Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A

2019-2024

Conservation status assessment for the species:

S6981 - Pool frog

(*Pelophylax lessonae*)

England

NATURAL ENGLAND

JNCC

For further information please contact:

Natural England, Foss House, Kings Pool, 1-2 Peasholme Green, York, YO1 7PX.
https://www.gov.uk/government/organisations/natural-england

JNCC, Quay House, 2 East Station Road, Fletton Quays, Peterborough, PE2 8YY.
https://jncc.gov.uk

This report was produced by JNCC in collaboration with Natural England.

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Important note - Please read

- The information in this document represents the England Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A, for the period 2019-2024.
- It is based on supporting information provided by Natural England, which is documented separately.
- The Habitats Regulations reporting 2019-2024 Approach Document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- Maps showing the distribution and range of the species are included.
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the assessments. Further underpinning explanatory notes are available in the related country 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 National Site Network coverage for Annex II species).

Further details on the approach to the Habitats Regulations Reporting 2019-2024 are available on the JNCC website.

Assessment Summary: Pool frog

Distribution Map

Range Map

Figure 1: England distribution and range map for S6981 - Pool frog (*Pelophylax lessonae*). 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.

Table 1: Table summarising the conservation status for S6981 - Pool frog (*Pelophylax lessonae*). Overall conservation status for species is based on assessments of range, population, habitat for the species, and future prospects.

Overall Conservation Status (see section 11)

Unfavourable-bad (U2)

Breakdown of Overall Conservation Status

Range (see section 5)	**Unfavourable-bad (U2)**
Population (see section 6)	**Unfavourable-bad (U2)**
Habitat for the species (see section 7)	**Favourable (FV)**
Future prospects (see section 10)	**Favourable (FV)**

List of Sections

National Level

1. General information

1.1 Country	England
1.2 Species code	S6981
1.3 Species scientific name	*Pelophylax lessonae*
1.4 Alternative species scientific name	
1.5 Common name	Pool frog
Annex(es)	IV

2. Maps

2.1 Sensitive species	Yes
2.2 Year or period	2019-2024
2.3 Distribution map	Yes
2.4 Distribution map; Method used	Complete survey or a statistically robust estimate

2.5 Additional information

Currenty found in 4 1km squares (1 10 km square)

3. Information related to Annex V Species

3.1 Is the species taken in the wild / exploited?

3.2 What measures have been taken?

a) Regulations regarding access to property
b) Temporary or local prohibition on the taking of specimens in the wild and exploitation
c) Regulation of the periods and/or methods of taking specimens
d) Application of hunting and fishing rules which take account of the conservation of such populations

e) Establishment of a system of licences for taking specimens or of quotas

f) Regulation of the purchase, sale, offering for sale, keeping for sale, or transport for sale of specimens

g) Breeding in captivity of animal species as well as artificial propagation of plant species

Other measures

Other measures description

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

a) Unit

Table 2: Quantity taken from the wild during the reporting period (see 3.3a for units). For species with defined hunting seasons, Season 1 refers to 2018/2019 (autumn 2018 to spring 2019), and Season 6 to 2023/2024. For species without hunting seasons, data are reported by calendar year: Year 1 is 2019, and Year 6 is 2024.

	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
b) Minimum	-	-	-	-	-	-
c) Maximum	-	-	-	-	-	-
d) Unknown	-	-	-	-	-	-

3.4: Hunting bag or quantity taken in the wild; Method used

3.5: Additional information

No additional information

Biogeographical Level

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs ATL

4.2 Sources of information

See section 14 References

5. Range

5.1 Surface area (km²)	100
5.2 Short-term trend; Period	2019-2024
5.3 Short-term trend; Direction	Stable
5.4 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	
d) Unknown	
e) Type of estimate	
f) Rate of decrease	
5.5 Short-term trend; Method used	Complete survey or a statistically robust estimate
5.6 Long-term trend; Period	
5.7 Long-term trend; Direction	
5.8 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Rate of decrease	

5.9 Long-term trend; Method used	

5.10 Favourable Reference Range (FRR)

a) Area (km²)	
b) Pre-defined increment	Current range is between 51% and 100% smaller than the FRR
c) Unknown	No
d) Method used	Expert opinion
e) Quality of information	moderate

5.11 Change and reason for change in surface area of range

a) Change	No
b) Genuine change	
c) Improved knowledge or more accurate data	
d) Different method	
e) No information	
f) Other reason	
g) Main reason	

5.12 Additional information

The northern clade pool frog is recognised as a native species and became the subject of a reintroduction programme in 2005 in Norfolk. The species is the rarest amphibian in Great Britain, and site protection should be a significant delivery mechanism for its conservation within its considered natural range in East Anglia. All sites with populations within the considered natural range, derived from an authorised reintroduction, or from natural colonisation from reintroductions, should be selected once the population has become established. Established means that there should be evidence of sustained period of breeding at the site over a period of not less than five years. Currently only found at two reintroduction sites, it is therefore considered to be: between 51 and 100% smaller than the FRR.

6. Population

6.1 Year or period	2019-2024

6.2 Population size (in reporting unit)

a) Unit	number of individuals
b) Minimum	50
c) Maximum	142
d) Best single value	60
6.3 Type of estimate	Best estimate
6.4 Quality of extrapolation to reporting unit	moderate

6.5 Additional population size (using population unit other than reporting unit)

a) Unit	
b) Minimum	
c) Maximum	
d) Best single value	
e) Type of estimate	

6.6 Population size; Method used	Complete survey or a statistically robust estimate
6.7 Short-term trend; Period	2019-2024
6.8 Short-term trend; Direction	Increasing
6.9 Short-term trend; Magnitude	
a) Estimated minimum	50
b) Estimated maximum	142
c) Pre-defined range	
d) Unknown	No
e) Type of estimate	Best estimate

f) Rate of decrease	
6.10 Short-term trend; Method used	Complete survey or a statistically robust estimate
6.11 Long-term trend; Period	
6.12 Long-term trend; Direction	
6.13 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Confidence interval	
d) Rate of decrease	
6.14 Long-term trend; Method used	

6.15 Favourable Reference Population (FRP)

ai) Population size	
aii) Unit	
b) Pre-defined increment	Current population is between 51% and 100% smaller than the FRP
c) Unknown	No
d) Method used	Expert opinion
e) Quality of information	moderate

6.16 Change and reason for change in population size

a) Change	No
b) Genuine change	
c) Improved knowledge or more accurate data	
d) Different method	
e) No information	

f) Other reason	
g) Main reason	

6.17 Additional information

The current population estimate is more than 50% below the FRP, although the short term trend is increasing. To achieve the FRP will require more sites with established populations, consisting of suitable habitat which is managed for this species.

6.18 Age structure, mortality and reproduction deviation	No deviation from normal

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat (for long-term survival)

a) Is area of occupied habitat sufficient?	Yes
b) Is quality of occupied habitat sufficient?	Yes
c) If No or Unknown, is there a sufficiently large area of unoccupied habitat of suitable quality?	Yes

7.2 Sufficiency of area and quality of occupied habitat; Method used

a) Sufficiency of area of occupied habitat; Method used	Complete survey or a statistically robust estimate
b) Sufficiency of quality of occupied habitat; Method used	Complete survey or a statistically robust estimate
7.3 Short-term trend; Period	2019-2024
7.4 Short-term trend; Direction	Increasing
7.5 Short-term trend; Method used	Complete survey or a statistically robust estimate

7.6 Long-term trend; Period

7.7 Long-term trend; Direction

7.8 Long-term trend; Method used

7.9 Additional information

There is considered to be sufficient habitat to support a viable population. Habitat quality is moderate and the short term trend is stable. Current occupied habitat is subject to agri-environment schemes tailored to enhance and maintain habitat for the species.

8. Main pressures

8.1 Characterisation of pressures

Table 3: Pressures affecting the species, including timing and importance/impact ranking. Pressures are defined as factors acting currently and/or during the reporting period (2019–2024). Rankings are: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Pressure	Timing	Ranking
PJ12: Decline or extinction of related species (e.g. food source / prey, predator / parasite, symbiote, etc.) due to climate change	Ongoing	High (H)
PA15: Use of other pest control methods in agriculture (excluding tillage)	Ongoing	Medium (M)
PI04: Plant and animal diseases, pathogens and pests	Ongoing	High (H)
PK01: Mixed source pollution to surface and ground waters (limnic and terrestrial)	Ongoing	Medium (M)
PG10: Harvesting or collecting of wild plants, fungi and animals on terrestrial land	Ongoing	Medium (M)
PL05: Modification of hydrological flow (mixed or unknown drivers)	Ongoing	High (H)
PM07: Natural processes without direct or indirect influence from human activities or climate change	Ongoing	Medium (M)
PB26: Other forestry activities, excluding those relating to agro-forestry	Ongoing	Medium (M)

PH08: Other human intrusions and disturbance not mentioned above	Ongoing	Medium (M)

8.2 Sources of information

See section 14 References

8.3 Additional information

PJ12: It is now clear that climatic conditions in the UK and elsewhere have changed as a result of himan activities. There is strong evidence that further change will take place and that the projected scale and rate of climate change as well as how change interacts with other environmental pressures, will have significant implications for the natural environment. Some habitats are particularly vulnerable to climate change, particularly wetlands due to the increased frequency and extent of drought and flooding, coastal habitats from sea-level rise, heathland from wildfire and montane habitats due to warming. Climate change is likely to have significant influences on the UK population of Pool Frog. At the northern edge of its range, advancing spring conditions may encourage an earlier emergence from hibernation and extend the breeding period, potentially increasing recruitment and juvenile dispersal opportunities (Dervo and others 2016). Hotter and drier summers are also likely to have an adverse effect on populations, reducing the availability of suitable aquatic habitats and invertebrate prey due to the increased frequency of periodic drying events (Préau and others 2020). This could seriously impact recruitment levels if breeding ponds dry out before metamorphosis. Disease risks, such as that caused by the chytrid fungus Batrachochytrium dendrobatidis, may also change with shifts in temperature (Pounds et al and others 2006). Landscape-scale wetland restoration, the reduction of over-abstraction, increasing connectivity between wetlands by creating new pools and increasing pond depth and diversity should all help build resilience.

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	Increase the population size and/or improve population dynamics (related to 'Population')
9.3 Location of the measures taken	Both inside and outside National Site Network
9.4 Response to measures	Medium-term results (within the next two reporting periods, 2025–2036)

9.5 List of main conservation measures

Table 4: Key conservation measures addressing current pressures and/or anticipated threats during the next two reporting periods (2025–2036). Measures are ranked by importance/impact: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Conservation measure	Ranking
MS02: Reintroduce species from the directives	High (H)
MM04: Other measures related to natural processes	Medium (M)
MK01: Reduce impact of mixed source pollution	Medium (M)
MA01: Prevent conversion of natural and semi-natural habitats, and habitats of species into agricultural land	Medium (M)
MM01: Management of habitats (others than agriculture and forest) to slow, stop or reverse natural processes that occur without direct or indirect influence from human activities or climate change	Medium (M)
MG02: Management of hunting, recreational fishing, and the recreational or commercial harvesting or collection of plants and fungi (incl. restoration of habitats)	Medium (M)
MK02: Reduce impact of multi-purpose hydrological changes	High (H)

9.6 Additional information

The Northern Pool Frog (Pelophylax lessonae) was declared extinct in the UK in the 1990′s and has been the focus of a major reintroduction programme led by Amphibian and Reptile Conservation and Natural England. Two reintroduction sites were chosen in Norfolk and the initial project culminated in northern pool frogs once again inhabiting ponds at these two sites in Norfolk. However, these have remained small and vulnerable. With grant funding from Natural England, Banham Zoo is supporting the next stage of this long-term project by establishing a dedicated pool frog breeding facility at Banham

Zoo. The facility will rear and breed frogs through their most vulnerable tadpole life stage before releasing them into these two safe sites in Norfolk. This project aims to safeguard the current population of reintroduced frogs and to increase numbers in the wild. Long term aims will be to support wild populations to become self-sustaining and the creation of other northern pool frog release sites to re-establish them in their former range of Lincolnshire, Norfolk and Cambridgeshire.

10. Future prospects

10.1a Future trends of parameters

ai) Range	Positive - increasing <=1% (one percent or less) per year on average
bi) Population	Positive - increasing <=1% (one percent or less) per year on average
ci) Habitat for the species	Positive - slight/moderate improvement

10.1b Future prospects of parameters

aii) Range	Good
bii) Population	Good
cii) Habitat for the species	Good

10.2 Additional information

Future trend of Range is Positive - increasing <=1% (one percent or less) per year on average; Future trend of Population is Positive - increasing <=1% (one percent or less) per year on average; and Future trend of Habitat for the species is Overall stable. Future trends are anticipated to move in a positive direction particularly with the captive breeding facility established at Banham Zoo (Norfolk). Monitoring and habitat management continue and also the restoration of adjacent habitats.

There is successful breeding at two sites, but as small populations are still highly vulnerable to pressures and threats such as disease, future prospects are still considered to be improving.

11. Conclusions

11.1 Range	Unfavourable-bad (U2)

11.2 Population	Unfavourable-bad (U2)
11.3 Habitat for the species	Favourable (FV)
11.4 Future prospects	Favourable (FV)
11.5 Overall assessment of Conservation Status	Unfavourable-bad (U2)
11.6 Overall trend in Conservation Status	Improving

11.7 Change and reason for change in conservation status

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.7 Change and reason for change in conservation status trend

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.8 Additional information

The re-introduction strategy for the pool frog in England includes an account of the conservation measures needed for the species. This includes re-establishing the species through reintroductions. Measures to achieve that goal have commenced with the reintroduction of two populations, along with efforts to ensure they persist, primarily habitat management, monitoring, legal protection, protected area mechanism improvements, communications, and research. The current populations are small and fragile and therefore highly vulnerable to stochastic events, for example extreme weather conditions such as drought, as seen most recently in 2022. It is imperative that we improve the resilience of these populations, so they are more robust and able to expand their distribution. Natural England has funded a project to continue head-starting and to design and construct a bespoke captive breeding facility, based at Zoological Society of East Angia, Banham Zoo (Norfolk). This new facility will incorporate an indoor laboratory and a series of outdoor enclosures to house a captive breeding population. Outdoor raising of all lifestages of this species has never been trialled and documented in the UK before. The aim is to retain a number of animals every year to found the captive breeding colony by Year 3 (2028), removing the requirement of wild sourcing

over time. This will create a sustainable, long-term solution for producing large numbers of headstarted tadpoles in following years. The NE-owned breeding facility will be a long-term partnership agreement for a minimum of 10 years. It is anticipated that it will be able to support current and found new populations across their historical range in England within this time frame and beyond.

12. UK National Site Network (pSCIs, SCIs, SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network

a) Unit	
b) Minimum	
c) Maximum	
d) Best single value	
12.2 Type of estimate	
12.3 Population size inside the network; Method used	
12.4 Short-term trend of population size within the network; Direction	
12.5 Short-term trend of population size within the network; Method used	
12.6 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Direction	
12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used	

12.8 Additional information

No additional information

13. Complementary information

13.1 Justification of percentage thresholds for trends

No justification information

13.2 Trans-boundary assessment

No trans-boundary assessment information

13.2 Other relevant information

No other relevant information

14. References

Biogeographical and marine regions

4.2 Sources of information

Joint Nature Conservation Committee. 2019. Fourth Report by the United Kingdom under Article 17 on the implementation of the Habitats Directive from January 2013 to December 2018.

Foster, J., Driver, D., Ward, R. & Wilkinson, J. (2021). IUCN Red List assessment of amphibians and reptiles at Great Britain and country scale. Report to Natural England. ARC report. ARC, Bournemouth.

NA

Sainsbury, A.W., Yu-Mei, R., Agren, E., Vaughan-Higgins, R.J., Mcgill, I.S., Molenaar, F., Peniche, G. & J. Foster. 2017. Disease Risk Analysis and Post Release Health Surveillance for a Reintroduction Programme: the Pool Frog Pelophylax lessonae. Transboundary and Emerging Diseases. 64(5), 1530-1548.

Main pressures

8.2 Sources of information

PJ12: Dervo, B.K., Bærum, K.M., Skurdal, J. and J. Museth. Effects of temperature and precipitation on breeding migrations of amphibian species in southeastern Norway . Scientifica Volume 2016, Article ID 3174316, 8 pages

PA15: Alan Pounds, J., Bustamante, M., Coloma, L. et al. Widespread amphibian extinctions from epidemic disease driven by global warming. Nature 439, 161–167 (2006). https://doi.org/10.1038/nature04246

PI04: Préau, C., Grandjean, F., Sellier, Y. et al. Habitat patches for newts in the face of climate change: local scale assessment combining niche modelling and graph theory. Sci Rep 10, 3570 (2020). https://doi.org/10.1038/s41598-020-60479-4

PK01: Dervo, B.K., Bærum, K.M., Skurdal, J. and J. Museth. Effects of temperature and precipitation on breeding migrations of amphibian species in southeastern Norway . Scientifica Volume 2016, Article ID 3174316, 8 pages

15. Explanatory Notes

Field label	Note
2.5: Additional information	The northern pool frog is currently found at two sites in Norfolk, Eastern England. It had become extinct in Britain in the mid-1990s, and the two populations are the result of reintroductions initiated using stock caught in Sweden.
5.3: Short-term trend; Direction	This increase in range is due to the introduction of the species to a second site in Norfolk during this reporting period, the species has not naturally spread appreciably from their initial re-introduction site nor this second site.
6.4: Quality of extrapolation to reporting unit	This is the approximate number of adults in 2017.
7.1: Sufficiency of area and quality of occupied habitat	The long-term population FRV of 10,000 will require more sites with established populations consisting of habitat suitable and managed for pool frogs. Up to 20 further re-introductions are proposed.
8.1: Characterisation of pressures	Recent analysis of disease risk by Sainsbury et al (2017) and 2018 disease screening indicates there are no pathogens of significant concern on the re-introduction sites, but the spread of ranavirus and chytrid are likely.
10.1: Future trends and prospects of parameters	Future prospects for population are good, with breeding recently confirmed at the second re-introduction site. Ongoing re-introductions and head-starting improvements are planned, but will require sufficient resources.
11.1: Range	Range has been assessed as Bad becase the FRV is much greater than the current surface area of range, although the short term trend is increasing
11.2: Population	Population has been assessed as unfavourable-bad because the current population estimate is more than 25% below the favourable reference population, although the short term trend is increasing
11.3: Habitat for the species	Habitat for species has been assessed as Favourable because, there is thought to be sufficient habitat to support a viable population, the habitat quality is moderate and the

	short term trend is stable. It is thought that there is sufficicent habitat available for re-introductions, with appropriate habitat management to support a viable population. Current occupied habitat is subject to agri-environment schemes tailored to enhance and maintain habitat for the species.
11.4: Future prospects	Future prospects for the species has been assessed as favourable. The habitat at both re-introduction sites is of high quality with numbers of individuals at both sites remaining low, but increasing.