

## New records of lichenized fungi from the Near East

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**Abstract.** Seven species of lichenized fungi (*Bagliettoa parmigerella*, *Collema callopismum*, *Dermatocarpon intestiniforme*, *Opegrapha demutata*, *O. subelevata*, *Phaeophyscia hirsuta*, and *Rinodinella dubyanoides*) that are new to the Near East were reported. New localities of 54 other species were recorded. Data on distribution of these species in various regions of the Near East and in the world were given.

**Key words:** lichen diversity, Near East, new records

### Introduction

Lichenological investigation of the Near East has a long history. The first data on lichens of this region were recorded in the works of Nylander (1864) and Müller Argo (1880, 1884, 1891), including information on lichen species collected in the Sinai Peninsula and the Negev Desert. At the same time, Krempelhuber (1868) was the first to report on lichens from Syria. Subsequently, lichen biota of various territories of the Near East has been studied by many scientists (Steiner 1916, 1921; Reichert 1937a, b, 1940; Szatala 1941, 1960; Santesson 1942; Reichert & Avisohar-Herchenzon 1946; Werner 1954, 1955, 1956, 1957, 1958, 1959, 1963, 1966; Reichert & Galun 1958; Galun & Reichert 1960, 1965; Galun 1963, 1966a, b, 1967, 1970; Galun & Lavee 1966; Alon & Galun 1971; Galun & Garty 1972; Marton & Galun 1974, 1981; Khalife 1982; El-Oqlah & Lahham 1985; El-Oqlah *et al.* 1986; Garty & Binyamini 1990; El-Oqlah 1992; Insarov & Insarova 1995; Wasser *et al.* 1995; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996; Navrotskaya *et al.* 1996; Kondratyuk & Zelenko 2002; Temina *et al.* 2002). There are a number of taxonomic papers where some lichen species from various regions of the Near East are mentioned (Wunder 1974; Mayrhofer & Poelt 1979; Egea 1989; Lumbsch 1989; Breuss 1990; Knoph 1990; Moreno & Egea 1992; Giralt & Mayrhofer 1994; Navarro-Rosinés & Hladun 1996).

The most intensive investigations of lichen diversity were made in the territories of Israel and Syria. To date, the list of lichens and lichenicolous fungi of Israel includes 258 taxa (Temina *et al.* 2002) and in Syria – 299 taxa (John *et al.* 2004). The lichen biota of other areas of the Near East is still poorly known. The number of lichens and lichenicolous fungi reported from Jordan were 93 (Schultz 2003). Eighty-one taxa were published by Werner (1954, 1955, 1956, 1957, 1958, 1959, 1963, 1966) and 43 by Khalife (1982) for Lebanon. According to Galun & Garty (1972) and Galun & Mukhtar (1996), 55 lichen species occurred in the Sinai Peninsula.

The present paper adds to already existing data on lichen diversity of the Near East. Data on 61 lichen species are given.

### Materials and Methods

The paper is based on the results of several expeditions to various regions of Israel from July 2000 to August 2002. Lichen species were collected by M. Temina (MT) in 13 localities from the following natural regions: Mount Hermon, Golan Heights, Upper Galilee, Upper Jordan Valley, Akko Plain, Mount Carmel, and Central Negev. The natural regions of Israel are given according to Zohary & Feinbrun-Dothan (1966–1986) (Fig. 1).

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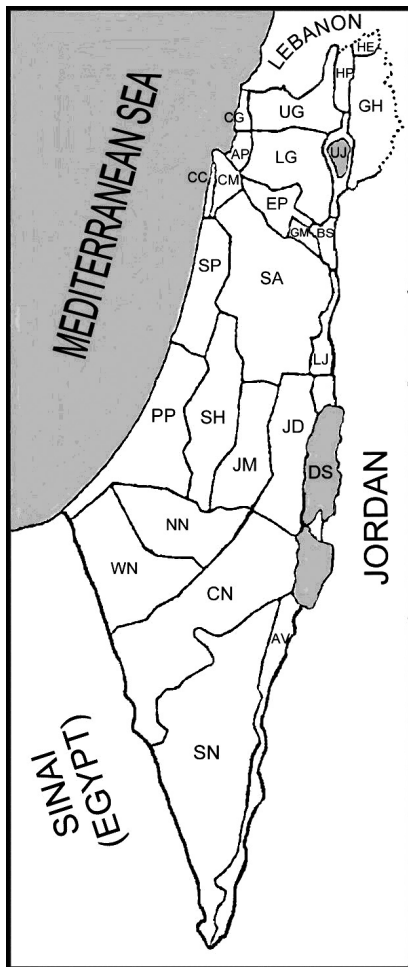


Fig. 1. Map of natural regions of Israel: AP – Akko Plain; AV – Arava Valley; BS – Bet Shean Valley; CC – Carmel Coast; CM – Mount Carmel; CN – Central Negev; DS – Dead Sea Area; EP – Esdraelion Plain; GC – Galilee Coast; GH – Golan Heights; GM – Gilboa Mountains; HE – Hermon; HP – Hula Plain; JD – Judean Desert; JM – Judean Mountains; LG – Lower Galilee; LJ – Lower Jordan Valley; NN – Northern Negev; PP – Philistine Plain; SA – Samaria; SH – Shefela; SN – Southern Negev; SP – Sharon Plain; UG – Upper Galilee; UJ – Upper Jordan Valley; WN – Western Negev

### Localities:

- 1) Mount Hermon: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002.
- 2) Mount Hermon: Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000.
- 3) Mount Hermon: NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000.
- 4) Golan Heights: S vicinity of the village of Ma'sada, oak forest, 33°13'N, 35°45'E, alt. 800-900 m, 20 Sep 2000.
- 5) Golan Heights: Nahal Meitsar, canyon, 32°44'N, 35°43'E, 5 Jun 2002.

- 6) Golan Heights: Tel Dan Nature Reserve, 33°14'N, 35°38'E, 18 Aug 2002.
- 7) Upper Galilee: Lower Nahal Keziv, "Evolution Canyon" II, 33°02'N, 35°11'E, 5 Nov 2001.
- 8) Upper Galilee: the vicinity of Mi'ilya, 33°01'N, 35°14'E, 5 Dec 2000.
- 9) Upper Galilee: the vicinity of Dalton, alt. 800 m, 33°01'N, 35°28'E, 13 Jan 2001.
- 10) Upper Jordan Valley: NE vicinity of Kokhav Ha-Yarden Reserve, 32°36'N, 35°31'E, 25 Sep 2000.
- 11) Akko Plain: SE area of Kiryat Bialik, Ha Hagana St., 32°49'N, 35°05'E, 12 Jul 2000.
- 12) Mount Carmel: Mount Carmel National Park, Lower Nahal Oren, "Evolution Canyon" I, 32°43'N, 34°58'E, 12 Jun 2001.
- 13) Central Negev: Negev highland, Makhtesh Ramon Nature Reserve, alt. 900-1000 m, 30°37'N, 34°54'E, 29 Sep 2000.

All lichen samples were collected for precise determination in the laboratory. Observations and measurements of morphological characters of lichen specimens were made under a dissecting microscope. Anatomical details were obtained by examining hand-cut sections or squash preparations under a light microscope. Microscopic preparations were mounted in water, 10% potassium hydroxide or Lugol's solution. Measurements of anatomical characters were made in water at  $\times 100$ -1000 magnification. The spot tests on the thallus and medulla were made using 10% potassium hydroxide, calcium hypochlorite, and para-phenylenediamine in ethanol. Hymenial color tests were carried out using 50% nitric acid and Lugol's solution. The following references were used to identify the specimens: Poelt (1969), Galun (1970), Alon & Galun (1971), Oxner (1971), Esslinger (1978), Poelt & Vězda (1981), Thomson (1984, 1997), Mayrhofer (1988), Egea (1989), Fröberg (1989), Torrente & Egea (1989), Breuss (1990), Purvis *et al.* (1992), Egea & Torrente (1993), Wirth (1995), Navarro-Rosinés & Hladun (1996), Brodo *et al.* (2001), and Giralt (2001). To verify identification of new species, specimens from lichenological collections of the Department of Lichenology & Bryology of Komarov Botanical Institute (St. Petersburg, Russia) were used as comparative material. Lichen nomenclature is given according to Kirk *et al.* (2003). Herbarium specimens are deposited at the herbarium of the Institute of Evolution, University of Haifa, Israel (HAI).

### List of species

*Aspicilia contorta* (Hoffm.) Kremp. subsp. *contorta* (*Verrucaria contorta* Hoffm., *Lecanora contorta* (Hoffm.) J. Steiner)

Description: Galun (1970), Fröberg (1989).

New locality in Israel: HE: Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rock, MT (HAI 001 2321).

General distribution: Europe (widespread), Asia (Caucasus, Israel, Mongolia, Saudi Arabia, Syria, Tajikistan, Turkey), North Africa (Morocco), Canary Islands, North America, Australia.

Note: In Israel this species was found in Upper Galilee and Mount Carmel (Galun 1970; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Syria (John *et al.* 2004).

*Aspicilia contorta* subsp. *hoffmanniana* S. Ekman & Fröberg (*Lecanora hoffmannii* Müll. Arg., *Aspicilia hoffmannii* (Ach.) Flagey)

Description: Galun (1970), Fröberg (1989).

New localities in Israel: HE: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002 – on calcareous rock, MT (HAI 021 2411), Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rock, MT (HAI 001 2322), NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2217); UG: Lower Nahal Keziv, "Evolution Canyon" II, 33°02'N, 35°11'E, 5 Nov 2001, south-facing slope – on calcareous rock, MT (HAI 012 416).

General distribution: Europe (widespread), Asia (Caucasus, China, Israel, Kuwait, Mongolia, Syria, Tajikistan, Turkey), North Africa (Morocco, Tunisia), Canary Islands, North America, Australia.

Note: In Israel this species was recorded from the Negev Desert (Galun & Reichert 1960; Galun 1970; Insarov & Insarova 1995; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Syria (John *et al.* 2004).

*Aspicilia desertorum* (Kremp.) Mereschk. (*Lecanora desertorum* Kremp.)

Description: Galun (1970), Oxner (1971).

New localities in Israel: HE: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002 – on calcareous rock, MT (HAI 021 2412), Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rock, MT (HAI 001 2323).

General distribution: Europe, Asia, North America.

Note: In Israel this species was found in the Upper Jordan Valley (Galun & Mukhtar 1996) and in the Judean and Negev Deserts (Galun 1970; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Syria (John *et al.* 2004).

*Aspicilia farinosa* (Flörke) Arnold (*Urceolaria calcarea* var. *farinosa* Flörke, *Lecanora farinosa* Nyl.)

Description: Galun (1970), Oxner (1971).

New localities in Israel: HE: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002 – on calcareous rock, MT (HAI 021 2413), Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rock, MT (HAI 001 2324), NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2218).

General distribution: Southern Europe, Asia [Egypt (Sinai), Iraq, Israel, Lebanon, Mongolia, Syria, Tajikistan, Turkey], North Africa (Morocco).

Note: In Israel this species was found in the Judean and Negev Deserts (Galun & Reichert 1960; Galun 1970; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Lebanon (Werner 1956: as *Lecanora farinosa*; Werner 1963: as *L. farinosa* f. *subopegraphoides*), the Sinai Peninsula (Galun & Garty 1972; Galun & Mukhtar 1996), and Syria (John *et al.* 2004).

*Bactrospora patellarioides* (Nyl.) Almq. var. *patellarioides* (*Opegrapha patellarioides* Nyl.)

Description: Egea & Torrente (1993).

New locality in Israel: UG: Lower Nahal Keziv, "Evolution Canyon" II, 33°02'N, 35°11'E, 5 Nov 2001, north-facing slope – on bark of *Quercus calliprinos*, MT (HAI 012 418).

General distribution: Southern Europe, Asia (Israel), Africa, Canary Islands, Madeira Islands, North America.

Note: In Israel this species was found in Mount Carmel (Navrotskaya *et al.* 1996; Kondratyuk *et al.* 1996).

*Bagliettoa parmigera* (J. Steiner) Vězda & Poelt (*Verrucaria parmigera* J. Steiner)

Description: Fröberg (1989).

New locality in Israel: UG: Lower Nahal Keziv, "Evolution Canyon" II, 33°02'N, 35°11'E, 5 Nov 2001, north-facing slope – on calcareous rock, MT (HAI 012 4111).

General distribution: Central and southern Europe, Asia (Israel, Syria, Turkey), North Africa (Morocco).

Note: In Israel this species was recorded on Mount Carmel (Wasser *et al.* 1995; Kondratyuk *et al.* 1996). This species was also reported from Syria (John *et al.* 2004).

*Bagliettoa parmigerella* (Zahlbr.) Vězda & Poelt (*Verrucaria parmigerella* Zahlbr.)

Description: Hawksworth *et al.* (1992).

Localities in Israel: UG: Lower Nahal Keziv, "Evolution Canyon" II, 33°02'N, 35°11'E, 5 Nov 2001, north-facing slope – on calcareous rocks, MT (HAI 012 411), the vicinity of Mi'ilya, 33°01'N, 35°14'E, 5 Dec 2000 – on calcareous rocks, MT (HAI 002 425); CM: Mount Carmel National Park, Lower Nahal Oren, "Evolution Canyon" I, 32°43'N, 34°58'E, 12 Jun 2001, north-facing slope – on calcareous rocks, MT (HAI 010 511).

General distribution: Central and southern Europe, Asia (Israel, Turkey), North Africa (Morocco).

Note: It is recorded for the first time in Israel and the Near East.

*Caloplaca alociza* (A. Massal.) Migula (*Biatorina alociza* A. Massal.)

Description: Fröberg (1989), Laundon (1992).

New localities in Israel: HE: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002 – on calcareous rock, MT (HAI 021 2414), Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rock, MT (HAI 001 2325), NE vicinity of the village of

Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2219); UG: the vicinity of Mi'ilya, 33°01'N, 35°14'E, 5 Dec 2000 – on calcareous rock, MT (HAI 002 426).

General distribution: Central and southern Europe, Asia [Egypt (Sinai), Iran, Israel, Lebanon, Syria, Tadjikistan, Turkey], North Africa (Morocco, Tunisia).

Note: In Israel this species was found on Mount Carmel (Kushnir & Galun 1977; Garty & Binyamini 1990) and in the Negev Desert (Galun & Mukhtar 1996). This species was also reported from Lebanon (Werner 1966), the Sinai Peninsula (Galun & Mukhtar 1996; Kondratyuk *et al.* 1996), and Syria (John *et al.* 2004).

*Caloplaca citrina* (Hoffm.) Th. Fr. (*Verrucaria citrina* Hoffm.)

Description: Galun (1970), Alon & Galun (1971).

New locality in Israel: HE: NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2220).

General distribution: Cosmopolitan.

Note: This species is distributed in many regions of Israel (Galun 1970; Alon & Galun 1971; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Jordan (Schultz 2003) and the Sinai Peninsula (Galun & Garty 1972; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996).

*Caloplaca erythrocarpa* (Pers.) Zwackh (*Patellaria erythrocarpa* Pers.)

Description: Galun (1970), Alon & Galun (1971).

New localities in Israel: HE: NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2221); CM: Mount Carmel National Park, Lower Nahal Oren, "Evolution Canyon" I, 32°43'N, 34°58'E, 12 Jun 2001, valley bottom – on calcareous rock, MT (HAI 010 518).

General distribution: Central and southern Europe, Asia [Caucasus, Egypt (Sinai), Israel, Jordan, Syria, Turkey], North Africa (Morocco, Tunisia).

Note: In Israel this species was found in the Golan Heights, Upper and Coastal Galilee, Shefela and Judean Mountains (Galun 1970; Alon & Galun 1971; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Jordan (Schultz 2003), the Sinai Peninsula (Galun & Garty 1972; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996), and Syria (John *et al.* 2004).

*Caloplaca ferrarii* (Bagl.) Jatta (*Calloposma ferrarii* Bagl.)

Description: Navarro-Rosinés & Hladun (1996).

Localities in Israel: HE: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002 – on calcareous rocks, MT (HAI 021 241), Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rocks, MT (HAI 001 2314), NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rocks, MT (HAI 001 2210).

General distribution: Central and southern Europe, Asia (Iraq, Israel, Syria), North Africa (Morocco).

Note: It is recorded for the first time in Israel. This species was also reported from Syria (John *et al.* 2004).

*Caloplaca flavescens* (Huds.) J.R. Laundon (*Lichen flavescens* Huds.)

Description: Laundon (1992).

New locality in Israel: HE: NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2222).

General distribution: Europe, Asia (Israel, Turkey), North Africa (Morocco, Tunisia).

Note: In Israel this species was recorded from Mount Carmel (Wasser *et al.* 1995; Kondratyuk *et al.* 1996).

*Caloplaca latzelii* (Servit) Clauzade & Cl. Roux (*Blastenia latzelii* Servit)

Description: Galun (1970).

New locality in Israel: CM: Mount Carmel National Park, Lower Nahal Oren, "Evolution Canyon" I, 32°43'N, 34°58'E, 12 Jun 2001, north-facing slope – on calcareous rock, MT (HAI 010 519).

General distribution: Europe (Yugoslavia), Asia (Israel).

Note: In Israel this species was found in Lower Galilee, Upper Jordan Valley, Samaria, and Judean Mountains (Galun 1970; Galun & Mukhtar 1996).

*Caloplaca polycarpa* (A. Massal.) Zahlbr. (*Calloposma aurantiacum* var. *polycarpum* A. Massal.)

Description: Wirth (1995).

Locality in Israel: CM: Mount Carmel National Park, Lower Nahal Oren, "Evolution Canyon" I, 32°43'N, 34°58'E, 12 Jun 2001, south-facing slope – on thallus of *Verrucaria* sp. on limestone, MT (HAI 010 512).

General distribution: Southern Europe, Asia (Israel, Lebanon, Syria, Turkey).

Note: It is recorded for the first time in Israel. This species was also reported from Lebanon (Werner 1955: as *C. tenuatula*) and Syria (John *et al.* 2004).

*Caloplaca saxicola* (Hoffm.) Nordin (*Psora saxicola* Hoffm., *Caloplaca murorum* (Hoffm.) Th. Fr.)

Description: Galun (1970), Alon & Galun (1971).

New locality in Israel: HE: Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rock, MT (HAI 001 2326).

General distribution: Cosmopolitan.

Note: In Israel this species was found in Upper and Lower Galilee, Philistine Plain, Shefela, Judean Mountains (Galun 1970; Alon & Galun 1971; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996) and also on Mount Carmel (Wasser *et al.* 1995; Kondratyuk *et al.* 1996; Navrotskaya *et al.* 1996). This species was also reported from Jordan (Schultz 2003) and Syria (John *et al.* 2004).

*Caloplaca variabilis* (Pers.) Müll. Arg. (*Lichen variabilis* Pers.)

Description: Galun (1970), Alon & Galun (1971).

New localities in Israel: HE: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002 – on calcareous rock, MT (HAI 021 2415), Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rock, MT (HAI 001 2327), NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2223).

General distribution: Europe (widespread), Asia (Afghanistan, Israel, Iran, Jordan, Kuwait, Lebanon, Mongolia, Russia, Syria, Tadjikistan, Turkey), North Africa (Morocco, Tunisia), North America, South America (Argentina).

Note: This species is distributed in many regions of Israel (Galun 1970; Alon & Galun 1971; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Jordan (Schultz 2003), Lebanon (Werner 1955: as *C. variabilis*; Werner 1957, 1959, 1963: as *C. variabilis* var. *subimmersa*), and Syria (John *et al.* 2004).

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

Description: James & Gilbert (1992a).

Locality in Israel: GH: Nahal Meitsar, canyon, 32°44'N, 35°43'E, 5 Jun 2002 – on bark of *Quercus ithaburensis*, MT (HAI 021 034).

General distribution: Cosmopolitan.

Note: It is recorded for the first time in Israel. This species was also reported from Jordan (Schultz 2003) and Syria (John *et al.* 2004).

*Candelariella aurella* (Hoffm.) Zahlbr. (*Verrucaria aurella* Hoffm.)

Description: Fröberg (1989), James & Gilbert (1992b).

New localities in Israel: HE: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002 – on calcareous rock, MT (HAI 0212 416), Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rock, MT (HAI 001 2328), NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2224); UG: the vicinity of Dalton, alt. 800 m, 33°01'N, 35°28'E, 13 Jan 2001 – on calcareous rock, MT (HAI 012 435).

General distribution: Cosmopolitan.

Note: In Israel this species was found in the Philistine Plain and Central Negev (Galun & Mukhtar 1996). This species was also reported from Jordan (Schultz 2003), Lebanon (Werner 1955), the Sinai Peninsula (Galun & Garty 1972; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996), and Syria (John *et al.* 2004).

*Candelariella vitellina* (Hoffm.) Müll. Arg. (*Verrucaria vitellina* Hoffm.)

Description: Galun (1970).

New localities in Israel: GH: S vicinity of the village of Mas'ada, oak forest, 33°13'N, 35°45'E, alt. 800-900 m, 20 Sep 2000 – on basalt, MT (HAI 001 018), Nahal Meitsar, canyon, 32°44'N, 35°43'E, 5 Jun 2002 – on basalt, MT (HAI 021 035).

General distribution: Cosmopolitan.

Note: In Israel this species was found in Upper and Lower Galilee, Upper Jordan Valley, and Judean Mountains (Galun 1970; Galun & Mukhtar 1996;

Kondratyuk *et al.* 1996). This species was also reported from Jordan (Schultz 2003) and Syria (John *et al.* 2004).

*Cladonia pocillum* (Ach.) O.J. Rich. (*Baeomyces pocillum* Ach.)

Description: Galun (1970).

New locality in Israel: GH: S vicinity of the village of Mas'ada, oak forest, 33°13'N, 35°45'E, alt. 800-900 m, 20 Sep 2000 – on mossy soil, MT (HAI 001 019).

General distribution: Cosmopolitan.

Note: In Israel this species was found in Upper and Coastal Galilee, Mount Carmel, Shefela, and Judean Mountains (Galun & Reichert 1965; Galun 1970; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996).

*Cladonia rangiformis* Hoffm.

Description: Galun (1970).

New locality in Israel: GH: S vicinity of the village of Mas'ada, oak forest, 33°13'N, 35°45'E, alt. 800-900 m, 20 Sep 2000 – on mossy soil, MT (HAI 001 020).

General distribution: Cosmopolitan.

Note: In Israel this species was found in Upper Galilee (Galun 1970; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Syria (John *et al.* 2004).

*Clauzadea immersa* (Weber) Hafellner & Bellem. (*Lichen immersus* Weber, *Protoblastenia immersa* (Weber) J. Steiner)

Description: Galun (1970).

New locality in Israel: UG: the vicinity of Dalton, alt. 800 m, 33°01'N, 35°28'E, 13 Jan 2001 – on calcareous rock, MT (HAI 012 436).

General distribution: Europe, Asia (Israel, Lebanon, Syria, Turkey), North Africa (Morocco, Tunisia), North America.

Note: In Israel this species was found on Mount Carmel (Galun 1970; Garty & Binyamini 1990; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996) and in Central Negev (Insarov & Insarova 1995; Galun & Mukhtar 1996). This species was also reported from Lebanon (Werner 1963: as *Protoblastenia immersa*) and Syria (John *et al.* 2004).

*Clauzadea metzleri* (Körb.) D. Hawksw. (*Biatora metzleri* Körb.)

Description: Hawksworth (1992).

New localities and in Israel: UG: Lower Nahal Keziv, "Evolution Canyon" II, 33°02'N, 35°11'E, 5 Nov 2001, north-facing slope – on calcareous rock, MT (HAI 012 4114), the vicinity of Mi'ilya, 33°01'N, 35°14'E, 5 Dec 2000 – on calcareous rock, MT (HAI 002 429), the vicinity of Dalton, alt. 800 m, 33°01'N, 35°28'E, 13 Jan 2001 – on calcareous rock, MT (HAI 012 437).

General distribution: Europe (widespread), Asia (Israel, Turkey), North Africa (Tunisia).

Note: In Israel this species was found on Mount Carmel (Kushnir & Galun 1977; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996).

*Collema auriforme* (With.) Coppins & J.R. Laundon (*Riccia auriformis* With.)

Description: Purvis & James (1992a).

Locality in Israel: UG: Lower Nahal Keziv, "Evolution Canyon" II, 33°02'N, 35°11'E, 5 Nov 2001, north-facing slope – on calcareous rocks, MT (HAI 012 412).

General distribution: Europe, Asia (Israel, Mongolia, Syria, Tadjikistan, Turkey), North Africa (Morocco, Tunisia), North America.

Note: It is recorded for the first time in Israel. This species was also reported from Syria (John *et al.* 2004).

*Collema callopismum* A. Massal.

Description: Thomson (1984), Purvis & James (1992a).

Localities in Israel: HE: NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rocks, MT (HAI 001 2211); UG: Lower Nahal Keziv, "Evolution Canyon" II, 33°02'N, 35°11'E, 5 Nov 2001, north-facing slope – on calcareous rocks, MT (HAI 012 413); CM: Mount Carmel National Park, Lower Nahal Oren, "Evolution Canyon" I, 32°43'N, 34°58'E, 12 Jun 2001, north-facing slope – on calcareous rocks, MT (HAI 010 513).

General distribution: Europe, Asia (Israel), Greenland, North America.

Note: It is recorded for the first time in Israel and the Near East.

*Collema cristatum* (L.) F.H. Wigg. (*Lichen cristatus* L.)

Description: Galun (1970).

New localities in Israel: HE: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002 – on calcareous rock, MT (HAI 021 2417), Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rock, MT (HAI 001 2329), NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2225); GH: Nahal Meitsar, canyon, 32°44'N, 35°43'E, 5 Jun 2002 – on soil, MT (HAI 021 036).

General distribution: Europe (widespread), Asia (Iran, Israel, Mongolia, Syria, Tadjikistan, Turkey), North Africa (Algeria, Morocco, Tunisia), North America.

Note: In Israel this species was found in Upper Galilee, Upper Jordan Valley, Mount Carmel, Judean Mountains, and Judean Desert (Galun & Reichert 1965; Galun 1970; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Syria (John *et al.* 2004).

*Collema flaccidum* (Ach.) Ach. (*Lichen flaccidus* Ach.)

Description: Purvis & James (1992a).

New localities in Israel: GH: Nahal Meitsar, canyon, 32°44'N, 35°43'E, 5 Jun 2002 – on basalt, MT (HAI 021 042); CM: Mount Carmel National Park, Lower Nahal Oren, "Evolution Canyon" I, 32°43'N, 34°58'E, 12 Jun 2001, north-facing slope – on calcareous rock, MT (HAI 010 527).

General distribution: Europe (widespread), Asia, North Africa (Tunisia), North America, Australia.

Note: In Israel this species was found in Upper Galilee (Galun & Mukhtar 1996). This species was also reported from Syria (John *et al.* 2004).

*Collema polycarpon* Hoffm. subsp. *polycarpon*

Description: Galun (1970).

New localities in Israel: HE: Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rock, MT (HAI 001 2330), NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2226); UG: Lower Nahal Keziv, "Evolution Canyon" II, 33°02'N, 35°11'E, 5 Nov 2001, south-facing slope – on calcareous rock, MT (HAI 012 4117), the vicinity of Mi'ilya, 33°01'N, 35°14'E, 5 Dec 2000 – on calcareous rock, MT (HAI 002 4211).

General distribution: Europe (widespread), Asia (India, Israel, Lebanon, Mongolia, Syria, Tadjikistan, Turkey), Africa, North America.

Note: In Israel this species was found in Lower Galilee (Galun 1970; Galun & Mukhtar 1996). This species was also reported from Lebanon (Werner 1958) and Syria (John *et al.* 2004).

*Dermatocarpon intestiniforme* (Körb.) Hasse (*Endocarpon intestiniforme* Körb.)

Description: Thomson (1984), Coppins & Fox (1992).

Locality in Israel: HE: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002 – on calcareous rocks, MT (HAI 021 242).

General distribution: Europe, Asia (Israel), North America.

Note: It is recorded for the first time in Israel and the Near East.

*Immersaria athroocarpa* (Ach.) Rambold & Pietschm. (*Lichen athroocarpus* Ach., *Porpidia athroocarpa* (Ach.) Hertel & Rambold)

Description: Galloway & Coppins (1992).

Locality in Israel: GH: S vicinity of the village of Mas'ada, oak forest, 33°13'N, 35°45'E, alt. 800-900 m, 20 Sep 2000 – on basaltic rocks, MT (HAI 001 015).

General distribution: Cosmopolitan.

Note: It is recorded for the first time in Israel. This species was also reported from Syria (John *et al.* 2004).

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

Description: Mayrhofer (1988), James & Purvis (1992).

New locality in Israel: HE: NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2229).

General distribution: Europe, Asia (Afghanistan, Israel, Mongolia, Syria), North Africa (Morocco, Tunisia), North America.

Note: In Israel this species was found on Mount Carmel (Kondratyuk *et al.* 1996) and in central Negev (Galun & Mukhtar 1996). This species was also reported from Syria (John *et al.* 2004).

*Lecanora agardhiana* Ach.

Description: Hawksworth & Dalby (1992).

Localities in Israel: HE: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002 – on calcareous rocks, MT (HAI 021 243), Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rocks, leg. MT, det. M. Andreev (HAI 001 2315), NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rocks, MT (HAI 001 2212).

General distribution: Europe, Asia (Israel, Lebanon, Syria, Turkey), North Africa (Morocco).

Note: It is recorded for the first time in Israel. This species was also reported from Lebanon (Werner 1956, 1963) and Syria (John *et al.* 2004).

*Lecanora dispersa* (Pers.) Sommerf. (*Lichen dispersus* Pers.)

Description: Fröberg (1989), Hawksworth & Dalby (1992).

New localities in Israel: HE: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002 – on calcareous rock, MT (HAI 021 2418), Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rock, MT (HAI 001 2332), NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2230); AP: SE area of Kiryat Bialik, Ha Hagana St., 32°49'N, 35°05'E, 12 Jul 2000 – on calcareous rock, MT (HAI 000 113); CN: Negev highland, Makhtesh Ramon Nature Reserve, alt. 900-1000 m, 30°37'N, 34°54'E, 29 Sep 2000 – on calcareous rock, MT (HAI 000 624).

General distribution: Cosmopolitan.

Note: This species (as *L. dispersa* f. *dissipata*) was recorded from Israel, but without detailed locality (Garty 1988; Galun & Mukhtar 1996). This species was also reported from Jordan (Schultz 2003), Lebanon (Werner 1956: as *L. dispersa* and *L. dispersa* f. *pruinosa*), and Syria (John *et al.* 2004).

*Lecanora muralis* (Schreb.) Rabenh. (*Lichen muralis* Schreb.)

Description: Galun (1970).

New localities in Israel: HE: Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rock, MT (HAI 001 2333), NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2231); GH: S vicinity of the village of Mas'ada, oak forest, 33°13'N, 35°45'E, alt. 800-900 m, 20 Sep 2000 – on basalt, MT (HAI 001 021).

General distribution: Cosmopolitan.

Note: In Israel this species was found in the Upper and Lower Galilee, Upper Jordan Valley, Gilboa Mountains, and Samaria (Galun 1970; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Jordan (Schultz 2003), Lebanon (Werner 1956: as *L. muralis* var. *diffRACTA*, Werner 1966: as *L. muralis* var. *versicolor*), and Syria (John *et al.* 2004).

*Lecanora pruinosa* Chaub.

Description: Galun (1970).

New locality in Israel: HE: NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2232).

General distribution: Europe, Asia (Israel, Jordan, Lebanon, Syria, Tadjikistan, Turkey), North Africa (Tunisia).

Note: This species is distributed in many regions of Israel (Galun & Reichert 1965; Galun 1970; Garty & Binyamini 1990; Galun & Mukhtar 1996). This species was also reported from Jordan (Schultz 2003), Lebanon (Werner 1966), and Syria (John *et al.* 2004).

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

Description: Hawksworth & Coppins (1992).

Locality in Israel: GH: S vicinity of the village of Mas'ada, oak forest, 33°13'N, 35°45'E, alt. 800-900 m, 20 Sep 2000 – on basalt, MT (HAI 001 022).

General distribution: Europe, Asia (China, Israel, Nepal, Syria, Tadjikistan, Turkey), Africa (Algeria, Morocco, Tunisia, South Africa), North America, South America.

Note: It is recorded for the first time in Israel. This species was also reported from Syria (John *et al.* 2004 – as *L. fuscoatra* var. *grisella*).

*Lecidella carpathica* Körb.

Description: Purvis & James (1992b).

New locality in Israel: HE: NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2233).

General distribution: Cosmopolitan.

Note: This species was recorded from Israel, but without detailed locality (Egea & Llimona 1991; Galun & Mukhtar 1996). This species was also reported from Syria (John *et al.* 2004).

*Leptochidium albociliatum* (Desm.) M. Choisy (*Leptogium albociliatum* Desm.)

Description: Thomson (1984).

Locality in Israel: GH: S vicinity of the village of Mas'ada, oak forest, 33°13'N, 35°45'E, alt. 800-900 m, 20 Sep 2000 – among mosses on basaltic rocks, MT (HAI 001 016).

General distribution: Europe, Asia (Israel, Syria, Turkey), North Africa (Morocco), Greenland, North America.

Note: It is recorded for the first time in Israel. This species was also reported from Syria (John *et al.* 2004).

*Leptogium corniculatum* (Hoffm.) Minks (*Collema corniculatum* Hoffm.)

Description: Coppins & Purvis (1992).

New locality in Israel: GH: S vicinity of the village of Mas'ada, oak forest, 33°13'N, 35°45'E, alt. 800-900 m, 20 Sep 2000 – on mossy soil, MT (HAI 001 023).

General distribution: Europe, Asia (Israel, Japan, Syria, Turkey), North Africa (Morocco), North America, Australia.

Note: In Israel this species was found on Mount Carmel (Galun & Mukhtar 1996). This species was also reported from Syria (John *et al.* 2004).

*Neofuscelia verruculifera* (Nyl.) Essl. (*Parmelia verruculifera* Nyl., *P. glomelifera* Nyl.)

Description: Galun (1970).

New locality in Israel: GH: S vicinity of the village of Mas'ada, oak forest, 33°13'N, 35°45'E, alt. 800-900 m, 20 Sep 2000 – on basalt, MT (HAI 001 024).

General distribution: Europe, Asia (Afghanistan, India, Israel, Jordan, Mongolia, Saudi Arabia, Syria, Tadjikistan, Turkey), Africa (Ethiopia, Morocco, South Africa), North America.

Note: In Israel this species was found in Upper Galilee (Galun 1970; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Jordan (Schultz 2003) and Syria (John *et al.* 2004).

*Opegrapha demutata* Nyl.

Description: Pentecost & James (1992).

Locality in Israel: UG: Lower Nahal Keziv, "Evolution Canyon" II, 33°02'N, 35°11'E, 5 Nov 2001, north-facing slope – on calcareous rocks, MT (HAI 012 414).

General distribution: Europe, Asia (Israel).

Note: It is recorded for the first time in Israel and the Near East.

*Opegrapha rupestris* Pers. (*Opegrapha saxatilis* DC., *O. saxicola* Ach.)

Description: Torrente & Egea (1989), Pentecost & James (1992).

New localities in Israel: UG: Lower Nahal Keziv, "Evolution Canyon" II, 33°02'N, 35°11'E, 5 Nov 2001, valley bottom – on calcareous rock, MT (HAI 012 4118); CM: Mount Carmel National Park, Lower Nahal Oren, "Evolution Canyon" I, 32°43'N, 34°58'E, 12 Jun 2001, north-facing slope – on calcareous rock, MT (HAI 010 531).

General distribution: Europe (widespread), Asia (Israel, Syria, Turkey), North Africa (Algeria, Morocco, Tunisia), North America.

Note: In Israel this species was found on Mount Hermon (Kushnir *et al.* 1978; Kondratyuk *et al.* 1996). This species was also reported from Syria (John *et al.* 2004).

*Opegrapha subelevata* (Nyl.) Nyl. (*Opegrapha varia* var. *subelevata* Nyl.)

Description: Pentecost & James (1992).

Locality in Israel: UG: Lower Nahal Keziv, "Evolution Canyon" II, 33°02'N, 35°11'E, 5 Nov 2001, north-facing slope – on calcareous rocks, MT (HAI 012 415).

General distribution: Europe, Asia (Israel), North Africa (Algeria, Morocco, Tunisia), New Zealand.

Note: It is recorded for the first time in Israel and the Near East.

*Parmelina tiliacea* (Hoffm.) Hale (*Lichen tiliaceus* Hoffm., *Parmelia tiliacea* (Hoffm.) Ach.)

Description: Galun (1970).

New locality in Israel: GH: Nahal Meitsar, canyon, 32°44'N, 35°43'E, 5 Jun 2002 – on bark of *Quercus ithaburensis*, MT (HAI 021 038).

General distribution: Europe, Asia (Afghanistan, India, Israel, Saudi Arabia, Syria, Tadjikistan, Turkey), Africa (Algeria, Morocco, Tunisia, South Africa).

Note: In Israel this species was found in Upper Galilee (Reichert & Galun 1958; Galun 1970; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Jordan (Schultz 2003) and Syria (John *et al.* 2004).

*Peltula euploca* (Ach.) Poelt (*Lichen euplocus* Ach.)

Description: Egea (1989).

New locality in Israel: UJ: NE vicinity of Kokhav Ha-Yarden Reserve, 32°36'N, 35°31'E, 25 Sep 2000 – on basalt, MT (HAI 002 513).

General distribution: Cosmopolitan.

Note: In Israel this species was found in Upper Galilee (Galun & Mukhtar 1996). This species was also reported from Jordan (Schultz 2003).

*Phaeophyscia hirsuta* (Mereschk.) Essl. (*Physcia hirsuta* Mereschk.)

Description: Esslinger (1978).

Locality in Israel: GH: Tel Dan Nature Reserve, 33°14'N, 35°38'E, 18 Aug 2002 – on bark of trees, MT (HAI 021 041).

General distribution: Southern Europe, Asia (Israel, Mongolia), North Africa (Algeria, Tunisia), North America, South America.

Note: It is recorded for the first time in Israel and the Near East.

*Phaeophyscia orbicularis* (Neck.) Moberg (*Lichen orbicularis* Neck.)

Description: Coppins (1992a).

Locality in Israel: HE: Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on bark of *Quercus* sp., MT (HAI 001 2316).

General distribution: Europe (widespread), Asia, North Africa, North America, Australia.

Note: It is recorded for the first time in Israel. This species was also reported from Syria (John *et al.* 2004).

*Physcia adscendens* (Fr.) H. Olivier (*Parmelia stellaris* var. *adscendens* Fr.)

Description: Galun (1970).

New locality in Israel: GH: Nahal Meitsar, canyon, 32°44'N, 35°43'E, 5 Jun 2002 – on basalt, MT (HAI 021 039).

General distribution: Cosmopolitan.

Note: This species is distributed in many regions of Israel (Galun 1970; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Lebanon (Khalife 1982) and Syria (John *et al.* 2004).

*Physcia caesia* (Hoffm.) Fűrnr. (*Lichen caesius* Hoffm.)

Description: Coppins (1992b).

Localities in Israel: HE: Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rock, MT (HAI 001 2335), NE vicinity of the village of



Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2235).

General distribution: Cosmopolitan.

Note: In Israel this species was reported from Mount Carmel (Navrotskaya *et al.* 1996), but all specimens of *Ph. caesia* from the lichenological collection of Haifa University were redetermined by M. Temina as *Solenopora cesatii* var. *grisea* (Bagl.) Nimis. This species was also reported from Syria (John *et al.* 2004).

***Physconia venusta* (Ach.) Poelt (*Parmelia venusta* Ach.)**

Description: Galun (1970).

New locality in Israel: GH: Nahal Meitsar, canyon, 32°44'N, 35°43'E, 5 Jun 2002 – on bark of *Quercus ithaburensis*, MT (HAI 021 040).

General distribution: Southern Europe, Asia (Israel, Jordan, Tadjikistan, Turkey), North Africa (Algeria, Morocco, Tunisia).

Note: In Israel this species was found on Mount Hermon (Galun & Mukhtar 1996) and in Upper Galilee (Galun 1970; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Jordan (Schultz 2003).

***Placidium squamulosum* (Ach.) Breuss (*Endocarpon squamulosum* Ach., *Catapyrenium squamulosum* (Ach.) Breuss)**

Description: Breuss (1990), Breuss & Fox (1992).

New locality in Israel: HE: NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on soil, MT (HAI 001 2236).

General distribution: Cosmopolitan.

Note: This species is common in Israel (Galun & Mukhtar 1996). This species was also recorded from the Sinai Peninsula (Galun & Garty 1972: as *Dermatocarpon hepaticum*) and Syria (John *et al.* 2004).

***Porina byssophila* (Hepp) Zahlbr. (*Sagedia byssophila* Hepp)**

Description: Fröberg (1989), Purvis & James (1992c).

New locality in Israel: UG: Lower Nahal Keziv, "Evolution Canyon" II, 33°02'N, 35°11'E, 5 Nov 2001, north-facing slope – on calcareous rock, MT (HAI 012 4122).

General distribution: Central and southern Europe, Asia (Israel), North Africa (Morocco).

Note: This species was reported from Israel, but without detailed locality (Kushnir *et al.* 1978; Kondratyuk *et al.* 1996).

***Rinodina bischoffii* (Hepp.) A. Massal. var. *bischoffii* (*Psora bischoffii* Hepp)**

Description: Fox & Purvis (1992), Giralt (2001).

Localities in Israel: HE: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002 – on calcareous rocks, MT (HAI 021 244), Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rocks, MT (HAI 001 2317), NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rocks, MT (HAI 001 2213); UG: the vicinity of Dalton, alt. 800 m, 33°01'N, 35°28'E, 13 Jan 2001 – on calcareous rocks, MT (HAI 012 434).

General distribution: Cosmopolitan.

Note: It is recorded for the first time in Israel. This species was also reported from Jordan (Schultz 2003), Lebanon (Werner 1956: as *R. bischoffii* var. *protuberans*; Werner 1959), and Syria (John *et al.* 2004).

***Rinodinella dubyanoides* (Hepp) H. Mayrhofer & Poelt (*Lecidea dubyanoides* Hepp)**

Description: Giralt (2001).

Locality in Israel: CM: Mount Carmel National Park, Lower Nahal Oren, "Evolution Canyon" I, 32°43'N, 34°58'E, 12 Jun 2001, north-facing slope – on calcareous rocks, MT (HAI 010 514).

General distribution: Southern Europe, Asia (Israel, Turkey), North Africa (Morocco).

Note: It is recorded for the first time in Israel and the Near East.

***Toninia athallina* (Hepp) Timdal (*Biatora athallina* Hepp, *Catillaria athallina* (Hepp) Hellb.)**

Description: Thomson (1997).

Localities in Israel: HE: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002 – on calcareous rocks, MT (HAI 021 246), Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rocks, MT (HAI 001 2318), NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rocks, MT (HAI 001 2214).

General distribution: Europe, Asia, North Africa, North America.

Note: It is recorded for the first time in Israel. This species was also recorded from Syria (John *et al.* 2004).

***Toninia sedifolia* (Scop.) Timdal (*Lichen sedifolius* Scop., *Toninia coeruleonigricans* (Lightf.) Th. Fr.)**

Description: Galun (1970).

New locality in Israel: HE: NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2237).

General distribution: Cosmopolitan.

Note: In Israel this species was found in Upper Galilee, Mount Carmel, Shefela, Judean Mountains, Dead Sea area, and Central Negev (Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also recorded from Jordan (Schultz 2003), the Sinai Peninsula (Galun & Garty 1972; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996), and Syria (John *et al.* 2004).

***Trapelia coarctata* (Sm.) M. Choisy (*Lichen coarctatus* Sm.)**

Description: Purvis (1992).

Locality in Israel: GH: S vicinity of the village of Mas'ada, oak forest, 33°13'N, 35°45'E, alt. 800-900 m, 20 Sep 2000 – on basaltic rocks, leg. MT, det. M. Andreev (HAI 001 017).

General distribution: Cosmopolitan.

Note: It is recorded for the first time in Israel. This species was also recorded from Syria (John *et al.* 2004).

***Verrucaria foveolata* (Flörke) A. Massal. (*V. schradleri* var. *foveolata* Flörke)**

Description: Fröberg (1989).

Localities in Israel: HE: Ski resort, upper cable station, 33°17'N, 35°45'E, alt. 2000 m, 18 Aug 2002 – on calcareous rocks, MT (HAI 021 247), Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rocks, MT (HAI 001 2319), NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rocks, MT (HAI 001 2215).

General distribution: Europe, Asia, North America.

Note: It is recorded for the first time in Israel. This species was also recorded from Lebanon (Werner 1955: as *V. dolomitica*) and Syria (John *et al.* 2004).

*Verrucaria fuscella* (Turner) Winch (*Lichen fuscellus* Turner)

Description: Galun (1970), Fröberg (1989).

New locality in Israel: HE: Ski resort – lower cable station, 33°17'N, 35°44'E, alt. 1600 m, 26 Sep 2000 – on calcareous rock, MT (HAI 001 2336).

General distribution: Europe, Asia, North Africa (Morocco), North America.

Note: In Israel this species was found in Upper Galilee and Mount Carmel (Galun 1970; Garty & Binyamini 1990; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996).

*Verrucaria macrostoma* Dufour ex DC.

Description: Fröberg (1989), Hawksworth *et al.* (1992).

Localities in Israel: HE: NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rocks, MT (HAI 001 2216); CM: Mount Carmel National Park, Lower Nahal Oren, "Evolution Canyon" I, 32°43'N, 34°58'E, 12 Jun 2001, south-facing slope – on calcareous rocks, MT (HAI 010 515).

General distribution: Cosmopolitan.

Note: It is recorded for the first time in Israel. This species was also recorded from Syria (John *et al.* 2004).

*Verrucaria marmorea* (Scop.) Arnold (*Lichen marmoreus* Scop.)

Description: Galun (1970).

New locality in Israel: HE: NE vicinity of the village of Majdal Shams, old fruit garden, 33°16'N, 35°45'E, alt. 1300 m, 27 Sep 2000 – on calcareous rock, MT (HAI 001 2238).

General distribution: Central and southern Europe, Asia (Israel, Jordan, Lebanon, Russia, Syria, Tadjikistan, Turkey), North Africa (Morocco), North America.

Note: In Israel this species was found in Upper and Lower Galilee, Mount Carmel, Esdraelon Plain, and Samaria (Galun 1970; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996). This species was also reported from Jordan (Schultz 2003), Lebanon (Werner 1963: as *V. marmorea* var. *rosea*), and Syria (John *et al.* 2004).

## Discussion

Our new records bring the total number of known lichens and lichenicolous fungi in Israel to 281. Among the lichen species mentioned in this study, seven are recorded for the

first time in the Near East. They are *Bagliettoa parmigerella*, *Collema callopismum*, *Dermatocarpon intestiniforme*, *Opegrapha demutata*, *O. subelevata*, *Phaeophyscia hirsuta*, and *Rinodinella dubyanoides*. Thirteen species (*Caloplaca ferrarii*, *C. polycarpa*, *Candelaria concolor*, *Collema auriforme*, *Immersaria athrocarpa*, *Lecanora agardhiana*, *Leptochidium albociliatum*, *Phaeophyscia orbicularis*, *Rinodina bischoffii* var. *bischoffii*, *Toninia athallina*, *Trapelia coarctata*, *Verrucaria foveolata*, and *V. macrostoma*) are reported for the first time in Israel, but these species are already known from other countries of the Near East (Jordan, Lebanon, and Syria). *Aspicilia farinosa*, *Caloplaca alociza*, *C. erythrocarpa*, *C. variabilis*, *Candelariella aurella*, *Lecanora dispersa*, *L. muralis*, *L. pruinosa*, *Toninia sedifolia*, and *Verrucaria marmorea* – are the most widely distributed lichen species in the Near East. These species were recorded in almost all areas of the Near East.

According to Zohary & Feinbrun-Dothan (1966-1986), the territory of Israel is subdivided into 26 natural regions (Fig. 1). Of the seven regions mentioned in the present study, the lichen biota of Upper Galilee, Mount Carmel, and Central Negev was investigated most thoroughly. Number of lichen species recorded from Upper Galilee is 127; from Carmel Mountains – 85; from Central Negev – 68; from Mount Hermon area – 25; from Upper Jordan Valley – 19; from Golan Heights – 18; from Akko Plain – 2 (Galun & Mukhtar 1996; Kondratyuk *et al.* 1996; Kondratyuk & Zelenko 2002; Temina *et al.* 2002). In the studied regions the biggest number of new records occurred in the Mount Hermon area. Thirty-two species were found for the first time in this region. Seventeen new species were also recorded in the Golan Heights, 16 – in Upper Galilee, and 9 – on Mount Carmel.

Among the lichens mentioned in this study, there are some interesting finds. *Dermatocarpon intestiniforme* is new to the Near East. According to Nimis (1993), *D. intestiniforme* is a boreal-montane to arctic-alpine species. It has distribution in arctic and boreal zones of Europe and occurs in the mountains. In the studied territory this lichen was found only at an altitude of 2000 m above sea level in the Mount Hermon area.

*Bactrospora patellarioides* var. *patellarioides*, *Caloplaca flavescens*, and *Clauzadea metzleri* are rare species in the Near East. They were found earlier – only once – on Mount Carmel (Kushnir & Galun 1977; Wasser *et al.* 1995; Galun & Mukhtar 1996; Navrotskaya *et al.* 1996; Kondratyuk *et al.* 1996). New localities for *Bactrospora patellarioides* var. *patellarioides* and *Clauzadea metzleri* were recorded in Upper Galilee. A new locality of *Caloplaca flavescens* was found in the Mount Hermon area.

New localities were found also for *Lecidella carpathica* (in the Mount Hermon area) and *Porina byssophila* (in the Upper Galilee). Both species were already reported from the territory of Israel, but without detailed locality (Kushnir *et al.* 1978; Egea & Llimona 1991; Galun & Mukhtar 1996; Kondratyuk *et al.* 1996).

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