



# *Echinococcus multilocularis* surveillance programme

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## Background

Echinococcosis is caused by tapeworms of the genus *Echinococcus*. Several species of *Echinococcus* have been identified which infect a wide range of domestic and wild animals, as well as humans. *Echinococcus multilocularis* normally circulates in a wildlife cycle involving wild carnivores (e.g. red fox, raccoon dog, wolf and coyote) as the definitive hosts and small mammals, usually rodents such as voles, as intermediate hosts. Domestic cats and dogs can be infected with the adult tapeworms if they prey on infected rodents. Humans can become infected with the intermediate stage as accidental hosts through the ingestion of tapeworm eggs (e.g. in contaminated vegetables or from hand to mouth after handling infected animals); in such cases, *E. multilocularis* causes a condition known as alveolar echinococcosis, which is often fatal if untreated. *E. multilocularis* is found in many countries in continental Europe, but it has never been reported in Ireland.

## Legislative basis

In Ireland, surveillance for *E. multilocularis* is carried out in accordance with Regulation (EU) No 2018/772. Ireland carries out surveillance as set out in Annex I of Regulation 2018/772, in order to be listed as a country which is free from *E. multilocularis*. This allows Ireland to insist that pets are treated for echinococcosis prior to entry into this country. In Ireland the only wild (potential) definitive host is the red fox, so that species is the target of the surveillance programme. Annex I specifies a design prevalence of 0.01 and a system sensitivity of 0.95 for the surveillance. In accordance with previous formal estimates, a figure of 150,000 is used for the total fox population in the surveillance sample size calculation.

## Active surveillance

The red foxes tested for this study include some foxes which have been shot by hunters, and some foxes which have died as a result of road traffic accidents. The foxes are tested in the laboratory operated by the Department of Agriculture, Food and the Marine (DAFM) in Backweston. Results of testing for recent years are as follows:



| Year | Samples tested | Positive | Negative |
|------|----------------|----------|----------|
| 2015 | 398            | 0        | 398      |
| 2016 | 405            | 0        | 405      |
| 2017 | 405            | 0        | 405      |
| 2018 | 403            | 0        | 403      |
| 2019 | 400            | 0        | 400      |
| 2020 | 404            | 0        | 404      |
| 2021 | 398            | 0        | 398      |
| 2022 | 400            | 0        | 400      |

The European Food Safety Authority reviews the type and sensitivity of the detection method, the selection of the target population, the sampling strategy, the methodology and the results of each annual survey conducted by Ireland. It also submits an annual report to the European Commission. On each of the annual surveys carried out, Ireland succeeded in the fulfilment of the technical legal requirements to provide evidence, with 95% confidence, of < 1% prevalence of *Echinococcus multilocularis* in red foxes in Ireland.

#### Passive surveillance:

It should be noted that the active surveillance outlined above is supplementary to the passive surveillance which Ireland has in place to detect a range of animal diseases. Echinococcosis caused by *E. multilocularis* is a notifiable disease in Ireland, meaning that anyone who suspects that an animal or animal product may be affected by the disease is legally obliged to notify DAFM (under SI 130 of 2016). It is also mandatory to notify the public health authorities, [HPSC](#), if echinococcosis is found in humans.

DAFM also operates a network of regional veterinary laboratories, strategically located around the country. These provide a further possible means through which echinococcosis would be detected, were it to occur in Irish animals.

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