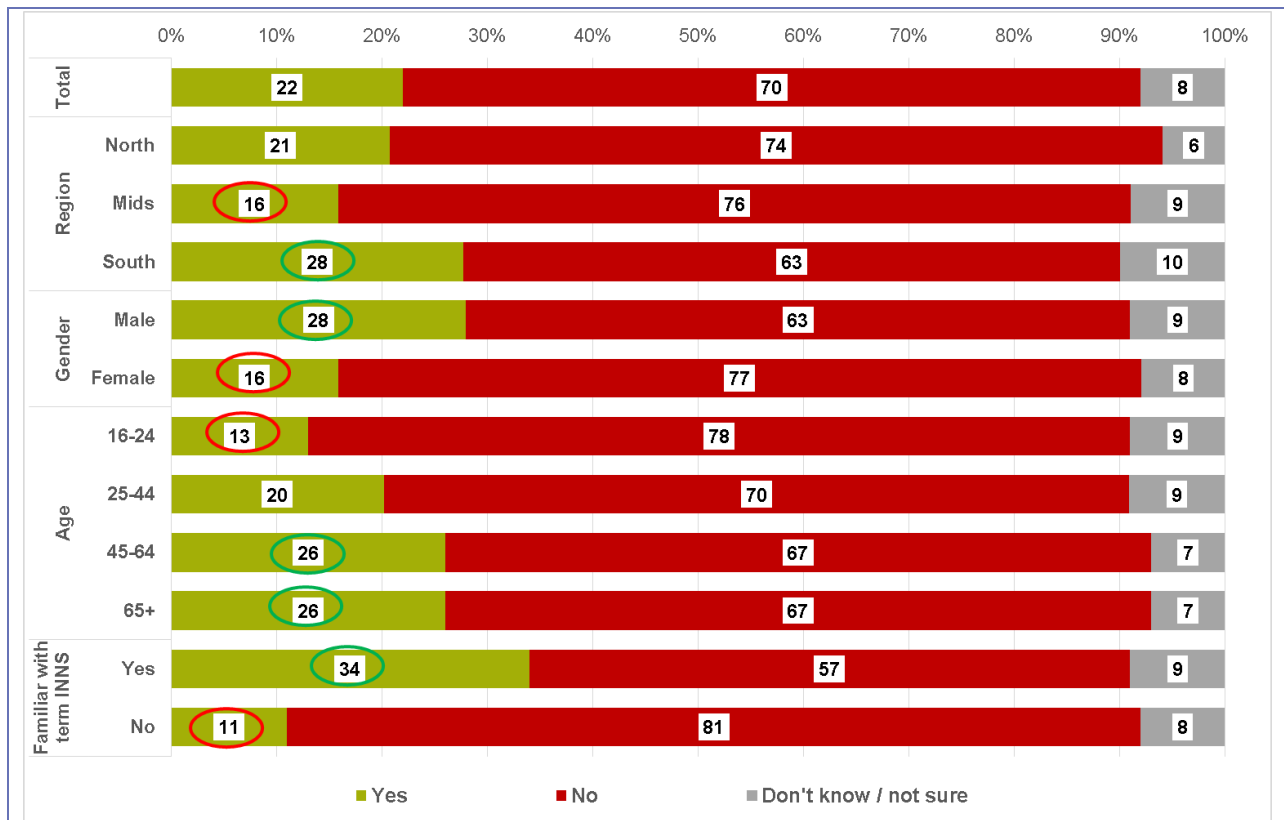
Members of the general public were asked whether or not they had come across the term biosecurity. Overall, one fifth had; see Figure 54.

There were some notable significant differences by segment:

- those in the **South** were significantly more likely to be aware of the term than those in the Midlands (28% vs.16%)
- **males** were significantly more likely than females to be aware of the term (28% vs.16%)
- those **aged 45+** were significantly more likely to be aware of the term than those aged 16-24 (26% respectively for both 45-64 and 65+ vs.13%)
- those **familiar with the term INNS** were significantly more likely to be aware of the term biosecurity (34% vs. 11%).

The top five definitions of biosecurity given by those aware of the term are shown in Table 35, with the higher proportion saying it meant ‘looking after and protecting land/nature/species’.

Figure 54: Awareness of the Term Biosecurity - General Public



Base: All general public – 604
 Bars may not sum to 100% due to rounding

Table 35: Top 5 Definitions of Biosecurity

Top 5 Definitions of Biosecurity	
	%
Looking after and protecting the land/nature/species	23
Making sure native habitats are protected from invasive species	14
Prevention of diseases - quarantine/disinfecting	13
Controlling the import of foreign species	13
Protects people from hazardous chemical spills/chemical usage/waste	13
Don't know	15

Base: all members of the public aware of the term – 133
 Numbers do not total to 100 because only the top five definitions are shown; respondents' answers may include more than one of the themes listed

There were some significant differences by segment, namely:

- **females** were significantly more likely to think it meant **looking after the land/nature/species** (35% vs.17%)

- **males** were significantly more likely to think it meant **prevention of diseases** (18% vs. 4%) or **having the right balance in the eco system** (15% vs. 0%)
- those in the **North** were significantly more likely not to know what it means (26% vs. 8%), as were those aged 16-24 compared to those aged 25-44 (41% vs. 5%).

8.6 Perceived Impact of INNS

8.6.1 General Public and Exotic Pet Owners

Members of the general public and exotic pet owners were asked the degree to which they perceived INNS to be a threat compared to other threats such as habitat destruction, climate change, pollution and human exploitation. The findings are shown in Table 36 and show both means and percentages. The means shown in the table are based upon allocating '+1' where INNS were perceived to be a bigger threat, '-1' where they were perceived to be a smaller threat and '0' where they were perceived to be about the same threat or where a participant did not know. The higher the mean, therefore, the greater the perceived threat. Overall, INNS were generally perceived to be less of a threat than all of the other four threats tested among both the public and owners of exotic pets. Exotic pet owners were significantly more likely to perceive INNS as a smaller threat than both habitat destruction and pollution than the general public (-0.41 vs. -0.25 for the former and -0.40 vs. -0.24 for the latter).

Table 36: Degree to Which INNS Were Perceived to be a Threat - General Public vs. Exotic Pet Owners

	Habitat destruction e.g. as a result of development		Climate change		Pollution e.g. major incidents such as serious oil spills and the use of chemicals such as pesticides that build up over time		Human exploitation e.g. harvesting a plant species for food		Overall threat scores (scores can range from +4 to -4)	
	Public	Exotic Pet	Public	Exotic Pet	Public	Exotic Pet	Public	Exotic Pet	Public	Exotic Pet
Base	604	600	604	600	604	600	604	600		
	%	%	%	%	%	%	%	%		
INNS is a bigger threat (+1)	22	16	20	22	24	19	24	24		
INNS is a smaller threat (-1)	47	57	45	54	48	59	37	36		
About the same threat (0)	18	20	21	17	18	16	22	30		
Don't Know (0)	13	6	14	7	9	7	18	10		
Mean	-0.25	-0.41	-0.24	-0.32	-0.24	-0.40	-0.13	-0.12	-0.87	-1.26

Columns may not sum to 100% due to rounding.

The table also includes an overall threat score for each sample, this is the mean of all responses given. The difference shown between the general public (-0.87) and exotic pets (-1.26), which would suggest that overall INNS were perceived as a lower threat by owners of exotic pets, was not statistically significant.

There were some significant differences by segment. For the general public these were:

- those in ONS defined **rural areas** were significantly more likely to see INNS as a bigger threat than **habitat destruction** and **pollution** than those in predominantly urban areas (29% vs.19% for the former and 31% vs. 22% for the latter)
- those in the **North** and **Midlands** were significantly more likely to see INNS as a smaller threat than **climate change** (51% and 48% respectively vs. 38% of those in the South)
- those in **the South** were significantly more likely to say INNS was a bigger threat than **human exploitation** than those in the Midlands (27% vs.17%)
- **males** were significantly more likely to see INNS as a bigger threat than **pollution** (28% vs. 20%)
- those **familiar with the term INNS** were significantly more likely to see it as a bigger threat than **habitat destruction** (26% vs.19%).

Significant differences within exotic pet owner segments included:

- those **aged 16-24** were significantly more likely to see INNS as a smaller threat than **habitat destruction** and **pollution** than those aged 25-44 and 45-64 (75% vs. 51% and 49% respectively for habitat destruction; 80% vs .51% and 43% respectively for pollution and 52% vs. 27% and 27% respectively for human exploitation).

Table 37 shows the results for the general public compared to 2008 and reveals no significant differences between the two surveys for individual threats or overall.

Table 37: Degree to Which INNS Are Perceived to Be a Threat

	Habitat destruction e.g. as a result of development		Climate change		Pollution e.g. major incidents such as serious oil spills and the use of chemicals such as pesticides that build up over time		Human exploitation e.g. harvesting a plant species for food		Overall threat scores (scores can range from +4 to -4)	
	2018	2008	2018	2008	2018	2008	2018	2008	2018	2008
Base	604	600	604	600	604	600	604	600		
	%	%	%	%	%	%	%	%		
INNS is a bigger threat (+1)	22	18	20	23	24	25	24	22		
INNS is a smaller threat (-1)	47	45	45	45	48	47	37	43		
About the same threat (0)	18	22	21	18	18	18	22	17		
Don't Know (0)	13	15	14	14	9	10	18	17		
Mean	-0.25	-0.27	-0.24	-0.22	-0.24	-0.22	-0.13	-0.21	-0.87	-0.92

Columns may not sum to 100% due to rounding.

8.6.2 Anglers and Boaters

Anglers and boaters were asked how serious a threat they perceived INNS to be with respect to six factors which could affect their sport. The results are shown in graphical format in Figure 55 and in tabular format, with both percentages and means, in Table 37.

Ratings were scored as follows:

- Very serious
+2
- Fairly serious
+1
- Not very serious
-1
- Not at all serious
-2
- Don't know
0

Figure 55 shows that INNS were generally perceived to represent a fairly or very serious threat on all statements by both anglers and boaters, and in particular, through carrying and spreading disease and in posing a threat to native fish.

Figure 55: Perceived Threat from INNS - Anglers and Boaters

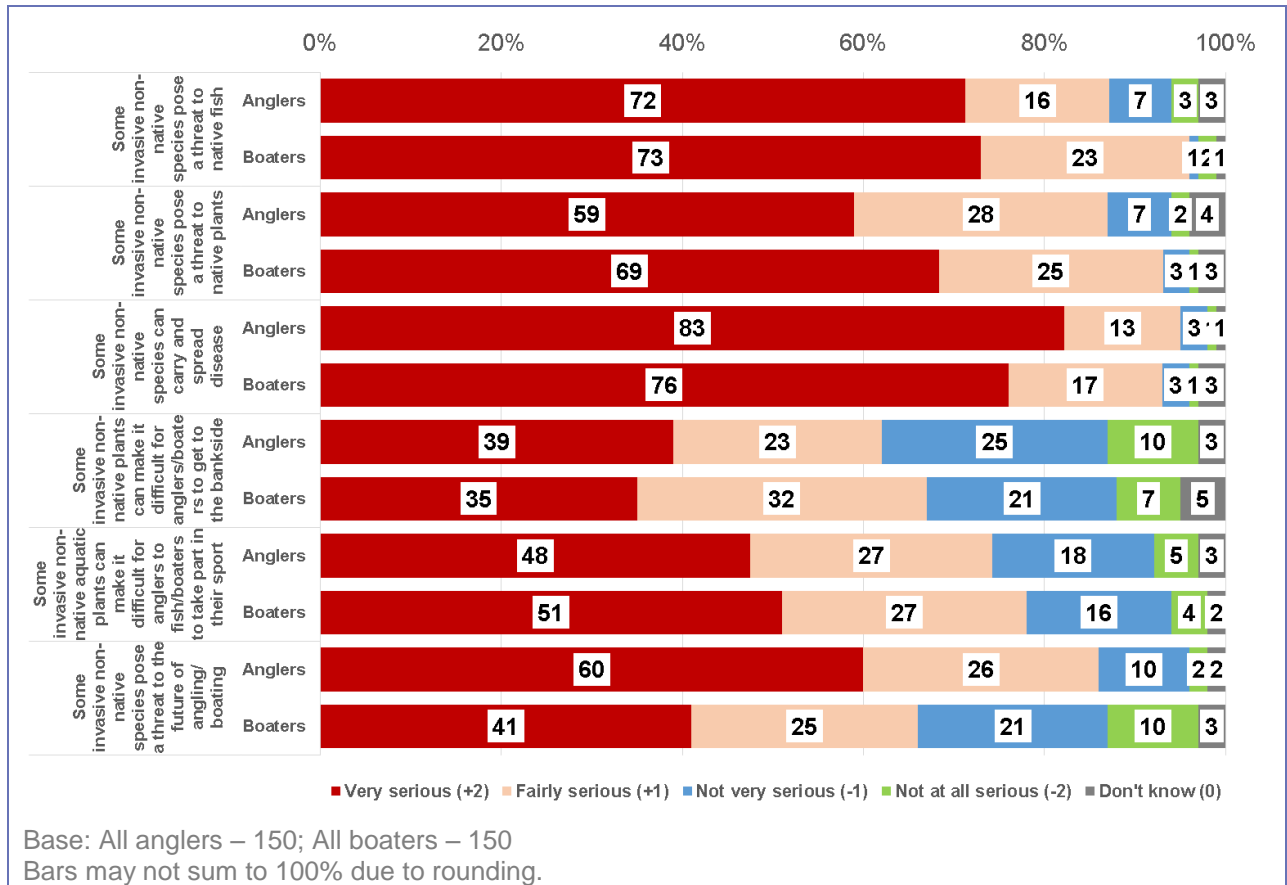


Table 38: Perceived Threat from INNS - Anglers vs. Boaters

	Some INNS pose a threat to native fish		Some INNS pose a threat to native plants		Some INNS can carry and spread disease		Some INN plants can make it difficult for anglers/boaters to get to the bankside		Some INN aquatic plants can make it difficult for anglers/boaters to take part in their sport		Some INNS pose a threat to the future of angling/boating		Overall threat scores (scores can range from +12 to -12)	
	Anglers	Boaters	Anglers	Boaters	Anglers	Boaters	Anglers	Boaters	Anglers	Boaters	Anglers	Boaters	Anglers	Boaters
Base	150	150	150	150	150	150	150	150	150	150	150	150		
	%	%	%	%	%	%	%	%	%	%	%	%		
Very serious	72	73	59	69	83	76	39	35	48	51	60	41		
Fairly serious	16	23	28	25	13	17	23	32	27	27	26	25		
Not very serious	7	1	7	3	3	3	25	21	18	16	10	21		
Not at all serious	3	1	2	1	1	1	10	7	5	4	2	10		
Don't Know	3	2	4	3	1	3	3	5	3	2	2	3		
Mean	1.48	1.67	1.36	1.57	1.75	1.65	0.56	0.67	0.95	1.05	1.32	0.67	7.42	7.28

Columns may not sum to 100% due to rounding.

There were a number of significant differences of note within the angler sample, based on the mean ratings, namely:

- those **aged 45-64** were significantly more likely to see INNS as a **threat to native fish** compared to 65+ year olds (1.60 vs.1.09)
- those **aged 16-64** were significantly more likely to see INNS as a **threat to native plants** than 65+ (16-44: 1.51; 45-64: 1.44 vs. 65+: 1.00)
- those **aged 16-44** were significantly more likely to see **INNS as carrying and spreading disease** than those aged 65+ (1.92 vs.1.60)
- those **aged 45+** were significantly more likely to see **INNS making it difficult to get to the bankside** than those aged 16-44 (45-64: 0.79; 65+: 0.86 vs.16-44: -0.18)
- those **aged 45-64** were significantly more likely to say **some invasive aquatic plants made it difficult for anglers to fish** than those aged 16-44 (1.11 vs. 0.54)
- **angling club members** were significantly less likely to see INNS as a threat to native fish (1.37 vs.1.71) but were significantly more likely to say **some invasive aquatic plants made it difficult for anglers to fish** (1.11 vs. 0.63)
- compared to anglers that fish at just a single site, **those fishing at 2-10 sites** were significantly more likely to see **INNS making it difficult to get to the bankside** (0.80 vs. 0.12), and to say **some invasive aquatic plants made it difficult for anglers to fish** (1.25 vs. 0.55)
- those that **only fish in fresh water** were significantly more likely to say **INNS made it difficult to fish** than those fishing in marine waters (1.07 vs. 0.44)
- **game anglers** were significantly more likely to **say INNS pose a threat to the future of angling** (1.66 vs.1.37 for coarse and 0.81 for sea/other).

There were also a small number of significant differences of note within the boater sample, namely:

- **females** were significantly more likely than males to say **INNS pose a threat to native fish** (1.80 vs.1.61)

- those with **yachts** were significantly more likely to say **INNS pose a threat to native fish** than those with canoes/kayaks and sailboats/dinghies (1.86 vs.1.60 and 1.48 respectively)
- those with **yachts** were also significantly more likely to feel **they pose a threat to native plants** (1.84 vs.1.51 canoeists/kayakers, 1.32 sailboat/dinghy and 1.23 motor boaters) and **make it difficult for boaters to do their sport** compared to those with other boat/craft (1.38 vs. 0.68)
- Those with **yachts** and **canoeists/kayakers** were significantly more likely to feel **INNS can carry and spread disease** than those with sailboats/dinghies (yachts:1.81; canoe/kayak: 1.80 vs.1.32 sailboat/dinghy)
- those with **yachts** were significantly more likely to say they can **make it difficult for boaters to take part in their sport** than those with other boats/craft (1.38 vs. 0.68).

Table 37 illustrates that boaters were more likely to consider INNS **a threat to native plants** than anglers (mean of 1.57 vs.1.36) but less likely to consider them **a threat to the future of boating** than anglers were to consider them a threat to the future of fishing (0.67 vs.1.32).

Table 39 shows a comparison of the 2018 findings for anglers with those from 2008, but it reveals no significant changes in anglers' perceptions between the two surveys.

Table 39: Perceived Threat from INNS - Anglers 2018 vs. 2008

	Some INNS pose a threat to native fish		Some INNS pose a threat to native plants		Some INNS can carry and spread disease		Some INN plants can make it difficult for anglers/boaters to get to the bankside		Some INN aquatic plants can make it difficult for anglers to fish/boaters to take part in their sport		Some INNS pose a threat to the future of angling/boating		Overall threat scores (scores can range from +12 to -12)	
	2018	2008	2018	2008	2018	2008	2018	2008	2018	2008	2018	2008	2018	2008
Base	150	150	150	150	150	150	150	150	150	150	150	150		
	%	%	%	%	%	%	%	%	%	%	%	%		
Very serious	72	76	59	76	83	77	39	37	48	53	60	69		
Fairly serious	16	15	28	13	13	13	23	33	27	23	26	19		
Not very serious	7	4	7	7	3	3	25	23	18	19	10	9		
Not at all serious	3	1	2	1	1	1	10	5	5	3	2	1		
Don't Know	3	4	4	2	1	7	3	2	3	2	2	2		
Mean	1.48	1.61	1.36	1.56	1.75	1.62	0.56	0.74	0.95	1.04	1.32	1.46	7.42	8.00

Columns may not sum to 100% due to rounding.

8.7 Support for Controlling INNS

8.7.1 General Public and Exotic Pet Owners

Members of the public and owners of exotic pets were asked the extent to which they agreed or disagreed with three statements relating to the control of INNS. Mean scores were derived from ratings of '+2' for strongly agree, '+1' for agree, '0' for neither and don't know, '-1' for disagree somewhat and '-2' for strongly disagree. The higher the mean, the higher the level of support for controlling INNS.

As shown in Figure 56, there was reasonably good support amongst the general public for killing INNS when they pose a threat although, as shown in Table 40, levels of support for killing invasive non-native species when they pose a threat to human health were significantly lower amongst exotic pet owners.

Figure 56: Support for Controlling INNS - General Public and Exotic Pet Owners

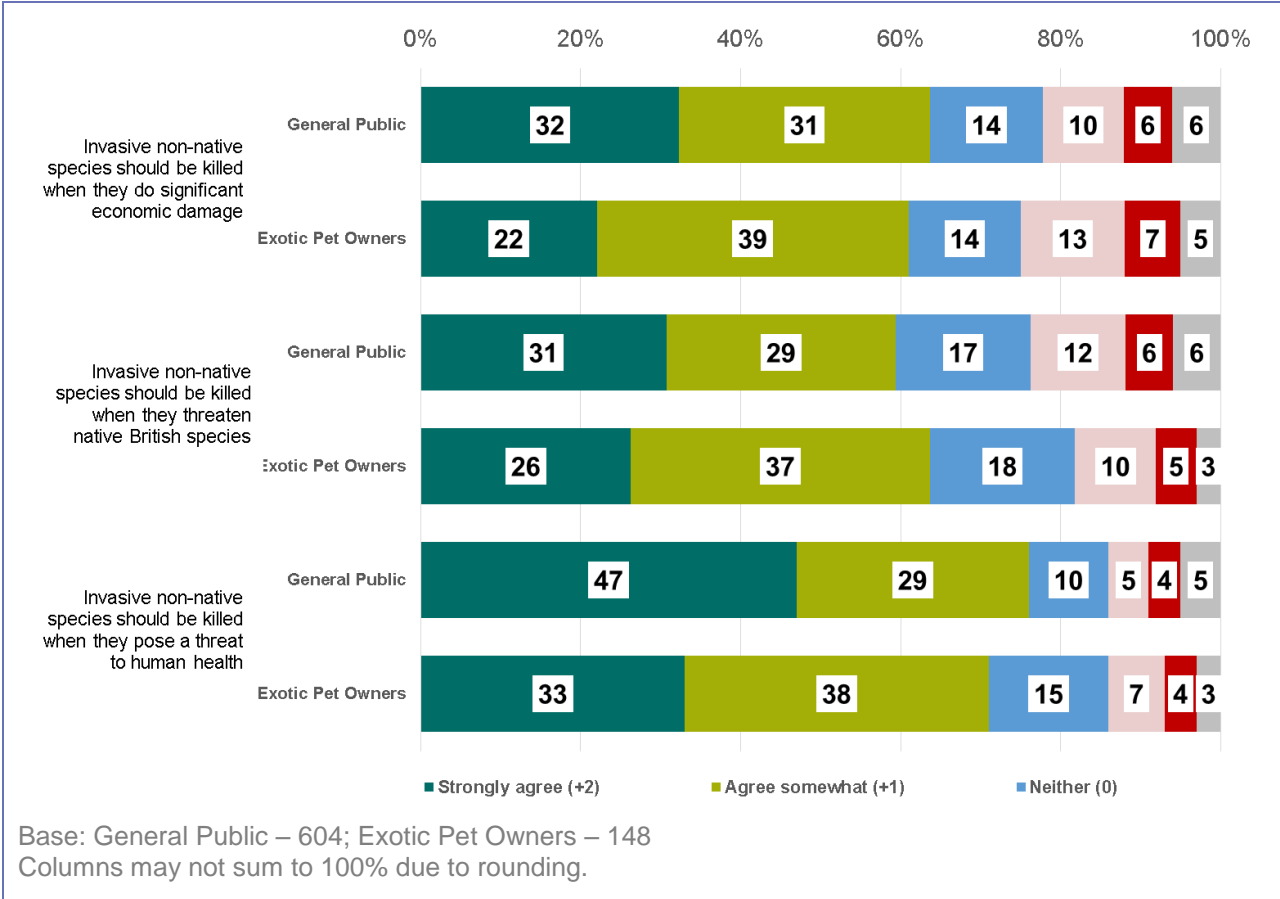


Table 40: Levels of Support for Controlling INNS - General Public vs. Exotic Pet Owners

	Invasive non-native species should be killed when they do significant economic damage		Invasive non-native species should be killed when they threaten native British species		Invasive non-native species should be killed when they pose a threat to human health		Overall Support for Controlling INNS (scores can range from +6 to -6)	
	Public	Exotic Pet	Public	Exotic Pet	Public	Exotic Pet	Public	Exotic Pet
Base (weighted)	604	148	604	148	604	148	604	148
	%	%	%	%	%	%		
Strongly agree	32	22	31	26	47	33		
Agree somewhat	31	39	29	37	29	38		
Neither	14	14	17	18	10	15		
Disagree somewhat	10	13	12	10	5	7		
Strongly disagree	6	7	6	5	4	4		
Don't Know	6	5	6	3	5	3		
Mean	0.73	0.55	0.68	0.69	1.10	0.89	2.51	2.12

Columns may not sum to 100% due to rounding.

There were a number of significant differences by segment. For the general public sample these included:

- those in self-defined **rural** areas were significantly more likely to **say INNS should be killed when they do significant economic damage** (0.95 vs. 0.68) and **when they threaten native British species** (0.92 vs. 0.61) than those in urban areas; they were significantly more likely to say they should be killed **when they are a threat to human health** than those in urban and semi-rural areas (1.35 vs.1.08 and 0.99 respectively)
- those in **aged 45+** were significantly more likely to say **INNS should be killed when they do significant economic damage** (45-64: 0.98 and 65+: 1.09 vs. 16-24: 0.33 and 25-44: 0.45), **when they threaten native British species** (45-64: 0.93 and 65+: 0.99 vs. 16-24: 0.11 and 25-44: 0.48) and **when they are a threat to human health** (45-64: 1.28 and 65+: 1.29 vs. 16-24: 0.70 and 25-44: 0.96)
- those **responsible for a garden** were significantly more likely to say **INNS should be killed when they do significant economic damage** (0.82 vs. 0.59) and **when they threaten native British species** (0.82 vs. 0.43) compared to those without this responsibility
- those **familiar with the term INNS** were significantly more likely to say **INNS should be killed when they do significant economic damage** (0.93 vs. 0.56), **when they threaten native British species** (0.85 vs. 0.53) and **when they are a threat to human health** (1.26 vs. 0.95) compared to those unfamiliar with the term
- **those believing INNS to have a high impact** were significantly more likely to say they should be killed should be killed **when they do significant economic damage** (0.87 vs. 0.64) and **when they threaten native British species** (0.85 vs .0.55) compared to those feeling INNS have less impact.

For exotic pet owners the significant differences were:

- **those believing INNS to have a high impact** were significantly more likely to say they should be killed **when they pose a threat to human health** (1.09 vs. 0.68)
- **males** were significantly more likely to say they should be killed when they threaten native species (1.00 vs. 0.50).

8.7.2 Overall levels of support for managing INNS

In addition to looking at levels of support for managing INNS in relation to economic, environmental and societal threats, we calculated an ‘overall support for controlling INNS score’ for each respondent by summing their ratings on each of the individual statements. These scores could range from +6 through 0 to -6. Respondents were then put into one of two groups based on whether their individual overall support score was above or below the sample average which, as Table 40 show, was 2.51 among the general public and 2.12 among exotic pet owners; this difference was not statistically significant.

Among the general public:

- 58% (n=348) were classed as exhibiting higher support for managing INNS, with a mean of 4.72 out of 6
- 42% (n=256) were classed as exhibiting lower support for managing INNS, with a mean of -0.48 out of 6.

These two sub-groups were included in the cross-tabs which indicated a number of significant differences between the two groups. Support for managing INNS increased significantly with **age** as shown below:

age:	a) 16-24	b) 25-44	c) 45-64	d) 65+
mean overall support scores:	0.97	1.86	3.19	3.48
sign differences	bcd	acd	ab	ab

Those **responsible for their garden** were also more supportive, with an average score of 2.72 compared to 1.92 for those without a garden/not responsible for their garden.

Members of the public that exhibited higher support for managing INNS were significantly more aware of all the terms we covered, as shown below in Table 41.

Although there were no significant differences in relation to the perceived impact of INNS compared to a range of other threats, such as climate change, those who had a **higher overall impact score** (i.e. summed over all threats) were significantly more likely to have higher overall support scores (2.82 vs. 2.14)

Table 41: Awareness of Terms in Relation to Levels of Support for Managing INNS

	higher overall support scores	lower overall support scores
Base (weighted)	348	256
awareness of terms	%	%
native species	73	58
non-native species	66	51
alien species	51	38
invasive alien species	55	37
invasive non-native species	43	32

Base: general public - 604

Although care is needed in interpreting these data, as they only demonstrate a correlation and not a cause and effect, it suggests that where people are familiar with the terms and the potential impact of INNS, there is greater support for their management.

Among exotic pet owners:

- 54% (n=80) were classed as exhibiting higher support for managing INNS, with a mean of 4.29 out of 6
- 46% (n=68) were classed as exhibiting lower support for managing INNS, with a mean of -0.43 out of 6.

There were far fewer significant differences between these two sub-groups:

- those with lower overall support scores were significantly more likely to say they did not know the meaning of NNS (13% vs. 3% of those with higher support scores) and INNS (24% vs. 9%)
- with one exception, there was:

- no significant difference in awareness of terms; the exception was for native species where those with higher support scores were more aware of the term (95% vs. 78%)
- no significant differences in the frequency in which the key themes were mentioned when defining NNS and INNS; the one exception was the frequency of references to PLACE when defining INNS which was mentioned by 49% of those with higher support scores compared to 40% of those with lower support scores
- no significant differences in the perceived threats of INNS; the one exception was that pet owners with higher levels of support for managing INNS rated INNS as a higher threat relative to human exploitation; they gave a mean rating of 0.01 compared to a mean of -0.28 among those with lower levels of support for controlling INNS.

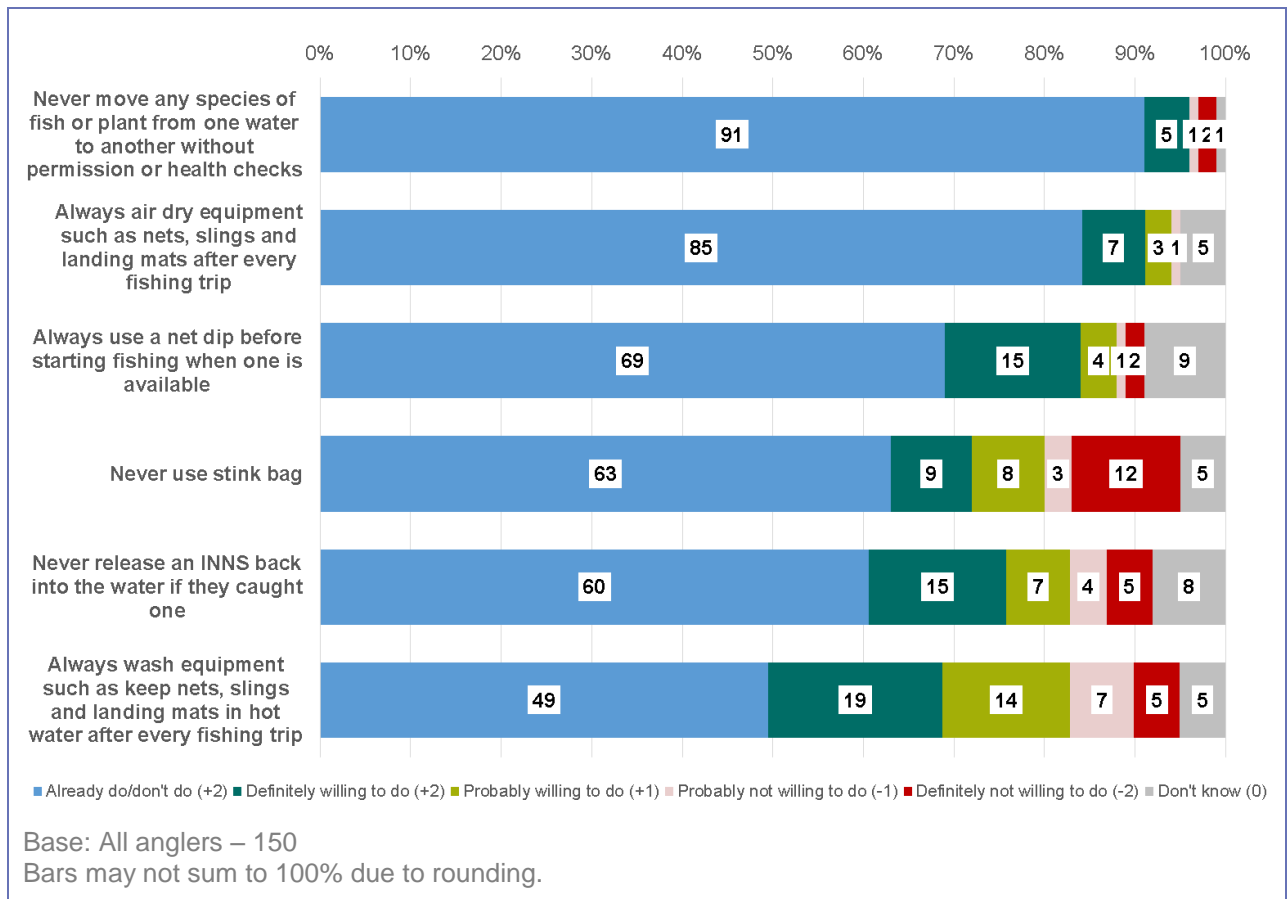
8.7.3 Anglers and Boaters

Anglers and boaters were asked how willing they were to adopt certain practices to help control the threat from INNS. For each practice, they were asked which of the following statements applied; the scores assigned to each answer are also shown:

Already do/ don't do	Definitely willing to do	Probably willing to do	Probably not willing to do	Definitely not willing to do	Don't know
+2	+2	+1	-1	-2	0

As shown in Figure 57, the majority of anglers either claim to be already adopting appropriate behaviours or were willing to do so. Particularly high numbers stated that they were already never moving any species of fish or plant from one water to another without permission or health checks (91%), and always air drying equipment such as nets, slings and landing mats after every fishing trip (85%). Where the proportions already doing so were lower, there was typically a high willingness to do so in the future, particularly for never releasing an INNS back into the water if they caught one (15% definitely willing and 7% probably willing not to) and always washing equipment such as keep nets, slings and landing mats in hot water after every fishing trip (19% definitely willing to and 14% probably willing to). There was, however, a little resistance to the idea of never using a stink bag, with 12% stating they would definitely not be willing to never use one.

Figure 57: Willingness to Help Control the Spread of INNS - Anglers



There were a number of interesting significant differences by segment, namely:

- those fishing in **Wales** were significantly more likely to **already not use a stink bag** than those fishing in England and overseas (94% vs. 62% respectively)
- those giving a **high overall threat score** were significantly more likely to be **already always washing their equipment** (57% vs. 39%) and to **already air dry their equipment** (92% vs. 77%)
- those **aged 45-64** were significantly more likely to **already not use a stink bag** than those aged 16-44 (72% vs. 51%); however, those **aged 16-44** were significantly more likely to be **definitely willing not to do so** (23% vs. 4%)
- those aged 45-64 were significantly more likely to already **never move any species of fish or plant from one water to another without permission or health checks** than those aged 16-44 (96% vs. 82%)

- those aged 45+ were significantly more likely to already **never release an INNS back into the water** (61% aged 45-64 and 83% aged 65+ vs. 36% aged 16-44); and those aged 45-64 to **already always wash their equipment** compared to those aged under 45 (57% vs. 31%)
- **coarse anglers** were significantly more likely to **already air dry their equipment** than game and sea/other anglers (94% vs. 79% and 38% respectively); **game anglers** were significantly more likely to **already air dry their equipment** than sea/other anglers (79% vs. 38%)
- **coarse and game anglers** were significantly more likely to **already always use a net dip** than sea/other anglers (69% and 78% respectively vs. 25%)
- **those fishing in fresh water, or both fresh and marine equally**, were significantly more likely than only/mostly marine anglers to be **already air drying their equipment every trip** (88% and 100% respectively vs. 50%), and to **already always using a net dip** (72% and 82% vs. 39%)
- those **fishing at 11+ sites** were significantly more likely than those fishing at just one site per year to **already always use a net dip** (81% vs. 51%).

Significant differences by segment not identified through the analysis of percentage responses, but found in analysis of the mean scores (overall mean scores are shown in Table 42) reveal the following further differences:

- **game anglers** were significantly more likely to be willing to **never release an INNS back into the water** than coarse anglers (1.79 vs. 1.36)
- **game and coarse anglers** were significantly more likely to be willing to **always wash their equipment** (1.31 and 1.47 respectively vs. 0.31) and to **always use (and already be using) a net dip** (1.79 and 1.86 respectively vs. 0.50, and 69% and 78% respectively already doing so vs. 25%) than sea/other anglers. **Coarse anglers** were more likely to be **already air drying their equipment** (94% vs. 79% game and 38% sea/other anglers)

- those fishing in **Scotland** were significantly more likely to be willing to **always wash their equipment** than those fishing in England (1.71 vs.1.33, *although this is based on a low base size for Scotland so should be treated with caution*)
- those fishing in **Scotland and overseas** were significantly more likely to be willing to **always use a net dip** than those fishing in England (2.00 and 1.92 vs.1.70, *although this is based on low base sizes for Scotland and overseas so should be treated with caution*).

The overall findings are set out in tabular format in Table 42 where they are compared with the same findings for 2008. Mean scores are also shown in the table, with letters indicating which of the 2018 findings are significantly different to other statements (e.g. the mean willingness to never move any species of fish or plant from one water to another without permission or health checks is higher than that for always using a net dip, never releasing an INNS, never using a stink bag and always washing equipment).

Table 42: Willingness to Help Control the Spread of INNS - Anglers 2018 vs. 2008

	A Never move any species of fish or plant from one water to another without permission or health checks		B Always air dry equipment such as nets, slings and landing mats after every fishing trip		C Always use a net dip before starting fishing when one is available		E Never release an INNS back into the water if they caught one		D Never use stink bag		F Always wash equipment such as keep nets, slings and landing mats in hot water after every fishing trip		Overall Behaviour Score (scores can range from +12 to -12)	
	2018	2008	2018	2008	2018	2008	2018	2008	2018	2008	2018	2008	2018	2008
Base (weighted)	150	150	150	150	150	150	150	150	150	150	150	150		
	%	%	%	%	%	%	%	%	%	%	%	%		
Already do/don't do (+2)	91	-	85	-	69	-	60	-	63	-	49	-		
Definitely willing to do / Strongly agree (+2)	5	98	7	90	15	90	15	75	9	62	19	68		
Probably willing to do/ Possibly agree (+1)	-	1	3	7	4	7	7	13	8	8	14	25		
Probably not willing to do / Probably not agree (-1)	1		1	1	1	1	4	6	3	9	7	4		
Definitely not willing to do / definitely not agree (-2)	2	1		3	2	1	5	3	12	9	5	3		
Don't know (0)	1	-	5		9	1	8	3	5	11	5	-		
Mean	1.89	1.95	1.86	1.80	1.69	1.84	1.43	1.51	1.25	1.05	1.33	1.51	9.45	9.70
Sig Diffs	c, d, e, f		c, d, e, f		d, e, f, a, b		a, b, c		a, b, c		a, b, c			

Bars may not sum to 100% due to rounding.

The results for 2008 versus 2018 show that there were no significant changes in willingness to adopt appropriate behaviour between the two surveys. However, it should

be noted that slightly different response codes and scores were used in 2008, as shown in Table 43.

Table 43: Comparison of Response Codes and Scores 2018 vs. 2008 for Willingness to Help Control the Threat of INNS

2008		2018	
Response Code	Score	Response Code	Score
Strongly agree	+2	Already do/don't do	+2
Possibly agree	+1	Definitely willing to do	+2
Probably not agree	-1	Probably willing to do	+1
Definitely not agree	-2	Probably not willing to do	-1
Don't know	0	Definitely not willing to do	-2
		Don't know	0

It is our view that in 2008 anyone already doing/not doing one of the measures would have said 'strongly agree', and that the agreement statements are equivalent to willingness to do/not do and that, for this reason, it is reasonable to compare the findings – and behaviour scores – between the two surveys. However, this subtle difference should be borne in mind when doing so.

The results for boaters when asked how willing they were to adopt certain practices to help control the threat from INNS are shown in Figure 58 and Table 44.

This reveals that, like the anglers, the majority of boaters either claimed to be already adopting appropriate behaviours or were willing to do so. However, there was considerable resistance to cleaning their boat/equipment with hot water, this probably reflecting the lack of hot water at places where boats are used. The lower current behaviour and willingness to use antifouling paint is likely to be due to it only being relevant to some boaters.

Figure 58: Willingness to Help Control the Spread of INNS - Boaters

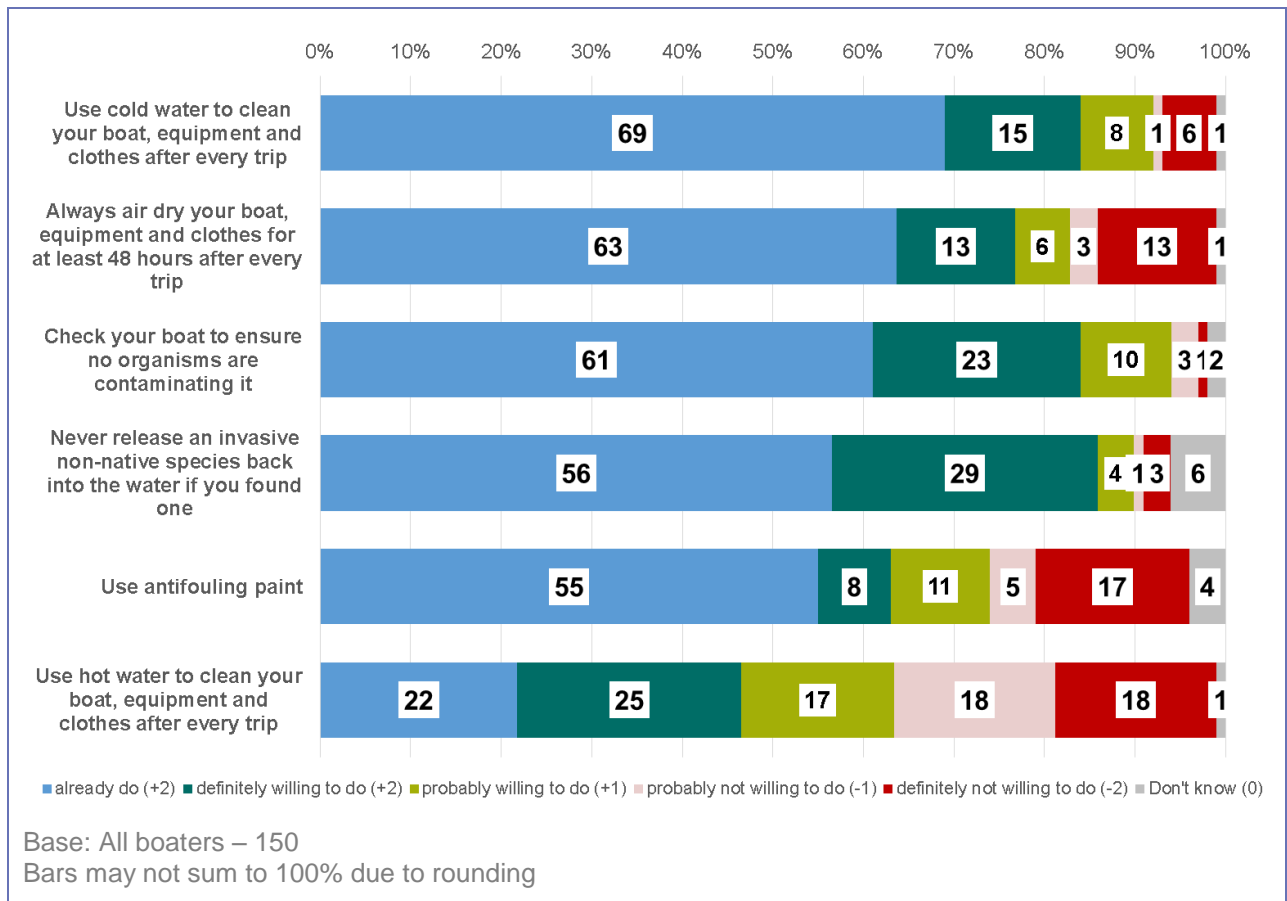


Table 44: Mean Behaviour Scores (Boaters)

	Mean	Sig Diffs
A. Use cold water to clean your boat, equipment and clothes after every trip	1.63	Higher than: b, e, f
B. Always air dry your boat, equipment and clothes for at least 48 hours after every trip	1.29	Higher than: f Lower than: a, c, d
C. Check your boat to ensure no organisms are contaminating it	1.72	Higher than: b, e, f Lower than: a
D. Never release an invasive non-native species back into the water if you found one	1.69	Higher than: b, e, f
E. Use antifouling paint	0.98	Lower than: a, c, d Higher than: f
F. Use hot water to clean your boat, equipment and clothes after every trip	0.56	Lower than: a, b, c, d, e

Significant differences by segment include:

- those with **yachts** and **motor boats** were significantly more likely to be **already using anti fouling paint** than canoeists/kayakers, sailboat/dinghy users and other boat/craft users (88% and 69% respectively vs. 21%, 39% and 36% respectively)

- those with **yachts** were significantly more likely to be **already checking their boat** than those with motor boats and other boats/craft (77% vs. 46% and 46% respectively)
- those with **canoes/kayaks** and **motor boats** were significantly more likely than yachters to be **definitely willing to check their boat** (29% and 46% vs. 9%)
- those with **yachts** were significantly less likely to be **already air drying their boat and equipment every time they used it** than canoeists/kayakers and sailboat/dinghy users (41% vs. 83% and 79%) and significantly more likely to be **definitely not willing to do so** than canoeists/kayakers (21% vs. 0%); **motor boaters** and users of **other boats/craft** were also significantly more likely to be **definitely not willing to do so** than canoeists/kayakers (30% and 20% vs. 0%)
- those doing **only/mainly marine boating** were significantly more likely to be **already using anti fouling paint** (69% vs. 45% only/mainly fresh water and 38% both equally)
- those doing **both fresh water and marine boating equally** were significantly more likely than those doing only/mainly marine boating to be **already air drying their boat and equipment** (81% vs. 53%)
- those **boating for pleasure** were significantly more likely to be **already never releasing INNS back into the water** (64% vs. 31% boating competitions and 46% boating for both pleasure and taking part in competitions)
- those **boating in competitions** were significantly more likely to **definitely not be willing to use hot water to clean their boat** than those boating for pleasure (42% vs.13%)
- those who are not **members of a boating club** were significantly more likely to already use hot water to clean their boat (29% vs.13%)
- **boat club members** were significantly more likely to **already air dry their boats** (73% vs. 55%)

- **females** were significantly more likely to **already use hot water to clean their boat** (34% vs.16%)
- those **owning their own boat** were significantly more likely to **already check their boat** (64% vs. 44%).

Significant differences by boater segment not identified through the analysis of percentage responses, but found in analysis of the mean scores (overall mean scores are shown in Table 44) reveal the following further differences:

- those **boating only/mainly in fresh water** were significantly more likely to be willing **to check their boat** than those boating in only/mainly marine waters (1.91 vs. 1.53)
- those **owning their own boat** were significantly **less willing to use hot water to clean their boat** (0.42 vs. 1.07).

8.7.4 Overall willingness to adopt appropriate behaviours

In addition to looking at willingness to adopt a range of individual appropriate behaviours, such as never using a stink bag (anglers) or using antifouling paint (boaters), we calculated an 'overall willingness to adopt appropriate behaviours' score for each respondent by summing their ratings on each of the individual statements. These scores could range from +12 through 0 to -12. Respondents were then put into one of two groups based on whether their individual overall support score was above or below the sample average which, as Table 42 shows, was 9.45 among the anglers. The equivalent score among boaters was 7.19; this difference was statistically significant.

Among anglers:

- 58% (n=87) were classed as exhibiting greater willingness to adopt appropriate behaviours, with a mean of 11.43 out of 12
- 42% (n=63) were classed as exhibiting lower willingness to adopt appropriate behaviours, with a mean of 6.71 out of 12.

Compared to those exhibiting lower willingness to adopt appropriate behaviours, those anglers that exhibited greater willingness to adopt appropriate behaviours were significantly more likely to:

- go fishing once every 3 to 5 days (16% vs. 2%)
- wash (74% vs. 44%) and air dry (91% vs. 71%) their equipment after every trip.

Interestingly, they were no more likely to be aware of the *Check, Clean, Dry* campaign.

The fact that there were very few significant sub-groups differences amongst the angler sample reflects that fact that, as a whole, anglers reported high levels of adopting appropriate biosecurity behaviours. Nevertheless, those anglers who exhibited greater willingness to adopt appropriate behaviours were significantly more likely to perceive INNS to be a greater threat, based on their overall threat scores (i.e. summed across all threat statements: 8.01 vs. 6.60 out of 12). Although only a correlation, and not a cause and effect, it does suggest that explaining the threat of INNS can motivate anglers to adopt appropriate biosecurity.

Among boaters:

- 59% (n=89) were classed as exhibiting greater willingness to adopt appropriate behaviours, with a mean of 9.66 out of 12
- 41% (n=61) were classed as exhibiting lower willingness to adopt appropriate behaviours, with a mean of 3.59 out of 12.

Compared to those exhibiting lower willingness to adopt appropriate behaviours, those boaters that exhibited greater willingness to adopt appropriate behaviours were significantly more likely to:

- be aged under 45 years old (mean scores 16-44: 8.46; 45-64: 6.82; 65+ 5.68¹⁶)

¹⁶ Although boaters aged 65+ had lower ratings compared to those age 45-64, this difference was not statistically significant)

- be found among canoeists/kayakers (30% of those with above average scores were canoeists/kayakers compared to just 15% of those with below average scores)
- among those boating overseas, always take their other boating equipment with them (65% of those with above average scores compared to just 33% of those with below average scores); there was no difference in the proportions taking their actual boat or trailer abroad with them
- clean their craft out of the water, at home (37% vs. 20%) as well as store their craft at home (41% vs. 21%).

In contrast, those boaters with lower overall scores were significantly more likely to report that they:

- store their craft at a club boathouse (23% vs. 10% of those with above average overall scores)
- did not use antifouling paint (49% vs. 30%)
- clean their craft out of the water, close to where they have used it (62% vs. 43%)
- and never air dry their boat/equipment for at least 48 hours (33% vs. 17%).

Just as with anglers, awareness of the *Check, Clean, Dry* campaign did not differ significantly between those with higher and lower overall behaviour scores. Having said this, those boaters that demonstrated a greater willingness to adopt appropriate behaviours, when asked which factors influenced their behaviour, gave significantly higher ratings to:

- the availability of information about why they should clean their equipment (mean ratings 1.37 vs. 0.93 among those with lower behaviour scores)
- the availability of information about what to do (mean ratings 1.18 vs. 0.77)
- they were also more concerned about how clean their boat looked at the end of their trip (mean ratings 1.93 vs. 1.33).

Finally, those boaters that demonstrated a greater willingness to adopt appropriate behaviours had significantly higher overall perceived threat scores (7.91 vs. 6.36; these were computed by summing their ratings across a number of possible threats from INNS; see 8.6.2).

Although care is needed in interpreting these data, as they only demonstrate a correlation and not a cause and effect, it suggests that where boaters are familiar with the potential impact of INNS, and understand what they are being asked to do and why, in terms of cleaning their gear, there is greater support for the management of INNS.

9 Communications

9.1 Key Findings

9.1.1 Quantitative findings

The results of the quantitative research on communications can be summarised as follows:

- One in five members of the general public **recalled seeing/hearing publicity about INNS**; there was no change from 2008.
- Only 7% of the general public said they had heard of *Be Plant Wise*, and when asked about the main message only 3 individuals (0.5%) made reference to INNS.
- One in four exotic pet owners surveyed **recalled seeing/hearing publicity about INNS**; this was significantly more than the general public.
- One in four anglers (25%) **recalled seeing/hearing about 'Check, Clean, Dry'**, especially match (31%) and specialist anglers (36%)
 - it was most typically seen at places they go fishing (67%)
 - where recalled, the main message was given as being about checking, cleaning and drying equipment between uses (n=23).
- One in four boaters (26%) **recalled seeing/hearing about 'Check, Clean, Dry'**, especially canoeist/kayakers (43%)
 - it was most typically seen at boating clubs (45%), places they go boating (39%) and on boating websites (24%)
 - where recalled, the main messages were given as being about checking, cleaning and drying equipment between uses (n=28) and stopping the spread of INNS (n=21).

9.1.2 Qualitative findings: Revisions to *Check, Clean, Dry*

The results can be summarised as follows:

- **Urgency of message:** the issue of INNS was seen as important enough that communications require a strong warning tone (albeit one that helps the angler/boater do their bit). The revised materials did not convey that urgency as strongly as they might. It also raised questions about how prevalent invasive species are locally – knowing a species is present locally (or even regionally) is ideal for greatest impact.
- **Amount of detail:** there was a disconnect between wanting less information to deliver greater impact and not acting as a deterrent to reading, yet also wanting more detail. Including directions to the website/QR code helped address this although there is a need to say what might be found there.
- **Visuals:** visuals are vital in conveying the problem and what is required, for example:
 - it might be possible to replace the description of the impact of INNS by showing the scale/impact of the problem visually
 - showing species close-up on equipment was felt to give an idea of their scale, what anglers/boaters are supposed to be looking for and the places to clean
 - photographs and/or realistic illustrations were preferred over cartoons/line drawings.

- **Targeting:** targeting was both:
 - too generic and not generic enough; consideration might be given to whether the generic poster should be aimed at all water users (currently they still refer to angling/boating in the copy) and be more specific about practices that involve the transfer of water/invasive species
 - specific and not specific enough; anglers and boaters comprise diverse populations and practices – while pictures hint at the variety, the copy needs to refer to embracing all forms of the sport (plus more targeted electronic messaging)
 - is there a need to avoid the term ‘boaters’ – those taking part did not readily identify with this umbrella term?
- **Endorsement:** Defra is key to establishing authority (the Environment Agency was also important especially among anglers but is not currently shown). Other organisations helped to establish relevance but should not have too much prominence (the revised designs were preferred). The posters might also identify their role e.g. ‘supported by’.
- **Call to action:**
 - although the quantitative research indicated high levels of awareness of the term, most taking part in the qualitative research had no clear idea what an INNS was or what its impact might be (the quantitative research confirmed that impact of INNS was referred to significantly less often in the definitions offered by both anglers and boaters compared to the general public and exotic pet owners)
 - the general practice being adopted by both anglers and boaters often appeared at odds with the call to action; for example: participants often clean their gear/craft only when they get home and some often only clean some items of equipment
 - some calls for actions were considered problematic and this can be used to deflect the message; for example: it can be difficult to drain all water from mobile craft after use or the lack of availability of hot water on-site
 - the call for action can also raise questions; for example: ‘Leave any contamination at the water body’ – what is meant by contamination? Does it mean returning INNS to the water? Will washing clothes in a machine kill any INNS?
 - some participants wanted more detailed instructions on what and how to clean and dry.
 - nevertheless, by the end of the discussions, most felt they had a greater appreciation of the issues and claimed they were motivated to be more diligent about their equipment in the future.
- **Terminology:** ‘Species’ and ‘organisms’ meant little to many participants – ‘invasive animals and plants’ were more meaningful. Preventing the spread is about not transferring invasive animals and plants in water or damp places – this raises the question whether the use of ‘aquatic’ (as in ‘invasive aquatic species’) is necessary.

9.2 Publicity about INNS

Awareness of publicity about INNS for the general public and exotic pet owners is shown in Figure 59, with significant differences by segment highlighted. These include, for the general public, higher awareness in the **South**, amongst **those aged 45+**, those **with ponds**, those **responsible for the plants** in their garden and those **aware of the term INNS**. Amongst exotic pet owners, where overall awareness was significantly higher than amongst the general public (25% vs. 22%), there was significantly higher awareness amongst those aware of INNS.

Among the general public there was no change in awareness of publicity about INNS between 2008 (21% aware) and 2018 (22% aware).

Figure 59: Whether Seen/Heard Publicity about INNS - General Public (upper chart) and Exotic Pet Owners (lower chart)

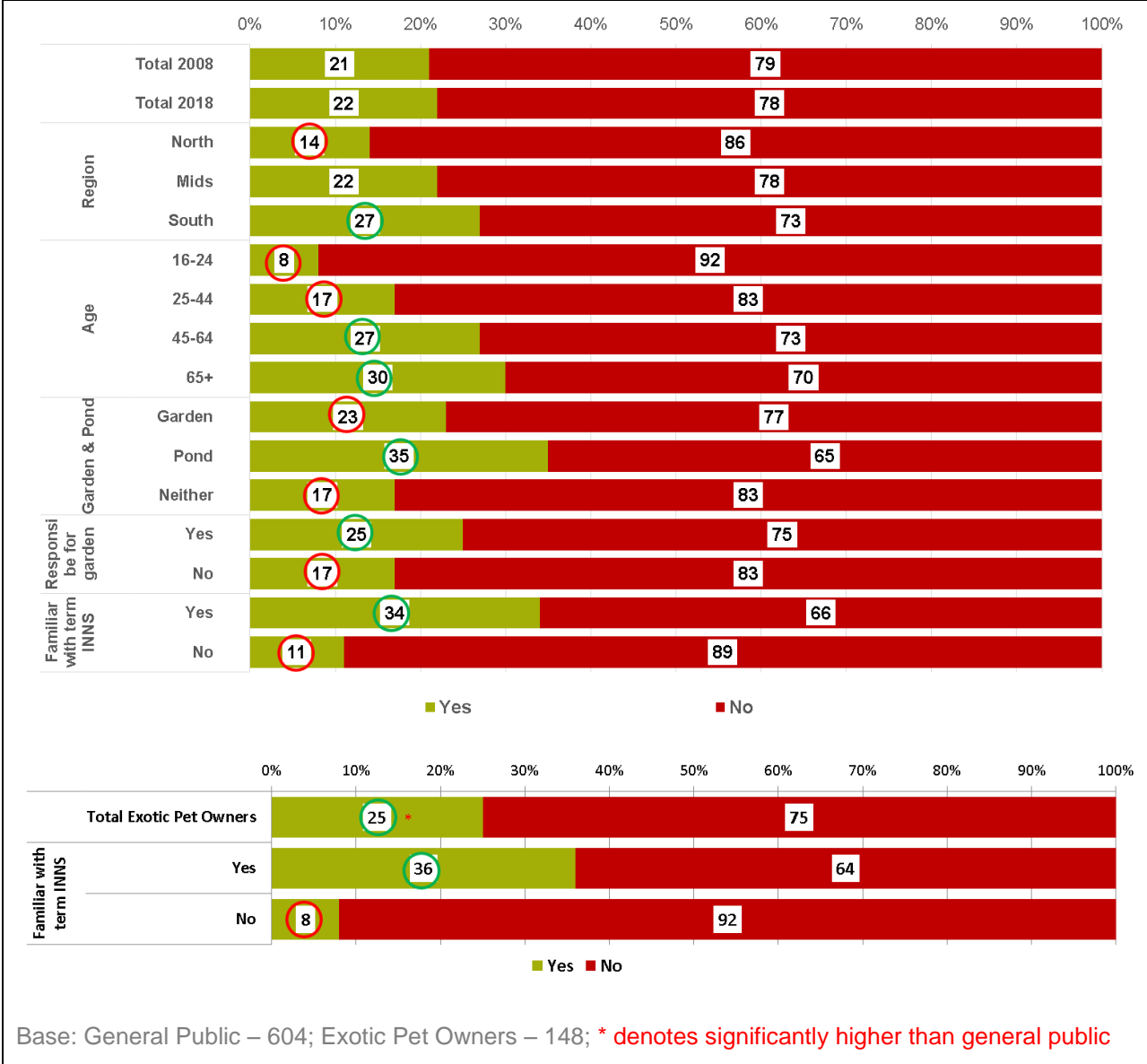
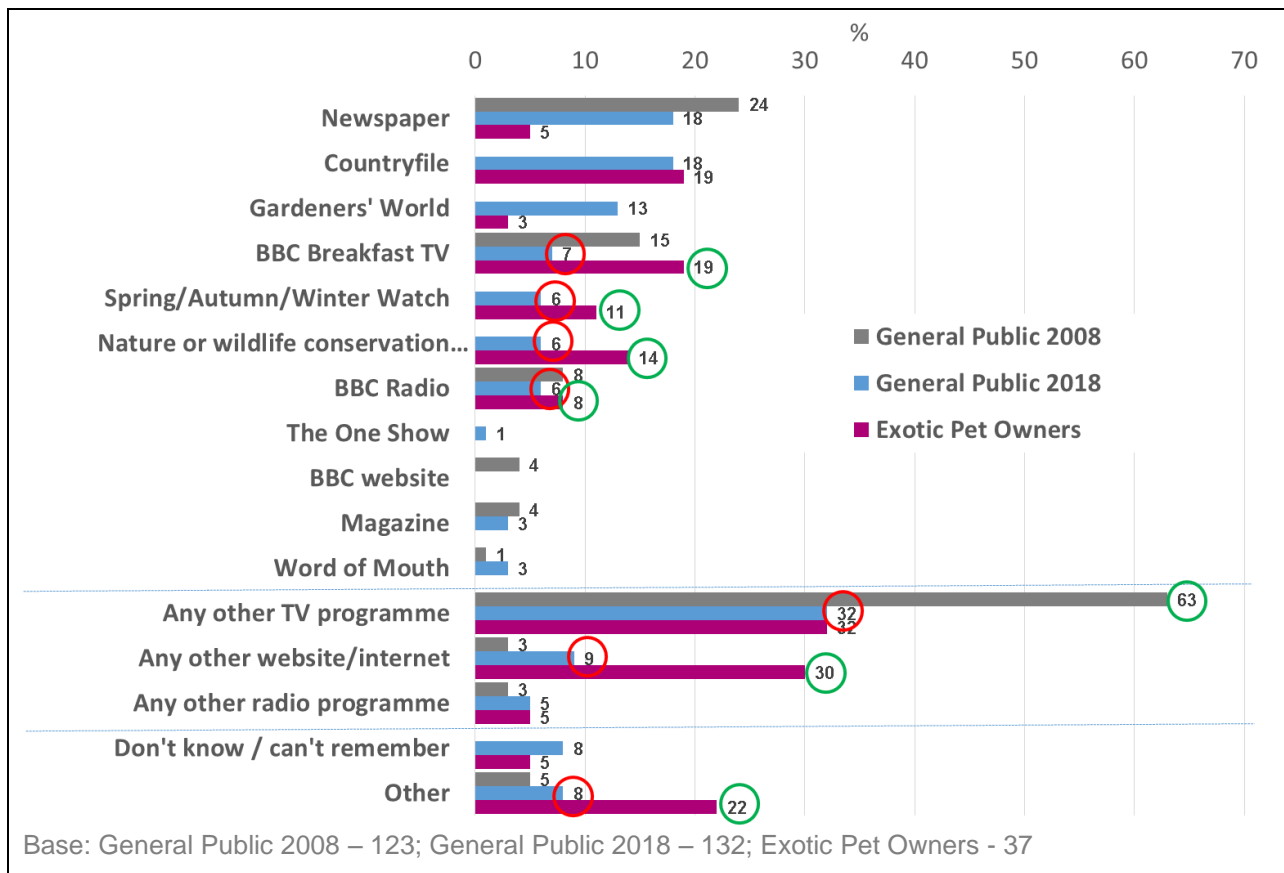


Figure 60 shows where this publicity was seen and, for the general public, compares this with 2008. The key difference between 2008 and 2018 is the drop in those seeing it on ‘any other TV programme’. However, this is no doubt accounted for by the inclusion of specific response codes for Countryfile, Gardener’s World and Spring/Autumn/Winter Watch in the 21018 survey. There are a number of significant differences suggested between the general public and exotic pet owners, but the low base for exotic pet

owners means these should be treated with caution. For the same reason (i.e. the low base of those aware) significant differences by segment are not included in the report.

Figure 60: Where Publicity Was Seen



9.3 Be Plant Wise

Be Plant Wise is a campaign designed to raise awareness of the damage caused by invasive aquatic plants and to encourage the public to dispose of such plants correctly (see Figure 61).

Members of the general public were asked whether or not they had heard of this campaign. As shown in Figure 62, just 7% said that they had, with the proportion being significantly higher amongst those aware of INNS (12% vs. 2%).

When asked to define the campaign, a variety of responses were given, most commonly 'to educate people - what to grow and how to look after it' (n=11). Only 3 individuals (0.5% overall) made reference to INNS, as shown in Table 44.

Figure 61: Screen Shot of the *Be Plant Wise* Landing Page (<http://www.nonnativespecies.org/beplantwise/>)

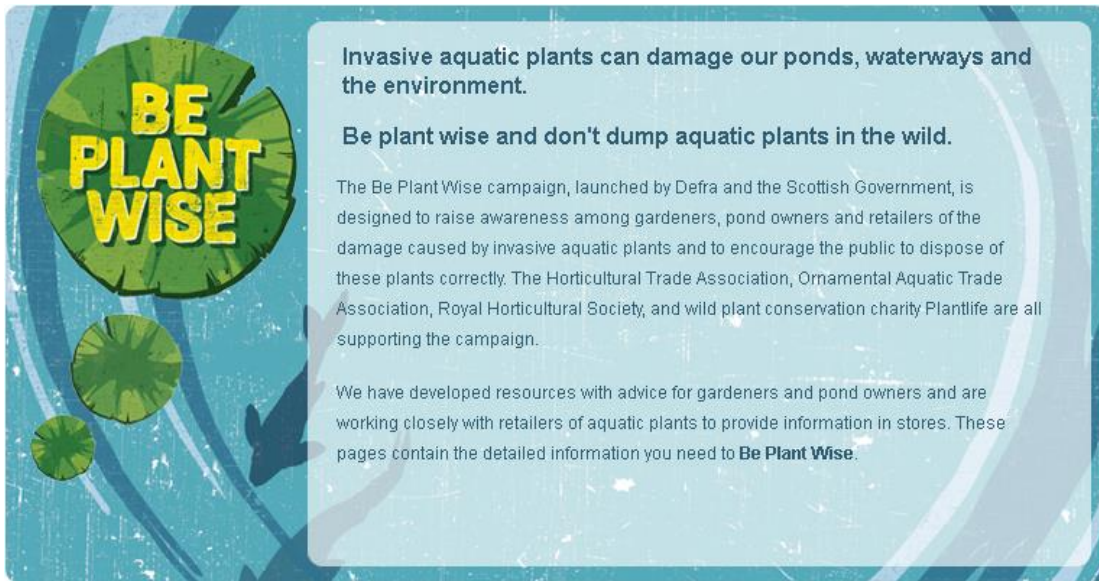


Figure 62: Awareness of the *Be Plant Wise* Campaign

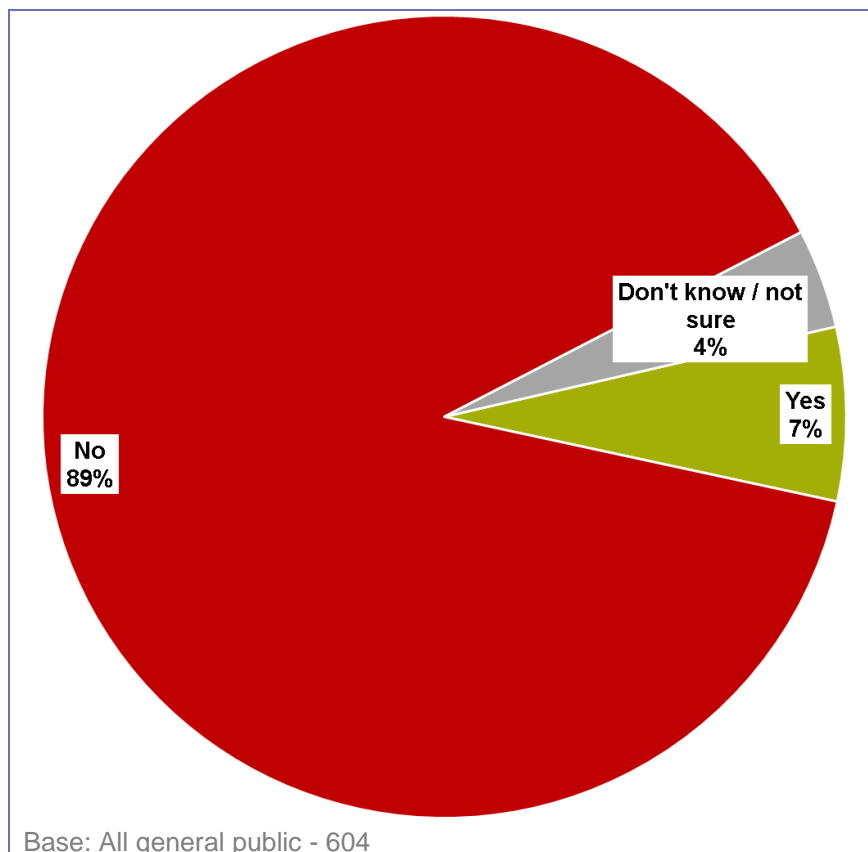


Table 45: Main Message of *Be Plant Wise*

Main Message of Campaign	
Base (weighted)	28
	n
Educate people - what to grow and how to look after it	11
Encouraging people to buy plants that bees/butterflies/insects can pollenate and benefit from	7
Care for the environment/wildlife	6
Invasive weeds/species from other countries taking over	2
Recycling	1
Talked about Japanese knotweed	1
Can't remember	3

Base: All general public aware of the campaign - 28

9.4 *Check, Clean, Dry*

Check, Clean, Dry is a campaign aimed at stopping the spread of invasive aquatic species (see Figure 63).

Figure 63: Screen Shot of the *Check, Clean, Dry* Landing Page

(<http://www.nonnativespecies.org/checkcleandry/>)



Anglers and boaters were asked whether they had heard of the '*Check, Clean, Dry*' campaign. The results for anglers are shown in Figure 64 and reveal that a quarter of the sample had come across the campaign. They also show that awareness was significantly **higher** amongst **match** and **specialist** anglers, **game** and **coarse** anglers,

ABC1s, those fishing in **Scotland** versus England, those fishing at **11+ sites** versus only 1, those typically **fishing further afield**, or in **no particular pattern**, and those **fishing weekly** versus fortnightly.

Figure 64: Awareness of Check, Clean, Dry Campaign – Anglers

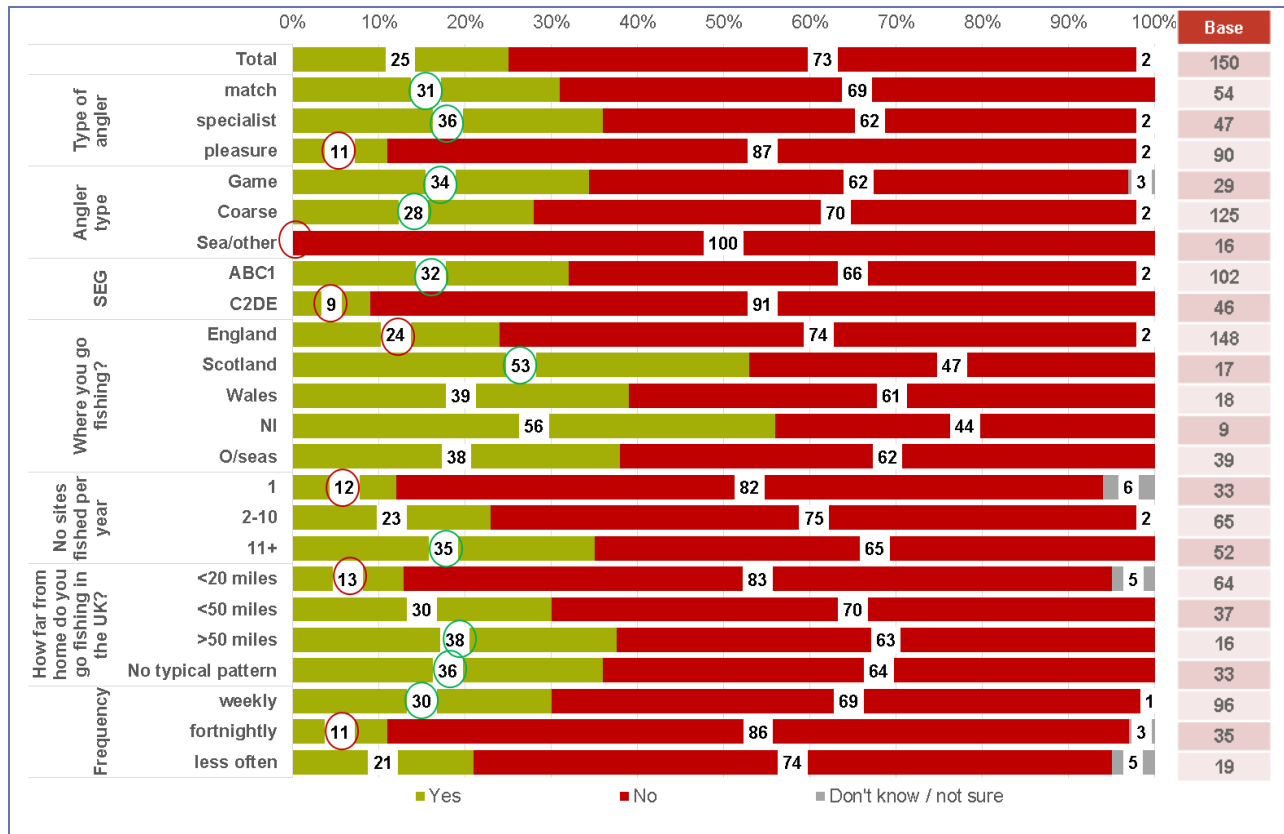


Figure 65 shows that a similar proportion of boaters (26%) had heard of the campaign, with awareness **highest** amongst **canoeists/kayakers** versus yachters and other boat/craft users, those **boating in only/mainly fresh water** versus only/mainly marine, **members of boating clubs**, and those **boating weekly** versus less often than fortnightly.

Both anglers and boaters saw the main campaign messages as being ‘to check, wash and disinfect and air dry your equipment between uses’ and ‘stop spreading invasive species’, although significantly fewer anglers mentioned these two messages. In contrast, more anglers mentioned ‘preventing the transfer of disease/contamination’ and ‘informing you of the benefits of cleaning your equipment’ (see Table 46).

Figure 65: Awareness of *Check, Clean, Dry* Campaign - Boaters

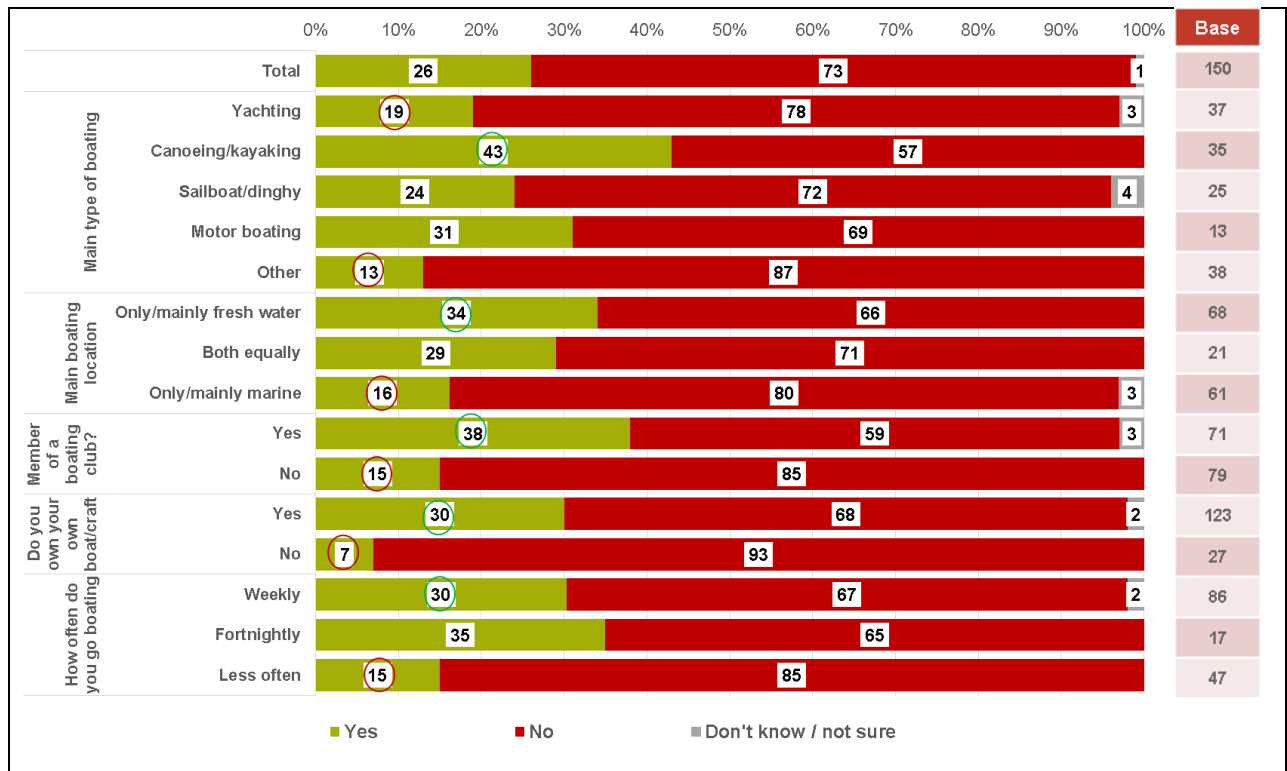


Table 46: Main Messages of the *Check, Clean, Dry* Campaign

Main Messages		
	ANGLERS	BOATERS
	n	n
BASE	37	39
It is to check, wash and disinfect and air dry your equipment between uses	23	28
Stop spreading invasive species	11	21
To stop the transfer of disease/contamination	13	7
To inform you of the benefits of cleaning your equipment	4	-
Don't know	1	-

Base: All anglers/boaters aware of the campaign – 37/39

Those aware of the campaign were asked whether they had seen any *Check, Clean, Dry* posters. Over half of the anglers aware of the campaign (n=21) had, most saying they had seen it at places where they went fishing (n=14). Over four-fifths of the boaters aware of the campaign (n=33) said they had seen posters or leaflets, most often at a

boat club (n=15), places where they go boating (n=13) or on a boating website (n=8). The full results are shown in Figure 66 and Figure 67.

Figure 66: Where Poster/Leaflet Seen - Anglers

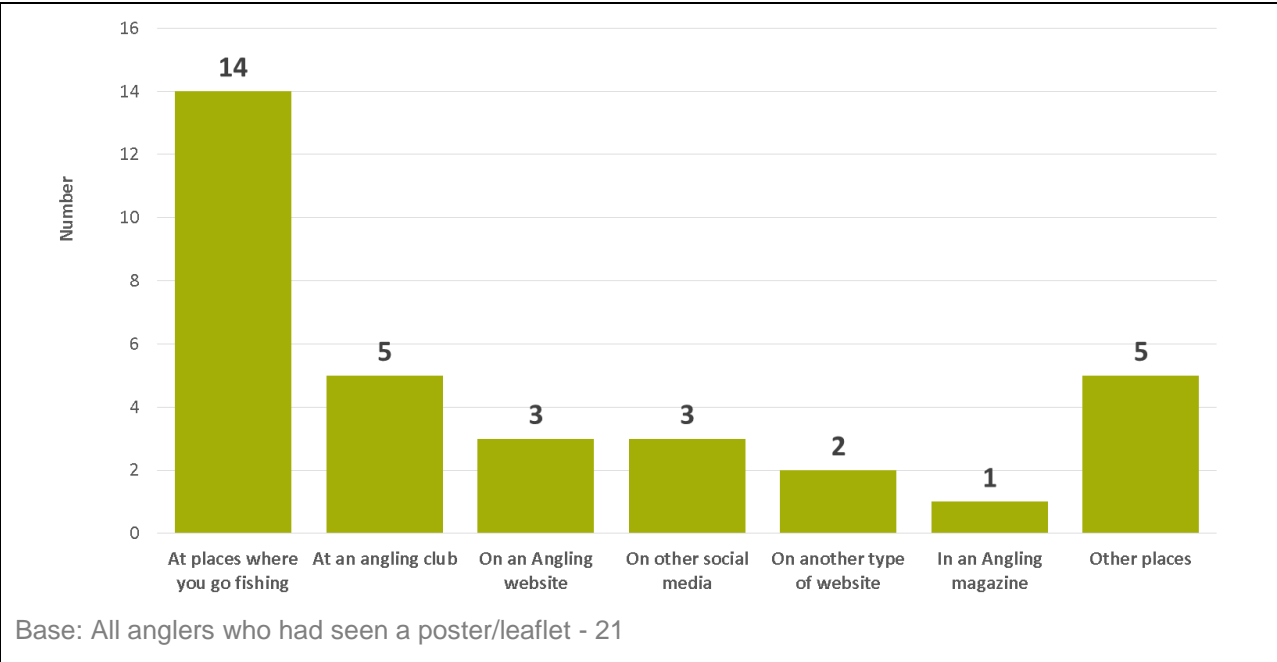
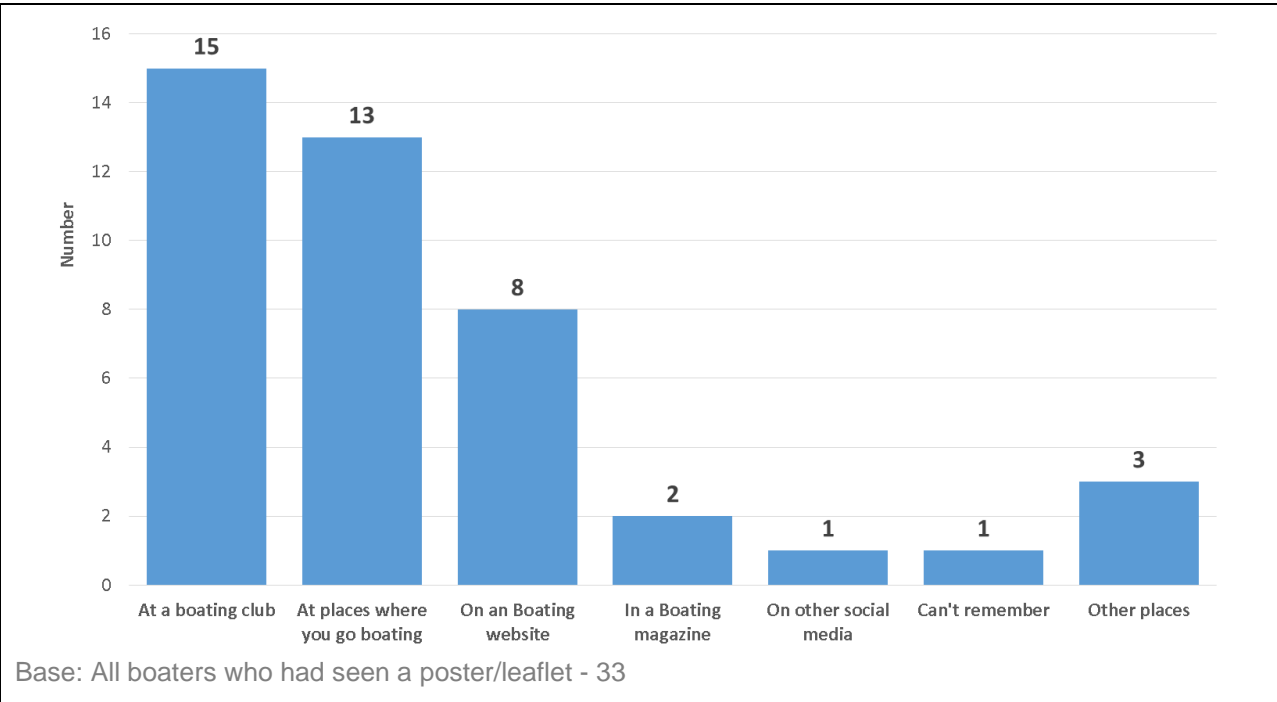


Figure 67: Where Poster/Leaflet Seen - Boaters



9.5 Redevelopment of *Check, Clean, Dry*

In order to explore responses to the revised campaign materials as compared to the original versions, four focus groups were conducted; two with anglers and two with boaters. The anglers were a mix of coarse, game and marine and similarly a mix of pleasure, specialist and match anglers; a number practised different types. The boaters were a similar good mix; canoeists, kayakers, paddle boarders, rowers, sailors, power boating, windsurfers.

Each discussion lasted two hours and focused on the communications materials which were presented without explanation in order to capture immediate responses and ascertain what participants understood from them. Three types of poster were presented (in the following order): a generic poster aimed at both anglers and boaters and others using water for sport (see Figure 68), posters targeted at anglers (see Figure 69) and boaters (see Figure 70) separately and posters aimed at anglers (see Figure 71) or boaters (see Figure 72) who practise their sport abroad. Both the original forms of these posters and revised versions were put into the research. In one angler and boater group, the original materials were presented first and in the other groups, the revised materials were presented first.

Figure 68: Generic Posters

(original design)



(revised design)



Figure 69: Angler Posters

original design

STOP THE SPREAD
INVASIVE AQUATIC SPECIES
CHECK-CLEAN-DRY

Invasive plants and animals harm the environment, reduce the quality of fishing and spread disease. Please help to stop them by following the Check, Clean, Dry code.

CHECK
Check your equipment and clothing for living plants and animals. Pay particular attention to areas that are damp or hard to inspect.

CLEAN
Clean and wash all clothing, footwear and equipment, especially nets, thoroughly. Use hot water where possible. If you do come across any plants and animals, leave them at the water body where you found them.

DRY
Dry all equipment and clothing – some species can live for many days in moist conditions. Make sure you don't transfer water elsewhere.

Watch out for the invasive species that are a problem in our waterways:
Zebra Mussel, Killer Shrimp, Fish Diseases, Floating Plantlets

Remember to check and clean these places

www.nonnativespecies.org/checkcleandry

Logos: Department for Environment, Food & Rural Affairs, Scottish Government, natural scotland, NINSS, SFCA, RIVERS Trust, CC angling cymru, ANGLING TRUST, RAFTS

revised design

CHECK • CLEAN • DRY
INVASIVE AQUATIC SPECIES

Invasive species and diseases kill fish, block up waterways, harm the environment, and can damage boat engines and props. They can be tiny and hard to spot, and some can survive over two weeks on damp equipment and clothing.

Protect the environment and the sport you love, remember to **CHECK, CLEAN, DRY.**

Remember to check, clean & dry these places

CHECK
Check your equipment, clothing and footwear for contamination. Pay particular attention to areas that are damp or hard to inspect.

CLEAN
Clean everything thoroughly, especially nets, using hot water where possible. Leave any contamination at the water body where you found it.

DRY
Dry everything as long as possible, some species can live over two weeks in damp conditions. Don't transfer water elsewhere.

Watch out for:
QUAGGA MUSSEL, FLOATING PENNYWORT, FISH DISEASES, WATER PRIMROSE

Logos: Department for Environment, Food & Rural Affairs, Scottish Government, natural scotland, NINSS, SFCA, Rivers Trust, CC angling cymru, RYA, BRITISH ANGLING TRUST, nonnativespecies.org/checkcleandry

Figure 70: Boater Posters

original design

STOP THE SPREAD
INVASIVE AQUATIC SPECIES
CHECK-CLEAN-DRY

Invasive plants and animals harm the environment, block up waterways, make navigation and paddling difficult and can damage boat engines and props. Please help to prevent the spread. Remember to Check, Clean, Dry.

CHECK Check your equipment and clothing for living organisms. Pay particular attention to areas that are damp or hard to inspect.

CLEAN Clean and wash all equipment, footwear and clothes thoroughly. Use hot water where possible. If you do come across any organisms, leave them at the water body where you found them.

DRY Dry all equipment and clothing – some species can live for many days in moist conditions. Make sure you don't transfer water elsewhere.

Just a few organisms to be on the lookout for:
Zebra Mussel
Killer Shrimp
Dreissenid Polychaete

Remember to check and clean these places

www.nonnativespecies.org/checkcleandry

Department for Environment, Food & Rural Affairs | natural scotland | Scottish Government | NNSS | RYA | Scottish Environment Protection Agency | BRITISH ROWING | British Canoe Union

revised design

CHECK • CLEAN • DRY
INVASIVE AQUATIC SPECIES

Invasive species and diseases kill fish, harm the environment, block waterways, make navigation and paddling difficult and can damage your boat's engine and props. They can be tiny and hard to spot, and some can survive over two weeks on damp equipment and clothing.

Protect the environment and the sport you love, remember to **CHECK, CLEAN, DRY.**

Remember to check, clean & dry these places

CHECK Check boats, equipment and clothing for contamination. Pay particular attention to areas that are damp or hard to inspect.

CLEAN Clean everything thoroughly, using hot water where possible, and antifoul boats annually. Put any fouling in the bin, not back in the water.

DRY Dry Drain water from every part of your boat or trailer before leaving the site. Dry clothing and equipment for as long as possible before using elsewhere, some species can live over two weeks in damp conditions.

Watch out for:
FLOATING PENNYWORT
QUAGGA MUSSELS
WATER PRIMROSE

Department for Environment, Food & Rural Affairs | natural scotland | Scottish Government | NNSS | SFC | Environment Scotland | Scottish Environment Protection Agency | RAFTS | nonnativespecies.org/checkcleandry

Figure 71: Angling Abroad Posters

original design



revised design



Figure 72: Boating Abroad Posters

original design



revised design



Participants were invited to write their immediate comments on the posters themselves before giving their views in open discussion. Spontaneous reactions were followed up with more specific exploration of views on: perceived impact, messaging, the call to action, the perceived target audience and the overall look and feel of the posters and specific design features.

9.5.1 Perceived visual impact

One of the first reactions to the posters was some scepticism on the part of participants that their attention would be caught by some of the posters or that they carried the urgency of for example, a warning poster relating to farming.

The generic, text-heavy posters which were seen first particularly gave this impression and indeed, blocks of text in a smaller font were seen as a deterrent to engagement.

The image of clear water prominent in the revised versions was also seen as too calming and too pristine to be realistic; it was associated with water companies and advertising for brands of bottled water.

I don't know if it brings enough urgency to it, the second one. It's like, quite a calming poster so, look at it, it doesn't really make you feel like anything's wrong. (Boater, Altrincham)

The features that were felt to enhance visibility and thereby impact, were:

- headlines in capital letters
- high levels of contrast between text and background – this was poor in the blue on blue of the original posters and red on blue in the revised; darker text was felt to have greater stand-out
- the logo and Check Clean Dry device with the white inner background and dark text
- images that caught the attention such as those showing the damage done by invasive species.

I like the white on the inner part of the circle. I think it makes it pop out more than it did on the first one. (Angler, Fareham)

The logos of endorsing organisations (especially those setting down regulations) were seen as helping convey the importance of the messages and in particular, that of Defra as the principal regulatory authority. Anglers expected the Environment Agency to be included because of its role in licensing.

9.5.2 Capture of main message

The **generic posters** left many participants puzzled referring as they did to a problem using unfamiliar and general terms ('organisms', 'contamination', 'invasive species') without identifying:

- what the invasive species are
- what one should be looking for – questions were asked as to whether they were fish/algae/a fish disease?
- what the damage they cause looks like?
- where the problem of invasive species is – is it local?

Moreover, the title of the organisation contained in the website address also added to the confusion.

While messages such as 'don't transfer water', 'don't cross-contaminate' and 'we all bear responsibility for not spreading invasive species' were variously identified, they were not felt to stand out clearly and the call to

It's endorsed by a lot of serious players, it's got a lot of serious people putting their name to it. Defra at the beginning. So, it says to me that there is a problem there, I wouldn't necessarily have known it was such a significant problem. (Angler, Fareham)

I think it's those that actually speak to me more than the poster. Because those organisations are like, you sail against them with some regulations, and you may have some other ones like that. So that rubber stamps the need to do it more than the poster. (Boater, Altrincham)

You've got the word species in the main paragraph and then you've got invasive aquatic species in the circle and then you've got non-native species in the name of the organisation. So is it a non-native species, an aquatic species, which is not a non..., and then invasive species in the main heading, it just doesn't make sense. (Boater, Fareham)

I felt I didn't have an understanding of it. So, they said invasive species and then they say live organisms, but not at any stage do they maybe say what it was or what to look out for. That could maybe like raise a lot more awareness. (Boater, Altrincham)

I think it should say what the aquatic things are or put a name to them at least, so people can relate to it, look it up on the internet and things like that. And then these check things like, check your equipment, boats and clothing, footwear. What are you looking for? It doesn't tell you what you're looking for. (Angler, Altrincham)

Wouldn't it be better to perhaps identify their priorities, so their top three predators and have a species-specific communication? You'd have incidents, you know they do these scatter gun dots, so you'd have a stretch of water and you'd have dots where they'd been seen, and you could get different colours. (Angler, Fareham)

action, Check, Clean, Dry, raised questions as to what was expected of them (see 9.5.4 and 9.5.5). Some commented on specific phrases that seemed more informative such as 'dry everything as long as possible' on the revised poster rather than 'dry all equipment and clothing' on the original.

The **posters targeted at anglers and boaters** were a welcome contrast to the generalities of the generic posters. They were immediately seen as clearer, more interesting, more informative, relevant and motivating. Participants now had a good sense of the types of plants and animals that were invasive and indeed, they were sometimes now called 'invasive plants and animals' rather than 'species' or 'organisms'. The images signalled that the posters were aimed at people like themselves and attracted the eye especially where there were arrows indicating points of interest.

The revised versions were largely seen as an improvement in terms of looking more professional and serious than the child-like drawings of the originals. The photographs of invasive species were clearer and seeing the Quagga mussel on a hand gave an idea of its size. Indeed, showing weed on equipment in the original posters led some boaters to suggest that it would be even more helpful to see the invasive plants/animals *in situ*. The revised posters were seen as giving less space to logos at the bottom so that more useful information could be accommodated. This included a wider range of equipment suggesting different types of angling/boating and more specific information about cleaning these. In terms of the text, there was more precision in the revised version such as 'Watch out for:' as the introduction to the images of invasive species rather than 'Just a few organisms to be on the lookout for'.

I think this is the first time we've been told to check the oars, check the kit, not just your personal kit, but what you use on the craft. That's the first time that's come through to me about the flippers, the oars, everything else has been just about impractical to me so I think that's helpful. (Boater, Altrincham)

However again, the posters were felt to lack the urgency that participants expected to be associated with a serious warning message; the tone was more 'public information' than 'warning' and there was neither an attention grabbing headline nor images of the impact.

I'd say it's more informative than the other one, but it doesn't kind of jump out at me like a mandatory regulation, 'stop, you must do this'. It's more like, 'have a look at this'. (Boater, Altrincham)

Questions were raised as to whether the species shown in the photographs were the ones that were present in the area and mobile boaters found the message about anti-fouling in the revised boaters poster confusing as they did not know what the fouling was that needed to be put in a bin.

I think it's lost the point on this one altogether. I think it's contradictory, it shows you a canoe and it talks about anti-fouling your boat annually. It's really confusing this one. It's better visually, but it's more confusing. (Boater, Fareham)

It was also noted that one of the main messages from the generic poster, that of not transferring water, was not mentioned explicitly in the revised boaters poster. The use of 'plants and animals' in the original anglers poster was identified as being preferable to 'organisms' or 'contamination'.

It says 'if you do come across any organisms, etc.' whereas here it says 'if you come across any small plants and animals', that's a lot better because I'd be like 'what do you mean by organism?' Whereas that's straightforward. (Angler, Fareham)

Although the **Been abroad?** posters were relevant to only a minority of the boaters and anglers, they showed features that many found appealing. The original versions were seen as particularly powerful because they showed the impact of invasive species and many could relate to the problem.

Because all of us relate to how hard it is to paddle through something like that. So straightaway you are looking at that and thinking, 'my god, that looks hard work', you know, 'I've been there'. And because that captures your attention, then you're reading these points aren't you, down underneath. (Boater, Fareham)

The point was made however that, while the diseased carp will resonate with anglers who go fishing in France, it does not show something that you can easily identify and remove when checking. One suggestion for an alternative image was of an angler's line getting caught up in an invasive plant.

The other ones, at least you could go and look for at a fishery whereas that, unless you went round cutting the gills off everything you pulled out you wouldn't know anything was in there. You're not going to find that on the bottom of your shoe either. Or in your tackle box that you brought back in. (Angler, Altrincham)

Whereas that fish is like eugh. It needs to be something a bit more...like an angler's worst nightmare. Snagged lines or something. (Angler, Fareham)

The fact that these posters conveyed their message in fewer words was liked – however, participants readily understood that their knowledge of the problem of invasive species had developed over the course of seeing the other materials. Moreover, the main message was not always clear – was it suggesting you should not bring invasive species back with you and should Check, Clean, Dry before leaving the country you were visiting? If this was the case, the poster needed to be shown as people left the UK. Or, was it saying you should Check, Clean, Dry before going fishing or boating again in the UK?

9.5.3 Response to call to action: Awareness of threat

While there was some awareness of the threat posed by invasive species, this was not generally the case. A couple of participants had seen warning notices about specific species at locations on the Norfolk Broads and in Wales and similar biosecurity messages had been encountered at launch sites, at fisheries, at drinking water reservoirs, in an email when signing up for a triathlon.

A couple of participants had a particular interest in the issue (e.g. one had just completed an Environmental Sciences degree as a mature student) and one mentioned seeing features on the subject in magazines like Anglers Mail.

It was Wales where they've had them next to the side of where you launch boats and quite often they have photographs, examples of the types of species so if you see them you know what you're looking for. (Angler, Altrincham)

I just signed up for a triathlon and there was similar advice to this, check, clean, dry all your kit if you do open water swimming so you don't transfer stuff from one body of water to another. So it was kind of a similar idea, but not as complicated as this. (Boater, Fareham)

A number were aware of threats to fishing/water sports more generally from fish diseases/parasites such as carp herpes (which had led to the closure of certain fisheries), from algae, from plastic and oil, and from beavers and otters. Some anglers and boaters were able to identify specific invasive species; signal crayfish, shrimp (Norfolk), 'foreign snail' (Wye), mitten crabs and Japanese knotweed. However, some had no idea what an invasive species was (something from overseas? things that shouldn't be there?) or whether the waters they visited were affected.

One woman had, as a result of seeing posters with cartoons of shrimp on them on the Broads, taken a towel with her to wipe down the sit-on-top kayaks she and her family

were using. Her view was that the posters she saw were effective because firstly, they were 'everywhere' and secondly, the text was larger and relied more on the image to get its message across so that non-English speakers might be able to understand it.

When we were in Norfolk we had very nice signs like with cartoon shrimp and it was very obvious and it was much more, I think it was like the text seemed bigger. Whatever it was that it said, I can't remember what it said, I just know these cartoon shrimps and it told you what the creatures were that you were looking for. So it gave you more incentive to wash it off and the plants as well. So it had this cartoon like more like for kids or for people who couldn't read.
(Boater, Fareham)

9.5.4 Response to call to action: How feasible?

The first response from both anglers and boaters to the call to Check, Clean, Dry depended on how they interpreted what they were being asked to do and this was often seen as unclear.

I think the key is, the clean and dry before you move, it's before you move on. It's doing it there, because we all started off talking about that we all take our gear home and then we hose it off at home. But then when we've spent more time going through all these, they don't want you to do that, they want you to do it wherever you've done the activity. (Boater, Fareham)

For those who saw it as asking them to Check, Clean and even Dry at the waterside, this was generally viewed as unfeasible. Hot water was generally not available except at some organised sites and if it was, there were often queues to use it. If the weather was poor, everybody just wanted to jump in their cars and get home as quickly as possible. For those who saw the message as being about asking them to do as much as possible, this was less of an issue. They assumed that if hot water was not available at the waterside, it would be acceptable to clean equipment with hot water at home.

Leave the contaminants there, in a perfect world. Surely the point is not to then contaminate somewhere else where it can get back into a waterway. But if you take your gear home, unless you live right alongside another water course. You clean and dry your kit, you leave it to dry. Whatever was on it is going to die pretty quickly wherever it is where it's drying and surely that's better than leaving it where it was?
(Angler, Fareham)

Its things like 'clean everything thoroughly using hot water where possible', so it's not saying, you know it's going to be possible or whatever. 'Try and leave the contamination at the water', 'dry everything as long as possible'. (Angler, Altrincham)

For **anglers**, the general practice was to take and wash/wipe down their gear at home (one angler wiped his rods with WD40 on-site) and dry nets in the shed or garage. Washing was seen as more important for sea fishing because of the potential damage from salt. Especially in bad weather, there was little appetite for cleaning on-site. Some

admitted that when cleaning equipment, the emphasis was on nets and rods rather than other equipment such as the bait box, wellies and waders.

A few anglers mentioned that some fisheries provide dip tanks for nets or insist on customers using the nets provided, or they might check that nets are dry before they can be used.

At competitions, anglers may be required to expose nets to 15 minutes of 'sunshine' even if it is raining. Some felt that this created confusion because it suggested that such exposure is sufficient rather than having to Check, Clean and Dry.

For those anglers who fished abroad, there was recognition that other countries have far stricter measures in place than the UK about hygiene around equipment.

All in all, it was felt that to encourage good biosecurity, there was a need to provide hot water at the waterside or at least disinfectant.

For **boaters**, the general practice was again, to take and wash or wipe down their gear and especially any clothing, at home. While they might try to drain water from a mobile boat before leaving the waterside, some water was always caught up in the craft so that as they drove home with the boats carried on their car, water sloshed out of them. It was suggested that some people with leaky boats never emptied them completely. Washing off salt water was similarly seen as more of a priority than fresh water.

I leave my landing net outside and just let it dry. And that was the advice...
...That's what the authorities said, if it was dry before you used it again...
...That's it, that was the main thing. I know at least one, maybe two, lakes that wouldn't let you go in if your landing net was wet and they had someone sitting there watching it...
... But you know, as with the tackle and lines and that, you never think about. And to be honest, even the landing mat. (Anglers, Fareham)

We're always told that with normal diseases that are passed from fishery to fishery that you dry your nets before they go into the water like, you know like the UV light from the sun kills everything. This doesn't describe anything here at all like that. (Angler, Altrincham)

If you fish in Iceland, you have to have all the gear and your waders and everything treated, disinfected and a covering letter goes with you and it goes through immigration and passport control and, you know, the people read that. When you come back into this country, you don't need nothing. You can just come back in and you can come in fish and you don't need any of that. (Angler, Altrincham)

I know so many people with boats that leak and they're full of the water most of the time and it's hanging around for years and they go off to an event somewhere and it's all over the place. So I would think that's a real problem. (Boater, Fareham)

In addition to the lack of hot water on-site for cleaning equipment, checking equipment such as wet suits was seen as difficult by the water. It would take too long when you simply wanted to get home; moreover, while they might wash and hang up wetsuits and other items, they might not be completely dry before being used again.

Boaters felt that their sport took so many different forms and the

behaviour and practices varied so much that a single message could be very confusing and more tailored messages were needed. For example, paddlers wanted to know what they should do on an open waterway; club rowing boats were described as being typically washed on the outside but should they also be cleaning the footplates; sailing boats come out of the water every 1-2 years so cleaning them is very different; the message, 'don't transfer water elsewhere' possibly needs emphasising for mobile boaters.

Not sure how accessible for anybody that's not, maybe, if you're sailing or attending a club, just thinking if you're paddling on a very open waterway, it's not obvious how, when are you meant to do these steps? So for me personally, if I'm getting out of a river I don't have anything to go wash my kayak in, I put it on top of the car, it gets washed when I get home along with wetsuits or any other equipment.
(Boater, Altrincham)

You've got to like turn your wetsuit inside out and everything, it would just take ages, I don't know, never really thought about doing it. Makes sense if it needs to be done I guess, but it's quite a lot to check over. There's quite a lot of surface area on the kit. (Boater, Altrincham)

Depends on what vessel or board you're using. There's some very mobile, I mean kayaks, stand-up boards, they come out of the water every time. Dinghies come off the water every time, but the bigger boats are going to be in the water, so, again, it's a very generic comment and I think, personally, I think there should be more than one. One for small craft, one for bigger craft, one for mobile craft. (Boater, Altrincham)

9.5.5 Questions around the *Check, Clean, Dry* Protocol

Some boaters and anglers questioned whether the *Check, Clean, Dry* protocol was the right one; if you check your equipment and find nothing, might you not bother cleaning it? Might it be better to check equipment after cleaning?

You might go and clean and dry it but you're going to double check that you've actually cleaned it properly. Whereas if you've already checked it and then you clean and dry it then, do you know what I mean?
(Angler, Fareham)

Actually the word 'check' throws me, I mean what are we checking for? I mean some things might not be overly visible so we don't need to check, we should automatically be cleaning and drying, forget the check.
(Boater, Fareham)

A number spontaneously commented however that a three-part process was more memorable although a couple of boaters thought the third element could be 'drain' rather than 'check'.

I think they need to make it, especially because of how serious things are, because the bits and things they're asking you to clean like nets and floats. How far do you go, do you start cleaning your lines? If it's something that serious they're going to need to put exactly what it is that they're trying to target. Tell me to individually clean my floats when I come back from fishing. (Angler, Altrincham)

Several felt more detail was needed about where and how to clean and dry, for example, could the communications suggest using a

chamois leather/towel to wipe things down? Should it be more prescriptive about how to clean equipment? The woman who had responded to the posters in Norfolk felt it vital that posters showed what the priority when cleaning was.

Also, it was questioned whether everyone needed to carry out the *Check, Clean, Dry* process. For example, if there are gaps between angling/boating trips of more than two weeks, do you need to do it (including if you have returned from abroad)? Similarly, what about if you always kayak etc. in the same waterway so you are not transferring water from one body to another?

Other questions hinted at wanting to know more about the detail of what one was being asked to do when checking and cleaning in particular. These included:

We tried to clean any weed or anything off. So that's why I think they need to show a picture of what it is you're cleaning, because we could have had shrimp all over our boat and thought, 'oh, we better clean the weed off'. So I think you have to say what you're looking for because then you could think, 'oh flip' - I think it was mussels maybe as well - 'flip these mussels and shrimps and weed off'. But that little bit of mud is alright. You need to know exactly what it is they want you to ... (Boater, Fareham)

- Presumably you shouldn't use water from a potentially contaminated water body to wash your equipment at the waterside?
- Why leave invasive species at the water body – does it mean put them back in the water?
- Should you inform anyone if you find invasive plants and animals?
- Does washing equipment at home cause problems if water goes down the drain?
- If you find invasive organisms on-site/at home, how should you dispose of them?

- If you come across organisms when cleaning equipment at home, how do you return them to the water body?
- What should you do if you return from abroad and find water in your boat?
- How do you know if organisms are alive especially if they are very small?
- Do invasive species cause health problems for humans?
- Will washing clothes in a machine kill the organisms?

9.5.6 Finding out more

While participants felt that the posters were more likely to catch people's attention if they were not text-heavy, they also wanted more information, as can be seen from their comments and questions. Using the QR code (not included on the revised versions) and the website were seen as important for following up what they had read and the visibility of the website address was often commented on. On the generic posters, for example, it was clearer on the original version than the revised version (and it explicitly states 'for more information go to ...'). The need was identified for the address to be in a large enough font size and to stand out against its background so as to be spotted and readily legible.

9.5.7 Perceived target audience

The **generic poster** was seen as not being aimed at a specific audience although its mention of 'sports' suggests that the practitioners of more serious recreation are being targeted and the logos of supporting organisations suggest that these are anglers and boaters.

Its lack of specificity led to questions about whether dog walkers, children going into the water with tyres, crabbing with nets, etc. should also be included since they could also come away with invasive plants and animals on their clothing, equipment or pets. There seemed to be a feeling among the anglers in particular that they are often held responsible for problems but that the wider public also needs to be aware.

It might be better to say, 'Help protect the environment and the places you love' rather than 'the sport you love' because it isn't just about sports that are happening.
(Angler, Altrincham)

The images on the **targeted posters** helped to identify their audience and it was appreciated that a range of types of angling and boating were covered especially in the revised versions. As noted above however, while it was recognised as difficult to target each water sport individually, the boaters in particular felt that tailoring the information in the text would be helpful.

Many immediately counted themselves out as being the target of the **Been abroad?** posters as it was not something they do or have done. They sometimes suggested that the posters' messages could have relevance for a broader audience, for example, anyone doing a sport that involves using equipment on the water (such as a surfboard) or a wetsuit.

Moreover, 'boating' was not a popular term to encompass so many diverse sports or to cover other ways of being on the water; some participants in these groups proposed a headline such as 'have you been on the water abroad?' or 'messing about on the water abroad? – please don't mess up your water' instead.

The focus on specific types of fishing/boating in the images of the revised versions of the posters raised issues around their broader relevance, for example, are they principally aimed at those sailing/fishing competitively?

I don't compete, so that to me would look like a competition so that wouldn't capture my attention at all. (Angler, Fareham)

9.5.8 Suggested display locations

When participants were asked where they might expect to see the three posters to reach their perceived target audiences, a range of sites were suggested, many of which overlapped between the two sports.

For the **generic and targeted posters**, the locations included:

- Entrance to fisheries/sites where you pay
- By the waterside
- Cafes at fisheries
- Fishing lodges
- Car parks
- Specialist shops
- Launch sites
- Boat/club houses
- Changing areas/shower rooms

It was envisaged that the **Been Abroad?** posters would be displayed at airports and ports, both for those coming into and leaving the UK.

In addition, a number of other ways and intermediaries were proposed for communicating and informing those audiences.

From the Environment Agency with rod licence	From insurance company insuring your equipment especially if taking it abroad
With membership of angling clubs	Websites of organisations where one books an activity or shop for equipment
Someone visiting clubs	From regatta organisers
Bailiffs spreading the word at fisheries	From RYA to members
Stickers e.g. on bait box	In the 'plastic book' showing paddle points on a river
On bags of ground bait	Magazine features
Leaflet put into bag in shops	

9.5.9 Response to campaign logo options

The groups were shown three alternative designs for the campaign logo and their preferences were recorded and discussed (see Figure 73).

By the end of the sessions, participants appreciated that they had a better understanding of what 'invasive aquatic species' were and in discussing the logo for the campaign, many wished to retain this as the central feature. However, they also recognised that others coming new to a poster or other materials, would not have that knowledge and therefore it might have little meaning for them.

Figure 73: Logo Options



A hybrid of logos 2 and 3 was commonly (but not universally) preferred:

- the white ground of 2 for greater contrast with the text
- the upper and lower text of 3 but with Check, Clean, Dry text in red for stand-out
- and for some, with Check, Clean, Dry divided by bullet points.

There was some support for the blue ground of logo 3 and a suggestion among some in one boating group that Check, Clean, Dry should be replaced by Drain, Clean, Dry or Clean, Drain, Dry.

One of the angler groups felt that 'invasive aquatic species' in logo 2 could be replaced by 'stop the spread'.

9.5.10 Learnings for participants

Overall, the communications suggested that for these anglers and boaters, invasive species presented a greater problem than they had appreciated. In terms of the impact of finding out more, some thought they would check their equipment more at the waterside but still not clean and dry it there. Some claimed they would be more diligent about drying their equipment before using it again.

For those who already cleaned and dried their equipment, knowing there was another important reason to do so would motivate them to continue. However, it was generally felt that until facilities were available at the waterside, there was little more they could do.

Yeah it will make me think more about drying the stuff off a bit more...
... Checking it a little bit more thoroughly. Looking out for them particular diseases. (Anglers, Altrincham)

Be more thorough in checking the craft when you leave it out of the water. If you have an inflatable paddleboat, look at it, try and wash it down, and when you take it home, again just inspect it. (Boater, Altrincham)

Yeah definitely. Give more of a look at my equipment before I go home.
So, you'd do the check bit?
I'd definitely do the check bit. But I can't do the clean and dry...I'd definitely do a double check on it and make sure. (Angler, Fareham)

It needs to focus on the transfer of water more, because we all clean our equipment, but we all clean it not for this reason, we clean it for longevity of the equipment. I've never thought of this before tonight. I will do from now on, but only because we've spoken about it. (Boater, Fareham)

There were also indications that some participants felt that cleaning all their equipment so thoroughly was going to be a chore. One angler thought that fisheries might be reluctant to display the poster because it might be seen as 'too many rules' and another angler who was someone who diligently cleaned his kit felt that seeing the pile of equipment in the targeted poster was quite off-putting.