

Lichenized, lichenicolous and allied fungi of Žemaitija National Park (Lithuania)

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Abstract: MOTIEJŪNAITĖ, J. 2007. Lichenized, lichenicolous and allied fungi of Žemaitija National Park (Lithuania). – Herzogia 20: 179–188.

An inventory of 273 lichens and allied fungi (including 19 lichenicolous and 6 non-lichenized saprobic calicioid fungi) of Žemaitija National Park (Lithuania) is presented. Geography, climate, vegetation and anthropogenic activities in the Park are described briefly. Nine species are reported for the first time in Lithuania: *Chaenotheca brunneola*, *C. gracillima*, *Cliostomum corrugatum*, *Lecanora circumborealis*, *Microcalicium ahlneri*, *Pycnora praestabilis*, *Thelocarpon impressellum*, *Trapelia corticola* and *Tremella lichenicola*. *Cresporhaphis pinicola* is reported for the first time outside Southern and Central Europe.

Zusammenfassung: MOTIEJŪNAITĖ, J. 2007. Lichenisierte, lichenicole und andere Pilze des Žemaitija Nationalparks (Litauen). – Herzogia 20: 179–188.

273 Flechten und andere Pilze (einschließlich 19 lichenicoler und 6 nicht lichenisierter saprophytischer, calicioider Pilze) werden aus dem Žemaitija Nationalpark in Litauen gemeldet. Die Geographie, das Klima, die Vegetation und die anthropogenen Aktivitäten werden kurz beschrieben. Neun Arten werden erstmals für Litauen nachgewiesen: *Chaenotheca brunneola*, *C. gracillima*, *Cliostomum corrugatum*, *Lecanora circumborealis*, *Microcalicium ahlneri*, *Pycnora praestabilis*, *Thelocarpon impressellum*, *Trapelia corticola* und *Tremella lichenicola*. *Cresporhaphis pinicola* wird erstmals außerhalb von Süd- und Mitteleuropa gefunden.

Key words: Lichens, biodiversity.

Introduction

Žemaitija National Park (ŽNP) is one of five National Parks in Lithuania, occupying an area of 21720 ha. It is situated in the north-western part of the country (Fig. 1) between 55°57'–56°09'N and 21°45'–22°01'E. It was established in 1991 to protect the natural areas surrounding the Plateliai lake and wetland system, as well as the cultural heritage of traditional farmland (KIRSTUKAS 2004).

The climate is predominantly influenced by Atlantic cyclones that bring moisture and minimise temperature extremes. The western part of Lithuania, where ŽNP is located, is characterized by a stronger oceanic influence than the eastern part of the country. The average annual temperatures are 16.5 °C (July) and –5.0 °C (January). The growing season lasts on average 170–200 days per year. ŽNP (just as the whole territory of Lithuania) is situated in a zone of excessive precipitation; that is, where precipitation exceeds transpiration. Average annual precipitation in ŽNP is 850 mm. Permanent snow cover lasts c. 95 days, and regular and prolonged snow thaws are characteristic for winter (BUKANTIS 1994).

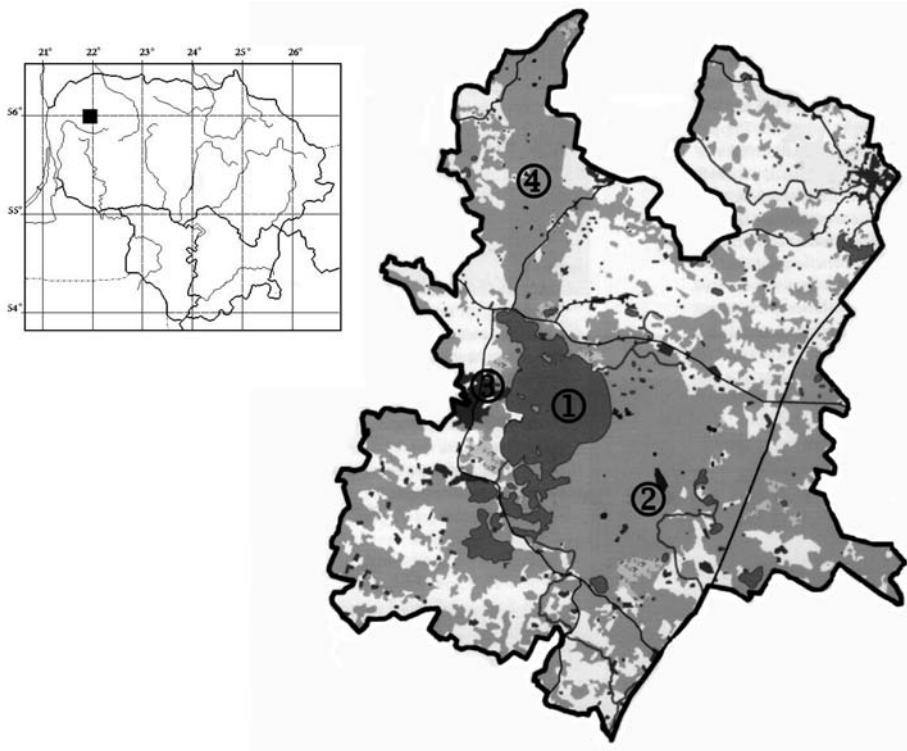


Fig. 1: Map of Žemaitija National park and its situation in Lithuania. Numbers indicate: 1 – the Plateliai lake, 2 – Plokštinė forest and previous military areas, 3 – Plateliai town, 4 – Montvidinė forest.

Geographically the area belongs to the district of Žemaičiai highlands. Its moraine-dominated hilly relief was formed 12000 years ago by receding glaciers; hills 150–190 m high cover a large part of the Park area. Lakes account for more than 7 % of the area, with the largest being Plateliai lake (1205 ha) and 26 smaller lakes. The watersheds of three rivers – Bartuva, Minija and Varduva – meet in the territory of ŽNP. 32 streams flow in the Park area (KIRSTUKAS 2004; BANDZIENĖ et al. 2001).

Phytogeographically, the area is part of the Žemaitija highland district of the Baltic subprovince (NATKEVIČAITĖ-IVANAUSKIENĖ 1983). The characteristic vegetation is western taiga. Forests occupy 43 % (9863 ha) of the park territory: almost half is spruce stands, the second largest component is pine forests, and the smallest percentage consists of broad-leaved stands. Most of the forests are young or medium-aged, and old stands make up only 1.5 %. Approximately one third of the forests is planted. Larger stands of near-natural mature forests are found in Plokštinė and Rukundžiai Nature Reserves (mainly spruce stands), Paplatelė and Liepijos Reserves (spruce and broad-leaved stands). Rich forest stands are also found on islands and peninsulas of the Plateliai lake (mainly oak and spruce), around numerous bogs and mires (mainly spruce and alder) and in the valleys of streams (alder and broad-leaved stands) (BANDZIENĖ et al. 2001).

ŽNP is a very recent Park (founded in 1991), and therefore still bears many traces of intensive previous human activities: forest logging, military developments and several abandoned, over-

growing gravel pits. On the other hand, traditional farming has created specific habitats, such as untreated timber artefacts, ancient stone buildings, open meadows with erratics and old manor parks. Nowadays human activity comprises mainly small to medium-scale farming, recreation and tourism, small-scale development and logging in forests that have no protection status.

The lichen flora of ŽNP has so far received only fortuitous attention, with incidental data published in several papers (KUKWA & DIEDERICH 2005; MOTIEJŪNAITĖ 1989, 1992, 2002a, 2002b; MOTIEJŪNAITĖ & ANDERSSON 2003; MOTIEJŪNAITĖ & GOLUBKOV 2005; MOTIEJŪNAITĖ et al. 2003, 2005). Recently, however, targeted biodiversity studies have become important for protected areas, and thus inventories of several groups of organisms were compiled for nature reserves and national parks in the country. A lichen inventory for ŽNP is presented here.

Material, methods, collecting localities

Lichens and lichenicolous fungi were collected from 2001 to 2003 from various localities in whole territory of ŽNP. All habitats and substrates were considered. Lichens were identified using routine microscopic techniques. For the identification of sterile specimens and some *Cladonia* species, TLC was performed, with methodology following ORANGE et al. (2001). Voucher specimens are deposited in the herbarium of the Institute of Botany in Vilnius (BILAS), with several duplicates in K and BM.

Localities

1. Getaučiai village: burial mound with old wooden crosses, stone walls, roadside trees, farmsteads, planted oak stand c. 50 years old.
2. Laumalenka Reserve: abandoned farmstead, meadow with erratics, spruce and pine stands, occasional oaks.
3. Babrungėnai village: farmsteads, traditional untreated timber buildings, meadow with erratics, roadside trees.
4. Plateliai manor park: ancient broad-leaved trees, stone walls, erratics along unsealed road.
5. Liepijos forest: mixed broad-leaved and spruce forest with numerous streams and small fragments of old, relatively untouched stands; old wooden crosses at the edge of the forest.
6. Stirbaičiai forest: predominating spruce stands and wetlands with occasional oak stands, farmstead with old trees.
7. Margupis stream valley: alder and ash stands.
8. Babrungas river valley: alder and ash stands with occasional oaks, old stone buildings.
9. Kreiviškės peninsula: oak and spruce stands.
10. Montvidinė forest: spruce stands, old farmstead, meadows with erratics.
11. Visvainiai village: farmsteads, untreated timber buildings.
12. Mikytai village: farmsteads, untreated timber buildings, castle mound overgrown with forest.
13. Didvyčiai forest: broad-leaved stand.
14. Plokštinė Nature Reserve: old spruce stands, spring and stream areas, swampy forests, abandoned military areas and abandoned, overgrowing gravel pit.
15. Rukundžiai Nature Reserve: old spruce stands, swampy forests.
16. Bartuva stream valley: alder stands, abandoned farmstead with untreated timber buildings.
17. Auksalė peninsula: oak and spruce stands, alder stands.
18. Pliksalė island: oak and spruce stand.
19. Žvirblaičiai village: abandoned gravel pit.
20. Žalnierkalnis village: abandoned gravel pit.
21. Pilis island: ancient castle site, oak stand.
22. Paplatelė reserve: spruce stands, oak and spruce stands, swampy spruce and alder forests.

23. Gegrėnai village: roadside trees.
 24. Virkšai village environs: planted oak stand, c. 50 years old.
 25. Mačiūkai II village environs: oak stand fragments, birch and willow stands; ancient burial mounds with wooden crosses.
 26. Šarnelė bog.
 27. Paežerės Rūdaičiai village: roadside trees, old wooden crosses.

List of species

* – indicates new record for Lithuania, ● – non-lichenized saprobic fungus, + – lichenicolous fungus (host lichen species indicated).

- Acarospora fuscata* (Schrad.) Th.Fr.: 1; 2; 3.
Acrocordia gemmata (Ach.) A.Massal.: 4; 5; 6; 7; 8; 9.
Agonimia allobata (Stizenb.) P.James: 8.
Amandinea punctata (Hoffm.) Coppins & Scheid.: 3; 8; 10; 11; 16.
Anaptychia ciliaris (L.) Körb.: 1; 4; 6; 8; 13; 10; 12; 24.
Anisomeridium polypori (Ellis & Everh.) M.E.Barr: 5; 6; 7; 13; 14.
Arthonia didyma Körb.: 8.
Arthonia mediella Nyl.: 17.
Arthonia ruana A.Massal.: 5; 7; 8; 9; 13.
Arthonia spadicea Leight.: 5; 6; 8; 13.
Arthonia vinosa Leight.: 2; 5; 9; 17; 18.
Aspicilia caesiocinerea (Nyl. ex Malbr.) Arnold: 1; 3; 10.
Aspicilia cinerea (L.) Körb.: 1; 4; 3; 10.
Bacidia bagliettoana (A.Massal. & De Not.) Jatta: 14; 19.
Bacidia biatorina (Körb.) Vain.: 6; 7; 14; 22.
Bacidia rubella (Hoffm.) A.Massal.: 2; 4; 5; 7; 8; 12; 13; 23.
Bacidia subincompta (Nyl.) Arnold: 6; 8.
Bacidina arnoldiana (Körb.) V.Wirth & Vězda: 7.
Bacidina chlorotricula (Nyl.) Vězda & Poelt: 14; 17; 19.
Bacidina inundata (Fr.) Vězda: 7; 8; 14; 18.
Baeomyces rufus (Huds.) Rebert: 6; 10; 15; 20.
Biatora chrysantha (Zahlbr.) Printzen: 2; 5; 8; 15.
Biatora efflorescens (Hedl.) Räsänen: 6.
Biatoridium monasteriense J.Lahm ex Körb.: 8.
 +*Biatoropsis usnearum* Räsänen: on thalli of *Usnea substerilis* and *U. glabrescens*: 22.
Bilimbia sabuletorum (Schreb.) Arnold: 4.
Bryoria capillaris (Ach.) Brodo & D.Hawksw.: 2; 14; 15; 22.
Bryoria fuscescens (Gyeln.) Brodo & D.Hawksw.: 14.
Buellia griseovirens (Turner & Borrer ex Sm.) Almb.: 5; 7; 8; 13; 14; 17.
Calicium glaucellum Ach.: 2; 6; 8; 14; 15; 17; 18.
Calicium quercinum Pers.: 12.
Calicium salicinum Pers.: 8; 22.
Calicium viride Pers.: 8; 18.
Caloplaca citrina (Hoffm.) Th.Fr.: 4; 10.
Caloplaca decipiens (Arnold) Blomb. & Forssell: 4.
Caloplaca flavorubescens (Huds.) J.R.Laundon: 1; 3; 13.
Caloplaca holocarpa (Hoffm. ex Ach.) A.E.Wade: 1–8; 10–14; 16; 19; 20; 23–25; 27.
Caloplaca saxicola (Hoffm.) Nordin: 1; 3.
Candelariella aurella (Hoffm.) Zahlbr.: 1–4; 8; 10–12; 14; 16; 19; 20; 23.
Candelariella reflexa (Nyl.) Lettau: 1; 8.
Candelariella vitellina (Hoffm.) Müll.Arg.: 1; 3; 16.
Candelariella xanthostigma (Ach.) Lettau: 1–25; 27.
Catillaria nigroclavata (Nyl.) Schuler: 1.
Cetraria islandica (L.) Ach.: 15.
Cetraria sepincola (Ehrh.) Ach.: 15; 22; 25.
Chaenotheca brachypoda (Ach.) Tibell: 6; 8; 22.
 **Chaenotheca brunneola* (Ach.) Müll.Arg.: 15.
Chaenotheca chlorella (Ach.) Müll.Arg.: 6; 13; 22.
Chaenotheca chrysocephala (Turner ex Ach.) Th.Fr.: 2; 5; 6; 8; 9; 10; 14; 15; 17; 22.
Chaenotheca ferruginea (Turner ex Sm.) Mig.: 1; 2; 5; 6; 9; 10; 14; 15; 17; 18; 22.
Chaenotheca furfuracea (L.) Tibell: 5; 6; 14.
 **Chaenotheca gracillima* (Vain.) Tibell: 14.
Chaenotheca phaeocephala (Turn.) Th.Fr.: 10.
Chaenotheca stemonea (Ach.) Müll.Arg.: 10.
Chaenotheca trichialis (Ach.) Th.Fr.: 1; 2; 5; 6; 8; 9; 10; 17; 18; 21.
Chaenotheca xyloxena Nád.v.: 2; 5; 6; 13; 14; 17; 22.
 ●*Chaenothecopsis nigra* Tibell: 5.
 ●*Chaenothecopsis pusilla* (Ach.) A.F.W.Schmidt: 10.
 ●*Chaenothecopsis savonica* (Räsänen) Tibell: 14.
 ●*Chaenothecopsis viridireagens* (Nád.v.) A.F.W.Schmidt: 14.

- Cladonia arbuscula* subsp. *mitis* (Sandst.) Ruoss: 14; 15.
- Cladonia arbuscula* subsp. *squarrosa* (Wallr.) Ruoss: 14; 15.
- Cladonia bacilliformis* (Nyl.) Glück: 14.
- Cladonia botrytes* (K.G.Hagen) Willd.: 14.
- Cladonia cariosa* (Ach.) Spreng.: 14; 20.
- Cladonia carneola* (Fr.) Fr.: 14; 15.
- Cladonia cenotea* (Ach.) Schaer.: 2; 14; 15; 22.
- Cladonia chlorophaea* (Flörke ex Sommerf.) Spreng.: 4; 5.
- Cladonia coniocraea* (Flörke) Spreng.: 1; 2; 4–10; 13–18; 21; 22; 24; 25.
- Cladonia cornuta* (L.) Hoffm.: 14; 15.
- Cladonia deformis* (L.) Hoffm.: 14; 15.
- Cladonia digitata* (L.) Hoffm.: 2; 5; 6; 8; 9; 10; 13–16; 17; 18; 22.
- Cladonia diversa* Asperges: 5; 14.
- Cladonia fimbriata* (L.) Fr.: 1–6; 8–10; 13–15; 17–20; 22; 25; 26.
- Cladonia furcata* (Huds.) Schrad.: 14; 15; 20.
- Cladonia glauca* Flörke: 15; 19.
- Cladonia gracilis* (L.) Willd. subsp. *gracilis*: 15.
- Cladonia gracilis* subsp. *turbinata* (Ach.) Ahti: 15.
- Cladonia grayi* G.Merr. ex Sandst.: 15; 17.
- Cladonia macilenta* Hoffm.: 13–15; 25.
- Cladonia norvegica* Tønsberg & Holien: 14.
- Cladonia novochlorophaea* (Sipman) Brodo & Ahti: 6.
- Cladonia ochrochlora* Flörke: 5; 6; 8; 14; 15; 22.
- Cladonia pocillum* (Ach.) Grognot: 14.
- Cladonia rangiferina* (L.) F.H.Wigg.: 14; 15.
- Cladonia rangiformis* Hoffm.: 19.
- Cladonia rei* Schaer.: 5; 19.
- Cladonia scabriuscula* (Delise) Nyl.: 15.
- Cladonia squamosa* Hoffm.: 5; 6.
- Cladonia stellaris* (Opiz) Pouzar & Vězda: 14; 26.
- Cladonia stygia* (Fr.) Ruoss: 26.
- Cladonia subulata* (L.) Weber ex F.H.Wigg.: 14; 15; 19; 20.
- **Cliostomum corrugatum* (Ach.) Fr.: 12.
- +*Clypeococcum hypocenomycis* D.Hawksw.: on squamules of *Hypocenomyce scalaris*: 2; 5; 8.
- Collema limosum* (Ach.) Ach.: 3.
- Collema tenax* (Sw.) Ach. em. Degel.: 14.
- **Cresporhaphis pinicola* (G.Samp.) M.B.Aguirre: 4.
- Dimerella pineti* (Ach.) Vězda: 2; 5; 6; 9; 10; 13–15; 17; 18; 22.
- Diplotomma alboatrum* (Hoffm.) Flot.: 4.
- Evernia prunastri* (L.) Ach.: 1–18; 21–27.
- Fellhanera bouteillei* (Desm.) Vězda: 6; 14.
- Fellhanera subtilis* (Vězda) Diederich & Sérus.: 14; 15; 17.
- Fellhaneropsis myrtillicola* (Erichsen) Sérus. & Coppins: 14; 15.
- Fellhaneropsis vezdae* (Coppins & P.James) Sérus. & Coppins: 6; 22.
- Fuscidea pusilla* Tønsberg: 14; 15.
- Graphis scripta* (L.) Ach.: 1; 5; 6; 8; 9; 10; 13.
- +*Graphium samogiticum* Motiej. & Alstrup: on thalli of *Sarcosagium campestre* and *Verrucaria bryoctona*: 14; 19; 20.
- Gyalecta flotowii* Körb.: 5.
- Hypocenomyce friesii* (Ach.) P.James & Gotth. Schneid.: 22.
- Hypocenomyce scalaris* (Ach.) M.Choisy: 1–3; 5; 6; 8–18; 21; 22; 24–27.
- Hypogymnia farinacea* Zopf: 6; 10.
- Hypogymnia physodes* (L.) Nyl.: 1–27.
- Hypogymnia tubulosa* (Schaer.) Hav.: 1; 2; 5–10; 13–18; 21–25.
- +*Illosporopsis christiansenii* (B.L.Brady & D.Hawksw.) D.Hawksw.: on thallus of *Physcia tenella*: 5.
- Imshaugia aleurites* (Ach.) S.L.F.Meyer: 15.
- Jamesiella anastomosans* (P.James & Vězda) Lücking, Sérus. & Vězda: 6; 14.
- Lecanactis abietina* (Ach.) Körb.: 2; 5; 6; 8; 14; 17.
- Lecania cyrtella* (Ach.) Th.Fr.: 1; 7.
- Lecania cyrtellina* (Nyl.) Sandst.: 4; 7; 17.
- Lecania hyalina* (Fr.) R.Sant.: 5; 8.
- Lecania naegelii* (Hepp) Diederich & P.Boom: 1; 3; 4; 7.
- Lecanora albescens* (Hoffm.) Branth. & Rostr.: 3.
- Lecanora allophana* Nyl.: 3; 5.
- Lecanora carpinea* (L.) Vain.: 1–25; 27.
- Lecanora chlarotera* Nyl.: 1; 5; 13.
- **Lecanora circumborealis* Brodo & Vitik.: 27.
- Lecanora conizaeoides* Nyl. ex Crombie: 15; 17.
- Lecanora dispersa* (Pers.) Sommerf.: 1–4; 10–12; 14; 19; 20; 23; 24; 27.
- Lecanora expallens* Ach.: 4.
- Lecanora hagenii* (Ach.) Ach.: 4.
- Lecanora polytropa* (Ehrh. ex Hoffm.) Rabenh.: 2; 3; 8; 14.
- Lecanora pulicaris* (Pers.) Ach.: 1–27.
- Lecanora saligna* (Schrad.) Zahlbr.: 10; 14; 16.
- Lecanora sambuci* (Pers.) Nyl.: 10.
- Lecanora symmicta* (Ach.) Ach.: 1; 2; 3; 4–8; 10; 14–16; 24; 25.

- Lecanora varia* (Hoffm.) Ach.: 1; 8; 10; 12; 15.
Lecidea fuscoatra (L.) Ach.: 2.
Lecidea nylanderii (Anzi) Th.Fr.: 14.
Lecidella elaeochroma (Ach.) M.Choisy: 1–18; 21–25; 27.
Lecidella flavosorediata (Vězda.) Hertel & Leuckert: 1.
Lecidella stigmatea (Ach.) Hertel & Leuckert: 1; 4; 19.
Lepraria incana (L.) Ach.: 14.
Lepraria lobificans Nyl.: 5; 7; 13; 18; 24.
Lepraria neglecta (Nyl.) Lettau: 10.
Lepraria rigidula (de Lesd.) Tønsberg: 23.
Leptogium lichenoides (L.) Zahlbr.: 5.
+*Lichenocodium erodens* M.S.Christ. & D.Hawksw.: on thalli of *Hypogymnia physodes*, *Cladonia digitata*, *Platismatia glauca*, *Parmelia submontana*: 5; 14; 15; 17.
+*Lichenocodium pyxidatae* (Oudem.) Petr. & Sydow: on thalli of *Cladonia pocillum*: 14.
Lichonomphalia umbellifera (L.: Fr.) Redhead et al.: 15.
Lobaria pulmonaria (L.) Hoffm.: 2; 6; 10.
Lopadium disciforme (Flot.) Kullh.: 6.
Loxospora elatina (Ach.) A.Massal.: 14.
+*Marchandiomyces aurantiacus* (Lasch) Diederich & Etayo: on thalli of *Physcia tenella*: 1; 3; 4; 7.
Melanelia exasperata (De Not.) Essl.: 6.
Melanelia exasperatula (Nyl.) Essl.: 1–18; 21–25; 27.
Melanelia fuliginosa (Fr. ex Duby) Essl.: 1; 3; 5; 8; 13; 14; 18; 24.
Melanelia sorediata (Ach.) Goward & Ahti: 3.
Melanelia subaurifera (Nyl.) Essl.: 5; 6; 8; 13; 14.
Micarea botryoides (Nyl.) Coppins: 6; 15.
Micarea denigrata (Fr.) Hedl.: 25.
Micarea misella (Nyl.) Hedl.: 6; 14; 15.
Micarea peliocarpa (Anzi) Coppins & R.Sant.: 22.
Micarea prasina Fr.: 2; 5; 6; 9; 10; 13–15; 17; 18; 22.
*●*Microcalicium ahlneri* Tibell: 13; 14.
+*Muellerella pygmaea* var. *athallina* (Müll.Arg.) Triebel: on thallus of *Lecidella stigmatea*: 4.
Mycoblastus fucatus (Stirt.) Zahlbr.: 2; 15.
Mycoblastus sanguinarius (L.) Norman: 14; 16; 22.
●*Mycocalicium subtile* (Pers.) Szatala: 14; 15; 17; 18.
+*Nectriopsis lecanodes* (Cesati) Diederich & Schroers: on thalli of *Peltigera rufescens*: 14; 22.
Neofuscelia loxodes (Nyl.) Essl.: 3; 6; 12.
Neofuscelia pulla (Ach.) Essl.: 10.
Ochrolechia androgyna (Hoffm.) Arnold: 5; 6; 13; 14; 15; 22.
Ochrolechia microstictoides Räsänen: 17.
Ochrolechia turneri (Sm.) Hasselrot: 10; 25.
Opegrapha rufescens Pers.: 5; 7; 8.
Opegrapha varia Pers.: 4–7.
Opegrapha vulgata (Ach.) Ach.: 5; 6; 9; 22.
Parmelia saxatilis (L.) Ach.: 1–14; 17–19; 21–25.
Parmelia submontana Nädv. ex Hale: 2–5; 8–10; 14; 17; 24; 25.
Parmelia sulcata Taylor: 1–25; 27.
Parmeliopsis ambigua (Wulfen) Nyl.: 1–3; 5–18; 21; 22; 24–26.
Peltigera canina (L.) Willd.: 10; 12.
Peltigera didactyla (With.) J.R.Laundon: 14; 15; 19; 20.
Peltigera leucophlebia (Nyl.) Gyeln.: 15.
Peltigera polydactylon (Neck.) Hoffm.: 14.
Peltigera praetextata (Flörke ex Sommerf.) Zopf: 5–7; 12–15; 22.
Peltigera rufescens (Weiss) Humb.: 12; 14; 20; 22.
Pertusaria albescens (Huds.) M.Choisy & Werner: 1–10; 12–14; 17; 19; 21–25.
Pertusaria amara (Ach.) Nyl.: 1–10; 12–14; 17; 19; 21–25.
Pertusaria coccodes (Ach.) Nyl.: 2; 3; 4; 6; 9; 24; 25.
Pertusaria hemisphaerica (Flörke) Erichsen: 2; 5; 6; 13; 17; 21.
Pertusaria leioplaca DC.: 5; 7; 8; 13.
Pertusaria pupillaris (Nyl.) Th.Fr.: 6; 13.
Phaeophyscia endophaenicea (Harm.) Moberg: 4.
Phaeophyscia nigricans (Flörke) Moberg: 1–4; 8; 10–12; 14; 16; 19; 20; 23.
Phaeophyscia orbicularis (Neck.) Moberg: 1–14; 16; 19–25; 27.
Phlyctis agelaea (Ach.) Flot.: 7.
Phlyctis argena (Spreng.) Flot.: 1–18; 21–25; 27.
Physcia adscendens H.Olivier: 1–4; 6; 8; 10–12; 14; 23–25.
Physcia stellaris (L.) Nyl.: 1; 2; 4–8; 10; 13; 14; 16; 24; 25.
Physcia tenella (Scop.) DC.: 1–8; 10–14; 16; 19; 20; 23–25; 27.
Physconia distorta (With.) J.R.Laundon: 1; 3; 4; 6; 23; 24.
Physconia enteroxantha (Nyl.) Poelt: 1–4; 6; 8; 10–12; 23–25; 27.
Physconia perisidiosa (Erichsen) Moberg: 2; 4; 8; 10; 23.
Placynthiella dasaea (Stirt.) Tønsberg: 14; 17.

- Placynthiella icmalea* (Ach.) Coppins & P.James: 5; 6; 10; 14; 15.
- Placynthiella uliginosa* (Schrad.) Coppins & P.James: 14; 15.
- Platismatia glauca* (L.) W.L.Culb. & C.F.Culb.: 1; 2; 5–10; 12–18; 21; 22; 24; 25; 26.
- Pleurosticta acetabulum* (Neck.) Elix & Lumbsch: 2–4; 10–12.
- Polyblastia agraria* Th.Fr.: 20.
- +*Polycoccum peltigerae* (Fuckel) Vězda: on thallus of *Peltigera didactyla*: 20.
- Porpidia crustulata* (Ach.) Hertel & Knoph: 1; 10; 14.
- +*Pronectria erythrinella* (Nyl.) Lowen: on thallus of *Peltigera didactyla*: 19.
- +*Pronectria robergei* (Mont. & Desm.) Lowen: on thallus of *Peltigera rufescens*: 14.
- +*Pronectria xanthoriae* Lowen & Diederich: on thalli and apothecia of *Xanthoria parietina*: 4.
- +*Pronectria* sp. – on thallus of *Peltigera rufescens*: 14.
- Protoparmeliopsis muralis* (Schreb.) M.Choisy: 1; 12.
- Pseudevernia furfuracea* (L.) Zopf: 1; 2; 5–10; 12–18; 21; 22; 24; 25; 26.
- Psilolechia clavulifera* (Nyl.) Coppins: 14.
- **Pycnora praestabilis* (Nyl.) Hafellner: 5; 27.
- Pycnora sorophora* (Vain.) Hafellner: 15.
- Ramalina farinacea* (L.) Ach.: 1–14; 17; 19; 21–25; 27.
- Ramalina fastigiata* (Pers.) Ach.: 3–5; 8; 10; 23; 25.
- Ramalina fraxinea* (L.) Ach.: 2–4; 8; 10; 23; 25.
- Rhizocarpon badioatrum* (Flörke ex Spreng.) Th.Fr.: 12.
- Rhizocarpon geographicum* (L.) DC.: 12.
- Rhizocarpon reductum* Th.Fr.: 2.
- Rhizocarpon viridiatrum* (Wulfen) Körb.: 10.
- Rinodina efflorescens* Malme: 5; 8; 13.
- Ropalospora viridis* (Tønsberg) Tønsberg: 5; 6; 18.
- Sarcosagium campestre* (Fr.) Poetsch & Schied.: 14; 19; 20.
- Sclerophora pallida* (Pers.) Y.J.Jao & Spooner: 4; 5; 7; 8.
- Scoliosporum chlorococcum* (Graewe ex Stenh.) Vězda: 1.
- Scoliosporum umbrinum* (Ach.) Arnold: 1.
- Steinia geophana* (Nyl.) Stein: 14.
- Stenocybe pullatula* (Ach.) Stein: 6; 14; 15.
- Stereocaulon dactylophyllum* Flörke: 6.
- Strangospora moriformis* (Ach.) Stein: 10.
- Strangospora pinicola* (A.Massal.) Körb.: 16.
- Thelidium zwackhii* (Hepp) A.Massal.: 14.
- **Thelocarpon impressellum* Nyl.: 14; 19; 20.
- Thelocarpon intermediellum* Nyl.: 14.
- **Trapelia corticosa* Coppins & P.James: 6.
- Trapelia placodioides* Coppins & P.James: 12.
- Trapeliopsis flexuosa* (Fr.) Coppins & P.James: 2; 8; 10; 14; 23.
- Trapeliopsis glaucolepidea* (Nyl.) Gotth.Schneid.: 5.
- Trapeliopsis granulosa* (Hoffm.) Lumbsch: 2; 5; 6; 10; 14; 15; 25.
- +*Tremella cladoniae* Diederich & M.S.Christ.: on thalli of *Cladonia* spp.: 5.
- *+*Tremella lichenicola* Diederich: on thallus of *Mycoblastus fucatus*: 15.
- +*Tremella phaeophysciae* Diederich & M.S.Christ.: on thalli of *Phaeophyscia orbicularis*: 4; 10.
- Tuckermanopsis chlorophylla* (Willd.) Hale: 2; 6; 10; 14; 15; 17; 22.
- Umbilicaria deusta* (L.) Baumg.: 10.
- Usnea barbata* (L.) Weber ex F.H.Wigg.: 10; 23.
- Usnea filipendula* Stirt.: 2; 6; 15; 23.
- Usnea glabrescens* (Nyl. ex Vain.) Vain.: 10.
- Usnea hirta* (L.) Weber ex F.H.Wigg.: 10; 15.
- Usnea subfloridana* Stirt.: 2; 6; 10; 14; 22.
- Usnea substerilis* Motyka: 22.
- Verrucaria bryoctona* (Th.Fr.) Orange: 14; 15; 19; 20.
- Verrucaria dolosa* Hepp: 14.
- Verrucaria hydrela* Ach.: 5; 7; 8; 13; 18.
- Verrucaria muralis* Ach.: 1; 3; 14; 19.
- Verrucaria nigrescens* Pers.: 19.
- Verrucaria praetermissa* (Trevis.) Anzi: 5; 7; 8; 13; 18.
- Verrucaria xyloxena* Norman: 19.
- +*Vouauxiella lichenicola* (Linds.) Petr. & Sydow: on thalli and apothecia of *Lecanora pulicaris*: 18; 27.
- +*Vouauxiomyces santessonii* D.Hawksw.: on thalli of *Platismatia glauca*: 2; 6; 9; 15; 23.
- Vulpicida pinastri* (Scop.) J.-E.Mattson & M.J.Lai: 6; 14; 15.
- Xanthoparmelia conspersa* (Ach.) Hale: 1; 3; 6; 8; 10; 12.
- Xanthoparmelia somloënsis* (Gyeln.) Hale: 1.
- Xanthoria candelaria* (L.) Th.Fr.: 10.
- Xanthoria fulva* (Hoffm.) Poelt & Petutschnig: 4; 10.
- Xanthoria parietina* (L.) Th.Fr.: 1–8; 10–14; 16; 19; 21; 20; 23–25; 27.
- Xanthoria polycarpa* (Hoffm.) Th.Fr. ex Rieber: 1–8; 10–14; 16; 19–21; 23–25; 27.
- Xylographa parallela* (Ach.:Fr.) Fr.: 23.

Discussion

A mosaic landscape of traditional land use and fragments of relatively undisturbed forests, combined with high air humidity provide favourable conditions for lichens in Žemaitija National Park. A total of 273 species (including 19 lichenicolous and 6 non-lichenized saprobic calicioid fungi) were found in this protected territory. The richest sites with respect to rare and threatened lichen species were the well-preserved spruce stands in Plokštinė Strict Nature Reserve, the mixed hardwood and spruce Liepijos forest, and the deciduous valley forests along the Margupis and Babrungas rivers. Due to high humidity and large amounts of coarse wood debris in various stages of decay, the Plokštinė spruce forests were rich in wood-inhabiting species, such as *Chaenotheca gracillima*, *Microcalicium ahlneri*, various *Chaenothecopsis* species, the damp wood-inhabiting *Jamesiella anastomosans*, and *Thelocarpon intermediolum*. Indicators of old-growth coniferous forests in the region, for example *Lecanactis abietina*, *Loxospora elatina* and *Mycoblastus sanguinarius* (MOTIEJŪNAITĖ et al. 2004), were recorded in Plokštinė forests as well. The most noteworthy species of the Liepijos forest and river valley forests were found mainly on hardwood trees; these included *Arthonia didyma*, *A. vinosa*, *Bacidia biatorina*, *Biatoridium monasteriense*, *Gyalecta flotowii*, *Leptogium lichenoides* and *Pertusaria hemisphaerica*.

Species such as *Phaeophyscia endophoenicea*, *Diplotomma alboatrum* and *Cresporhaphis pinicola* were confined to anthropogenic habitats and were found only in the manor park. Untreated timber constructions in various parts of ŽNP support a rich lichen flora that includes rare and previously unrecorded (for the country) species like *Calicium quercinum*, *Cliostomum corrugatum*, *Lecanora circumborealis*, *Pycnora praestabilis*.

A rich and noteworthy lichen flora was found in abandoned overgrowing gravel pits. A number of nationally and regionally rare species were recorded here: *Sarcosagium campestre*, *Verrucaria bryoctona*, *V. xyloxena*, *Steinia geophana*, *Thelocarpon impressellum*. A new species of lichenicolous fungi, *Graphium samogiticum*, was described from these lichens (MOTIEJŪNAITĖ & ALSTRUP 2006). However, these lichens and lichenicolous fungi cannot really be considered as adding to the biological values of the Park as they are connected to destructive human activities that are no longer allowed in the Park territory; their rareness both nationally and continent-wide is also rather doubtful (MOTIEJŪNAITĖ 2006).

Cresporhaphis pinicola was so far known only from conifers on the Iberian Peninsula and in Austria (AGUIRRE-HUDSON 1991; BERGER et al. 1998). The Lithuanian specimen has a different ecology (the branches of *Berberis* sp.) slightly smaller perithecia (150–200 µm) than described by AGUIRRE-HUDSON (1991) and longer spores (to 75 µm). However, the ascus type and spore septation support its identification as *C. pinicola* (see also CALATAYUD & AGUIRRE-HUDSON 2001). This species is generally very rare and hence its full character variation as well as substrate range are probably not fully known.

The rich occurrence of *Parmelia submontana* in ŽNP was previously noted by MOTIEJŪNAITĖ et al. (2003). During the current investigation, even more localities of this species were recorded in the Park territory. In one, the lichen not only grows luxuriantly, but also has apothecia (Fig. 2). These are similar to apothecia of *P. sulcata*, but with the margin entirely dissolved into coarse granular soredia, characteristic of *P. submontana*. Asci and ascospores were not developed.

Thelocarpon superellum Nyl. was incorrectly recorded from ŽNP, Plokštinė Nature Reserve (MOTIEJŪNAITĖ & ANDERSSON 2003). The specimens belong to *T. impressellum* and *T. su-*

perellum has not been found in Lithuania so far.

The species of *Pronectria* found on thallus of *Peltigera rufescens* evidently represents an undescribed species and has combination of characters not known from other peltigericolous species of the genus:

Perithecia scattered, arising singly, 150–180 μm diam., very pale yellow, (pigment not reacting with KOH), immersed in host thallus, erumpent by a split showing only ostiolar region (Fig. 3). Setae absent. Asci 70–90 \times 11–14 μm , cylindrically clavate, 8-spored; apex truncate. Ascospores biseriate in the middle of the ascus, uniseriate above and below, smooth-walled, hyaline, eguttulate, 11–13.5 \times 7–8.5 μm , 1-septate, slightly to strongly constricted at the septum, with both cells of more or less equal size and with rounded ends. The fungus causes discolourations of host thallus, bordered by brownish zone (Reference specimen: BILAS 6902). This species superficially resembles *Pronectria erythrinella* (Nyl.) Lowen and *P. robergei* (Mont. & Desm.) Lowen. The latter has narrower ascospores (4–7 μm) with less pronounced constriction at the septum and a more intensively pigmented perithecial wall. In contrast, *P. erythrinella* has somewhat paler perithecia and ascospores that are more noticeably constricted than those of *P. robergei* (HAWKSWORTH 1978) but it nevertheless differs from the undescribed *Pronectria* sp. by its longer ascospores (18–28 μm). Unfortunately the collected material is too limited for the formal description of a new species here.

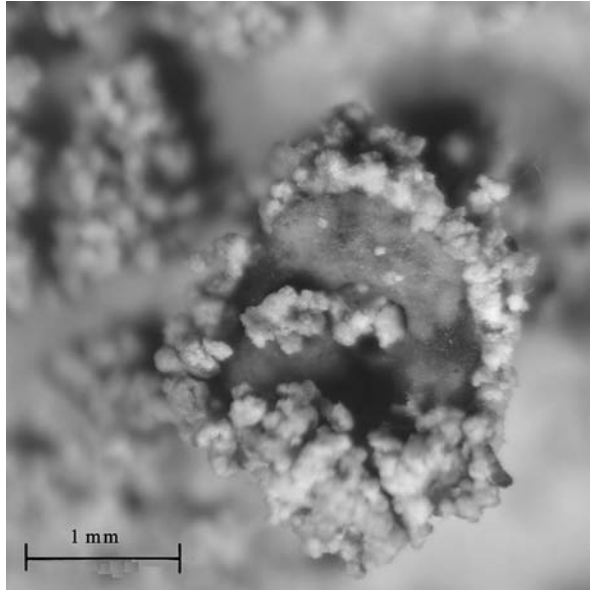


Fig. 2: Apothecium of *Parmelia submontana*.

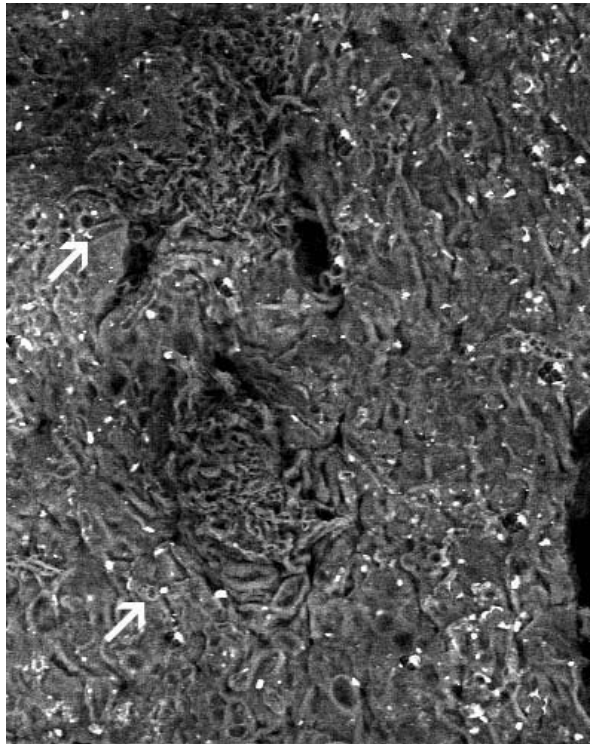


Fig. 3: Perithecia of *Pronectria* sp. breaking through the host thallus ($\times 750$) (arrows).

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