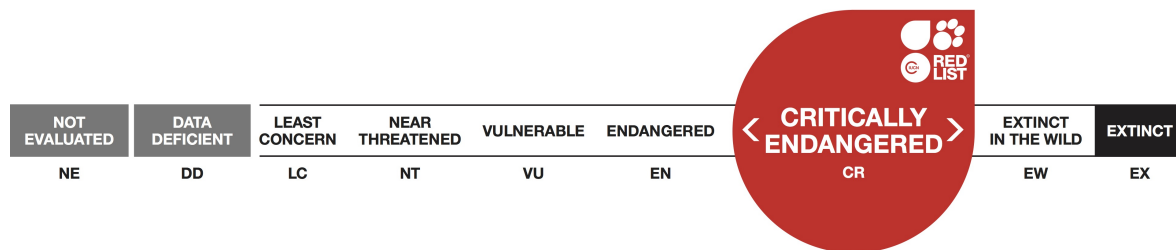


Buellia asterella, Starry Breck Lichen

Assessment by: Spribille, T., Bilovitz, P., Printzen, C., Haugan, R. & Timdal, E.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Physciaceae

Taxon Name: *Buellia asterella* Poelt & Sulzer

Common Name(s):

- English: Starry Breck Lichen

Taxonomic Notes:

This species was described in Poelt & Sulzer, Nova Hedwigia 25: 182-184 (1974). There are no synonyms.

Assessment Information

Red List Category & Criteria: Critically Endangered A4c [ver 3.1](#)

Year Published: 2015

Date Assessed: June 29, 2015

Justification:

Buellia asterella used to occur in isolated patches of dry grassland from Italy to England and southern Norway. It appears to have had its centre of occurrence in the central German Mittelgebirge. Today it is thought to be extinct in all but three or four localities globally (in Norway and Germany). The only British site was last confirmed in 1991 and two of the four German sites documented in the last 30 years were visited in 2015 and the species could not be re-found. The immediate causes for its disappearance appear to be outright loss of grassland habitat to agricultural and urban development, eutrophication (through fertilizer drift, the sites being surrounding by rapeseed fields), shrub and grass encroachment and trampling of sites where suitable habitat would otherwise still exist.

We assume for this species a generation time of 30 years, estimating the time for population reduction record and application of criterion A as 90 years. We estimate a population decline of 80% between 1950 and 2040 (Dahlberg and Mueller 2011). *Buellia asterella* is Critically Endangered based on A4c at the global level.

Geographic Range

Range Description:

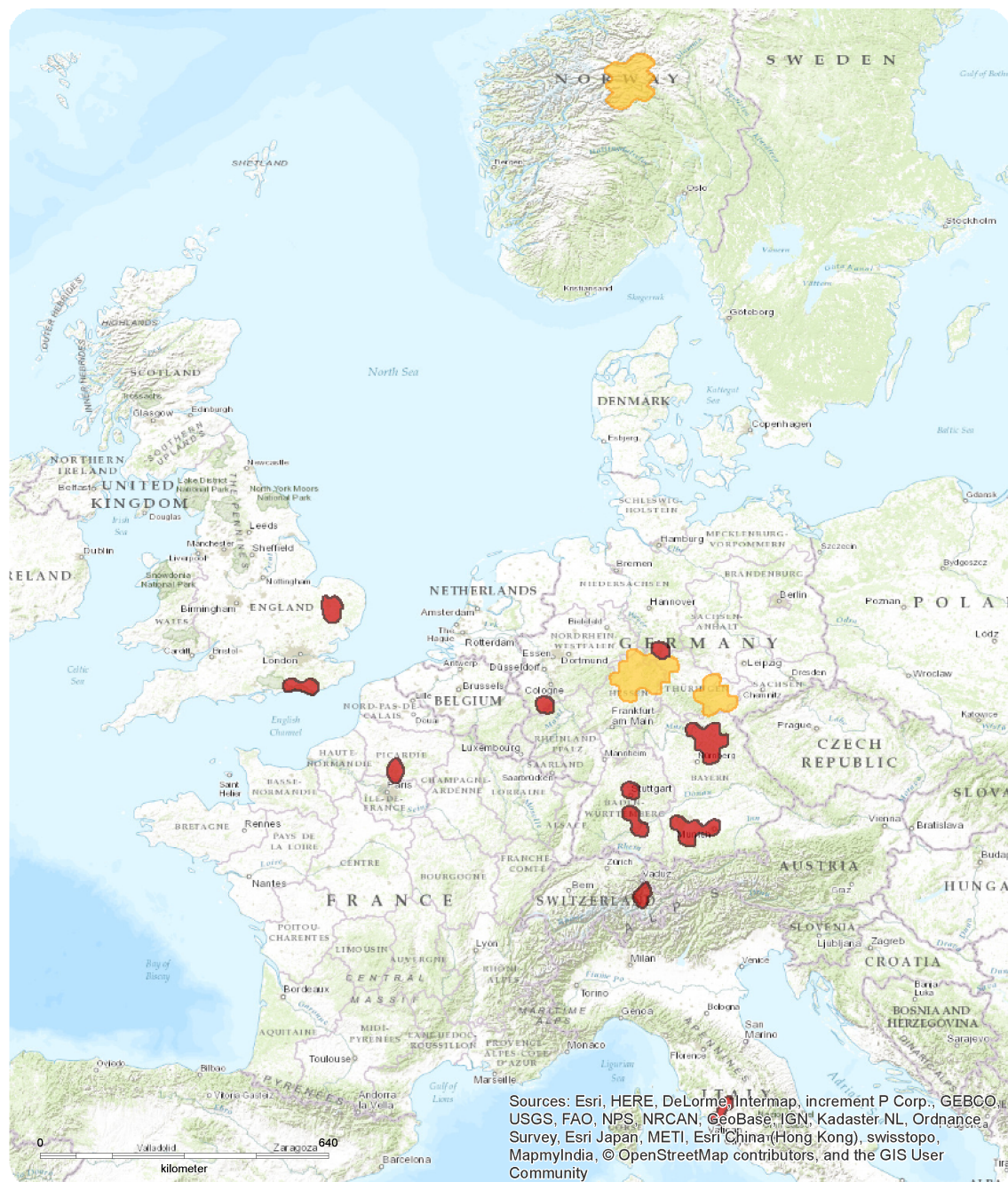
This is an endemic of western European low elevation dry grasslands. It is found from Italy to the British Isles and Norway. The majority of all sites ever found are in the German lowlands and "Mittelgebirge". A recent literature report of *B. asterella* from India (Rai and Upreti 2014) is clearly in error. The specimen from 3,300 m asl is depicted in the work and clearly belongs to *Phaeorhiza sareptana* var. *sphaerocarpa* (H. Mayrhofer pers. comm. 2015).

Country Occurrence:

Native: Germany; Norway

Regionally extinct: France; Italy; Switzerland; United Kingdom

Distribution Map

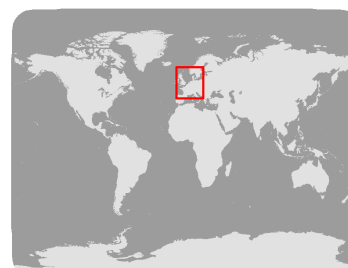


Buellia asterella

Range

- Extant (resident)
- Extinct

Compiled by:
International Union for the
Conservation of Nature



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.

Population

Due to extinctions at numerous localities in the 20th century, there are only a few localities left. All French, Italian and Swiss records are from before 1960.

United Kingdom

The last record from Lakenheath Warren seems to be from 5th July 1994 by Peter Lambley (UK National Grid Reference (GR) TL752804). Any later sightings should find their way to the BLS Database.

The last record for Thetford Heath seems to be from 1986 by Vince Giavarini, but with GR just as TL78. Previous to that, the most recent record is by Peter James, Peter Lambley and Chris Hitch from 9th May 1983, TL840790. This species was said not to be re-found here in 1991.

The last record for Deadman's Grave seems to be from 9th December 1982 by Peter Lambley and G.P. Radley, TL776742. There is also a report from Weeting Heath Site of Special Scientific Interest (SSSI) from 1972 by Peter Lambley, TL758879, which states there were "a few thalli in one small area".

Outside of Breckland there is a 19th Sussex record at Chene Gap, Peacehaven, TQ40, by J. Hemmings in 1868. There are also (?earlier) specimens labelled Rottingdean, and later given the GR of TQ30, but the sites are close and could well have been all the same place. Francis Rose, Simon Davey and Brian Coppins looked carefully along the coast there in the 1970s and 1980s, but there was little intact habitat left, being mostly 'developed' for housing, caravan parks and recreational uses (B. Coppins pers. comm. 2015).

Norway (R. Haugan and E. Timdal pers. comm. 2015)

According to E. Timdal (pers. comm. 2015), the status of this species is very bad in Norway. It is known from a handful localities in two small areas in the "steppe" area of the Gudbrandsdal valley in southeast Norway. It is thought to be extinct in one area and some localities in the second area have been destroyed by cattle trampling.

The first area, in Dovre municipality, "northeast of the Dovre railway station, 1948" (site one) has been searched for in vain by R. Haugan and E. Timdal but no suitable site has been found. The locality is probably overgrown by shrubs and trees, or has been destroyed. The second area is the south facing slope north of lake Vågåvatn in Vågå municipality ("Nordherad"), which consists of seven sites within a radius of 2 km (sites two to eight). Sites two to seven are in the old cultural landscape near farms, and site eight is in natural vegetation at 930 m asl. In Vistehorten nature reserve (site two) the habitat has been strongly degraded by trampling of goats. *Buellia asterella* is probably much reduced but may still exist and the latest observation was in 2010. At rock outcrops east of the Vistehorten nature reserve, the site (site three) is still intact. A few specimens of *B. asterella* were observed by R. Haugan in 2005 and the latest observation was in 2010. The rock outcrops below the farm Ulvsbu, Sandehorten nature

reserve (site four) was last visited by R. Haugan and E. Timdal in 2002. This species was still present but very sparingly and the present situation is unknown. There were sightings from Sande (site five; in 1958), Fellese (site six; in 1981), Vistdal (site seven; in 1948) farms. R. Haugan and E. Timdal have searched in vain for suitable habitats near these farms and *Buellia asterella* probably no longer occurs here. The brook Svarthamarbekken (site eight) is a recently discovered (2013) site on a steep slope. The population size here is unknown.

In the Norwegian Red List database, there are an estimated 4.5 current localities based on 27 specimens, suggesting a Norwegian Red List Category of Critically Endangered based on criteria C1+2a(i) and D1 (E. Timdal pers. comm. 2015).

France

There are no recent observations in France and C. Roux has not personally seen this species (C. Roux pers. comm. 2015).

Germany

Most historical collections are documented by Trinkaus and Mayrhofer (2000). This species was so abundant at localities in the 19th century that exsiccates (mass collections) could be or were made at Krögelstein (in 1866), Allach, which is now a suburb of Munich (in 1888 and 1894), and at Lechfeld near Augsburg (date unknown).

An effort has been made to reach out to amateurs and professionals in Germany with information on possible recent occurrences of this species. This species has been documented twice from Thuringia:

- Germany, Thuringia, Zechstein-Orlasenke, 16. Oct. 1967, collected by R. Marstaller;
- Germany, Felsenberg south of Öpitz, 15. Jan 2011, collected by L. Meinunger.

Note that the recent Meinunger record is only 2.2 km distant from the other most recent central European record by R. Marstaller in 1967 (T. Spribille pers. obs. 2015). The Rote Liste der Flechten Hessens lists this species as Red List Status 1 (threatened with extinction; Schöller *et al.* 1996, C. Printzen pers. comm. 2015). Three sites were recorded in northern Hessen between 1986 and 2005 (D. Teuber pers. comm. 2015).

This species appears to be extinct from the Tiesberg dry grassland near Iversheim (North Rhine-Westfalia; F. Bungartz pers. comm. 2015).

Italy

No records are known for Italy other than the historical record cited by Trinkaus and Mayrhofer (2000).

Switzerland

The Swiss locality “Tardisbrücke”, near Landquart (canton of Grisons) has not been confirmed so far. The Rhine river has been channelised in this part and the old bridge was replaced by a larger one to suit the modern traffic in 1892 (C. Scheidegger pers. comm. 2015). However, this species was abundant enough at this locality in the 19th century that it was twice collected for mass distribution to herbaria (exsiccates by Hepp and Rabenhorst, thought to be *B. epigaea* at the time).

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

Buellia asterella grows on limestone, dolomite or gypsum soils in dry grasslands, primarily temperate dry grasslands of central Europe. It is not a component of Eurosiberian dry grasslands that extend to the east or the Pannonian basin. This species has a generation length of 30 years (Dahlberg and Mueller 2011).

Systems: Terrestrial

Use and Trade

This species is not utilised.

Threats (see Appendix for additional information)

Buellia asterella appears to be very vulnerable to the impact of habitat changes and destruction. Many of the previous sites such as Allach near Munich, and sites on dolomite in Franconia, northern Bavaria, have been completely converted either to suburban developments or to agriculture. Fragmentary sites in northern Hessen that are contained in nature reserves are embedded in heavily utilised agricultural landscapes dedicated especially to rapeseed cultivation and are subjected to fertilizer drift. Furthermore, potential habitats, such as gypsum grasslands, are popular sites to visit for recreation and the dry gypsum domes on which appropriate *Fulgensia*-dominated lichen communities develop are often heavily trampled by tourists. The species occurs in or near habitats which are often re-sampled by phytosociologists who collect species for ecological plots (e.g. a site in Hessen is an annual excursion site for the University of Göttingen); collecting of this species and all other members of its lichen community should be strictly forbidden.

Conservation Actions (see Appendix for additional information)

Buellia asterella is Red Listed in Germany (CR), Switzerland (EX) and the United Kingdom of Great Britain and Ireland (EX), as well as in France (CR).

Credits

Assessor(s): Spribille, T., Bilovitz, P., Printzen, C., Haugan, R. & Timdal, E.

Reviewer(s): Nadyeina, O. & Dahlberg, A.

Contributor(s): Aptroot, A. & Scheidegger, C.

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External Resources

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Appendix

Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Habitat	Season	Suitability	Major Importance?
4. Grassland -> 4.4. Grassland - Temperate	Resident	Suitable	Yes

Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.1. Shifting agriculture	Ongoing	Majority (50-90%)	Rapid declines	Medium impact: 7
5. Biological resource use -> 5.2. Gathering terrestrial plants -> 5.2.2. Unintentional effects (species is not the target)	Ongoing	Unknown	Causing/could cause fluctuations	Unknown
6. Human intrusions & disturbance -> 6.1. Recreational activities	Ongoing	Majority (50-90%)	Very rapid declines	High impact: 8
9. Pollution -> 9.3. Agricultural & forestry effluents -> 9.3.1. Nutrient loads	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6

Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions in Place
In-Place Research, Monitoring and Planning
Action Recovery plan: No
Systematic monitoring scheme: No
In-Place Land/Water Protection and Management
Conservation sites identified: Yes, over part of range
Occur in at least one PA: Yes
In-Place Species Management
Harvest management plan: No
Successfully reintroduced or introduced benignly: No

Conservation Actions in Place
Subject to ex-situ conservation: No
In-Place Education
Subject to recent education and awareness programmes: Yes
Included in international legislation: No
Subject to any international management/trade controls: No

Conservation Actions Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions Needed
1. Land/water protection -> 1.1. Site/area protection
2. Land/water management -> 2.1. Site/area management
2. Land/water management -> 2.3. Habitat & natural process restoration

Research Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Research Needed
1. Research -> 1.2. Population size, distribution & trends
3. Monitoring -> 3.4. Habitat trends

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km ²): 16
Continuing decline in extent of occurrence (EOO): Yes
Number of Locations: 4
Continuing decline in number of locations: Yes
Extreme fluctuations in the number of locations: No
Lower elevation limit (m): 580
Upper elevation limit (m): 930
Population
Continuing decline of mature individuals: Yes
Continuing decline in subpopulations: Yes

Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 30

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