

Lichens in the new Red List of Estonia

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Abstract: The compilation of the current Red List of Estonia took place during 2006–2008; the IUCN system of categories and criteria (vers. 6.1), which is accepted worldwide, was applied. Out of the 1019 lichenized, lichenicolous and closely allied fungal species recorded in Estonia in 2006, 464 species (45.5%) were evaluated while 555 species remained not estimated – in the category Not Evaluated (NE). Of the evaluated species, 213 were assigned to the so-called red-listed categories: Regionally Extinct (RE), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) and Data Deficient (DD). 113 of them were classified as threatened (belonging to the categories CR, EN, VU). 251 species were assigned to the category Least Concerned (LC). The full enumeration of the red-listed lichens of Estonia with appropriate category and criteria is presented.

Kokkuvõte: Samblikud Eesti uues punases raamatus

Eesti uue punase raamatu koostamine kestis 2006–2008; kasutati IUCN'i kategooriate ja kriteeriumite laialdaselt tunnustatud süsteemi (versioon 6.1). 1019 samblikuliigist (Eesti 2006. a nimekirja järgi) hinnati 464 liigi (45,5%) ohustatuse seisundit ning 555 liiki jäid hindamata; samblikena on sealjuures tinglikult käsitletud lihheniseerunud ja lihhenikoolseid seeni ning neile süstemaatiliselt lähedasi liike. Hinnatud samblikest 213 liiki kuuluvad nn punastesse kategooriatesse (Eestis hävinud, Äärmiselt ohustatud, Ohustatud, Ohualtid, Ohulähedased ja Puuduliku andmestikuga), neist 113 liiki on ohustatud (kuuluvad kategooriatesse Äärmiselt ohustatud, Ohustatud ja Ohualtid). 251 liigi seisund hinnati väljaspool ohtu olevaks (kategooria Ohuvälised). Esitatakse nn punastesse kategooriatesse kuuluvate samblikuliikide täielik loetelu koos rakendatud kriteeriumitega.

INTRODUCTION

The previous Red List of Estonia was compiled ten years ago (Lilleleht, 1998). In this book conventional system of threat categories (Extinct or probably extinct, Endangered, Vulnerable, Rare, Care demanding, Indeterminate) was applied while criteria for defining these categories were fairly vague. Altogether 1318 species or infraspecific taxa were included.

At that time understanding of the composition of the Estonian lichen biota was rather limited, the second checklist of lichenized, lichenicolous and allied fungi of Estonia (Randlane & Saag, 1999) was still under preparation and only the revision of Estonian macrolichens (Trass & Randlane, 1994) had been published. Considering this state of knowledge, only macrolichens were included in the previous Red List of Estonia, altogether 110 species out of the 337 macrolichen taxa known at that time (Randlane, 1998).

The compilation of the current Red List of Estonia took place during 2006–2008. As the knowledge of the composition and distribution of

Estonian lichen biota has significantly improved during the last ten years (e.g. Randlane & Saag, 2004; Lõhmus, 2005; Suija, 2005; Jüriado, 2007; Tõrra & Randlane, 2007; Saag, 2008), it appeared reasonable to apply for the first time in Estonia the IUCN system of categories and criteria, which is accepted worldwide. The aim of the article is (1) to summarize regional modifications in application of categories and criteria while assessing lichens and (2) to present – with a brief synopsis – the full list of Estonian lichens included into the red-listed categories.

MATERIAL AND METHODS

Data collection

Lichens were evaluated as a separate, non-systematic group. Besides lichenized taxa, lichenicolous fungi growing on lichens, and a few saprophytic fungi closely related to the lichenized taxa and traditionally treated by lichenologists were also included in the group.

The basis for assessments was the latest (when the workgroup of the Red List of Estonia started in 2006) list of lichenized, lichenicolous and allied fungi of Estonia (Randlane et al., 2006).

For evaluation of lichen species, the main data source was the lichen herbarium of Natural History Museum of the University of Tartu (TU) and herbarium database of the Estonian lichens eSAMBA. Also, the materials from other lichen herbaria of Estonia (ICEB, TALL, TAM) were considered and databases of lichen herbaria B, LD, S and UPS were used. In addition, various literature data (e.g. Ekman et al., 1991; Halonen et al., 2000; Aptroot et al., 2005) and unpublished data of lichen experts and their colleagues were taken into account. All lichen data which were accumulated during the process of assessment were saved in the Information System of Estonian Lichens eSEIS. The first author acted as a member of the workgroup of the Red List of Estonia 2008 and as the coordinator of the lichen expert team. All authors acted as lichen experts.

Application of criteria

The IUCN latest guidelines for the system of red list categories and quantitative criteria, vers. 6.1 (Standards and Petitions Working Group, 2006), was applied in assessing the possible threats to the lichens recorded in Estonia. However, earlier versions of guidelines (IUCN, 2001, 2003) were also considered. The following IUCN categories were used: Regionally Extinct (RE), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concerned (LC), Data Deficient (DD), Not Evaluated (NE); categories Extinct (EX), Extinct in the Wild (EW) and Not Applicable (NA) were not used for lichens. Species assigned to either RE, CR, EN, VU, NT or DD are classified as 'red-listed lichens', and species assigned to CR, EN or VU are described as 'threatened' (Gärdenfors, 2005).

All species which have been reliably reported from Estonia until 1950 but not later, and only such species, were classified to the category RE. Criteria A (Population Reduction), B (Geographic Range), C (Small Population Size and Reduction) or D (Very Small or Restricted Population) were used to assign species to the threatened categories CR, EN and VU, criterium E (Quantitative Analysis) was not used due to the insufficiency

of data. The taxa which actually did not qualify but were close to be qualified for a threatened category, were included in the category NT. Category DD was applied for such species which had also been evaluated against the criteria A–D, and it emerged that the existing information was still not sufficient to assess the risks of threat for this taxon. Category LC was ascribed to the species which had been evaluated against the criteria and, as a result, did not qualify for any of the red-listed categories. All species which have not been evaluated against the criteria yet belong to the category NE.

In some applied criteria such as C and D1, the number of mature individuals is essential. Delimitation of an individual of a lichen is often a complicated task which may require even special genetic studies. We used these criteria only occasionally and only in such cases where the individuals (*sensu* Gärdenfors, 2005; Haltingbäck, 2007) had really been counted, e.g. in the cases of *Cladonia norvegica* Tønsberg & Holien and *C. parasitica* (Hoffm.) Hoffm. (Löhmus & Löhmus, 2008). Generation time, another parameter difficult to identify for lichens (Scheidegger & Goward, 2002), is important when using criteria A and C1. Different species have been considered to have a generation time of 7 to 33 years (Gärdenfors, 2005). Applying criterium A, we often measured the decline of populations comparing all available data up to 1950 and after 1990, equalizing this period to the minimum of three generations.

RESULTS AND DISCUSSION

1,062 species of lichenized, lichenicolous and allied fungi have been recorded in Estonia by now (Randlane et al., 2007, Suija et al., 2008). The according list from 2006 (Randlane et al., 2006), which was the basis for the assessments, included 1019 species. Of these, 464 species (45.5%) have been evaluated while 555 species remained not evaluated.

All lichenicolous fungi (137) remained, by intention, in the category NE as the distributional data of these taxa are extremely scarce, with two exceptions – *Athelia arachnoidea* (Berk.) Jülich and *Vouauxiella lichenicola* (Linds.) Petr. & Sydow which both were assigned to the Category LC. The species (altogether 48) which had been included in the list of Estonian lichens

based on literature data only, without any known herbarium material, were also assigned to NE by choice. A major part of the category NE consists of various microlichens for which the distributional and population data are still insufficient to carry out the evaluation process. A few macrolichens (e.g. species of the *Cladonia chlorophaea* group, some taxa from the genera *Collema*, *Leptogium* and *Stereocaulon*) which are difficult to identify and therefore lack suitable information also belong to this category.

Of the 464 evaluated species, 251 species were assigned to the category LC and 213 were assigned to the so-called red-listed categories (RE, CR, EN, VU, NT, DD) while 113 species were classified as threatened (belonging to the categories CR, EN, VU) (Tables 1 & 2).

Collema subnigrescens Degel., *Flavoparmelia caperata* (L.) Hale, *Leptogium subtile* (Schrad.) Torss. ja *Bilimbia lobulata* (Sommerf.) Hafellner & Coppins.

In Estonia, in addition to the activities connected with the Red List, the system of legally protected species functions. Since 2004, 51 lichen species are officially protected (divided under the protection categories 1, 2 and 3) (Keskkonnaministri määrus nr 51, 2004; Vabariigi Valitsuse määrus nr 195, 2004). Out of these 51 taxa, 30 belong to the threatened categories of the latest Red List of Estonia, and 19 species are assigned to the category NT; two further protected species, *Hypocenomyce anthracophila* (Ach.) M. Choisy and *Sclerophora pallida* (Pers.) Fr., were evaluated as LC.

Table 1. Distribution of lichen species in the respective categories of Red List of Estonia 2008 (for the abbreviations of categories see Material and Methods)

Categories	RE	CR	EN	VU	NT	DD	LC	NE
No of species included	29	13	32	68	42	29	251	555
% from all evaluated species	6.3	2.8	6.9	14.6	9.0	6.3	54.1	–

Comparison of the data of the current and of the previous red list of Estonian lichens (Lilleleht, 1998; Randlane, 1998) would not be correct as the previous list included macrolichens only, and because the contents of the categories do not coincide. However, some comments might be helpful. There were five species which had been recorded in the previous red list, and which turned out to be misidentifications: *Caloplaca flavescens* (Huds.) J.R. Laundon, *Catapyrenium lachneum* (Ach.) R. Sant., *Heterodermia speciosa* (Wulfen) Trevis., *Nephroma helveticum* Ach. and *Xanthoria lobulata* (Flörke) de Lesd. Two more species – *Dermatocarpon arnoldianum* Degel. and *Usnea scabrata* Nyl. – have been included into other taxa, *Dermatocarpon miniatum* (L.) W. Mann and *Usnea barbata* (L.) F.H. Wigg., respectively. In addition, there were six species which had been included in the previous red list under category 'Extinct or probably extinct' and which have been re-found again: *Cetrelia olivetorum* (Nyl.) W.L. Culb. & C.F. Culb.,

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Table 2. Red-listed lichens of Estonia (for the abbreviations of red list categories and criteria see Material & Methods)

Species name	Category of red list	Criterion	Protection category
<i>Acarospora oligospora</i> (Nyl.) Arnold	RE		
<i>Alectoria sarmentosa</i> (Ach.) Ach.	NT		2
<i>Amygdalaria panaeola</i> (Ach.) Hertel & Brodo	RE		
<i>Anaptychia runcinata</i> (With.) J. R. Laundon	VU	D2	
<i>Arctoparmelia centrifuga</i> (L.) Hale	EN	B1ab(i,iv)	
<i>Arctoparmelia incurva</i> (Pers.) Hale	EN	A2c, B1ab(i,iv)	
<i>Arthonia apatetica</i> (A. Massal.) Th. Fr.	VU	D2	
<i>Arthonia byssacea</i> (Weigel) Almq.	NT		3
<i>Arthonia didyma</i> Körb.	NT		
<i>Arthonia lapidicola</i> (Taylor) Branth. & Rostr.	VU	D2	
<i>Arthopyrenia cinereopruinosa</i> (Schaer.) A. Massal.	RE		
<i>Arthobelium spectabile</i> Flot. ex A. Massal.	VU	D2	
<i>Aspicilia gibbosa</i> (Ach.) Körb.	RE		
<i>Aspicilia xyloxena</i> (H. Magn.) R. Sant. comb. inedit.	RE		
<i>Bacidia biatorina</i> (Körb.) Vain.	EN	B2ab(iii)	2
<i>Bacidia fuscoviridis</i> (Anzi) Lettau	RE		
<i>Bacidia laurocerasi</i> (Delise ex Duby) Zahlbr.	NT		2
<i>Baeomyces carneus</i> Flörke	VU	D2	2
<i>Biatoridium monasteriense</i> J. Lahm ex Körb	NT		2
<i>Bilimbia lobulata</i> (Sommerf.) Hafellner & Coppins	VU	B2ab(iii)	
<i>Bryoria chalybeiformis</i> (L.) Brodo & D. Hawksw.	VU	D2	
<i>Bryoria furcellata</i> (Fr.) Brodo & D. Hawksw.	VU	B1ab(iii)	2
<i>Bryoria intricans</i> (Vain.) Brodo & D. Hawksw.	DD		
<i>Bryoria simplicior</i> (Vain.) Brodo & D. Hawksw.	DD		
<i>Caloplaca atroflava</i> (Turner) Mong.	RE		
<i>Caloplaca biatorina</i> (A. Massal.) J. Steiner	VU	D2	
<i>Caloplaca chalybea</i> (Fr.) Müll. Arg.	RE		
<i>Caloplaca coronata</i> (Kremp. ex Körb.) J. Steiner	VU	D2	
<i>Caloplaca lucifuga</i> G. Thor	NT		
<i>Caloplaca thallincola</i> (Wedd.) Du Rietz	VU	D2	
<i>Caloplaca ulcerosa</i> Coppins & P. James	VU	D2	
<i>Caloplaca verruculifera</i> (Vain.) Zahlbr.	NT		2
<i>Catapyrenium cinereum</i> (Pers.) Körb.	EN	B2ab(iii)	
<i>Cetrelia cetrarioides</i> (Delise ex Duby) W. L. Culb. & C. F. Culb.	VU	B1ab(iii)	
<i>Cetrelia olivetorum</i> (Nyl.) W. L. Culb. & C. F. Culb.	VU	B1ab(iii)	2
<i>Chaenotheca cinerea</i> (Pers.) Tibell	EN	B2ab(iii)	2
<i>Chaenotheca gracilentia</i> (Ach.) J. Mattsson & Middelh.	VU	B2ab(iii)	2
<i>Cladonia portentosa</i> (Dufour) Follmann	NT		
<i>Cladonia borealis</i> S. Stenroos	EN	A2bc	
<i>Cladonia brevis</i> (Sandst.) Sandst.	EN	B2ab(iii)	
<i>Cladonia caespiticia</i> (Pers.) Flörke	VU	D2	
<i>Cladonia carneola</i> (Fr.) Vain.	EN	A2bc	
<i>Cladonia cervicornis</i> ssp. <i>cervicornis</i> (Ach.) Flot.	DD		
<i>Cladonia coccifera</i> (L.) Willd.	EN	A2bc	
<i>Cladonia convoluta</i> (Lam.) Anders	VU	B2ab(iii)	2
<i>Cladonia decorticata</i> (Flörke) Spreng.	VU	D2	
<i>Cladonia foliacea</i> (Huds.) Willd.	NT		
<i>Cladonia incrassata</i> Flörke	NT		
<i>Cladonia macroceras</i> (Delise) Hav.	NT		
<i>Cladonia macrophylla</i> (Schaer.) Stenh.	EN	A2bc, B2ab(iii)	
<i>Cladonia metacorallifera</i> Asahina	VU	D2	
<i>Cladonia parasitica</i> (Hoffm.) Hoffm.	NT		

Table 2 (continued)

Species name	Category of red list	Criterion	Protection category
<i>Cladonia pocillum</i> (Ach.) Grognot	NT		
<i>Cladonia scabriuscula</i> (Delise) Nyl.	VU	A2bc	
<i>Collema bachmanianum</i> (Fink) Degel.	DD		
<i>Collema limosum</i> (Ach.) Ach.	DD		
<i>Collema nigrescens</i> (Huds.) DC.	VU	B2ab(iii,iv), C1	2
<i>Collema occultatum</i> Bagl.	RE		
<i>Collema parvum</i> Degel.	VU	D2	
<i>Collema subnigrescens</i> Degel.	NT		
<i>Collema undulatum</i> Laurer ex Flot.	VU	D2	
<i>Cyphelium inquinans</i> (Sm.) Trevis.	NT		3
<i>Dermatocarpon leptophyllum</i> (Ach.) K. G. W. Lang	DD		
<i>Dermatocarpon luridum</i> (With.) J. R. Laundon	DD		
<i>Dermatocarpon miniatum</i> (L.) W. Mann	DD		
<i>Dibaeis baeomyces</i> (L. f.) Rambold & Hertel	NT		
<i>Dimerella lutea</i> (Dicks.) Trevis.	VU	B2ab(iii)	2
<i>Diplotomma lutosum</i> (Ach.) Arnold	RE		
<i>Endocarpon psorodeum</i> (Nyl.) Blomb. & Forssell	EN	D1	
<i>Endocarpon pusillum</i> Hedw.	EN	B2ab(iii)	
<i>Eopyprenula leucoplaca</i> (Wallr.) R. C. Harris	EN	B2ab(iii)	
<i>Evernia divaricata</i> (L.) Ach.	VU	A4bc	3
<i>Evernia mesomorpha</i> Nyl.	NT		
<i>Flavocetraria cucullata</i> (Bellardi) Kärnefelt & A. Thell	CR	B1ab(iii)+2ab(iii)	1
<i>Flavocetraria nivalis</i> (L.) Kärnefelt & A. Thell	NT		
<i>Flavoparmelia caperata</i> (L.) Hale	EN	B1ab(iii)	2
<i>Fulgensia bracteata</i> (Hoffm.) Räsänen	NT		3
<i>Fulgensia fulgens</i> (Sw.) Elenkin	DD		
<i>Fuscidea cyathoides</i> (Ach.) V. Wirth & Vězda	RE		
<i>Fuscopannaria leucophaea</i> (Vahl) P. M. Jørg.	DD		
<i>Gyalecta ulmi</i> (Sw.) Zahlbr.	VU	B2ab(iii)	2
<i>Hyperphyscia adglutinata</i> (Flörke) H. Mayrhofer & Poelt	RE		
<i>Hypogymnia vittata</i> (Ach.) Parrique	CR	B2ab(iii)	
<i>Lasallia pustulata</i> (L.) Mérat	VU	A2c+3c	3
<i>Lecanora bicincta</i> Ramond	VU	D2	
<i>Lecanora caesiosora</i> Poelt	VU	D2	
<i>Lecanora epibryon</i> (Ach.) Ach.	RE		
<i>Lecanora impudens</i> Degel.	VU	D2	
<i>Lecanora intumescens</i> (Rebent.) Rabenh.	VU	B2ab(iii)	
<i>Lecanora swartzii</i> (Ach.) Ach.	VU	D2	
<i>Lecidea</i> 'erythrophaea' Flörke ex Sommerf.	NT		3
<i>Lempholemma isidiodes</i> (Nyl. ex Arnold) H. Magn.	VU	D2	
<i>Lempholemma polyanthes</i> (Bernh.) Malme	RE		
<i>Leptogium cyanescens</i> (Rabenh.) Körb.	DD		
<i>Leptogium gelatinosum</i> (With.) J. R. Laundon	DD		
<i>Leptogium rivulare</i> (Ach.) Mont.	CR	D1	
<i>Leptogium saturninum</i> (Dicks.) Nyl.	NT		3
<i>Leptogium schraderi</i> (Bernh.) Nyl.	VU	D2	
<i>Leptogium subtile</i> (Schrad.) Torss.	VU	D2	
<i>Leptogium tenuissimum</i> (Dicks.) Körb.	DD		
<i>Leptogium teretiusculum</i> (Wallr.) Arnold	VU	B2ab(iii)	2
<i>Lobaria pulmonaria</i> (L.) Hoffm.	NT		3
<i>Lobaria scrobiculata</i> (Scop.) DC.	CR	B2ab(iii)	
<i>Lobothallia radiosa</i> (Hoffm.) Hafellner	NT		
<i>Megalaria grossa</i> (Pers. ex Nyl.) Hafellner	NT		3

Table 2 (continued)

Species name	Category of red list	Criterion	Protection category
<i>Megaspora verrucosa</i> (Ach.) Hafellner & V. Wirth	EN	B2ab(iii)	
<i>Melanelia commixta</i> (Nyl.) A. Thell	CR	B2ab(iv), C1+2a(i)	
<i>Melanelia disjuncta</i> (Erichsen) Essl.	DD		
<i>Melanelia elegantula</i> (Zahlbr.) Essl.	EN	B1ab(iii,iv)	
<i>Melanelia glabra</i> (Schaer.) Essl.	CR	B2ab(iii)	
<i>Melanelia hepaticizon</i> (Ach.) A. Thell	EN	B1ab(iii,iv)	
<i>Melanelia septentrionalis</i> (Lyng.) Essl.	NT		
<i>Melanelia sorediata</i> (Ach.) Goward & Ahti	DD		
<i>Melanelia stygia</i> (L.) Essl.	VU	A2c	
<i>Melaspilea gibberulosa</i> (Ach.) Zwackh	RE		
<i>Menegazzia terebrata</i> (Hoffm.) A. Massal.	NT		3
<i>Micarea hedlundii</i> Coppins	VU	B2ab(iii)	2
<i>Micarea turfosa</i> (A. Massal.) Du Rietz	RE		
<i>Multiclavula mucida</i> (Pers.) R. H. Petersen	VU	B2ab(iii)	
<i>Multiclavula vernalis</i> (Schwein.) R. H. Petersen	CR	A2a, D1	
<i>Nephroma arcticum</i> (L.) Torss.	RE		
<i>Nephroma bellum</i> (Spreng.) Tuck.	CR	B2ab(iii)	
<i>Nephroma isidiosum</i> (Nyl.) Gyeln.	DD		
<i>Nephroma laevigatum</i> Ach.	VU	A4bc	3
<i>Nephroma parile</i> (Ach.) Ach.	VU	A2bc	3
<i>Nephroma resupinatum</i> (L.) Ach.	EN	A2bc	2
<i>Ochrolechia frigida</i> (Sw.) Lyng.	VU	B1ab(iii)	2
<i>Opegrapha atra</i> Pers.	NT		
<i>Opegrapha herbarum</i> Mont.	DD		
<i>Opegrapha ochrocheila</i> Nyl.	VU	D2	
<i>Opegrapha rupestris</i> Pers.	VU	D2	
<i>Opegrapha sorediifera</i> P. James	VU	D2	
<i>Opegrapha viridis</i> (Pers. ex Ach.) Behlen & Desberger	VU	A3c	
<i>Parmelia fraudans</i> (Nyl.) Nyl.	EN	B1ab(i,iv)	
<i>Parmelia omphalodes</i> (L.) Ach.	NT		
<i>Parmeliella triptophylla</i> (Ach.) Müll. Arg.	VU	A2bc, B2ab(iii)	2
<i>Parmelina tiliacea</i> (Hoffm.) Hale	NT		
<i>Peltigera collina</i> (Ach.) Schrad.	CR	D1	2
<i>Peltigera degenii</i> Gyeln.	VU	D2	
<i>Peltigera elisabethae</i> Gyeln.	RE		
<i>Peltigera horizontalis</i> (Huds.) Baumg.	NT		
<i>Peltigera hymenina</i> (Ach.) Delise	NT		
<i>Peltigera lepidophora</i> (Nyl. ex Vain.) Bitter	DD		
<i>Peltigera ponoiensis</i> Gyeln.	DD		
<i>Peltigera scabrosa</i> Th. Fr.	EN	B2 ab(iii)	
<i>Peltigera venosa</i> (L.) Hoffm.	EN	B2ab(iv)	
<i>Pertusaria carneopallida</i> (Nyl.) Anzi	RE		
<i>Phaeophyscia chloantha</i> (Ach.) Moberg	RE		
<i>Phaeophyscia endophoenicea</i> (Harm.) Moberg	DD		
<i>Physcia leptalea</i> (Ach.) DC.	VU	A4c	
<i>Physcia magnussonii</i> Frey	VU	D2	
<i>Physconia deterosa</i> (Nyl.) Poelt	NT		
<i>Physconia grisea</i> (Lam.) Poelt	NT		
<i>Pilophorus cereolus</i> (Ach.) Th. Fr.	EN	B2ab(iii)	
<i>Placidium pilosellum</i> (Breuss) Breuss	EN	B2ab(iii)	
<i>Placidium squamulosum</i> (Ach.) Breuss	EN	B2ab(iii)	
<i>Polychidium muscicola</i> (Sw.) Gray	DD		
<i>Protopannaria pezizoides</i> (Weber) P. M. Jørg. & S. Ekman	DD		
<i>Protoparmeliopsis achariana</i> (A. L. Sm.) Moberg & R. Sant.	VU	D2	

Table 2 (continued)

Species name	Category of red list	Criterion	Protection category
<i>Protoparmeliopsis macrocyclos</i> (H. Magn.) Moberg & R. Sant.	NT		
<i>Psora decipiens</i> (Hedw.) Hoffm.	NT		3
<i>Punctelia subrudecta</i> (Nyl.) Krog	RE		
<i>Pycnora praestabilis</i> (Nyl.) Hafellner	CR	B2ab(i,ii,iii,iv), D1	
<i>Pycnotelia papillaria</i> Dufour	EN	A2	
<i>Pyrenula laevigata</i> (Pers.) Arnold	VU	B2ab(iii)	2
<i>Pyrenula nitidella</i> (Schaer.) Müll. Arg.	VU	B2ab(iii)	2
<i>Ramalina calicaris</i> (L.) Fr.	VU	A1b	
<i>Ramalina dilacerata</i> (Hoffm.) Hoffm.	DD		
<i>Ramalina elegans</i> (Bagl. & Carestia) Jatta	RE		
<i>Ramalina obtusata</i> (Arnold) Bitter	DD		
<i>Ramalina siliquosa</i> (Huds.) A. L. Sm.	VU	D2	
<i>Ramalina sinensis</i> Jatta	EN	A2	
<i>Ramalina thrausta</i> (Ach.) Nyl.	NT		3
<i>Rhizocarpon badioatrum</i> (Flörke ex Spreng.) Th. Fr.	RE		
<i>Rhizocarpon oederi</i> (Weber) Körb.	RE		
<i>Rinodina interpolata</i> (Stirt.) Sheard	RE		
<i>Sclerophora coniophaea</i> (Norman) J. Mattsson & Middelb.	NT		2
<i>Sclerophora farinacea</i> (Chevall.) Chevall.	VU	B2ab(iii), A3c	2
<i>Sclerophora peronella</i> (Ach.) Tibell	VU	B2ab(iii)	2
<i>Solorina bispora</i> Nyl.	VU	D2	
<i>Solorina saccata</i> (L.) Ach.	NT		2
<i>Solorina spongiosa</i> (Ach.) Anzi	EN	B1ab(iii)	2
<i>Sphaerophorus globosus</i> (Huds.) Vain.	CR	B2ab(iii,iv)	
<i>Squamarina lentigera</i> (Weber) Poelt	EN	B1ab(iii)	2
<i>Stereocaulon condensatum</i> Hoffm.	VU	A2c	3
<i>Stereocaulon evolutum</i> Graewe ex Th. Fr.	RE		
<i>Stereocaulon incrustatum</i> Flörke	DD		
<i>Stereocaulon vesuvianum</i> Pers.	RE		
<i>Thelidium pyrenophorum</i> (Ach.) Mudd	RE		
<i>Thelotrema lepadinum</i> (Ach.) Ach.	NT		3
<i>Toninia sedifolia</i> (Scop.) Timdal	VU	B2ab(iii)	
<i>Toninia verrucarioides</i> (Nyl.) Timdal	DD		
<i>Umbilicaria cinerascens</i> (Arnold) Frey	VU	D2	
<i>Umbilicaria cylindrica</i> (L.) Delise ex Duby	DD		
<i>Umbilicaria decussata</i> (Will.) Zahlbr.	VU	D2	
<i>Umbilicaria hyperborea</i> (Ach.) Hoffm.	VU	D2	
<i>Umbilicaria nylanderiana</i> (Zahlbr.) H. Magn.	VU	D2	
<i>Umbilicaria polyrhiza</i> (L.) Fr.	CR	A2bc	
<i>Umbilicaria proboscidea</i> (L.) Schrad.	DD		
<i>Usnea barbata</i> (L.) Weber ex F.H. Wigg	NT		3
<i>Usnea chaetophora</i> Stirt.	EN	B1ab(iii)	
<i>Usnea diplotypus</i> Vain.	NT		
<i>Usnea fulvoraegens</i> (Räsänen) Räsänen	EN	A2bc+3bc	
<i>Usnea glabrata</i> (Ach.) Vain.	CR	A2bc+3bc	
<i>Usnea substerilis</i> Motyka	EN	A2bc+3bc	
<i>Usnea wasmuthii</i> Räsänen	VU	A2bc+3bc	
<i>Verrucaria maculiformis</i> Kremp.	RE		
<i>Vulpicida juniperinus</i> (L.) J.-E. Mattsson & M. J. Lai	DD		
<i>Vulpicida tubulosus</i> (Schaer.) J.-E. Mattsson & M. J. Lai	NT		2
<i>Xanthoparmelia mougeotii</i> (Schaer. ex D. Dietr.) Hale	EN	B2ab(iii)	2
<i>Xanthoria calcicola</i> Oxner	VU	D2	
<i>Xanthoria fallax</i> (Hepp) Arnold	VU	B1ab(i,iv)	
<i>Xanthoria soredata</i> (Vain.) Poelt	VU	D2	

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