Derogations

11.1 Explanation as to why the derogation sought is the only available option for works and no suitable alternative exists as per Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations.

The only way to ascertain numbers of egg strings and therefore estimate breeding success and female population counts is through visual spawn surveys. This involves surveyors walking slowly and carefully around the edges of each pond, noting the number and placement of eggs strings. This is a relatively non-invasive method of surveying. Female natterjack toads lay one egg string per season, and so this can be a somewhat accurate method of assessing female population counts (Beebee and Denton 1996), however this is an imperfect method, as female natterjacks do not usually breed every year (Smith and Skelcher 2019). Each pond is visited every 7-10 days, to calculate the cumulative egg string count per pond throughout the breeding season. Various environmental parameters are also recorded (pH, water and air temperatures, sward height, salinity, percentage of aquatic, substratum and emergent vegetation cover and threats/pressures), to assess compliance with the agri-environment scheme and to monitor the suitability of each pond. These measurements are non-invasive.

Vocalisations are also noted if heard during pond surveys, however this alone count is not used to assess breeding success or population size, as it does not provide an accurate representation of numbers of males present or of the resultant breeding success. Furthermore, surveys take place during the day (to minimise disturbance) and this species primarily breeds and calls at night Gómez-Mestre 2014).

These surveys cannot be undertaken at other (less disruptive) times of year, as toads only congregate at pools during the breeding season and egg string counts are needed to estimate breeding success.

Capture and handling are necessary to (i) accurately identify sexes of toads (for estimating adult population size), (ii) to swab individuals for diseases (*Batrachochytrium dendrobatidis* (Bd), *Batrachochytrium salamandrivorans* (Bsal) and Ranaviruses) and (iii) to take swabs to assess the microbiome. This is the standard protocol for disease surveillance and all surveyors have been trained in handling and swabbing techniques to minimise stress and discomfort to the toads (Boyle et al 2004). Handling is also necessary to determine sex, as the only reliable indicator is a reddish/purple chin in males, which cannot be seen from above.

11.2 Evidence that actions permitted by a derogation will not be detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range as is required under Section 54(2) of the European Communities (Birds and Natural Habitats) Regulations.

The natterjack toad in Ireland is classified as regionally endangered (King et al 2011) and is therefore not considered to be at a favourable conservation status. However, the surveys will provide insight into the effectiveness of current conservation efforts (including the agri-environment pond creation scheme and headstarting and translocations), which have been implemented to improve their conservation status. This data will show population trends that will build on previous data from 2011-2013 (Sweeney et al 2013), 2016-2018 (Reyne et al 2019) and 2024 and will provide evidence that can be used by NPWS in future management strategies for achieving favourable conservation status.

While the surveys may involve temporary and localised disturbance to individual toads, these potential impacts are outweighed by the long-term benefits of understanding and optimising conservation interventions to improve their conservation status.

11.3 Details of any mitigation measures planned for the species affected by the derogation at the location, along with evidence that such mitigation has been successful elsewhere.

For larger ponds, it is sometimes necessary to wade in zig-zag transects through the centre of the pond. However, this does not take place if spawn is so dense that entering the pond would likely cause harm to the egg strings. In this situation, binoculars are used to count egg strings in the centre of the pond.

Surveys take place during the day to get a clearer view of egg strings and to minimise disturbance to the breeding toads.

All surveyors have been trained in handling and swabbing techniques, to minimise stress and discomfort to the toads (Boyle et al 2004). Nitrile gloves are worn each time an amphibian is handled, and gloves are changed between ponds. Toads in amplexus are not handled.

11.4 As much information as possible to allow a decision to be made on this application.

This study will add to long term programme of natterjack toad research in Ireland. Almost 200 ponds will be visited every 7-14 days throughout the breeding season to record egg strings and environmental data influencing Natterjack toad occurrence and breeding success, for example, water chemistry parameters, habitat features and nearby threats and pressures.

In addition to its core component of population biology, water samples will be collected for environmental DNA to assess species presence to test the efficacy of previous translocations; and collect toad skin swabs to assess their skin microbiome with respect to disease and pathogen vulnerability.

Egg string count and pond parameter methodology will be undertaken as described in Reyne et al's (2019) publication.

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