

**Supporting Information for an Application for Derogation
under Regulation 54 & 54A of the European Communities
(Birds and Natural Habitats) Regulations 2011 to test
whether Slender Naiad (*Najas flexilis*) can be germinated
ex-situ from seeds collected from living plants in Lough
Leane, Killarney National Park**



NPWS

An tSeirbhís Páirceanna
Náisiúnta agus Fiadhúlra
National Parks and Wildlife
Service

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2. Introduction

- (a) This application is an extension of a recent derogation [DER-Flora-2026 to DER-Flora - 01 -2026 – 08] expired on 31st May 2026 , which authorised the collection of *Najas flexilis* seeds from sediment in Lough Leane for propagation trails. The proposed work builds directly on that project, which is ongoing, and seeks to extend the authorised activities to include the collection of seeds directly from living *N.flexilis* plants.

The rationale behind the project is to safeguard future Lough Leane *N.flexilis* populations, given that since 2013, the species has seen a dramatic decline in abundance and distribution, despite Lough Leane being cited as once possibly having the largest population in Europe (See Section 3.2).

- (b) Paul Murphy , supported by Aisha O'Connor is proposed to collect seeds/fruits from living *N.flexilis* plants within selected locations in Lough Leane

Paul Murphy is an aquatic and terrestrial ecologist with widespread experience in freshwater and marine surveys including Macrophytes. He completed numerous contracts on behalf of NPWS on marl lakes and rare aquatic macrophytes and charophytes.

Aisha O'Connor has experience with aquatic survey methodologies and macrophyte identification.

Having started snorkelling for macroalgal samples as part of her undergraduate thesis, Aisha further developed and honed her snorkelling and scientific survey skills through her role as Senior Consultant Ecologist at AQUAFACT-APEM Group, Galway. Aisha project managed and was the lead macrophyte scientist for the National Coastal Lagoon Monitoring Programme, fulfilling the National Parks and Wildlife Service obligations under Article 17. This involved conducting snorkel and wading surveys of coastal lagoons around Ireland to survey the macrophyte composition and to identify the charophyte species when present. Aisha also successfully tendered for and carried out the EPA Rocky Shore Seaweed Surveys contract in 2024, while in her role at AQUAFACT, which involved identification of macroalgal specimens to species level. The lagoon project aligns closely to the proposed aquatic ecological survey in terms of methodologies employed and macrophyte species to be identified. Aisha is part of the consortium which was recently awarded the tender for the NPWS

Both Paul and Aisha, hold the relevant boating skills, safety and diving qualifications

NPWS staff that may assist and be involved with the projects are;

- a. Mary Sheehan, Regional Manager, Killarney National Park

Mary has completed an Aquatic Plant ID skills course with BSBI and has worked previously on aquatic plant monitoring projects in Killarney National Park and provided reports on notifiable actions concerning Lough Leane to Regional Management and Divisional Ecologist. Mary collected lake sediment using an Ekman grab as part of the *N.flexilis* ex-situ propagation trials earlier this year. She has also undertaken eDNA sampling. Prior to joining the NPWS, Mary worked in the

Environmental Protection Agency for over 11 years both as an inspector and writing licences on installations requiring an IPPC or waste management licence which involved assessing Environmental Impact Assessments and Appropriate Assessment and Natura Impact Statements and has taken water samples during investigations of non-compliances in her role as inspector.

b. Shonagh Gray, Conservation Ranger;

Shonagh Gray is a Conservation Ranger working in Killarney National Park since 2023. She has a degree in Zoology (BSc. Hons) from UCC & several years' experience in conducting ecological surveys as both a student, as Field Studies Instructor in Killarney National Park Education Centre and as Conservation Ranger. Shonagh has completed an Aquatic Plant ID skills course with BSBI. She is familiar with biosecurity protocols and has practical experience operating a lake boat being competent in their safe use for ecological fieldwork, including navigation and positioning. **She is currently managing the ex –situ propagation trials of *N.flexilis* from lake sediment**

3. Background to proposed activity

3.1 Site Background

Killarney National Park forms part of the Killarney National Park, Macgillycuddy's Reeks & Caragh River Catchment SAC (000365) and is also designated as an SPA, Killarney National Park SPA (004038).

Killarney National Park is state owned and managed by National Parks and Wildlife Service (NPWS), with conservation objectives aimed at maintaining or restoring the favourable conservation condition of qualifying interests

Lough Leane is the largest of the Killarney lakes, with a surface area of approximately 19km² (Fig 1)

Lough Leane is categorised as Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]. Within Lough Leane, key qualifying interests include Slender naiad (*Najas flexilis*), Killarney Shad (*Alosa killarneyensis*), Atlantic salmon (*Salmo salar*), lamprey species (*Lampetra planeri*, *Lampetra fluviatilis*, *Petromyzon marinus*) and otter (*Lutra lutra*)

3.2 Slender Naiad (*Najas flexilis*)[1833]

The Overall Conservation Status of *N.flexilis* is assessed as Bad with a deteriorating trend, which is a change in status from Inadequate with a declining trend in 2019. The deterioration in status is due to habitat degradation and population decline (Article 17 Report, NPWS, 2025)

Evidence indicates the population of *N.flexilis* in Lough Leane, once likely to have been the largest in Ireland and, possibly, Europe, has collapsed in recent years (Roden et al., 2021; Roden and O Connor 2024). A survey in 2019 only recorded five plants at a single location at Tomies point, Lough Leane. This is in stark contrast to 2013 surveys, which recorded *N.flexilis* at nine stations throughout Lough Leane. It is thought the introduction of the non-native macrophyte *Nympoides peltata* has contributed to the decline in *N.flexilis*.

3.3 Project Rationale

The project aims to support the conservation and safeguarding of *N.flexilis* given its recorded population collapse. The species is known to have specific habitat requirements and can be sensitive to environmental change, making populations vulnerable

The objective is to investigate the feasibility of supporting the conservation of *N.flexilis* through propagating seeds ex-situ.

The collection **seeds/fruits** to facilitate ex-situ propagation trials will improve understanding of germination requirements and support the development of conservation measures

Ex-situ propagation provides a means of safeguarding genetic material and supporting potential future restoration or reinforcement of populations, if required

The project therefore contributes directly to the conservation management of *N.flexilis* and supports conservation objectives within the SAC.

4. Full details of proposed activity to be covered by the derogation

Paul Murphy, supported by Aisha O'Connor, will collect seeds/fruits from living *Najas flexilis* plants within Lough Leane, Killarney National Park (Fig 1), if living plants can be found

Seeds/fruits will ideally be collected **in September 2026 – October 2026** – A time for peak seeds/fruit maturity and at the end of the plants natural growing season. The propagation of *Najas flexilis* will continue until at least December 2027

Areas with highest likelihood of living plants mature seeds were chosen based on;

- Most recent records of adult plants
- Greatest abundance of adult plants

The areas identified for sediment collection are (Fig 1):

- Ross Bay at depths <3 m (species was found by Roden and Murphy to be widespread and abundant here in 2013)
- Castlough Bay at depths <3 m (seen at low abundance along southern shore by EPA in 2011 and on south-eastern shore by Roden and Murphy in 2013)
- Victoria Bay (recorded here, as Rare, by KNP staff in 2018)
- Tomies (last locality where adult plants were recorded by Roden and Murphy in 2019)

The seeds/fruits will be collected directly from living *Najas flexilis* plants using appropriate and established collection procedures. Collection will be undertaken carefully to minimise disturbance or damage to parent plants. Only mature seeds/fruits suitable for the proposed ex-situ germination trials will be collected, and the quantity collected from individual plants will be kept to the minimum necessary to achieve the objectives of the project. Plants will not be uprooted. Seeds will be stored appropriately and transported accordingly

Seeds/fruits will be placed in suitable transparent containers, containing lake sediment and covered with some lake water to mimic lake conditions. Some containers will be placed inside a poly tunnel, whilst others will remain outdoors. Each container will be monitored regularly, and will require topping up from time to time. Records, including photographs, will be kept and a report will be written at the end of the project

Following completion of the project, sediment and any germinated plant material will be retained in a contained area on dry land and allowed to dry prior to disposal. Any remaining lake water used in propagation will be disposed of away from natural watercourses on vegetated ground and will not be returned to the lake. These measures eliminate pathways for species transfer and contamination.

4.3 Other relevant information

A section 21 licence will be applied for in addition to the derogation licence.



Figure 1 - Lough Leane showing the four proposed locations for collecting sediment

5. Tests for Derogation

Test 1 - Reason for Derogation:

The reason for the derogation falls into reason 2D “for the purpose of research and education, of re-populating and re-introducing these species and for the breeding operations necessary for these purposes, including artificial propagation of plants.”

Test 2 - Absence of Alternative Solutions

Alternative scenario: Do Nothing

Under this option, mature seeds/fruits would not be collected and no ex-situ germination trial would be undertaken. While this approach would avoid collection of seeds, it would not fulfil the purpose of the proposed activity, which is to support research relating to the species’ propagation and conservation.

As previously, stated *N.flexilis* has experienced a documented decline in recent years (Article 17 report NPWS, 2025, Roden & O’Connor, 2024). There is currently limited understanding of the viability of propagation of *N.flexilis* from seeds/fruits collected from living plants. In the absence of this preliminary research, opportunities to inform evidence-based conservation action may be constrained. The do-nothing approach would fail to contribute to scientific knowledge and understanding of the species.

Alternative scenario: Sediment Collection Only

Whilst the collection of small volumes of surface sediment provides a less intrusive method of obtaining seeds, there is no guarantee that viable seeds are within the collected sediment. Collecting seeds/fruits from a living guarantees germination trials can take place. The collection of mature seeds/fruits aims to support the ongoing seed bank germination from lake sediment trials

Alternative Scenario: Surveys Only

Conducting a survey would only inform on the distribution and relative abundance of *N.flexilis*. This approach would not allow for the collection of potential seed bank and would not therefore not meet the objectives of the pilot

Test 3 - Impact of a derogation on Conservation Status

- (i) The current Conservation Status of Slender Naiad (*Najas flexilis*) is Bad – with a deteriorating trend (Article 17 Report, 2025) which is change from status of Inadequate with a declining trend in 2019 (Article 17 Report, 2019)

A survey conducted in Lough Leane 2013 by Roden & Murphy found *N.flexilis* throughout the lake, except in the North East corner. The size of each population varied but was noted as being substantial given the size of the Lough Leane. The survey repeated in 2019 noted

a significant decline in distribution and population size of *N.flexilis* with only five plants being recorded at a single location, Tomies Point.

By following the recommended methodology and biosecurity protocols, it is unlikely that the sampling will affect population viability, substrate quality, water quality or reproductive capacity of *N.flexilis* within Lough Leane.

- (ii) The project has the potential to impact *N.flexilis* by ;

Physical disturbance of plants

The collection of seeds/fruits directly from living *N.flexilis* plants has the potential to cause limited physical disturbance to individual plants during collection. Collection will be undertaken manually and carefully, with minimum contact with plants necessary to obtain mature seeds/fruits. Plants will not be uprooted, or deliberately damaged, and care will be taken to avoid disturbing the surrounding vegetation and substrate

The timing of the collection will be limited to that necessary to obtain sufficient material for the proposed ex-situ germination trials. Collection will be undertaken at a small number of previously known *N.flexilis* locations

Following the completion of the study, all sediment and plant material will be dried out on dry land in a secure, suitable container before being disposed of accordingly. Water will be disposed of on a green area away from watercourse and drains. No material or will be returned to the sampling locations.

In summary, the activity represents a limited and localised interaction with the species. The scale of collection will be minimal and conducted manually. The activity will not involve the removal of whole plants and will be undertaken to minimise disturbance/damage to the plant

6. Monitoring the impacts of the derogation

The implementation of the proposed derogation will be monitored to ensure activities are carried out in accordance with the approved methodology, and no unintended impacts in *N.flexilis* arise.

Seed/fruit collection will be recorded in the field, including date, location (GPS), volume. This will ensure sampling is minimal and localised.

During collection, visual checks will be undertaken to ensure that no excessive disturbance to surrounding plants occurs.

All collected material will be clearly labelled and tracked throughout the propagation process. Ex-situ germination trials, including seedling emergence, species identification (where possible), and growth observations.

Biosecurity measures will be monitored through the cleaning and disinfection of equipment between sampling sites, with procedure documented to ensure compliance.

The outcome of the project will be reviewed to assess whether the objectives have been achieved, including successful collection of seeds and evidence of germination.

In the unlikely event that any unforeseen impacts to *N.flexilis* are observed during collection activities will be halted and methodology reviewed

A summary report will be prepared, detailing methodology, monitoring results and outcomes of the propagation trial

7. References

NPWS (2017) Conservation Objectives: Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC 000365. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished NPWS report

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