

T: +44 (0)131 244 4196 F: +44 (0)131 244
E: simon.dryden@gov.scot

Mr Paul Toseland
27 Cove Circle
Cove Bay
ABERDEEN
AB12 3DG
By email to secretary@adaasales.co.uk

Our ref: 2018/0026095
6 August 2018

Dear Paul,

Many thanks for your letter to Ms Cunningham, MSP dated 16 July 2018. The Cabinet Secretary For Environment, Climate Change and Land Reform has asked me to respond on her behalf.

I assure you that Scottish Ministers and my team and I, who lead in the wild salmon policy arena, take the situation extremely seriously and share your passion to better protect and recover our wild populations.

We have established 12 high level pressures impacting salmon, as outlined in the table on the next page.

High level pressures on Atlantic salmon

Pressure	Components
Exploitation	Illegal exploitation Legal commercial (which includes coastal netting) Rod and line
Predation / Competition	Piscivorous birds Piscivorous fish Seals Other
Fish health	Disease Sea lice Other parasites
Genetic introgression	Stocking Escapes
Invasive non-native species	Crayfish Fish – including pink salmon Other
Habitat - Water quality	Acidification Point-source pollution Diffuse pollution Other pollution Changing rainfall patterns Eutrophication Oligotrophication
Habitat - Water quantity	Abstraction Flow regulation Upland / agriculture land-use and drainage Forestry drainage
Habitat - Thermal	Loss of shading Over-shading Changing temperature patterns Thermal discharge Hydro modification Other
Habitat - Instream	Sedimentation Loss of sediment transfer Lack of, or excessive, large woody debris Canalisation / dredging/boulder removal
Habitat - Riparian	Loss of natural riparian vegetation Conifer afforestation
Barriers to migration	Upstream passage (consider cumulative impacts) Downstream passage Dams / weirs / large water bodies Other
Coastal and Marine	Inshore commercial fisheries Developments – including wind/wave/energy projects Other

We are seeking to deliver a balanced, evidence based and proportionate approach across all of these pressures, working alongside Fisheries Management Scotland and their member Boards and Trusts. On the River Dee, for example, I think we have a good working relationship with Dr Lorraine Hawkins, the River Director for the Dee District Salmon Fishery Board (DSFB) and the River Dee Trust.

The launch of a Fisheries Management Plan (FMP) pressures tool will allow each Board to map, on a common platform, if, where and to what extent they believe these pressures are impacting their local populations. Subsequently, once we've delivered this component, and we plan to pilot utilisation of the new pressures tool across up to 6 Boards from late August this year, we will ask each Board to submit an action plan to address them. We acknowledge some, however, will be out with their control and for government and/or agencies to address. FMPs should allow us to identify the length and proportion of individual and/or collective rivers impacted by each pressure so that priorities can be established.

The existing range of activities already in hand, both locally and nationally, is already extensive but we're not complacent and acknowledge that more can also be done, as and when resources allow.

Some examples of the activities already in hand are:

- The annual river assessments and spring close times already provide some protection from over exploitation by anglers. Given the latest assessments we will review whether there is evidence to support the extension of the spring closure from 1 April to a later date, either nationally or for some specific rivers. An application from the Tweed Commission to extend closure until 1 June is being progressed.
- In autumn 2018, a Phd student will commence research into three underlying questions: 1) What is a reasonable general estimate of salmon catch-and-release mortality and does this vary with environmental conditions or fish phenotype?; 2) How can mortality be reduced?; and 3) Are there additional, sub-lethal effects of catch and release that are detrimental for fish reproductive success or offspring viability?
- We have agreed that illegal gill netting, very close to the shore, remains a recurrent issue, because the existing regulation allows illegal operators to claim that they are targeting species other than salmon and sea trout. We expect to consult on this specific issue later this year, with a potential opportunity to replace the existing regulation through secondary legislation in 2019.
- Ministers have committed to reviewing the prohibition on coastal netting within three years (that is, by 2019), within which period further data would be collected which would allow us to better understand the nature and potential impact mixed-stock coastal fisheries have on SACs and other in-river fisheries. Marine Scotland published two reports in May 2018: <https://data.marine.gov.scot/dataset/using-historic-tag-data-infer-geographic-range-salmon-river-stocks-likely-be-taken-coastal> & <https://data.marine.gov.scot/dataset/application-acoustic-tagging-satellite-tracking-and-genetics-assess-mixed-stock-nature>

- We are working closely with the Seal Mammal Research Unit to better understand seal predation on wild salmon. Previous work by the Sea Mammal Research Unit and Marine Scotland Science (MSS) has shown that salmon generally comprises a small proportion of the total population diet. However, there is likely to be a smaller number of individuals that forage regularly on salmon, particular within rivers. Current work is focused on developing non-lethal methods for removing seals from rivers. A specific case study looking at management options for dealing with harbour or common seals which repeatedly swim up the River Dee is in progress.
- Piscivorous birds (mainly sawbill ducks and cormorants), as you explain, could be causing significant smolt mortality in Scottish rivers. Sawbill ducks are counted annually by a number of Fisheries Boards and/or Trusts as part of a process of obtaining a licence to shoot from Scottish Natural Heritage (SNH). Data collected is submitted to the Science and Advice for Scottish Agriculture (SASA) as part of applications to reduce predation by shooting to aid scaring. Licences to shoot are issued by SNH. Advice is provided by MSS on licence applications, particularly in relation to fish populations and likely impacts of the birds.

SNH's published 2016 Commissioned Report No.884 – An update of the review on the impacts of piscivorous birds on salmonid populations and game fisheries in Scotland (<https://www.nature.scot/sites/default/files/Publication%202016%20-%20SNH%20Commissioned%20Report%20884%20-%20An%20update%20of%20the%20review%20on%20the%20impacts%20of%20piscivorou%20birds%20on%20salmonid%20populations%20and%20game%20fisheries%20in%20Scotland.pdf>) – has data on cormorant, goosander and grey heron numbers.

Between 1970 and 2010 this shows that there were significant declines in abundance of cormorant in Scotland and a contraction in its range. The same data for goosanders suggests a decrease in abundance, but this was not statistically significant. In respect of grey herons, the population appears stable over this same period, but there was a contraction in range. SNH does not hold figures for shags, as it is an exclusively marine species.

Marine Scotland continues to work with Fisheries Management Scotland and their member Boards and Trusts, including the River Dee Trust and the Deveron, Bogie and Isla Rivers Trust, SNH and SASA to better understand and evidence the situation. Historic analysis of gut contents of sawbill ducks and cormorants indicated that they consume salmon throughout freshwater life stages, including smolts. The impact on smolts is likely to be higher in more northern rivers where there are fewer other species of fish in the diet. Preliminary investigations of the River Dee have highlighted that losses of salmon during the smolt run may be in the order of 37% despite concurrent shooting to scare birds. However, further work is required to verify these estimates and to relate losses to predation by sawbill ducks.

In respect of the River Dee, I met with the Dee Trust and DSFB, SNH and SASA in February this year and agreed that:

- An MSS expert statistician is now reviewing last and this year's data from the Dee's acoustic tagging study;
- The Dee will design a potential year 3 project (therefore for 2019), on the assumption that our analysis of year's 1 & 2 data gives a strong indication of the sawbill duck predation risk; and

- All parties will meet again in late August/September to discuss the latest outputs and, if appropriate, the plan for 2019.

In respect of the River Deveron, Marine Scotland has provided the Trust with 50 acoustic tags this season to facilitate research to evaluate the potential impact on mortality of different types of tag. Marine Scotland will also continue to engage constructively with the Atlantic Salmon Trust's 'Missing Salmon Project' and is currently acting in an advisory capacity through the Moray Firth Tagging Project Steering Committee. We hope that this project may provide very valuable data about avian predation during the 2019 fishing season, potentially across up to six rivers flowing into the Firth.

- A partnership of Marine Scotland, the University of Aberdeen, the Ness and Beaully Fisheries Trust and local salmon netting interests commenced a pilot study on 9 July 2018 to identify the impact of dolphin predation on returning adult salmon in the Moray Firth and has successfully acoustically tagged 109 adult grilse.

The specific objectives of the study are to:

- a) Determine whether the timing of movements through these tidal narrows is related to time of day or tide;
- b) Assess minimum survival rates of adult salmon passing through these areas; and
- c) To determine which rivers these fish return to.

A gateway of acoustic receivers was established across the narrows at Chanonry and in the Cromarty Firth Souters. Single receivers have also been sited within the lower part of various rivers in the area. I've attached separately a tremendous photograph showing one of the tagged salmon being eaten by a dolphin.

- The Fish Health Inspectorate (FHI) continue to sample moribund salmon. We recognise that aquaculture can result in elevated numbers of sea lice in open water, and hence may increase the infestation potential on wild salmon. The magnitude of any such impact in relation to overall mortality levels is not known for Scotland and Marine Scotland Science has commenced a four-year project, funded by SARF, to consider this. We will continue to fully engage with the ECCLR and REC Committees as they continue their respective inquiries.
- We have agreed a national introgression/genetics project, utilising up to £80k of funding from the additional £500k of funding allocated to wild fisheries in this financial year. The national introgression project will seek to utilise a panel of genetic markers to screen juvenile fish tissue samples collected from sites around Scotland in structured surveys and is expected to continue over three years. Levels of introgression will then be quantified and examined in relation to the presence/absence and concentration of aquaculture production in the different rivers and regions sampled. Collection of samples will take advantage of and thus produce added value from survey work being carried out across Scotland in 2018 as part of the national electrofishing sampling plan.
- Impact may occur from a wide range of non-native species, such as mink and signal crayfish. Our latest activity is focussed on pacific pink salmon. Experiments by MSS this year using eggs deposited in Scottish rivers indicate that the young fish can survive initially, but will emerge and leave the river in winter rather than spring (which is the normal season in the native range) and are unlikely then to survive. A full and detailed Non Native Risk Assessment is underway and MS, SEPA and SNH will contribute our findings.

- The Scottish Invasive Species Initiative is a priority project in the Scottish Biodiversity Strategy's route map to 2020. The route map sets out the major steps needed to improve the state of nature in Scotland and halt the loss of biodiversity by 2020. It highlights the spread of invasive species as one of the key pressures on biodiversity.
- Scotland's River Basin Management Plans (RBMPs) published in 2015 set objectives for the protection and improvement of our water environment, with the aim of 87% of water bodies achieving a classification of 'good ecological status' by 2027. Fish passage is recognised as one of the three main priorities of RBMP2 and the challenges faced by smolts in their downstream migration, particularly in relation to hydro schemes, are now well-understood.
- Much of the RBMP implementation work is led by Scottish Environment Protection Agency (SEPA), through the application of its regulatory tools. SEPA has put in place a programme of work to ensure that fish passage is provided by major operators such as Scottish and Southern Energy and Scottish Water. A notable recent example of successful work in this area was the announcement earlier this year that a section of one of Scotland's most important tributaries is soon to have consistent flows restored after decades of very extensive water abstraction. Ten miles of the River Garry, which has been essentially dry since the mid-1950s, will run again, promising major benefits for adult salmon spawning and juvenile production. SEPA is also leading on work to remove or ease redundant barriers in rivers, utilising circa £5m annual funding from the Scottish Government.
- DSFBs are working closely with SEPA to address other matters such as acidification and diffuse pollution. A number of DSFBs and Trusts are engaged in peat restoration projects, for example, which improves river water quality and some have carried out liming to change the river pH.
- A number of DSFBs and Trusts have done extensive tree planting, particularly in head waters, to provide shade and reduce water temperatures. Furthermore, we are in discussion with FMS, Sainsbury's and the SSPO about developing a sponsored programme of planting riparian trees in areas that are particularly sensitive to warming.
- We are in very early discussions with FMS about a potential nutrient enrichment project to see if we can improve the size and therefore marine survival of smolts.
- In SW Scotland there is still a significant issue regarding acidification in the headwaters of the Bladnoch, Cree, Dee and Water of Fleet. A combination of acid rain, poorly buffered underlying geology, extensive Sitka spruce afforestation and degraded peatlands have reduced water quality, which has a major impact on fish stocks, particularly salmon. There may be months in the Spring when all salmonids (especially salmon) will be killed by the impacts of low pH. Earlier in December FMS escalated this issue to SEPA and we await developments. The Galloway Fisheries Trust's work and planning with the Forestry Commission represents historic, exemplar work where conifer afforestation too close to the river banks has been addressed, but FMS now argues that limited actions are being taken to restore these areas.
- We are working with FMS with the aim of influencing the beaver management plan to ensure that the decision to reintroduce beavers to Scotland does not negatively impact upstream or downstream migration of salmon and sea trout, by seeking to ensure allows fisheries managers to take quick and effective action to ensure fish passage.

- Marine Scotland and other stakeholders continue to conduct research and complete assessments to understand the potential impact of off shore developments on salmon migrations. The coastal movements of salmon are poorly understood and we wish to produce advice which produces sufficient safeguards for migratory fish.

I hope the above gives you some reassurance that we are 'on the case' – that we take the matter very seriously. The bottom line, of course, is that more adult salmon to return to our rivers. And, despite the new conservation regulations introduced from 2016 and other local and national activity, we are witnessing the opposite.

Of course, the progeny of the adult salmon we 'saved' since the 2016 season (such as through the prohibition on retaining salmon in Scottish coastal waters) will not return as adults until the 2019 and/or 2020 seasons. So I hope we start to see the fruits of all of our efforts, including increased angler catch and release %'s for example, thereafter. But I stress, we are not complacent, and will continue to strive to do more over the coming weeks, months and years, to mitigate the complex and challenging mix of pressures which wild salmon face.

Please do not hesitate to call me if you'd like to discuss further.

Kind regards,



Simon Dryden
Salmon and Recreational Fisheries Team,
Marine Scotland, Area 1B South, Victoria Quay, Edinburgh, EH6 6QQ
Tel: 0131 244 4196 (W) 07795 426765 (M)