ACTA MYCOLOGICA
Vol. 30 (1): 137-146
1995

Lichens of the Hel Peninsula

WIESŁAW FAŁTYNOWICZ[1], BOGUMIŁA WOJTYŁA-KUCHTA[2]

[1] Laboratory of Plant Taxonomy and Phytogeography, University of Gdańsk, Legionów 9, 80-441 Gdańsk, Poland
[2] Department of Plant Cytology and Embriology, University of Gdańsk, Kładki 24, 80-952 Gdańsk, Poland

Fałtynowicz W., Wojtyła-Kuchta B.: *Lichens of the Hel Peninsula*. Acta Mycol. 30 (1): 137-146, 1995.

The paper contains a list of 131 lichen species collected in Hel Peninsula (western part of Polish Baltic coast). The current lichen flora of this area comparises only 116 species; we have not found 15 taxa which have been recordered earlier.

Key words: Lichen flora, antrophogenic changes.

INTRODUCTION

Human activities had an enormous impact on the Hel Peninsula (northern Poland). The distorted species structure and quantitative relationships in the plant communities, as well as the planting of large numbers of tree and shrub species foreign to both the habitat and this geographical region (e.g. *Pinus mughus, P. nigra, P. strobus* and *Rosa rugosa*) are just two examples of the man-made transformations of the vegetation. Moreover, the annual invasion of holidaymakers in their hundreds of thousands during the summer – numbers far in excess of the carrying "tourist capacity" of the place – subjects this environment to intolerable pressure.

CHARACTERISTIC OF THE AREA

Some 35 km long and from 200 m to 3 km broad the Hel Peninsula is one of the most distinctive morphological features of the Polish section of the Baltic Sea coast. It is a very recent spit formation; in the 17th century it still consisted of a number of

sandy islets joined to one another by narrow isthmuses (D y l i k o w a, 1973). The accumulation of sand continued until the end of the 19th century, but in the early 20th century this process was interrupted by the modernisation of the port at Władysławowo. Since that time abrasion has been the dominant process as a result of which the peninsula has been breached by storm waters on several occasions (Z a t o r s k a, 1984).

The climate of the Hel Peninsula is eminently maritime. Thus the diurnal and annual temperature ranges are small, the air humidity is high, the winters are the mildest in the whole of Poland, and windless days are very few in number (< 5 % per annum) (see P a s z y ń s k i, 1984).

The spit is mainly made up of medium-grained dune sands. The soil that have been able to form here comprise a variety of initial soils, weakly podzolized podzols, as well as half-bog and peat soils. They support sandy swards belonging to the *Elymo-Ammophiletum, Helichryso-Jasionetum and Spergulo-Corynephoretum* associations at various stages of advancement, as well as woodland communities. In the latter, the stands consist of planted *Pinus sylvestris*, with admixtures of *Betula pendula, Quercus* spp., *Populus tremula* and *Sorbus aucuparia*. Most of the trees are comparatively young; 90-100 year-old specimens are rare. However, the herb layer and undergrowth are typical not so much of coniferous woodland as of acidophilous mixed deciduous woodland (P i o t r o w s k a, 1984). Forest communities cover about 40 % of the peninsula.

METHODS

The peninsula was divided into 26 localities (Fig. 1). Localities 1-24, each 1 km wide, were delineated on the basis of maps issued by the Polish Maritime Bureau and correspond to the consecutive kilometers of shoreline on the open-sea side. Locality 25 is much larger than all the rest and is poorly known, covering as it does a restricted military area. We were only once granted an entry pass for a few hours; we are indebted to Jolanta Miądlikowska for listing the lichens in this locality and collecting samples of them, and for subsequently passing on to us her data. Locality 26 is that part of the town of Hel and its environs which are accesible to the civilian population. Material was collected in the field in 1984, 1985, 1988, 1989 and 1994.

The species list also contains taxa reported from the Hel Peninsula by O h l e r t (1870), S u z a (1928) and K r a w i e c (1933). Our survey failed to record 15 these species, which are indicated by an asterisk∗. The species nomenclature is an accordance with F a ł t y n o w i c z (1993) with the exception of the genera *Amandinea* (S c h e i d e g g e r, 1993), *Pleurosticta* (L u m b s c h et al., 1988) and *Cetraria, Tuckermannopsis* and *Vulpicida* (R a n d l a n e, S a a g, 1993). Herbarium specimens are at UGDA.

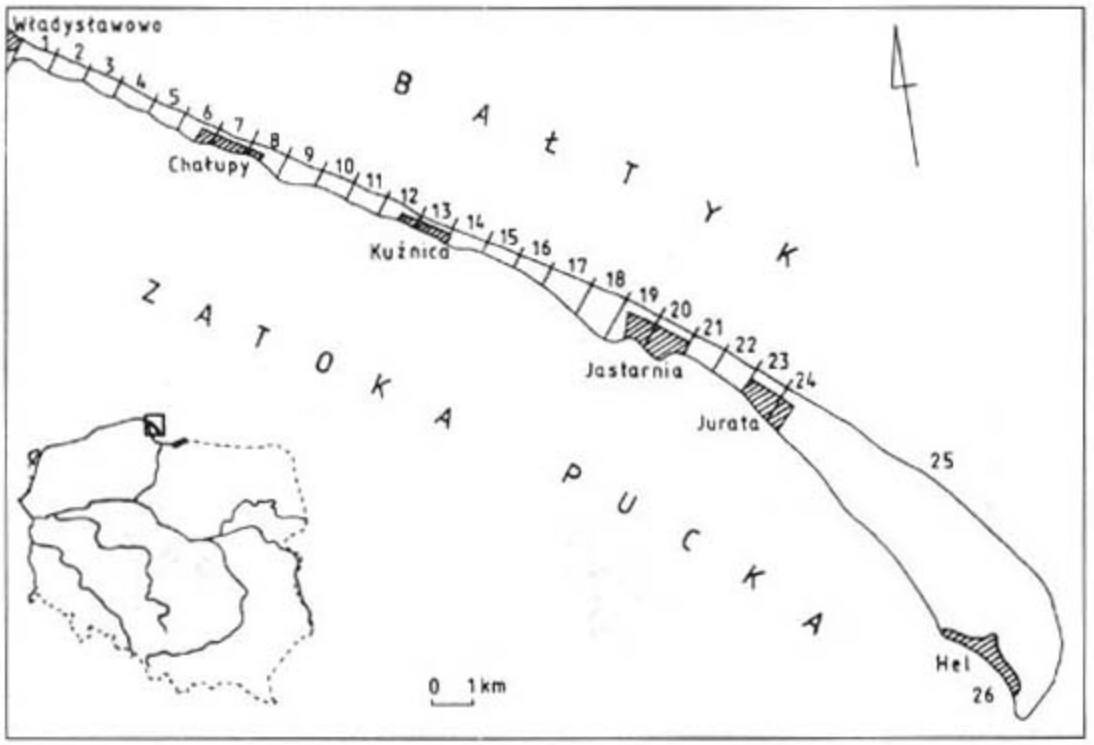

Fig. 1. Localities of the investigated area (1-26 – localities)

CHARACTERISTIC OF THE LICHEN FLORA AND RESULTS

Factors mentioned in chapter 1 and 2 combined with the small area of peninsula and the relatively slight differentiation between habitats have all contributed to the comparative poorness of the lichen flora here. In total 116 species have been found, as many as 49 of which at only 1-3 localities. A mere 15 species have been recorded at more than 20 localities. There are mainly common sward or ubiquitous species, non-woodland *Cladina* and *Cladonia* (*Cladina mitis, Cladonia chlorophaea, C. coniocraea, C. fimbriata, C. foliacea, C. furcata, C. macilenta, C. rangiformis* and *C. subulata*), pine epiphytes (*Hypocenomyce scalaris, Hypogymnia physodes, Lecanora conizaeoides* and *Lepraria incana*) *and Lecanora argentata* and *L. expallens.*

Indicators of man-made transformations include:

- the very small proportion of epiphytic macrolichens (23 spp., most of which are sporadic);
- the widespread occurrence of epilithic, calciphilous lichens in areas that have undergone particularly far-reaching changes, i.e. the villages (Fig. 2).

The presence of a number of species that are quite rare in this region is noteworthy, e.g. *Bryoria fuscescens, Cetraria muricata, Cladina stellaris, Lecanora intumescens, Ramalina obtusata* and *Usnea subfloridana.* Apart from *Ramalina obtusata*, the others are on the list of lichens endeangered in Poland and are in one of

two categories: E – on the verge the extinction, and V – vulnerable (C i e ś l i ń-s k i et al., 1992). The species *Schismatomma graphidioides* is now considered extinct in Poland; O h l e r (1870) has reported it from Hel, but since then it has never been found again.

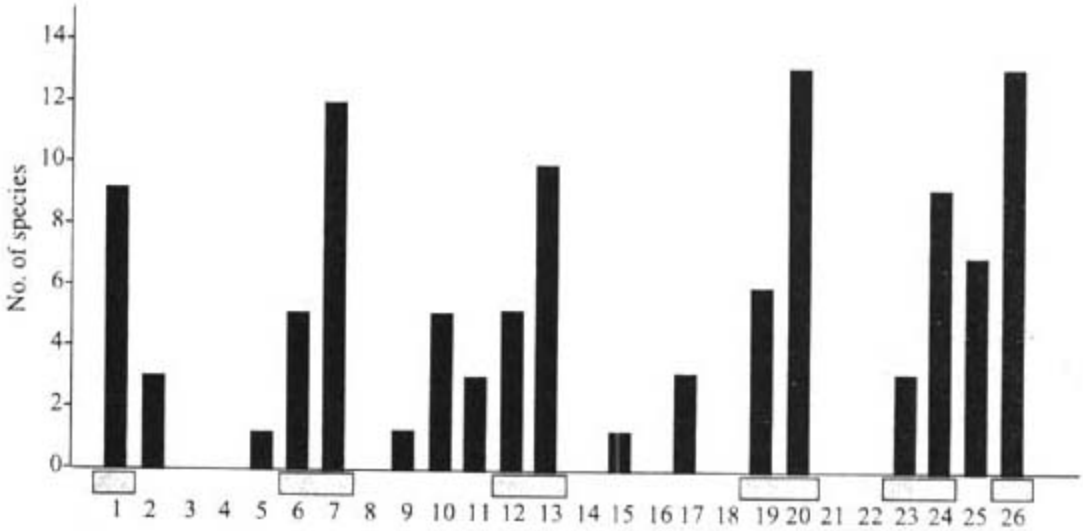

Fig. 2. Number of species of the epilithic calciphilous lichens in the particular localities (1-26); most of these lichens grow in villages and small towns

List of taxa

Acarospora fuscata (Nyl.) Arnold – on granite post: 3.

Amandinea punctata (Hoffm.) Coppins et Scheidegger [*Buellia punctata* (Hoffm.) Massal.] – on the bark of deciduous trees: 8, 13, 18, 20, 24, 26.

Aspicilia calcarea (L.) Mudd – on concrete: 25.

Bacidia globulosa (Flk.) Hafellner et V. Wirth – on the bark of aspen: 25.

Baeomyces rufus (Huds.) Rebent. – on the ground on slope: 25.

Bryoria fuscescens (Gyelnik) Brodo et D. Hawksw. – on the bark of birch and Scotch-pine: 18, 23 (leg. T. Sulma, 1956).

**Buellia schaereri* De Not. – reported from Hel by O h l e r t (1870).

Calicium viride Pers. – on the bark of deciduous trees: 12, 16-18.

Caloplaca citrina (Hoffm.) Th. Fr. – on concrete: 1, 6, 7, 9, 13, 17, 19, 20, 23-26.

C. decipiens (Arnold) Blomb. et Forss. – on concrete: 7, 13, 20, 26.

C. holocarpa (Hoffm.) Wade – on concrete: 1, 7, 20, 24-26.

C. saxicola (Hoffm.) Nordin – on concrete: 1, 2, 7, 12, 13, 19, 20, 24, 26.

Candelariella aurella (Hoffm.) Müll. Arg. – on concrete: 1, 2, 6, 7, 10-13, 15, 17, 19, 20, 23, 24, 26.

C. vitellina (Hoffm.) Müll. Arg. – on concrete: 1.

C. xanthostigma (Ach.) Lettau – on the bark of lime and maple: 20, 23.

Cetraria aculeata (Schreber) Fr. [*Coelocaulon aculeatum* (Schreber) Link.] – on the ground: 2, 4, 5, 8, 17, 20, 22-26; reported from Hel by O h l e r t (1870) and K r a w i e c (1933).

C. ericetorum Opiz – on the ground: 25.

C. islandica (L.) Ach. – on the ground: 16, 22-24, 26; reported from Hel by O h l e r t (1870) and K r a w i e c (1933).

C. muricata (Ach.) Eckfeldt [*Coelocaulon muricatum* (Ach.) Karnefelt] – on the ground: 25; reported from Hel by O h l e r t (1870) and S u z a (1928).

Chaenotheca ferruginea (Turner ex Sm.) Migula – on the bark of the pine: 15, 16, 18, 20, 21, 24.

Chrysothrix candelaris (L.) Laundon – on the bark of birch: 18.

Cladina arbuscula (Wallr.) Hale et W. Culb. – on the ground: 2, 4, 5, 7-11, 14-18, 20, 22-26; reported by K r a w i e c (1933) from Hel as for. *decumbens* Anders end for. *sphagnoides* Flk.

C. ciliata (Stirton) Trass var. *tenuis* (Flk.) Ahti – on the ground: 8, 9, 15-17, 21, 23, 24-26; reported from Hel by S u z a (1928) and K r a w i e c (1933).

C. mitis (Sandst.) Hustich – on the ground, in masses: 1, 2, 4-8, 10-12, 14-17, 20, 22-26; reported from Hel by K r a w i e c (1933).

C. portentosa (Dufour) Follm. – on the ground: 2, 4, 7, 8, 10, 15, 16, 20, 22-26; reported from Hel by S u z a (1928) and K r a w i e c (1933).

C. rangiferina (L.) Nyl. – on the ground: 10, 16, 20, 22-26; reported by K r a w i e c (1933) from Hel as for. *major* Flk. and for. *tenuior* Delise.

C. stellaris (Opiz) Brodo – on the ground: 26; reported from Hel by K r a w i e c (1933).

**Cladonia bellidiflora* (Ach.) Schaerer – probably erroneously reported by O h l e r t (1870), this was *C. floerkeana* (?).

**C. cariosa* (Ach.) Sprengel – reported from Hel by S u z a (1928) as for. *cribrosa* Wallr. and for. *squamulosa* Müll. Arg.

**C. carneola* Fr. – reported from Hel by O h l e r t (1870), probably erroneously (*C. grayi*?).

C. cervicornis (Ach.) Flotow subsp. *verticillata* (Hoffm.) Ahti – on the ground: 23, 24; reported from Hel by S u z a (1928) as var. *evoluta* Th. Fr. and by O h l e r t (1870) as for. *simplex* Schaerer.

C. chlorophaea (Flk. ex Sommerf.) Sprengel – on the ground: 1, 2, 4, 5, 7-26.

C. coccifera (L.) Willd. – on the ground: 6, 22-24.

C. coniocraea (Flk.) Vainio – on the ground, wood and on the bark at the base of tree trunks: 1-5, 8-12, 14-18, 20-26.

C. cornuta (L.) Hoffm. – on the ground: 3, 4, 10-12, 17, 20, 22-26; on localities 20, 22-24, and 26 – also in f. *phyllotoca* (Flk.) Vainio.

**C. crispata* (Ach.) Flotow var. *dilacerata* (Schaerer) Mallbr. – reported from Hel by S u z a (1928).

**C. decorticata* (Flk.) Sprengel – probably erroneously reported from Hel by S u z a (1928); The occurrence of this species in the study area is highly unlikely.

C. deformis (L.) Hoffm. – on the ground and lignum: 2, 17.

C. digitata (l.) Hoffm. – on the ground, lignum and at the base of trunks of pine and birch: 2, 3, 10, 12, 14, 16-18, 20, 24-26.

C. fimbriata (L.) Fr. – on the ground, lignum and on the bark of pine: 1-12, 14-18, 20-25; reported from Hel by K r a w i e c (1933).

C. floerkeana (Fr.) Flk. – on the ground, lignum and on the bark: 4, 6, 8-11, 15, 17, 20 [also var. *carcata* (Ach.) Nyl.], 22-26; reported from Hel by O h l e r t (1870) as var. *xanthocarpa* Nyl. and by K r a w i e c (1933) as var. *carcata*.

C. foliacea (Huds.) Willd. – on the ground: 1, 4-13, 15-17, 20, 22-26; reported from Hel by S u z a (1928).

C. furcata (Huds.) Schrader – on the ground and lignum: 1, 3-5, 7-18, 20-26; reported from Hel by K r a w i e c (1933).

C. glauca Flk. – on the ground, lignum and on the bark of pine: 10, 17, 22-26; reported from Hel by K r a w i e c (1933) as for. *capreolata* Flk.

C. gracilis (L.) Willd. – on the ground: 8, 9, 16, 17, 20, 22-26; on locality 24 var. *dilatata* (Hoffm.) Vainio, and on locality 26 var. *dilacerata* Flk. Reported from Hel by S u z a (1928) and K r a w i e c (1933) as var. *dilatata*.

C. grayi Merrill – on the ground and lignum: 8-12, 15-17, 20, 22-24, 26.

C. macilenta Hoffm. subsp. *macilenta* – on the ground, lignum and on the bark of pine: 2-4, 9, 11, 12, 15-17, 19, 20, 24, 26; reported from Hel by K r a w i e c (1933).

C. macilenta Hoffm. subsp. *bacillaris* Nyl. – on the ground and lignum: 2, 5, 6, 9-13, 15-17, 20, 22-26.

C. ochrochlora Flk. – on the ground: 11, 24; reported from Hel by K r a w i e c (1933) as for. *monstrosa* Harm.

C. phyllophora Hoffm. – on the ground, exceptionally at the base of pine trunk: 2-4, 6, 11, 12, 14, 15, 17, 18, 20, 21, 23-26; reported from Hel by K r a w i e c (1933).

C. pleurota (Flk.) Schaerer – on the ground and lignum: 8, 17, 20, 22-26; reported from Hel by O h l e r t (1870) and K r a w i e c (1933).

C. pyxidata (L.) Hoffm. – on the ground: 22.

C. ramulosa (With.) Laundon – on the ground: 15, 17, 23, 26; reported from Hel by K r a w i e c (1933) as for. *crassiuscula* Coem.

C. rangiformis Hoffm. – on the ground: 1, 2, 4, 5, 7-18, 20-24; on localities 8, 16 and 23 – also var. *foliosa* (Dufour) Flk. Reported from Hel by K r a w i e c (1933) as var. *pungens* Vainio.

C. scabriuscula (Delise) Leighton – on the ground: rare on lignum, exceptionally on the bark of birch: 7-9, 11-18, 20-26.

**C. squamosa* (Scop.) Hoffm. var. *denticollis* Flk. – reported from Hel by K r a w i e c (1933).

C. subulata (L.) Weber in Wigg. – on the ground: 1-4, 6-18, 20-24, 26.

**C. turgida* (Ehrh.) Hoffm. – reported by S u z a (1928).

C. uncialis (L.) Wigg. – on the ground: 8, 16, 17, 20, 22-26.

Cliostomum griffithii (Sm.) Coppins – on the bark of deciduous trees, rarely on pine bark and lignum: 4-7, 9-20, 22, 23.

**Cyphelium tigillare* (Ach.) Ach. – reported from Hel by O h l e r t (1870).

**Dimerella diluta* (Pers.) Trevisan – reported from Hel by Ohlert (1870).
Evernia prunastri (L.) Ach. – on the bark of deciduous and coniferous trees: 2, 3, 5, 8-10, 12-19, 24, 25.
Hypocenomyce scalaris (Ach.) Choisy – on the bark of trees and on lignum: 1-3, 5, 7, 9-26.
Hypogymnia physodes (L.) Nyl. – on the bark of trees, shrubs, dwarf-shrubs, on lignum and on soil on dunes: 1-26.
H. tubulosa (Schaerer) Havaas – on the bark of aspen, willow and rowan: 15, 25.
Imshaugia aleurites (Ach.) Fricke Meyer – on the bark of pine and birch: 16-19, 22, 24-26; reported from Hel by K r a w i e c (1933).
Lecania erysibe (Ach.) Mudd. – on concrete: 5, 7, 24, 26.
Lecanora albescens (Hoffm.) Branth et Rostrup – on concrete: 1, 7, 11-13, 19, 20, 24-26.
L. argentata (Ach.) Malme – on the bark of deciduous trees: 4-10, 12-20, 22-24, 26.
L. carpinea (L.) Vainio – on the bark of deciduous trees: 5-7, 9, 12-20, 22, 24, 25.
L. chlarotera Nyl. – on the bark of deciduous trees: 12, 24, 25,.
L. conizaeoides Nyl. in Cromb. – on the bark of trees, shrubs, dwarf-shrubs and on lignum: 1-26.
L. dispersa (Pers.) Sommerf. – on concrete: 1, 2, 6, 7, 10, 11, 13, 17, 19, 20, 24-26.
L. expallens Ach. – on the bark of the deciduous trees and pine: 1-10, 12-20, 22-26.
L. glabrata (Ach.) Malme – on the bark of maple and horse-chestnut: 4, 12.
L. hagenii (Ach.) Ach. – on concrete: var. *lithophila* (Wallr.) Flotow – 1, 7, 12, 13, 19, 20, 24, 26; var. *roscida* Sommerf. – 7, 20, 24.
L. intumescens (Rebent.) Rabenh. – on the bark of horse-chestnut: 4.
L. muralis (Schreber) Rabenh. – on concrete: 6, 7, 20.
L. pulicaris (Pers.) Ach. – on the bark of aspen and maple: 25.
L. saligna (Schrader) A. Zahlbr. var. *saligna* – on the bark of aspen and maple: 14, 20; var. *sarcopis* (Wahlenb.) Hillm. – on the bark of maple: 20.
L. symmicta (Ach.) Ach. – on the bark of deciduous trees: 10, 18, 24.
L. umbrina (Ach.) Massal. – on the bark of aspen and horse-chestnut: 7, 26.
L. varia (Hoffm.) Ach. – on pine bark: 25.
Lecidella elaeochroma (Ach.) Choisy – on the bark of deciduous trees: 4, 5, 7, 11-20, 23-25.
L. stigmatea (Ach.) Hertel et Leuckert – on concrete: 6, 20, 26.
Lepraria incana (L.) Ach. – on the bark of trees, lignum and on concrete: 1-5, 7, 9-26.
Melanelia exasperatula (Nyl.) Essl. – on the bark of roadside maple: 23.
M. fuliginosa (Fr. ex Duby) Essl. – on the bark of pine and aspen: 19, 25.
M. subaurifera (Nyl.) Essl. – on the bark of deciduous trees: 4-9, 11, 12, 14-20; reported from Hel by K r a w i e c (1933).
Micarea denigrata (Fr.) Hedl. – on lignum: 16, 24.
Ochrolechia subviridis (Hoeg.) Erichsen – on pine bark: 19.

**Opegrapha atra* Pers. – reported from Hel by K r a w i e c (1933).
**O. vulgata* Ach. – reported from Hel by O h l e r t (1870).
Parmelia saxatilis (L.) Ach. – on pine bark: 2, 15.
P. sulcata Tayl. – on the bark of deciduous and coniferous trees and on lignum: 2, 4-6, 8-12, 14-20, 23, 25, 26.
Parmeliopsis ambigua (Wulfen) Nyl. – on the bark of pine and birch and on lignum: 18, 19, 25.
Peltigera canina (L.) Willd. – on the ground: 1, 2, 4, 8, 16-18, 21, 22.
P. didactyla (With.) Laundon – on the ground: 15, 18, 25; reported from Hel by K r a w i e c (1933).
**P. malacea* (Ach.) Funck – reported from Hel by K r a w i e c (1933).
P. neckerii Hepp. ex Müll. Arg. – on the ground in heath: 8.
P. polydactyla (Necker) Hoffm. – on the ground: 1, 2, 4, 5, 7-11, 13, 14, 16-18, 21, 23, 26.
P. rufescens (Weiss.) Humb. – on the ground: 1, 4, 15.
Pertusaria amara (Ach.) Nyl. – on the bark of rowan and oak, in small numbers: 17, 18.
P. pertusa (L.) Tuck. – on the bark of rowan: 18.
Phaeophyscia nigricans (Flk.) Moberg – on concrete: 13, 25.
P. orbicularis (Necker) Moberg – on concrete and on the bark of lime: 7, 12, 13, 20, 23, 25, 26.
Physcia adscendens (Fr.) Olivier – on the bark of deciduous trees and on concrete: 1, 11, 13, 15, 19, 20, 24, 25.
P. tenella (Scop.) DC. in Lam. et DC. – on the bark of deciduous trees and lignum and on concrete: 4, 7, 11, 14, 15, 20, 23, 24, 26.
Placynthiella oligotropha (Vainio) Coppins et P. James – on the ground and on lignum: 2, 4, 10-12, 14-16, 18, 19, 23-25.
Platsmatia glauca (L.) W. Culb. et C. Culb. – on the bark of pine and birch: 15, 18, 19.
Pleurosticta acetabulum (Neck.) Elix et Lumbsch in Lumbsch [*Melanelia acetabulum* (Necker) Essl.] – on the bark of poplar: 20.
Pseudevernia furfuracea (L.) Zopf – on the bark of pine, birch and willow: 3, 16, 22-26; reported from Hel by S u z a (1928).
Ramalina farinacea (L.) Ach. – on the bark of deciduous trees and pine: 2, 4, 5, 9, 12, 14, 15, 17-19.
R. fastigiata (Pers.) Ach. – on the bark of deciduous trees, exceptionally on pine: 4, 7, 14, 15, 18, 20.
R. obtusata (Ach.) Bitter – on the bark of deciduous trees and pine: 4, 18-20.
R. pollinaria (Westr.) Ach. – on the bark of pine and birch: 10, 20 (leg. T. Sulma 1954).
Rinodina gennarii Bagl. – on concrete: 1, 7, 10, 13, 20, 24, 26.
**Schismatomma graphidioides* (Leighton) A. Zahlbr. – reported from Hel by O h l e r t (1870).

Scoliciosporum chlorococcum (Stenham.) Vězda – on the bark of pine and deciduous trees: 4, 12, 14, 17, 19.

**Stereocaulon paschale* Fr. – reported from Hel by K r a w i e c (1933).

Thelocarpon laureri (Nyl.) Flotow – on stones: 25.

Trapelia coarctata (Sm.) Choisy in Werner – on brick and sandstone: 10, 25, 26.

Trapeliopsis fexuosa (Fr.) Coppins et P. James – on lignum: 25.

T. granulosa (Hoffm.) Lumbsch in Hertel – on the ground, lignum and on the bark of pine: 2, 7, 9-12, 15-18, 23-26.

Tuckermannopsis chlorophylla (Willd.) Hale [*Cetraria chlorophylla* (Willd.) Vainio] – on the bark of oak, pine and aspen: 15, 24.

Usnea hirta (L.) Weber in Wigg. – on the bark of pine and birch: 16, 18, 22, 23 (leg. T. Sulma 1957), 24-26; reported from Hel by K r a w i e c (1933).

U. subfloridana Stirton – on the bark of pine and birch: 19, 23 (leg. T. Sulma 1957).

Vulpicida pinastri (Scop.) J.-E. Mattsson et M. J. Lai [*Cetraria pinastri* (Scop.) S. F. Gray] – on the bark of pine: 19; reported from Hel by K r a w i e c (1933).

Xanthoria candelaria (L.) Th. Fr. – on the bark of pine and on lignum: 5, 20.

X. parietina (L.) Th. Fr. – on the bark of deciduous trees, lignum and on concrete: 1, 2, 4, 6-10, 12-15, 18-20, 23-26.

X. polycarpa (Hoffm.) Rieber – on the bark of deciduous trees, exceptionally on pine: 1, 13, 14, 18-20, 25.

REFERENCES

C i e ś l i ń s k i S., C z y ż e w s k a K., F a b i s z e w s k i J., 1992. Czerwona lista porostów zagrożonych w Polsce. [In:] Zarzycki K., Wojewoda W., Heinrich Z. (eds.), Lista roślin zagrożonych w Polsce (ed.). Inst. Bot. im. W. Szafera, PAN, Kraków, pp. 57-74.

D y l i k o w a A., 1973. Geografia Polski. Krainy geograficzne, Warszawa, pp. 691-739.

F a ł t y n o w i c z W., 1993. A checklist of Polish lichen forming and lichenicolous fungi including saprophytic and parasitic fungi occurring on lichens. Polish Bot. Stud. 6: 1-65.

K r a w i e c F., 1933. Materiały do flory porostów Pomorza. Acta Soc. Bot. Pol. 10.1: 25-47.

L u m b s c h H. T., K o t h e H. W., E l i x J. A., 1988. Resurrection of the lichen genus *Pleurostica* Petrak (*Parmeliaceae: Ascomytina*). Mycotaxon 33: 447-455.

O h l e r t A., 1870. Zusammenstellung der Lichen der Provinz Preussen. Schrift. Kgl. Phys.-ökon. Ges. Königsberg 11: 1-51.

P a s z y ń s k i J., 1984. Główne cechy klimatu. [In:] Augustowski B. (ed.), Pobrzeże Pomorskie. Ossolineum, Wrocław, pp. 169-178.

P i o t r o w s k a H., 1984. Szata roślinna. [In:] Augustowski B. (ed.), Pobrzeże Pomorskie. Ossolineum, Wrocław, pp. 282-286.

R a n d l a n e T., S a a g A., 1993. World list of cetrarioid lichens. Mycotaxon 47: 395-403.

S c h e i d e g g e r Ch., 1993. A revision of European saxicolous species of the genus *Buellia* de Not. and formerly included genera. Lichenologist 25 (4): 315-364.

S u z a J., 1928. Przyczynek do znajomości flory porostów Polski. Acta Soc. Bot. Pol. 5.2: 213-218.

Z a t o r s k a J., 1984. Ochrona i kształtowanie środowiska. [In:] Augustowski B. (ed.), Pobrzeże Pomorskie, Ossolineum, Wrocław, pp. 361-383.

Porosty Półwyspu Helskiego

S t r e s z c z e n i e

Półwysep Helski, jeden z najbardziej charakterystycznych elementów morfologicznych polskiego wybrzeża Bałtyku (rys. 1), jest tworem geologicznie młodym; jako zwarta mierzeja powstał niecałe 300 lat temu. Działalność człowieka spowodowała tutaj duże zmiany: zniekształcona struktura gatunkowa i stosunki ilościowe w zbiorowiskach roślinnych, liczne nasadzenia drzew i krzewów obcych siedliskowo i geograficznie (*Pinus mughus, P. nigra, P. strobus, Rosa rugosa* i in.) – to tylko niektóre przykłady antropogenicznych przeobrażeń szaty roślinnej. Również ciągły napływ setek tysięcy ludzi w sezonie letnim, wielokrotnie przekraczający tzw. pojemność turystyczną tego terenu, wywiera bardzo duży ujemny wpływ na środowisko. Przedstawione czynniki w połączeniu z niewielką powierzchnią półwyspu i ze stosunkowo małą różnorodnością siedlisk sprawiają, że flora porostów jest tutaj dosyć uboga. Znaleziono 116 gatunków, z których aż 49 ma 1-3 stanowiska.

Jednymi ze wskaźników przeobrażeń antropogenicznych są:
– mały udział makrolichenes epifitycznych (24 gatunki, w tym większość sporadycznych);
– liczne występowanie epilitycznych porostów kalcyfilnych na terenach szczególnie silnie zmienionych, głównie w miejscowościach (rys. 2).

Na uwagę zasługuje obecność kilku gatunków względnie rzadkich w skali regionu, jak np. *Bryoria fuscescens, Cetraria muricata, Cladina stellaris, Lecanora intumescens, Ramalina obtusata* i *Usnea subfloridana*. Poza *R. obtusata*, pozostałe znajdują się na liście porostów zagrożonych w Polsce, z kategoriami „E" – wymierające i „V" – narażone (C i e ś l i ń s k i i in., 1992). Za gatunek wymarły w naszym kraju została uznana *Schismatomma graphidioides*, podana z Helu przez O h l e r t a (1870) i ponownie nie odszukana. W wykazie umieszczono również taksony, które z Półwyspu Helskiego podawali Ohlert (1870), Suza (1928) oraz Krawiec (1933). Obecnie nie odnaleziono 15 gatunków podawanych przez tych autorów; są one oznaczone „*".