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LICHENS FROM CROATIA

STEEN N. CHRISTENSEN and ERIC STEEN HANSEN

(Botanical Museum, University of Copenhagen)

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121 taxa of lichens are reported from Croatia. Four taxa are new to the NW Balkans, viz. *Caloplaca velana* var. *placidia*, *Lecanora sienae*, *Lepraria lobificans*, and *Petractis luetkemulleri*. One species, viz. *Chryso-trix candelaris*, is new to Croatia. Eight taxa, including *Phaeophyscia insignis*, are new to the Croatian Littoral (H. Pr.), and nine taxa, including *Ochrolechia turneri* and *Physconia servitii*, are new to Istria.

Introduction

The former Yugoslavia is one of the lichenologically better investigated Mediterranean areas (Christensen 1987). The comprehensive checklist of Kušan (1953) constitutes a valuable source of information. Recently a flora of the area has been commenced, of which the first volume has been published (Murati 1992). In spite of this there is still much to do in the field of floristics, as can be seen from this work on one of the more thoroughly investigated parts of the area.

Materials

The material from the localities Bakar, Kraljevica, Uvala Scott and Senj was collected by the second author in June 1971. The specimens are not numbered. In cases where more than one specimen were collected, the numbers of specimens are indicated. Material from the remaining localities was collected by the first author. The collection numbers are those of the first author. Specimens referred to by numbers in brackets are cooccurring with

the specimen to which the number refers. The specimens are deposited at the Botanical Museum of Copenhagen (C) and in the private herbarium of the first author.

The investigated area of Croatia is divided into four botanical districts (Kušan 1953): Istria (Istra, I.), the interior of Croatia (un. Hrvatska, u. Hrv.), the Croatian Littoral (Hrvatsko Primorje, H. Pr.) and Dalmatia (Dalmacija, Dalm.) The area covered by the former Yugoslavia, with the exclusion of Macedonia, is here designated as the NW Balkans.

Distributional data were compared with Kušan (1953), Murati (1992), and Christensen (1982, 1988) and the literature cited therein – and with monographs (Breuss 1990, Degelius 1954). The paper of Schuler (1902) was not available to us. Therefore, we had to rely on the notes of the referee.

Climate and vegetation

The climatic conditions of the sampling sites are comparable with that of Pazin (Christensen 1988), with the exception that for those of the sites which lie south of Istria, frost periods do not occur at most of the coastal sites. Some of these, e.g. Kraljevica, have short, dry periods during the summer.

Most of the localities lie within the Eumediterranean and Submediterranean-colline vegetation belts, while a few (nos 10 and 17) lie within the montane belt (Bertović & Lovrić 1992). The Submediterranean zones are characterized by forests and coppices of *Quercus*, *Carpinus* and *Ostrya* and their degradation products, while *Fagus* and *Abies* forests are dominating in the montane zone.

The localities

The geographical positions of the localities are indicated in Fig. 1. The bold face names in the locality description below are the names used in the species list.

1. About 7 km N of Poreč, about 1 km W of the village Vabriga, Červar Bay. Limestone outcrops in littoral meadow. 24. & 26. 6. 1985.

2. About 7 km N of Poreč, the village Tar. Limestone fences and road side trees in the village. Alt. o. 100 m. 23. 6. 1985.

3. About 5 km N of Poreč, near the village Vabriga. Arable land with limestone fences. Alt. c. 75 m. 23. 6. 1985.

4. 8 km N of the town Rovinj, about 1 km SW of the village Kloštar. Mixed forest/coppice of *Acer campestre*, *Carpinus*, *Fraxinus* and *Quercus* spp. on limestone. Along forest road. Alt. 75 m. 7. 5. 1989.

5. About 7 km NW of the town Rovinj, between the town Vršar and the hill Mukaba. Maquis on limestone. Alt. c. 50 m. 10. 5. 1989.

6. About 25 km NE of Poreč, about 1 km S of the village Oprtalj. Limestone fences along gravel paved road in arable land. Alt. c. 350 m. 2. 7. 1985.



Fig. 1. Map of Croatia with the localities indicated. The localities are arranged in alphabetical order below. See chapter »The localities« for geographical arrangement. 11. Bakar; 1. Červar Bay; 10. Gomirje; 4. Kloštar; 12. Kraljevica; 8. Lanišće; 19. Lokvičići; 5. Mukaba; 6. Oprtalj; 9. Račja Vas; 16. Senj; 18. Starigrad-Paklenica; 2. Tar; 13. Uvala Scott; 3. Vabriga; 15. Vidohlam; 7. Vodice; 14. Vrbnik; 17. Vučjak.

7. About 30 km NW of Opatija, about 1 km NW of the village Vodice. Dry meadow on SW slope with scattered limestone outcrops. Alt. c. 650 m. 2. 7. 1985.

8. C. 15 km WNW of Opatija, the village Lanišće. Limestone fence along road in the village. Alt. c. 550 m. 30. 6. 1985.

9. About 10 km WNW of Opatija, near the village Račja Vas. Limestone outcrops. Alt. c. 1000 m. 1. 7. 1985.

10. About 51 km E of Rijeka, Velika Kapela Mts., NW of the town Ogulin, at the river Dobra near the village Gomirje. Thicket with among others *Carpinus betulus*. Alt. c. 350 m. 29. 6. 1982 (loc. 13 of Christensen 1987).
11. About 6 km ESE of Rijeka, the town Bakar. 20. 6. 1971.
12. About 11 km SE of Rijeka, the town Kraljevica. 15th, 16th, 18th and 20th June, 1971.
13. About 12 km SE of Rijeka, S of the town Kraljevica, near the hotel complex Uvala Scott. 12th, 13th, 23th and 24th June, 1971.
14. The island of Krk, about 4 km NW of the town Vrbnik. Arable land on limestone. *Salix* trees along field track. Alt. c. 150 m. 8. 7. 1990.
15. The island of Krk, just E of the town Baška, Mt. Vidohlam. Grass steppe with limestone outcrops in the opening of *Pinus* wood (plantation) on SSE slope. Alt. c. 350 m. 10. 7. 1990.
16. About 53 km SSE of Rijeka, the town Senj. 14. 6. 1971.
17. Velebit Mts., N of the summit Vučjak. *Fagus* forest on limestone. Alt. 1300–1400 m. 26. 6. 1982 (loc. 1 in Christensen 1987).
18. 27 km NE of the town Zadar, the village Starigrad-Paklenica. *Ulmus* trees in the village. Alt. c. 5 m. 6. 7. 1990.
19. About 30 km E of Omiš. near the village Lokvičići, at a Bogumil burial place. Few *Quercus* trees in grazed thicket (Sibljak). Alt. c. 600 m. 5. 7. 1990.

The species

- Arthonia radiata* (Pers.) Ach.
Gomirje: on *Carpinus betulus*, 909.
- Aspicilia calcarea* (L.) Mudd
Vabriga: on limestone fence, 2449.
- Aspicilia contorta* (Hoffm.) Krempelh.
Uvala Scott: on limestone.
- Aspicilia hoffmannii* (Ach.) Flag.
Vodice: on limestone outcrop, 2726.
Kraljevica: on limestone on stone fence. Two specimens, one conf. by Clauzade & Roux.
Uvala Scott: on limestone.
This is the second record from Istria (Christensen 1988).
- Aspicilia subcircinata* (Nyl.) Coppins
(= *A. radiosa* (Hoffm.) Poelt & Leuckert p. p.)
Kraljevica: on limestone and on limestone fence. Two specimens.
- Buellia* aff. *punctata* (Hoffm.) Massal.
Vrbnik: on *Salix alba*, 8369, 8372. The spores are more light-coloured and smaller (about $10 \times 4 \mu\text{m}$) than in North European material. »In the Mediterranean area this group is represented by several species and requires a detailed taxonomic revision« (Nimis & Poelt 1987).
- Caloplaca aurantia* (Pers.) Hellb.
Vabriga: on limestone fence, 2452.
Cervar Bay: on limestone boulder in maquis, 2448, on limestone outcrop in littoral meadow, 2530, 2535.
Tar: on limestone fence in the village, 2467.
Kraljevica: on limestone fence and limestone outcrops.
Eight specimens, one confirm. Clauzade & Roux.
- Caloplaca cerina* (Ehrh. ex Hedw.) Th. Fr.
Vrbnik: on *Salix alba*, 8364, 8366, 8368.
Starigrad-Paklenica: on *Ulmus minor* (cum 8348).

- Caloplaca citrina* (Hoffm.) Th. Fr. f. *citrina*
 Vabriga: on limestone fence shaded by *Ulmus* (cum 2451).
 Kraljevica: on limestone.
 Uvala Scott: on limestone.
 Not mentioned for Istria by Kušan (1953), but reported by Schuler (1902).
- Caloplaca erythrocarpa* (Pers.) Zw.
 Kraljevica: on limestone fence and on limestone pebbles.
 Three specimens, one confirm. by C. Roux.
 Not included in Kušan (1953), but reported by Schuler (1902).
- Caloplaca ferruginea* (Huds.) Th. Fr.
 Uvala Scott: on bark.
- Caloplaca flavescens* (Huds.) Laund.
 Cervar Bay: on limestone outcrop in littoral meadow, 2471, 2526, 2537.
 Kraljevica: on limestone outcrops and limestone fence. Four specimens.
 Uvala Scott: on limestone.
 Vidohlam: on limestone outcrop (cum 8376).
- Caloplaca flavorubescens* (Huds.) Laundon
 Starigrad-Paklenica: on *Ulmus minor* (cum 8348).
- Caloplaca flavovirescens* (Wulf) DT. & Sarnth.
 Kraljevica: on limestone fence. Det. by C. Roux.
- Caloplaca haematites* (Chaub. ex St Am.) Zw.
 Starigrad-Paklenica: on *Ulmus minor* (cum 8348 & 8352).
- Caloplaca ochracea* (Schaerer) Flag.
 Cervar Bay: on limestone outcrops in littoral meadow, 2473, 2523, 2526a.
 Vodice: on limestone outcrop in dry meadow, 2723.
 Kraljevica: on limestone fence. Two specimens.
 Uvala Scott: on limestone. Two specimens.
- Caloplaca pollinii* (Massal.) Jatta
 Uvala Scott: on bark.
- Caloplaca pyracea* (Ach.) Th. Fr.
 Starigrad-Paklenica: on trunk of *Ulmus minor*, 8349.
- Caloplaca saxicola* (Hoffm.) Nordin ssp. *saxicola*
 Vidohlam: on limestone outcrop, 8376.
- Caloplaca spalatensis* Zahlbr.
 Vodice: 2715 (det. by C. Roux), 2724a.
 Known from Dalmatia, near Split (Kušan 1953). New to Istria.
- Caloplaca tenuatula* (Nyl.) Zahlbr. ssp. *tenuatula* var. *lithophila* (H. Magn.) Clauz. & Roux
 Kraljevica: on limestone on stone fence. Two specimens, one confirm by Clauzade & Roux.
 See taxon below.
- Caloplaca tenuatula* (Nyl.) Zahlbr. ssp. *verrucariorum* (Clauz. & Roux) Clauz. & Roux
 Uvala Scott: on *Verrucaria* sp. on limestone. Det. by Clauzade & Roux.
C. tenuatula was published from the area (H.Pr. & Dalm.) by Kušan (1953) in a broad sense as *C. polycarpa* (Mass.) A. Zahlbr.
- Caloplaca velana* (Massal.) Du Rietz var. *placidia*
 (Massal.) Clauz. & Roux
 Vodice: 2724 (det. by G. Clauzade and C. Roux)
 The variety is new to the NW Balkans.
- Caloplaca* sp. (aff. *C. crenularia* (With.) Laundon, syn.: *C. festiva* (Ach.) Zwackh)
 Kraljevica: on limestone outcrops.
- Candelaria concolor* (Dicks.) B. Stein
 Kloštar: on *Quercus ilex*, 6079.
 Kraljevica: on bark.
 Uvala Scott: on bark. Four specimens.
 Starigrad-Paklenica: on *Ulmus minor*, 8339, 8355.
- Candelariella medians* (Nyl.) A. L. Sm.
 Lanišće: on limestone fence, 2620.
 Kraljevica: on limestone on stone fence. Six specimens, one confirm. Clauzade & Roux.
 The species was not reported from the Croatian Littoral (H. Pr.) by Kušan (1953) or Murati (1992), but was earlier reported by Schuler (1902).

- Candelariella xanthostigma* (Ach.) Lettau
Uvala Scott: on bark. Two specimens.
- Catapyrenium pilosellum* Breuss
Kraljevica: on soil and among mosses on limestone. Three specimens, det. by O. Breuss.
Uvala Scott: on soil and among mosses on soil and on mosses on rocks near the beach. Two specimens, det. by O. Breuss.
Not included in M u r a t i (1992), but known from Croatia (B r e u s s 1990).
- Catapyrenium squamulosum* (Ach.) Breuss
Uvala Scott: on soil, det. by O. Breuss.
- Cetrelia olivetorum* (Nyl.) Culb. & Culb.
Kloštar: on *Quercus ilex*, 6080.
- Chrysotrix candelaris* (L.) Laund.
Kloštar: on *Quercus cerris*, 6043, 6074.
Included neither in K u š a n (1953) nor in M u r a t i (1992), but known from Vojvodina (G a l l é 1975). New to Croatia.
- Cladonia convoluta* (Lam.) P. Cout.
Mukaba: in opening in the maquis, 6086,
Uvala Scott. Two specimens.
Vidohlam: on shallow soil, 8373.
- Cladonia fimbriata* (L.) Fr.
Kloštar: on *Quercus cerris*, 6068, 6073.
- Cladonia furcata* (Huds.) Schrad. ssp. *subrangiformis* (Sandst.) Pisut
Kraljevica: on limestone fence.
Uvala Scott: on rocks near the beach. Two specimens.
Known from Dalm. (M u r a t i 1992). New to the Croatian Littoral (H. Pr.).
- Cladonia pocillum* (Ach.) O.-J. Rich.
Kraljevica: on soil and mosses. Four specimens.
Uvala Scott: on soil and mosses. Two specimens.
- Cladonia rangiformis* Hoffm.
Mukaba: in opening in the maquis, 6087 (con apoth.).
Kraljevica: on soil and mosses on limestone fence (form with primary thallus dominant and only few, very small podetia).
Uvala Scott: on soil and mosses and on rocks near the beach. Seven specimens.
Vidohlam: on shallow soil, 8375.
- Cladonia symphyocarpa* (Ach.) Fr.
Vidohlam: on shallow soil, 8374.
This is the second record from the Croatian Littoral (H. Pr., C h r i s t e n s e n 1987). The species was probably overlooked.
- Collema crispum* (Huds.) G. H. Web. var. *crispum*
Kraljevica: on soil, mosses and pebbles on limestone fence and directly on the rock. Two specimens, conf. G. Degelius.
Uvala Scott: on soil, mosses, and pebbles and rock on limestone fence, conf. G. Degelius.
Known from Istria, Dalmatia (K u š a n 1953, D e g e l i u s 1954), and the Croatian Littoral (H. Pr., S c h u l e r 1902).
- Collema cristatum* (L.) Web.
Uvala Scott: on mosses, det. by G. Degelius.
- Collema cristatum* (L.) Web. var. *marginale* (Huds.) Degel.
Kraljevica, det. by G. Degelius.
Uvala Scott: det. by G. Degelius.
The variety is not mentioned in K u š a n (1953). Known from Croatia, (D e g e l i u s 1954, B r e u s s 1980).
- Collema fuscovirens* (With.) Laundon
Syn.: *C. tuniforme* (Ach.) Ach.
Uvala Scott: on limestone, conf. by G. Degelius.
New to the Croatian Littoral (H. Pr.), cf. Christensen (1987).
- Collema polycarpon* Hoffm. var. *corcyrense* (Arn.) Harm.
Kraljevica: on limestone, conf. by G. Degelius.
Uvala Scott: on limestone. Two specimens, conf. by G. Degelius.

The variety is not mentioned in Kušan (1953), but known from Croatia, (Degelius 1954).

Collema subflaccidum Degel.

Uvala Scott: on bark, conf. by G. Degelius.
For distributional data see Degelius (1954).

Collema tenax (Sw.) Ach. em. Degel.

Kraljevica: on soil and mosses on limestone fence. Two specimens, conf. by G. Degelius.

Collema tenax (Sw.) Ach. em. Degel. var. *vulgare* (Schaeerer) Degel.

Kraljevica: on soil, mosses, and pebbles on the ground.
Two specimens, conf. by G. Degelius.

Collema spp.

Kraljevica: on soil and on limestone fence.
Uvala Scott: on bark

Diploschistes muscorum (Scop.) R. Sant.

Uvala Scott: on *Catapyrenium*? on soil.

Fulgensia fulgens (Sw.) Elenk.

Vodice: on mosses on limestone outcrop, 2722.
Rača Vas: on mosses on limestone outcrop, 2634a.
Not mentioned from Istria by Kušan (1953) or Murati (1992), but reported by Glovacki (1874, as *Psoroma fulgens* (Sw.) Körb.).

Hyperphyscia adglutinata (Flörke) Mayrh. & Poelt

Kloštar: on *Quercus ilex*, 6082.
Vrbnik: on *Salix alba*, 8371.
Starigrad-Paklenica: on *Ulmus minor*, 8341, 8348 (confirm. by R. Moberg), 8351,
New to Istria (Kušan 1953, Murati 1992).

Lecania cyrtella (Ach.) Th. Fr.

Vrbnik: on *Salix alba*, 8365, 8370. Discs remaining plane, apothecial margins persistent.
Spores somewhat narrow.
»The taxonomy of the corticolous species [of the genus *Lecania*] is often confused, and ... needs a monographic treatment.« (Nimis & Poelt 1987).

Lecania rabenhorstii (Hepp) Arnold

Syn. *L. erysibe* auct., non (Ach.) Mudd
Vabriga: on limestone fence shaded by *Ulmus*, 2450.
Kraljevica: on limestone and on limestone fence. Three specimens, one det. by Clauzade & Roux.
Uvala Scott: on limestone.
New to Istria (Murati 1992).

Lecanora albescens (Hoffm.) Branth & Rostrup

Kraljevica: on limestone.

Lecanora chlarotera Nyl. ssp. *chlarotera* f. *crassula* (H. Magn.) Poelt

Kloštar: on *Quercus cerris*, 6058, 6064, 6066.
In the NW Balkans *L. chlarotera* is seldom reported, but is known from Bosnia, Serbia (Kušan 1953), Slovenia (Batič & Martinčič 1982), and Croatia (Christensen 1988). It was probably overlooked.

Lecanora crenulata (Dicks.) Hook.

Vabriga: on limestone fence, (cum 2449, 2452).
New to Istria (Kušan 1953).

Lecanora expallens Ach.

Kloštar: on *Quercus cerris*, 6072, 6078, both sterile, with usnic acid and zeorin (tlc).
Published by Kušan (1953, as *L. conizaea* (Ach.) Nyl.).

Lecanora hagenii (Ach.) Ach.

Kraljevica: on limestone.

Lecanora pruinosa Chaub.

Kraljevica: on limestone on stone fence and outcrops.
Three specimens.

Lecanora sienae B. de Lesd.

Vrbnik: on *Salix alba*, 8356, 8357a, 8360, 8361, 8364a, 8369a. Contrary to Brodo (1984) European authors regard *L. sienae* and *L. laevis* Poelt as conspecific (Ozenda & Clauzade 1970), Poelt & Vězda 1981, Clauzade & Roux 1985). This species

concept is adopted here, although the material seems to contain two different morphological types.

New to the NW Balkans (K u š a n 1953).

Lecidea lurida (With.) Ach.

Syn. *Psora lurida* (With.) DC.

Kraljevica: on soil and mosses on limestone fence and limestone outcrops. Three specimens.

Uvala Scott: on soil, mosses and *Thyrea*?, det. by E. Tindal.

Senj: on limestone outcrop.

Lecidella achristotera (Nyl.) Hertel & Leuckert

Kloštar: on *Quercus cerris*, 6044, 6045, 6049, 6050, 6051.

Kraljevica: on bark.

Uvala Scott: on bark. Three specimens.

Starigrad-Paklenica: on *Ulmus minor*, 8345.

L. achristotera was recently published as new to Croatia (Christensen 1987, 1988).

Lecidella elaeochroma (Ach.) Choisy var. *elaeochroma*

Kloštar: on *Quercus cerris*, 6061.

Kraljevica: on bark.

Starigrad-Paklenica: on *Ulmus minor* (cum 8342).

Lecidella euphorea (Flörke) Hertel

Starigrad-Paklenica: on *Ulmus minor*, 8349a.

New to the Croatian Littoral (H. Pr.).

Lecidella stigmataea (Ach.) Hertel

Syn. *Lecidea vulgata* Zahlbr.

Cervar Bay: on limestone outcrop in littoral meadow, 2528.

New to Istria (K u š a n 1953).

Lepraria incana (L.) Ach.

Kloštar: on *Quercus cerris*, 6048 (tlc: atranorin & divaricatic acid), 6062 (tlc: atranorin and unknown purple spot in rf. 6-7). the blue-white colour of the specimens argues for the present taxon, despite the deficient chemistry (L a u n d o n 1992).

[*L. incana*, no. 903, reported by Christensen (1987) is in fact *L. lobificans* (tlc: atranorin, zeorin & stictic acid aggregate), while no. 2685 (tlc: atranorin & zeorin) with a blue-white thallus (Christensen 1988) is best referred to as *L. incana*.]

Lepraria lobificans Nyl.

Kloštar: on *Quercus cerris*, 6069 (tlc: atranorin, zeorin & stictic acid aggregate).

Apparently new to the NW Balkans.

Leptogium cyanescens (Rabenh.) Körber

Kraljevica: on bark.

Leptogium lichenoides (L.) Zahlbr.

Kraljevica: among mosses on soil on limestone fence. Two specimens.

Uvala Scott: on limestone (var. *lichenoides*).

Leptogium massiliense Nyl.

Kraljevica: on limestone fence.

Uvala Scott: on limestone. Two specimens.

Normandina pulchella (Borr.) Nyl.

Kloštar: on *Quercus cerris*, 6046.

Ochrolechia turneri (Sm.) Hasselrot

Kloštar: on *Quercus cerris*, 6047.

New to Istria (M u r a t i 1992).

Opegrapha atra Pers.

Kloštar: on *Quercus cerris*, 6055, 6057 (both conf. by Torrente and Egea).

Parmelia acetabulum (Neck.) Duby

Kraljevica: on bark. Thallus of the »normal« brown-green form.

Lokvičići: on *Quercus pubescens*, 8338. Thallus lead-grey, a form that seems to increase in frequency from N to S through the Balkan Peninsula (cf. Nimis & Poelt 1987). The specimen (2690) reported from Tinjan, Istria (Christensen 1988) belongs to this colour form, and so does the Greek specimen cited in Christensen (1989).

Parmelia borveri (Sm.) Turn.

Starigrad-Paklenica: on *Ulmus minor*, 8346.

- Parmelia caperata* (L.) Ach.
 Kloštar: on *Quercus cerris*, 6042, 6054, 6071, the latter with apothecia.
 Kraljevica: on bark.
 Uvala Scott: on bark. Three specimens.
 Starigrad-Paklenica: on *Ulmus minor*, 8340.
- Parmelia carporrhizans* Th. Tayl.
 Kloštar: on *Quercus ilex*, 6084.
 New to Istria (K u š a n 1953).
- Parmelia coniocarpa* Laurer
 Syn.: *P. perlata* (Huds.) Vain.
 Kloštar: on *Quercus cerris*, 6053, 6067.
 Uvala Scott: on bark.
- Parmelia exasperata* (Ach.) De Not.
 Kraljevica: on bark (ster.)
 Uvala Scott: on bark.
- Parmelia glabra* (Schaeerer) Nyl.
 Kloštar: on *Quercus ilex*, 6085.
- Parmelia glabratula* (Lamy) Nyl. ssp. *glabratula*
 Uvala Scott: on bark.
 This taxon was earlier published from the Croatian Littoral (H. Pr.) by B r e u s s (1980).
- Parmelia quercina* (Willd.) Vainio
 Uvala Scott: on bark.
 Starigrad-Paklenica: on *Ulmus minor*, 8343, 8344.
- Parmelia saxatilis* (L.) Ach.
 Kraljevica: on bark.
- Parmelia subaurifera* Nyl.
 Kloštar: on *Acer campestre*, 6076.
 Kraljevica: on bark.
 Uvala Scott: on bark. Three specimens.
- Parmelia subrudecta* Nyl.
 Kloštar: on *Quercus cerris*, 6056, 6060.
 Uvala Scott: on bark.
P. subrudecta was recently published as new to Croatia (C h r i s t e n s e n 1987).
- Parmelia sulcata* Th. Tayl.
 Kloštar: on *Quercus cerris*, 6063.
 Kraljevica: on bark (cum apoth.)
- Parmelia tiliacea* (Hoffm.) Ach.
 Kloštar: on *Quercus cerris*, 6059, 6077.
- Peltigera rufescens* (Weis) Humb.
 Bakar: on mosses.
- Pertusaria albescens* (Huds.) Choisy & Werner
 Kloštar: on *Quercus ilex*, 6081.
- Pertusaria flavida* (DC.) Laund.
 Syn.: *P. lutescens* (Hoffm.) Lamy
 Vučjak: on *Fagus sylvatica*, 761.
 New to the Croatian Littoral (H. Pr., K u š a n 1953).
- Petractis luetkemuelleri* (Zahlbr.) Vezda
 Cervar Bay: on limestone outcrop in littoral meadow, 2525 (conf. by A. Vězda).
 New to the NW Balkans (K u š a n 1953).
- Phaeophyscia chloantha* (Ach.) Moberg
 Kraljevica: on limestone, det. by R. Moberg. See M o b e r g (1978).
- Phaeophyscia hirsuta* (Mereschk.) Moberg
 Vabriga: on limestone fence (cum 2452).
 Uvala Scott: on bark, conf. by R. Moberg.
 Senj: on limestone outcrop.
 Starigrad-Paklenica: on *Ulmus minor*, 8352.
 New to the Croatian Littoral (H. Pr.).
- Phaeophyscia insignis* (Mereschk.) Moberg
 Uvala Scott: on bark, det. R. Moberg.

»*P. insignis* is probably overlooked in South Europe, where it is known from Switzerland and Yugoslavia« (M o b e r g 1978). Known from Dalm. (M u r a t i 1992). Apparently new to the Croatian Littoral (H. Pr.).

Phaeophyscia orbicularis (Necker) Moberg

Starigrad-Paklenica: on *Ulmus minor* (cum 8349, det. by R. Moberg).

Phlyctis argena (Ach.) Flotow

Kloštar: on *Acer campestre*, 6075.

Physcia adscendens (Fr.) H. Oliv.

Kloštar: on *Quercus cerris*, 6052.

Kraljevica: on limestone and on *Erica*? stems. Five specimens.

Uvala Scott: on bark. Two specimens.

Vrbnik: on *Salix alba*, 8362.

Starigrad-Paklenica: on *Ulmus minor* (cum 8345, conf. R. Moberg).

Physcia aipolia (Ehrht.) Hampe

Kloštar: on *Quercus ilex*, 6083.

Kraljevica: on bark. Two specimens.

Uvala Scott: on bark, conf. by R. Moberg.

Physcia biziana (Massal.) Zahlbr. var. *biziana*

Starigrad-Paklenica: on *Ulmus minor*, 8347, 8354.

New to the Croatian Littoral (H. Pr., M u r a t i 1992).

Physcia semipinnata (Gmelin) Moberg

Starigrad-Paklenica: on *Ulmus minor*, 8342.

Physcia stellaris (L.) Nyl.

Uvala Scott: on bark.

Physconia distorta (With.) Laundon

Syn. *P. pulverulacea* Moberg

Kraljevica: on bark.

Physconia grisea (Lam.) Poelt ssp. *grisea*

Starigrad-Paklenica: on *Ulmus minor*, 8353.

Physconia servitii (Nadv.) Poelt

Kloštar: on *Quercus ilex*, 6083a, sterile.

P. servitii is easily mistaken for *P. distorta*, especially in the field. B r e u s s (1980) discusses the diagnostic characters of this species. According to P o e l t (1974) *P. servitii* grows predominantly on *Pinus*, but B r e u s s (1980) recorded the species from several broadleaved tree genera: *Acer*, *Ostrya* and *Quercus*. New to Istria (M u r a t i 1992).

Placynthium nigrum (Huds.) S. Gray

Kraljevica: on limestone. Three specimens.

Uvala Scott: on limestone. Two specimens.

Protoblastenia calva (Dicks.) Zahlbr.

Uvala Scott: on limestone.

Protoblastenia incrustans (DC.) Steiner

Uvala Scott: on limestone.

Protoblastenia rupestris (Scop.) J. Stein.

Červar Bay: on stone on shallow soil on limestone outcrop in maquis, 2427.

Oprtalj: on limestone fence, 2705.

Not reported from Istria by K u š a n (1953), but reported by S c h u l e r (1902).

Psora decipiens (Hedw.) Hoffm.

Kraljevica: on soil and mosses on limestone fence. Two specimens.

Uvala Scott: on soil and mosses. Four specimens.

Cf. *Pyrrhospora querneae* (Dicks.) Körber

Vabriga: on *Olea* in dry hay meadow, 2503.

New to Istria (M u r a t i 1992).

Ramalina farinacea (L.) Ach.

Kloštar: on *Quercus cerris*, 6070.

Ramalina cf. *fastigiata* Pers.

Vrbnik: on *Salix alba*, 8363, sterile.

Rinodina exigua (Ach.) Gray

Kraljevica: on *Erica*? stems.

New to the Croatian Littoral (H. Pr.).

- Rinodina pyrina* (Ach.) Arnold
Kraljevica: on bark of twig.
- Rinodinella controversa* (Massal.) Mayrhofer & Poelt
Senj: on limestone.
New to the Croatian Littoral (H. Pr.).
- Sarcogyne regularis* Körber var. *intermedia* (Körber) Golubk.
Syn.: *S. pruinosa* var. *pruinosa* auct. (Clauzade & Roux 1985)
Uvala Scott: on limestone.
- Squamarina cartilaginea* (With.) P. James
Kraljevica: on soil and mosses on limestone fence. Two specimens.
Uvala Scott: on litter, soil and limestone pebbles. Three specimens.
- Teloschistes chrysophthalmus* (L.) Th. Fr.
Mukaba: on dead stem of *Spartium junceum* in maquis, 6088.
- Toninia sedifolia* (Scop.) Timdal
Syn. *T. caeruleonigricans* auct., non (Lightf.) Th. Fr. (Timdal 1991).
Kraljevica: on soil and among mosses on limestone fence and limestone outcrops. Five specimens, conf. by E. Timdal.
Uvala Scott: on moss on soil, conf. by E. Timdal.
- Verrucaria calciseda* DC.
Uvala Scott: on limestone.
- Verrucaria marmorea* (Scop.) Arnold
Uvala Scott: on limestone, conf. by C. Roux.
- Verrucaria nigrescens* Pers.
Kraljevica: on limestone fence and limestone outcrop. Two specimens, one det. by G. Clauzade & C. Roux.
Uvala Scott: on limestone. Four specimens, two conf. by C. Roux.
Senj: on limestone outcrop.
- Xanthoria parietina* (L.) Th. Fr.
Kraljevica: on bark (of trunk?) and on bark of twig. Two specimens.
Uvala Scott: on bark. Two specimens.
Vrbnik: on *Salix alba*, 8357, 8358, 8359, 8367.
Starigrad-Paklenica: on *Ulmus minor*, 8350.

*

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SAŽETAK

PRILOG FLORI LIŠAJA HRVATSKE

Steen N. Christensen i Eric Steen Hansen

(Botanički muzej Sveučilišta u Kopenhagenu)

Za područje Hrvatske autori navode 121 svojtu lišaja. Četiri svojte su nove za sjeverozapadni dio Balkanskog poluotoka (*Caloplaca velana* var. *placidia*, *Lecanora sienae*, *Lepraria lobificans* i *Petractis luetkemulleri*). Jedna vrsta (*Chysotrix candelaris*) je nova za Hrvatsku. Osam svojti, uključujući *Phaeophyscia insignis*, nove su za kvarnersko primorje, a devet svojti, uključujući *Ochrolechia turneri* i *Physconia servitii*, nove su za Istru.

Dr. Steen N. Christensen

Dr. Eric Steen Hansen

Botanical Museum, University of Copenhagen

Gothersgade 130

DK-1123 København K, Denmark