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

2019-2024

Conservation status assessment for the species:

S1083 - Stag beetle

(*Lucanus cervus*)

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

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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: Stag beetle

Distribution Map

Range Map

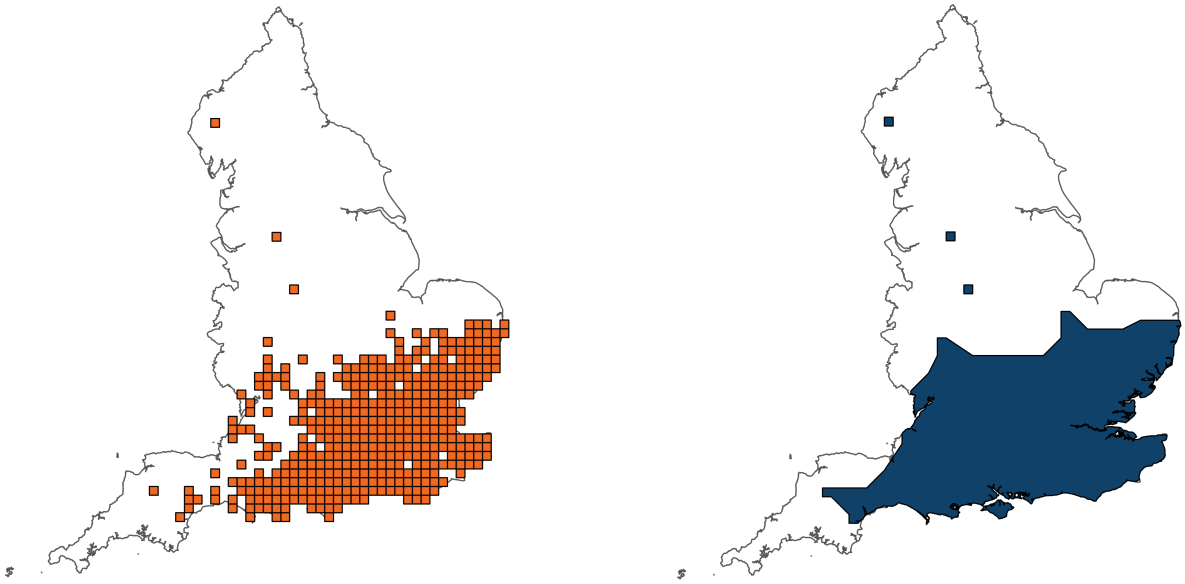

Figure 1: England distribution and range map for S1083 - Stag beetle (*Lucanus cervus*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. The 10km grid square distribution map is based on available species records within the current reporting period.

Table 1: Table summarising the conservation status for S1083 - Stag beetle (*Lucanus cervus*). 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)

Favourable (FV)

Breakdown of Overall Conservation Status

Range (see section 5)	**Favourable (FV)**
Population (see section 6)	**Favourable (FV)**
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	S1083
1.3 Species scientific name	*Lucanus cervus*
1.4 Alternative species scientific name	
1.5 Common name	Stag beetle
Annex(es)	II

2. Maps

2.1 Sensitive species	No
2.2 Year or period	1994-2024
2.3 Distribution map	Yes
2.4 Distribution map; Method used	Based mainly on extrapolation from a limited amount of data

2.5 Additional information

The species mapping data are mainly derived from unsystematic occurrence recording. Occurrence is likely to have increased relative to 2013-2018 due to better reporting via 'Citizen Science' apps, where photographs can be reliably identified.

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)	52,621
5.2 Short-term trend; Period	2013-2024
5.3 Short-term trend; Direction	Increasing
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	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	
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 less than 2% smaller than the FRR
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	moderate

5.11 Change and reason for change in surface area of range

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

5.12 Additional information

Stag Beetle's range data are mainly derived from unsystematic occurrence recording. Occurrence is likely to have increased relative to 2019 report due to better reporting via 'Citizen Science' apps, where photographs can be reliably identified, e.g records from the period of the COVID-19 pandemic (2020-21) accounted for 52% of 53k records (2019-23; 2024 data missing due to lag in reporting). Slight increase of range to the northern and western margins of southern England suggests some genuine range expansion.

6. Population

6.1 Year or period	2019-2024

6.2 Population size (in reporting unit)

a) Unit	number of map 1x1 km grid cells
b) Minimum	
c) Maximum	
d) Best single value	5,256
6.3 Type of estimate	Best estimate
6.4 Quality of extrapolation to reporting unit	

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

a) Unit	number of map 10x10 km grid cells
b) Minimum	
c) Maximum	
d) Best single value	364
e) 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	2013-2024
6.8 Short-term trend; Direction	Increasing
6.9 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	
d) Unknown	Yes
e) Type of estimate	
f) Rate of decrease	
6.10 Short-term trend; Method used	Based mainly on extrapolation from a limited amount of data

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 less than 5% smaller than the FRP
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	moderate

6.16 Change and reason for change in population size

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

6.17 Additional information

The short-term population trend (monads, or 1x1 km cells, between 2013-24) has been assessed as increasing, with 5,256 monads in 2019-24 compared to 4,111 for 2013-18 (change of 21.8%). In contrast, the no. of hectads (10x10 km cells) for 2019-24, at 364, was close to the long term, 1995-2018 value of 357 (noting no data for 2024 in NBN, presumably due to reporting lag). There is uncertainty in estimating population size from occurrence data because survey effort is not standardised: genuine change in population size is difficult to distinguish from change in recording effort. Recording has become more intensive during the 2nd period, due to the growth of Citizen Science app recording, e.g. iRecord. The number of NBN Atlas records was 22k in 2013-18 and 53k in 2019-2024 - an increase of 241%. This is also seen in the peak of recording during the COVID-19 pandemic (2020-21), when 'lock-downs' on movement likely led to increased observations close to where people lived. Stag Beetle is positively associated with gardens in urban environments in the south-east of England.

6.18 Age structure, mortality and reproduction deviation	Unknown

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?	

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

a) Sufficiency of area of occupied habitat; Method used	Based mainly on extrapolation from a limited amount of data
b) Sufficiency of quality of occupied habitat; Method used	Based mainly on extrapolation from a limited amount of data

7.3 Short-term trend; Period	2013-2024
7.4 Short-term trend; Direction	Stable
7.5 Short-term trend; Method used	Based mainly on expert opinion with very limited data
7.6 Long-term trend; Period	
7.7 Long-term trend; Direction	
7.8 Long-term trend; Method used	

7.9 Additional information

Although the Stag Beetle was assessed as Least Concern in the Great Britain Regional IUCN Red List (Lane & Mann, 2016), it remains Near Threatened in Europe (Nieto et al, 2010) and thus British conservation measures contribute to the wider situation.

The 2019 review concluded that historic, northern English losses were real, with no recent records, but it was uncertain whether this was due to habitat deterioration or a temporarily poorer climate.

In her survey of private gardens is SE England, Fremlin (2013) showed a larval dependency on tree stumps and logs, fence posts and other wooden structures; suggesting this species in England is synanthropic, which is not unreasonable for a large number of sub-populations.

The narrative of the 3rd report (2012) still holds: Stag Beetles prefer decaying, subterranean timber (mainly of broadleaves). It occasionally breeds in artificial structures and other decaying plant matter such as compost heaps. Most populations occur on warm alluvial soils and those over chalk are less favoured. Stag beetles are absent from areas with extensive underlying chalk, except for the alluvial soils of river valleys cutting through them. Although we understand the habitat, systematiclly evaluating the resource over its range is difficult. Habitat over the period 2018-24 was judged stable, with moderqate confidence. There are no obvious pressures or measures operating over substantial parts of the range to infer widescale habitat improvement or deterioration.

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
PF02: Construction or modification (e.g. of housing and settlements) in existing built-up areas	Ongoing and likely to be in the future	High (H)
PB07: Removal of dead and dying trees (including debris)	Ongoing and likely to be in the future	High (H)
PH05: Tree surgery, felling/removal of roadside trees and vegetation for public safety	Ongoing and likely to be in the future	Medium (M)

8.2 Sources of information

See section 14 References

8.3 Additional information

PF02: Tidiness in parks, gardens and even in the countryside threat to remove the important wood rot substrates for the larvae, whilst this resource is actively provided through the man-made infrastructure of fence posts and other wooden structures embedded in the ground. Renewal of this resource is, in the absence of guidance, a pressure of the localised population structure. An over-application of percieved safety risks on all decaying timber (as opposed to that that is a real risk), may operate in the parklands, commons and allotments

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	Only 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
MF10: Other measures related to residential, commercial, industrial and recreational infrastructures, operations and activities	High (H)

9.6 Additional information

The issues identified in the 3rd report (2012) remain: The concentration of Stag beetle in the heavily populated south-east of England brings a number of pressures and oppportunities. Re-development and the loss of old timber can result in localised losses, and a subtle fragmentation of the population within a borough. Harvey & Gange (2011) note the strong likelihood of this species existing within a meta-population structure, such that development could reduce habitat and promote population isolation. Radio-tracked males had a maximum flight distance of 50m, and a total displacement maximum distance of 225m, whilst females were tracked no further than 30m from their intial tag site (Hawes, 2009). This urban-constrained population travelled considerably less than individuals in Germany, where typical maximum flights in the countryside were 1,720m (Rink and Sinsch, 2007).

Both the People's Trust for Endangered Species and the London Wildlife Trust have species information guides for stag beetle. These guides detail the beetle's ecology and habitat needs, and how house-holders can help stag beetles. There

is need for greater understanding around the impacts of within and between garden translocations, as this seems to be common practice. The role losses of large garden in urban situations through related development also requires

exploration.

10. Future prospects

10.1a Future trends of parameters

ai) Range	Very Positive - increasing >1% (more than one percent) per year on average
bi) Population	

	Very Positive - increasing >1% (more than one percent) per year on average
ci) Habitat for the species	Overall stable

10.1b Future prospects of parameters

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

10.2 Additional information

No additional information

11. Conclusions

11.1 Range	Favourable (FV)
11.2 Population	Favourable (FV)
11.3 Habitat for the species	Favourable (FV)
11.4 Future prospects	Favourable (FV)
11.5 Overall assessment of Conservation Status	Favourable (FV)
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

Stag Beetle conservation status was assessed as overall - Favourable (Tab. 1A), with Range - Favourable (Tab. 1A, 2A) as current period (2013-24) more than FRR and short-term tend increasing (Tab. 1A, 2B; range of 52,261km2 > 10% greater than 45,331km2 of 2007-18).

Population - Favourable (Tab. 1A, 2B) as current period (2013-24) > FRP and increasing (5,256 monads, 21.8% > than 4,111 monads of 2013-18).

Habitat (Tab. 1A) - Favourable as occupied area and quality of habitat sufficient for population persistence (Tab. C1) and short-term trend stable (too much uncertainty to assess unoccupied habitat).

Overall conservation status trend (Tab. 1B) - Improving as Range and Population Increasing and Habitat Stable.

Future Prospects conclusion (Tab. D2) - Favourable - as Range & Population future prospects both Good and Habitat Stable.

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	number of map 1x1 km grid cells
b) Minimum	
c) Maximum	
d) Best single value	640
12.2 Type of estimate	Best estimate
12.3 Population size inside the network; Method used	Based mainly on expert opinion with very limited data

12.4 Short-term trend of population size within the network; Direction	Stable
12.5 Short-term trend of population size within the network; Method used	Based mainly on expert opinion with very limited data
12.6 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Direction	Increasing
12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used	Based mainly on expert opinion with very limited data

12.8 Additional information

No. of monads in current period (calculated as 2010-24) is 640, compared to 323 in 2019 report (covering 2007-18) indicates doubling across SACs. Out of all 6289 monads for 2010-24, 1,577 were in SSSIs (total 1,589 across SACs or SSSIs).

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

Fremlin, M. 2013. Results of the ‘Stag Beetle ‘larval incidents’ in private gardens’ survey, Essex Naturalist (New Series) 30, 94-108.

Nieto, A. Mannerkoski, I., Pettersson, R., Mason, F., Méndez, M. & Schmidl, J. 2010. Lucanus cervus (Europe assessment). The IUCN Red List of Threatened Species 2010: e.T157554A5094499.

Lane & Mann (2016) A review of the status of the beetles of Great Britain The stag beetles, dor beetles, dung beetles, chafers and their allies - Lucanidae, Geotrupidae, Trogidae and Scarabaeidae. Species Status No.31. Natural England.

Harvey DJ and Gange AC (2011) The stag beetle: a collaborative conservation study across Europe, Insect Conservation and Diversity (2011) 4, 2-3.

Hawes, C, (2009) Radio-telemetric monitoring of stag beetles Lucanus cervus at two sites in the United Kingdom: limited dispersal and its implications for conservation, in 2nd meeting of the European Stag Beetle Group December 5th 2009, Leiden, https://repository.naturalis.nl/pub/325951/2n_meeting_booklet.pdf

Rink M, and Sinsch U, (2007) Radio-telemetric monitoring of dispersing stag beetles: implications for conservation, Journal of Zoology, 272 (3) 235-243.

Main pressures

8.2 Sources of information

No sources of information

15. Explanatory Notes

Field label	Note
No explanatory notes	