

Summary of the monitoring of piscivorous bird licenses

2002- 2003 Season

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1.0 Introduction

- 1.1 This report provides a summary of the monitoring undertaken by the National Wildlife Management Team of the Rural Development Service (RDS) of the Department for Environment, Food & Rural Affairs (DEFRA), for licences issued in England, under section 16(1)(k) of the Wildlife and Countryside Act 1981, to shoot piscivorous birds for the purpose of preventing serious damage to inland fisheries. During the 2002-2003 'season' (May to April), licences were issued to shoot limited numbers of Cormorants *Phalacrocorax carbo*, Grey Herons, *Ardea cinerea* and Goosanders, *Mergus merganser*. No licences to shoot Red-breasted Mergansers, *Mergus serrator*, were issued during this period in England.
- 1.2 The primary objective of the monitoring was to gather information on the effects of licensed shooting and other fishery protection measures. It should be stressed that this programme is not designed to be a rigorous, scientific R&D exercise. A separate programme of scientific research was commissioned by the former Ministry of Agriculture, Fisheries & Food (MAFF), the Department of Environment, Transport & the Regions (DETR) and the Environment Agency (EA).
- 1.3 The report outlines the methods used to acquire and assimilate the data. Results for licensing are presented in various formats with comments on each section. The Centre for Environment, Fisheries and Aquaculture Science (CEFAS) did not analyse the stomach content of birds shot during the 2002/2003 licensing period, as this study has been completed.

2.0 Methodology

- 2.1 Information was obtained from site visits to fisheries when licensees and others involved with the individual fishery were interviewed and their views recorded. Where possible, observations were made of the implementation of licensed shooting and the use of other protection measures. Piscivorous bird numbers and their activities in and around the area were also noted.
- 2.2 For both still water and river fisheries, the RDS Wildlife Adviser typically made one monitoring visit during the licence period. Wherever possible, this was timed to coincide with peaks when the fishery was under the greatest potential threat from piscivorous birds. Occasionally, where the situation demanded, additional visits were made.
- 2.3 Contact with licensees was also maintained by telephone; in some cases, interim records and results, which included details of bird impact and numbers, scaring measures and the results of such efforts, were produced in written form and forwarded to Advisers.

3.0 Results and discussion – licence evaluation

Figures for licensed shooting and non-lethal anti-predation measures are presented within the Appendices A - K.

3.1 Details of Licences Issued

3.1.1 Bird species licensed (Appendix A)

During the 2002-2003 season (01 May to 30 April), 138 licences were issued throughout England to permit the shooting of piscivorous birds as a means of reinforcing the scaring effort at inland fisheries. One-hundred and nineteen (86.2%) were issued for Cormorants, 17 (12.3%) for Grey Herons and two (1.5%) for Goosanders. No licences were issued for Red-breasted Mergansers.

3.1.2 Types of fishery licensed (Appendix A)

For Cormorants, still water fisheries (including ponds, lakes, reservoirs and fish farms) accounted for 65% (77) of licences, with the remaining 35% (42) issued for rivers. For Grey Herons, 53% (9) were issued for still water fisheries and 47% (8) for rivers. Two licences were issued to shoot Goosanders on still water fisheries.

3.1.3 Shooting details (Appendix B)

The number of birds permitted to be shot under these licences amounted to 698, comprising 603 (86%) Cormorants, 86 (13%) Grey Herons and 9 (1%) Goosanders. Of the 138 licences issued, 82 Cormorant and 13 Grey Heron licences were utilised, resulting in 319 birds (46% of the allocation) being shot - 284 Cormorants and 35 Grey Herons. Last year, 41% of birds licensed to be shot, were shot.

3.1.4 Geographical distribution of licences

For all three bird species, the geographical distribution of licences (still water & river) throughout DEFRA's eight Government Office Regions, is presented in Appendices C, D & E.

Cormorant licences were issued in all regions, with the highest proportion issued in the South East (39%). Twenty-two percent were issued in the South West. Although still water licences were issued within all regions, river licences were confined to the South East (45%), the South West (43%) the West Midlands (10%) and the East Midlands (2%).

For Grey Herons, licences were only issued within 3 regions; with 88% in the South East. All river licences were confined to the South East.

Only 2 licences were issued for Goosanders on still waters in the West Midlands and North East.

3.2 Evaluation of licensed shooting (Appendix F)

Licensed shooting cannot and should not be planned in advance as it is stressed to licensees that the shooting of birds as part of the scaring programme should only be undertaken when the situation demands. For example, if the effects of other measures begin to wane and the number of birds preying on the fishery increases. This inevitably means that RDS monitoring visits are unlikely to coincide with specific shooting action, hence the lack of first hand information and experience.

3.2.1 Still water fisheries

(i) View of Licensee

In 55 cases involving Cormorants, the licensee considered that the shooting of a limited number of birds under licence had helped to protect the fishery from predation. A similar assessment was made in respect of 7 Grey Heron cases. No opinions could be expressed in 21 Cormorant, 2 Grey Heron and 2 Goosander licences, as no birds were shot. In one Cormorant case, the licensee considered the licence to be ineffective.

(ii) View of RDS Wildlife Adviser

In 56 cases involving Cormorants, the Adviser formed the opinion that licensed shooting had been partly effective in protecting the fishery from predation. The same applied to 7 Grey Heron cases. As it is unlikely that Advisers will witness shooting activities, this assessment is usually based on information provided by the licensee or others. However, in 1 Cormorant case, the Adviser disagreed with the licensee's opinion and suggested that his inability to undertake adequate scaring (due to illness) had reduced the deterrent effort of lethal shooting.

3.2.2 River fisheries

(i) View of Licensee

In respect of the shooting of Cormorants in river situations, 26 licensees were of the opinion that such action had been partly effective. This also applied to 6 Grey Heron cases. No birds were shot in 16 Cormorant cases and 2 Grey Heron. No licensees considered the issue of a river licence to be ineffective.

(ii) View of RDS Wildlife Adviser

Advisers expressed a similar opinion that licensed shooting was partly effective in 26 Cormorant and 6 Grey Heron cases. As it is unlikely that Advisers will witness shooting activities, this assessment is usually based on information provided by the licensee or others.

3.2.3 The role of licensed shooting in fishery protection

Ways in which licensed shooting had helped to protect fisheries from piscivorous bird damage were expressed by licensees and included the following:

- birds left the area of the fishery at the time of shooting.

- ability to remove persistent birds.
- reduction in the number of birds that subsequently returned to the fishery.
- significant reduction in time spent by birds at the fishery, even though overall bird numbers were not influenced.
- birds became more wary and therefore more responsive to scaring measures.
- birds were easier to scare and more difficult to shoot, mainly because they remained out of shot gun range.
- birds were more wary of landing directly on water bodies and associated banks.
- reduction in losses or damage was recorded.

3.2.4 Reasons for not utilising licences

There were a number of reasons stated why no birds were shot in a total of 43 cases (37 Cormorant, 4 Grey Heron and 2 Goosander). These included:

- effectiveness of non-lethal scaring measures removed the need to shoot birds.
- birds made wary by non-lethal scaring measures, remained out of shotgun range.
- number of birds frequenting the fishery declined significantly during the licence period.
- birds fed on adjacent fisheries that had recently opened.
- licensed shooting was discontinued as Grey Herons nested early on-site.
- no birds on site.
- absence of someone to shoot.

3.2.5 Adverse public reaction to licensed shooting

There was only 1 case this season where there was adverse public reaction to licensed shooting. Several complaints were received from members of the public that shooting was taking place along a footpath. When investigated, it transpired that there was no public access to the fishery. Despite previous attempts to prevent public access, the licensee had been unsuccessful. As the fishery is owned by a third party, the licensee ceased shooting in January 2003.

3.3 Details of non-lethal anti-predation measures employed

This section refers to any non-lethal measures that were employed in order to protect still water and river fisheries from piscivorous bird predation. More than one

approach or method was employed at each site and these were classified under 4 categories: (i) Scaring, (ii) Proofing & Exclusion, (iii) Habitat Modification & (iv) Stocking Regime.

3.3.1 Scaring (Appendix G)

Human disturbance on sites was the most significant element in the scaring regime and was exercised by all licensees. In conjunction with this, the most commonly used method was shooting to scare with shotguns (exercised in 99% of cases). Other scaring devices such as rockets and gas guns/crow bangers were used in 16% and 19% of cases respectively and served to reinforce the deterrent effect of human presence and form the basis of most scaring programmes.

Human mimics i.e. scarecrows with moving parts (items attached to blow in the wind) were utilised in 29% of cases and found to be particularly effective when moved around the fishery on a regular basis and reinforced with shooting to scare. The use of other static visual or audible scarers such as car or air horns, rotating reflectors, flags and kites was limited. This was due mainly to their use being considered beneficial only on small water bodies such as ponds, fish farms or where there are focal points of piscivorous bird interest, including cages located within large water bodies (e.g. reservoirs) and where islands or other structures are used as roost sites.

The fact that commercially available devices are generally designed to scare birds from agricultural and horticultural crops is also relevant and this is a significant factor in their limited benefit and application to fishery situations. Examples include the impracticalities of using gas bangers to protect large areas of water and the difficulties of effectively deploying visual scaring devices in such situations.

The most commonly used combination of techniques in river situations was human disturbance (100%) and reinforcement by the firing of shotgun cartridges or blanks (98%). Static noise generating or visual scarers such as gas guns/crow bangers, flags/plastic bags, predator mimics and kites/rotating scarers were employed collectively in only 24% of river licences. Human mimics were only established in 32%. This reflects the unsuitability and ineffectiveness of these types of scarers in the river situation where mobility and flexibility of approach is required in order to protect long narrow stretches of vulnerable water.

3.3.2 Proofing & exclusion (Appendix H)

Despite being an extremely costly method of deterring piscivorous birds from inland fisheries, a few licensees (9%) erected netting over ponds and fish farms. Although effective in the majority of cases, one licensee indicated that herons had developed a means of gaining access to the fish farm through the mesh. The method of erecting tape or wires across rearing pools and fencing the water's edge to deter piscivorous birds was only utilised in 9% and 8% of cases respectively. Licensees usually found that the birds rapidly habituated to this technique.

It is generally impractical to exclude birds from large water bodies and rivers, and on rod and line fisheries, proofing would interfere with fishing activities. This was reflected by the fact that proofing techniques were implemented in only 4 river licences.

3.3.3 Habitat modification (Appendix I)

Fish refuges were installed in 10 (11%) still water fisheries and 3 (6%) river fisheries. The effectiveness of this technique was extremely varied and it has been suggested that in some situations, fish refuges can, in fact, exacerbate the level of damage experienced, as it attracts the fish, and therefore the birds, to that specific area. River bailiffs preferred to manage the growth of weed such as *Ranunculus sp.*, to provide natural cover for fish. Weed management was practised in 24% of all river fisheries.

Bank vegetation management was the most common form of habitat modification, with 15 river and 13 still water fisheries (20% of all cases) implementing it. The majority of this management was directed at deterring Grey Herons from fishing along the bank side. Techniques included the planting of scrub species to act as natural barriers or allowing the branches of trees to overhang riverbanks to render the habitat incompatible with a quick escape route.

Roost removal was exercised in the least number of cases (7%). This was a reflection of the difficulty involved in gaining access to facilitate the felling and removal of such trees. Furthermore, the removal of roost trees is generally undesirable or not permitted due to their conservation or amenity value.

3.3.4 Stocking regime (Appendix J)

Increasing stocking rates is generally viewed as being prohibitively expensive and was not exercised at any fishery during this season. However, stocking with larger fish is now being more widely used at put-and-take fisheries as a possible means of limiting predation and was undertaken in 20% of still water situations. Reports from licensees, however, indicate that birds, particularly cormorants, are opportunistic in their approach and will still attempt to catch these larger fish even though they could never consume them. For this reason, damage to the fish usually occurs, which can render them susceptible to infections and less acceptable to fishermen.

By delaying the timing of stocking to avoid periods when cormorant numbers are at their highest and the fishery is at its most vulnerable, 14% of still water fisheries found that they could limit the level of damage sustained.

Although it is generally accepted that cyprinid fish are slower than salmonids, no game fisheries were found to stock alternative prey species in an attempt to deflect piscivorous bird predation.

3.4 Evaluation of non-lethal anti-predation measures (Appendix K)

The basis for assessing the effectiveness of non-lethal measures relied primarily on information provided by the licensee. For the reasons stated, it was usually not possible for Advisers to be in attendance sufficiently often, or for long enough periods, to make judgements based on their own observations. In addition, this assessment needs to be considered in conjunction with the benefits gained from licensed shooting contributing to the overall scaring programme.

3.4.1 Still water fisheries

(i) View of Licensee

In 81 cases (92%) involving still waters, the licensee considered that the use of a variety of non-lethal scaring measures was at least partly effective in helping to deter birds from feeding within the fishery and therefore reducing damage levels. In only 6 Cormorant cases and 1 Grey Heron case, the licensee was of the opinion that scaring was ineffective. In these cases, the licensee gave the following reasons why scaring was ineffective:

- due to the size of the reservoir, the birds simply moved from one bank to the other when scared.
- due to the number of lakes present, the birds simply moved from lake to lake when scared.
- due to the proximity of public roads and housing, effective noise-generating scarers could not be implemented.
- due to ill-health, scaring was unable to be implemented frequently enough.

On this basis, it is considered likely that fishery managers will continue to employ such measures whilst seeking ways to improve the overall effect of the action that is taken.

(ii) View of RDS Wildlife Adviser

In relation to still water fisheries, the Adviser was of the opinion that non-lethal anti-predation measures were partly responsible for reducing the impact of piscivorous birds in 94% of cases. The Adviser agreed with the licensee that scaring was ineffective in 4 Cormorant cases and 1 Grey Heron case but disagreed with their opinion on 2 Cormorant cases. In both of these, the Adviser indicated that insufficient effort had been invested on implementing a variety of scaring methods.

3.4.2 River fisheries

(i) View of Licensee

In 45 cases (90%) involving river fisheries, the licensee considered that the use of a variety of non-lethal anti-predation measures was at least partly effective in helping to deter birds from feeding within the fishery and therefore reducing damage levels. In 4 Cormorant cases the licensee considered scaring to be ineffective for the following reasons:

- due to the proximity of housing, noise-generating scarers could not be implemented.
- due to the frequency with which the birds visited the fishery, it was not possible to scare often enough.
- due to the number of birds frequenting the fishery, scaring ceased to be effective.
- birds habituated to non-lethal scaring.

In one river Cormorant case, the licensee was unable to assess the effectiveness of scaring, as illness prevented him from implementing scaring for a long enough period.

(ii) View of RDS Wildlife Adviser

In 45 cases (90%), the Adviser was of the opinion that non-lethal anti-predation measures were partly responsible for reducing the impact of piscivorous birds on river fisheries. The Adviser agreed with the licensee that scaring had been ineffective in 4 cases.

3.4.3 Adverse public reaction to non-lethal scaring measures

Although concerns are sometimes expressed that the use of scaring measures, particularly noise generation, will meet with opposition in urban environments or cause disturbance on sites where other birds are present (such as nature reserves), only 4 cases were reported where this proved to be a problem. Fortunately, the sensitivity of fishery managers to these concerns is a factor in preventing problems of this type arising often. In two cases (Cormorant still water and river licences on the same fishery), complaints were received from the adjoining nature reserve in relation to disturbance of resident birds. To address this problem, the licensee organised a meeting with the management. In another case, a neighbour complained to the licensee in relation to the frequency with which a gas gun was being fired. The licensee accepted the complaint and reduced the gas guns firing rate. In the final case, the implementation of shooting to scare resulted in a member of the public reporting the licensee to the Police for illegally shooting birds. No further action was taken once the facts were established.

4.0 Summary

- 4.1 In 32 river and 63 still water situations (69% of all licences) where birds were shot, the combined use of licensed shooting and non-lethal measures provided a positive contribution to resolving the problems of piscivorous bird predation in individual fisheries. This suggests that in those cases where non-lethal measures alone have not been sufficient and where a licence has been issued, such a regime of protection or management strategies will remain the best approach to such problems for the foreseeable future.
- 4.2 Changes to fishery management, such as habitat modifications and alternative stocking regimes, reflect the possible options available to reduce the attraction to, and impact of, piscivorous birds. At present, success has been restricted to relatively small still water fisheries. On rivers and in most coarse fisheries, particularly those on extensive water bodies such as reservoirs, there appears to be little or no prospect of being able to manipulate or modify fishery management to reduce predation.

4.3 The main conclusions from the monitoring of cases where licences were issued are that:

- the combination of licensed shooting and the use of non-lethal anti-predation measures appears to be the most successful approach in protecting fisheries from predation by piscivorous birds;
- of the limited options available, human disturbance combined with non-lethal shooting has provided the most effective non-lethal scaring regime;
- in most situations, licensees consider that it is not practicable to resolve bird predation problems by changing the management of the fishery.

Appendix A

Licenses Issued in 2002-2003 to permit the shooting of limited numbers of piscivorous birds as an aid to protecting inland fisheries.

Bird Species	No. of Licences Issued	Fishery Type	
		Still Water	River
Cormorant <i>Phalacrocorax carbo</i>	119	77	42
Grey Heron <i>Ardea cinerea</i>	17	9	8
Goosander <i>Mergus merganser</i>	2	2	-

Appendix B

Information on (i) numbers of piscivorous birds licensed to be shot and (ii) actual numbers of birds shot in 2002-2003

Bird Species	No. Licensed to be Shot	Actual No. Shot
Cormorant <i>Phalacrocorax carbo</i>	603	284
Grey Heron <i>Ardea cinerea</i>	86	35
Goosander <i>Mergus merganser</i>	9	0

Appendix C

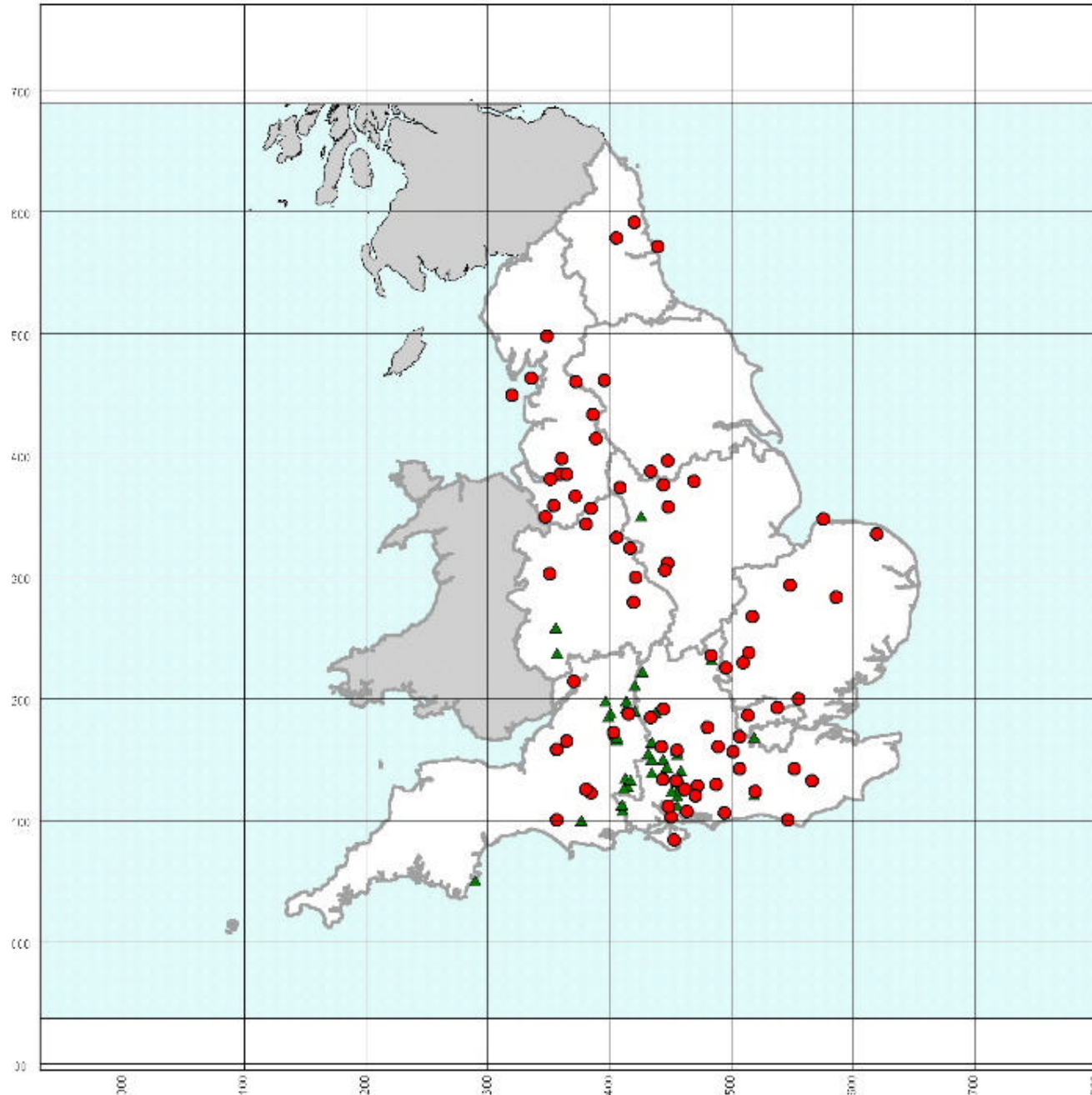
Department for Environment
Food and Rural Affairs
Rural Development Service



Appendix C

Wildlife & Countryside Act 1981 (as amended)

Licences issued throughout England
in 2002-2003, to permit the shooting of
Cormorants at still water & river fisheries



- Still water fisheries
- ▲ River fisheries
- Government Offices

Scale 1:1,500,000

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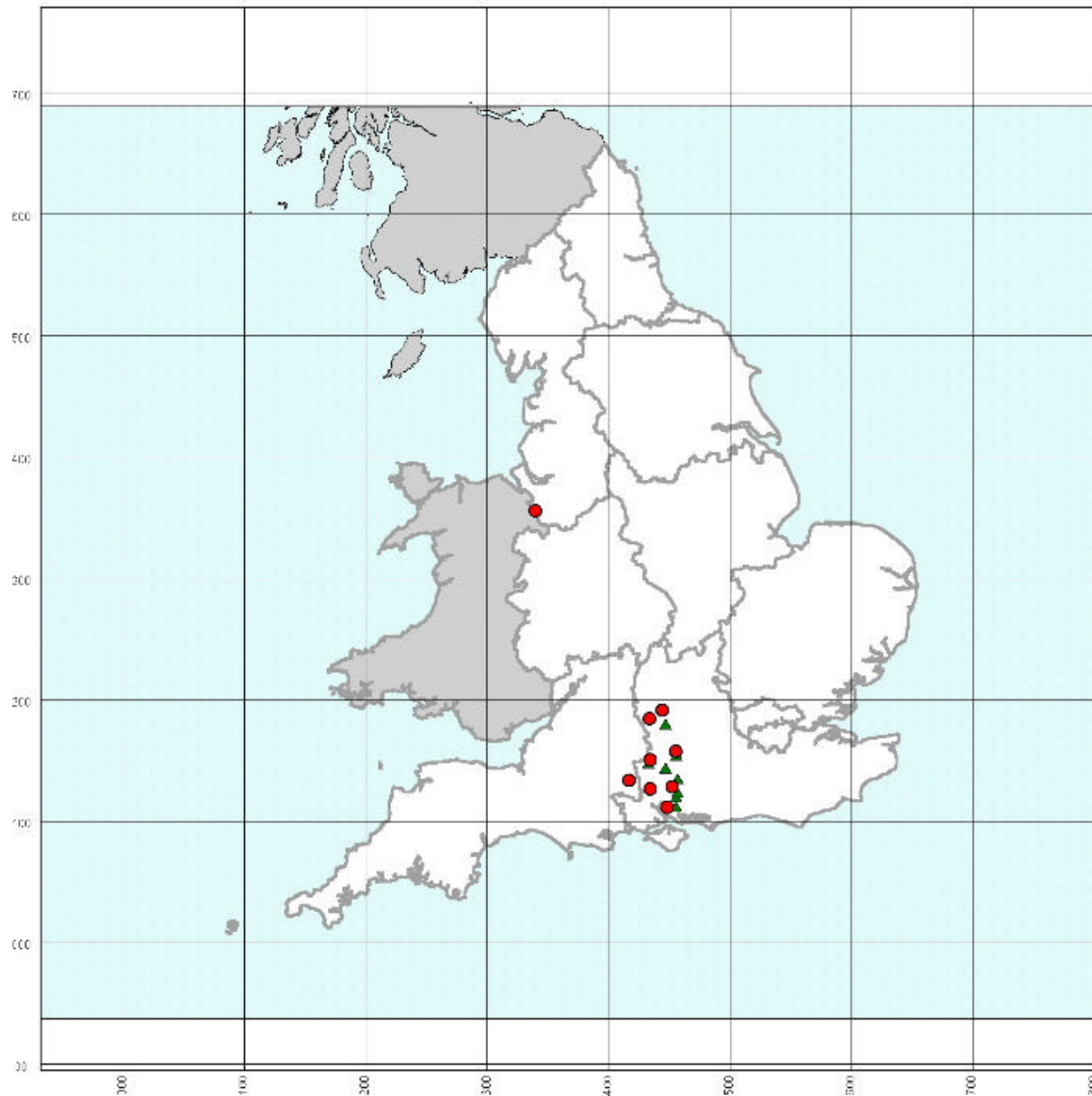
Map Produced on 05 August 2003 from 04/04/03 Data RDS Desktop Information System

Appendix D

Wildlife & Countryside Act 1981 (as amended)

Licences issued throughout England
in 2002-2003, to permit the shooting of
Grey Herons at still water & river
fisheries

- Still water fisheries
- ▲ River fisheries
- Government Offices



Scale 1:1,000,000

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Appendix F

Evaluation of the efficacy of licensed shooting in 2002-2003 to deter piscivorous birds from feeding at inland fisheries. Values represent number of licences.

		Partly Effective		Ineffective		Unable to Assess		Not Utilised	
Bird Species	Assessor	Still Water	River	Still Water	River	Still Water	River	Still Water	River
Cormorant	<i>Licensee</i>	55	26	1	0	21	16	21	16
	<i>Adviser</i>	56	26	0	0	21	16		
Grey Heron	<i>Licensee</i>	7	6	0	0	2	2	2	2
	<i>Adviser</i>	7	6	0	0	2	2		
Goosander	<i>Licensee</i>	0	-	0	-	2	-	2	-
	<i>Adviser</i>	0	-	0	-	2	-		

Appendix G

Scaring measures implemented in 2002-2003 to deter Cormorants, Grey Herons & Goosanders from feeding at inland fisheries. Values represent number of licences.

Fishery Type	Human Presence	Shooting to Scare	Pyro-technics	Rockets	Sirens/Horns	Gas guns/Crow Bangers	Flags/Plastic Bags	Human Mimics i.e. Scarecrows	Predator Mimics	Kites/Rotating Scarers	Others
<i>Still Water</i>	88 (100%)	87 (99%)	7 (8%)	20 (23%)	7 (8%)	22 (25%)	10 (11%)	24 (27%)	1 (1%)	7 (8%)	14 (16%)
<i>River</i>	50 (100%)	49 (98%)	4 (8%)	2 (4%)	1 (2%)	4 (8%)	4 (8%)	16 (32%)	2 (4%)	2 (4%)	6 (12%)
<i>All Sites</i>	138 (100%)	136 (99%)	11 (8%)	22 (16%)	8 (6%)	26 (19%)	14 (10%)	40 (29%)	3 (2%)	9 (7%)	20 (14%)

Appendix H

Proofing & exclusion measures established in 2002-2003 to deter Cormorants, Grey Herons & Goosanders from feeding at inland fisheries. Values represent number of licences.

Fishery Type	Netting	Fencing Water's Edge	Erection of Wire/Tape
<i>Still Water</i>	12 (14%)	11 (13%)	9 (10%)
<i>River</i>	0 -	0 -	4 (8%)
<i>All Sites</i>	12 (9%)	11 (8%)	13 (9%)

Appendix I

Habitat modifications undertaken in 2002-2003 to deter Cormorants, Grey Herons & Goosanders from feeding at inland fisheries. Values represent no. of licences.

Fishery Type	Fish Refuges	Weed Mgmt	Bank Vegetation Mgmt	Roost Removal
<i>Still Water</i>	10 (11%)	4 (5%)	13 (15%)	6 (7%)
<i>River</i>	3 (6%)	12 (24%)	15 (30%)	4 (8%)
<i>All Sites</i>	13 (9%)	16 (12%)	28 (20%)	10 (7%)

Appendix J

Modifications in stocking regimes undertaken in 2002-2003 to try to reduce the level of Cormorant, Grey Heron & Goosander damage to fish stocks at inland fisheries. Values represent number of licences.

Fishery Type	Timing of Stocking	Size of Fish Stocked	Alternative Prey Stocked
<i>Still Water</i>	12 (14%)	18 (20%)	0 -
<i>River</i>	4 (8%)	1 (2%)	0 -
<i>All Sites</i>	16 (12%)	19 (14%)	0 -

Appendix K

Evaluation of the efficacy of non-lethal anti-predation measures implemented in 2002-2003, to deter Cormorants, Grey Herons & Goosanders from feeding at inland fisheries. Values represent number of licences.

Fishery Type	Assessor	Partly Effective	Ineffective
Still Water	<i>Licensee</i>	81 (92%)	7 (8%)
	<i>Adviser</i>	83 (94%)	5 (6%)
River	<i>Licensee</i>	45 (90%)	4 (8%)
	<i>Adviser</i>	45 (90%)	4 (8%)
All Sites	<i>Licensee</i>	126 (91%)	11 (8%)
	<i>Adviser</i>	128 (93%)	9 (6%)

