

New and interesting records of lichens from Turkey

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Abstract: 46 species are new for the Turkish lichen flora. 51 additional records are given for the provinces of Antalya, Aydın, Canakkale, Denizli, Gaziantep, Hatay, İzmir, Manisa, Muğla, Kütahya and Zonguldak. Most of them represent the second record from Turkey. *Caloplaca floridana* is recorded for the first time from the Old World.

Zusammenfassung: 46 Flechtenarten werden erstmals aus der Türkei gemeldet. Von 51 weiteren Arten werden Funde aus den Provinzen Antalya, Aydın, Canakkale, Denizli, Gaziantep, Hatay, İzmir, Manisa, Muğla, Kütahya und Zonguldak angeführt, wobei es sich meist um Zweitfunde der jeweiligen Art aus der Türkei handelt. *Caloplaca floridana* wurde erstmals in der Alten Welt aufgefunden.

The Turkish lichen flora is still poorly known. Recently, much research on lichens has been carried out in various regions in the country (e.g., ASLAN 2000; ASLAN & ÖZTÜRK 1994; ASLAN & al. 2002 a, b; GÖNÜLOL & al. 1995; KARABULUT & ÖZDEMİR TÜRK 1998; ÖZDEMİR TÜRK 2003; ÖZTÜRK 1990; ÖZTÜRK & KAYNAK 1999; YAZICI 1995, 1999; YAZICI & ASLAN 2002 a, b, 2003; YILDIZ & JOHN 2002; YILDIZ & al. 2002). Recent national checklists refer to 2968 taxa in Scandinavia (SANTESSON & al. 2004), 2794 taxa in Spain (LLIMONA & HLADUN 2001), 2399 taxa in Germany (SCHOLZ 2000), 2237 taxa in Austria (HAFELLNER & TÜRK 2001), 2345 taxa in Italy (NIMIS & MARTELOS 2003), 1830 taxa in Great Britain and Ireland (COPPINS 2002), and 1608 taxa in Japan (KUROKAWA 2003). Those numbers provide some measure of a potential total number of lichen taxa which could be expected in Turkey with so many different biogeographical elements. A forthcoming checklist of the lichens of Turkey at moment consists of approximately 1200 taxa. A number of 1331 taxa for Ukraine (KONDRATYUK & al. 1998), 860 taxa for a small country as Slovenia (SUPPAN & al. 2000) and 234 taxa for Israel (GALUN & MUKHTAR 1996) may not apply a standard to the number of taxa expected in Turkey.

Furthermore even some provinces with a better known lichen flora, like Antalya, Bursa, Eskişehir, Hatay, İzmir and Trabzon, are far from being sufficiently studied and are in need of additional records. One reason for the gap of those data in Turkey is a tradition of 200 years of lichenology in European countries versus 20 years of active lichenology in Turkey.

Results

The majority of the samples listed below were collected during the 1992 fieldtrip of the BLAM (Bryologisch-lichenologische Arbeitsgemeinschaft für Mitteleuropa) in the surroundings of İzmir. Additional taxa were collected by the second author during several excursions in various parts of Turkey. The taxa are arranged in alphabetical order. New taxa for Turkey are marked by an asterisk (*). The remaining taxa represent new records for the province indicated. The samples collected by V. JOHN are deposited in his private herbarium, those collected by O. BREUSS are in LI.

**Acarospora hospitans* H. MAGN.

İzmir (35), Yamanlardağ N of İzmir. Southern slope above Yamanlarköy. 38°32'N, 27°09'E. Alt. 700 m s. m., on *Aspicilia* spec. on intermediate rocks, 14. 4. 1992, leg. O. BREUSS (no. 8339).

This species has a chiefly arctic-alpine distribution extending to the Mediterranean mountains (NIMIS 1993).

**Acarospora insolata* H. MAGN.

İzmir (35), Bozdağ, mountain range E of Bozdağköy. 38°21'N, 28°06'E. Alt. 1700 m s. m., on siliceous rocks, 18. 4. 1992, leg. O. BREUSS (no. 8502).

**Anthracocarpon virescens* (ZAHLEBR.) BREUSS – Syn. *Dermatocarpon virescens* ZAHLEBR., *Catapyrenium virescens* (ZAHLEBR.) BREUSS

Muğla (48), coastal rocks of Belcikiz, S of Fethiye. 36°34'N, 29°05'E. Alt. 10 m s. m., on calcareous rocks, 25. 3. 1982, leg. V. JOHN (no. 3673), det. O. BREUSS.

This Mediterranean species was so far known from Spain, Croatia, Tunisia, Italy, and Greece (BREUSS 1994, CHRISTENSEN & al. 1997, LLIMONA & HLADUN 2001, PUNTILLO 1996, SIPMAN & RAUS 1999).

Arthonia lapidicola (TAYLOR) BRANTH & ROSTRUP

İzmir (35), Bozdağ, mountain range E of Bozdağköy. 38°21'N, 28°06'E. Alt. 1700 m s. m., on siliceous rocks, 18. 4. 1992, leg. O. BREUSS (s.n.), det. B. COPPINS.

**Arthopyrenia rhyponia* (ACH.) A. MASSAL.

İzmir (35), Bozdağ, village of Bozdağköy. 38°21'N, 28°05'E. Alt. 1150 m s. m., on *Castanea sativa* MILL., 18. 4. 1992, leg. O. BREUSS (no. 8490).

**Aspicilia mastrucata* (WAHLENB.) TH. FR.

İzmir (35), southern slope of Yamanlar Dağ, small valley N of Karşıyaka. 38°30'N, 27°07'E. Alt. 125 m s. m., on vertical siliceous rocks, 30. 6. 2001, leg. V. JOHN (no. 10094).

**Aspicilia simoensis* RÄSÄNEN

İzmir (35), Bozdağ, mountain range E of Bozdağköy. 38°21'N, 28°06'E. Alt. 1700 m s. m., on siliceous

rocks, 18. 4. 1992, leg. V. JOHN (s.n.).

According to NIMIS (1993) *Aspicilia simoensis* is relatively frequent in the mountains of C Europe.

***Aspicilia viridescens* (A. MASSAL.) KREMP.**

Antalya (07), rocks in pine forest c. 15 km E of Kumluca. Alt. 440 m s. m., on calcareous rocks, 15. 3. 1982, leg. V. JOHN (no. 10072), det. P. L. NIMIS.

****Bacidia auerswaldii* (HEPP ex STIZENB.) MIGULA**

Aydın (09), northern part of Samsundağ, canyon in the Millipark. 37°42'N, 27°14'E. Alt. 100 m s. m., 16. 4. 1992, leg. O. BREUSS (no. 8429) & G. ÇETIN.

The species is known from Europe and western North America (EKMAN 1996).

***Bacidia friesiana* (HEPP) KÖRB. – Syn. *Biatora friesiana* HEPP**

Aydın (09), SW border of Bafa Gölü. 37°30'N, 27°25'E. Alt. 40 m s. m., on bark of *Olea europaea* L., 24. 3. 1983, leg. V. JOHN (no. 9626).

Bacidia friesiana is distributed from C Europe to the Mediterranean region (NIMIS 1993) and is also known from Oregon (EKMAN 1996).

****Bagliettoa steineri* (KUŠAN) VĚZDA**

Aydın (09), northern part of Samsundağ, canyon in the Millipark. 37°42'N, 27°14'E. Alt. 100 m s. m., on calcareous rocks, 16. 4. 1992, leg. O. BREUSS & G. ÇETIN.

Bagliettoa steineri is common in southern C Europe and especially in the (sub-) Mediterranean region with known occurrences in alvar areas of southern Sweden.

****Buellia dispersa* A. MASSAL.**

İzmir (35), open hills N of Bornova to Yamanlar Dağ. 38°29'N, 27°13'E. Alt. 300 m s. m., on exposed siliceous rocks of andesit, 2. 4. 1986, leg. V. JOHN (no. 5821), det. C. SCHEIDEGGER. – İzmir (35), Bornovaçay NE of Bornova. 38°30'N, 27°14'E. Alt. 200 m s. m., on siliceous rocks, 13. 4. 1992, leg. O. BREUSS (s.n.).

The species is widely distributed in the Mediterranean region and in the inner Alpine dry valleys (NIMIS 1993).

***Buellia subdisciformis* (LEIGHT.) VAIN.**

Muğla (48), Beşparmakdağ, pass between Narhisar and Çukurköy. 37°28'N, 27°42'E. Alt. 800 m s. m., on gneiss, 17. 4. 1992, leg. O. BREUSS (no. 8455).

****Buellia tumida* (A. MASSAL.) BAGL.**

İzmir (35), Yamanlardağ N of İzmir. Southern slope beneath Yamanlarköy. 38°31'N, 27°07'E. Alt. 150 m s. m., on intermediate rocks, 14. 4. 1992, leg. O. BREUSS (no. 8310).

Buellia tumida was included in *B. dispersa* by SCHEIDEGGER (1993).

****Calicium lenticulare* ACH. – Syn. *Calicium subquercinum* ASAHINA**

İzmir (35), Yamanlardağ N of İzmir. Northern slope near the road to Karagöl. 38°32'N, 27°11'E. Alt. 750 m s. m., on bark of *Pinus*, 14. 4. 1992, leg. O. BREUSS (no. 8350).

****Caloplaca adriatica* (ZAHLEBR.) SERVIT**

Aydın (09), Northern part of Samsundağ, canyon in the Millipark. 37°42'N, 27°14'E. Alt. 100 m s. m., 16. 4. 1992, leg. O. BREUSS (no. 8437) & G. ÇETIN.

The species occurs especially in southeastern parts of Europe and in (sub-)Mediterranean zones on sun-exposed rocks.

***Caloplaca agardhiana* (A. MASSAL.) CLAUZADE & CL. ROUX**

Antalya (07), rocks in pine forest c. 15 km E of Kumluca, exposed hills to the south. 36°22'N, 30°22'E. Alt. 440 m s. m., on calcareous soil, 15. 3. 1982, leg. V. JOHN (no. 3451).

****Caloplaca albolutescens* (NYL.) H. OLIVIER**

İzmir (35), artificial wall near the coast, N of İnciraltı. Alt. 5 m s. m., on mortar, 10. 4. 1986, leg. V. JOHN (no. 5839).

***Caloplaca arenaria* (PERS.) MÜLL. ARG.**

Hatay (31), Amanos Dağları, E of Kuzuculu. Karakaya in the Deliçay valley. 36°53'N, 36°20'E. Alt. 600 m s. m., on siliceous rocks, 16. 3. 1989, leg. V. JOHN (no. 10928).

***Caloplaca ferruginea* (HUDS.) TH. FR.**

Hatay (31), Amanos Dağları, SW-part of Kızıldağ, S of Uluçınar. 36°17'N, 35°52'E. Alt. 1100 m s. m., on *Pinus brutia* TEN., 23. 3. 1989, leg. V. JOHN (no. 6556).

****Caloplaca floridana* (TUCK.) S. TUCKER**

Antalya (07), northern slope of Tahtalı dağ, W of Kemer, c. 1.5 km W of a small village. 36°35'N, 30°25'E. Alt. 500 m s. m., on bark of *Quercus* spec., 21. 3. 1982, leg. V. JOHN (no. 3618). - Aydın (09), SW border of Bafa Gölü. 37°30'N, 27°25'E. Alt. 40 m s. m., on bark of *Olea europaea*. 24. 3. 1983, leg. V. JOHN (no. 9636). - İzmir (35), Nifdağ E of İzmir, small valley between summit and Kurudere. 38°23'N, 27°24'E. Alt. 800-850 m s. m., on smooth bark, 15. 4. 1992, leg. O. BREUSS (no. 8412); - Nifdağ E of İzmir. Gorge on the eastern slope near Kurudere. 38°23'N, 27°24'E. Alt. 600 m s. m., on *Platanus*, 15. 4. 1992, leg. O. BREUSS (no. 8419, 8421), confirm. C. M. WETMORE; - Nifdağ E of İzmir, northern slope of the mountain. 38°23'N, 27°23'E. Alt. 800 m s. m., on bark of *Platanus orientalis* L., 15. 4. 1992, leg. V. JOHN (no. 10199); - Yamanlardağ, vicinity of Karagöl. 38°33'N, 27°13'E. Alt. 800 m s. m., on bark of *Platanus orientalis*, 10. 4. 1982, leg. V. JOHN; - Tekke tepesi SW of İzmir. 38°19'N, 26°59'E. Alt. 600 m s. m., on bark of *Platanus orientalis*, 4. 4. 1988, leg. V. JOHN. - Kütahya (43), N of Kütahya, W of the İlica village. 39°37'N, 30°02'E. Alt. 950 m s. m., on bark of *Salix* spec., 1. 5. 1992, leg. V. JOHN.

Caloplaca floridana is similar to *C. suspiciosa* (NYL.) H. MAGN. from which it differs in having larger spores with thicker septa, and distinct grey thalli. The species was known from SE North America, C and S America (WETMORE 1994). In Turkey it seems to be locally common in the Mediterranean part of the country. It is new to the Old World.

****Caloplaca interna* POELT & NIMIS**

İzmir (35), Yamanlardağ N of İzmir, southern slope beneath Yamanlarköy. 38°31'N, 27°07'E. Alt. 150 m s. m., on *Aspicilia* spec. over intermediate rocks, 14. 4. 1992, leg. O. BREUSS (no. 8314).

Originally described from Sardinia, this parasitic species seems to be widely distributed but scattered in the Mediterranean area and is also known from the Austrian Alps (NIMIS 1993).

****Caloplaca pellodella* (NYL.) HASSE – Syn. *Caloplaca conglomerata* (BAGL.) JATTA**

İzmir (35), Yamanlardağ N of İzmir, southern slope beneath Yamanlarköy. 38°31'N, 27°07'E. Alt. 150 m s. m., on intermediate rocks, 14. 4. 1992, leg. O. BREUSS (no. 8298).

Caloplaca pellodella is mainly mediterranean extending northwards into the southern Alps (NIMIS 1993), and is further known from SW North America, the Canary Islands and a few collections in Asia (WETMORE 1996).

****Caloplaca tavaresiana* NAV.-ROS. & CL. ROUX**

İzmir (35), northern part of Çeşme peninsula, near Karaburun. Alt. 5 m s. m., on siliceous rocks near the sea, 17. 3. 1983, leg. V. JOHN (no. 7348, 7916, 7917), det. P. L. NIMIS.

This is a southern Mediterranean species occurring on rocks near the coast.

****Candelariella lutella* (VAIN.) RÄSÄNEN**

Muğla (48), N of Üzümlü, pass near Incirköy. 36°48'N, 29°11'E. Alt. 1000 m s. m., on *Quercus pubescens* WILLD. subsp. *anatolica* O. SCHWARTZ, 26. 3. 1982, leg. V. JOHN (no. 10698).

***Caloplaca pyracea* (ACH.) TH. FR.**

Antalya (07), c. 10 km N of Elmalı, between Korkuteli and Elmalı. 36°47'N, 30°00'E. Alt. 1000 m s. m., on *Pyrus communis* L., 19. 3. 1982, leg. V. JOHN (no. 4327), det. P. L. NIMIS.

****Catillaria praedicta* TRETACH & HAFELLNER**

Muğla (48), Beşparmakdağ, pass between Narhisar and Çukurköy. 37°28'N, 27°42'E. Alt. 800 m s. m., on bark, 17. 4. 1992, leg. O. BREUSS (no. 8467).

The sample has 12-16(-24)-spored asci whereas typical *C. praedicta* has rarely less than 24 spores (mostly 24-32) per ascus. *Catillaria praedicta* has a mainly western Mediterranean maritime distribution (TRETACH & HAFELLNER 1998).

***Collema subflacidum* DEGEL.**

Muğla (48), Beşparmakdağ, road to Çukurköy, N of Selimiye. 37°28'N, 27°42'E. Alt. 150 m s. m., on *Olea europaea*, 17. 4. 1992, leg. O. BREUSS (no. 8482).

***Dermatocarpon biennense* ZSCHACKE**

Denizli (20), W-exposed overhangs at the northern slope of Honazdağ, near Honazköy. 37°42'N, 29°17'E. Alt. 1600 m s. m., on calcareous rocks, 13. 3. 1982, leg. V. JOHN (no. 4332, M), det. O. BREUSS.

Dermatocarpon biennense is close to *D. miniatum* (L.) MANN but with the under-surface of thallus covered with densely crowded coarse, knobby papilla-like structures. Its distribution is insufficiently known.

***Fulgensia fulgida* (NYL.) SZATALA**

Antalya (07), rocks in pine forest c. 15 km E of Kumluca, exposed hills to the south. 36°22'N, 30°22'E. Alt. 440 m s. m., on calcareous soil, 15. 3. 1982, leg. V. JOHN (no. 10618).

This is the second record for Turkey (JOHN 2003).

Gyalecta truncigena* (ACH.) HEPP var. *truncigena

Aydın (09), northern part of Samsundağ, canyon in the Millipark. 37°42'N, 27°14'E. Alt. 100 m s. m., 16. 4. 1992, leg. O. BREUSS (no. 8434) & G. ÇETİN.

****Ingvariella bisporus* (BAGL.) GUDERLEY & LUMBSCH – Syn. *Diploschistes bisporus* (BAGL.) J. STEINER**

İzmir (35), Dumanlı Dağ N of Menemen, S-exposed open hills near Belen. 38°40'N, 27°07'E. Alt. 400 m s. m., on siliceous rocks, 9. 4. 1992, leg. V. JOHN (no. 10812), det. H. T. LUMBSCH. - İzmir (35),

Yamanlardağ N of İzmir, southern slope above Yamanlarköy. 38°32'N, 27°09'E. Alt. 700 m s. m., on intermediate rocks, 14. 4. 1992, leg. O. BREUSS (no. 8331).

Ingvariella bisporus is a cosmopolitan species with its main distribution centre in the Mediterranean area (LUMBSCH 1989, NIMIS 1993).

***Lecania fuscella* (SCHAER.) KÖRB.**

Antalya (07), c. 10 km N of Elmalı, between Korkuteli and Elmalı. 36°47'N, 30°00'E. Alt. 1000 m s. m., on *Pyrus communis*, 19. 3. 1982, leg. V. JOHN (no. 4328).

***Lecania turicensis* (HEPP) MÜLL. ARG.**

Antalya (07), rocks in pine forest c. 15 km E of Kumluca, exposed hills to the south. 36°22'N, 30°22'E. Alt. 440 m s. m., on calcareous rocks, 15. 3. 1982, leg. V. JOHN (no. 10078), det. P. L. NIMIS.

This is the second record for Turkey (JOHN 2003).

***Lecanora hagenii* (ACH.) ACH.**

Antalya (07), c. 10 km N of Elmalı, between Korkuteli and Elmalı. 36°47'N, 30°00'E. Alt. 1000 m s. m., on *Pyrus communis*, 19. 3. 1982, leg. V. JOHN (in no. 4328).

****Lecanora prominens* CLAUZADE & VĚZDA**

İzmir (35), Nifdağ E of İzmir, near to the top of the mountain. 38°23'N, 27°21'E. Alt. 1470 m s. m., on calcareous rocks, 15. 4. 1992, leg. O. BREUSS (no. 8382).

Lecanora prominens is a poorly known species with a southern European distribution.

****Lecanora sarcopis* (ACH.) ACH.**

Antalya (07), c. 15 km E of Kumluca, exposed hills to the south. 36°22'N, 30°22'E. Alt. 440 m s. m., on cone of *Pinus brutia*, 15. 3. 1982, leg. V. JOHN (no. 10079).

***Lecanora subrugosa* NYL.**

Hatay (31), Amanos Dağları, E of Dörtiyol, NE of Tohtak Yaylası. 36°52'N 36°24'E. Alt. 1450 m s. m., on *Quercus cerris* L., 1. 8. 1990, leg. V. JOHN (no. 7753).

****Lecidea nylanderii* (ANZI) TH. FR. – Syn. *Biatora nylanderii* ANZI**

Zonguldak (67), N of Safranbolu, N of Buğa Dağ, Mercimekli Tepe, road to Ulu Yayla, in a depression. 41°31'N, 32°42'E. Alt. 750 m s. m., on *Fagus orientalis* LIPSKY, 14. 8. 1988, leg. V. JOHN (no. 6796, M).

***Lecidea promiscens* NYL.**

İzmir (35), Bozdağ, mountain range E of Bozdağköy. 38°21'N, 28°06'E. Alt. 1700 m s. m., on siliceous rocks, 18. 4. 1992, leg. O. BREUSS (no. 8500).

****Lecidea turgidula* FR.**

İzmir (35), Yamanlardağ N of İzmir, northern slope near the road to Karagöl. 38°32'N, 27°11'E. Alt. 750 m s. m., on lignum, 14. 4. 1992, leg. O. BREUSS (no. 8351).

For a detailed description see HINTEREGGER (1994) as *Biatora turgidula* (FR.) NYL. According to PRINTZEN (1995) the species has an uncertain taxonomic position.

***Lecidella asema* (NYL.) KNOPH & HERTEL**

Canakkale (17), W-exposed slope of a small gorge E of Ayvacık, on the road Küçükkuuyu-Ezine.

39°35'N, 26°37'E. Alt. 330 m s. m., on siliceous conglomerate, 12. 3. 1983, leg. V. JOHN (no. 10835).

****Lepraria lesdainii* (HUE) R. C. HARRIS**

İzmir (35), Bornovaçay NE of Bornova. 38°30'N, 27°14'E. Alt. 200 m s. m., with mosses on overhangs of calcareous rocks, 13. 4. 1992, leg. O. BREUSS (no. 8292).

****Leptogium intermedium* (ARNOLD) ARNOLD**

İzmir (35), Nifdağ E of İzmir, near to the top of the mountain. 38°23'N, 27°21'E. Alt. 1400 m s. m., on calcareous soil, 15. 4. 1992, leg. O. BREUSS (no. 8404).

***Mycobilimbia lobulata* (SOMMERF.) HAFELLNER**

İzmir (35), Nifdağ E of İzmir, near to the top of the mountain. 38°23'N, 27°21'E. Alt. 1470 m s. m., on calcareous rocks, 15. 4. 1992, leg. O. BREUSS (no. 8391).

****Ochrolechia microstictoides* RÄSÄNEN**

İzmir (35), Nifdağ E of İzmir, near to the top of the mountain. 38°23'N, 27°21'E. Alt. 1470 m s. m., on *Pinus*, 15. 4. 1992, leg. O. BREUSS (no. 8396).

***Parmelia submontana* NÁDV. ex HALE**

Hatay (31), Amanos Dağları, NE of Dörtyol, 3 km SE of Üçkoz Yaylası. 36°58'N, 36°26'E. Alt. 1700 m s. m., on bark of *Quercus cerris*, 29. 7. 1990, leg. V. JOHN (no. 9782, M).

***Parmelina carporrhizans* (TAYLOR) POELT & VĚZDA**

İzmir (35), Bozdağ, village of Bozdağköy. 38°21'N, 28°05'E. Alt. 1150 m s. m., on *Castanea sativa*, 18. 4. 1992, leg. O. BREUSS (no. 8483).

***Peltigera virescens* (J. STEINER) GYELN.**

Antalya (07), S of Elmalı, in a *Cedrus libani*-forest, E Avlan gölü. 36°35'N, 29°59'E. Alt. 1400 m s. m., on calcareous soil, 20. 3. 1982, leg. V. JOHN (no. 3680, M), det. O. VITIKAINEN. - Manisa (45), top of Spil Dağ. 38°23'N, 27°21'E. Alt. 1500 m s. m., on calcareous soil, 10. 4. 1983, leg. V. JOHN (no. 5877, M), det. O. VITIKAINEN.

This species was described from Turkey and is expected to occur elsewhere in the Mediterranean area (VITIKAINEN 1994).

****Pertusaria stalactiza* NYL.**

Muğla (48), Beşparmakdağ, pass between Narhisar and Çukurköy. 37°28'N, 27°42'E. Alt. 800 m s. m., on gneiss, 17. 4. 1992, leg. O. BREUSS (no. 8459).

This species is known from the Alps and Carpathians.

****Pertusaria trachythallina* ERICHSEN**

Zonguldak (67), northern slope of the mountain between Devrek and Mengen, N of the tunnel. 41°02'N, 32°02'E. Alt. 900 m s. m., on *Fagus orientalis*, 4. 5. 1992, leg. V. JOHN (no. 9968, M).

***Physcia magnussonii* FREY**

Muğla (48), gorge near Uzunyurt, southern slope of Baba Dağ, S of Fethiye. 36°31'N, 29°09'E. Alt. 350 m s. m., on calcareous rocks, 28. 3. 1982, leg. V. JOHN (no. 3487), det. P. L. NIMIS.

***Physconia perisidiosa* (ERICHSEN) MOBERG**

Hatay (31), Amanos Dağları, NE of Dörtyol, 3 km SE of Üçkoz Yaylası. 36°58'N, 36°26'E. Alt. 1700 m s. m., on bark of *Quercus cerris*, 29. 7. 1990, leg. V. JOHN (no. 9785, M).

****Placidium lacinulatum* (ACH.) BREUSS – Syn. *Catapyrenium lacinulatum* (ACH.) BREUSS**

Muğla (48), coastal rocks of Belcıkız, S Fethiye. 36°34'N, 29°05'E. Alt. 10 m s. m., on soil over calcareous rocks, 25. 3. 1982, leg. V. JOHN (no. 3466), det. O. BREUSS.

In Asia the species is known only from a few collections (BREUSS 1998).

****Placidium semaforonense* (BREUSS) BREUSS – Syn. *Catapyrenium semaforonense* BREUSS**

Muğla (48), coastal rocks of Belcıkız, S Fethiye. 36°34'N, 29°05'E. Alt. 10 m s. m., on soil over calcareous rocks, 25. 3. 1982, leg. V. JOHN (no. 9166), det. O. BREUSS.

The distribution of this species ranges from Macaronesia throughout the Mediterranean area eastwards to C Asia and it is known from E and S Africa as well (BREUSS 1998).

****Placynthium asperellum* (ACH.) TREVIS.**

İzmir (35), Bornovaçay NE of Bornova. 38°30'N, 27°14'E. Alt. 200 m s. m., on overhangs of calcareous rocks, 13. 4. 1992, leg. O. BREUSS (no. 8267).

This is a widely distributed and very variable arctic-alpine species (NIMIS 1993).

****Placynthium stenophyllum* (TUCK.) FINK var. *isidiatum* HENSSEN**

İzmir (35), Bornovaçay NE of Bornova. 38°30'N, 27°14'E. Alt. 200 m s. m., on overhangs of calcareous rocks, 13. 4. 1992, leg. O. BREUSS (no. 8294).

****Porpidia cinereoatra* (ACH.) HERTEL & KNOPH var. *percontigua* (NYL.) BOIS-SIERE & CL. ROUX**

Muğla (48), Reşadiye peninsula, macchia 4 km W of Reşadiye. 36°45'N, 27°38'E. Alt. 100 m s. m., on siliceous rocks, 30. 3. 1982, leg. V. JOHN (no. 9736), det. P. L. NIMIS. - Hatay (31), Amanos Dağları, NE of Dörtöy, 3 km SE of Üçkoz Yaylası. 36°58'N, 36°26'E. Alt. 1700 m s. m., on siliceous rocks, 17. 3. 1989, leg. V. JOHN (no. 6463, M).

***Psorotichia schaeferi* (A. MASSAL.) ARNOLD**

İzmir (35), Yamanlaradağ N of İzmir, southern slope beneath Yamanlarköy. 38°31'N, 27°07'E. Alt. 150 m s. m., on intermediate rocks, 14. 4. 1992, leg. O. BREUSS (no. 8312). - İzmir (35), Bornovaçay NE of Bornova. 38°30'N, 27°14'E. Alt. 200 m s. m., on overhangs of calcareous rocks, 13. 4. 1992, leg. O. BREUSS (no. 8285).

***Ramalina mediterranea* H. MAGN.**

Canakkale (17), west-exposed slope of a small valley east of Ayvacık; near the road Küçükkuyu to Ezine. 39°35'N, 26°37'E. Alt. 330 m s. m., on rocks of intermediate conglomerates, 12. 3. 1983, leg. V. JOHN (no. 10873), det. H. KASHIWADANI. TLC: usnic acid, obtusatic acid, evernic acid (by H. KASHIWADANI). - Muğla (48), NW of Bodrum, cliffs near the sea between Cukurbük and Gümüşlük. 37°04'N, 27°16'E. Alt. 50 m s. m., on gneiss, 23. 3. 1983, leg. V. JOHN (no. 4056, dubl. in TNS), det. H. KASHIWADANI. TLC: usnic acid, obtusatic acid, evernic acid (by H. KASHIWADANI).

***Ramalina pollinaria* (WESTR.) ACH.**

Aydın (09), Aegean region, 16 km S of Çine, N of Gökbel pass. 37°29'N, 28°09'E. Alt. 250 m s. m., on granite, 9. 3. 1989, leg. V. JOHN (no. 10500), det. H. KASHIWADANI. TLC: usnic acid, obtusatic acid, evernic acid (by H. KASHIWADANI).

****Rhizocarpon epispilum* (NYL.) ZAHLBR.**

Muğla (48), Beşparmakdağ, pass between Narhisar and Çukurköy. 37°28'N, 27°42'E. Alt. 800 m s. m., on *Pertusaria rupicola* (FR.) HARM. over gneiss, 17. 4. 1992, leg. O. BREUSS (no. 8471).

This parasitic species has a wide but scattered distribution throughout the (sub-) Mediterranean region.

***Rhizocarpon richardii* (LAMY) ZAHLBR.**

İzmir (35), Yamanlardağ N of İzmir, southern slope above Yamanlarköy. 38°32'N, 27°09'E. Alt. 700 m s. m., on intermediate rocks, 14. 4. 1992, leg. O. BREUSS (s.n.). - Muğla (48), Göktepe N of Muğla, near the top of the mountain. 37°19'N, 28°23'E. Alt. 1300 m s. m., on metamorphic slate, 1. 4. 1982, leg. V. JOHN (no. 3428), det. T. FEUERER.

****Rhizocarpon subpostumum* (NYL.) ARNOLD**

İzmir (35), Çeşme-peninsula, near the coast at the foot of Koca Dağ, between Karapınar and Balıklıova. 38°24'N, 26°37'E. Alt. 10 m s. m., on siliceous rocks, 8. 4. 1982, leg. V. JOHN (s.n.), det. T. FEUERER.

For the systematics of the *Rhizocarpon obscuratum* group see FRYDAY (2000).

****Rinodina alba* METZLER ex ARNOLD**

İzmir (35), southern slope of Yamanlar Dağ, between Karşıyaka and Yamanlar Köyü. 38°31'N, 27°08'E. Alt. 100 m s. m., on siliceous rocks, 12. 4. 1982, leg. V. JOHN (no. 5854), det. H. MAYRHOFER.

Rinodina alba is a mainly maritime Mediterranean-Macaronesian species (GIRALT & BARBERO 1995).

***Rinodina beccariana* BAGL. var. *beccariana* – Syn. *Rinodina subglaucescens* (NYL.) SHEARD**

İzmir (35), Yamanlardağ N of İzmir, southern slope above Yamanlarköy. 38°32'N, 27°09'E. Alt. 700 m s. m., on intermediate rocks, 14. 4. 1992, leg. O. BREUSS (no. 8343), det. H. MAYRHOFER. - Canakkale (17), west-exposed slope of a small valley E of Ayvacık; near the road Küçükkuyu to Ezine. 39°35'N, 26°37'E. Alt. 330 m s. m., on rocks of intermediate conglomerates, 12. 3. 1983, leg. V. JOHN (no. 10843), det. P. L. NIMIS.

Rinodina beccariana has a wide Atlantic-Mediterranean distribution (see map in MAYRHOFER & al. 1993).

***Rinodina bischoffii* (HEPP) A. MASSAL.**

Hatay (31), Amanos Dağları, vadi between Dört Yol and Erzin. 36°54'N, 36°15'E. Alt. 180 m s. m., on calcareous stones on the ground, 20. 3. 1989, leg. V. JOHN (no. 10708), det. H. MAYRHOFER.

***Rinodina capensis* HAMPE in A. MASSAL. – Syn. *Rinodina corticola* (ARNOLD) ARNOLD**
Muğla (48), Beşparmakdağ, pass between Narhisar and Çukurköy. 37°28'N, 27°42'E. Alt. 800 m s. m., on bark, 17. 4. 1992, leg. O. BREUSS (no. 8466).

***Rinodina guzzinii* JATTA – Syn. *Rinodina miocenensis* FLAGEY**

İzmir (35), Bornovaçay NE of Bornova. 38°30'N, 27°14'E. Alt. 200 m s. m., on overhangs of calcareous rocks, 13. 4. 1992, leg. O. BREUSS, det. H. MAYRHOFER.

The distribution of *Rinodina guzzinii* is centred in dry areas of SW Asia with extensions to the Mediterranean, N Africa and E Europe (MAYRHOFER 1984).

***Rinodina lecanorina* (A. MASSAL.) A. MASSAL.**

Gaziantep (27), 25 km W of Gaziantep. 37°10'N, 37°11'E. Alt. 1080 m s. m., on calcareous rocks, 26. 3. 1989, leg. V. JOHN (no. 10724), det. H. MAYRHOFER.

****Rinodina lesdainii* SAMP.**

İzmir (35), southern slope of Yamanlar Dağ, between Karşıyaka and Yamanlar Köyü. 38°31'N, 27°08'E. Alt. 100 m s. m., on siliceous rocks, 12. 4. 1982, leg. V. JOHN (no. 5855), det. H. MAYRHOFER. TLC: no lichen substances detected (J. SATTLER, Graz).

This record expands the known area of the species to the E Mediterranean (MAYRHOFER 1984, MAYRHOFER & POELT 1979).

****Rinodina obnascens* (NYL.) H. OLIVIER**

İzmir (35), Yamanlardağ N of İzmir, southern slope beneath Yamanlarköy. 38°31'N, 27°07'E. Alt. 150 m s. m., on intermediate rocks, 14. 4. 1992, leg. O. BREUSS (no. 8304).

The species is known from scattered occurrences in C and S Europe and from the Canary Islands (HAFELLNER 1995). It grows parasitically on crustose lichens.

***Rinodina parasitica* H. MAYRHOFER & POELT**

İzmir (35), Yamanlar Dağ, near Karagöl, picnic area. 38°33'N, 27°13'E. Alt. 800 m s. m., on siliceous rocks, 10. 4. 1982, leg. V. JOHN (no. 5935), det. H. MAYRHOFER.

***Rinodina poeltii* H. MAYRHOFER**

Gaziantep (27), 25 km W of Gaziantep. 37°10'N, 37°11'E. Alt. 1080 m s. m., on calcareous rocks, 26. 3. 1989, leg. V. JOHN (no. 10725), det. H. MAYRHOFER.

This is the second record from Turkey; it is known from Siirt province (MAYRHOFER 1984).

***Rinodina trachytica* (A. MASSAL.) BAGL. & CAR.**

Canakkale (17), west-exposed slope of a small valley E of Ayvacık; near the road Küçükkuyu to Ezine. 39°35'N, 26°37'E. Alt. 330 m s. m., on rocks of intermediate conglomerates, 12. 3. 1983, leg. V. JOHN (no. 10871), det. H. MAYRHOFER.

The known distribution range (map in MAYRHOFER 1984) includes several occurrences in Turkey.

****Solenopsora bagliettoana* C. TAV. – Syn. *Solenopsora cesatii* (A. MASSAL.)**

ZAHLBR. var. *grisea* (BAGL.) NIMIS

Aydın (09), northern part of Samsundağ, canyon in the Millipark. 37°42'N, 27°14'E. Alt. 100 m s. m., on calcareous rocks, 16. 4. 1992, leg. O. BREUSS (no. 8428) & G. ÇETİN.

****Solenopsora olivacea* subsp. *olbiensis* (NYL.) CLAUZ. & CL. ROUX**

Antalya (07), rocks in pine forest c. 15 km E of Kumluca, exposed hills to the south. 36°22'N, 30°22'E. Alt. 440 m s. m., on calcareous rocks, 15. 3. 1982, leg. V. JOHN (no. 10076), det. P. L. NIMIS.

***Squamarina gypsaceae* (SM.) POELT**

İzmir (35), Nifdağ E of İzmir, near to the top of the mountain. 38°23'N, 27°21'E. Alt. 1470 m s. m., on calcareous rocks, 15. 4. 1992, leg. O. BREUSS (no. 8383).

****Staurothele succedens* (REHM ex ARNOLD) ARNOLD**

İzmir (35), Bornovaçay NE of Bornova. 38°30'N, 27°14'E. Alt. 200 m s. m., on overhangs of calcare-

ous rocks, 13. 4. 1992, leg. O. BREUSS (no. 8288).

The species is widely distributed on calciferous rocks in moist sites.

***Strangospora moriformis* (ACH.) B. STEIN**

Kütahya (43), hills of a valley N of Kütahya, W of Ilıca. 39°37'N, 30°02'E. Alt. 1050 m s. m., on intermediate rocks in *Pinus nigra* forest, 1. 5. 1992, leg. V. JOHN (no. 9945).

***Synalissa symphorea* (ACH.) NYL.**

İzmir (35), Bornovaçay NE of Bornova. 38°30'N, 27°14'E. Alt. 200 m s. m., on overhangs of calcareous rocks, 13. 4. 1992, leg. O. BREUSS (no. 8263).

***Toninia albilabra* (DUFOR) H. OLIVIER**

Muğla (48), gorge near Uzunyurt, S slope of Baba Dağ, S of Fethiye. 36°31'N, 29°09'E. Alt. 350 m s. m., on calcareous rocks, 28. 3. 1982, leg. V. JOHN (no. 3491), det. P. L. NIMIS.

***Toninia diffracta* (A. MASSAL.) ZAHLBR.**

Gaziantep (27), depression 25 km W of Gaziantep. 37°10'N, 37°11'E. Alt. 1080 m s. m., on calcareous rocks, 26. 3. 1989, leg. V. JOHN (no. 10565), det. P. L. NIMIS.

****Toninia toepfferi* (B. STEIN) NAVÁS**

Aydın (09), hills S of Samailli between Beydağ and Nazilli. 38°00'N, 28°19'E. Alt. 650 m s. m., on siliceous rocks in a *Quercus* dominated area, 1. 4. 1983, leg. V. JOHN (no. 9198), det. P. L. NIMIS.

This record expands the known area of the species to the E Mediterranean (TIMDAL 1991).

***Tuckermannopsis chlorophylla* (WILLD.) HALE**

Hatay (31), Amanos Dağları, NE of Dört Yol, 3 km SE of Üçkoz Yaylası. 36°58'N, 36°26'E. Alt. 1700 m s. m., on bark of *Quercus cerris*, 29. 7. 1990, leg. V. JOHN (no. 9796, M).

****Verrucaria canella* NYL. – Syn. *Verrucaria aspiciliicola* R. SANT.**

Antalya (07), rocks in Pine forest c. 15 km E of Kumluca, exposed hills to the south. 36°22'N, 30°22'E. Alt. 440 m s. m., on calcareous rocks, 15. 3. 1982, leg. V. JOHN (no. 10081), det. P. L. NIMIS. - Antalya (07), between Antalya and Korkuteli, c. 25 km E of Korkuteli. 36°22'N, 30°22'E. Alt. 700 m s. m., on calcareous rocks, 19. 3. 1982, leg. V. JOHN (no. 9183), det. P. L. NIMIS.

This parasitical species has a predominantly Mediterranean and submediterranean distribution with outposts in northwestern Europe.

***Verrucaria fuscula* NYL.**

Antalya (07), rocks in pine forest c. 15 km E of Kumluca, exposed hills to the south. 36°22'N, 30°22'E. Alt. 440 m s. m., on calcareous rocks, 15. 3. 1982, leg. V. JOHN (in no. 10081), det. P. L. NIMIS.

***Verrucaria geophila* ZAHLBR.**

İzmir (35), rocks of a vadi E Haseki, near Karaburun. 38°39'N, 28°28'E. Alt. 35 m s. m., on calcareous soil, 17. 3. 1983, leg. V. JOHN (no. 8913), det. O. BREUSS.

This is the second record for Turkey (JOHN 2003).

***Verrucaria hochstetteri* FR.**

Antalya (07), rocks in pine forest c. 15 km E of Kumluca, exposed hills to the south. 36°22'N, 30°22'E. Alt. 440 m s. m., on calcareous soil, 15. 3. 1982, leg. V. JOHN (no. 3450).

***Verrucaria macrostoma* DC.**

Antalya (07), rocks in pine forest c. 15 km E of Kumluca, exposed hills to the south. 36°22'N, 30°22'E. Alt. 440 m s. m., on calcareous rocks, 15. 3. 1982, leg. V. JOHN (no. 10067), det. P. L. NIMIS.

***Verrucaria sphaerospora* ANZI**

İzmir (35), Bozdağ, mountain range E of Bozdağköy. 38°21'N, 28°06'E. Alt. 1700 m s. m., on siliceous rocks, 18. 4. 1992, leg. O. BREUSS (no. 8499).

****Verrucaria tabacina* (A. MASSAL.) TREVIS.**

İzmir (35), Bornovaçay NE of Bornova. 38°30'N, 27°14'E. Alt. 200 m s. m., on overhangs of calcareous rocks, 13. 4. 1992, leg. O. BREUSS (no. 8291).

This is a poorly-known and rarely collected species known from C Europe.

****Xanthoparmelia mexicana* (GYELN.) HALE**

Hatay (31), Amanos Dağları, vadi between Dörtiyol and Erzin. 36°54'N, 36°15'E. Alt. 180 m s. m., on siliceous stones on the ground, 20. 3. 1989, leg. V. JOHN (no. 6578).

The genus has recently been studied in Italy (GIORDANI & al. 2002). *Xanthoparmelia mexicana* is widely distributed in the New World and also reported from Africa, Asia and Australasia (NASH & al. 1995). In Europe it was found twice in Sardinia (GIORDANI & al. 2002, NIMIS & POELT 1987).

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