



Virtual Fisheries Forum 03/02/2022 (Tackling Invasive Non-Native Species In Yorkshire).

Q&A session

Q. What research is taking place to manage/eradicate populations of American Signal Crayfish?

A. (Emily Smith) Trapping has historically been the main management approach, but this is shown to not be an effective control measure for the reasons mentioned in Andy's (Virtue) presentation. There were some trials on enclosed waterbodies going on with CEFAS using finer mesh trapping techniques aimed to capture more of the juvenile signal crayfish. Male crayfish sterilisation is another method being researched where mature male crayfish are trapped, sterilised and returned to the waterbody so they can continue being cannibalistic, predated upon the juvenile crayfish but are in turn unable to reproduce with the remaining females thus contributing to a self-destructing population over time in theory. This research is in its early stages however and there is concern over whether in time the male crayfish will be able to regrow their gonads/redevelop the ability to reproduce despite being initially sterilised by gonad removal. There are further works around artificial refuge traps to increase trapping success of as large a proportion of the crayfish population as possible including ranging sizes of individual crayfish. Artificial refuge traps have been found to capture smaller individuals as well as berried females. In terms of what methods are available to achieve eradication as opposed to just control, genetic modification is very new in the field of crayfish control research and will likely not be at a stage of being utilised for at least 5-10 years. The idea being that male crayfish will be modified so that any female crayfish offspring they produce will be infertile whilst all the male offspring will carry the same gene, theoretically leading to an all-male population of Crayfish over time. This is in the early stages with a substantial amount of research expected to be undertaken on this approach to ensure it is

safe to use. This is why this approach will not be available for a further 5-10 years.

A. (Ian Doyle) Following on from what Andy's (Virtue) presentation mentioned about leaving Yorkshire populations of signal Crayfish alone, I am familiar with a study on the River Goyt, a waterway well outside of Yorkshire where this policy was adopted, and it was observed that numbers of signals did reduce over time. Also, to touch on gene editing research which I believe has been brought about for future control of Grey squirrel populations and is thought, I'm told, to be a viable future option with Crayfish. This is designed to create same sex offspring and is programmed to fade out after around 5 generations, whilst it's early days hopefully this could bring about good results.

Q. What about dogs and the transfer of INNS?

A. (Steph Bradbeer) This is a very valid point that dogs and other animals can act as vectors in spread of INNS. For domestic pets the check clean dry approach is applicable but obviously taking into account animal welfare with appropriate adjustments in place.

A. (Alex Clegg) One thing to be considered with dogs when allowing pets to swim and roam around waterbodies is that flea treatments commonly applied to dog fur is very harmful to invertebrates and wild insect life. People should be responsible for reducing risks of what their pet could spread into the environment whether its INNS related or other.

Q. What is the feasibility to eradicate the INNS or is it a case of living with it?

A. (Emily Smith) It depends on the species and timescales. Prevention is better than cure and the faster an INNS is discovered ideally when its populations are not well established yet the greater the chance of being able to eradicate. This relates well to the importance of correct reporting procedures. If an INNS population is more widespread then it's a case typically of damage minimisation by working to contain the spread within affected catchments. There is research going on into biological controls where the natural predators for INNS in their indigenous environment are being trialled for safe use in the UK. The main weapon currently in the control INNS is partner stakeholder working to close the gaps in which INNS can exploit to spread.

A. (Andy Virtue) I agree with all that, eradication of certain INNS is an ambitious dream currently, but we can do our best with stakeholder engagement, partnership working and control measures so we can get them down to a level that reduces the problems to people and the environment. Floating Pennywort for example would be great to eradicate but it keeps popping up and its basically impossible to find all the populations of it.

A. (Ian Doyle) I hear what you are saying Andy, but I'd say the cost of INNS financially to the country and damage to indigenous biodiversity certainly justifies maximum effort/resources invested to eradicate them. I think we need to maintain full eradication as the goal even if it feels ambitious.

A. (Emily Smith) Regarding floating pennywort there have been cases I know outside Yorkshire such as on the River Kennet where angling clubs and contractors have worked together and got specialist machinery involved to make a significant reduction in floating pennywort presence whereby bulk establishment is no more being able to just pick out rare remaining single plants here & there as they appear. This occurred over a 3-year period.

A. (Ian Doyle) There has also been a lot of work with Himalayan Balsam on the Welsh Dee where populations have been reduced dramatically. If you don't try you won't get anywhere.

A. (Andy Virtue) For Himalayan Balsam in Yorkshire we have widespread coverage of the species except on the River Hull where we fund Balsam control exclusively as there is realistic chance to safeguard that catchment.

A. (Alex Clegg) Following Alex's (Green) presentation think it's excellent that the Yorkshire Wildlife Trust would be able to provide biosecurity services for angling clubs and other water users. The idea of a mobile service where risk carrying events could be attended by knowledgeable trained people to implement biosecurity is great progress.

A. (Alex Green) A central aim of our (YWT) position is to support the implementation of biosecurity at the point of risk by getting involved in the field ourselves. The Yorkshire invasive species forum and the

momentum of the work we do will hopefully outlast the duration of the partnership project as a whole.

Q. We have a small boat used across 5 small ponds – are there any recommended materials/chemicals to wipe down the underside of the boat between lakes for better biosecurity?

A. (Alex Green) Hot water is the best option but the availability in remote locations is potentially a problem. One disinfectant that can be used is called Virkon Aquatic effective against crayfish plague and other bacterial/fungal diseases. A basic hand brush should be suitable for means of scrubbing down the hull even though it will be a tedious job. Disinfecting after cleaning is important so as to reduce risk of spread of disease and this should be done away from any watercourses.

A. (Ian Doyle) Also, whilst in this country it's not always possible sun drying the boat would be a useful precaution if you can achieve it.

Statement. We at Abbeydale Industrial Hamlet in Sheffield are inundated by crayfish which come out of the River Sheaf.

A. (Andy Virtue) Correct, this used to be a white claw crayfish catchment and now it is overrun with invasive signals sadly. A situation manifesting across Yorkshire. I share the frustration; however, research shows that trapping won't be the solution to this problem.

Q. Do waterfowl transfer everything we are talking about from water to water?

A. (Ian Doyle) There is much concern over waterfowl carrying New Zealand Pigmy Weed around between waterbodies, particularly with geese.

A. (Steph Bradbeer) I am aware of scientific studies such as Reynolds et al, 2015 (<https://onlinelibrary.wiley.com/doi/full/10.1111/ddi.12334>) showing the risks which waterfowl present with INNS transfer so obviously whilst it is not something we have much control over it is a very real concern for us at Yorkshire Water with waterfowl travelling between company sites. The best risk reduction we can do for waterfowl transfer is simply control the INNS in the first place where they are currently to hopefully prevent waterfowl contamination.

Q. we have a consortium of angling clubs looking at the introduction of the rust control of balsam. Who can I talk to who might help?

A. (Andy Virtue) Trials are still ongoing. My understanding is that there are several different strains of Himalayan balsam and the rusts being used against them were not always effective as the correct rust needs to be matched to the right strains (Phenotype) of balsam. There is a trial site on the River Calder for this research and it is headed up by [CABI \(Centre for Agriculture and Bioscience International\)](#). It is a very labour intense process to perform these rust trials as well as expensive to my knowledge. I'd say speak to CABI directly for advice.

A. (Rachel Naden) Rust trials cost in the region of £8000 per trial site so if there is the funding to do, then it it's a potential control measure but I wouldn't see it as an effective means of eradication currently. When assessing a potential trial site, it is important to consider the location as for example in a river catchment your results can be impacted by what is going on upstream if there is for instance limited management of balsam plants there. Top-down control.

A. (Ian Doyle) The rust spray needs to be kept at low temperatures, so application is not so simple as well being very expensive.

A. (Andy Virtue) One biological control out there that is good for water fern as well as being affordable is the "Azolla weevil". You can purchase them from CABI.

A. (Alex Clegg) We will be running a managing invasive plants virtual fisheries forum on the 29th of March where some of these newer developments will be covered. We will be promoting this on our social media pages nearer the time, so please come along if you are interested.

Q. How effective is the chemical used in the process of net dipping to prevent INNS spread?

A. (Steph Bradbeer) The general consensus regarding Virkon aquatic is that it's effective against most but not all INNS. At a standard concentration (1%) and when nets are dipped in solution for the recommended 2 minutes it definitely works for small invertebrates like killer shrimp but with some of the plants this wouldn't be enough. A

combination of checking, cleaning, drying and disinfectant use is the best protocol to kill all potential INNS attached to equipment. Use hot water to clean your equipment where this is available.

Q. Has any of this information re cleaning watercraft been shared with organisations such as British canoeing, boating and paddleboarding groups etc?

A. (Emily Smith) The check clean dry campaign which has been repeatedly mentioned is supported by not just the Angling Trust but other major stakeholder water activity NGO groups such as British Canoeing, British Rowing, the Green Blue and more.

A. (Rachel Naden) British Canoeing have certainly been very active working with Yorkshire Water at our Thruscross reservoir site installing wash down facilities. They have also contributed a lot to floating pennyworth management. Same with British Canoeing and there is some good research going into how boaters and kayaker groups can be utilised to manage INNS by removing plants for example.

A. (Ian Doyle) The control of INNS is so difficult the only real way forward is through multi-organisational partnerships.

A. (Steph Bradbeer) In terms of the biosecurity engagement project Yorkshire Water is actively working with all of our sites/asset tenants and the progress so far in getting cooperation is very positive.

Statement. To follow on from Emily's and Alex's comments on Himalayan Balsam, River Keepers for the Derbyshire Wye have managed over a relatively short period of time to eradicate Himalayan Balsam. A success story and also not now labour intensive. Club Members and Local Wildlife Trusts did assist in this.

A. (Alex Clegg) Thank you for sharing that.

A. (Ian Doyle) I assume they were working on this through a catchment-based approach to management which is critical in effective control/eradication. Also, you mention partnership working getting multiple stakeholders involved which is excellent.

A. (Emily Smith) Just to add it is great to hear about these success stories and if there is more from within the audience, we would like to know about them to have the details noted.

A. (Alex Green) From a Yorkshire invasive species forum point of view if there are success stories which clubs/fisheries would like to share we have a newsletter which such things would be ideal to include for others benefit.

Statement. Possibly worth a mention. At one time angling clubs required members to attend work parties as part of membership. This is often now not the case, which means boots on the ground lost. On the Aire one angling club pull HB however the opposite bank doesn't bother!

A. (Alex Clegg) The subject of work party attendance as compulsory means to be a member was discussed in our [H&S virtual fisheries forum](#) recently as it can be deemed a form of coercion which is likely why it happens less now in the world of angling clubs.

Q. Similar to Ian's question about waterfowl transferring invasives - what about otters?

A. (Alex Clegg) The same as the waterfowl issue applies to Otters.

Q. Should the catchment area group be looking at INNS management with the Don catchment rivers trust? what I was actually thinking about was a programme of getting clubs and riparian owners together. A networking system?

A. (Rachel Naden) There are quite a few Rivers Trusts undertaking invasive species related projects in Yorkshire currently. The Environment Agency are already very active on the Don catchment, so funding is probably prioritised elsewhere for other Yorkshire Rivers Trusts. Yorkshire water and partner organisations will look to support projects where we can. We have the Yorkshire Invasive Species Forum who whilst not being active on the Don do run river treatment programs where the Environment Agency do not due to such smaller Rivers not being classes as main rivers. So, to summarise there are many groups involved in undertaking riparian INNS management currently but I'm not certain about what is going on with the Don besides the Environment Agency work focusing on 3 key species.

A. (Andy Virtue) Just to add the reason that the Don catchment is subject to focusing on just 3 INNS is because the funding came from flood defence budget, and we had to argue the case for controlling these

species based on their flood defence impacts. The same argument sadly doesn't apply to signal crayfish for example. A potential 4th to add could be Himalayan balsam due to its erosional potential of banks.

A. (Alex Green) The Yorkshire Invasive Species Forum ran a workshop back in 2018 where stakeholder networking and mapping out of treatments took place for the Don catchment. We would be more than happy to help facilitate ongoing progress but we have a lot of catchments which we are involved in so resources are allocated carefully.

A. (Rachel Naden) If the author of the question could pass on who the angling clubs are in the Don area to Alex (Green) this would be useful to know as a starting point for collaboration.

A. (Emily Smith) Ian with us tonight is the Environment Officer for the North and can assist clubs that are looking to set up collaborative partnerships on certain catchments. We have been speaking with Andy at the EA about trying to do some work on the River Don so if the club were happy to pass on their details we can have chat after the forum about if there is a way to combine efforts.

Q. Thanks for your answer regarding my question on sharing info on invasive species with orgs such as British Canoeing. However, with the recent massive rise in the use of SUPS (paddleboards) there is a very large number of participants who are not members of organisations. Would bankside info boards at popular locations be something that may help?

A. (Ian Doyle) The Angling Trust can provide through the GB non-native species secretariat, generic check clean dry and invasive species information available for all recreational water users.

A. (Steph Bradbeer) This is a good point and information boards, specific to water activities are definitely a great way to provide information on biosecurity. To build on this, we should also consider biosecurity information to be provided at the point of purchase with equipment like paddleboards in the same way that when you buy a fishing license it comes with biosecurity information.

Statement. Following on from Ian Doyle A Catchment wide approach is vital. The Keepers also covered all the feeder streams and water courses. Origin was the Garden Waste, (HB), dumped at the Recycling Centre above Buxton; the seeds finding their way into local water courses and consequently the Wye.

Key contacts from this forum meeting:

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