

Review

Hansen, E.S. 2020. *Bornholms laver* [*The lichens of Bornholm*]. Edited by R. L. Vilsholm, published by NaturBornholm and printed by H. Holm Grafisk ApS, Rønne, ISBN 978-87-91122-30-9, 96 pages.

The main purpose of this flexible little paperback is to capture the curiosity of beginners and the general public about lichens on Bornholm, the sunniest island in the Baltic Sea and the easternmost outpost of Denmark. On this island, the lichens are by no means an insignificant group of organisms. The large diversity of habitats is unique for Denmark, otherwise characterized mainly by agricultural and domesticated land, which enables a rich lichen flora. Coastal cliffs along the northern coast and calcareous ruins at Hammershus are largely covered by beautiful orange-coloured lichens belonging to the genera formerly known as *Caloplaca* and *Xanthoria*, but now divided into several genera based on molecular systematics, e.g. *Calogaya*, *Flavoplaca*, *Polycauliona* and *Variospora*. Most of the island's former heathlands are now forested and offer substrates for many common and conspicuous foliose and fruticose lichens such as *Evernia*, *Parmelia*, *Platismatia* and *Pseudevernia*. The genus *Cladonia*, including reindeer lichens, covers the ground on sand dunes and in planted pine forests at Dueodde, the island's scenic southeastern tip; at least 22 species, representing the striking diversity of the genus, are found. Only small remnants of natural forests remain, mainly in difficult terrain dominated by rocks and boulders and steep valleys such as those encountered in Døndalen, Ekkodalen and Kobbeådal. Here it is possible to find indicators of old-growth forests such as *Pyrenula nitida* and *Arthonia cinnabarina*, the latter being one of the unexpectedly few critically endangered lichens in Bornholm which are supplied with red-list categories following IUNC. Although the small areas are of little interest in forestry and usually have some form of protection, species have evidently disappeared due to environmental changes. Old herbarium material and literature show that two lungwort lichens, *Lobaria*, used to grow on Bornholm – *L. scrobiculata* a long time ago, whereas *L. pulmonaria* grew at Jon's Chapel, a seaside cliff with old-growth forest, until the 1990s. The most threatened of current lichens is *Parmelina pastillifera* which still occurs in small amounts on granite in the harbour on the small island Christiansø situated c. 20 km north of the main island. This occurrence is only briefly mentioned in the book and without illustration, probably to protect it from collection.

The illustrations and drawings in the book are of excellent quality, often with both a close-up of the species and a photograph of its habitat with accompanying species. The main purpose of these well-designed and detailed drawings is to describe the biology and anatomy of the lichens in the introductory parts of the book. These chapters are planned to be educational and give the beginner the right amount of information in an easy-to-understand way in accordance with the drawings. In the next part of the book, the author connects the lichen flora with the beautiful nature sites, like Hammershus fortress and other ruins, rocky places, coastal cliffs, sandy beaches and crack valleys with old-growth forests. This is followed by a presentation of 116 personally selected species, comprising about one fifth of Bornholm's 550 species, fortunately without keys that would take the joy out of the beginners, well aware that some species are not easy to determine only with photos and shorty descriptions. The species are supplied with both Danish and Latin names using the latest taxonomy. At the back of the book there is a glossary of lichen terms supported by suitable illustrations.

Eric Steen Hansen and his co-workers should be very happy with this appealing book that will hopefully reach the target audience of non-lichen specialists with a general interest in nature who live on Bornholm or like to go there. The author, who started studying lichens in the 1960s under his mentor Mogens Skytte Christiansen (1918–1996), is still a very active Associate Professor Emeritus at the National Museum of Natural History in Copenhagen.

Although primarily known for his studies of Greenland lichens, he is very fond of this wonderful little island which he visits almost every year. Educated at Copenhagen University, the editor, René Vilsholm Larsen, has a broad biological knowledge, with emphasis on lichens. In 2006, he was employed as a guide at NaturBornholm, an international experience centre in Aakirkeby founded in 2000, not only to teach those interested in the changes in Bornholm's nature over the centuries, but also to address environmental and energy issues.

If you live within Denmark you can order this book, priced 98 DKK [c. 12.70 EUR] from naturbornholm.dk, or from the local bookstore in Rønne at Bornholm, William Dam Boghandel, williamdam.dk. Alternatively, you can purchase the book from the shop at NaturBornholm and thus avoid the cost of postage.

Ingvar Kärnefelt, Sergey Kondratyuk & Arne Thell

