

S. KONDRATYUK¹, E. NEVO², S. WASSER^{1,2}

1M.G. Kholodny Institute of Botany, National Academy of Sciences of Ukraine, 2, Tereshchenkivska str., 01601 Kyiv, Ukraine
2 International Center for Cryptogamic Plants and Fungi, Institute of Evolution, University of Haifa, Mount Carmel, Haifa 31905, Israel

NEW AND RARE LICHEN-FORMING AND LICHENICOLOUS FUNGI FROM THE CARMEL MOUNTAINS, ISRAEL

Key words: lichen-forming fungi, *Caloplaca*, *Cladonia*, *Collema*, *Lecanora*, *Opegrapha*, *Physcia*, *Phoma*, *Topelia*, *Verrucaria*, *Xanthoanaptychia*, *Xanthoria*, Asia, Israel.

Eighteen new species of lichen-forming fungi (*Agonimia tristicula*, *Amandinea punctata*, *Bacidia trachoma*, *Bispora christiansennii*, *Caloplaca obscurella*, *C. polycarpa*, *Cladonia pyxidata*, *Collema callopismum*, *Dirina stenhammari*, *Graphis scripta*, *Muellerella lichenicola*, *Opegrapha demutata*, *Phoma caloplacae*, *Rinodina sophodes*, *Topelia nimisiana*, *T. rosea*, *Verrucaria macrostoma*, *Xanthoricola physciae*) are recorded for Israel. Descriptions including synonyms, references on diagnosis, distribution in Israel, and general distribution (after style of «The First Checklist of the Lichen-forming, Lichenicolous and Allied Fungi of Israel» [3]) are provided for each taxon. Twenty one lichen-forming and lichenicolous taxa (*Arthonia molendoi*, *Caloplaca citrina*, *C. haematiites*, *Collema crispum*, *C. flaccidum*, *Guignardia olivieri*, *Hyperphyscia adglutinata*, *Lecanora crenulata*, *L. dispersa*, *L. hagenii*, *Lecidella euphoria*, *Parmelia verruculifera*, *Physcia semipinnata*, *P. stellaris*, *P. tenella*, *Placynthium nigrum*, *Protoparmeliopsis muralis*, *Tornabea scutellifera*, *Xanthoanaptychia lacunosa*, *Xanthoria calcicola*, *X. schistidii*), which are recorded for the first time for some regions of Israel, are listed as well. New localities for another 9 lichen species (*Aspicilia cinerea*, *Caloplaca conglomerata*, *Clauzadea immersa*, *Parmelina tiliacea*, *Physconia distorta*, *Ramalina maciformis*, *Tephromela atra*, *Toninia aromatica*, and *Verrucaria nigrescens*) associated with other rare lichens are also provided.

Introduction

During the last decade a number of new lichen species were found for Israel [2–5]. New findings of lichen-forming and lichenicolous fungi were recorded for the first time for Israel in «The First Checklist of the Lichen-forming, Lichenicolous and Allied Fungi of Israel» [3] as well. Among the new for science taxa of lichen-forming and lichenicolous fungi (*Lichenochora wasseri* S. Kondr. [4]; *Adelococcus porocyphii* S. Zelenko & S. Kondr. and *Sclerococcum acarosporae* S. Kondr. as well as *Xanthoria hermonii* S. Kondr. [2]) are described. Forty one new names for lichen-forming and lichenicolous fungi from the Near East region are proposed in a latter paper [2].

New lichen-forming and lichenicolous fungi for Israel as well as new lichen taxa for some Israeli regions are listed below. New taxa are provided by descriptions following the style of «The First Checklist of Lichen-forming and Lichenicolous Fungi of Israel» [3].

Materials and methods

Material described was collected by the first co-author during two two-week expeditions to Israel in 2000. Some specimens of Israeli lichens kept in *LD* were analyzed during this study as well. Standard methods for identifying lichen-forming and lichenicolous fungi were applied.

Results

New for Israel Taxa

1. *Agonimia tristicula* (Nyl.) Zahlbr., Österr. Bot. Z., 5: 351, 1909.

SYNONYMS: *Verrucaria tristicula* Nyl., Flora, 48: 356, 1865.

DESCRIPTION: Clauzade & Roux, 1985: 153.

HABITAT: on bark of trees, on mosses, on soil.

DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I, north-facing slope, conditions similar to point 7 and 6 of long term monitoring plots, on mosses above limestone, 21.09.2000, S. Kondratyuk, 20118 (*KW*).

GENERAL DISTRIBUTION: Central, Western, Southern Europe, North America, Asia.

2. *Amandinea punctata* (Hoffm.) Coppins & Scheid., Lichenologist, 25: 343 (1993).

SYNONYMS: *Verrucaria punctata* Hoffm., Deutschl. Flora: 192, 1796; *Buellia punctata* (Hoffm.) A. Massal., *Buellia punctiformis* (Hoffm.) A. Massal.

DESCRIPTION: Purwis et al., 1992: 135.

HABITAT: on bark of trees.

DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I, N-facing slope, conditions similar to point 7 and 6 of long term monitoring plots, on bark of trees, 21.09.2000, S. Kondratyuk, 20118 (*KW*).

GENERAL DISTRIBUTION: Cosmopolitan.

3. *Bacidina trachona* (Ach.) Lettau, Hedwigia, 52: 133 (1912).

SYNONYMS: *Verrucaria trachoma* Ach., Meth. Lich. Suppl.: 16 (1803); *Bilimbia coprodes* Körber.

DESCRIPTION: Purvis et al., 1992: 113.

HABITAT: on calcareous rocks.

DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel, in the vicinity of Haifa University, on limestone, 13.01.2000, S. Kondratyuk, 2004 (*KW*).

GENERAL DISTRIBUTION: Europe, Asia (Israel, Mongolia), North America.

4. *Caloplaca obscurella* (Lahm ex. Körber) Th. Fr., Lich. Sc., 1: 182 (1871).

SYNONYMS: *Blastenia obscurella* Lahm ex. Korb.

DESCRIPTION: Oxner, 1993: 465; Purvis et al., 1992: 156, 158; Palice, 1999: 297.

HABITAT: on bark of deciduous trees or shrubs, mainly at the base.

DISTRIBUTION IN ISRAEL. **Carmel Mountains:** Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I (32° 43' N, 34° 58' E), north-facing slope, point 7, 120 m alt., on bark of trees, 12.01.2000, S. Kondratyuk, 2001 (KW). **Upper Galilee:** Lower Nahal Keziv, Nahal Keziv Reserve — «Evolution Canyon» II, south-facing slopes, point 3 (the lowest on this slope), on dead roots of *Quercus*, 14.01.2000, S. Kondratyuk, 2013 (KW); the same, to E from point 4, along bottom of the valley, on bark of *Platanus* sp., and *Quercus caliprinus*, 18.09.2000, S. Kondratyuk, 2011 (KW). **Golan Heights:** slopes of Mt Hermon, old (a. 600-year old) oak forest to S of Mas'ada settlement, 800–900 m alt., on bark of oak trees (*Quercus caliprinus*, *Q. infesta*, *Q. ithaburensis*, *Q. boisei*), 20.09.2000, S. Kondratyuk, 2011 (KW).

GENERAL DISTRIBUTION: Europe (Scandinavian, Atlantic and Central regions), North Africa, Asia (Israel). It is for the first time recorded for Israel and Asia.

TAXONOMICAL NOTES. This species is well characterized by discrete crateriform soralia, often tinged bluish grey, and brown apothecia, which are, however, rarely developed, but sometimes very abundant in Israeli material. It is very similar to *C. ulcerosa* Coppins & P. James, which differs by possessing orange apothecia and the soralia of that species never turn bluish grey (Purvis et al., 1992: 156, 158).

5. *Caloplaca polycarpa* (A. Massal.) Zahlbr., Österr. Bot. Z., 68: 317, 1919. — *Callopsisma aurantiacum* v. *polycarpum* A. Massal., Symmicta Lich.: 31, 1855.

SYNONYMS: *Lecanora tenuatula* Nyl.; *Caloplaca tenuatula* (Nyl.) Zahlbr.

DESCRIPTION: Werner, 1955: 355.

HABITAT: parasitic on thalli of several endolithic, calcicolous Verrucarias.

DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel National Park, the vicinity of Haifa University, on limestone, 13.01.2000, S. Kondratyuk, 2004 (KW).

GENERAL DISTRIBUTION: Southern Europe (Mediterranean and Sub-Mediterranean regions), Asia (Israel, Syria).

6. *Cladonia pyxidata* (L.) Hoffm., Deutschl. Flora, 2: 121 (1796).

SYNONYMS: *Lichen pyxidatus* L., Sp. Pl., 2: 1151 (1753).

DESCRIPTION: Oxner, 1968: 272.

HABITAT: on soil.

DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel, Lower Nahal Oren — «Evolution Canyon» I (32° 43' N, 34° 58' E), north-facing slope, station 6, 90 m alt., on soil among limestone outcrops, 12.01.2000, S. Kondratyuk, 2002 (KW).

GENERAL DISTRIBUTION: all of Europe, Asia, Northern America, Africa, Australia, New Zealand, Sub-Antarctic Isles.

7. *Collema callopsimum* A. Massal., Miscell. Lichenol.: 23 (1856).

SYNONYM: *Leptogium callopsimum* Harm.

- DESCRIPTION: Purvis et al., 1992: 219.
 HABITAT: on calcareous rocks.
 DISTRIBUTION IN ISRAEL. Carmel Mountains, Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I (32° 43' N, 34° 58' E), north-facing slope, point 7, 120 m alt., on limestone growing together with *Verrucaria nigrescens*, 12.01.2000, S. Kondratyuk, 2001 (KW).
 GENERAL DISTRIBUTION: Europe, Asia, North America, Greenland.
8. *Dirina stenhammari* (Stenham.) Poelt et Follm., Herzogia, 1,1: 61 (1968).
 SYNONYMS: *Dirina massiliensis* f. *sorediata* (Müll. Arg.) Tehler, Opera Bot., 69: 33 (1983). — *Dirina immersa* f. *sorediata* Müll. Arg., Proc. Roy. Soc. Edinburgh., 11, 1882.
 DESCRIPTION: Purvis et al., 1992: 239.
 HABITAT: on calcareous rocks.
 DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel National Park, in the vicinity of Haifa University, on limestone, 13.01.2000, S. Kondratyuk, 2004 (KW).
 GENERAL DISTRIBUTION: Europe (Northern, Central and Southern regions), Asia (Israel).
 TAXONOMICAL NOTES. Soredious species *D. stenhammari* is very often considered as the only soredious form of *D. massiliensis*. However, we share the opinion of Nimis (1993) on separate status of both taxa.
9. *Graphis scripta* (L.) Ach., Lich. Univ.: 265, 1810.
 SYNONYMS: *Lichen scriptus* L., Sp. Fl.: 1140, 1753.
 DESCRIPTION: Oxner, 1956: 255.
 HABITAT: on trunk of trees with smooth bark.
 DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I, north-facing slope, conditions similar to point 7 and 6 of long-term monitoring plots, on bark of trees (mainly *Quercus caliprinus*), 21.09.2000, S. Kondratyuk, 20118 (KW).
 GENERAL DISTRIBUTION: Europe (widespread), Asia (widespread), North Africa (Algeria, Morocco), North America, South America.
10. *Opegrapha demutata* Nyl., Flora, 62: 358 (1879).
 DESCRIPTION: Purvis et al., 1992: 408.
 HABITAT: on rocks.
 DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel, Lower Nahal Oren — «Evolution Canyon» I (32° 43' N, 34° 58' E), south-facing slope, point 2 (at the middle part of slope), a. 90 m alt., on limestone growing together with *Verrucaria nigrescens*, 13.01.2000, S. Kondratyuk, 2006 (KW).
 GENERAL DISTRIBUTION: Europe, Asia.
11. *Rinodina sophodes* (Ach.) A. Massal., Ric. Auton. Lich. Crost.: 14 (1852).
 SYNONYMS: *Lichen sophodes* Ach., Lich. Suec. Prodr.: 67 (1799).
 DESCRIPTION: Giralt, 2001, Purvis et al., 1992: 552.
 HABITAT: on smooth, often base-rich bark of deciduous trees.

DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I (32° 43' N, 34° 58' E), south-facing slope, point 2 (at the middle part of slope), a. 90 m alt., 13.01.2000, S. Kondratyuk, 2006 (KW). Golan Heights: NE vicinity of Majdal Shams, EEN slope, old fruit garden, 1400 m alt., on bark of *Amygdalus*, *Crategus*, *Malus* growing together with *Physconia distorta*, 27.09.2000, S. Kondratyuk, 20128 (KW).

GENERAL DISTRIBUTION: Europe, Asia.

12. *Topelia nimisiana* Tretiach & Vězda, Lichenologist, 24, 2: 107 (1992).

DESCRIPTION: Tretiach & Vězda, 1992: 107

HABITAT: on *Quercus* at the base.

DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I, N-facing slope, conditions similar to point 7 and 6 of long term monitoring plots, on bark of trees, 21.09.2000, S. Kondratyuk, 20118 (KW).

GENERAL DISTRIBUTION: Europe (Italy) and Asia (Israel). It is for the first time recorded for Israel and Asia.

13. *Topelia rosea* (Sérvit) P.M. Jørg. & Vězda, Beiheft 79 Zur Nova Hedwigia. Festschrift J. Poelt: 507 (1984).

SYNONYM: *Microglaena rosea* Sérvit, Webbia, 8: 419—420 (1952); *Microglaena corrossa* var. *carnea* B. de Lesd., Bull. Fr. Soc. Bot. France, 97: 171 (1950).

DESCRIPTION: Jørgensen & Vězda, 1984: 507.

HABITAT: on shaded and humid calcareous rocks, often among mosses.

DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I, long-term monitoring plot, lower part of N-facing slope (conditions similar to point 5), 24.09.2000, S. Kondratyuk, 20123 (KW); N-facing slope, conditions similar to point 7 and 6 of long-term monitoring plots, on limestone, 21.09.2000, S. Kondratyuk, 20118 (KW).

GENERAL DISTRIBUTION: Europe (Mediterranean part), Asia (Israel). It is for the first time recorded for Israel and Asia.

14. *Verrucaria macrostoma* DC. [Dufour ex] DC. [in Lam. & DC.], Fl. Franc., ed. 3: 319 (1805).

DESCRIPTION: Purvis et al., 1992: 638.

HABITAT: on calcareous substrata.

DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I (32° 43' N, 34° 58' E), south-facing slope, point 3 (the lowest one), a. 60 m alt., 13.01.2000, S. Kondratyuk, 2007 (KW).

GENERAL DISTRIBUTION: Europe (widespread in central and southern areas), Asia, North Africa (Algeria).

Lichenicolous Fungi

15. *Bispora christiansenii* D. Hawksw., Bull. Br. Mus. Nat. Hist. (Bot.), 6 (3): 207 (1979).

DESCRIPTION: Hawksworth, 1979: 207.

HABITAT: in apothecia of various crustaceous lichens.

DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I, long-term monitoring plot, S. Kondratyuk.

GENERAL DISTRIBUTION: Europe, Asia (Israel), North America. It is for the first time recorded for Israel and Asia.

16. *Muellerella lichenicola* (Sommerf.) D. Hawksw., Bot. Notiser, 132: 289 (1979).

DESCRIPTION: Vězda, 1963: 154; Triebel, 1989: 155—159.

HABITAT: on *Caloplaca alociza*.

DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I (32° 43' N, 34° 58' E), north-facing slope, point 6, 90 m alt., on limestone growing together with *Verrucaria nigrescens*, 12.01.2000, S. Kondratyuk, 2002 (KW); south-facing slope, point 1 (the highest one), a. 120 m alt., on limestone growing together with *Verrucaria nigrescens*, 13.01.2000, S. Kondratyuk, 2005 (KW); south facing slope, point 2 (at the middle of the slope), a. 90 m alt., on limestone growing together with *Verrucaria nigrescens*, 13.01.2000, S. Kondratyuk, 2006 (KW).

GENERAL DISTRIBUTION: Europe, Asia (Russia, Israel), North Africa, North America, Greenland, New Zealand.

17. *Phoma caloplacae* D. Hawksw., Bull. Br. Mus. Nat. Hist. (Bot.), 9, 1: 50 (1981).

DESCRIPTION: Hawksworth, 1981: 50.

HABITAT: on thalli of *Caloplaca cerina*.

DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I (32° 43' N, 34° 58' E), S. Kondratyuk (KW).

GENERAL DISTRIBUTION: Asia (Israel, Russia).

18. *Xanthoriicola physciae* (Kalchbr.) D. Hawksw., in D. Hawksw. & Punith., Trans. Br. Mycol. Soc., 61: 67 (1973).

SYNONYMS: *Gymnosporium physciae* Kalchbr., Math. Termmesz. Kozlem., 3: 299 (1865).

DESCRIPTION: Hawksworth, 1979: 267

HABITAT: On *Xanthoria parietina* apothecia.

DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I (32° 43' N, 34° 58' E), north-facing slope, point 7, 120 m alt., on bark of trees, 12.01.2000, S. Kondratyuk, 2001 (KW).

GENERAL DISTRIBUTION: Europe, Asia, North Africa. It is for the first time recorded for Israel and Asia.

New for some regions of Israel species of lichen-forming and lichenicolous fungi

Only new regions for each fungus taxon are listed below. List of other regions of Israel for mentioned taxa see last editions of the Checklist [1, 3].

1. *Arthonia molendoi* (Heufl. ex Frauent.) R. Sant., Thunbergia, 3: 2 (1986).

Golan Heights: Ski Resort, N-facing slope of Mt Hermon at the upper cable station, 1600—2000 m alt., mainly on basaltic rocks, on *Caloplaca biatorina*, 26.09.2000, S. Kondratyuk, 20126 (KW); slopes of Mount Hermon, 1100—1200 m alt., on gentle slopes with basaltic rock and single oak (*Quercus caliprinus*) and *Crategus* sp. trees, and on basalt rock, on *Xanthoria parietina* growing together with *Aspicilia cinerea*, 19.09.2000, S. Kondratyuk, 20114 (KW, HAJ). **Upper Galilee:** between Bar'am and Yiron, near Israel-Lebanon border, on roadside trees (mainly *Ceratonia* sp.), on *Xanthoria parietina*, 19.09.2000, S. Kondratyuk, 20112 (KW). **Carmel Mountains:** Mt Carmel, Nahal Oren, «Evolution Canyon», north-facing slope, conditions similar to point 7 and 6 of long-term monitoring plots, on bark of trees (mainly *Quercus caliprinus*), on *Xanthoria parietina*, 21.09.2000, S. Kondratyuk, 20118 (KW). **Negev:** Tel-el-Milek, on crystalline limestone, on thalli of *Xanthoria mediterranea*, 14.03.1956, M. Galun (LD).

2. *Caloplaca citrina* (Hoffm.) Th. Fr., Nova Acta Soc. Sci. Upsal., ser. 3, 3: 218 (1861).

Golan Heights: NE vicinity of Majdal Shams, EEN slope, old fruit garden, 1400 m alt., on bark of *Malus* growing together with *Physconia distorta*, 27.09.2000, S. Kondratyuk, 20128 (KW). **Carmel Mountains:** Mt Carmel National Park, Lower Nahal Oren, near «Evolution Canyon» I, long-term monitoring plot, along bottom of valley from point 4 in the direction of the sea, on limestone growing together with *Clauzadea immersa* and *Toninia aromatica*, 22.09.2000, S. Kondratyuk, 20121 (KW). **Upper Jordan Valley:** NE vicinity of Kokhav Ha-Yarden Reserve, lower part of N- or NW-facing slopes of hills, on «calcium-rich» soil and on basaltic rocks, 25.09.2000, S. Kondratyuk, 20125 (KW).

3. *Caloplaca haematites* (Chaub. ex St-Amans) Zw., Flora, 45:487 (1862).

Golan Heights: NE vicinity of Majdal Shams, EEN slope, old fruit garden, 1400 m alt., on bark of *Pinus*, *Amygdalus*, *Crategus*, and *Malus* growing together with *Physconia distorta*, 27.09.2000, S. Kondratyuk, 20128 (KW).

4. *Collema crispum* (Huds.) Web. ex Wigg., Primit. Fl. Holsat., 89 (1780).

Carmel Mountains: Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I, north-facing slope, conditions similar to points 7 and 6 of long-term monitoring plots, on limestone, 21.09.2000, S. Kondratyuk, 20118 (KW); W-facing slopes at the lower part of the Lower Nahal Oren, on chalk, 21.09.2000, S. Kondratyuk, 20120 (KW).

5. *Collema flaccidum* (Ach.) Ach., Lich. Univ.: 647 (1810).

Golan Heights: slopes of Mt Hermon, old (a. 600-year old) oak forest to S of Mas'ada settlement, 800—900 m alt., on bark of oak trees (*Quercus caliprinus*, *Q. infesta*, *Q. ithaburensis*, and *Q. boisei*), and on volcanic rocks and on soil growing together with *Cladonia convoluta*, 20.09.2000, S. Kondratyuk, 20115 (KW); slopes of Mt Hermon, old plantation of olea trees near Nimrod fortress ruins, on *Olea europea* bark growing together with *Parmelina tiliacea*, 20.09.2000, S. Kondratyuk, 20117 (KW).

6. *Guignardia olivieri* (Vouaux) Sacc., Syll. Fung., 24: 786 (1928).

Upper Galilee: Lower Nahal Keziv — «Evolution Canyon» II, south-facing slopes, point 3 (the lowest on this slope), on twigs of *Quercus*, on shrubs, on *Xanthoria parietina* thalli, 14.01.2000, S. Kondratyuk, 2013 (KW); between Bar'am and Yiron, near Israel-Lebanon border, on roadside trees (mainly *Ceratonia* sp.), on *Xanthoria parietina* thalli, 19.09.2000, S. Kondratyuk, 20112 (KW).

7. *Hyperphyscia adglutinata* (Flurke) H. Mayrh. & Poelt, [in Hafellner & al.], Herzogia, 5: 62 (1979).

Golan Heights: slopes of Mt Hermon, old (a. 600-year old) oak forest to S of Mas'ada settlement, on bark of oak trees (*Quercus caliprinus*, *Q. infesta*, *Q. ithaburensis*, and *Q. boisei*), 800–900 m alt., 20.09.2000, S. Kondratyuk, 20115 (KW). **Upper Galilee:** Lower Nahal Keziv — «Evolution Canyon» II, north-facing slopes, point 7, (the highest on the slope), on bark of *Quercus*, *Laurus* etc., 14.01.2000, S. Kondratyuk, 2014 (KW).

8. *Lecanora crenulata* Hook., Engl. Fl.: 194 (1833).

Golan Heights: NE vicinity of Majdal Shams, EEN slope, old fruit garden, 1400 m alt., on limestone, 27.09.2000, S. Kondratyuk, 20128 (KW). **Carmel Mountains:** Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I, in conditions similar to point 4 (bottom of valley at the base of N-facing slope), on limestone, 24.09.2000, S. Kondratyuk, 20122 (KW).

9. *Lecanora dispersa* (Pers.) Sommerf., Suppl. Fl. Lapon.: 96 (1826).

DISTRIBUTION IN ISRAEL. Carmel Mountains: Mt Carmel National Park, Lower Nahal Oren, near «Evolution Canyon» I long-term monitoring plots, along bottom of valley from point 4 in the direction of the sea, on limestone growing together with *Toninia aromatica*, 22.09.2000, S. Kondratyuk, 20121 (KW).

10. *Lecanora hagenii* (Ach.) Ach., Lichgr. Univ., 367 (1810).

Golan Heights: NE vicinity of Majdal Shams, EEN slope, old fruit garden, 1400 m alt., on bark of *Pinus*, *Amygdalus*, *Crategus*, and *Malus* growing together with *Physconia distorta*, 27.09.2000, S. Kondratyuk, 20128 (KW).

11. *Lecidella euphorea* (Flurke) Hertel [in Hawksworth & al.] Lichenologist, 12: 107 (1980).

Golan Heights: NE vicinity of Majdal Shams, EEN slope, old fruit garden, 1400 m alt., on bark of *Pinus*, *Amygdalus*, *Crategus*, and *Malus* growing together with *Physconia distorta*, 27.09.2000, S. Kondratyuk, 20128 (KW); slopes of Mt Hermon, old (a. 600-year old) oak forest to S of Mas'ada settlement, on bark of oak trees (*Quercus caliprinus*, *Q. infesta*, *Q. ithaburensis*, and *Q. boisei*), 800–900 m alt., 20.09.2000, S. Kondratyuk, 20115 (KW).

12. *Parmelia verruculifera* Nyl., Flora, 61: 247 (1878).

Golan Heights: slopes of Mt Hermon, old (a. 600-year old) oak forest to S of Mas'ada settlement, on volcanic rocks growing together with *Aspicilia cinerea* and *Tephromela atra*, 800–900 m alt., 20.09.2000, S. Kondratyuk, 20115 (KW).

13. *Physcia semipinnata* (J.F. Gmelin) Moberg, Symb. Bot. Upsal., 12, 1: 56 (1977).

Golan Heights: NE vicinity of Majdal Shams, EEN slope, old fruit garden, 1400 m alt., on bark of *Amygdalus*, *Crategus*, and *Malus* growing together with *Physconia distorta*, 27.09.2000, S. Kondratyuk, 20128 (KW).

14. *Ph. stellaris* (L.) Nyl., Act. Soc. Linn. Bordeaux, 21: 307 (1856).

Golan Heights: NE vicinity of Majdal Shams, EEN slope, old fruit garden, 1400 m alt., on bark of *Pinus*, *Amygdalus*, *Crategus*, and *Malus* growing together with *Physconia distorta*, 27.09.2000, S. Kondratyuk, 20128 (KW); slopes of Mt Hermon, 500 m to N of Neve Ativ village, old fruit garden, on bark of old fruit trees, 20.09.2000, S. Kondratyuk, 20116 (KW).

15. *Ph. tenella* (Scop.) DC. [in Lam. & DC.], Fl. Franc., ed. 3, 2: 396 (1805).

Golan Heights: NE vicinity of Majdal Shams, EEN slope, old fruit garden, 1400 m alt., on bark of *Amygdalus*, *Crategus*, and *Malus* growing together with *Physconia distorta*, 27.09.2000, S. Kondratyuk, 20128 (KW).

16. *Placynthium nigrum* (Huds.) S.F. Gray, Nat. Arrang. Brit. Plants, 1: 395 (1821).

Carmel Mountains: Mt Carmel National Park, Lower Nahal Oren — «Evolution Canyon» I, conditions similar to point 7 and 6 of long-term monitoring plots, on limestone, 21.09.2000, S. Kondratyuk, 20118 (KW); near «Evolution Canyon» I long-term monitoring plot, along the bottom of valley from point 4 in the direction of the sea, on limestone growing together with *Toninia aromatica*, 22.09.2000, S. Kondratyuk, 20121 (KW).

17. *Protoparmeliopsis muralis* (Schreber) Choisy, Contrib. Lichenogr., dec. I: tab. 7 (1929).

Golan Heights: slopes of Mt Hermon, old (a. 600-year old) oak forest to S of Mas'ada settlement, on volcanic rocks growing together with *Aspicilia cinerea* and *Tephromela atra*, 800–900 m alt., 20.09.2000, S. Kondratyuk, 20115 (KW).

18. *Tornabea scutellifera* (With.) J.R. Laundon, The Lichenologist, 16: 226, 1984.

Golan Heights: slopes of Mt Hermon, old (a. 600-year old) oak forest to S of Mas'ada settlement, on bark of oak trees (*Quercus caliprinus*, *Q. infesta*, *Q. ithaburensis*, and *Q. boisei*), 800–900 m alt., 20.09.2000, S. Kondratyuk, 20115 (KW).

19. *Xanthoanptychia lacunosa* (Rupr.) S. Kondratyuk & Kärnefelt, Ukr. Botan. Journ., 60 (4): 436 (2003).

Central Negev: 10 km to SW of Mahtesh Ramon, on sandstones growing together with *Ramalina maciformis*, 29.09.2000, S. Kondratyuk, 20133 (KW).

20. *Xanthoria calcicola* Oxner, Vznachnik lishainikov URSR: 302 (1937).

Golan Heights: slopes of Mt Hermon, old (a. 600-year old) oak forest to S of Mas'ada settlement, on volcanic rocks growing together with *Aspicilia cinerea* and *Tephromela atra*,

800—900 m alt., 20.09.2000, S. Kondratyuk, 20115 (KW). **Upper Jordan Valley:** NE vicinity of Kokhav Ha-Yarden Reserve, lower part of N- or NW-facing slopes of hills, on basaltic rocks growing together with *Caloplaca conglomerata*, 25.09.2000, S. Kondratyuk, 20125 (KW).

21. *X. schistidii* (Anzi) S. Kondratyuk in Kondratyuk & Zelenko, Ukr. Botan. Journ., 59 (5): 605 (2002).

Golan Heights: NE vicinity of Majdal Shams, EEN slope, old fruit garden with *Pinus*, *Amygdalus*, *Crategus*, and *Malus*, on mosses, 1400 m alt., 27.09.2000, S. Kondratyuk, 20128 (KW).

Acknowledgement

The authors are grateful to colleagues of the Dept. of Lichenology and Bryology, namely, Dr. O.G. Roms, [N.G. Beznis], L.P. Popova, N.M. Fedorenko, and T.O. Smerechynska (KW, Kiev, Ukraine) for their support as well as technical help during the preparation of summarizing paper on lichen-forming and lichenicolous fungi of Israel and the Near East, as well as to Profs. E. Nevo, and S.P. Wasser (Haifa, Israel) for initiating this project, and for support and help with the arrangement of expeditions.

1. Galun M., Mukhtar A. Checklist of the lichens of Israel // *Bocconea*. — 1996. — 6. — P. 149—171.
2. Kondratyuk S.Y., Zelenko S.D. New lichens and lichenicolous fungi from Israel and the Near East // *Ukr. Botan. Journ.* — 2002. — 59, N 5. — P. 598—607.
3. Kondratyuk S.Y., Navrotskaya I.L., Zelenko S.D., Wasser S.P., Nevo E. The first checklist of lichen-forming and lichenicolous fungi of Israel / Eds. E. Nevo, S.P. Wasser. — Kyiv; Haifa, 1996. — 136 p.
4. Navrotskaya I.L., Kondratyuk S.Y., Wasser S.P., Nevo E., Zelenko S.D. Lichens and lichenicolous fungi new for Israel and other countries // *Israel Journal of Plant Sciences*. — 1996. — 44. — P. 181—196.
5. Wasser S.P., Nevo E., Vinogradova O.N., et al. Diversity of cryptogamic plants and fungi in «Evolution Canyon», Nahal Oren, Mount Carmel Natural Preserve, Israel // *Israel Journal of Plant Sciences*. — 1995. — 43. — P. 367—383.

Рекомендує до друку
І.О. Дудка

Надійшла 23.07.2004

С.Я. Кондратюк¹, Е. Нево², С.П. Вассер^{1,2}

¹ Інститут ботаніки ім. М.Г. Холодного НАН України, м. Київ, Україна

² Міжнародний центр криптогамних рослин та грибів, Хайфа, Ізраїль

НОВІ ТА РІДКІСНІ ДЛЯ ІЗРАЇЛЮ ЛИШАЙНИКИ ТА ЛІХЕНОФІЛЬНІ ГРИБИ З ГІР КАРМЕЛЬ

Наведено 18 нових для Ізраїлю видів лишайників та ліхенофільних грибів (*Agonimia tristicula*, *Amandinea punctata*, *Bacidia trachoma*, *Bispora christiansennii*, *Caloplaca obscurella*, *C. polycarpa*, *Cladonia ruxidata*, *Collema callopismum*, *Dirina stenhammari*, *Graphis scripta*, *Muellerella lichenicola*, *Opegrapha demutata*, *Phoma caloplacae*, *Rinodina sophodes*, *Topelia nimisiana*, *T. rosea*, *Verrucaria macrostoma*, *Xanthoriicola physciae*). Для всіх таксонів представлені описи, що включають синоніми, діагнози, поширення в Ізраїлі та загальне поширення. Вказані місцезнаходження нових для деяких регіонів Ізраїлю видів лишайників та ліхенофільних грибів (*Arthonia molendoi*, *Caloplaca citrina*, *C. haematites*, *Collema crispum*, *C. flaccidum*, *Guignardia olivieri*, *Hyperphyscia adglutinata*, *Lecanora crenulata*, *L. dispersa*, *L. hagenii*, *Lecidella euphoria*, *Parmelia verruculifera*,

Physcia semipinnata, *P. stellaris*, *P. tenella*, *Placynthium nigrum*, *Protoparmeliopsis muralis*, *Tornabea scutellifera*, *Xanthoanptychia lacunosa*, *Xanthoria calcicola*, *X. schistidii* — загалом 21 вид), а також нові локалітети 9 видів, асоційованих з іншими рідкісними видами лишайників (*Aspicilia cinerea*, *Caloplaca conglomerata*, *Clauzadea immersa*, *Parmelina tiliacea*, *Physconia distorta*, *Ramalina maciformis*, *Tephromela atra*, *Toninia aromatica* та *Verrucaria nigrescens*).

С.Я. Кондратюк¹, Е. Нево², С.П. Вассер^{1,2}

¹ Інститут ботаніки ім. Н.Г. Холодного НАН України, Київ, Україна

² Міжнародний центр криптогамних рослин і грибів, Хайфа, Ізраїль

НОВЫЕ И РЕДКИЕ ДЛЯ ИЗРАИЛЯ ЛИШАЙНИКИ И ЛИХЕНОФИЛЬНЫЕ ГРИБЫ С ГОР КАРМЕЛЬ

Приведено 18 новых для Израиля видов лишайников и лихенофильных грибов (*Agonimia tristicula*, *Amandinea punctata*, *Bacidia trachoma*, *Bispora christiansennii*, *Caloplaca obscurella*, *C. polycarpa*, *Cladonia pyxidata*, *Collema callopismum*, *Dirina stenhammari*, *Graphis scripta*, *Muellerella lichenicola*, *Opoglyphis demutata*, *Phoma caloplacae*, *Rinodina sophodes*, *Topelia nimisiana*, *T. rosea*, *Verrucaria macrostoma*, *Xanthoriicola physciae*). Для всех таксонов представлены описания, включающие синонимы, ссылку на диагноз, распространение в Израиле и общее распространение. Указаны местонахождения новых для некоторых регионов Израиля видов лишайников (*Arthonia molendoi*, *Caloplaca citrina*, *C. haematites*, *Collema crispum*, *C. flaccidum*, *Guignardia olivieri*, *Hyperphyscia adglutinata*, *Lecanora crenulata*, *L. dispersa*, *L. hagenii*, *Lecidella euphoria*, *Parmelia verruculifera*, *Physcia semipinnata*, *P. stellaris*, *P. tenella*, *Placynthium nigrum*, *Protoparmeliopsis muralis*, *Tornabea scutellifera*, *Xanthoanptychia lacunosa*, *Xanthoria calcicola*, *X. schistidii* — всего 21 вида), а также новые локалитеты 9 видов, ассоциированных с другими редкими видами лишайников (*Aspicilia cinerea*, *Caloplaca conglomerata*, *Clauzadea immersa*, *Parmelina tiliacea*, *Physconia distorta*, *Ramalina maciformis*, *Tephromela atra*, *Toninia aromatica* и *Verrucaria nigrescens*).