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Contributions to the lichen flora of Kastamonu and Sinop Provinces in Turkey

by

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With 1 figure

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Abstract: The present study reports 167 lichen taxa from Kastamonu province and 94 from Sinop province in Turkey. Twelve species are new to Turkey: *Acarospora heppii* (Nägeli) Nägeli, *Acrocordia salweyi* (Leight. ex Nyl.) A.L.Sm., *Arthonia punctiformis* Eschw., *Bacidia arnoldiana* Körb., *Bacidia trachona* (Ach.) Lettau, *Caloplaca concilians* (Nyl.) H.Olivier, *Candelariella athallina* (Wedd.) Du Rietz, *Enterographa elaborata* (Lyell ex Leight.) Coppins & P.James, *Eopyrenula leucoplaca* (Wallr.) R.C.Haris, *Lecanora impudens* Degel., *Staurothele caesia* (Arnold) Arnold and *Verrucaria pinguicula* A.Massal. 76 taxa are new to the province of Kastamonu and 49 are new to the province of Sinop.

Introduction

The provinces of Kastamonu and Sinop are located within the boundaries of Euxine section of the Euro-Siberian floristic region of Turkey. The research area is located between 40-42°N and 33-35°E in the western part of Black Sea region of Turkey.

The research area has different climates because of its diverse topography. The localities in the coastal area such as Abana, Ayancık, İnebolu and Sinop are influenced by a mild Mediterranean climate. Mean annual precipitation is 680-1050 mm and temperature 12-14°C. The vicinity of Kastamonu has different climatic features. While Azdavay, Daday and Devrekani districts of Kastamonu province are influenced by transition climate which resembles to Mediterranean climate, Kastamonu and Taşköprü has semi-terrestrial climate. Mean annual precipitation in these areas are 360-850 mm and temperature 8-11°C (Akman 1995).

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Various vegetation types occur depending on climate types and altitude. The narrow coastal zone and valleys from sea level to 200 m are dominant maquis elements consist of *Arbutus andrachne* L., *A. unedo* L., *Cistus creticus* L., *Myrtus communis* L., *Phillyrea latifolia* L., *Rhamnus alaternus* L., *Spartium junceum* L.. But, from 200 to 500 m, deciduous forests exist, that composed of *Carpinus betulus* L., *Castanea sativa* Mill., *Fagus orientalis* Lipsky., *Quercus pubescens* Willd., *Quercus petraea* (Matt.) Liebl. subsp. *iberica* (Steven ex M.Bieb.) Krassiln., *Q. macranthera* Fisch. & C.A.Mey. ex Hohen. subsp. *syspirensis* (C.Koch) Menitsky. *Fagus orientalis* is dominant above the zone of deciduous forest at the elevation of 500-700 m. This Fagetum zone is mixed with *Pinus nigra* Arn. subsp. *pallasiana* (Lamb.) Holmboe and *Rhododendron ponticum*. Above of 800 m, the *Fagus orientalis* and *Abies nordmanniana* (Steven) Spach subsp. *bornmuelleriana* (Mattf.) Coode et Cullen exist with *Rhododendron flavum* G.Don. *Abies nordmanniana* subsp. *bornmuelleriana* is dominant at this zone. The forest community which consists of *Pinus nigra* subsp. *pallasiana*, *P. sylvestris* L. and *Abies nordmanniana* subsp. *bornmuelleriana,* also cover an important area in the vicinity of Kastamonu (Akman 1995).

Although several studies on the lichen flora of Black Sea region of Turkey have recently been published (Aslan 2000, Aslan et al. 2002, Çobanoğlu & Akdemir 2004, John & Breuss 2004, Yazıcı 1999, 2002), detailed information on the lichen flora in Black Sea region is still incomplete. In the previous study on lichens from Kastamonu, a few species were described by Szatala (1927) and Hertel (1989). The other studies on lichens from Kastamonu province are included the regions from the Ilgaz Mountain to the Küre Mountain in the Northern regions of Kastamonu province (Öztürk & Güvenç 2003, Yıldız & John 2002). There are two studies on lichens from Sinop province. The lichens from the coastal areas have been investigated by Özdemir Türk (1997). In addition, another study has been recently completed by Yıldız et al. (2002) on the lichens of Çangal Mountain. But, these studies are still preliminary and insufficient for the information on the lichen flora of this region.

Table 1. Numbers of lichen species recorded from Kastamonu and Sinop provinces.

	Kastamonu			Sinop		
Source	Total	Similar species both previous and present study	In addition to the lichen flora of Kastamonu	Total	Similar species both previous and present study	In addition to the lichen flora of Sinop
Szatala (1927)	5	4	1			
Özdemir Türk (1997)	16	12	4	59	49	10
Yıldız et al. (2002)	66	33	33			
Yıldız & John (2002)				98	54	44
Öztürk & Güvenç (2003)	91	79	12			
Present study	167	91	76	94	45	49
Total number of taxa	217	91	126	157	54	103

Numbers of the lichen species have been gradually increased by the recent studies on lichen from Kastamonu and Sinop provinces (Table 1). The present paper aims to contribute further information on the lichen flora of Kastamonu and Sinop provinces.

Materials and methods

The lichen samples were collected from 49 localities in Kastamonu and Sinop Provinces during on 20 June 2000 and 28 July, 2001 (Figure 1). All these collections were identified with flora books (Clauzade & Roux 1985, Nash et al. 1994, Purvis et al. 1994, Wirth 1995) and monographies (Giralt 2001, Mayrhofer 1988) and are deposited in the Herbarium (BULU) of the Faculty of Science and Art, Uludag University, Bursa. Air dried specimens were examined with a stereomicroscope and a high power microscope for external morphology and anatomical observations. Sections of the ascocarps were examined and stained with Lugol's iodine.

Collection numbers and localities

The province of Kastamonu

1. Daday - Azdavay road; Ballıdağ passageway, Kavak Plateau, 1245m, 41°29'N-33°34'E, 20.07.2000.
2. Araç; entery of Kayaboğazı village, rocky area, 505 m, 41°12' N-33°01' E, 25.07.2001.
3. Araç; exit of Iğdır village, 535 m, 41°13' N-33°11'E, 25.07.2001.
4. Araç - İhsangazi road; after 6 km from Araç, near to Basköy stream, 730 m, 41°12' N-33°26' E, 25.07.2001.
5. Exit of İhsangazi, in vicinity of Kandırmaz stream, 915 m, 41°10'N-33°32'E, 25.07.2001.
6. After 3 km from Kuzyaka village, 945 m, 41°15'N-33°45'E, 25.07.2001.
7. Kastamonu - Ilgaz road; in vicinity of Terziköy village, *Pinus sylvestris* forest, 960-1020 m, 41°17'N-33°48'E, 25.07.2001.
8. Kırcalar village, 710 m, 41°25'N-33°46'E, 26.07.2001.
9. After 1 km from Kastamonu - Devrekani road junction, 1025 m, 41°34'N-33°46' E, 26.07.2001.
10. Devrekani - Abana road; after 10 km from Hacıhasan village, rocky area, 1300 m, 41°38'N-33° 50'E, 26.07.2001.
11. Devrekani - Abana road; Yaralıgöz passageway, 1250-1300 m, 41°41'N-33°56'E, 26.07.2001.
12. Devrekani - Abana road, in vicinity of Esentepe village, 1310 m, 41°49'N-34°05'E, 26.07.2001.
13. Devrekani - Abana road; in vicinity of Odayboğazı, entery of Arpalıkbaşı, 810 m, 41°50'N-34°05'E, 26.07.2001.
14. Devrekani - Abana road; 3 km to Bozkurt district, 370 m, 41°55'N-34°04'E, 26.07.2001.
15. İnebolu - Küre road; after 7 km from İnebolu, location of Yukarı çaylı , 400 m, 41°56'N-33°45' E, 27.07.2001.
16. İnebolu - Küre road; after 5 km from Çuhadoruğu passageway, 750 m, 41°48'N-33°41'E, 27.07.2001.
17. İnebolu - Küre road; after 13 km from İnebolu, 715 m, 41°53'N-33°43'E, 27.07.2001.
18. İnebolu - Küre road; after 3 km from İnebolu, in vicinity of İkiçay stream, 60 m, 41°57'N-33° 45'E, 27.07.2001.

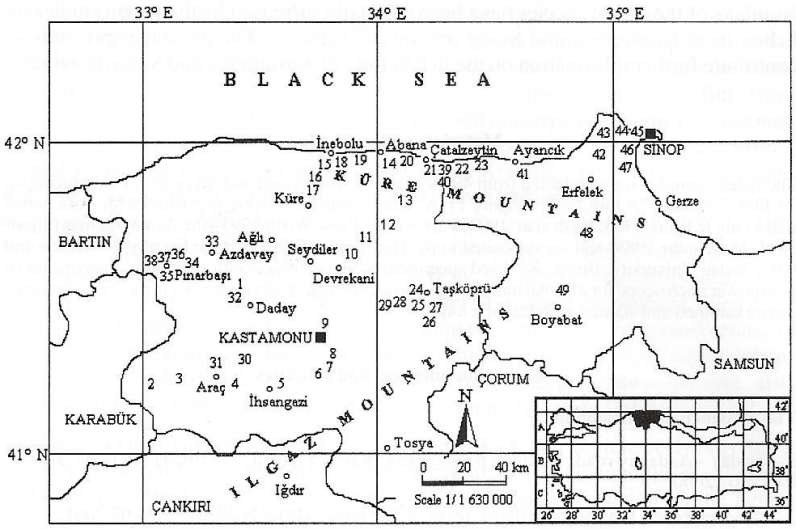


Figure 1. The localities in the study area.

19. İnebolu - Abana road; junction of İkizler village, border of stream, 20 m, 41°57'N-33°53'E, 27.07.2001.
20. Abana - Sinop road; after 14 km from Abana, 130 m, 41°57'N - 34°07'E, 27.07.2001.
21. After 6 km from Çatalzeytin; in vicinity of Moganaltı stream, 10 m, 41°54'N - 34°15' E, 27.07.2001.
22. Çatalzeytin - Sinop road; after 6 km from Güzelkent, border of stream, 70 m, 41°54'N - 34°23' E, 27.07.2001.
23. Çatalzeytin - Sinop road; in vicinity of Topağaç village, 130 m, 41°53'N - 34°26'E, 27.07.2001.
24. Taşköprü; garden of Seka Paper Factory, 490 m, 41°31'N - 34°13'E, 29.07.2001.
25. After 4 km from Taşköprü - Tosya road junction, 575 m, 41°29'N - 34°13'E, 29.07.2001.
26. Taşköprü - Tosya road; after 18 km from Taşköprü, 910 - 1030 m, 41°21'N - 34°14'E, 29.07.2001.
27. Taşköprü - Tosya road; after 2 km from Bayırlı village junction, 840 m, 41°23'N - 34°15'E, 29.07.2001.
28. Taşköprü - Kastamonu road; Akdoğan village, 620 m, 41°31'N - 34°08'E, 29.07.2001.
29. Taşköprü - Kastamonu road; 20 km to Kastamonu, next to Gölveren stream, 655 m, 41°29'N - 34°01'E, 29.07.2001
30. Kastamonu - Araç road; 27. km, border of Kanlıgöl stream, 1015 m, 41°18'N - 33°26'E, 30.07.2001.
31. Araç - Daday road; after 8 km from Araç, 980 m, 41°21'N - 33°19'E, 30.07.2001.
32. Daday - Azdavay road; before 24 km from Azdavay, Ballıdağ passageway, 1550 m, 41°34'N - 33°24'E, 30.07.2001.

33. Azdavay, 800 m, 41°38'N - 33°18'E, 30.07.2001.

34. Azdavay - Pınarbaşı road; Pınarbaşı junction, 780 m, 41°37'N - 33°16'E, 30.07.2001.

35. Entry of Pınarbaşı, 745 m, 41°36'N - 33°08'E, 30.07.2001.

36. Pınarbaşı district; after 7 km from Demirtaş village, 975 m, 41°38'N - 32°59'E, 24.08.2002.

37. Pınarbaşı; in vicinity of Kayabükü village, 825 m, 41°37'N - 33°00'E, 24.08.2002.

38. Pınarbaşı; in vicinity of Uzunçam village, 670-680 m, 41°36'N - 33°04'E, 24.08.2002.

The province of Sinop

39. Çatalzeytin - Sinop road; in vicinity of Büyükdüz village, 355 m, 41°52'N - 34°30' E, 27.07.2001.

40. Çatalzeytin - Sinop road; in vicinity of İkisu stream at Tevhikiye village, 80 m, 41°53'N - 34°36' E, 27.07.2001.

41. Ayancık; Yeşilyurt village, 90 m, 41°53'N - 34'36'E, 27.07.2001.

42. Sarıkum village, *Fraxinus* forest, 10 m, 41°55'N - 34°58'E, 27.07.2001.

43. İnce Burun; forest area, 75 m, 42°06'N - 34°56'E, 28.07.2001.

44. İnceburun; in vicinity of Abalı village, 10 m, 42°04'N - 35°03'E, 28.07.2001.

45. In vicinity of Akliman, 15 m, 42°03'N - 35°04'E, 28.07.2001.

46. In vicinity of Sinecan village, 350 m, 41°48'N - 35°02'E, 28.07.2001.

47. Gerze; in vicinity of Çakıldak village, *Abies* forest, 1235 m, 41°47'N - 34°51'E, 28.07.2001.

48. Boyabat; in vicinity of Akçakese village, 1060 m, 41°34'N - 34°48'E, 28.07.2001.

49. Boyabat; after Koçak village, near to Fevzi Çakmak stream, 355 m, 41°35'N - 34°39'E, 28.07.2001.

Results

The taxa are listed in alphabetical order, followed by locality, substrate and herbarium number. Author names are abbreviated according to Brummitt & Powell (1992). Lichen taxa new to Turkey are indicated by #, those new to the Black sea region of Turkey by •, those new to Kastamonu province by * and those new to Sinop province by +.

+ **Acarospora cervina** A.Massal.

A widespread holarctic calcareous lichen. This lichen has widespread from sea level to mountain regions in Turkey. It is reported from Kastamonu and Çorum provinces in the Black sea region of Turkey (Çobanoğlu & Akdemir 2004, Yıldız & John 2002). Loc. 10, 11, 49: calcareous rock (4883, 4918, 5205).

Acarospora heppii (Nägeli) Nägeli

Thallus saxicolous, effuse, very thin, mostly scarcely visible, indistincly areolate, rarely minutely warted, pale brown to whitish grey. Apothecia mm diam., single, rarely 2- to 3- contiguous, regularly rounded, pale reddish brown, rarely grey-white, disc concave, surroumded by a ± concolorous or ± white- or green-pruinose true exciple, c. 0.2-0.4(-0.6) mm in size, hymenium 80-120 µm, paraphyses very thin,

0.5-1 µm at base, 1.5 µm at the tips, branched and anastomosing, ascus with K/I blue apical dome. Ascospores 3-6 × 1.5-3 µm, shortly ellipsoid. Thallus Pd-, K-, KC-, C-; no lichen substances detected by TLC (Purvis et al. 1994).

This species grows on calcareous rock from Boreal to submediterranean and Mediterranean region (Wirth 1995). - Loc. 49: calcareous rock (5211).

***, + Acarospora smaragdula** (Wahlenb.) A.Massal.

This cosmopolitan species has common and widespread from sea level to high montane area in Turkey. Loc. 6, 18: siliceous rock (4806, 5023); loc. 48: poorly calcareous rock (5197).

• Acrocordia gemmata (Ach.) A.Massal.

This species grows on rough bark of mature trees in woodlands or open situations from subboreal to Mediterranean mountains belt (Purvis et al. 1994, Wirth 1995). It is reported only from Hatay and Istanbul provinces (John 1996, John & Nimis 1998, Steiner l899, Szatala 1927). Loc. 21: *Platanus* sp. (5040); loc. 39: *Carpinus* sp. (5067).

 # Acrocordia salweyi (Leight. ex Nyl.) A.L.Sm.

Thallus ± immersed, whitish to pale brownish grey, thin, granular or smooth to rimose. Perithecia 0.7-1.5 mm diam., ¼ to ½ immersed; involucrellum tightly incurved around the exciple and often continuous below. Ascospores 20-35 × 10-15 µm. Pycnidia 0.2-0.3 mm diam., usually few.

A calcicolous species seems to distribution from Central European to Mediterranean region (Wirth 1995). - Loc. 45: calcareous rock (5130).

+ Anaptychia ciliaris (L.) Körb.

A widespread and common species in Turkey (John 1992, 1995). Loc. 9: *Populus* sp. (4860), *Salix* sp. (4859); loc. 12, 31, 48: *Quercus* sp. (4953, 5376, 5180).

Anaptychia setifera (Mereschk.) Räsänen

Recently, this species has been recorded only from the Black sea region of Turkey (Özdemir Türk 1997, Yazıcı 1999, 2002, Yıldız & John 2002). Loc. 37: *Crataegus* sp. (6060).

 # Arthonia punctiformis Eschw.

Thallus immersed, usually effuse, indistinct or slightly 'bleaching' the bark. Photobiont absent. Apothecia 0.2-1.4 × 0.1-0.4 mm, roundlish, elliptic to linear, rarely branched or substellate, black, not pruinose, usually immersed then erumpent and often with a thin margin of bark tissue; in section 40-60 µm tall; epithecium brown or olive- brown, K+ greenish; hymenium 26-50 µm tall, colourless; thickened to 3.5 µm wide with dark brown walls. Ascospores 13-23 × (4-)5-7 µm, 3(5)-septate, oblong-ovoid to oblong; apical cell not enlarged, colourless. Pycnidia not found (Purvis et al. 1994).

From Subboreal to the Mediterranean region, it grows on smooth bark of a wide variety of trees and shrubs, ranging from sea level to high mountain areas (Purvis et al. 1994, Wirth 1995). - Loc. 28: *Armeniaca* sp. (5311).

***, + Arthonia radiata** (Pers.) Ach.

This species is known from the Mediterranean region (John & Nimis 1998) and Black sea region of Turkey (Çobanoğlu & Akdemir 2004, John & Breuss 2004). Loc. 11: *Abies sp.* (4930); loc. 15: *Castanea* sp. (5000); loc. 19: *Fagus* sp. (5026); loc. 36: *Carpinus* sp. (6040); loc. 43: *Quercus* sp. (5104); loc. 47: *Abies* sp. (5162).

Aspicilia caesiocinerea (Nyl. ex Malbr.) Arnold

A common and widespread lichen in Turkey (John 1996, Aslan 2000, Aslan et al. 2002). Loc. 4: poorly calcareous rock (4782); loc. 32: siliceous rock (5403).

+ Aspicilia calcarea (L.) Mudd

This lichen of calcareous rocks, southern temperate to Mediterranean distribution, is a common and widespread in Turkey (Nimis & John 1998). Loc. 10, 11, 15, 30, 35, 40, 49: calcareous rock (4884, 4938, 5006, 5349, 5455, 5073, 5206).

Aspicilia cinerea (L.) Körb.

A common and widespread lichen of siliceous rocks in Turkey (Nimis & John 1998). Loc. 17: siliceous rock (5015).

Aspicilia contorta (Hoffm.) Kremp.

A common and widespread calcicolous lichen in Turkey (Nimis & John 1998). Loc. 1, 31, 34, 38, 40, 49: calcareous rock (6105, 5384, 5430, 6090, 5069, 5212).

Aspicilia farinosa (Flörke) Motyka

A calcicolous species of the southern European and Mediterranean montane belts. It is common in the Mediterranean region of Turkey (John 1996). There is only one record from Black sea region of Turkey (Yı ldı z & John 2002). Loc. 38: calcareous rock (6076).

+ Bacidia fraxinea Lönnr.

This lichen is locally abundant in several parts of Mediterranean region with a rather humid climate. It is frequently found on deciduous trees with base-rich bark, such as *Fraxinus* and *Acer* (Nimis & John 1998). Up to the present time, there are two records from the Mediterranean region of Turkey (John 1996, Nimis & John 1998). Loc. 42: *Fraxinus* sp. (5082).

Bacidia rosella (Pers.) De Not.

A southern temperate to Mediterranean mountain species. It is much common than *B. fraxinea* from Turkey (Steiner 1899, Özdemir Türk & Güner 1998, John 1996, Nimis & John 1998, Yıldız & John 2002). Loc. 11: *Abies* sp. (4932).

 # Bacidia trachona (Ach.) Lettau

Thallus thin, rimose, pale grey-green or fawn, surface minutely granular-warted, rarely thicker and minutely leprose-granular. Apothecia 0.2-0.5 mm diam., often absent, sessile, flat, black; true exciple persistent; epithecium dark green, K (-), N (+) red; hymenium 40-50 µm tall, pale reddish brown below, pale green above; hypothecium and true exciple dark red-brown, K+ purplish. Paraphyses 1-1.5 µm wide, concorted and often branched or anastomosing, the apices to 2 µm, not or only slightly swollen. Ascospores 11-17(20) × 3-5 µm, 1-3-septate, fusiform. Pycnidia 100-300 µm diam., ± sessile, black; conidia 3-5 × 1-1.5 µm, short-bacilliform, often biguttulate (Purvis et al. 1994).

This species grows on calcareous and base-rich siliceous rocks from Boreal to Mediterranean region (Wirth 1995). Loc. 21: calcareous rock (5043).

 # Bacidina arnoldiana (Körb.) V.Wirth & Vģzda

Thallus dull yellowish gren to fawn, finely granular; Apothecia 0.35-0.7(-1.2) mm diam., usually few and scattered, or absent, flat, whitish grey to grey-brown; true exciple raised, usually paler and often ± white-pruinose; inner part concolorous with hypothecium, the outher part colourless; hyphae towards outer part with ellipsoid lumina 3-7 × 1.5-5 µm; hymenium (35)40-50 µm tall, colourless; hypothecium dark reddish brown, K+ dull olivaceous brown. Paraphyses 1-2 µm wide, simple, or a few forked above; apices often swollen to 5 µm. Ascospores (19) 24-46 × 1-2 µm, thinly 1- to 3-septate, acicular. Pycnidia 100-200 µm diam., white, ± immersed; conidia 26-47 × 1-1.5 µm, curved (Purvis et al. 1994).

It is grown on calcareous rocks from Central European to Mediterranean submountains region (Wirth 1995). Loc. 45: on calcareous rock (5127).

Bagliettoa parmigera (J.Steiner) Vģzda & Poelt

It is a mainly Submediterranean species of calcareous rocks, which also occurs within evergreen Mediterranean vegetation (John 1996, John & Nimis 1998, Nimis & John 1998). At first, it was recorded from Kastamonu province in the Black sea region of Turkey (Öztürk & Güvenç 2003). Loc. 6, 10, 11, 15, 38: calcareous rock (4812, 4886, 4945, 5009. 6088).

Bryoria capillaris (Ach.) Brodo & D.Hawksw.

A common epiphytic species of the Submediterranean and Mediterranean montane belts (Öztürk 1992, Aslan 2000, Yıldız et al. 2002). Loc. 47: *Abies* sp. (5163).

Bryoria fuscescens (Gyeln.) Brodo & D.Hawksw.

This epiphytic species shown to distribution from the Submediterranean to Mediterranean mountain belts is common in Turkey (Aslan et al. 2002, Yıldız et al. 2002, Yazıcı & Aslan 2003). Loc. 12: *Quercus* sp. (4952); loc. 26: *Pinus* sp. (5269); loc. 32, 47: *Abies* sp. (5399, 5160).

• **Caloplaca aurantia** (Pers.) Hellb.

A common and widespread calcicolous lichen seems to distribution from southern temperate to Mediterranean is found mainly in the Mediterranean region of Turkey (John 1996). Loc. 38: calcareous rock (6077).

Caloplaca cerina (Ehrh. ex Hedw.) Th.Fr.

A common corticolous species with a wide ecological range. This species is common and widespread in Turkey (John 1992, 1995). Loc. 8: Garden fence (4852), *Malus* sp. (4851); loc. 9: *Populus* sp. (4871); loc. 11: *Abies* sp. (4904); loc. 21: *Juglans* sp. (5034); loc. 26: *Salix* sp. (5258); loc. 31: *Pyrus* sp. (5371); loc. 48: *Quercus* sp. (5168).

* **Caloplaca cerinella** (Nyl.) Flagey

Compared with the previous species, less common than of it (John 1996, John & Breuss 2004). Loc. 13: *Juglans* sp. (4972); 41: *Quercus* sp. (5074).

Caloplaca chalybaea (Fr.) Müll.Arg.

A common calcicolous species (John 1992, 1995, 1996). Loc. 11, 26, 30: calcareous rock (4916, 5281, 5350).

\# **Caloplaca concilians** (Nyl.) H.Olivier

Thallus crustose, dark grey to black, thick, coarsely rimose-areolate, the surface irregular. Apothecia to 0.8 mm diam., crowded, discrete or contiguous, ± rounded, flat at first, becoming markedly convex; thalline exciple even but later excluded, dark rust-red, reddish black. Paraphyses branched, with narrow or clavate apices. Ascospores 12-17 × 6-9 µm, broadly ellipsoid, the septum about 1/3 of the length of the ascospore. Thallus K (-), apothecia K (+) violet-red. On schistose coastal and montane rocks (Purvis et al. 1994).

This species is found on poorly calcareous rock above 800m in the province of Sinop. Loc. 48: poorly calcareous rock (5194)

Caloplaca crenularia (With.) J.R.Laundon

A common and widespread silicicolous species (Nimis & John 1998). Loc. 6: siliceous rock (4811).

• **Caloplaca demissa** (Körb.) Arup & Grube

This lichen which is known as *Lecanora demissa* inhabits sunny, dry, vertical siliceous rocks and has a wide distribution ranging from North America to Europe and Asia. It is found mainly in the Mediterranean region of Turkey (John 1996, Nimis & John 1998). Loc. 49: poorly calcareous rock (5207).

\+ **Caloplaca dolomiticola** (Hue) Zahlbr.

This species is a very common in the Mediterranean areas in Turkey (John 1996). It has recently been recorded from the Black sea region of Turkey (Çobanoğlu &

Akdemir 2004, John & Breuss 2004, Öztürk & Güvenç 2003, Yıldız & John 2002). Loc. 30: calcareous rock (5351); loc. 48: poorly calcareous rock (5188).

Caloplaca ferruginea (Huds.) Th.Fr.

A common southern temperate epiphytic lichen of subacidic bark (Nimis & John 1998). It is a common species in Turkey. Loc. 31: *Pinus* sp. (5360).

*** Caloplaca flavorubescens** (Huds.) J.R.Laundon

It is a common epiphytic species in Turkey (John 1992, 1995). Loc. 3: *Quercus* sp.(4754); loc. 26: *Salix* sp. (5250).

Caloplaca flavovirescens (Wulfen) Dalla Torre & Sarnth.

It is a common calcicolous species in Turkey (John 1992, 1995). Loc. 36: Calcareous rock (6027).

Caloplaca herbidella (Hue) H.Magn.

This epiphytic lichen is shown distribution from Boreal to Mediterranean mountane belts. Up to the present time, this species has been reported from the Mediterranean region (John 1996) and on coniferous trees from Black sea region of Turkey (Çobanoğlu & Akdemir 2004, John & Breuss 2004, Öztürk & Güvenç 2003, Yıldız et al. 2002). Loc. 32: *Abies* sp. (5395).

Caloplaca holocarpa (Hoffm.) A.E.Wade

A common and widespread species in Turkey (John 1992, 1995). Loc. 1, 7, 10, 31, 34, 46: calcareous rock (6104, 4825, 4887, 5382, 5428, 5151); loc. 3, 38: Garden fence (4762, 6097); loc. 4, 12: *Quercus* sp.(4776, 4960); loc. 5, 23, 24, 26, 33: *Populus* sp. (4793, 5053, 5213, 5255, 5411); loc. 6, 26, 30: *Salix* sp. (4801, 5254, 5343); loc. 7: *Pinus sylvestris* (4837); loc. 8, 49: *Malus* sp. (4853, 5200); loc. 11: *Abies* sp. (4906); loc. 13, 21, 28: *Juglans* sp. (4973, 5039, 5317); loc. 37: *Crataegus* sp. (6065); loc. 48: poorly calcareous rock (5192).

+ Caloplaca lactea (A.Massal.) Zahlbr.

A common and widespread calcicolous species in Turkey. Recently, it has been reported from the provinces of Bolu, Çorum and Kastamonu in the Black sea region of Turkey (Çobanoğlu & Akdemir 2004, Öztürk & Güvenç 2003). Loc. 2, 11, 26, 31, 35, 38, 40: calcareous rock (4744, 4937, 5280, 5383, 5452, 6087, 5071).

*** Caloplaca lobulata** (Flörke) Hellb.

This epiphytic species has seldom distribution from sea level to mountane region in Central Europe to Mediterranean belt (Wirth 1995). Up to the present time, it is recorded two times from Turkey (John 1999, Öztürk & Güvenç 2003). Loc. 8: *Malus* sp. (4850).

+ Caloplaca saxicola (Hoffm.) Nordin

It is a widespread saxicolous species in Turkey (John 1992, 1995). Loc. 48: poorly calcareous rock (5198).

+ Caloplaca variabilis (Pers.) Müll.Arg.

This calcicolous species is common in Turkey (John 1992, 1995). In the studies from Black sea region of Turkey, it is collected from the western part of the Black sea region (Yıldız & John 2002, Öztürk & Güvenç 2003, Çobanoğlu & Akdemir 2004). Loc. 4, 10, 11, 30, 35, 38, 48: calcareous rock (4781, 4881, 4915, 5348, 5450, 6085, 5191).

*** Candelaria concolor** (Dicks.) Stein

A Subboreal to Mediterranean epiphytic species has been collected from the montane area in different regions of Turkey (Yazıcı 1999, Yazıcı & Aslan 2003). Loc. 7: *Salix* sp. (4822).

 # Candelariella athallina (Wedd.) Du Rietz

Thallus granulose, granules 0.1 mm diam. egg yellow colour. Apothecia 0.2-0.7 mm diam., apothecia concolorous with thallus, thalline exciple even or crenulate; ascus 12-32 spored, ascospores 9-12 × 4-6 µm. On rocks (Clauzade & Roux 1985). - Loc. 15: calcareous rock (5001).

Candelariella aurella (Hoffm.) Zahlbr.

A cosmopolitan species of calcareous substrata. It is the commonest species of *Candelariella* in Turkey (John 1992, 1995). Loc. 4, 6, 11, 15, 26, 34, 35, 38, 46, 49: calcareous rock (4778, 4801, 4917, 5003, 5283, 5429, 5451, 6081, 5142, 5202)

Candelariella vitellina (Hoffm.) Müll.Arg.

This cosmopolitan species is found on siliceous rocks from sea level to mountain areas. It is mainly found on bark in the study area. It is one of the commonest species of *Candelariella* in Turkey (John 1992, 1995). Loc. 4: *Quercus* sp.(4774); loc. 6, 26: siliceous rock (4807, 5296); loc. 8: Garden fence (4846), *Malus* sp. (4845); loc. 11: *Abies* sp. (4907); loc. 13, 25, 33: *Populus* sp. (4983, 5238, 5412); loc. 28: *Armeniaca* sp. (5304); loc. 31: *Pinus* sp. (5363); loc. 46: *Pistacia* sp. (5138).

*** Candelariella xanthostigma** (Pers. ex Ach.) Lettau

Widespread temperate epiphytic lichen is shown to distribution at the areas influenced by a Mediterranean climate in Turkey (John 1996; Nimis & John 1998, Özdemir Türk & Güner 1998). Loc. 24: *Abies* sp. (5225); loc. 25: *Populus* sp. (5238).

*** Catapyrenium rufescens** (Ach.) Breuss

This calcicolous species is shown to distribution from Subboreal to Mediterranean and it is rarely known from Turkey (Szatala 1960, Çiçek & Özdemir Türk 1998, Yazıcı 1999, Güvenç & Öztürk 2004). Loc. 38: calcareous rock (6074).

Catillaria chalybeia (Borrer) A.Massal.

This species grows on siliceous and calcareous rocks, has a holarctic distribution in the Northern Hemisphere. Common in Turkey (John 1996, John & Nimis 1998, Nimis & John 1998, John & Breuss 2004). Loc. 31: calcareous rock (5380).

* **Cetraria aculeata** (Schreb.) Fr.

A widespread terricolous lichen which is usually found on acid soil. It is a common species in Turkey (John 1995, 1996, Aslan 2000). Loc. 10: soil (4875).

Cetraria islandica (L.) Ach.

A widespread terricolous lichen which is usually found on acid soil, especially in wind-swept habitats. It is a common species especially high mountain area in Turkey (John 1992, Yıldız & John 2002, Yazıcı 2002, Çobanoğlu & Akdemir 2004). Loc. 10: soil (4874).

* **Chrysothrix candelaris** (L.) J.R.Laundon

A widespread epiphytic lichen of acid bark is distribution from subboreal to Mediterranean region (Wirth 1995). It is common in the Mediterranean and Black sea regions of Turkey (Nimis & John 1998, Yıldız et al. 2002). Loc. 11, 47: *Abies* sp. (4927, 5153).

* **Cladonia cervicornis** (Ach.) Flot.

A Boreal to Mediterranean terricolous lichen is reported from Bartın and Rize provinces in the Black sea region of Turkey (Öztürk & Güvenç 2003, John & Breuss 2004). It is common in the Mediterranean Turkey (John 1996, Nimis & John 1998). Loc. 32: Together with moss on siliceous soil (5396).

* **Cladonia convoluta** (Lam.) Cout.

This terricolous lichen is common throughout the Mediterranean region, from the eu-Mediterranean to the Mediterranean-montane belts (Nimis & John 1998). It is common in Turkey (John 1992, 1995). Loc. 10: soil (4876).

Cladonia fimbriata (L.) Fr.

This pantemperate species is common in Turkey (John 1992, 1995). Loc. 31: bark of *Pinus* sp. (5378).

Cladonia foliacea (Huds.) Willd.

This silicicolous lichen has a Central European - Mediterranean distribution (Wirth 1995). It is more common from sea level to hign mountain area in Turkey (John 1995, 1996). Loc. 26: Together with moss on siliceous soil (5287).

Cladonia pyxidata (L.) Hoffm.

Chemically and morphologically variable this lichen is a very common and widespread with broad ecological amplitude in Turkey (Nimis & John 1998). Loc. 4: Together

with moss on soil (4765); loc. 11: base of stem of *Pinus sylvestris* (4924); loc. 26: Together with moss on siliceous rock (5289).

Cladonia rangiformis Hoffm.

This species shown to distribution from Subboreal to Mediterranean - montane belt, is common in Turkey (John 1996). Loc. 10, 26: siliceous soil (4877, 5286).

+ Clauzadea monticola (Ach.) Hafellner & Bellem.

Widespread calcicolous lichen is poorly known to distribution in Turkey (Steiner 1909, Szatala 1960, Nimis & John 1998, Öztürk & Güvenç 2003). Loc. 46: calcareous rock (5148).

*** Collema crispum** (L.) Weber ex F.H.Wigg.

It is common almost completely of Turkey (John 1992, 1995, 1996). Loc. 2: calcareous soil (4745); loc. 10, 11, 15, 35: calcareous rock (4892, 4943, 5005, 5456).

Collema cristatum (L.) Weber ex F.H.Wigg.

This calcicolous lichen is common almost completely of Turkey (John 1996, Nimis & John 1998). Loc. 38: calcareous rock (6091).

*** Collema polycarpon** Hoffm.

Common calcicolous lichen occurring from sea level to high mountain area in Turkey is only found to record from Trabzon province in the Black sea region of Turkey (Yazıcı 1999). Loc. 38: calcareous rock (6078).

*** Dermatocarpon miniatum** W.Mann

This species occurring from sea level to high mountain area is common in the Black sea region and the other regions of Turkey (John 1996, Yazici 1999, Aslan 2000). Loc. 38: calcareous rock (6093).

*** Diploschistes scruposus** (Schreb.) Norman

A widespread and polymorphic silicicolous species is common in Turkey. Loc. 26: siliceous rock (5297).

Diplotomma alboatrum (Hoffm.) Flot.

This species seems to be mainly coastal belt in the Mediterranean region of Turkey (John 1996) is reported within the boundaries of Euxine section of the Euro - Siberian floristic region of Turkey (Özdemir Türk 1997, Öztürk & Güvenç 2003). Loc. 37: *Crataegus* sp. (6062); loc. 48: *Quercus* sp. (5179).

***, + Diplotomma epipolium** (Ach.) Arnold

This species which is known as common in Turkey (John 1992, 1995) is the second times found from the Black sea region. Loc. 10, 48, 49: calcareous rock (4882, 5190, 5203).

 # Enterographa elaborata (Lyell ex Leight.) Coppins & P.James

Thallus pale pink-brown to pallid brown, brownish green-grey, densely granular-refractive, K+ dissolving. Apothecia lireate, 1-5 × 0.1-0.2 mm, ± immersed in thallus, often branched or stellate. Ascospores (42-)49-65 × 3.5-4.5 µm, 9-16 septate, often ± curved, needle shape, colourless, with a thin perispore. Thallus Pd (+)yellow-orange, K- or faint yellow, C-.

On shaded bases and trunks of mature or senescent broad-leaved trees, ± especially on *Fagus* (Clauzade and Roux 1985, Purvis et al. 1994).

This species distinguished by the large size of ascospores, septate number more than 9 and thallus P(+) yellow - orange from the other *Enterographa* species (*E. hutchinsiae*, *E. zonata*) which is found in Turkey (John & Nimis 1998, John & Breuss 2004). ¾ Loc. 45: *Quercus* sp. (5123).

 # Eopyrenula leucoplaca (Wallr.) R.C.Haris

Thallus immersed, smooth, whitish to pale grey. Photobiont present. Perithecia 0.2-0.3 mm diam., ± globose, without involucrellum. Ascospores (13)18-26(32) × 6.5-10(12) µm, brown, ellipsoid to clavate-fusiform, (1-)3- to 5(-7)- septate; septa dark; middle two cells darkest and the outer cells progressively paler. Macrogonidia 6.5-9.5 × 3-4 µm, ellipsoid, ovoid or pryform, (0-)1- septate, the septum pale; microgonidia 6-10 × 0.5-0.7 µm, filiform.

From Subboreal to Central Europe occurs on without resin bark in old woodland (Clauzade and Roux 1985, Purvis et al. 1994, Wirth 1995). - Loc. 15: *Castanea* sp. (4999); loc. 41, 45: *Quercus* sp. (5075, 5122); loc. 44: Garden fence (5112).

Evernia prunastri (L.) Ach.

A common epiphytic lichen. Loc. 3, 12, 31, 43, 45, 48: *Quercus* sp. (4748, 4948, 5354, 5099, 5121, 5166); loc. 7: *Pinus sylvestris* (4827); loc. 25: *Prunus* sp. (5233); loc. 26, 31: *Pinus* sp. (5264, 5353); loc. 26: *Salix* sp. (5239); loc. 33, 39: Garden fence (5404, 5062); loc. 35: *Agrostemma* sp. (5433); loc. 35, 42: *Crataegus* sp. (5432, 5088); loc. 47: *Abies* sp. (5154).

*** Flavoparmelia caperata** (L.) Hale

A common epiphytic lichen. Loc. 20: *Pinus* sp. (5032); loc. 42: *Crataegus* sp. (5085); loc. 43: *Quercus* sp. (5095); loc. 44: Garden fence (5110).

Graphis scripta (L.) Ach.

A common epiphytic lichen. Loc. 39: *Carpinus* sp. (5066).

*** Gyalecta truncigena** (Ach.) Hepp

A less known species from Turkey. So far, it has been recorded only from the provinces of İstanbul (Steiner 1899) and Trabzon (John & Breuss 2004). Loc. 21: *Platanus* sp. (5041).

* **Hafellia disciformis** (Fr.) Marbach & H.Mayrhofer

This epiphytic lichen which is distribution from Boreal to Mediterranean mountains belt, often found from the Marmara (Steiner 1916) and the Black sea regions of Turkey (Yıldız et al. 2002, John & Breuss 2004). Loc. 16: *Quercus* sp. (5010); loc. 37: *Carpinus* sp. (6071); loc. 39: Garden fence (5064).

* **Hyperphyscia adglutinata** (Flörke) H.Mayrhofer & Poelt

A poorly known species (John & Nimis 1998, Aslan 2000, Çobanoğlu & Akdemir 2004). Loc. 21: *Juglans* sp. (5038).

Hypogymnia physodes (L.) Nyl.

A common epiphytic lichen in Turkey (John 1992, 1995). Loc. 7, 11: *Pinus sylvestris* (4829, 4923); loc. 11, 32, 47: *Abies* sp. (4922, 5391, 5155); loc. 26, 31: *Pinus* sp. (5266, 5355); loc. 36: *Carpinus* sp. (6036); loc. 43: *Quercus* sp. (5094).

Hypogymnia tubulosa (Schaer.) Hav.

A common epiphytic lichen in Turkey (John 1992, 1995). Loc. 7: *Pinus sylvestris* (4828); loc. 11: *Abies* sp. (4894); loc. 26, 31: *Pinus* sp. (5267, 5356).

Lecania fuscella (Schaer.) Körb.

This epiphytic lichen is often found in the area influenced by Mediterranean climate in Turkey (Güvenç & Öztürk 1998, Karabulut & Özdemir Türk 1998). Recently, it has been recorded from the Western part of Black sea region of Turkey (Öztürk & Güvenç 2003, Çobanoğlu & Akdemir 2004). Loc. 3: *Crataegus* sp. (4760); loc. 5: *Populus* sp. (4790); loc. 11: *Abies* sp. (4931); loc. 29: *Juglans* sp. (5326), *Populus* sp. (5325).

* **Lecania rabenhorstii** (Hepp) Arnold

This species is uncommon in Turkey. There is only one record from Bolu province (Çobanoğlu & Akdemir 2004). Loc. 36: calcareous rock (6030).

* **Lecania turicensis** (Hepp) Müll.Arg.

This calcicolous lichen has been given to be a new record for Turkey in a short time ago by John (2003). Loc. 10: calcareous rock (4890).

Lecanora albella (Pers.) Ach.

This epiphytic lichen common in the Northern Anatolia (Aslan 2000, Yazıcı et al. 2002). Loc. 43: *Quercus* sp. (5101).

*, + **Lecanora albescens** (Hoffm.) Branth & Rostr.

A common calcicolous lichen. Loc. 26, 46, 49: calcareous rock (5282, 5145, 5210).

* **Lecanora allophana** (Ach.) Nyl.

This epiphytic lichen which is distribution from Boreal to Mediterranean mountains belt, is uncommon in Turkey (Steiner 1909, Çiçek & Özdemir Türk 1998). Loc. 26: *Salix* sp. (5262).

Lecanora argentata (Ach.) Malme

This epiphytic species is common in Turkey (John 1992, 1995). Loc. 3: *Quercus sp.*(4755); loc. 4: *Pinus* sp. (4767); loc. 26: *Salix* sp. (5246); loc. 30, 33: *Populus* sp. (5336, 5414); loc. 34: *Corylus* sp. (5423); loc. 35: *Crataegus* sp. (5440); loc. 49: *Malus* sp. (5199).

* **Lecanora campestris** (Schaer.) Hue

This species is common in Turkey (John 1992, 1995). Loc. 6: siliceous rock (4803).

Lecanora carpinea (L.) Vain.

This epiphytic species is common in Turkey (John 1992, 1995). Loc. 4, 12, 14, 16, 27, 48: *Quercus* sp.(4773, 4956, 4996, 5012, 5300, 5170); loc. 8: *Malus* sp. (4844); loc. 11, 47: *Abies* sp. (4899, 5161); loc. 11, 36, 39: *Carpinus* sp. (4900, 6034, 5061); loc. 13: *Juglans* sp. (4968); loc. 13, 25: *Populus* sp. (4969, 5238), *Prunus* sp. (4970, 5230); loc. 13: *Tilia* sp. (4971); loc. 22, 39: Garden fence (5046, 5060); loc. 24: *Elaeagnus* sp. (5222); loc. 25: *Cornus mas* (5226); loc. 28: *Armeniaca sp.* (5306); loc. 31: *Pinus* sp. (5364); loc. 34: *Corylus* sp. (5425); loc. 35: *Agrostemma* sp. (5446); loc. 36: *Acer* sp. (6033).

Lecanora chlarotera Nyl.

This epiphytic species is common in Turkey (John 1996). Loc. 5, 9,13, 25, 30, 33: *Populus* sp. (4789, 4872, 4976, 5236, 5340, 5413); loc. 11: *Abies* sp. (4901), *Carpinus* sp. (4902); loc. 12, 14, 16, 31, 43, 48: *Quercus* sp. (4957, 4995, 5013, 5367, 5098, 5169); loc. 13, 28: *Juglans* sp. (4975, 5314); loc. 19: *Platanus* sp. (5025); loc. 25: *Cornus mas* (5227); loc. 26: *Salix* sp. (5247); loc. 44: Garden fence (5111).

• **Lecanora conferta** (Duby ex Fr.) Grognot

Closely resembles *L. dispersa*, but the apothecial margin C (+) yellow reaction. Loc. 10: calcareous rock (4891).

*, + **Lecanora dispersa** (Pers.) Sommerf.

This calcicolous lichen is common in Turkey. Loc. 1, 4, 6, 10, 26, 30, 31, 34, 35, 36, 38, 46, 49: calcareous rock (6102, 4779, 4808, 4889, 5285, 5347, 5379, 5427, 5454, 6029, 6083, 5143, 5201).

+ **Lecanora expallens** Ach.

This epiphytic species knows mainly in the Mediterranean region of Turkey (John 1996). But, there is distribution from the Black sea region (John et al. 2000, John & Breuss 2004). Loc. 43: *Quercus* sp. (5103).

Lecanora hagenii (Ach.) Ach.

A common epiphytic lichen. Loc. 3, 34, 41: *Quercus* sp. (4757, 5419, 5076); loc. 8: *Malus* sp. (4849); loc. 9: *Salix* sp. (4868); loc. 11: *Abies* sp. (4903); loc. 23, 33: *Populus* sp. (5054, 5416); loc. 25: *Cornus mas* (5228); loc. 28: *Armeniaca* sp. (5307) and *Juglans* sp. (5308).

*** Lecanora hagenii** (Ach.) Ach. f. *coerulescens* (Hag.) Hazsl.

Compared with the previous species, this taxon is uncommon in Turkey. So far, it is only reported by Szatala (1960). Loc. 11: *Abies* sp. (4914); loc. 13: *Juglans* sp. (4974).

 # Lecanora impudens Degel.

Thallus crustose, continuous or verrucose-areolate, flat or verruculose; prothallus: not visible; areolles: thin or thick, opaque, ecorticate; surface: yellowish white to yellowish gray or whitish gray to gray, smooth or rough, epruinose, with an indistinct margin, sorediate; soredia: granulose, 0,3-1 mm in diam., white to whitish gray or pale yellow to yellowish gray or greenish white to yellowish green; apothecia; sessile or adnate, lecanorine; disc: red-brown, plane, epruinose; margin: concolorous with thallus, thin, persistent, even, entire or flexuose, smooth, entire or sorediate, without a parathecial ring; epihymenium: red-brown to orange-brown, with pigment not dissolving in K, without crystals; hymenium: hyaline, clear or inspersed with small oil droplets; asci: clavate, 8-spored; ascospores: hyaline, simple broadly elipsoid, (10)12-14.5(15) × (6)8-9.5(-10) µm; wall: less than 1 µm thick; Spot tests: K (+) yellow, C(-), KC(-), P(-) or P(+) pale yellow (Nash et al. 2004).

This epiphytic lichen which is sparse distribution from Central Europe to Mediterranean region is growing on bark of deciduous trees. - Loc. 37: *Carpinus* sp. (6054).

Lecanora pulicaris (Pers.) Ach.

A common epiphytic species in Turkey. Loc. 31: *Pinus* sp. (5366); loc. 33: Garden fence (5417).

Lecanora rupicola (L.) Zahlbr.

A common silicicolous lichen in Turkey. Loc. 26: siliceous rock (5292).

• Lecanora strobilina (Spreng.) Kieff.

This epiphytic species growing on bark, mainly of coniferous trees, recently has been reported from Turkey (Özdemir Türk & Güner 1998). Loc. 31: *Pinus* sp. (5359).

*** Lecanora subcarpinea** Szatala

Recently, this lichen has given to be a new record for Turkey (John & Nimis 1998). For the last time, it has raported from Bolu province (Öztürk & Güvenç 2003). Loc. 26, 30: *Salix* sp. (5248, 5338); loc. 30: *Acacia* sp. (5339); loc. 30, 33: *Populus* sp. (5337, 5410); loc. 37: *Carpinus* sp. (6055).

* **Lecanora symmicta** (Ach.) Ach.

This widespread epiphytic lichen seems to be common in the Black Sea region of Turkey (Özdemir Türk 1997, Yıldız et al. 2002, John & Breuss 2004). Loc. 7: *Pinus sylvestris* (4832); loc. 16: *Quercus* sp. (5014).

* **Lecanora umbrina** (Ach.) A.Massal.

Closely resembles *L. hagenii*, but lacks traces of pruina on the apothecial margin and disk. Common in Turkey (John 1996, Nimis & John 1998). Loc. 13: *Populus* sp. (4988), *Prunus* sp. (4989) and *Tilia* sp. (4990).

* **Lecidea fuscoatra** (L.) Ach.

A common silicicolous lichen. Loc. 26: siliceous rock (5293).

Lecidella carpathica Körb.

A common silicicolous lichen. Loc. 4, 18, 26: siliceous rock (4784, 5022, 5275); loc. 10, 48: calcareous rock (4885, 5186).

Lecidella elaeochroma (Ach.) M.Choisy

A very common and widespread epiphytic lichen. Loc. 3, 35, 37, 42: *Crataegus* sp. (4753, 5441, 6064, 5090); loc. 3, 4, 12, 14, 16, 27, 31, 34, 43, 48: *Quercus* sp.(4752, 4775, 4955, 4994, 5011, 5301, 5362, 5421, 5097, 5167); loc. 5, 9, 13, 25, 30, 33: *Populus* sp. (4788, 4866, 4981, 5237, 5328, 5407); loc. 6, 7, 9, 26, 30: *Salix* sp. (4799, 4823, 4865, 5249, 5329); loc. 8, 22, 39, 44: Garden fence (4848, 5047, 5063, 5108); loc. 8: *Malus* sp. (4847); loc. 11, 24, 32, 47: *Abies* sp. (4897, 5220, 5390, 5158); loc. 11, 36, 37: *Carpinus* sp. (4898, 6031, 6072); loc. 13, 25, 33: *Prunus* sp. (4982, 5234, 5406); loc. 15: *Castanea* sp. (4998); loc. 19, 40: *Platanus* sp. (5024, 5068); loc. 21, 28, 29: *Juglans* sp. (5037, 5303, 5327); loc. 24: *Elaeagnus* sp. (5219); loc. 25: *Cornus mas* (5229); loc. 28: *Armeniaca* sp. (5302); loc. 30, 44: *Acacia* sp. (5330, 5107); loc. 31: *Pinus* sp. (5361); loc. 34: *Corylus* sp. (5422); loc. 36: *Acer* sp. (6032); loc. 46: *Pistacia* sp.(5136).

* **Lecidella elaeochroma** (Ach.) M.Choisy f. *soralifera* (Erichsen) D.Hawksw.

This taxon separated from the previous species to have soredia. Loc. 7: *Salix* sp. (4824); loc. 13: *Populus* sp. (4981) and *Prunus* sp. (4982).

\+ **Lecidella patavina** (A.Massal.) Knoph & Leuckert

A common calcicolous lichen. Loc. 49: calcareous rock (5208).

Lecidella stigmatea (Ach.) Hertel & Leuckert

A common calcicolous lichen. Loc. 1, 10, 15, 26, 31, 35, 36, 46, 48, 49: calcareous rock (6103, 4888, 5004, 5277, 5385, 5449, 6028, 5149, 5189, 5204); loc. 26: siliceous rock (5276).

*, + **Lepraria eburnea** J.R.Laundon

This lichen showing to distribution from sea level to mountain area is rarely in Turkey. Loc. 7: *Pinus sylvestris* (4833); loc. 45: *Quercus* sp. (5120).

Lepraria incana (L.) Ach.

A common species growing on acid bark and rocks. Loc. 20: *Pinus* sp. (5031).

+ **Lepraria lobificans** Nyl.

A common species, mainly in the Mediterranean region of Turkey. Loc. 42: *Fraxinus* sp. (5083).

Lobaria pulmonaria (L.) Hoffm.

A common and widespread species (John 1996). Loc. 42: *Fraxinus* sp. (5077).

*, + **Lobothallia radiosa** (Hoffm.) Hafellner

A common calcicolous lichen. Loc. 1, 30, 31, 35, 38, 48: calcareous rock (6101, 5345, 5381, 5448, 6080, 5185).

*, + **Melanelia elegantula** (Zahlbr.) Essl.
This epiphytic species common in Turkey. Loc. 3: *Crataegus* sp. (4759); loc. 34: *Corylus* sp. (5424); loc. 35: *Agrostemma* sp. (5443); loc. 48: *Quercus* sp. (5177).

Melanelia exasperata (De Not.) Essl.

This epiphytic species is widespread and common in Turkey (John 1992, 1995). Loc. 12: *Quercus* sp. (4958); loc. 13: *Prunus* sp. (4985); loc. 39: Garden fence (5059).

Melanelia exasperatula (Nyl.) Essl.

This species and the previous are the commonest epiphytic species which is known of *Melenalia* genera from Turkey (John 1992, 1995). Loc. 9: *Populus* sp. (4873); loc. 24: *Abies* sp. (5224); loc. 31: *Pinus* sp. (5358).

Melanelia glabratula (Lamy) Essl.

A common epiphytic species in the whole of Turkey (John 1995, 1996). Loc. 14: *Quercus* sp. (4993); loc. 20: *Pinus* sp. (5033); loc. 26: siliceous rock (5281); loc. 35: *Crataegus* sp. (5431).

Melanelia subargentifera (Nyl.) Essl.

Recently, this species has added to be a new species to the lichen flora of Turkey (Yıldız et al. 2002). It is reported for the second time from Kastamonu province (Öztürk & Güvenç 2003). Loc. 26: *Salix* sp. (5253); loc. 48: *Quercus* sp. (5176).

Melanelia subaurifera (Nyl.) Essl.

This epiphytic species is widespread and common in Turkey (John 1992, 1995). Loc. 7: *Pinus sylvestris* (4830); loc. 12, 45: *Quercus* sp. (4959, 5114); loc. 22: Garden fence (5045); loc. 25. *Prunus* sp. (5231); loc. 26: *Salix* sp. (5240); loc. 42: *Crataegus* sp. (5089).

Mycobilimbia sabuletorum (Schreb.) Hafellner

So far, this species has found the third time from Turkey (John 1996, Yıldız et al. 2002). Loc. 45: siliceous soil on the surface calcareous rock (5128).

+ Neofuscelia pulla (Ach.) Essl.

A common silicicolous species. Loc. 26, 48: siliceous rock (5298, 5182).

+ Opegrapha atra Pers.

A common epiphytic species. Loc. 39: *Carpinus* sp. (5065); loc. 42: *Crataegus* sp. (5091) and *Fraxinus* sp. (5079); loc. 44: *Acacia* sp. (5109).

+ Opegrapha herbarum Mont.

An uncommon in Turkey. Loc. 43: *Quercus* sp. (5102).

*** Opegrapha rupestris** Pers.

An uncommon in Turkey (John & Nimis 1998). There is only one record from the Black sea region of Turkey (John & Breuss 2004). Loc. 11, 37: calcareous rock (4946, 6066).

***, + Opegrapha varia** Pers.

A common and widespread lichen in Turkey. Loc. 3, 34: *Quercus* sp. (4756, 5420); loc. 23: *Platanus* sp. (5056); loc. 28: *Populus* sp. (5312); loc. 37: *Carpinus* sp. (6069); loc. 45: calcareous rock (5129).

+ Opegrapha vulgata (Ach.) Ach. var. *vulgata*

This oceanic epiphytic lichen is abundant in humid montane forest in the Black sea region of Turkey (John 1999, Yazıcı 1999). It is also found in humid parts of the Mediterranean region (John & Nimis 1998). Loc. 45: *Fagus orientalis* (5124).

*** Parmelia saxatilis** (L.) Ach.

Very common and widespread lichen. Loc. 26: *Pinus* sp. (5265).

Parmelia sulcata Taylor

This cosmopolitan lichen is one of the most widely distributed lichens known from Turkey. Loc. 7: *Pinus sylvestris* (4836); loc. 9: *Salix* sp. (4861); loc. 12, 14, 45: *Quercus* sp. (4949, 4992, 5113); loc. 20, 31: *Pinus* sp. (5030, 5357); loc. 22, 39:

Garden fence (5044, 5058); loc. 25. *Prunus* sp. (5232); loc. 32: *Abies* sp. (5392); loc. 36: *Acer* sp. (6038) and *Carpinus* sp. (6037); loc. 42: *Crataegus* sp. (5084).

Parmelina quercina (Willd.) Hale

A common epiphytic lichen. Loc. 13: *Prunus* sp. (4984); loc. 24: *Elaeagnus* sp. (5221)

Parmeliopsis ambigua (Wulfen) Nyl.

This widespread species shown to distribution from Boreal to Mediterranean mountain regions is common in Turkey. Loc. 32: *Abies* sp. (5397).

*, + **Parmotrema chinense** (Osbeck) Hale & Ahti

A suboceanic species is common, mainly in the Black sea regions, in Turkey (Nimis & John 1998). Loc. 42: *Crataegus* sp. (5086); loc. 43, 45: *Quercus* sp. (5096, 5118); loc. 45: *Fagus orientalis* (5119).

Peltigera collina (Ach.) Röhl.

This oceanic lichen shown to distribution in humid forest from Boreal to Mediterranean mountain belts (Wirth 1995). Especially, common in the Black sea region of Turkey (Öztürk & Güvenç 2003, John & Breuss 2004). Loc. 11: soil (4895).

* **Peltigera horizontalis** (Huds.) Baumg.

A common, mainly the Black sea region of Turkey (Yazıcı 1999, John & Breuss 2004). Loc. 26: together with moss on siliceous soil (5288).

Peltigera polydactylon (Neck.) Hoffm.

A common species of humid forest in Turkey. It is one of the most common species in the Black sea region of Turkey (Yazıcı 1999, Yıldız et al. 2002). Loc. 17, 32: Together with moss on siliceous rock and soil (5018, 5400).

* **Peltigera praetextata** (Flörke ex Sommerf.) Vain.

It is the most frequent species of *Peltigera* throughout in the Turkey (John 1992, 1995, Nimis & John 1998). Loc. 17, 32: Together with moss on siliceous rock and soil (5019, 5387); loc. 42: *Fraxinus* sp. (5078).

* **Peltigera rufescens** (Weiss) Humb.

It is a common species on calcareous ground in the whole of Turkey. Loc. 38: calcareous soil (6073).

* **Peltigera venosa** (L.) Baumg.

It is the least common species of *Peltigera* known from Turkey (Aslan 2000, John & Breuss 2004, Özdemir Türk 1997). Loc. 32: Together with moss on siliceous soil (5393).

Pertusaria albescens (Huds.) M.Choisy & Werner

A widespread and polymorphic temperate epiphytic lichen. Common in Turkey. Loc. 32: *Abies* sp. (5394); loc. 48: *Quercus* sp. (5173).

Pertusaria amara (Ach.) Nyl.

This and above species are the most common of *Pertusaria* in Turkey. Loc. 32: *Abies* sp. (5398); loc. 38: garden fence (6098).

+ Phaeographis inusta (Ach.) Müll.Arg.

This epiphytic species is very rare in Turkey. Loc. 43: *Quercus* sp. (5105).

*** Phaeophyscia ciliata** (Hoffm.) Moberg

This epiphytic species is only recorded from the Mediterranean region (John 1996, Nimis & John 1998) and the province of Trabzon in the Black Sea region of Turkey (John & Breuss 2004, Yazıcı 1999). Loc. 13: *Juglans* sp. (4977) and *Populus* sp. (4978).

Phaeophyscia orbicularis (Neck.) Moberg

A common in Turkey. Loc. 3, 23: *Prunus* sp. (4764, 5052); loc. 4, 46: *Quercus* sp. (4772, 5131); loc. 5, 23, 26, 30: *Populus* sp. (4786, 5051, 5257, 5333); loc. 6, 7, 9, 26, 30: *Salix* sp. (4814, 4816, 4862, 5256, 5334); loc. 8: Garden fence (4843) and *Malus* sp. (4842); loc. 9: *Cerasus avium* (4863); loc. 11: *Abies* sp. (4908); loc. 26: calcareous rock (5279) and siliceous rock (5278); loc. 30: *Acacia* sp. (5335); loc. 46: *Pistacia* sp. (5134)

Phlyctis argena (Spreng.) Flot.

This widespread temperate lichen is restricted to the sub Mediterranean and Mediterranean montane belts. It is found mainly the Mediterranean region of Turkey (John 1996, John & Nimis 1998, Nimis & John 1998). Recently, this lichen has been given to be a new record for the Black Sea region of Turkey (Öztürk & Güvenç 2003). Loc. 3: *Crataegus* sp. (4747) and *Quercus* sp.(4746).

Physcia adscendens (Th.Fr.) H.Olivier

A very common nitrophytic species in Turkey. Loc. 3, 37: *Crataegus* sp. (4761, 6059); loc. 4, 45, 46: *Quercus* sp. (4770, 5115, 5133); loc. 5, 9, 13, 23, 26, 33: *Populus* sp. (4787, 4869, 4980, 5049, 5244, 5409); loc. 6, 26, 30: *Salix* sp. (4796, 5243, 5341); loc. 8: *Acacia* sp. (4841); loc. 9, 26: *Cerasus avium* (4870, 5245); loc. 11, 24: *Abies* sp. (4913, 5218); loc. 21: *Juglans* sp. (5035); loc. 23: *Prunus* sp. (5050); loc. 24: *Elaeagnus* sp. (5217); loc. 35: *Agrostemma* sp. (5445); loc. 45: *Laurus nobilis* (5116).

Physcia aipolia (Ehrh. ex Humb.) Fürnr.

A mainly submediterranean epiphytic lichen is common in Turkey. Loc. 5, 13: *Populus* sp. (4791, 4965); loc. 13: *Juglans* sp. (4964) and *Tilia* sp. (4966); loc. 24: *Abies* sp. (5223); loc. 26: *Cerasus avium* (5242) and *Salix* sp. (5241); loc. 46: *Pistacia* sp. (5139); loc. 48: *Quercus* sp. (5171); loc. 37: *Crataegus* sp. (6070).

+ Physcia dubia (Hoffm.) Lettau

A common and widespread in Turkey. Loc. 48: poorly calcareous rock (5196).

Physcia semipinnata (J.F.Gmel.) Moberg

Compared with the closely related *Ph. adscendens*, this species is more frequent at low elevations. A common in Turkey. Loc. 3: *Crataegus* sp. (4758); loc. 46: *Pistacia* sp. (5137).

Physcia stellaris (L.) Nyl.

A common in Turkey. Loc. 3, 4, 35, 37: *Quercus* sp. (4751, 4771, 5436, 6063); loc. 6, 7, 9: *Salix* sp. (4795, 4817, 4864); loc. 7: *Populus* sp. (4818); loc. 11: *Abies* sp. (4912); loc. 13: *Prunus* sp. (4986); loc. 35: *Agrostemma* sp. (5437); loc. 38: garden fence (6096).

Physconia distorta (With.) J.R.Laundon

A common southern temperate epiphytic lichen is the most common of *Physconia* sp. in Turkey. Loc. 6, 7, 9, 26: *Salix* sp. (4797, 4815, 4858, 5252); loc. 11: *Abies* sp. (4896); loc. 31: *Pyrus* sp. (5369) and *Quercus* sp. (5370); loc. 39: *Acer* sp. (5057).

+ Physconia enteroxantha (Nyl.) Poelt

A common nitrophitic lichen in Turkey. There is only one locality known in the Black sea region of Turkey (Öztürk & Güvenç 2003). Loc. 6: *Salix* sp. (4810); loc. 31, 48: *Quercus* sp. (5377, 5172).

Physconia grisea (Lam.) Poelt

A common epiphytic lichen. Loc. 28, 29: *Juglans* sp. (5315, 5323); loc. 29: *Malus* sp. (5321) and *Pyrus* sp. (5322).

+ Physconia perisidiosa (Erichsen) Moberg

This epiphytic sorediate lichen, with a mainly submediterranean to Mediterranean - montane distribution, is quite frequent in humid montane areas in the whole of Turkey. Loc. 12, 48: *Quercus* sp. (4954, 5178).

• Placocarpus schaereri (Fr.) Breuss

This lichen has a Central Europe to Mediterranean distribution seems to distribution in the Mediterranean region of Turkey (John 1996, Nimis & John 1998, Öztürk et al. 2005). Loc. 10: calcareous rock (4878).

*** Porpidia macrocarpa** (DC.) Hertel & A.J.Schwab

This silicicolous species has a Submediterranean to Mediteranean distribution is reported from the provinces of İstanbul (Özdemir Türk & Güner 1998) and Trabzon (Steiner 1909, Yazıcı 1999) in Turkey. Loc. 32: siliceous rock (5401).

Protoblastenia rupestris (Scop.) J.Steiner

A common calcicolous lichen in Turkey. Loc. 11, 15, 19: calcareous rock (4919, 5007, 5027).

Protoparmeliopsis muralis (Schreb.) M.Choisy

This lichen known as *L. muralis* is very common in Turkey. Loc. 4, 10, 11, 30, 35, 38, 46, 48: calcareous rock (4780, 4879, 4939, 5346, 5447, 6079, 5141, 5183); loc. 6, 26: siliceous rock (4805, 5274).

Pseudevernia furfuracea (L.) Zopf var. *ceratea* (Ach.) D.Hawksw.

A widespread epiphytic lichen is very common, mainly montane areas, in Turkey. Loc. 11: *Pinus sylvestris* (4934); loc. 26: *Pinus* sp. (5273).

Pseudevernia furfuracea var. **furfuracea** (L.) Zopf

Loc. 7, 11: *Pinus sylvestris* (4826, 4935); loc. 11, 47: *Abies* sp. (4893, 5164); loc. 12, 48: *Quercus* sp. (4947, 5181); loc. 13: *Prunus* sp. (4991); loc. 26, 31: *Pinus* sp. (5272, 5352); loc. 35: *Agrostemma* sp. (5444).

*** Psora lurida** (Ach.) DC.

This calcicolous lichen is uncommon, mainly found in the Mediterranean region of Turkey (John 1996, John & Nimis 1998, Nimis & John 1998). So far, it has been reported from Trabzon province in the Black sea region of Turkey (John et al. 2000). Loc. 10: calcareous rock (4880).

• Pyrenula chlorospila (Nyl.) Arnold

This epiphytic lichen seems to distribution humid areas in the Mediterranean region. Loc. 45: *Fagus orientalis* (5126).

+ Ramalina calicaris (L.) Fr.

This species is common in humid montane forests in Turkey. Loc. 42: *Crataegus* sp. (5092).

+ Ramalina canariensis J.Steiner

This lichen is common in coastal habitats in the Mediterranean region of Turkey (Güvenç & Öztürk 1998, John 1996, Nimis & John 1998). It is only one locality known from the Black sea region of Turkey (Öztürk & Güvenç 2003). Loc. 42: *Crataegus* sp. (5093).

Ramalina farinacea (L.) Ach.

This widespread lichen, most abundant in humid montane forests in the Mediterranean region, is common in the whole of Turkey. Loc. 7: *Pinus sylvestris* (4835); loc. 12, 14, 31, 43, 45: *Quercus* sp. (4951, 4947, 5373, 5100, 5117); loc. 22: Garden fence (5048); loc. 26: *Salix* sp. (5260); loc. 32: *Abies* sp. (5389); loc. 36: *Acer* sp. (6042); loc. 37, 42: *Crataegus* sp. (6061, 5087).

Ramalina fastigiata (Pers.) Ach.

This widespread lichen is common in Turkey. Loc. 11, 47: *Abies* sp. (4925, 5157); loc. 12: *Quercus* sp. (4950); loc. 36: *Carpinus* sp. (6039).

Ramalina fraxinea (L.) Ach.

A common epiphytic lichen. Loc. 31, 48: *Quercus* sp. (5372, 5174).

Ramalina obtusata (Arnold) Bitter

This suboceanic epiphytic lichen seems to distribution high montane areas is found mainly in the Black sea region of Turkey (Aslan 2000, Yıldız et al. 2002, John & Breuss 2004). Loc. 7: *Pinus sylvestris* (4834); loc. 37: *Carpinus* sp. (6057).

Ramalina pollinaria (Westr.) Ach.

This lichen has Boreal to Mediterranean distribution is the most abundant in the Black sea region of Turkey. Loc. 31, 48: *Quercus* sp. (5375, 5175); loc. 42: *Crataegus* sp. (5081) and *Fraxinus* sp. (5080); loc. 36: *Carpinus* sp. (6035).

• **Ramalina portuensis** Samp.

This epiphytic species is very rarely in Turkey. Loc. 37: *Carpinus* sp. (6056).

* **Rhizocarpon distinctum** Th.Fr.

It is a southern temperate species of siliceous rocks. Common in Turkey. Loc. 17: siliceous rock (5017).

\+ **Rhizocarpon geminatum** Körb.

A widespread and common in Turkey. Loc. 48: poorly calcareous rock (5184).

Rhizocarpon geographicum (L.) DC.

Widespread polymorphic species of siliceous substrata is common in all of the regions of Turkey. Loc. 17, 26: siliceous rock (5016, 5295); loc. 48: poorly calcareous rock (5193).

Rhizocarpon petraeum (Wulfen) A.Massal.

This species has Boreal to Mediterranean - montane distribution is found mainly in the Black sea and Marmara regions of Turkey (John et al. 2000, Özdemir Türk & Güner 1998, Öztürk & Güvenç 2003). Loc. 15: calcareous rock (5008).

\+ **Rinodina bischoffii** (Hepp) A.Massal.

It is a pioneer species of calcareous rocks, with a very broad distribution. Common in Turkey. Loc. 11, 15, 35, 38, 46, 48: calcareous rock (4942, 5002, 5453, 6086, 5150, 5195).

*** Rinodina exigua** (Ach.) Gray

This epiphytic species common in Turkey. Loc. 8: *Acacia* sp. (4838); loc. 9: *Salix* sp. (4867); loc. 26: *Cerasus avium* (5261); loc. 28: *Sorbus* sp. (5316); loc. 29: Garden fence (5318); loc. 31: *Pinus* sp. (5365).

*** Rinodina gennarii** Bagl.

This calcicolous species is uncommon in Turkey (Güvenç 2002, Karabulut & Özdemir Türk 1998). There is only one record from the Black sea region of Turkey (John 2000). Loc. 38: calcareous rock (6084).

Rinodina pyrina (Ach.) Arnold

This epiphytic species is common in Turkey. Loc. 3: Garden fence (4763); loc. 4: *Pinus* sp. (4768) and *Quercus* sp.(4777); loc. 6, 30: *Salix* sp. (4798, 5342); loc. 11: *Abies* sp. (4905); loc. 28: *Armeniaca* sp. (5309) and *Juglans* sp. (5310); loc. 29: *Pyrus* sp. (5324); loc. 33: *Populus* sp. (5415); loc. 35: *Agrostemma* sp. (5439) and *Crataegus* sp. (5436).

+ Rinodina sophodes (Ach.) A.Massal.

This epiphytic species has Subboreal to Mediterranean distribution is less known from the Mediterranean region of Turkey (John & Nimis 1998). It is found mainly from the Black sea region of Turkey (Çobanoğlu & Akdemir 2004, Öztürk & Güvenç 2003, Yıldız & John 2002, Szatala 1960). Loc. 13: *Prunus* sp. (4987); loc. 26: *Salix* sp. (5255); loc. 46: *Pistacia* sp. (5140); loc. 38: garden fence (6099).

***, + Sarcogyne regularis** Körb.

A pioneer lichen of calcareous substrata. Common in Turkey. Loc. 4, 11, 40: calcareous rock (4766, 4920, 5070); loc. 6: siliceous rock (4802).

 # Staurothele caesia (Arnold) Arnold

Thallus immersed, pale grey to bluish grey, scurfy or indistinct, sometimes with a black prothallus. Perithecia 300-700 µm diam., ± deeply immersed; involucrellum absent; outer part of exciple black with purple tints, the inner part pale. Asci 8-spored. Ascospores (25)30-40 × 18-25 µm, colourless to pale straw. Hymenial algal cells 2.5-4.5 µm diam., globose-cuboid (Purvis et al. 1994). - Loc. 38: calcareous rock (6075).

• Staurothele hymenogonia (Nyl.) Th.Fr.

This calcicolous species is found only from the Amanos mountain in Turkey (John & Nimis 1998). Loc. 19: calcareous rock (5029).

Tephromela atra (Huds.) Hafellner

This cosmopolitan lichen is common in Turkey. Loc. 26: siliceous rock (5290).

Toninia candida (Weber) Th.Fr.

A species of calcareous rocks, most frequent in the mountains. Loc. 38: calcareous soil (6092).

Toninia sedifolia (Scop.) Timdal

This common and widespread terricolous species is very frequently found in Turkey. Loc. 37: calcareous rock (6067); loc. 38: calcareous soil (6082).

* **Trapelia coarctata** (Turner ex Sm.) M.Choisy

This silicicolous lichen has Boreal to Mediterranean - montane distribution is common in Turkey. Loc. 18: siliceous rock (5021).

* **Usnea cavernosa** Tuck.

This species is found to be rarely in Turkey. Loc. 11: *Abies* sp. (4909).

Usnea florida (L.) Weber ex F.H.Wigg.

The most common species of *Usnea* genera known from Turkey. Loc. 26: *Pinus* sp. (5268); loc. 47: *Abies* sp. (5156).

* **Usnea fulvoreagens** (Räsänen) Räsänen

A less known from Turkey (Aslan 2000, Çiçek & Özdemir Türk 1998). There is only one record from the Black sea region of Turkey (Çobanoğlu & Akdemir 2004). Loc. 12: *Quercus* sp. (4962); loc. 26: *Pinus* sp. (5271).

* **Usnea glabrescens** (Nyl. ex Vain.) Vain.

A less known from Turkey (John & Breuss 2004). Loc. 12: *Quercus* sp. (4963).

Usnea hirta (L.) Weber ex F.H.Wigg.

Common in Turkey. Loc. 11: *Pinus sylvestris* (4933); loc. 26, 31: *Pinus* sp. (5270, 5368); loc. 33: Garden fence (5405); loc. 35: *Crataegus* sp. (5442).

* **Usnea rigida** Vain.

Uncommon in Turkey. It is found only from the Black sea region of Turkey (Çobanoğlu & Akdemir 2004). Loc. 11, 32: *Abies* sp. (4910, 5388); loc. 12: *Quercus* sp. (4961).

* **Verrucaria calciseda** DC.

This calcicolous species has Subboreal to Mediterranean distribution is common mainly in the Mediterranean region of Turkey (Nimis & John 1998).There is only one record from the Black sea region of Turkey (Steiner 1909). Loc. 37: calcareous rock (6068).

*** Verrucaria fuscella** (Turner) Winch

This calcicolous species is found mainly the Black sea region of Turkey (Çobanoğ lu & Akdemir 2004, John et al. 2000, Yazıcı 1999). Loc. 38: calcareous rock (6089).

***, + Verrucaria hochstetteri** Fr.

This calcicolous species is found one time from Turkey (Steiner 1909). Loc. 11, 49: calcareous rock (4921, 5209).

Verrucaria muralis Ach.

A widespread and common in Turkey. Loc. 18: calcareous rock (5020); loc. 32: siliceous rock (5402).

+ Verrucaria nigrescens Pers.

This widespread species is extremely common in Turkey. Loc. 6, 11, 19, 21, 31, 40, 49: calcareous rock (4813, 4944, 5028, 5042, 5386, 5072, 5147).

 # Verrucaria pinguicula A.Massal.

Thallus immersed, or more commonly superficial, continuous, finely rimose to areolate, pale to dark brown, grey-green or grey-brown, chesnut brown, greenish brown, smooth to verruculose, frequently delimited by a dark brown prothallus. Perithecia compound, 1/3-1/2 immersed; involucrellum 0.15-0.3(0.4) mm diam., dimidiate or extending to base-level of true exciple, black; centrum o.1-0.2(-0.25) mm diam., globose; true exciple colourless to brown. Ascospores 11-21(-23) × (4.5)6-9 µm. On hard limestones (Purvis et al. 1994, Wirth 1995).

This calcicolous species has Central Europe to Mediterranean distribution is new to Turkey. - Loc. 46: calcareous rock (5144).

*** Verrucaria subfuscella** Nyl.

This calcicolous species is found only from the Mediterranean region of Turkey (John & Nimis 1998, Nimis & John 1998). Loc. 38: calcareous rock (6094).

*** Xanthomendoza fallax** Søchting, Kärnefelt & S.Y.Kondr.

A species is only a few records from Turkey (Öztürk et. al. 2005, Steiner 1916, Szatala 1960). It is known only from Rize province in the Black sea region of Turkey (John & Breuss 2004). Loc. 30: *Acacia* sp. (5344).

*** Xanthomendoza fulva** (Hepp) Søchting, Kärnefelt & S.Y.Kondr.

Recently, this species has been added to the lichen flora of Turkey (Öztürk & Kaynak 1999). Uncommon in Turkey (Çobanoğlu & Akdemir 2004, Öztürk et al. 2005). Loc. 1: calcareous rock (6100); loc. 5, 26: *Populus* sp. (4792, 5259); loc. 6, 9: *Salix* sp. (4800, 4857).

*** Xanthoparmelia somloënsis** (Gyeln.) Hale

This cosmopolitan silicicolous species is common in Turkey. Loc. 26: siliceous rock (5294).

+ Xanthoria elegans (Link) Th.Fr.

Common in Turkey. Loc. 6, 46, 48: calcareous rock (4804, 5146, 5187).

Xanthoria parietina (L.) Th.Fr.

This cosmopolitan nitrophilous species is common and widespread in the whole of Turkey. Loc. 3, 35, 37: *Crataegus* sp. (4750, 5434, 6057); loc. 3, 4, 27, 31, 46, 48: *Quercus* sp. (4749, 4769, 5299, 5374, 5132, 5165); loc. 5, 7, 9, 24, 26, 30, 33: *Populus* sp. (4785, 4820, 4855, 5214, 5263, 5331, 5408); loc. 6, 7, 9, 26: *Salix* sp. (4794, 4819, 4854, 5251); loc. 7, 34, 35: calcareous rock (4821, 5426, 5435); loc. 8, 30, 44: *Acacia* sp. (4839, 5332, 5106); loc. 8, 29: *Malus* sp. (4840, 5320); loc. 9: *Cerasus avium* (4856); loc. 11: *Abies* sp. (4911); loc. 13, 21, 28: *Juglans* sp. (4967, 5036, 5313); loc. 23: *Platanus* sp. (5055); loc. 24: *Elaeagnus* sp. (5215); loc. 29, 38: Garden fence (5319, 6095); loc. 36: *Acer* sp. (6041); loc. 45: *Fagus orientalis* (5125); loc. 46: *Pistacia* sp. (5135).

*** Xanthoria polycarpa** (Hoffm.) Rieber

This epiphytic species is less known in Turkey (Çobanoğlu & Akdemir 2004, Sommerfeldt & John 2001, Yazıcı 1999, Yazıcı & Aslan 2003). Loc. 24: *Populus* sp. (5216).

Discussion

As a result of the taxonomical investigations of the 772 specimens which collected from the research area, 195 lichen taxa listed above followed by locality, substrate and herbarium number. 167 lichen taxa reported from Kastamonu and 94 from Sinop provinces in Turkey. 76 taxa are new to the province of Kastamonu and 49 new to the province of Sinop. Twelve species are also new for Turkey. These species are *Acarospora heppii*, *Acrocordia salweyi*, *Arthonia punctiformis*, *Bacidia arnoldiana*, *B. trachona*, *Caloplaca concilians*, *Candelariella athallina*, *Enterographa elaborata*, *Eopyrenula leucoplaca*, *Lecanora impudens*, *Staurothele caesia* and *Verrucaria pinguicula*. Furthermore, nine species are the first records from the Black sea region of Turkey. These new records are *Acrocordia gemmata*, *Caloplaca aurantia*, *Caloplaca demissa*, *Lecanora conferta*, *Lecanora strobilina*, *Placocarpus schaereri*, *Pyrenula chlorospila*, *Ramalina portuensis* and *Staurothele hymenogonia*.

Lichen biodiversity seems to differentiate depending on vegetation types and altitude. Lichens with a broader ecological amplitude such as *Physcia adscendens*, *P. aipolia*, *P. semipinnata* and *Xanthoria perietina* were observed on the evergreen sclerophyllous vegetation such as *Laurus nobilis* and *Pistacia* sp. in the coastal belts.

Arthonia radiata, *Opegrapha vulgata* var. *vulgata*, *Parmotrema chinense*, *Pyrenula chlorospila* and *Xanthoria parietine* taxa were found on *Fagus orientalis* which is dominant in the deciduous forest. Moreover, *Arthonia radiata*, *Eopyrenula leucoplaca*

and *Lecidella elaeochroma* were also collected from on *Castanea sativa*, common in this deciduous forest. Another tree species of deciduous forest belt, *Carpinus* sp. has a rich lichen biodiversity. The richest lichen biodiversity was observed on *Abies nordmanniana* subsp. b*ornmuelleriana* and *Pinus sylvestris*. These trees shows an important distribution in montane region in the vicinity of Kastamonu

So far, number of species recorded from different regions of Kastamonu province is 129 (Özdemir Türk 1997, Öztürk & Güvenç 2003, Yıldız & John 2002). Lichens given in this study are the first records from the coastal area of Kastamonu province. The number of lichen species in Kastamonu province is reach to 217 together with additional records from this study. The lichen flora of Kastamonu province has been nearly completed with this study. But, due to species richness of the province, additional records can be done in future studies.

The lichen flora of Sinop province is less known than that of Kastamonu province. The studies on lichens from Sinop were also done from the coastal areas (Özdemir Türk 1997) and from the Çangal Mountain (Yıldız at al. 2002). In this study, the lichen samples are collected from the coastal areas and the inner part of the province, especially in the vicinity of Boyabat. The number of lichen species in Sinop province now reached to 157. However, additional studies are necessary to complete the lichen flora of Sinop province.

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