

CRAYFISH PLAGUE OUTBREAKS UPDATE NO 2 DECEMBER 2017

Information note issued by National Parks and Wildlife Service and Marine Institute.

The purpose of this note is to provide an update on the Crayfish Plague Outbreaks and associated information. These will be produced as, and when, significant new information is available. This is the second update following on from one issued in October 2017. For more detailed information on the outbreak and advice on biosecurity, please refer to the pages on Crayfish Plague on the National Biodiversity Data Centre (NBDC) web site <http://www.biodiversityireland.ie/projects/invasive-species/crayfish-plague/>. If you have any other questions please contact Brian Nelson in National Parks and Wildlife Service (NPWS) at Brian.nelson@chg.gov.ie

This notes contains:

- 1 an update on the known outbreaks
- 2 information from the genotyping of the disease strains
- 3 NPWS recommendations on operation of the voluntary ban

1. Update on the known outbreaks

There is no new information to share on the outbreaks on the Barrow and Suir. Survey in the winter months is generally not effective because of adverse river conditions and the relative inactivity of the species.

There is additional information from the outbreaks on the Lorrha, Bruskey and Deel following the sampling carried out in October and tests on the collected samples.

Lorrha stream outbreak. Test results on animals collected from three sites around north Galway and north Tipperary have all proved negative for Crayfish Plague. The samples sites were from the upper part of the Lorrha stream at Gortpheepra (M9520704108) Co Tipperary, the Ballyfinboy River upstream of Lough Derg in Co Tipperary (R8380898032) and the Kilcrow River at Castletown Bridge, Co. Galway (M7401515383).

Bruskey/Erne outbreak. The test on a sample of 2 crayfish collected from a stream at Annaghcliff, Co. Longford (N2653088179) on the western side of Lough Gowna proved negative for Crayfish Plague.



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Deel outbreak. Testing of samples confirmed the visual evidence in the field of dead and symptomatic animals that the outbreak has moved upstream. Crayfish Plague was detected on at least one animal tested from each of the following sites:

- the main Deel river upstream of Grange bridge from R3080035018 to R3086034730
- the River Deel upstream of Grange Bridge (R3082534577)
- Lisheenine stream (R2989031772)
- Ehernagh stream, upstream of R522 Bridge (R2960532395) and downstream of R520 Bridge (R2979332842)
- River Arra, Trib of Deel, upstream of Deel confluence (R2979432892) and Newcastle West upstream of N21 Bridge (R2822733527)

2. Genotyping results

This is an update on the results provided in October with the results of the genotyping of the Crayfish Plague strain involved in the River Deel outbreak. More detailed genotyping of the Barrow and Suir outbreak strains have proved these are distinct from each other. The outbreaks on the Deel and Barrow do appear to be the same genotype. So a complicated pattern has been revealed which indicates multiple separate inoculations.

Five genotype groups of *Aphanomyces astaci*, have been described by Huang et al., 1994 and Dieguez-Urbeondo et al., 1995, Kozubíková et al., 2011a:

- **Group A** – originally isolated from *Astacus astacus* (Noble crayfish) and *Astacus leptodactylus* (Turkish crayfish) comprises of a number of strains thought to have been related to the early introductions of *A. astaci* into Europe in the 19th century.
- **Group B** – includes strains isolated from Noble crayfish, originally detected in Sweden, and *Pacifastacus leniusculus* (Signal crayfish), originally detected in Lake Tahoe USA. It is thought that Signal crayfish may have introduced *A. astaci* into Europe and infected the Noble crayfish.
- **Group C** – consists of strains originally isolated from Signal crayfish in Pitt Lake, Canada.
- **Group D** – originally isolated from *Procambarus clarkii* (red swamp crayfish) in Spain, this strain is generally associated with higher optimum temperatures compared to isolates from northern Europe (Dieguez-Urbeondo et al. 1995)
- **Group E** – isolated from *O. limosus* (Kozubíková et al., 2011a).

Genotyping results to date as confirmed by the OIE Reference Laboratories in the UK & Finland:

- **1. River Bruskey** – (S/94/15 - 11B & 11D) - Genotyping has indicated that this isolate is 'closely related' to Genotype C. Further sequencing work is being carried out to elucidate the closeness of the relationship.
- **2. River Lorrha** – (S/63/17 – 12) – Genotyping has indicated that this isolate is Genotype A.
- **3. River Deel** – (S/82/17 and S/83/17) – Genotyping has indicated that this isolate is Genotype D.
- **4. River Barrow** – (S/74/17 – 2) – Genotyping has indicated that this isolate is Genotype D.
- **5. River Suir** – (S/21/17 – 3) - Genotyping has indicated that this isolate is Genotype D.



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As there was a small variation in the initial genotyping results between the Suir and the Barrow, i.e. they are both genotype D but appeared to be 2 different sub-types, additional samples from both the Suir and the Barrow were sent to the OIE reference lab in Finland; in an effort to determine whether these 2 different sub-types were completely separate i.e. the Barrow has one sub-type D and the Suir has another subtype D, or if both sub-types were present in both catchments.

The results showed that the Barrow and the Suir have have been infected by different sub-types of genotype D, and at present there appears to be no mix of the 2 sub-types present in both locations which suggests that the outbreaks on the Barrow and the Suir were separate events.

The River Deel is now also confirmed as genotype D, and detailed test results have shown that it is the same sub-type D as detected in the Barrow.

3 NPWS recommendations on operation of the voluntary ban

This new information from the genotyping results shows a complicated picture of multiple infections of the plague organism in the affected rivers. The identification of the genotypes does not however provide information on where and how the plague arrived in Ireland. This is because there is no clear pattern in the distribution of the genotypes in other countries, most occur throughout Europe.

As each outbreak has involved just a single and different genotype, it is reasonable to infer that there has not been cross-contamination of rivers in Ireland with the possible exception of the Deel and Barrow. However given that the four other rivers are separate infections, it is entirely possible that the Deel and Barrow were also separate events.

It is the recommendation of NPWS that the voluntary ban remains in place until another review by 1st March 2018. This measure is in place to contain the outbreaks to the affected rivers and protect the unaffected populations elsewhere in Ireland.

All water users are asked to operate a temporary ban on moving water sports and angling equipment out of affected catchments. Activity on affected rivers can continue but users are requested to limit activity to the river section where they normally operate. Any movement between catchments should only be done while following the Check, Clean and Dry biosecurity protocol.



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