European Community Directive

on the Conservation of Natural Habitats

and of Wild Fauna and Flora

(92/43/EEC)

Second Report by the United Kingdom under Article 17

on the implementation of the Directive

from January 2001 to December 2006

Conservation status assessment for :

S1207: *Rana lessonae* - Pool frog

S1207 *Rana lessonae* Pool frog

Audit trail compiled and edited by JNCC and the Inter-Agency Herpetofauna Working Group

This document is an audit of the data and judgements on conservation status in the UK's report on the implementation of the Habitats Directive (January 2001 to December 2006) for this species. Superscript numbers accompanying the headings below, cross-reference to headings in the corresponding Annex B reporting form. This supporting information should be read in conjunction with the UK approach for species (see 'Assessing Conservation Status: UK Approach').

1. Range Information[2.3]

Rana lessonae is found only in East Anglia. It is absent from Northern Ireland, Scotland and Wales.

1.1 Surface area of range[2.3.1]

100km^2

This species is known at just one location in the UK (see Map 1.1). Therefore, assuming a 10 km resolution, range is 100 km^2.

Map 1.1. Current extent of occurrence and occupied 10-km square (2006)

Data sources provided in Section 6

1.2 Date of range determination[2.3.2]

2006

1.3 Quality of range data[2.3.3]
Good
Prior to 1995 this species has been the subject of intensive survey and monitoring at its last known sites in East Anglia. The re-introduction site is closely monitored. Therefore, the quality of data is considered to be good.

1.4 Range trend[2.3.4] & Range trend magnitude[2.3.5]
Increasing
This species was known to have a very restricted range at the turn of the 19th Century, and was presumed to have become extinct in the wild in 1995 i.e. after the Habitats Directive came into force in 1994. The species has now been re-introduced to the UK at one site, as part of an on-going re-introduction plan.

The known range of pool frog has declined to and then increased from 0 to 10 km^2 since the Habitats Directive came into force in 1994.

1.5 Range trend period [2.3.6]
1994 – 2006

1.6 Reasons for reported trend in range[2.3.7]
3. Direct human influence (restoration, deterioration, destruction)
Negative trends observed between the 1800s and 1990s have been attributed to loss of aquatic and terrestrial habitat through agricultural intensification, development and drainage; habitat fragmentation by agriculture and development; and a reduction in suitable breeding sites resulting from successional change. Collection of individuals by humans also contributed to declines.

The recent increase is the result of an on-going re-introduction programme.

1.7 Favourable reference range[2.7.1]
Unknown
The decision tree in Note 1 has been used as a guide in determining the favourable reference range estimate (see 'Assessing Conservation Status: UK Approach').

The pool frog has always had a restricted distribution in the UK. A re-introduction programme has begun, and aims to establish the species in parts of six Vice Counties: West Norfolk, Cambridgeshire, Bedfordshire, Northampton, South Lincolnshire and North Lincolnshire. The first site has been set up and has received animals, however it cannot yet be considered a viable, self sustaining population, though the initial results are very promising. Whilst only one site exists the risks from stochastic events remains high. A favourable reference range cannot yet be determined until information relating to establishment of individuals and development of local population dynamics can be gathered. Favourable reference range has thus been reported as Unknown.

1.8 Range conclusion[2.8]
Unfavourable – Bad but improving
Although the *R. lessonae*'s range is currently increasing, this is only as a result of a re-introduction program and active site management. As *R. lessonae* went extinct after the Directive came in to effect and the re-introduction programme is at an early stage, the range

of the species must be considered Unfavourable - Bad but improving, due to the hoped for successes of the re-introduction program.

2. Population of the species[2.4]

2.1 Population estimate[2.4.1]
1 population
One population, comprising approx 40 adults was recorded at the end of 2006 (J. Foster, *pers comm*.).

2.2 Date of population estimate[2.4.2]
2006

2.3 Method of population estimate[2.4.3]
3 = from comprehensive inventory
There is only one population and most adults are individually identifiable. Surveys of other possible sites in the last decade have failed to produce any positive sightings.

2.4 Quality of population data[2.4.4]
Good
Surveys have been conducted to a high standard at the re-introduction site and further afield. It is highly unlikely that any further unidentified populations exist.

2.5 Population trend[2.4.5] & Population tend magnitude[2.4.6]
Increasing
At the beginning of the 19th Century this species was known at two sites. By the mid-1800s, one of these sites had been lost, and by 1995 pool frogs were presumed extinct in the wild. However, a population has since been re-established in the UK (Foster & Buckley, 2006). The UK population has therefore decreased to and increased from zero to one, since the Habitat Directive came into force in 1994. However, at this early stage of the re-introduction programme the population cannot be considered established and self sustaining.

2.6 Population trend period[2.4.7]
1994 – 2006

2.7 Reasons for reported trend in population[2.4.8]
3. Direct human influence (restoration, deterioration, destruction)
Negative trends observed between the 1800s and 1990s have been attributed to loss of aquatic and terrestrial habitat through agricultural intensification, development and drainage; habitat fragmentation by agriculture and development; and a reduction in suitable breeding sites resulting from successional change. Collection of individuals by humans also contributed to population declines.

Re-introduction programs and active management have driven the recent increase.

2.8 Justification of % thresholds for trends[2.4.9]
Not applicable

2.9 Main pressures[2.4.10]
100 cultivation
101 modification of cultivation practices
141 abandonment of pastoral systems
151 removal of hedges & copses
164 forestry clearance
390 mineral extraction activities not referred to above – specifically chalk and clay extraction
400 urbanised areas, human habitation
410 industrial or commercial areas
500 communication networks
701 water pollution
800 landfill etc
853 management of water levels
890 over-abstraction from boreholes
910 silting up
920 drying out
964 genetic pollution
952 eutrophication
965 predation

2.10 Threats[2.4.11]
101 modification of cultivation practices
400 urbanised areas, human habitation
410 industrial or commercial areas
500 communication networks
853 management of water levels
910 silting up
920 drying out
964 genetic pollution

2.11 Favourable reference population[2.7.2]
Unknown
The decision tree in Note 1 has been used as a guide in determining the favourable reference population estimate (see 'Assessing Conservation Status: UK Approach').

Population numbers have always been low in the UK. One re-introduced population has been set up and more are planned. One small population is not considered sufficient to ensure the long-term survival of the species in the UK on the basis that one stochastic event could effect the site.

Work undertaken as part of the re-introduction programme (Buckley & Foster, 2005) provides an estimate of the number of populations and individuals probably needed to ensure that the population is viable in genetic and population dynamics terms. The figures are: 20 populations, each comprising more than 500 individuals and should be regarded as minima.

Not withstanding the population estimate made above, until further evidence is gathered the favourable reference population is reported as Unknown.

2.12 Population conclusion[2.8]

Unfavourable – Bad but improving

As with Range, the population of *R. lessonae* is currently increasing, as a direct result of a re-introduction program and active site management. Because *R. lessonae* went extinct after the Directive came in to effect and the re-introduction programme is at an early stage, the population of the species must be considered Unfavourable - Bad but improving, due to the hoped for successes of the re-introduction program.

3. Habitat for the species in the Biogeographic region or sea[2.5]

Kuzmin *et al.* (2004) state that "the pool frog is present in deciduous and mixed forests, forest steppe, steppe, bush lands (e.g. riparian alder groves), meadows, fields and fens. It may often be found in shallow stagnant waterbodies (usually without fish) such as lakes, ponds, swamps, large puddles, clay and gravel pits, and ditches, often covered with dense herbaceous vegetation. It breeds in these wetlands, but may be found hibernating away from waterbodies. It is not very adaptable, but can occur in slightly modified habitats." The northern clade pool frogs (i.e. the UK populations pre and post re-introduction) are found in a more restricted range of habitats.

3.1 Surface area of habitat[2.5.2]

$0.125km^2$

This represents the area of the re-introduction site.

3.2 Date of estimation[2.5.3]

2006

3.3 Quality of data on habitat area[2.5.4]

Good

Due to *R. lessonae*'s restricted distribution, it is possible to estimate current habitat area. However, this does not include any estimate of habitat likely to be suitable for pool frog in other areas.

3.4 Habitat trend[2.5.5]

Unknown

There is no data on this at present. Since the 1800s, there are likely to have been large declines in pool frog habitat as a result of changed land uses (for agriculture and development etc.). However, these are likely to have been curbed since the 1990s following greater general awareness of conservation issues. That said, water abstraction has the potential to markedly alter the wetland habitat this species needs.

3.5 Habitat trend period[2.5.6]

1994 – 2006

3.6 Reasons for reported trend in habitat[2.5.7]

Not applicable

With regard to ponds, key historic pressures have included eutrophication and infilling from development and, more recently, pressures from forestry and agriculture. Natural changes to habitat have also come about through succession.

3.7 Suitable habitat for the species (in km^2)[2.7.3]
Unknown

3.8 Habitat conclusion[2.8]
Unknown

4. Future Prospects[2.6]
Unknown

The re-introduction programme is at an early stage and it is therefore premature to make a judgement about its success.

The Biodiversity Action Plan (BAP) process is the main driver for restoring the species, and is becoming more closely integrated into other sectors. Agri-environment schemes, though not yet geared up for this species, could encourage habitat enhancement and creation. New emphasis on habitat creation in planning could, in theory, result in major gains. New legal duty (NERC Act 2006) should mean that public bodies take account of the species. These positive comments are however heavily dependent on how well the mechanisms are implemented and it remains to be seen how much will be achieved in practice. In addition, even if these mechanisms are sufficiently implemented, it will take many years to compensate for the substantial historical population losses.

4.1 Future prospects conclusion[2.8]
Unknown

5. Overall Conclusion [2.8]
Unfavourable – Bad but improving

Table 5.1. Summary of conclusions

Parameter	Judgement	Grounds for Judgement (in accordance with Annex C)	Reliability*
Range	Unfavourable – Bad but improving	Current range is more than 10% below favourable reference range	1
Population	Unfavourable – Bad but improving	Population is more than 25% below favourable reference population	1
Habitat	Unknown	Insufficient reliable information available	N/A
Future Prospects	Unknown	Insufficient reliable information available

The re-introduction programme is at an early stage hence judgement is withheld | 2 |
| **Overall Assessment** | Unfavourable – Bad but improving | One or more Unfavourable – Bad

Range and population are improving and prospects are favourable | 1 |

*1=High, 2=Moderate, 3=Low

High – Expert opinion is that the concluding judgement accurately reflects the current situation based on a professional understanding of the species. For range, population, and habitat, quality of data used to establish the current estimate has been identified as "good"; data used to inform trends is comprehensive and up to date.

Moderate – A greater understanding of the feature, or the factors affecting it, is required before a confident concluding judgement can be made by experts. For range, population, and habitat, the current estimate and/or trend are based on recent, but incomplete or limited survey data; or alternately, a comprehensive, but outdated (pre-1994) review.

Low – Judgements, and comprising estimates, are based predominately on expert opinion.

N/A – Assessment conclusion is "unknown", on the basis of insufficient reliable information

6. References

BEEBEE, T.J.C., BUCKLEY, J., EVANS, I., FOSTER, J.P., GENT, A.H., GLEED-OWEN, C.P., KELLY, G., ROWE, G., SNELL, C., WYCHERLEY, J.. .& ZEISSET, I. 2005. Neglected native or undesirable alien? Resolution of a conservation dilemma concerning the pool frog *Rana lessonae*. *Biodiversity and Conservation* **14**: 1607–1626.

BEEBEE, T.J.C. & GRIFFITHS, R.A. 2000. Amphibians *and reptiles: A natural history of the British herpetofauna*. The New Naturalist series. London: HarperCollins.

BIGGS, J., WILLIAMS, P., WHITFIELD, M., NICOLET, P. & WEATHERBY, A. 2005. 15 years of pond assessment in Britain: results and lessons learned from the work of Pond Conservation. *Aquatic Conservation-Marine and Freshwater Ecosystems*, **15**: 693-714.

BUCKLEY, J. & FOSTER, J. 2005. Re-introduction strategy for the pool frog *Rana lessonae* in England. *English Nature Research Report* no 642. English Nature, Peterborough.

FOSTER, J. & BUCKLEY, J. 2006. Report on the second release in the reintroduction of the pool frog *Rana lessonae* to England, May-June 2006. *Report to Natural England Wildlife Licensing Unit*. October 2006. Unpublished.

KUZMIN, S., BEEBEE, T., ANDREONE, F., NYSTRÖM, P., ANTHONY, B., SCHMIDT, B., OGRODOWCZYK, A., OGIELSKA, M., COGALNICEANU, D., KOVÁCS, T., KISS, I., PUKY, M. & VÖRÖS, J. 2004. *Rana lessonae*. In: IUCN 2006. 2006 IUCN Red List of Threatened Species. www.iucnredlist.org/search/details.php/58643/all

POOL FROG SAP SG (2006) Pool frog SAP targets review. Unpublished. URL: www.ukbap.org.uk/bapgrouppage.aspx?id=98

Map Data Source

Natural England, J. Foster (*pers. comm.*).