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:

S1079 - Violet click beetle (*Limoniscus violaceus*)

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.

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NATIONAL LEVEL	

1. General information

1.1 Member State	UK
1.2 Species code	**1079**
1.3 Species scientific name	**Limoniscus violaceus**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Violet click beetle

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2013-2018
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	POSITION STATEMENT ON MANAGING THE THREAT TO ANCIENT & VETERAN ASH TREES FROM CHALARA ASH DIEBACK, ANCIENT TREE FORUM (ATF) WORKING GROUP ON CHALARA ASH DIEBACK, 2015. Gouix, N. Brustel H (2012) Emergence trap, a new method to survey Limoniscus violaceus (Coleoptera:Elateridae) from hollow trees, Biodivers. Conserv, 21: 421-436 Gouix,N et al (2015) Habitat requirements of the violet click beetle (Limoniscus violaceus), an endangered umbrella species of basal hollow trees. Insect Conservation and Diversity 8(5):418-427 Quine, C, et al, (2011) National Ecosystem Assessments, Chapter 8 Woodlands, 8.2.2 Stand Age & Structural states, p247. Supporting documentation for the Third Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2007 to December 2012 Conservation status assessment for Species: S1079 - Violet click beetle (Limoniscus violaceus). JNCC http://bd.eionet.europa.eu/article17/reports2012/species/summary/?period=3&group=Arthropods&subject=Limoniscus+violaceus&region=

5. Range

5.1 Surface area (km²)	300	
5.2 Short-term trend Period	2013-2018	
5.3 Short-term trend Direction	Stable (0)	
5.4 Short-term trend Magnitude	a) Minimum	b) Maximum

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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)	300
	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	No change	
	The change is mainly due to:	
5.12 Additional information	The current surface area is equal to the FRR and the trend is stable.	

6. Population

6.1 Year or period	2013-2018	
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	7
6.3 Type of estimate	Best estimate	
6.4 Additional population size (using population unit other than reporting unit)	a) Unit	number of inhabited trees (trees)
	b) Minimum	22
	c) Maximum	30
	d) Best single value	22
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	Stable (0)	
6.9 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	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 (-)	

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6.13 Long-term trend Magnitude	a) Minimum b) Maximum c) Confidence interval	
6.14 Long-term trend Method used	Based mainly on expert opinion with very limited data	
6.15 Favourable reference population (using the unit in 6.2 or 6.4)	a) Population size b) Operator c) Unknown	100 with unit number of inhabited trees (trees)
	d) Method	The FRP has changed since 2013. The new value is considered to be large enough to support a viable population and no less than the population estimate when the Habitats Directive came into force in the UK. The FRP has been revised since 2013 from 38 to 100 inhabited trees. The extrapolation of 100 trees is setting the UK resource against a typical French level of tree use, and scaling it down. For further information see the 2019 Article 17 UK Approach document.
6.16 Change and reason for change in population size	Use of different method The change is mainly due to: Use of different method	
6.17 Additional information	The apparent increase in population since 2013 is the result of using a different method – from assessing occupied trees to non-invasive probability mapping, which establishes a statistical probability of use, but not of occupation. This method indicates the size of the resource, not certainty of occupation. Based on knowledge of the species' ecology and the likely distribution of veteran trees over the last 100 years, expert opinion is that the species was more numerous than present figures suggest. The population is now considered insufficient to support a viable UK population and is more than 25% below the FRP.	

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)?	No
	b) Is there a sufficiently large area of unoccupied habitat of suitable quality (for long-term survival)?	No
7.2 Sufficiency of area and quality of occupied habitat Method used	Based mainly on expert opinion with very limited 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 expert opinion with very limited data	
7.6 Long-term trend Period	1995-2018	
7.7 Long-term trend Direction	Decreasing (-)	
7.8 Long-term trend Method used	Based mainly on extrapolation from a limited amount of data	
7.9 Additional information	The area and quality of habitat are not sufficiently large to ensure the long-term survival of the species. The number of veteran ash and beech trees remains a	

limiting factor for this species. Understanding of the age class gaps across the three sites is improving.

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Interspecific relations (competition, predation, parasitism, pathogens) (L06)	M
Abandonment of traditional forest management (B04)	H
Problematic native species (I04)	M

Threat	Ranking
Interspecific relations (competition, predation, parasitism, pathogens) (L06)	H
Abandonment of traditional forest management (B04)	H
Problematic native species (I04)	M

8.2 Sources of information

8.3 Additional information

Acute oak decline and ash die-back both pose potential risks to the veteran tree stock supporting this species.

The main risk here to the veteran tree stock is one of not being managed to reduce the impacts of wind throw, or undertaking tree surgery on excessive bough weighting/ crown reduction to maintain tree longevity. This parameter also notes the tree age class gaps through lack of r adequate replanting of open grown trees over decades of opportunity.

Deer and grey squirrel damage to trees help maintain the age class gaps. Rhododendron has been a pressure at Windsor but is being cleared out

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

Maintain the current range, population and/or 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/change forest management and exploitation practices (CB05)

Maintain existing traditional forest management and exploitation practices (CB02)

9.6 Additional information

Over the three UK sites a range of tree management practices are or have been deployed, especially managing and securing the veteran tree resource to mantain longevity and persistence.

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10. Future prospects

10.1 Future prospects of parameters	a) Range	Good
	b) Population	Poor
	c) Habitat of the species	Bad
10.2 Additional information	Future trend of Range is Overall stable; Future trend of Population is Negative - decreasing <=1% (one percent or less) per year on average; and Future trend of Habitat for the species is Negative - slight/moderate deterioration. 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 - Bad (U2)
11.3. Habitat for the species	Unfavourable - Bad (U2)
11.4. Future prospects	Unfavourable - Bad (U2)
11.5 Overall assessment of Conservation Status	Unfavourable - Bad (U2)
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 No change The change is mainly due to:
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 stable; and (ii) the current Population size is more than 25% below the Favourable Reference Population. Conclusion on Habitat for the species reached because: (i) the area of occupied and unoccupied habitat is not sufficiently large and (ii) the habitat quality is not adequate 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 good; (ii) the Future prospects for Population are poor; and (iii) the Future prospects for Habitat for the species are bad. Overall assessment of Conservation Status is Unfavourable-bad because one or more of the conclusions is Unfavourable-bad.

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

Overall assessment of conservation status has not changed since 2013.

Overall trend in conservation status has not changed since 2013.

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	6
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	Based mainly on expert opinion with very limited data	
12.6 Additional information	Probability mapping has been completed for Dixton wood SAC, quite a lot of the Bredon Hill NNR, and a small part of the Elmley Castle area of the SAC, and not at all at Windsor great Park, though a contract is proposed for summer 2018.	

13. Complementary information

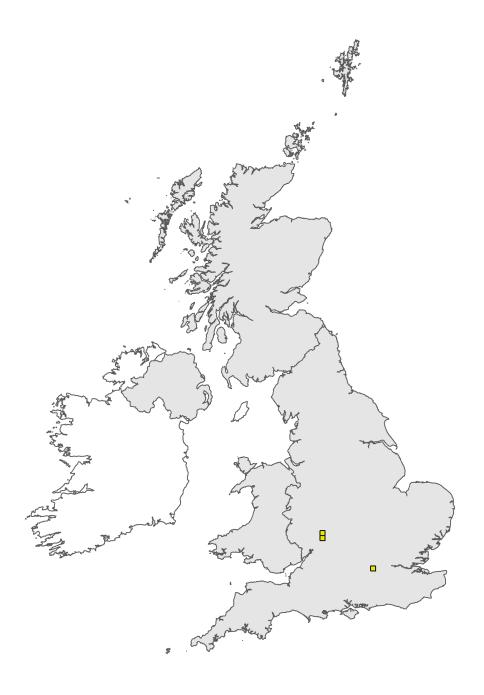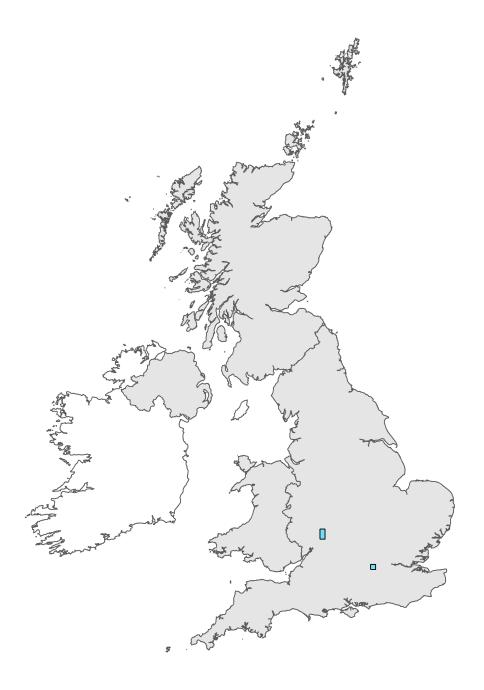|	
13.1 Justification of % thresholds for trends	
13.2 Trans-boundary assessment	
13.3 Other relevant Information	This species is victim to the age class gap present in UK parklands and woods, where its veteran tree resource, though relatively long-lived, is finite and will suffer a resource bottleneck in the future as the wood mould will probably not be in sufficient volumes to sustain the species at its three UK sites. Climate change effects, either from drought, excessive wet, or increased storm events, all threaten the small resource of veteran trees, whilst the rise of tree pathogens, such as sudden oak death pose extra problems.

Distribution Map

Figure 1: UK distribution map for S1079 - Violet click beetle (*Limoniscus violaceus*). 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 S1079 - Violet click beetle (*Limoniscus violaceus*). 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.

Explanatory Notes

Species name: Limoniscus violaceus (1079) Region code: ATL

Field label	Note
5.12 Additional information	This follows the previous reporting information, as only the same 3 locations are known, and it is believed not to have been lost from any of the 3 sites, though the lack of a non-damaging survey technique had, until 2012, thwarted the ambition to prove this. The previous assessment text still holds: On the basis that the range has been stable since the late 1980s, it can be assumed that the range in 1994 (when the Habitats Directive came into force) was equal to the current range. However, based on knowledge of the species' ecology and the likely distribution of veteran trees over the last 100 years, expert opinion is that the species was more numerous than present figures suggest, and that the population is now insufficient to support a viable GB population.
6.6 Population size; Method used	Given that the micro-habitat damaging wood mould removal is frowned on as a technique, the 3rd report noted a trial of emergence trapping following the technique of Gouix et al (2012). This was trialled at Bredon Hill SAC but was unsuccessfulat detecting Limoniscus, though it did capture a number of other rare saproxylic coleoptera and diptera. Trials were also undertaken at the same site to see if eDNA could be used to detect the beetle, but this has so far proved hard, the signals seemingly being weak and the mixture awash with bacterial and fungal DNA. Even the use of quite specific primers has yet to detect the key species. An alternative and successful technique has been to develop probability maps of trees likely to be used by Limoniscus, based on the work of Gouix et al (2015). This has been completed for the smallest SAC, had some work at another, and the third sub-site will hopefully be assessed in 2018. Givenm the number of trees to assess it may take some years to get around all of the likely resource. The probability classes chosen are medium to high, or trees with a basal 30cms bole circumference > 332 cms, with decay classes 4 or 5. The benefit of this technique is that it better tracks the available resource on the site and does not dismiss trees on the basis of not finding larvae. Given that our understanding of the successional stages of wood mould decay and suitability are poor, total resource tracking offers up greater benefits. It is, however, slow to carry out on site with many trees.
6.15 Favourable reference population	The extrapolation of 100 trees is setting the UK resource against a typical French level of tree use, and scaling it down. This forms the basis of the draft English Favourable Conservation Status document.
6.16 Change and reason for change in population size	The population has probably not increased- there is now a greater number of high probability trees known to exist, and that number is likely to grow. The apparent increase in population is from using a completely different method - from occupied trees to non-invasive probability mapping, which establishes a statistical probability of use, but not of occupation. this is indicating the size of the resource, not certainty of occupation. This means that there is a reduced risk of extinction as there are more trees for potential occupation.
7.1 Sufficiency of area and quality of occupied habitat	The argument is more about quality of the supporting habitat than the area, as area is sufficient in two of the 3 UK sites. However, the population will be limited by the availability and decay stage of the tree species present. Whilst Dixton wood, the smallest site, might well be area constrained, the other two sites are not. The extent of the tree resource outside of these sites may, at Bredon Hill, be extensive, although this is in the early stages of being explored, and the inter-tree distances in a largely hedgerow-dominated veteran ash tree landscape may well have a bearing on the ability of Limoniscus to colonise that landscape.

7.2 Sufficiency of area and quality of occupied habitat; Method used	This resource is actually better measured by the use of probability maps than it is by direct survey for larvae, or emergence trapping in the UK, or eDNA detection in its current capacity. Technique aside, the number of veteran ash and beech trees remains a limiting factor for Limoniscus, and we are moving to understanding the age class gaps much better across the 3 sites.
7.9 Additional information	Brown, red/black rot decay cavities in very ancient beech (one site) or ash (two sites) trees in sites with large populations of such trees occurring in old growth forest (single site, beech) or wood-pasture (ash - two sites). Wood mould has been observed to be continued to be produced in these trees, and will for a while. Action so far has been the identification and mapping of high probability of occupation trees, and arborcultural works to prolong veteran tree life. This was already in place at Dixton Wood SAC, has been extended to Bredon HILL NNR and to a more limited extent to Bredon Hill SSSI, and probablity mapping at High Standing Hill, Windor Great Park SAC is proposed for 2018.
9.5 List of main conservation measures	Over the 3 UK sites a range of tree management practices are or have been deployed, so both continuity and adaption are required. This is especially true in the need to manage and secure the veteran tree resource through arborcultural practices, to mantain longevity and resource persistence. This has taken place at Dixton wood, is ongoing at Bredon Hill NNR but less so in the larger SSSI. At Windsor: Halo thinning - some of this work is a 'second round' of haloing of some trees, where it is being done in a phased way; Tree surgery to retain old trees vigour, and to keep them standing for as long as possible; Planting of long term replacement beech & oak to become open grown ancient trees; Removal of dense rhododendron understorey from much of the estate, including around ancient and veteran trees in the VCB areas (pers comm Des Sussex).