# European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC)

## Fourth Report by the United Kingdom under Article 17

on the implementation of the Directive
from January 2013 to December 2018

Conservation status assessment for the species:

**S1833 - Slender naiad (*Najas flexilis*)**

UNITED KINGDOM

## IMPORTANT NOTE - PLEASE READ

- The information in this document represents the UK Report on the conservation status of this species, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- It is based on supporting information provided by the geographically-relevant Statutory Nature Conservation Bodies, which is documented separately.
- The 2019 Article 17 UK Approach document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Maps showing the distribution and range of the species are included (where available).
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the UK assessments. Further underpinning explanatory notes are available in the related country-level reports.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was not relevant to this species (section 12 Natura 2000 coverage for Annex II species).
- The UK-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, https://jncc.gov.uk/article17, for further information on UK Article 17 reporting.

# Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

## NATIONAL LEVEL

## 1. General information

| | |
|---|---|
| 1.1 Member State | **UK** |
| 1.2 Species code | **1833** |
| 1.3 Species scientific name | **Najas flexilis** |
| 1.4 Alternative species scientific name | |
| 1.5 Common name (in national language) | Slender naiad |

## 2. Maps

| | |
|---|---|
| 2.1 Sensitive species | No |
| 2.2 Year or period | 1999-2018 |
| 2.3 Distribution map | Yes |
| 2.4 Distribution map Method used | Based mainly on extrapolation from a limited amount of data |
| 2.5 Additional maps | No |

## 3. Information related to Annex V Species (Art. 14)

| | | |
|---|---|---|
| 3.1 Is the species taken in the wild/exploited? | No | |
| 3.2 Which of the measures in Art. 14 have been taken? | a) regulations regarding access to property | No |
| | b) temporary or local prohibition of the taking of specimens in the wild and exploitation | No |
| | c) regulation of the periods and/or methods of taking specimens | No |
| | d) application of hunting and fishing rules which take account of the conservation of such populations | No |
| | e) establishment of a system of licences for taking specimens or of quotas | No |
| | f) regulation of the purchase, sale, offering for sale, keeping for sale or transport for sale of specimens | No |
| | g) breeding in captivity of animal species as well as artificial propagation of plant species | No |
| | h) other measures | No |

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3.3 Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit

| b) Statistics/ quantity taken | Provide statistics/quantity per hunting season or per year (where season is not used) over the reporting period | | | | | |
|---|---|---|---|---|---|---|
| | Season/ year 1 | Season/ year 2 | Season/ year 3 | Season/ year 4 | Season/ year 5 | Season/ year 6 |
| Min. (raw, ie. not rounded) | | | | | | |
| Max. (raw, ie. not rounded) | | | | | | |
| Unknown | No | No | No | No | No | No |

3.4. Hunting bag or quantity taken in the wild Method used

3.5. Additional information

## BIOGEOGRAPHICAL LEVEL

## 4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs

**Atlantic (ATL)**

4.2 Sources of information

England
WINGFIELD, R. 2004. The Ecology of Najas flexilis. Scottish Natural Heritage. Commissioned Report No. 017.
PRESTON, C.D., PEARMAN, D.A. & DINES, T.D. 2002. New Atlas of the British & Irish Flora. Oxford University Press.
http://data.ecn.ac.uk/sites/ecnsites.asp?site=L05
http://data.ecn.ac.uk/Data_discovery/searchresults.asp?t=1&search=SITE&sites=L05
Maberly, S. C., De Ville, M. M., Thackeray, S. J., Ciar, D., Clarke, M., Fletcher, J. M., J. James, B., Keenan, P.,
Mackay, E. B., Patel, M., Tanna, B. & Winfield, I.J. 2016. A survey of the status of the lakes of the English Lake District: The Lakes Tour 2015. Lake Ecosystems Group, Centre for Ecology & Hydrology report to United Utilities.
Maberly S.C. De Ville M.M., Kelly J. & Thackeray S.J. (2011). The state of Esthwaite Water in 2010. A report to Natural England. 34pp.
Scotland
Wingfield, R., Murphy, KJ., Hollingsworth, P. and Gaywood, M.J. (2004). The Ecology of Najas flexilis. Scottish Natural Heritage Commissioned Report No. 017.
Bennion, H., Clarke, G., Davidson, T., Morley, N., Rose, N., Turner, S. and Yang, H. (2008). Palaeoecological study of seven mesotrophic lochs. ECRC research report 121. Final report to SEPA and SNH.
McKenzie, S.W., Baxter, E., Korba, L., Stewart, N. & Birkinshaw, N. 2018. Site Condition Monitoring Report 2016 Dunkeld and Blairgowrie Lochs SAC; Lochs Clunie and Marlee SSSI; and Lochs Butterstone, Craiglush and Lowes SSSI Report by Ecus Ltd. Scottish Natural Heritage Commissioned Report

# Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

Inger, S.D, Nisbet, C. & N. Birkinshaw, N. 2018. Site Condition Monitoring Report 2018 Loch Kindar. Report by Ecus Ltd. Scottish Natural Heritage Commissioned Report Unpublished
Baxter, E. 2017. Site Condition Monitoring Report 2016 Coll Machair SAC & Totamore Dunes and Loch Ballyhaugh SSSI: Loch Ballyhaugh. Report by Ecus Ltd. Scottish Natural Heritage Commissioned Report Unpublished
Baxter, E. 2017. Site Condition Monitoring Report 2016 North East Coll Lochs and Moors SSSI: Loch an t-Sagairt. Report by Ecus Ltd. Scottish Natural Heritage Commissioned Report
Bishop, I. J, Bennion, H, and Sayer, C. D. 2018. Understanding the habitat and decline of Najas flexilis in the UK using ecology and paleoecology. Scottish Natural Heritage Commissioned Report
McKenzie, S.W., Baxter, E., Korba, L., Stewart, N. & Birkinshaw, N. 2017. Site Condition Monitoring Report 2016 Balranald Bog and Loch nam Feithean SSSI and North Uist Machair SAC: Loch Scaraidh, Loch Grogary and Loch a Roe. Report by Ecus Ltd. Scottish Natural Heritage Commissioned Report
Baxter, E. McKenzie, S.W., Korba, L., Stewart, N. & Birkinshaw, N. 2017. Site Condition Monitoring Report 2016 Bornish and Ormiclate Machairs SSSI: West Loch Ollay, Loch Toronish and Mid Loch Ollay. Report by Ecus Ltd. Scottish Natural Heritage Commissioned Report Unpublished
Baxter, E., McKenzie, S.W., Wallace, M. & Inger S.D. 2018. Site Condition Monitoring Report 2016 South Uist Machair SAC & South Uist Machair and Lochs Ramsar. Report by Ecus Ltd. Scottish Natural Heritage Commissioned Report Unpublished
Baxter, E. 2017. Site Condition Monitoring Report 2016 North East Coll Lochs and Moors SSSI: Loch an t-Sagairt. Report by Ecus Ltd. Scottish Natural Heritage Commissioned Report Unpublished
Baxter, E. 2017. Site Condition Monitoring Report 2016 Loch Hallan SSSI: Loch Hallan. Report by Ecus Ltd. Scottish Natural Heritage Commissioned Report Unpublished
Smith, P. BSBI (2016) pers comm.
King, U. (2011) pers comm.
Scottish Environment Protection Agency (2017) pers. Comm

## 5. Range

| | | |
|---|---|---|
| 5.1 Surface area (km²) | 2743.57 | |
| 5.2 Short-term trend Period | 2007-2018 | |
| 5.3 Short-term trend Direction | Stable (0) | |
| 5.4 Short-term trend Magnitude | a) Minimum | b) Maximum |
| 5.5 Short-term trend Method used | Based mainly on extrapolation from a limited amount of data | |
| 5.6 Long-term trend Period | | |
| 5.7 Long-term trend Direction | | |
| 5.8 Long-term trend Magnitude | a) Minimum | b) Maximum |
| 5.9 Long-term trend Method used | | |
| 5.10 Favourable reference range | a) Area (km²) | 2505 |
| | b) Operator | |
| | c) Unknown | |
| | d) Method | The FRR is the same as in 2013. The value is considered to be large enough to support a viable population and no |

lower than the range estimate when the Habitats Directive came into force in the UK. For further information see the 2019 Article 17 UK Approach document.

| | |
|---|---|
| 5.11 Change and reason for change in surface area of range | Improved knowledge/more accurate data<br>Use of different method<br>The change is mainly due to: Improved knowledge/more accurate data |
| 5.12 Additional information | As a submerged Annual plant it is difficult to record systematically. Further, evidence shows that it can return a decade after it last set seed in significant numbers, complicating accurate recording. Several sites with records older than a decade have been removed from the range since 2013. This loss is balanced by the submission of eight additional sites to the records. |

## 6. Population

| | | |
|---|---|---|
| 6.1 Year or period | 1999-2018 | |
| 6.2 Population size (in reporting unit) | a) Unit | number of map 1x1 km grid cells (grids1x1) |
| | b) Minimum | |
| | c) Maximum | |
| | d) Best single value | 112 |
| 6.3 Type of estimate | Best estimate | |
| 6.4 Additional population size (using population unit other than reporting unit) | a) Unit | number of localities (localities) |
| | b) Minimum | |
| | c) Maximum | |
| | d) Best single value | 44 |
| 6.5 Type of estimate | Best estimate | |
| 6.6 Population size Method used | Based mainly on extrapolation from a limited amount of data | |
| 6.7 Short-term trend Period | 2007-2018 | |
| 6.8 Short-term trend Direction | Decreasing (-) | |
| 6.9 Short-term trend Magnitude | a) Minimum<br>b) Maximum<br>c) Confidence interval | |
| 6.10 Short-term trend Method used | Based mainly on extrapolation from a limited amount of data | |
| 6.11 Long-term trend Period | 1995-2018 | |
| 6.12 Long-term trend Direction | Decreasing (-) | |
| 6.13 Long-term trend Magnitude | a) Minimum<br>b) Maximum<br>c) Confidence interval | |
| 6.14 Long-term trend Method used | Based mainly on extrapolation from a limited amount of data | |

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| | | |
|---|---|---|
| 6.15 Favourable reference population (using the unit in 6.2 or 6.4) | a) Population size | 46 with unit number of localities (localities) |
| | b) Operator | |
| | c) Unknown | |
| | d) Method | The FRP is the same as in 2013. The value is considered to be large enough to support a viable population and no less than when the Habitats Directive came into force in the UK. For further information see the 2019 Article 17 UK Approach document. |
| 6.16 Change and reason for change in population size | Genuine change<br>Improved knowledge/more accurate data<br>Use of different method | |
| | The change is mainly due to: | Genuine change |
| 6.17 Additional information | As an annual species occuring in deep water, with a population which fluctuates across years, estimating population size is difficult. However, the decline in population is since 2013 is considered genuine, with the population considered to have decreased by 1% or less per year across the current reporting period. | |

## 7. Habitat for the species

| | | |
|---|---|---|
| 7.1 Sufficiency of area and quality of occupied habitat | a) Are area and quality of occupied habitat sufficient (for long-term survival)? | Yes |
| | b) Is there a sufficiently large area of unoccupied habitat of suitable quality (for long-term survival)? | |
| 7.2 Sufficiency of area and quality of occupied habitat Method used | Based mainly on extrapolation from a limited amount of data | |
| 7.3 Short-term trend Period | 2007-2018 | |
| 7.4 Short-term trend Direction | Decreasing (-) | |
| 7.5 Short-term trend Method used | Based mainly on extrapolation from a limited amount of data | |
| 7.6 Long-term trend Period | | |
| 7.7 Long-term trend Direction | | |
| 7.8 Long-term trend Method used | | |
| 7.9 Additional information | The occupied habitat for the species is considered sufficient. However, despite improvements in water quality under the Water Framework Directive, the short term trend in quality of habitat is set decreasing due to acidification, nutrient enrichment and competition from non-native species in some loch habitats. | |

## 8. Main pressures and threats

8.1 Characterisation of pressures/threats

| Pressure | Ranking |
|---|---|
| Intensive grazing or overgrazing by livestock (A09) | H |
| Application of synthetic (mineral) fertilisers on agricultural land (A20) | H |

| | |
|---|---|
| Construction or development of reservoirs and dams for residential or recreational development (F29) | M |
| Invasive alien species of Union concern (I01) | H |
| Other invasive alien species (other then species of Union concern) (I02) | H |
| Problematic native species (I04) | M |
| Mixed source pollution to surface and ground waters (limnic and terrestrial) (J01) | H |

| Threat | Ranking |
|---|---|
| Tillage practices in forestry and other soil management practices in forestry (B17) | M |
| Application of synthetic fertilisers in forestry, including liming of forest soils (B19) | M |
| Temperature changes (e.g. rise of temperature & extremes) due to climate change (N01) | M |
| Droughts and decreases in precipitation due to climate change (N02) | M |
| Sea-level and wave exposure changes due to climate change (N04) | M |

8.2 Sources of information

8.3 Additional information

## 9. Conservation measures

| | | |
|---|---|---|
| 9.1 Status of measures | a) Are measures needed? | Yes |
| | b) Indicate the status of measures | Measures identified and taken |
| 9.2 Main purpose of the measures taken | | Restore the habitat of the species (related to 'Habitat for the species') |
| 9.3 Location of the measures taken | | Both inside and outside Natura 2000 |
| 9.4 Response to the measures | | Medium-term results (within the next two reporting periods, 2019-2030) |

9.5 List of main conservation measures

| |
|---|
| Adapt mowing, grazing and other equivalent agricultural activities (CA05) |
| Reduce/eliminate point pollution to surface or ground waters from agricultural activities (CA10) |
| Reduce diffuse pollution to surface or ground waters from agricultural activities (CA11) |
| Manage the use of chemicals for fertilisation, liming and pest control in forestry (CB09) |
| Reduce diffuse pollution to surface or ground waters from forestry activities (CB10) |
| Manage changes in hydrological and coastal systems and regimes for construction and development (CF10) |
| Manage water abstraction for public supply and for industrial and commercial use (CF11) |
| Management, control or eradication of other invasive alien species (CI03) |
| Reduce impact of mixed source pollution (CJ01) |
| Implement climate change adaptation measures (CN02) |

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9.6 Additional information

## 10. Future prospects

10.1 Future prospects of parameters

| | |
|---|---|
| a) Range | Poor |
| b) Population | Poor |
| c) Habitat of the species | Poor |

10.2 Additional information

Future trend of Range is Negative - decreasing <=1% (one percent or less) per year on average; Future trend of Population is Overall stable; and Future trend of Habitat for the species is Positive - slight/moderate improvement. For further information on how future trends inform the Future Prospects conclusion see the 2019 Article 17 UK Approach document.

## 11. Conclusions

| | |
|---|---|
| 11.1. Range | Favourable (FV) |
| 11.2. Population | Unfavourable - Inadequate (U1) |
| 11.3. Habitat for the species | Unfavourable - Inadequate (U1) |
| 11.4. Future prospects | Unfavourable - Inadequate (U1) |
| 11.5 Overall assessment of Conservation Status | Unfavourable - Inadequate (U1) |
| 11.6 Overall trend in Conservation Status | Deteriorating (-) |

11.7 Change and reasons for change in conservation status and conservation status trend

a) Overall assessment of conservation status

No change

The change is mainly due to:

b) Overall trend in conservation status

Genuine change

The change is mainly due to: Genuine change

11.8 Additional information

Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is stable; and (ii) the current Range surface area is not less than the Favourable Reference Range.

Conclusion on Population reached because: (i) the short-term trend direction in Population size is decreasing by 1% per year or less; and (ii) the current Population size is not more than 25% below the Favourable Reference Population.

Conclusion on Habitat for the species reached because: (i) the area of occupied habitat is sufficiently large and (ii) the habitat quality is suitable for the long-term survival of the species; and (iii) the short-term trend in area of habitat is decreasing.

Conclusion on Future prospects reached because: (i) the Future prospects for Range are poor; (ii) the Future prospects for Population are poor; and (iii) the Future prospects for Habitat for the species are poor.

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Overall assessment of Conservation Status is Unfavourable-inadequate because three of the conclusions are Unfavourable-inadequate.

Overall trend in Conservation Status is based on the combination of the short-term trends for Range - stable, Population - decreasing, and Habitat for the species - decreasing.

Overall assessment of Conservation Status has not changed since 2013.

The Overall trend in Conservation Status has changed between 2013 and 2019 because the Habitat for the species trend has changed from stable to decreasing

## 12. Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

| | | |
|---|---|---|
| 12.1 Population size inside the pSCIs, SCIs and SACs network (on the biogeographical/marine level including all sites where the species is present) | a) Unit | number of map 1x1 km grid cells (grids1x1) |
| | b) Minimum | |
| | c) Maximum | |
| | d) Best single value | 40 |
| 12.2 Type of estimate | | Best estimate |
| 12.3 Population size inside the network Method used | | Based mainly on extrapolation from a limited amount of data |
| 12.4 Short-term trend of population size within the network Direction | | Stable (0) |
| 12.5 Short-term trend of population size within the network Method used | | Complete survey or a statistically robust estimate |
| 12.6 Additional information | | |

## 13. Complementary information

| |
|---|
| 13.1 Justification of % thresholds for trends |
| 13.2 Trans-boundary assessment |
| 13.3 Other relevant Information |

# Distribution Map

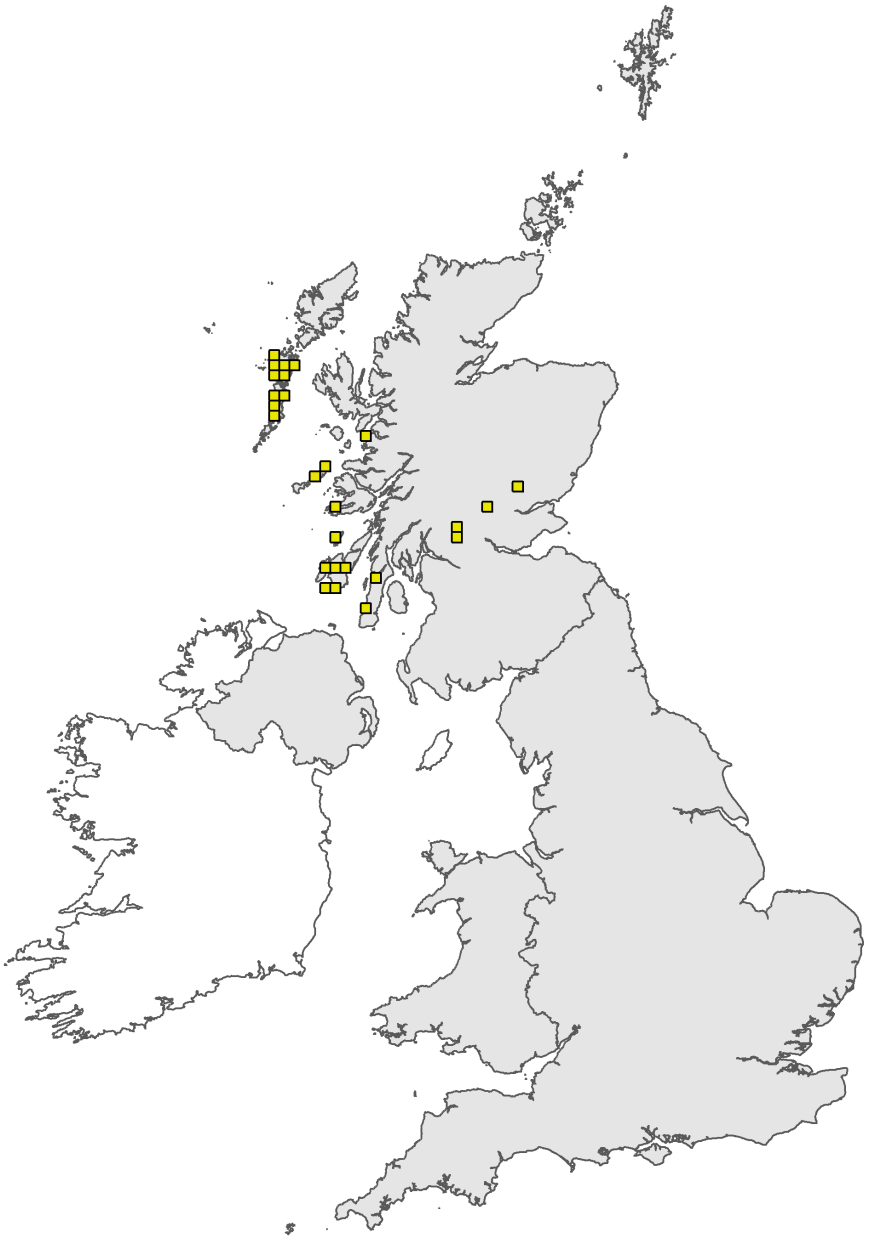

Figure 1: UK distribution map for S1833 - Slender naiad (*Najas flexilis*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available species records within the current reporting period. For further details see the 2019 Article 17 UK Approach document.

# Range Map

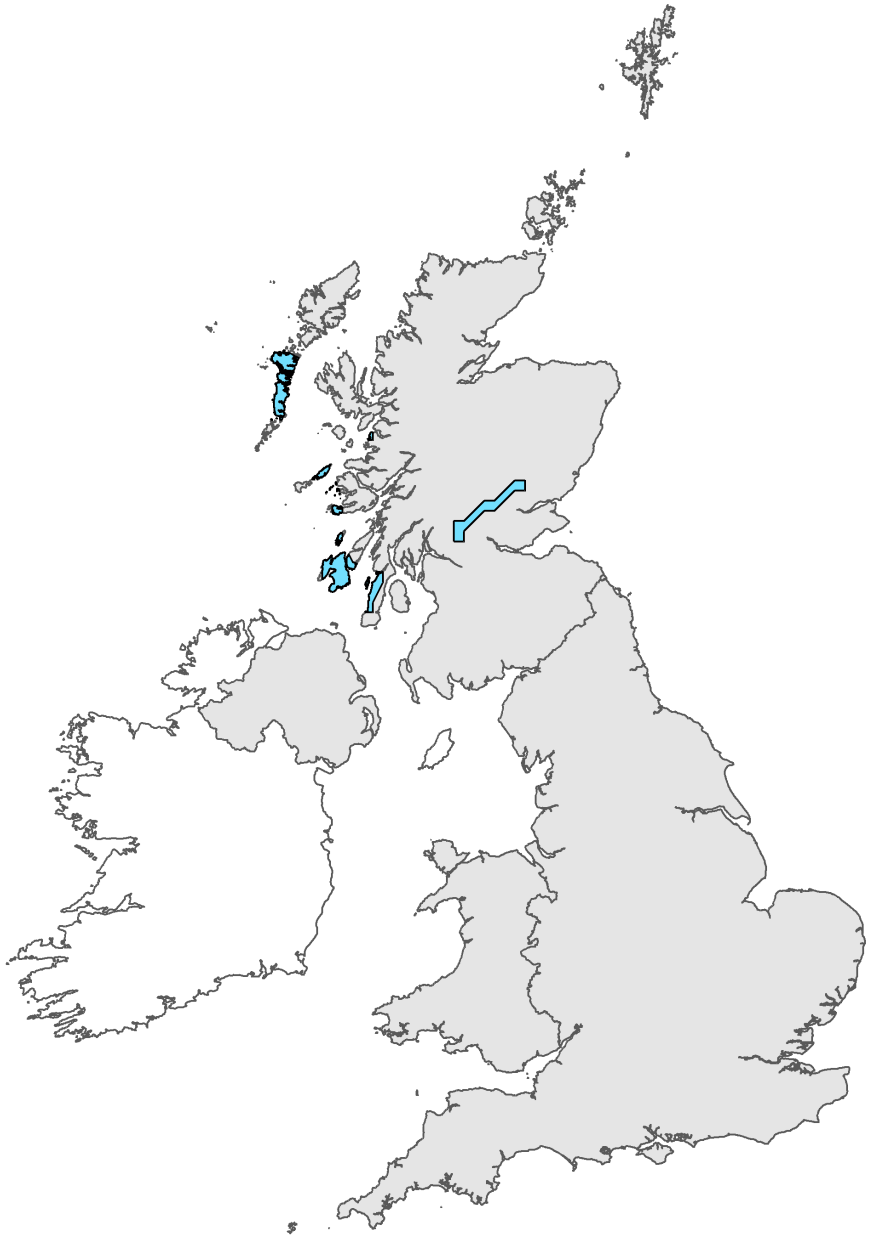

Figure 2: UK range map for S1833 - Slender naiad (*Najas flexilis*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this species was 20km. For further details see the 2019 Article 17 UK Approach document.