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CHALK TALK

Unintended consequences

*The spread of signal crayfish, scourge of our waterways, seems unstoppable, writes **Simon Cooper***

HE IS LED BY AN INVISIBLE HAND to promote an end which was no part of his intention." The writings of Adam Smith, the 18th-century philosopher and economist, should haunt to the grave those who in the late 1970s and early '80s took delivery of infant American signal crayfish.

Perhaps I am being harsh. In the words of a man far wiser than even Adam Smith maybe I should forgive them for they knew not what they did. They were, after all, following government-sanctioned policy that saw the importation as a welcome diversification for fish farmers, creating a lot of income for little investment. As it turns out, all it has created is a lot of headaches, no income and put our native white-clawed crayfish at real risk of extinction.

Now you might fairly ask how that matters; the natives offered next to no food value and barely anyone knew they existed. You'll struggle to find them mentioned in any census, depicted in a heraldic motif or as a recipe in a medieval cookbook. But it does matter. Our natural kingdom evolved in balance. The natives were part of that equilibrium: not too big, not too greedy, not too fecund. But signal crayfish are all those things and more, out-competing not just the natives but the small-fish community and amphibians. It's a bit like replacing your sheepdog with a wolf — briefly effective.


Four decades later and we have not one non-native crayfish species but seven established in the wild, with two more looming on the horizon. These insurgents have wonderful names such as the red swamp and spiny cheeked crayfish, but that is as far as the wonder goes. In different ways, they are as bad as the signals. Of the two in the wings, the most troubling, currently illegally on sale through disreputable members of the aquatic trade, is the marbled crayfish; the females are asexual, able to reproduce without a male.

The march of the signal has been relentless; in the Hampshire chalkstreams, where the white-clawed were once prolific, only two small colonies cling on. This is a common picture throughout southern England despite various attempts to control the interlopers, which include impassable barriers and intensive trapping. The former has had limited success; crayfish are persistent little critters who given enough time will outwit most manmade obstacles, which are, anyway, definitely no barriers to the crayfish plague. This fungal disease carried by signals, which fatally affects just the natives, is spread by waterborne spores that can live without a host for up to 16 days, distributed not just by nature but by man, attached to muddy waders, nets and all the other paraphernalia of fishing.

Trapping sounds an alluring option — crayfish are suckers for a baited cage trap — but counter-intuitively it can make the situation worse in that the traps are mostly designed to catch the larger males, who are, as confirmed cannibals, best placed for population control. When you consider that a juvenile crayfish is not much bigger than the nail of your smallest finger then you'll understand that even intensive trapping to remove all sizes and age groups to eliminate all possibility of regeneration is near to impossible on rivers. Our hope, and it is a faint one, lies in sterilizing the alpha male crayfish, who will helpfully kill their younger, fertile rivals while failing to perpetuate the bloodline. In case you are wondering, there are two ways of sterilization: an x-ray technique, which is cumbersome and expensive; or by snipping off the two tiny gonopods from the underside of the male. Mating takes place by the male flipping the female on her back and then using his gonopods, that are shaped a bit like two pairs of fingers, to lodge a sac of sperm on the belly of the female so that the eggs are fertilized as they come out of the ovaries. No gonopods? A bit of feeble fumbling before the sac just floats away on the current or sticks to the female but nowhere near the right location.

For all the science and ingenuity, the sad fact is that the American signal crayfish (and probably all the others) are here to stay. On rivers, the best we can hope for is limiting the population, though we may have some success making some stillwaters signal-free. But, depressing though that maybe, we should not give up on the native white-claws. As Adam Smith observed, we had no intention of making their lives hell, but that doesn't exonerate us from trying to make it up to them in some form or another.

The search is on for communities of natives as yet unrecorded; a colony was re-discovered as recently as 2015 on a tributary of the River Test. Likewise, bodies of water that are currently non-native free (there are some!) might make the perfect home for the establishment of a population of white-claws, as has been done in a reedbed pond at Sparsholt College in Hampshire. We might not be able to beat the signals, but we can at least preserve the natives.

I am indebted to Ben Rushbrook, senior ecologist at the Hampshire & Isle of Wight Wildlife Trust, for all his help with this piece. Let him know if you spot or know of any white-clawed crayfish. Likewise, he is on the lookout for potential Ark Sites, which Ben says are typically, "An isolated, self-contained site with running and/or stillwater, which can support a healthy, self-sustaining population of white-clawed crayfish with little need for ongoing management." Contact him via the Trust at Ben.Rushbrook@hiwwt.org.uk 

■ Simon Cooper is managing director of Fishing Breaks (fishingbreaks.co.uk), the leading chalkstream fishing specialists. He is also the author of *Life of a Chalkstream* and *The Otters' Tale*.