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2019

Document Version:
Publisher's PDF, also known as Version of record

Link to publication

Citation for published version (APA):

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Lobaria pulmonaria in the southwestern Baltic area

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Summary

Lungwort lichen, Lobaria pulmonaria (L.) Hoffm., was surveyed in the southwestern Baltic area in 2016–2018. At each of the localities, the habitat ecology and lichen viability were investigated. A substantial decline was noted, particularly in Skåne. The commonest habitats for L. pulmonaria in southernmost Sweden are lime-maple and species-poor, oligotrophic beechnets, and the commonest substrates were trunks of birch and maple. Followed by oak. Lobaria pulmonaria often survived on trees growing on rocky Boulder-ricb, mese- to oligotrophic soils in the upper part of steep slopes. Localities with a locally cool climate, a stable environment in terms of light, moisture and temperature, with only a minor influence of air pollution, agriculture and forestry practices are preferred. Current and historical distributions in Denmark, northern Germany, northwestern Poland and mesoal parts of Skåne, Blekinge, southwesternmost Småland and southern Öland are presented.

Distribution in the southwestern Baltic area

Lobaria pulmonaria has a very widespread distribution covering the Northern Hemisphere and Southern Africa (LITTERSKY 1999). It was formerly widespread in the nemoral zone of southern Sweden, Denmark and northern Germany, where it is now either extinct, rare or threatened. The species disappeared from southernmost Sweden a long time ago. Only a single specimen remains in southwestern Småland and a single transplanted specimen in southern Sweden (SCHIEFELBEIN et al. 2016, 2017, SCHIEFELBEIN & THELL 2018, THELL & SCHIEFELBEIN 2018). It is very rare south of the Baltic Sea, being found in only 16 localities since 2000 (2 in Schleswig-Holstein, 3 in Mecklenburg-Vorpommern, 19 in NW Poland). To the south of these, the closest localities are in Poland, a mountains area in the border area between Bussia, Hesse and Thuringia in the south-west, and at the Polish-Czech border in the southeast (HALDA 2006). It is extinct in the Netherlands, but in Denmark, although the last specimens in Zealand died a few years ago, it is recently found more often in Jutland.


Substrate in southernmost Sweden

Lobaria pulmonaria was found on six different tree species. The commonest host tree is maple, Acer platanoides, and beech, Fagus sylvatica, followed by oak, Quercus robur. Lobaria pulmonaria was most frequently found on trees with a circumference between 100 and 150 cm at breast height. When L. pulmonaria grew on lime trees, the circumference exceeded 2 m, whereas it colonizes rather young or thin maples and hornbeams, Carpinus betulus.

Habitat in southernmost Sweden

Lobaria pulmonaria is restricted to certain regions, habitats and locations where forest communities on rather nutrient-poor soils naturally dominate. In regions, where eutrophic beech forests or oak-hornbeam forests would form the natural vegetation cover, L. pulmonaria is now absent. 23 of the investigated localities and 42 host trees, respectively, are located in forests, and only two specimens are on trees in woody meadows.

Climatic factors

Lobaria pulmonaria avoids very warm areas in Skåne and Blekinge, and occurs almost exclusively in regions where acidophilous beech or oak forests potentially form the natural vegetation. In contrast, the annual precipitation seems to have had less influence on its distribution in the study area.

Lobaria pulmonaria does not appear to be very tolerant to light in the study area, as it almost always occurs on half-shaded habitats, and only exceptionally in sunny or dark-shaded places. The sunny locations are wooded meadows, but here it occurs on the sheltered sides of trunks of very old trees, and on exposed trees at the lakeshores.

A further very important factor for the occurrence of L. pulmonaria is air humidity (e.g. GAUSLAA 2013). In the study area, favourable conditions for this occur almost exclusively in old growth forests, the only exceptions being localities on the Kullen Peninsula near the seashore and at Lake Ibivisjo, where the humidity is guaranteed by the adjacent waters.

Conclusion

Lobaria pulmonaria has survived in the study area almost entirely at very special sites offering a stable environment in terms of light, moisture and temperature, which has been little influenced by air pollution, agriculture and forestry practices.

Acknowledgements

Prof. Mark Seaward is thanked for reviewing the text, Dr Natalya Thell for some of the photographs, and the Ole Albronn Foundation for financial support.

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