

An appraisal of the potential for using catchment or area-based licences to reduce the impact of fish-eating birds on Welsh freshwater fisheries

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Crynodeb Gweithredol

Mae poblogaethau o adar pysgysol penodol, fel y fulfran, *Phalacrocorax carbo* (“y fulfran”), a'r hwyaden ddanheddog, *Mergus merganser*, wedi cynyddu yn y DU dros y degawdau diwethaf, ac mae'r adar hyn bellach wedi'u dosbarthu'n eang ledled Cymru. Dros gyfnodau tebyg o amser, gwelwyd gostyngiadau amlwg yn statws stociau o bysgod dŵr croyw penodol yng Nghymru, yn enwedig eog yr Iwerydd, *Salmo salar*, a brithyll y môr, *Salmo trutta*. Mae'r dosbarthiad ‘mewn perygl’ neu ‘yn debygol o fod mewn perygl’ bellach wedi'i bennu i'r mwyafrif o stociau o'r fath yng Nghymru. Mewn ymateb i'r dirywiadau hyn, gyda chefnogaeth cais Gweinidogol, cyhoeddodd Cyfoeth Naturiol Cymru y Cynllun Gweithredu ar gyfer Eogiaid a Brithyllod y Môr yng Nghymru ym mis Ebrill 2020. Mae'r cynllun hwn yn cydnabod bod ystod eang o bwysau yn effeithio ar y stociau hyn ac yn nodi'r camau gweithredu parhaus a newydd i fynd i'r afael â'r rhain. Wrth geisio cael dealltwriaeth well o'r graddau y gall materion gwahanol fod yn effeithio ar stociau, nododd y cynllun yr angen i gynnal adolygiad o ysglyfaethu gan adar pysgysol.

Wrth gyflawni'r adolygiad polisi hwn, cymeradwyodd Bwrdd CNC sefydlu Grŵp Cynghori Cymru ar Adar sy'n Bwyta Pysgod (y “Grŵp Cynghori”) o dan arweiniad CNC er mwyn asesu'r sefyllfa yng Nghymru a chynghori ar y camau gweithredu posibl y mae angen eu cymryd. Wedi hyn, nododd y Grŵp Cynghori naw thema tystiolaeth allweddol yn ei Gynllun Cyflenwi i lywio'r adolygiad polisi ynghylch adar pysgysol. Mae'r adroddiad hwn yn mynd i'r afael â Thema 6 o'r adolygiad hwnnw - “asesu'r angen am ddull trwyddedu rhanbarthol (h.y. ardaloedd Datganiadau Ardal CNC) a/neu drwyddedu dalgylchol yng Nghymru”, a bydd hefyd yn cefnogi Thema 7 - “datblygu polisi trwyddedu CNC sy'n addas i'r diben”. CNC yw'r awdurdod trwyddedu cymwys sy'n gyfrifol am asesu a rhoi trwyddedau i saethu adar pysgysol er mwyn atal difrod difrifol i bysgodfeydd (ac er cadwraeth fflora a ffawna).

Mae'r adroddiad yn amlygu cyfrifoldebau statudol CNC o ran diogelu statws dynodedig rhywogaethau o bysgod fel sy'n ofynnol o dan y Gyfarwydddeb Cynefinoedd ac o ran sicrhau bod unrhyw gamau a gymerir yn erbyn adar pysgysol yn gydnaws â rhanddirymiadau caniaol. Mae gan holl adar gwyllt Cymru warchodaeth gyfreithiol. Mae gan Cyfoeth Naturiol Cymru (CNC) nifer o bwerau y gallwn awdurdodi eraill i ladd neu gymryd rhywogaethau penodol o adar gwyllt, wyau a nythod at ddibenion penodol oddi tanynt, er enghraifft er mwyn atal niwed difrifol i gnydau, da byw neu bysgodfeydd, i warchod iechyd neu ddiogelwch y cyhoedd, neu i warchod rhywogaethau eraill o fywyd gwyllt.

Mae'r adroddiad yn disgrifio'n fras y trefniadau trwyddedu cyfredol ar gyfer adar pysgysol yng Nghymru, gan gynnwys y defnydd o ddarpariaethau trwyddedu sydd wedi bod yn gymwys i nifer fach o ddalgylchoedd afon dros y blynyddoedd diwethaf. Wedyn, ceir trafodaeth ar y rhinweddau cymharol o gymhwyso trwyddedau ar lefel leol, lefel pysgodfa benodol, ac ar raddfa ehangach a allai hybu gweithgareddau cydlynol dros ardal ehangach, er enghraifft o fewn dalgylch afon penodol.

Mae'r adolygiad o'r strategaeth drwyddedu yn gwneud defnydd helaeth o brofiadau diweddar yn Lloegr lle mae trwyddedau ardal wedi cael eu defnyddio'n gynyddol ers y cynhaliwyd adolygiad polisi yno yn 2013. Trafodir effeithiolrwydd y trwyddedau hyn, yng nghyd-destun adar a physgod, o safbwynt y rheoleiddiwr (Natural England) a'r Ymgynghorwyr Rheoli Pysgodfeydd sy'n gweithio i'r Ymddiriedolaeth Genweirio yn Lloegr,

sydd wedi bod yn hanfodol o ran cydlynu'r gwaith o gyflwyno a gweithredu'r trwyddedau. Mae ychydig o enghreifftiau o ddulliau rheoli o awdurdodaethau eraill, lle maent wedi cael eu defnyddio mewn ffordd gydlynol dros raddfeydd ehangach, wedi cael eu cynnwys hefyd.

Mae'r adroddiad yn dod i ben gyda chrynodeb o negeseuon allweddol. Er y disgwylir i drefniadau trwyddedu safle barhau i fod yn ofynnol ar gyfer rhai pysgodfeydd, yn enwedig safleoedd dŵr llonydd sy'n weddol anghysbell, casgliad yr adroddiad yw bod dyrannu trwyddedau sy'n cwmpasu ardaloedd mwy o faint yn dwyn nifer o fuddion posibl, o leiaf mewn rhai sefyllfaoedd. Mae'r buddion hyn yn cynnwys y canlynol:

- Darparu dull mwy strategol o drwyddedu, gan alluogi pysgodfeydd i gydlynu dulliau dychryn a dulliau rheolaeth marwol effeithiol mewn ardal benodol.
- Darbodion posibl mewn costau gweinyddol drwy ostyngiad mewn gweithgareddau trwyddedu.
- Darparu cyfleoedd i bysgodfeydd gydweithio, rhannu profiadau ac arferion gorau.
- Darparu mesurau diogelu gwell ar gyfer stociau pysgod a phoblogaethau o adar, yn enwedig lle ceir buddiant a rennir mewn rheoli stociau o bysgod yr effeithir arnynt a diogelu statws cadwraeth mulfrain a hwyaid danheddog.
- Gwella ymgysylltiad a chyfranogiad rhanddeiliaid mewn gweithgareddau rheoli pysgodfeydd.

Bennir bod dulliau trwyddedu o'r fath yn enwedig o berthnasol i ddulliau posibl o reoli gwrthdaro rhwng adar pysgysol a physgodfeydd afonol, sef ffocws allweddol yr adolygiad hwn mewn perthynas â stociau o eogiaid a brithyllod y môr yng Nghymru. Wrth reoli gwrthdaro o'r fath, mae'r adroddiad yn awgrymu ei bod yn debygol y bydd camau gweithredu cydlynol ar draws ardal ehangach yn hanfodol. Os yw adar yn cael eu symud ychydig gannoedd o fetrau i fyny neu i lawr yr afon, ni fydd hynny o fantais fawr i stociau pysgod os o gwbl. Fodd bynnag, wrth gydnabod y dylai trwyddedau dalgylch ddarparu lefel uwch o ddiogelwch i stociau pysgod, cydnabyddir bod heriau posibl ynghlwm wrth dull o'r fath hefyd. Mae'r rhain yn cynnwys y canlynol:

- Yr angen i sicrhau dull cydlynol effeithiol rhwng pysgodfeydd sy'n cymryd rhan er mwyn sicrhau bod gweithgareddau'n cael eu targedu er y budd gorau, ac yr eir i'r afael â heriau ymarferol a logisteg.
- Sicrhau ymrwymiad digonol gan bysgodfeydd/'beats' sy'n cymryd rhan mewn dalgylch.
- Sicrhau bod goblygiadau cyfreithiol ynghylch trwyddedu ac adrodd yn cael eu bodloni.
- Ystyried effeithiau posibl adleoli adar ar safleoedd pysgodfeydd eraill yn yr ardal ehangach.

Mae profiadau yn Lloegr yn awgrymu bod trwyddedau dalgylch/trwyddedau ardal wedi gweithredu orau pan fo gweithgareddau trwyddedu a gofynion adrodd wedi cael eu cydlynu gan 'brif gyswllt' rhagweithiol. Wrth ddatblygu polisïau trwyddedu yn y dyfodol yng Nghymru,

ystyriaeth bwysig wrth benderfynu a ddylid gweithredu trwyddedau dalgylch yn ehangach ai peidio, fydd rôl y prif gyswllt hwn. Pe byddai swydd o'r fath yn swydd ddi-dâl y byddai'r sawl sy'n ei chyflawni â diddordeb yn y bysgodfa/pysgodfeydd yr effeithir arnynt, neu pan allai cadwraeth rhywogaeth o bysgod sydd wedi'i dihysbyddu, ac sydd wedi'i 'wedi'u rhestru' o bosibl fod yn sbardun ar gyfer cymryd camau rheoli, a ddylai hon fod yn rôl ar gyfer corff cadwraeth natur statudol?

Amcan trosfwaol yr adroddiad yw helpu Cyfoeth Naturiol Cymru i ddiogelu adar a physgod a gweithio tuag at adfer a diogelu bioamrywiaeth iach a chytbwys yn ecosystemau dyfrol Cymru

Executive summary

Populations of certain fish-eating birds, notably the great cormorant *Phalacrocorax carbo* (“cormorant”) and goosander *Mergus merganser*, have increased in the UK in recent decades, and these birds are now widely distributed across Wales. Over similar timescales, marked reductions have been observed in the status of certain freshwater fish stocks in Wales, particularly Atlantic salmon *Salmo salar* and sea trout *Salmo trutta*. The majority of such stocks in Wales are now classified as being ‘at risk’ or ‘probably at risk’. In response to these declines, supported by a Ministerial request, Natural Resources Wales published a Plan of Action for salmon and sea trout in Wales in April 2020. This Plan recognises that there are a wide range of pressures affecting these stocks and sets out the ongoing and new actions to address these. In seeking to better understand the extent to which different issues might be impacting on stocks, the Plan identified the need to undertake a policy review of predation by fish-eating birds.

In delivering this policy review, NRW’s Board endorsed the establishment of an NRW-led fish-eating birds Advisory Group (‘the Advisory group’) to assess the position in Wales and advise on potential actions required. The Advisory Group subsequently identified nine key evidence themes in their Delivery Plan to inform the fish-eating birds policy review. This report addresses Theme 6 of that review – “assess the need for a regional (i.e., NRW Statement Areas) and/or catchment-based licensing approach in Wales”, and will also support Theme 7 – “develop a fit for purpose NRW licensing policy”. NRW are the competent licensing authority responsible for assessing and issuing licences to shoot fish-eating birds to prevent serious damage to fisheries (and for the conservation of flora and fauna).

The report highlights the statutory responsibilities on NRW to both protect the designated status of fish species as required under the Habitats Directive and to ensure that any actions taken against fish-eating birds are compatible with permissible derogations. All wild birds in Wales have legal protection. Natural Resources Wales (NRW) has a number of powers under which we can authorise others to kill or take particular species of wild birds, eggs and nests for certain purposes, for example in order to prevent serious damage to crops livestock or fisheries, to protect public health or safety or to conserve other species of wildlife.

The report briefly describes the current licensing arrangements for fish-eating birds in Wales, including the application of licensing provisions that have applied to a small number of river catchments in recent years. The relative merits of applying licences at a local, fishery-specific level and on a broader scale that might enable coordinated activities over a wider area, for example within a particular river catchment, are then discussed.

The review of licensing strategy draws heavily on recent experiences in England where area-based licences have been used increasingly since a review of policy there in 2013. The efficacy of these licences is discussed, in the context of both birds and fish, from the viewpoint of both the regulator (Natural England) and the Fishery Management Advisors working for the Angling Trust in England, who have been instrumental in coordinating the introduction and implementation of the licences. Some examples of management approaches from other jurisdictions, where these have been applied in a coordinated manner over broader scales, have also been included.

The report concludes with a summary of key messages. While local, site-specific licensing arrangements are expected to continue to be required for some fisheries, particularly stillwater sites that may be relatively isolated, the report concludes that the issuing of licences covering larger areas confers a number of potential benefits, at least in some situations. These benefits include:

- Providing a more strategic approach to licensing, enabling fisheries to coordinate effective scaring and lethal control within a specified area.
- Potential savings in administrative costs through reduced licensing activities.
- Providing opportunities for fisheries to work together, share experiences and best practice.
- Providing better protection for fish stocks and bird populations, particularly where there is a shared interest in management of affected fish stocks and safeguarding cormorant and goosander conservation status.
- Enhancing stakeholder engagement and participation in fishery management activities.

Such licensing approaches are considered to have particular relevance for the potential management of conflicts between fish-eating birds and river fisheries, a key focus of this review in relation to Welsh salmon and sea trout stocks. In managing such conflicts, the report suggests that co-ordinated actions across a wider area will probably be essential. There will likely be minimal, if any, benefit for fish stocks if birds are simply moved a few hundred metres up or downstream. However, while recognising that catchment-wide licences should provide better protection for fish stocks, it is recognised that such an approach also brings potential challenges. These include:

- The need for effective coordination between participating fisheries to ensure activities are targeted to best effect, and practical and logistical challenges addressed.
- Ensuring adequate take-up by participating fisheries/beats in a catchment.
- Ensuring legal obligations around licensing and reporting are met.
- Considering potential effects of the relocation of birds on other fishery sites in the wider area.

Experiences in England indicate that catchment/area-based licences have operated best where licensing activities and reporting requirements have been coordinated by a proactive 'primary contact'. In developing future licensing policy in Wales, an important consideration in deciding whether to implement catchment-based licences more widely, will be the role of this primary contact. Should such a position be a non-remunerated position held by a vested interest in the affected fishery/fisheries or, when the trigger for management action could be the conservation of a depleted possibly 'listed' fish species, should this be a role for a statutory nature conservation body.

The overarching objective of the report is to assist Natural Resources Wales in protecting both birds and fish and in working towards the restoration and protection of a healthy and balanced biodiversity in Welsh aquatic ecosystems.

Introduction

There have been large increases in populations of great cormorant *Phalacrocorax carbo* (“cormorant”) across Europe over the past 40–50 years (van Eerden *et al.*, 2012; Bregnballe *et al.*, 2014). This increase has been mirrored in the UK (Chamberlain *et al.*, 2013), with birds also making increased use of inland fishery sites at which to feed and breed (Newson *et al.*, 2013). Goosanders (*Mergus merganser*) have also increased in numbers across the UK in recent decades and spread to many parts of the country (Musgrove *et al.*, 2013). The UK Breeding Bird Survey (Harris *et al.*, 2020) suggests a gradual long-term (23 year) decline (-25%) in goosander breeding numbers, but with a 12% increase in the short-term trend (10 years). In Wales, the Wetland Bird Survey (WeBS) index for wintering goosander shows an increase of 184% over the long-term (25 years) and a 44% increase over the short-term (10 years) (Frost *et al.*, 2021). For cormorants, the UK Breeding Bird Survey (Harris *et al.*, 2020) suggests a gradual long-term (23 year) increase (24%) in breeding numbers, but with a 3% decrease in the short-term trend (10 years). In Wales, the WeBS index for wintering cormorants shows an increase of 62% over the long-term (25 years) and a 22% increase over the short-term (10 years) (Frost *et al.*, 2021). Taylor *et al.* (2022), under commission from NRW, undertook a winter census of cormorant and goosander in 2020/21 on ten important salmonid catchments in Wales and presented Welsh population estimates for cormorant of 2,894 birds and 1,460 goosanders.

Both bird species are widely distributed in Wales and, as elsewhere in the UK, this has resulted in widespread conflicts with fishery interests. Principal concerns in Wales have centred on the potential impact of these fish-eating birds on river catchments supporting populations of salmonid species, mainly salmon and trout. However, concerns have also been raised about the potential impact of the birds on other riverine fish stocks and on stillwater fisheries, both stocked and ‘natural’, that all support important fisheries.

Atlantic salmon *Salmo salar* and many sea trout *Salmo trutta* populations in Wales have been in decline for many years and the majority of stocks are currently classified as either ‘at risk’ or ‘probably at risk’ (Cefas, Environment Agency and Natural Resources Wales, 2020; NRW, 2019). In light of these declines, and in response to a Ministerial request, NRW published a Plan of Action for salmon and sea trout in Wales (NRW, 2020). The overall objective for migratory salmon and sea trout stocks in Wales is: “To protect, through the application of best-practice science and management, the sustainability of our natural resource of wild salmon and sea trout stocks in Wales.” The Plan details ongoing and new actions to address the many pressures affecting salmon and sea trout stocks in Wales, including catch control regulations, river habitat restoration and a renewed focus on water quality management. In seeking to better understand the extent to which issues might be impacting on stocks, and to better support delivery of their statutory responsibilities, the NRW Plan also identified the need to undertake a review of predation by fish-eating birds.

In delivering Plan objectives, NRW have a statutory regulatory role to protect the designated status of fish species as listed on Annex II of the Habitats Directive (Council Directive 92/43/EEC) and also to ensure that any actions taken against fish-eating birds are compatible with the derogations permissible under the Birds Directive (Council Directive 2009/147/EC) on the conservation of wild birds. Although the UK is no longer an EU member state subject to the Wild Birds Directive, the terms of the Birds Directive are still relevant. Under Regulation 9(1) of the Conservation of Habitats and Species Regulations 2017 (as amended), NRW: “...must exercise [its] functions which are relevant to nature

conservation....so as to secure compliance with the requirements of the Directives.” NRW are the licensing authority responsible for assessing and issuing licences to allow the use of lethal control of fish-eating birds for the purposes to prevent serious damage to fisheries and for the conservation of flora and fauna. In balancing these responsibilities, NRW seek to work towards the restoration and protection of a healthy and balanced biodiversity in Welsh aquatic ecosystems, extending to populations of both fish and birds. NRW have also recognised the need to protect populations of fish species other than migratory salmonids, including non-migratory brown trout in rivers and lakes, and other fish species in stillwaters.

NRW’s Board endorsed the establishment of an NRW-led fish-eating birds Advisory Group to assess the position in Wales and advise on potential actions required to develop a licensing policy to reduce the impact of predation by fish-eating birds on Welsh fisheries. In January 2020, the NRW Board asked for a wide and comprehensive review of NRW’s approach to the permissions it gives for the shooting and trapping of wild birds in Wales. The policy development to address the impacts of predation by fish-eating birds on Welsh fisheries now falls within this wider review.

This report seeks to address Theme 6 of the Fish-eating Birds Advisory Group Delivery Plan – “Assess the need for a regional and/or catchment-based licensing approach in Wales”. In doing this, the report briefly summarises the current licensing approach in Wales, considers the advantages and disadvantages of local and wider area-based licensing and draws on experiences in other jurisdictions, particularly in England, where area-based licences were introduced following a policy review in 2013 (Defra, 2013 a & b), as well as at least a decade of experience on the cross-border River Wye. The report concludes with a summary of key messages aimed at informing the NRW review and specifically Theme 7 – Develop a fit-for purpose NRW licensing policy.

Theme 7 is expected to consider a range of issues, as listed below, and these are therefore not addressed in this report:

- content of form and type of information requested;
- permissible evidence-based thresholds to conserve salmonids and to prevent serious damage to fisheries;
- requirements for site visits by NRW fisheries officers to validate numbers of cormorants and/or goosanders;
- licensing period (consequences of further control in breeding season);
- efficacy of process for assessing application for prevention of serious damage, and;
- engagement with applicants / fishery managers to appraise and develop a licence application that is clear and fit-for-purpose.

The Review Group have recognised that Theme 7 may incorporate the development of a bespoke questionnaire to canvass the views of relevant stakeholder groups.

Current licensing arrangements for fish-eating birds in Wales

The majority of licences issued in Wales to permit lethal control of fish-eating birds currently apply to discrete individual sites, such as a stillwater fishery, or cover a limited geographic area, such as a specific stretch of river. All licences state the numbers of birds that can be killed and are issued as an aid to scaring, through the use of other, non-lethal measures. Licences typically cover the winter period from September to mid-March prior to the bird's breeding seasons. However, NRW has discretion to extend licensed control into early April, dependent on appropriate, robust evidence.

There are currently no formalised mechanisms within Wales for applicants to consider management of fish-eating birds and licensing provisions across multiple fisheries within a catchment or over a large defined spatial area. However, some local ad hoc provisions have been permitted to enable streamlining of licensing arrangements within certain river catchments. For example, a Management Advisory Group (Wye MAG) was established by the National Rivers Authority on the River Wye in about 1995. This group dealt with a range of catchment-based challenges (not only fisheries) and potential solutions. As part of the work of the Group, catchment-based licences for fish-eating birds were identified as a means of reducing the overall number of licence applications, improving operational efficiency and facilitating evaluation of bird mobility through catchment-scale surveys. As a result of this initiative, two licences have been issued each year covering the whole River Wye, one covering the main river in Wales and the other the lower stretches of the river in England. These arrangements have operated along broadly similar lines since this time and have been seen by stakeholders as being more effective, and easier to administer by the respective regulatory authorities in the two countries.

Since the introduction of the licensing arrangements on the River Wye, similar arrangements have been negotiated on some other Welsh rivers. Thus, in recent years, catchment licences have operated on the rivers Tywi and Dyfi with shorter lengths of river covered by licences on the River Usk (~40 km) and River Dee (~20 km). The local arrangements on these catchments have only applied to identified stretches of river and have excluded stillwater fisheries located within the various catchments. The uptake and management of these licences has depended on active participation by local volunteer coordinators, but their introduction has been regarded as a success by local stakeholders in enabling a more joined up approach to fishery protection.

Advantages and disadvantages of local vs area-based licences

Licensed actions against fish-eating birds at fishery sites have typically been focussed at a local site-specific level. There are many reasons for this:

- Administratively, individual licences provide licensing authorities with clear and unambiguous lines of communication with individual site owners or fishery managers to ensure that legal obligations are met.
- For owners of discrete fishery sites individual licences provide direct ownership of licensing responsibilities and a clear mandate for what actions they are able to apply on their particular fishery to best protect their interests.
- Many of the conflicts between fish-eating birds and fisheries occur across a wide geographical area and often in small, isolated water bodies.
- Studies have also shown that levels of damage vary markedly between sites and the mere presence of some fish-eating birds at a site does not necessarily imply that serious damage is occurring. As a consequence, authorities have commonly seen a need for case-by-case evaluation of licence applications with resulting targeted actions at specific sites.

While these reasons still apply, and there is clearly still a need for such licences to be available, there has been a growing awareness that a more joined-up and strategic approach to licensing may provide additional benefits for both stakeholders and licensing authorities, at least in some situations. A key factor here is that a central purpose of licensed lethal control is typically to facilitate the efficacy of other deterrent measures in preventing birds from frequenting and foraging at a particular site. The effectiveness of the combined actions depends not only on the frequency and extent of the deterrent measures applied, but also on the number and proximity of alternative sites to which birds disturbed from a site can move to feed.

Other evidence submitted to this review (Russell and Carss, 2022) has identified that the movement patterns of birds disturbed from sites remains a significant evidence gap in our ability to best manage conflicts between fish-eating birds and fisheries. For example, Advisory Group members have suggested that there may be differences between cormorants and goosanders in the extent to which birds might be willing to cross land between river catchments. This has particular relevance for the potential management of conflicts on river fisheries. If the objective is to reduce predation pressure on a riverine fish stock, a key focus of this review in relation to Welsh salmon and sea trout, there is likely to be little benefit for a stock as a whole if birds from one discrete river beat are simply moved a short distance up - or downstream, for example to an adjacent beat. This highlights the importance of seeking to tailor preventive and lethal control measures to the biology/ecology of the birds.

The issuing of licences covering larger areas raises a number of issues, but confers a number of potential benefits, at least in certain situations. These include:

- Providing a more strategic approach to licensing, enabling fisheries to coordinate an effective cormorant and goosander scaring and lethal control approach within a specified area.
- Potential savings in administrative costs through reduced licensing activities.
- Providing opportunities for fisheries to work together, share experiences and best practice.
- Providing better protection for birds and fish stocks, particularly where there is a shared interest in management of affected fish stocks and of the need to safeguard the conservation status of cormorant and goosander in Wales.
- Having greater confidence when assessing the impacts and efficacy of both non-lethal techniques and licensed cormorant and goosander lethal control within catchments.
- Enhancing stakeholder engagement and participation in fishery management activities.

Any such approach also poses potential challenges which would likely need to be considered. These include:

- Effective coordination between participating fisheries to ensure activities are targeted to best effect, and practical and logistical challenges addressed.
- Ensuring adequate take-up by participating fisheries in a designated area.
- Ensuring legal obligations around licensing and reporting are met.
- Evaluating potential effects of the relocation of birds on other fishery sites in the wider geographical area.
- Ensuring compliance checking and where required, enforcement.

The following sections report on recent experiences with wider area/catchment-based licensing in other jurisdictions.

Review of policy on fish-eating birds in England

The most recent review of policy related to the management of fish-eating birds in England reported in 2013 (Defra, 2013a, Defra, 2013b). Two of the recommendations from that review are particularly pertinent to this report: the introduction of area-based licences and the appointment of new Fishery Management Advisor posts.

Area-based licences (ABLs)

One of the main recommendations of the review was the establishment of area or catchment-wide approaches to the management of fish-eating birds in England through a system of area-based licences. These licences were intended to give fisheries the opportunity to operate together under an umbrella licence and co-ordinate their actions to reduce predation by cormorants. The licences were also intended to be flexible and to apply for groups of stillwaters within a local area, for linear stretches of river catchments, or for combinations of the two. The Group that undertook the review concluded, at the time, that there was insufficient evidence to support a change to the licensing arrangements for other fish-eating birds, which therefore continued to be evaluated on a case-by-case basis. Since this time however, the scheme has been extended, on a limited basis, to include goosanders. ABLs were initially introduced on a three-year trial basis at three different sites, subject to a process of formal review. Following successful completion of the trial and review, ABLs have become an integral part of the licensing arrangements in England and adopted quite widely.

A key benefit anticipated from the introduction of ABLs was that more effective management of predation conflicts could be achieved by fisheries working together at a wider scale to coordinate the most appropriate non-lethal and, where necessary, lethal management techniques. It was envisaged that fisheries would benefit from the sharing of best practice management approaches, as well as by having greater access to hands-on support through the Fishery Management Advisors (also recommended by the review in England - see below). It was envisaged that there would be further benefits arising from the introduction of ABLs, for example, through a reduction in administrative costs by reducing the number of applications, enabling more strategic assessments and through enhanced working with stakeholders.

ABLs enable a group of fisheries, within a specified area, to operate under a single licence for the whole area. No particular limits were set for the number of fisheries or geographical area that might be covered by an ABL, but it was recognised that there were likely to be practical limits for operational purposes. Coordinating actions over a very large area with many fisheries would inevitably pose logistical challenges. Equally, if only a few fisheries in an area wished to participate this wasn't likely to be effective. As an initial guide, it was suggested that a reasonable working area for an ABL might be of the order of 100-150 km² and with the majority of fisheries in that area, perhaps 10 to 15, participating. In Wales it is feasible that a catchment-based approach could be coordinated either by existing Local Fishery Groups or, subject to closer consideration of resources, by Rivers Trusts.

In setting up an ABL in England, it was decided that a Primary Contact would need to be identified who would be responsible for submitting the application on behalf of participating

fisheries, and for communicating with Natural England and ensuring compliance with licensing conditions. The Primary Contact would also be responsible for liaising with participating fisheries to coordinate activities, ensuring that each fishery knows how many birds it can kill under the overall allocation under the ABL, and keep a written record of this. This was also the model that was introduced for the catchment-based licences that have been trialled in Wales.

The overall limits on the number of cormorants that could be killed under licence were not affected by the introduction of ABLs in England, the intention was simply to make the system more flexible and effective. At a national level, the objective of licensing sought to continue to strike a balance between reducing the damage resulting from predation at fishery sites and safeguarding the conservation status of the English cormorant population. In achieving this, Natural England have monitored the number of birds being licensed against policy limits and issued licences to ensure that there is some capacity for additional licences later in the season, should these be needed, and that there is a fair spread of 'quota' across licensees. Within a local area no more than 10-20% of wintering cormorants have typically been covered by licences for lethal control, with overall numbers licensed in any year equating to about 10% of the national wintering population.

In line with previous licensing policy, ABLs have continued to specify a maximum number of birds that could be killed within an area during the licensing period. However, an important change was that licences did not specify the numbers that might be killed at different sites within the area, or when birds could be killed. This, therefore, provided licensees with greater flexibility to decide how and when to take action to best address varying levels of predation across the wider area.

In other respects, ABLs have continued to operate in line with other licensing provisions, thus:

- All licences typically apply between 1 September and 15 April, but with potential options to extend the control period to May to protect salmon and sea trout smolt migrations where evidence shows that this is needed.
- There was a genuine need to take/kill birds for the purpose of preventing serious damage to fisheries.
- Licensing decisions continue to be subject to three tests: (a) that serious damage is being, or is likely to be, caused (N.B. The current Defra policy for cormorant licensing in England states that the presence of a significant number of cormorants at a fishery where they are feeding on valued fish stocks amounts to serious damage, or the risk of serious damage. More stringent evidential requirements apply in respect of licences for goosanders); (b) that all other non-lethal anti-predation measures have either been tried and found to be ineffective, or are impracticable at the site; and (c) that it is reasonable to consider that shooting birds will reduce, or prevent from increasing, the level of damage (whether through scaring or direct reduction of numbers).

A further important development with the introduction of ABLs in England was the need for applicants to develop a 'Management Plan' as part of the application process, setting out how participating fisheries would work together to manage predation. Plans were expected

to include details of the fisheries ('sites') that fall within the area in question, details of how many birds there are estimated to be, how the fisheries propose to make decisions across the area and how they will work together to coordinate non-lethal and lethal activities.

The review group had suggested that there were a number of potential benefits that could be realised from better coordination of activities, for example:

- By fisheries working together to communicate about where and when birds are roosting and feeding, so that licensees have a good idea of where they are within an area at any one time.
- By coordinating scaring techniques at the best times to deter the birds from using the same areas repeatedly and for too long a time - e.g., using lethal control concurrently across fisheries to best deter birds from the wider area, or by giving certain fisheries more of the quota on the licence to better target particular problems.
- Through sharing resources (e.g. person resources, vehicles and deterrent devices) and best practice and experiences about what has, and has not, worked well.
- Identifying and targeting locations of greatest predation risk, for example locations on river catchments upstream of structures such as barriers that may delay migration and result in the accumulation of migrating fish.

While completing a Management Plan has been a mandatory element of the application process in England, it was anticipated that plans would also need to be practical and updated, as necessary, in light of experience and in consultation with Fishery Management Advisors and / or Natural England. In practice, the Fishery Management Advisors have played a key role with the development of management plans and in helping to ensure the setting up and effective coordination of activities within the ABLs.

Fishery Management Advisors (FMAs)

One of the other recommendations arising from the most recent review of policy relating to fish-eating birds in England, was the appointment of Regional Fishery Management Advisors (FMAs) It was envisaged that the FMAs would provide a knowledgeable face-to-face source of advice for inland fishery managers and guidance on a range of relevant issues, including:

- offering advice on best practice for non-lethal measures to mitigate problems with fish-eating birds;
- assisting fishery managers in drawing up bespoke management plans;
- offering guidance and support on preventing serious damage to fisheries and support in submitting licence applications, where required;
- providing signposting to other sources of information;
- advising fishery managers on how to design fisheries that incorporate the best mitigation measures for addressing the impact of fish-eating birds;

- offering advice on wider issues relating to fisheries management, ecology, etc.

As noted above, FMAs were also integral to the setting up and running of the initial trial of area-based licences in England. Since this time, the FMAs have continued to play a key role in setting up and establishing area and catchment-wide approaches to the management of fish-eating birds across England. In delivering this function, the Defra review recognised that there were potential benefits for the effective implementation of this approach if the FMAs were viewed as the ‘angler’s friend’ and one step removed from the regulator. The FMAs have thus been employed by the Angling Trust (funded by the Environment Agency from angler’s licence fees). However, the appointment selection procedure and interview process were conducted by a combination of staff from the Angling Trust, Natural England and the Environment Agency. In addition, upon appointment, the successful candidates underwent a detailed two-week induction period conducted by representatives from these three organisations, Cefas and an independent fisheries consultant.

Angling Trust feedback on the introduction of area-based licences

Information supplied by the Fishery Management Advisors employed by the Angling Trust

This information is based on feedback from the two FMAs (Jake Davoile and Richard Bamforth) currently employed in England.

Following successful completion of the initial trial of ABLs in England, the number of such licences has increased steadily, and there are now around 20 ABLs operating in England. Many of these have been set up to coordinate management activities on a particular river catchment, or part of it. Others cover both river sections and adjacent stillwater sites, and some cover aggregations of stillwaters. Licences are managed by a ‘primary contact’ and authorise the shooting of a certain number of birds. However, fisheries have flexibility to move the allocation between the various individual fisheries covered by the licence to target areas of highest predation or most vulnerable fish populations.

In establishing and implementing the various ABLs, FMAs have worked with fisheries to collate knowledge on the resident populations of fish-eating birds (primarily cormorants) to get a better understanding of the feeding patterns of the birds and to help develop bespoke strategies to deal with predation. Information collected has included the number and location of roosts and breeding colonies, patterns of movement (directions / times), favoured feeding locations / potential predation ‘hot spots’ and variations in bird numbers. This shared knowledge on bird movements and behaviour has been used to inform licensing decisions by Natural England and to facilitate management activities to combat predation and protect fish stocks. Such activities have typically included:

- A co-ordinated plan for lethal control to enhance scaring – e.g., weekly shoots.
- Improvement in non-lethal techniques to complement lethal control, including habitat improvements to provide better cover for fish at stillwater sites.

- Establishing a reporting procedure for efficient monitoring – individual fisheries are strongly encouraged to maintain logbooks of bird numbers, etc.
- Developing effective communication links between fisheries (e.g., mobile telecommunications / group email).

In general, ABLs are considered to have worked reasonably well, particularly where the primary contact is proactive and when effective co-ordination between fisheries has been maintained over time. Successes in removing night roosts have been noted on a number of catchments through the use of deterrents, such as lasers, over a number of successive days. In addition, adjacent fishery beats have been shown to work collaboratively to reinforce scaring programmes and avoid the danger of birds simply relocating a short distance up- or downstream. Co-ordination between fisheries has also proved effective in mobilising teams to deter birds during critical periods, such as during the smolt run, or at known predation ‘pinch points’, such as weirs. Good communication between individual fisheries is seen as being key to the effective application of ABLs. However, it has also been noted that focus on the co-ordination of activities can wane over time and loss of interest in reinforcing actions can see bird numbers recovering quickly.

Natural England views on the introduction of area-based licences

Subsequent to the initial, successful three-year trial of ABLs, Natural England has not conducted a formal review of their longer-term use at this time, and hence it is unclear whether this approach is any more effective in managing damage over an area than multiple individual licences. However, Natural England’s impressions of the benefits and drawbacks of ABLs are as follows.

ABLs permit flexibility, allowing licensees to target the areas where lethal control is most needed. This can be especially useful on dynamic systems such as migratory salmonid rivers.

Cormorant numbers licensed under ABLs can be relatively high in relation to the local population, and care is required to ensure that there is some ‘quota’ available for others who do not wish to be included in the ABL. In some cases, the cormorant numbers licensed are lower than would be the case if several individual sites applied separately, due to the ability to allocate the number flexibly within the area covered by the ABL. However this reduction is normally driven by Natural England, whereas licensees tend to seek increased numbers year-on-year, normally with little evidence of a need for an increase.

For the licensing authority, there are efficiencies and time-savings in certain situations. The initial assessment tends to be similar; each site still needs to be assessed, along with the overarching management plan, but there are efficiencies in coordinating assessments of multiple sites. Once a licence is in place, there are time-savings in dealing with several sites through a single contact. There is also added value in reviewing licensed actions across multiple sites rather than in isolation. Consideration of any impacts on protected sites are also more straight-forward for a single ABL, as opposed to multiple individual applications.

The availability of support from the FMAs has also been positive for Natural England, reducing the number of initial queries received from applicants. FMA support also typically improves the quality of licence applications (reducing the amount of further information that needs to be requested) and of the evidence submitted (such as coordinated bird counts).

The effectiveness of ABLs are reliant on enthusiasm and intuitiveness of the Primary Contact, and on that person to have productive and informative open lines of communication with all other riparian owners and licence operators, and of course with the licensing authority. Where this is the case, benefits in coordinated action can be seen. However a lack or loss of enthusiasm from the Primary Contact can be problematic. For example, it can be difficult to get site-specific information where the Primary Contact states difficulties in coordinating such information.

Examples of area-based management in other countries

Approaches to the management of conflicts between fish-eating birds and fisheries vary among different jurisdictions (Russell *et al.*, 2021), and a number have developed approaches that facilitate coordinated actions at a wider geographic scale. Some examples include:

- **Austria**, management strategies vary between provinces. In some provinces, targeted actions are deployed in smaller tributaries to protect trout and grayling, with wider lowland river systems left free from activities so that they can serve as 'refuge' areas for cormorants dispersed from elsewhere. In another province, trials have taken place to examine the potential benefits of enlarging the areas covered by management actions to better protect salmonid stocks.
- **Denmark**, wider scale shooting strategies have been trialed in some areas to advance the departure of cormorants from a fjord area. There have also been growing concerns about the impact of cormorants on salmonid stocks in recent years resulting in increased focus on actions to deter the birds from rivers and estuaries, particularly during the period of the smolt run. A new management plan is also under development in Denmark which is likely to include provisions for angling clubs (and others) to get assistance from the regional authorities to help ensure that efforts to reduce numbers of cormorants on rivers and river mouths are conducted in an organised and effective way.
- **Israel**, a case study demonstrated the benefits of coordinated activities in an area of intensive aquaculture. Here, large numbers of cormorants (~8,000) migrated into the Hula Valley area each winter resulting in major conflicts at fish ponds (Carss, 2003; Carss and Marzano, 2005). Shooting at individual sites was seen as costly and ineffective. In an effort to address this, a collaborative partnership was set up involving biologists, fish farmers and NGOs and a co-operative management scheme was developed. On arrival of the birds, coordinated actions involving both lethal and non-lethal measures were initiated and resulted in birds being moved to alternative, less sensitive foraging sites. As this control programme developed, it was reported that operating costs (e.g., staff time, ammunition), the extent of lethal control, and the estimated losses of fish all declined. Coupled with the availability of alternative foraging sites, the success of the measures was considered to depend on three key factors: (a) organisation (e.g., interest/expert groups, manpower, resources); (b) information (e.g., knowledge of cormorant behaviour and movements); and (c) timing (e.g., knowledge of bird migration, co-ordinated scaring). As a cautionary footnote, it was later reported that the scheme operated less well after a period of years, believed to be as a consequence of some complacency. This reinforced the need for the measures to be well coordinated and applied actively for them to remain effective.
- **Switzerland**, a coordinated 'cormorant-watch' programme has been carried out annually since the winter of 1997/98 (Staub, 2021). The programme is concentrated on a riverine area renowned for its grayling population and is focused on the period prior to the fish's spawning season in March-April. At this time, coordinated actions are taken to maintain a daily presence of fishers on the water, and both scaring

techniques and shooting are applied. The measures are reported to have resulted in a substantial reduction in fish losses and the numbers of fish damaged by cormorants.

Summary of key points pertinent to the NRW review

It is expected that there will be an ongoing requirement for local, site-specific licensing arrangements to continue for some fisheries in Wales, particularly for stillwater sites that may be relatively isolated. However, it is concluded that there is scope to extend the currently limited application of licences in Wales at the catchment scale. Such licences should enable better coordinated management of conflicts between fish-eating birds and river fisheries, a key focus of this review in relation to Welsh salmon and sea trout stocks. A primary concern with localised, uncoordinated management actions on river catchments is that birds may simply be moved a few hundred metres up- or downstream, with minimal benefit for fish stocks. However, it is recognised that the movement patterns of birds disturbed by management activities remains an important knowledge gap, and highlights the importance of seeking to tailor preventive and lethal control measures to the biology/ecology of the birds.

The introduction of activities coordinated at a wider geographic scale, such as a river catchment, has a range of potential benefits for managing conflicts between fish-eating birds and fisheries. These include:

- Providing a more strategic approach to licensing, enabling fisheries to coordinate an effective cormorant and goosander scaring and lethal control approach within a specified area.
- Potential savings in administrative costs through reduced licensing activities.
- Providing opportunities for fisheries to work together, share experiences and best practice.
- Providing better protection for fish stocks and bird populations, particularly where there is a shared interest in management of affected fish stocks and of the need to safeguard the conservation status of cormorant and goosander in Wales.
- Having greater confidence when assessing the impacts and efficacy of both non-lethal techniques and licensed cormorant and goosander lethal control within catchments.
- Enhancing stakeholder engagement and participation in fishery management activities.

Examples from other jurisdictions indicate that the use of area or catchment-based licences can provide an effective additional management tool. However, while recognising that catchment-wide licences may provide better protection for riverine fish stocks and fish-eating birds, it is recognised that such an approach also brings potential challenges. These include:

- The need for effective coordination between participating fisheries to ensure activities are targeted to best effect, and practical and logistical challenges addressed.
- Ensuring adequate take-up by participating fisheries/beats in a catchment
- Ensuring legal obligations around licensing and reporting are met.

- Considering potential effects of the relocation of birds on other fishery sites in the wider area.

Experiences in England indicate that catchment/area-based licences have operated best where licensing activities and reporting requirements have been coordinated by a proactive 'primary contact'. In developing future licensing policy in Wales, an important consideration in deciding whether to implement catchment-based licences more widely, will be the role of this primary contact. Should such a position be a non-remunerated position held by a vested interest in the affected fishery/fisheries or, when the trigger for management action could be the conservation of a depleted possibly 'listed' fish species, should this be a role for a statutory nature conservation body.

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