

PE1558/N

Abigail Stancliffe-Vaughan Letter of 17 November 2015

Petition PEO 1558 is aimed at finding a control/ management solution to the expanding population of non-native signal crayfish (*Pacifastacus leniusculus*) in Loch Ken, Dumfries and Galloway, Scotland.

Some general aspects of this debate are agreed upon:

- Signal crayfish cause significant damage to biodiversity and habitats
- Populations of non-native crayfish are growing and spreading with new populations detected
- Native crayfish are at risk from direct competition, crayfish plague and other issues

However, ideas for strategies to deal with non-native crayfish populations are more contentious with three key arguments currently in play...

1. Non-native crayfish consumption in the UK

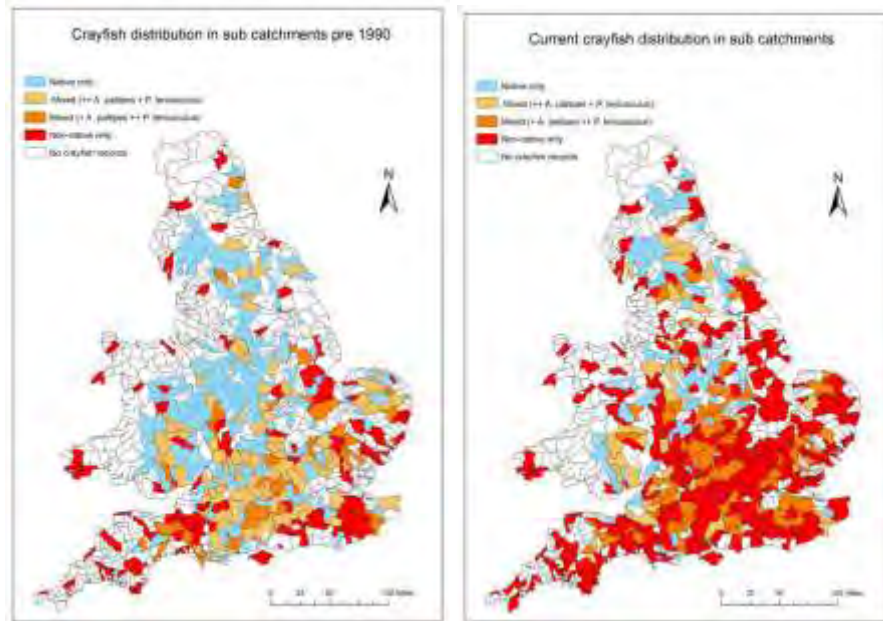
In the UK it is illegal to disturb native white-clawed crayfish and their habitat (with consumption out of the question). But we are also inadvertently ‘protecting’ non-native crayfish with trapping “illegal” in Scotland and subject to licensing and regulation in England. ‘Food miles’ and ‘local sourcing’ seem to be goals of the past with non-native crayfish consumption frowned upon whilst the purchase and consumption of non-native crayfish from shops and restaurants (often *Procambarus clarkii*/ red swamp crayfish from China) is accepted.

Across Europe and the world both native and non-native crayfish are consumed, the UK is out of step.

2. Trapping as a control/management option

Trapping is still occasionally referred to as an untested method of population control in spite of a number of studies demonstrating population crashes in trapped areas (Hein et al, 2006 & 2007; Jussila et al, 2014; Sandström et al, 2014) though control methods and cited causes vary. My own research on trapped and untrapped reaches of the River Lark (Suffolk, UK) has demonstrated significantly reduced catch-per-unit-effort in trapped areas, with no increase in juvenile biomass detected using samplers developed to detect smaller crayfish year-round (<http://hdl.handle.net/10540/579908>). The original control/ management trapping project for Loch Ken (reported on by Ribbens and Graham, 2009) considered trapping a success and urged continued funding. However, the review by Peay (2010) considers (correctly) that before and after population estimates for a single year are problematic. My personal view is that the original research is sound and was carried out thoroughly within a given timescale and funding brief. Sadly, trapping as a control method is still considered contentious by some.

Non-native crayfish populations continue to increase and spread. Range expansion has been mapped from pre-1990 to 2009 (Annexe 2; DEFRA/David Rogers Associates, 2009), see maps below.



Classification of sub-catchments as native only, non-native only or mixed crayfish distribution Pre - 1990 and 2009 (David Rogers Associates, 2009).

The deleterious effect of signal crayfish on freshwater plant and animal communities and habitats is well documented yet ‘no action’ is considered preferable to the purported consequences of control/management. Reducing the number of signal crayfish, and potentially the mean size of individuals over time, does have a positive impact on invaded freshwaters. A reduction in the breeding population will affect recruitment whilst the removal of larger individuals will reduce pressure on their prey species and banksides used for burrowing. Smaller crayfish are more vulnerable to predation (and potentially cannibalism) and less fecund. Non-native crayfish are undoubtedly a formidable invader but it is nonsense to state that they do not conform to basic biological principles. If they are continuously removed, there will be less. Population reduction in Loch Ken will take time and effort for an undetermined time period with eradication unlikely. That is not disputed. However, those against the petition also note that trapping Loch Ken “would have to be maintained indefinitely.” This begs the question, if control were to be carried on “indefinitely” what would the likely outcome be if no control or management is instigated? Does it not make sense to reduce the environmental impact of the introduced species even if it does require long term management?

3. Public engagement

Submissions in relation to this petition (and blogs – such as the Ayrshire River Trust) note the scale of accidental and deliberate introductions yet still people are urged to do nothing as it might ‘make it worse’. Since their Government sponsored introduction in the 1970’s and 1980’s the debate has moved from the capabilities of signal crayfish (in terms of population growth and spread) to the ‘risk’ of what ‘people’ will or will not do. Whilst there are situations that likely arose from people moving them around that does not mitigate the positive effects of removal by people intent on saving their local waterway (see above blog).

Links have been made between the establishment of fisheries for signal crayfish and increased numbers of illegal introductions. Whilst there may be a *correlation* between large signal crayfish populations (Sweden and Spain in the stated examples) and increased numbers of new occurrence records for non-native species in the area but this does not imply *causality* due to trapping for consumption! Separating the impact of having a large non-native population (and how this might spread by its own or assisted methods) and what will happen if there is a control programme that includes consumption is impossible. New populations are being found constantly and this will continue, whether we approve or not. Failure to take any sensible management action will not improve this situation with legislation similarly ineffective.

The idea of “making the best of a bad situation” (Gherardi and Holdich, 1999) is not new and can be neatly summed up by a quote from two Norwegian researchers Taugbøl and Skurdal (1999):

“No method has been developed for eradication of unwanted crayfish populations without causing harmful effects to other biota. That means that the alien species have to be accepted as part of the European fauna. Accepting this does not mean giving up on the native species. A more balanced view with minds open for different solutions in different areas is a more fruitful approach. If those who are advocates for the native species also accept the existence and exploitation of alien species outside the “Native Crayfish Areas”, this may perhaps, in return, lead to more understanding for the necessary native crayfish conservation actions. “

The fact that we have made little progress on this issue over the last 15 years (and prior to 1999) demonstrates the lack of efficacy in holding a view based on ‘what ifs’. New populations are being discovered all the time, population growth and spread is happening – it is worse already. Lack of appropriate action distances communities from conservation messages with the mantra in this discourse being wholly negative. This may well have the opposite effect on people’s views and actions and lead to more ‘bad’ behaviour.

Scotland still has the opportunity to seize the initiative and combine sensible timely action with conservation messages that allow people to be part of the solution rather than casting them as the problem. Signal crayfish are the problem. But they are edible, were introduced as food and are on sale in the UK. Sale of crayfish means that control and management can be carried out long-term and may be appropriately managed with thought and care. The involvement, engagement and education of people is a vital part of this initiative.