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Source: Willdenowia, 45(1) : 15-34

Published By: Botanic Garden and Botanical Museum Berlin (BGBM)

URL: https://doi.org/10.3372/wi.45.45102

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Lichenological exploration of Algeria: historical overview and annotated bibliography, 1799–2013

Abstract

Amrani S., Nacer A., Noureddine N.-E. & Seaward M. R. D.: Lichenological exploration of Algeria: historical overview and annotated bibliography, 1799–2013. – Willdenowia 45: 15–34. 2015. – Version of record first published online on 20 February 2015 ahead of inclusion in April 2015 issue; ISSN 1868-6397; © 2015 BGBM Berlin-Dahlem.

DOI: http://dx.doi.org/10.3372/wi.45.45102

Despite more than two centuries of almost uninterrupted surveys and studies of Algerian lichenology, the history and lichen diversity of Algeria are still poorly understood. During the preparation of a forthcoming checklist of Algerian lichens it was considered necessary to provide the present historical overview of lichenological exploration of the country from 1799 to 2013, supported by a reasonably comprehensive annotated bibliography of 171 titles.

Additional key words: North Africa, Mediterranean, Sahara, lichens, history of lichenology

† Sadly, our colleague and co-author Nazhat-Ezzamane Noureddine (1967–2013), to whom we dedicate this paper, died before it could be published.

Introduction

By their ability to thrive in a wide, often extreme variety of habitats, lichens provide a rich mosaic of colour and play an important role in ecosystems. These composite organisms, the product of a successful alliance between a fungus and an alga and/or a cyanobacterium, form a significant part of biological biodiversity. Currently it is conservatively estimated that there are 20 000 lichenized and lichenicolous fungi worldwide (Feuerer & Hawksworth 2007), but this number is steadily growing with the intensification of research on these interesting organisms and the exploration of geographic areas hitherto not or only poorly studied.

Although lichens are more noticeable in hot and cold deserts, high altitudes, tundra zones, seashores and even in unpolluted urban areas, their worldwide occurrence and ecological importance cannot be underestimated, since they: (1) enrich the environment by providing moisture, energy, carbon and phosphorus, as well as nitrogen in the case of nitrogen-fixing species; (2) participate in soil formation and stabilization by means of physico-chemical weathering of rocks and their ability to aggregate soil particles; (3) provide a food resource for invertebrates and some vertebrates; and (4) provide habitats and shelter for insects and a source of nest-building material for many birds.

Lichens have often been neglected in the past, but in recent decades they have been the subject of renewed interest from the scientific community. Unfortunately, for Algeria, where the territory has been largely underexplored and would undoubtedly contain many new spe-

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cies to discover, work on lichen diversity has aroused little interest among Algerian scientists. In an attempt to provide a new impetus to lichenological research in Algeria, which has suffered from the absence of a recent lichen flora, catalogue or even a checklist, we are currently compiling a checklist from a wide range of sources, particularly published ones. During our researches we thought it necessary in the first instance to publish a historical overview and an annotated bibliography relating to an appreciable body of knowledge that already exists on Algerian lichens. This list of references is by no means exhaustive, but does include primary sources of published material; a complementary list of titles will accompany the *Checklist of Algerian lichens* currently in preparation.

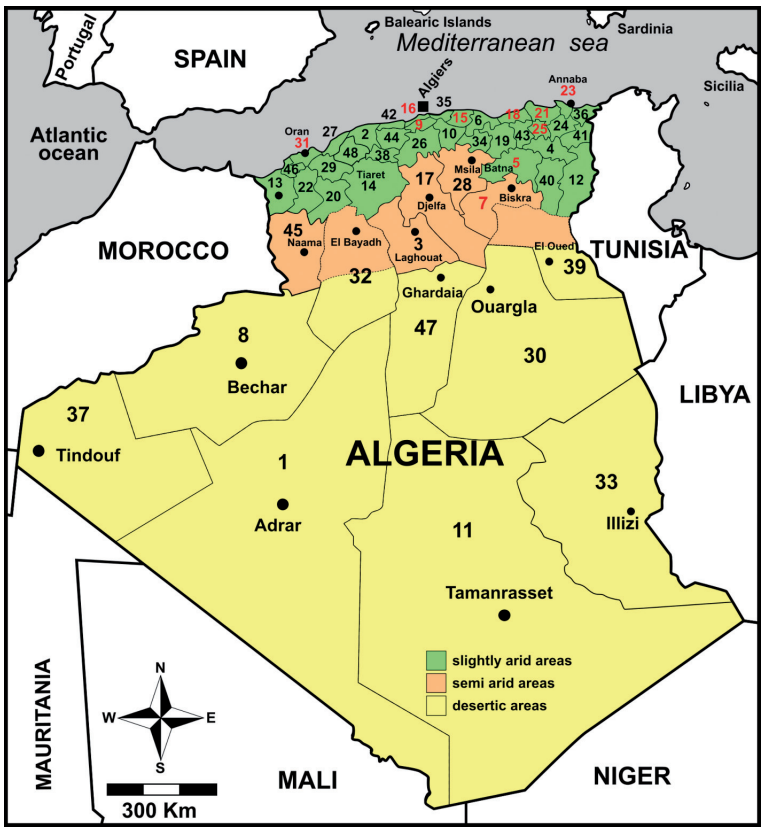


Fig. 1. Map of Algeria showing the 48 current administrative districts (or wilayates) and their bioclimatic status. Those districts numbered in red have been the subject of more detailed lichenological exploration. See Table 1 for the full list of districts as numbered on the map.

Historical overview of lichenological exploration of Algeria

18th and 19th centuries

The study of lichens of Algeria is a relatively old activity dating back to the first written contribution in 1799 by René Desfontaines (1750–1833) in his *Flora atlantica* (lichen section pp. 417–420), based on a scientific journey of more than two years he made between Tunisia and Algeria, mainly exploring coastal areas and part of the N Sahara (Fig. 1). As a consequence, Desfontaines (1799) reported almost 30 lichens (or rather morphological groups of lichens), more than half of which were recorded from Algeria.

A further 36 years elapsed before the next contribution by Adolph Steinheil (1810–1839), who spent 18 months in the area of Bône (currently Annaba) (Fig. 1), where he discovered 11 lichen taxa (Steinheil 1834). Soon after, the naturalist Camille Montagne (1784–1866), a member, like Steinheil, of the Scientific Committee for the Exploration of Algeria (SCEA), published a paper (Montagne 1838) listing 17 lichens collected by Alexandre Roussel (1795–1874) in the Algiers area and four lichens by Jean Guyon (1794–1870) in the Constantine area. The first major contribution to the study of lichens of Algeria was provided by Montagne (1846), who authored the lichen section (pp. 198–295) of the *Cryptogamie* volume of the *Flore d'Algérie*, based on reports made by members of the SCEA, although his name has been eclipsed by that of Michel Durieu de Maisonneuve (1796–1878) – see below. In this work, Montagne identified 29 genera and almost 180 taxa, including two genera and 18 species new to science.

Between 1853 and 1887, numerous authors (Nylander 1853, 1854, 1858b, 1864, 1878; Jourdan 1866, 1867, 1872; Paris 1871; Brongniart 1882; Gandoger 1883; Trabut 1887) contributed to our knowledge of Algerian lichens. Among these authors, one whose contri-

Table 1. The 48 current administrative districts (or wilayates) in Algeria, cited as D1, D2, etc. in the text and indicated by number on the map in Fig. 1.

1 Adrar	13 Tlemcen	25 Constantine	37 Tindouf
2 Chlef	14 Tiaret	26 Médéa	38 Tissemsilt
3 Laghouat	15 Tizi Ouzou	27 Mostaganem	39 El Oued
4 El Bouaghi	16 Alger (Algiers)	28 M'Sila	40 Khenchela
5 Batna	17 Djelfa	29 Mascara	41 Souk Ahras
6 Béjaïa	18 Jijel	30 Quargla	42 Tipaza
7 Biskra	19 Sétif	31 Oran	43 Mila
8 Béchar	20 Saïda	32 El Bayadh	44 Ain Defla
9 Blida	21 Skikda	33 Illizi	45 Naáma
10 Bouira	22 Sidi Bel Abbès	34 Bordj Bou Arreridj	46 Ain Témouchent
11 Tamanrasset	23 Annaba	35 Boumerdès	47 Ghardaia
12 Tébessa	24 Guelma	36 El Tarf	48 Relizane

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butions were most significant is undoubtedly the famous Finnish lichenologist William Nylander (1822–1899); even though he never visited Algeria, he considerably extended our understanding of its lichens due to his examination of the numerous specimens sent to him by plant collectors who explored the country, such as Benjamin Balansa (1825–1892), Aristide-Horace Letourneux (1820–1890) and Johan Norrlin (1842–1917). In less than 25 years, Nylander published five contributions dealing more or less with Algerian lichens, two of which are of particular importance. In his *Études sur les lichens de l'Algérie*, Nylander (1854) listed 167 taxa, including 141 attributed to Durieu de Maisonneuve (see above), and *Symbolae quaedam ad lichenographiam sahariensem* (Nylander 1878), concentrating mainly on lichens of desert areas of Algeria, where he enumerated c. 50 species, including 17 new to science. He also published *Lichenes algerienses novi* (Nylander 1853) and integrated the Algerian lichens hitherto known in his *Prodromus lichenographiae Galliae et Algeriae* (Nylander 1858b).

The early 1890s saw the emergence of the works of one of the scientists who contributed the most to Algerian lichenology, namely Camille Flagey (1837–1898). Established as a civil engineer in 1884 in Constantine (E Algeria), he studied the lichens, mainly of that area, for 15 years, his first published contribution being *Herborisation lichénologique dans les environs de Constantine (Algérie)* (Flagey 1888). He is better known for his three fascicles of exsiccatae (Flagey 1891a–b, 1892, 1895) and his *Catalogue des lichens d'Algérie* (Flagey 1896) published as part of *Flore de l'Algérie*. For his catalogue, Flagey drew on his own observations, mainly in the region of Constantine, and on those of Montagne; he also duly acknowledged the support of Nylander, Ferdinand Arnold (1828–1901) and Ernst Stizenberger (1827–1895) in its compilation. In doing so, he increased the number of lichen taxa for Algeria from the 180 recognized by Montagne to almost 650. Flagey's catalogue has remained to this day the most comprehensive compilation of Algerian lichens.

Almost simultaneously with the publication of Flagey's catalogue, Julius Steiner (1844–1918) published two important contributions on Algerian lichens, namely *Ein Beitrag zur Flechtenflora der Sahara* (Steiner 1895), which lists 18 taxa, including four species new to science, and *Zweiter Beitrag zur Flechtenflora Algiers* (Steiner 1902), which lists 60 taxa, including a new genus, *Gonohymenia* J. Steiner, and 11 species new to science.

20th century

In addition to Steiner (1902), the first half of the 20th century saw the publication of a large number of contributions on Algerian lichens (Gandoger 1883; Zahlbruckner 1904; Flahault 1906; Maheu 1906; Bouly de Lesdain 1907, 1909, 1911, 1939; Lapie 1909; Battandier & al. 1914; Maire 1916, 1933; Hue 1921; Tits 1925; Maire & Senevet 1928; Szatala 1929; Andreanszky 1934; Maire & Wilczek 1935; Werner 1939, 1941, 1949; Dubuis & Faurel 1945). Almost all of these contributions were based on explorations of limited or small geographic areas, but some included the discovery of several new lichen species. Among these reports, the contribution of Bénédict Hochreutiner (1873–1959) should be highlighted; the lichens he collected from Algeria in 1901, including a new species, *Physcia hochreutineri* Zahlbr., were identified by Alexander Zahlbruckner (1860–1938); see Zahlbruckner in Hochreutiner (1904).

In the same period, Roger-Guy Werner (1901–1977), although involved primarily in a study of North African lichens, particularly those of Morocco, added considerably to our knowledge of Algerian lichens through his phytogeographical analyses of the region, including four that were more closely related to Algeria (Werner 1939, 1941, 1949, 1956).

The second half of the 20th century saw the publication of an even larger number of contributions of quantitative and qualitative importance (Faurel & al. 1951a, b, 1952, 1953a–c, 1954; Faurel & Schotter 1954; Collenot & al. 1960; Werner 1975; Schwarz 1976; Semadi 1983, 1989; Esnault 1985; Esnault & Roux 1987; Egea 1989; Zouaoui 1989; Egea & al. 1990; Haluwyn & Letrouit-Galinou 1990; Haluwyn & al. 1994). Of these contributions, it is important to highlight those of Faurel & al. (1951a, 1953a, 1954), published under the title of "Matériaux pour la flore lichénologique d'Algérie et de Tunisie", which attempted to lay the foundation for a true lichen flora of Algeria and Tunisia, a project seemingly impaired by the Algerian War of Independence (1954–1962).

Following that conflict, 13 years elapsed before the publication of contributions dealing with Algerian lichens, the first of which was that of Werner (1975) based on his examination of six lichens collected by René Maire (1878–1959), including *Lecanora chlarotera* Nyl., new to the country. This contribution was quickly followed by that of Schwarz (1976), who undertook a lichenological survey in the mountains of the desert area of Tamanrasset (D11) and found c. 20 taxa, all of which were previously known from Algeria.

The first contributions by an Algerian researcher to our knowledge of Algerian lichens were undertaken by Semadi (1983, 1989) within the framework of his doctorate theses. In both contributions he surveyed lichens in the area of Annaba (D25), from where he reported 88 taxa. Another important Algerian contribution was provided by Zouaoui (1989) within the framework of his master's thesis on the lichens of the Akfadou and Beni-Ghobri forests (D15 & D9), in which he lists 147 taxa, 66 of them new to Algeria. These proved to be the exception during the period 1980–2000, as other important published contributions on Algerian lichens resulted mainly from the work of foreign lichenologists, particularly those of French and Spanish origin. The first and most important French contribution was the doctorate thesis of Esnault

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(1985), which concentrated on the genus *Aspicilia* A. Massal. in Algeria. In this thesis, Esnault enumerated 39 *Aspicilia* taxa (34 named and four considered new to science), of which 24 were new to Algeria and 17 were new to North Africa; resulting from this work one year later was the description of *Amygdalaria tellensis* Esnault & Cl. Roux, new to science (Esnault & Roux 1987). Other French contributions from this period were those of the van Haluwyn group (Haluwyn & Letrouit-Galinou 1990; Haluwyn & al. 1994) undertaken in NE Algeria, the latter including *Waynea stoechadiana* (Abassi & Cl. Roux) Cl. Roux & P. Clerc, a species new to Africa. However, two contributions by Algerians on the lichen flora of the industrial area centred on Annaba (D23) were also published during this period (Semadi & Tahar 1995; Semadi & al. 1997).

21st century

Since the beginning of this century, about 25 published contributions and theses on the biodiversity of Algerian lichens have appeared. The first and most important ones were those of Alonso & Egea (2003) and Rahali (2003), which enumerated respectively 74 and 62 species, all probably already known from Algeria. The most recent publications on Algerian lichens have resulted from the work of Algerian teams (Fadel & al. 2010; Ait Hammou & al. 2011; Rebbas & al. 2011; Serradj & al. 2013; Slimani & al. 2013), all of whom, unfortunately, studied previously explored areas and did not lead to the discovery of species new to science, or indeed new to Algeria.

Besides those authors who have explored Algeria first-hand in search of lichens or who have investigated specimens provided by other collectors, one must not forget those who have contributed to our knowledge by their meticulous investigation of herbarium specimens. For example, Navarro-Rosinés & al. (2000) assigned an Algerian specimen from the Werner Herbarium to a new species, *Caloplaca calcitrapa* Nav.-Ros. & al., and Rico & al. (2007) assigned Algerian material from the Esnault Herbarium to *Aspicilia uxoris* (Werner) V. J. Rico & al., a new combination for a species known from Algeria, Morocco and Spain. Similarly, one should not forget those authors who, although not directly involved in the study of Algerian lichens, have included them in their works (e.g. Hue 1890, 1891, 1892, 1898, 1899, 1900, 1901; Harmand 1905a, b, 1907, 1909, 1913; Ozenda & Clauzade 1970; Vouaux 1912, 1914).

Further considerations

Despite the numerous lichen surveys of, and collections from, Algeria before and after independence, there is no official lichen herbarium to support lichenological research within Algeria. Unfortunately, those herbaria (e.g. Faurel, Flagey, Maire) established during the colonial period, and stored at the Faculty of Sciences of Algiers, were all transferred to France before independence and this material is to be found in several herbaria (e.g. MARS, MPU, P, STR – codes according to Thiers 2014+). Furthermore, as regards the collections made in surveys carried out since independence, voucher specimens for detailed study by foreign lichenologists are currently housed in institutional herbaria (e.g. Egea and his research group in MUB) or personal herbaria (e.g. Esnault, van Haluwyn, Letrouit-Galinou), not all easily accessible. Furthermore, in the absence of a national repository, Algerian lichenologists retain personal herbaria that are not necessarily accessible, and their quality and sustainability cannot be guaranteed. A national herbarium in Algeria is clearly a prerequisite to support future lichenological research in the country.

As elsewhere in the world, lichen diversity in Algeria is threatened mainly by pollution, reduction in natural habitats, and climate change. A further threat is intensive harvesting of marketable species, such as *Pseudevernia furfuracea* (L.) Zopf, which is used as a spice for cooking, as a perfume base for several cosmetic preparations, or as a substitute for incense. To protect such lichens, Algeria has enacted a law prohibiting the unauthorized collection of about 100 taxa (RADP 2012).

Perhaps one of the reasons for the limited knowledge of Algerian lichens by the international scientific community is that the vast majority of contributions before and after independence have been written in French rather than English.

It is clear from our literature survey that, whatever the period considered, most of the studies undertaken on Algerian lichens have led to the discovery of species which, if not new to science, are at least new to Algeria. Such discoveries lead one to believe that Algeria is rather poorly explored from a lichenological point of view and almost certainly contains many lichen taxa yet to be discovered. We trust that this brief historical review and comprehensive annotated bibliography, together with the forthcoming *Checklist of Algerian lichens*, will encourage scientists to investigate an important component of Algeria's biodiversity and to make it better known to the world's scientific community.

Acknowledgements

We are most grateful to the staff of various libraries, particularly Harvard University (Botany), Wisconsin University, American Philosophical Society, Muséum National d'Histoire Naturelle (Paris) and LRZA (Algiers), which kindly provided us with copies of various publications, and to the many individuals, particularly J. Esnault, D. Fadel, R. Khedim, L. Lökös, C. Roux and S. Zouaoui, for their interest in our work, their encouragement and/or supply of useful documents, as well as two anonymous reviewers and the editor of Willdenowia for their most helpful criticisms of an earlier draft of this paper.

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Hue A. 1921: Lichenes in Africa tropica occidentali et praecipue in Mauritania a Cl. Chudeau, annis 1908–1912 lectos descripsit. – Mém. Soc. Bot. France **30:** 1–17.

Jourdan P. 1866: Flore murale de la ville de Tlemcen, province d'Oran (Algérie). – Alger: Imprimerie de l'Akhbar, F. Paysant.

Jourdan P. 1867: Flore murale du Tombeau de la Chrétienne (Province d'Alger). – Paris: Baillière et fils.

Jourdan P. 1872: Flore murale de la ville d'Alger. – Bull. Soc. Algér. Climatol. **1872:** 27–50.

Lapie G. 1909: Étude phytogéographique de la Kabylie du Djurjura. – Paris: Delagrave.

Maheu J. 1906: Lichens récoltés pendant la session extraordinaire de la Société botanique de France dans la province d'Oran et déterminés. – Bull. Soc. Bot. France **53**(Sess. Extr.): ccxviii.

Maire R. 1916: La végétation des montagnes du Sud Oranais. – Bull. Soc. Hist. Nat. Afrique N. **7:** 210–292, 17 plates.

Maire R. 1933: Études sur la flore et végétation du Sahara central. Mission du Hoggar II. – Mém. Soc. Hist. Nat. Afrique N. **3:** 1–272, 36 plates, 2 maps.

Maire R. & Senevet G. 1928: Flore murale du Tombeau de la Chrétienne. – Bull. Soc. Hist. Nat. Afrique N. **19:** 23–28.

Maire R. & Wilczek E. 1935: Florule des Iles Habibas. – Bull. Soc. Hist. Nat. Afrique N. **26bis:** 61–78, 2 plates.

Montagne C. 1838: Cryptogames algériennes, ou plantes cellulaires recueillies par M. Roussel aux environs d'Alger, et publiées. – Ann. Sci. Nat., Bot., sér. 2, **10:** 268–279.

Montagne C. 1846: Lichens. – Pp. 198–295 in: Durieu de Maisonneuve M. C., Flore d'Algérie. Cryptogamie. 1ère partie. – Paris: Imprimerie Impériale.

Navarro-Rosinés P., Gaya E. & Roux C. 2000: *Caloplaca calcitrapa* sp. nov. (*Teloschistaceae*) un nuevo liquen saxícolo-calcícola mediterráneo. – Bull. Soc. Linn. Provence **51:** 145–152.

Nylander W. 1853: Lichenes algerienses novi. – Ann. Sci. Nat., Bot., sér. 3, **20:** 315–320.

Nylander W. 1854: Études sur les lichens de l'Algérie. – Mém. Soc. Sci. Nat. Cherbourg **2:** 305–344.

Nylander W. 1858b: Prodromus lichenographiae Galliae et Algeriae. – Actes Soc. Linn. Bordeaux **21:** 249–467.

Nylander W. 1864: Sur quelques lichens d'Algérie. – Bull. Soc. Bot. France **11:** 215–217.

Nylander W. 1878: Symbolae quaedam ad lichenographiam sahariensem. – Flora **61:** 337–345.

Ozenda P. & Clauzade G. 1970: Les lichens: étude biologique et flore illustrée. – Paris: Masson et Cie.

Paris J. E. G. N. 1871: Notice sur la végétation des environs de Constantine. – Bull. Soc. Bot. France **18:** 252–270.

RADP 2012: Décret exécutif n°12–03 du 4 janvier 2012 fixant la liste des espèces végétales non cultivées protégées. – J. Off. Républ. Algér. Démocr. Populaire **3:** 12–39.

Rahali M. 2003: Étude de la pollution plombique et globale dans la région d'Alger, en utilisant les lichens comme indicateurs biologiques. – Algiers: doctorate thesis, National Institute of Agronomy.

Rebbas K., Boutabia L., Touazi Y., Gharzouli R., Djellouli Y. & Alatou D. 2011: Inventaire des lichens du Parc National de Gouraya (Béjaïa, Algérie). – Phytothérapie **9:** 225–233.

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Rico V. J., Aragón G. & Esnault J. 2007: *Aspicilia uxoris*, an epiphytic species from Algeria, Morocco and Spain. – Lichenologist **39:** 109–119.

Schwarz W. 1976: Ökophysiologische Untersuchungen in den Bergen der zentralen Sahara. – Ber. Naturwiss.-Med. Vereins Innsbruck **63:** 139–164.

Semadi A. 1983: Incidence de la pollution fluorée d'origine industrielle sur la végétation de la région de Annaba-Algérie. – Paris: doctor-engineer thesis, University Paris VII.

Semadi A. 1989: Effets de la pollution atmosphérique (pollution globale, fluorée et plombique) sur la végétation dans la région de Annaba (Algérie). – Paris: doctorate thesis, University Paris VI.

Semadi A. & Tahar A. 1995: Une méthode biologique pour la détection de la pollution globale dans la région d'Annaba (Algérie). – Pollut. Atmos. **146:** 50–58.

Semadi A., Tahar A., Fadel D. & Benoit-Guyod J. L. 1997: The behaviour of some lichen species in Annaba area (Algeria). – Synth. Rev. Sci. Technol. **2:** 17–24.

Serradj A. A. M., El Oualidi J., Slimani A. & Boumedris Z. 2013: Contribution to the lichens inventory from the Oubeira lake (NE Algeria). – Bull. Inst. Sci., Rabat, Sect. Sci. Vie **35:** 15–17 [online at http://www.israbat.ac.ma/?page_id=277].

Slimani A., Serradj A. A. M., Hamel T. & Coste C. 2013: Contribution à l'étude de la flore lichénique dans la zéenaie de Bougous (forêt de Ramel Toual) au niveau du Parc National d'El Kala Nord Est algérien. – Synth. Rev. Sci. Technol. **27:** 22–29.

Steiner J. 1895: Ein Beitrag zur Flechtenflora der Sahara. – Sitzungsber. Kaiserl. Akad. Wiss., Wien, Math.-Naturwiss. Cl., Abt. 1, **104:** 383–393.

Steiner J. 1902: Zweiter Beitrag zur Flechtenflora Algiers. – Verh. K. K. Zool.-Bot. Ges. Wien **52:** 469–487.

Steinheil A. 1834: Matériaux pour servir à la flore de Barbarie. II^{e} article. Notice sur les cryptogames recueillies aux environs de Bone [sic!]. – Ann. Sci. Nat., Bot., sér. 2, **1:** 282–289.

Szatala Ö. 1929: Enumeratio lichenum a cl. Barone G. de Andreanszky in Africa boreale lectorum. – Magyar Bot. Lapok **28:** 162–166.

Thiers B. 2014+ [continuously updated]: Index herbariorum: a global directory of public herbaria and associated staff. – New York Botanical Garden: published at http://sweetgum.nybg.org/ih/ [accessed 16 Nov 2014].

Tits D. 1925: Le Sahara occidental (contribution phytogéographique). – Bull. Soc. Roy. Bot. Belgique **58:** 39–91, 3 plates.

Trabut L. C. 1887: D'Oran à Mécheria. Notes botaniques et catalogue des plantes remarquables. – Alger: Adolphe Jourdan.

Vouaux L. 1912: Synopsis des champignons parasites de Lichens. – Bull. Soc. Mycol. France **28:** 177–256.

Vouaux L. 1914: Synopsis des champignons parasites de lichens (Suite). – Bull. Soc. Mycol. France **30:** 135–198, 281–329.

Werner R. G. 1939: Aperçu phytogéographique sur la flore cryptogamique méditerranéenne de l'Afrique du Nord. L'endémisme et les caractères propres au Maroc, à l'Algérie et à la Tunisie. – Pp. 219–244 in: *Actes du 4ème Congrès de la Fédération des Sociétés Savantes de l'Afrique du Nord*. – Rabat: Société Historique Algérienne.

Werner R. G. 1941: Contribution à l'étude de la flore cryptogamique de l'Algérie et de la Tunisie. – Bull. Soc. Sci. Nat. Maroc **20:** 113–121.

Werner R. G. 1949: Les origines de la flore lichénique de l'Algérie d'après nos connaissances actuelles. – Mém. Soc. Hist. Nat. Afrique N., Hors Sér. **2:** 299–312.

Werner R. G. 1956: Synthèse phytogéographique de la flore lichénique de l'Afrique du Nord française d'après les données récentes et essai de paléogéographie lichénique. – Bull. Soc. Bot. France (Mém.) **102:** 35–50.

Werner R. G. 1975: Quelques lichens nord-africains intéressants des territoires arides. – Bull. Acad. Soc. Lorraines Sci. **14:** 157–162.

Zahlbruckner A. 1904: Lichenes oranenses hochreutineraní. – Pp. 244–247 in: Hochreutiner B. P. G., Le Sud-Oranais. Études floristiques et phytogéographiques faites au cours d'une exploration dans le sud-ouest de l'Algérie en 1901. – Annuaire Conserv. Jard. Bot. Genève **7–8:** 22–276.

Zouaoui S. 1989: Étude de la flore lichénique du massif forestier Akfadou et Beni-Ghobri. – Tizi Ouzou: master's thesis, Université de Tizi Ouzou.

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Appendix: Lichenological bibliography of Algeria (1799–2013)

The following list of 171 titles has been selected as being fundamental to any detailed taxonomic, ecological or biogeographical study of Algerian lichenology, but it has to be acknowledged that a comprehensive search of monographs on particular taxa has not been undertaken. A further 35 titles (mainly concerned with local bioindicational studies) were gleaned from the literature, but these were considered to be of minor importance and were therefore excluded from the list below.

1799

Desfontaines R. [1798–]1799: *Flora atlantica, sive historia plantarum, quae in Atlante, agro tunetano et algeriensi crescunt* **2.** – Paris: L. G. Desgranges. – 458 pages, 261 plates [lichens pp. 417–420, pl. 258 fig. 3. 1799]. – Observations of c. 30 lichens (or more accurately groups of lichens) from unspecified areas and localities of Algeria. [Leg. & det. author]. – Note: A verbatim reissue of *Flora atlantica* was reprinted in 1800 by Blanchon (Paris).

1834

Steinheil A. 1834: Matériaux pour servir à la flore de Barbarie. II[e] article. Notice sur les cryptogames recueillies aux environs de Bone [sic!]. – *Annales des Sciences Naturelles* (2ème série) **1:** 282–289 [lichens pp. 284–285]. – Observation of 11 lichens in the city of Annaba (formerly Bône) and its surroundings (D23). [Leg. author, det. C. Montagne].

1838

Montagne C. 1838: Cryptogames algériennes, ou plantes cellulaires recueillies par M. Roussel aux environs d'Alger, et publiées. – *Annales des Sciences Naturelles* (2ème série) **10:** 268–279 [lichens p. 278]. – Identification of 17 lichens collected by Roussel from the district of Algiers (D16) and four lichens collected by Guyon from the district of Constantine (D25). [Leg. A. V. Roussel & C. L. Guyon (actually J.-L. G. Guyon – see 1852 entry below), det. author].

1846

Durieu de Maisonneuve M. C. 1846: *Flore d'Algérie. Cryptogamie. 1ère partie*. – Paris: Imprimerie Impériale. – 693 pages [lichens pp. 198–295]. – The author surveyed almost 180 lichen taxa collected from several districts of N Algeria (D16, D31, D21, D25…), of which two genera (*Myriangium*, *Myxopuntia*) and 18 species were new to science. [Leg. M. C. Durieu, C. Montagne & al., det. M. C. Durieu & C. Montagne]. – Note: the name of the lichenologist Camille Montagne, who was mainly responsible for the cryptogamic section, has been eclipsed by that of M. C. Durieu de Maisonneuve.

1849

Munby G. 1849: On the botanical productions of the kingdom of Algiers, followed by a short notice of the supposed manna of the Israelites. – *Annals and Magazine of Natural History* **4:** 426–435 [lichens p. 435]. – Reference to the discovery of the manna lichen (*Aspicilia esculenta*) in the desert areas of Algeria.

1852

Guyon J.-L. G. 1852: *Voyage d'Alger aux Ziban, l'ancienne Zebe*. – Alger: Imprimerie du Gouvernement. – 302 pages, 31 plates [lichens p. 212]. – The author noted the absence of the manna lichen (*Aspicilia esculenta*) in the areas visited, but states that he had first discovered this species in 1835 in sand samples from the district of Ghardaïa (D47). – Note: J.-L. G. Guyon (1794–1870) used the name C. L. Guyon on the labels of the numerous botanical specimens he collected in Algeria and Tunisia; these initials refer to his decoration "Chevalier de la Légion".

1853

Cosson M. E. 1853: Rapport sur un voyage botanique en Algérie, d'Oran au Chott-El-Chergui. – *Annales des Sciences Naturelles* (3ème série) **19:** 83–140 [lichens p. 92]. – The author reported two lichens (*Dirina massiliensis*, *Lecanactis grumulosa*) on Santa Cruz mountain near the city of Oran (D31). [Leg. & det. author].

Nylander W. 1853: Lichenes algerienses novi. – *Annales des Sciences Naturelles* (3ème série) **20:** 315–320. – After examination of 14 lichens collected by B. Balansa from the districts of Oran (D31), Batna (D5) and Constantine (D25), Nylander described two genera (*Glypholecia*, *Peltula*) and ten species that were new to science. [Leg. Balansa, det. author].

1854

Nylander W. 1854: Études sur les lichens de l'Algérie. – *Mémoires de la Société des Sciences Naturelles de Cherbourg* **2:** 305–344. – In this contribution, partly based on an examination of specimens collected by B. Balansa in 1852 and 1853 from several districts of Algeria (D5, D7, D25, D31) and some types provided by Durieu, Nylander listed 167 lichens as present in Algeria and provided diagnoses of 55 new or poorly known taxa. [Leg. mainly Balansa & M. C. Durieu de Maisonneuve (types provided), det. author].

1856

Montagne C. 1856: *Sylloge generum specierumque plantarum cryptogamarum*. – Paris: J. P. Baillière. – 498 pages [lichens pp. 317–382]. – In this cryptogamic compendium, Montagne referred to six lichens, mostly from the area of Algiers (D16). [Leg. Durieu (five taxa) & Roussel (one taxon), det. author].

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Nylander W. 1856: Synopsis du genre *Arthonia*. – *Mémoires de la Société Impériale des Sciences Naturelles de Cherbourg* **4:** 85–104. – In this monograph of the genus *Arthonia*, five species that occur in Algeria are cited.

1857

Cosson M. E. 1857: Liste des plantes observées par M. le Dr Reboud dans le Sahara algérien, pendant l'expédition de 1857 de Laghouat à Ouargla. – *Bulletin de la Société Botanique de France* **4:** 469–473 [lichens p. 473]. – Records of the manna lichen (*Aspicilia esculenta*) in at least five locations of the Ghardaïa district (D47). [Leg. V. C. Reboud, det. author].

Montagne C. 1857: Huitième centurie de plantes cellulaires nouvelles, tant indigènes qu'exotiques, décades VI et VII. – *Annales des Sciences Naturelles* (4ème série) **8:** 285–310 [lichens pp. 293–298]. –Reference to *Pyrenothea maresii*, a species new to science, collected by P. Marès in the district of El Bayadh (D32). [Leg. P. Marès, det. author].

1858

Nylander W. 1858a: Expositio synoptica Pyrenocarpeorum. Mém. Soc. Acad. Maine-et-Loire **4:** 5–88. – In this monograph on pyrenocarpous lichens Nylander listed 15 taxa that occur in Algeria.

Nylander W. 1858b: Prodromus lichenographiae Galliae et Algeriae. – *Actes de la Société Linnéenne de Bordeaux* **21:** 249–467. – In this prodromus on French and Algerian lichens, Nylander listed c. 140 lichen taxa that occur in Algeria. [Leg. mainly B. Balansa, M. C. Durieu & A. V. Roussel, det. author].

1864

Nylander W. 1864: Sur quelques lichens d'Algérie. – *Bulletin de la Société Botanique de France* **11:** 215–217. – Identification of 21 lichen taxa collected by A. H. Letourneux from mountains of the district of Msila (D28) including two species (*Verrucaria scotinopsara*, *V. spodopsara*) new to science. [Leg. Letourneux, det. author].

1866

Jourdan P. 1866: *Flore murale de la ville de Tlemcen, province d'Oran (Algérie)*. – Alger: Imprimerie de l'Akhbar, F. Paysant. – 38 pages [lichens p. 10]. – The author listed six lichens, all previously known from Algeria, on walls and roofs of the city of Tlemcen (D13). [Leg. & det. author].

1867

Jourdan P. 1867: *Flore murale du Tombeau de la Chrétienne (Province d'Alger)*. – Paris: Baillière et fils. – 46 pages. – Three common lichens (all previously known from Algeria) from an archaeological site in the district of Tipaza (D42) are listed. [Leg. & det. author].

Reboud V. 1867: Catalogue des plantes les plus intéressantes observées dans le cercle de Bou-Saada (Algérie), de septembre 1864 à juillet 1865. – *Bulletin de la Société Botanique de France* **14:** 130–137 [lichens p. 136]. – Report of an observation of the manna lichen (*Aspicilia esculenta*) in the district of El Bayadh (D32). [Leg. author, det. M. E. Cosson].

1871

Paris J. E. G. N. 1871: Notice sur la végétation des environs de Constantine. – *Bulletin de la Société Botanique de France* **18:** 252–270 [lichens pp. 269–270]. – 49 lichens are listed from the district of Constantine (D25) and seven from the district of Msila (D28), including nine taxa new to Algeria. [Leg. author & A. M. Emy, det. W. Nylander].

1878

Nylander W. 1878: Symbolae quaedam ad lichenographiam sahariensem. – *Flora* **61:** 337–345. – Identification of c. 50 lichen taxa collected by J. Norrlin from the districts of Biskra (D7), Batna (D5) and Annaba (D23), including 17 species new to science. [Leg. Norrlin, det. author].

1882

Brongniart C. 1882: Excursion dans l'Atlas. – *Compte rendu … de l'Association Française pour l'Avancement des Sciences* **10:** 1084–1091. – Five lichens (all previously known from Algeria) observed by L. C. Trabut in the district of Blida (D9) are listed. [Leg. & det. Trabut].

1883

Gandoger M. 1883: *Catalogue des plantes récoltées durant mon séjour en Algérie de 1877 à 1880*. – Paris: Savy. – 40 pages [lichens p. 38]. – About 40 lichens from the districts of Algiers (D16) and Tizi Ouzou (D15) are mentioned. [Leg. author, det. A. F. Malbranche].

1887

Trabut L. C. 1887: *D'Oran à Mécheria. Notes botaniques et catalogue des plantes remarquables*. – Alger: Adolphe Jourdan. – 36 pages [lichens pp. 35–36]. – The author reported 34 lichens (all most likely previously known from Algeria) from the districts of Oran (D31) and Naama (D45). [Leg. & det. author].

1888

Clavenad P. 1888: *Une mission dans le sud oranais*. – Paris: Librairie Ancienne et Moderne de S. Pitrat. – 123 pages [lichens p. 73]. – Report of *Parmelia* (= *Aspicilia*) *esculenta* on the banks of the Wadi Sidi-Naceur in the district of El Bayadh (D32).

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Flagey C. 1888: Herborisation lichénologique dans les environs de Constantine (Algérie). – *Revue Mycologique* **1888:** 126–134. – This contribution, the first Flagey published after he moved to Algeria in 1884, reports c. 230 lichen taxa, including seven new to science, observed in his home district of Skikda (D21) and the neighbouring districts of Constantine (D25), Mila (D43), Batna (D5), Jijel (D18) and Bordj Bou Arreridj (D34). [Leg. & det. author].

1890

Hue A. M. 1890: Lichenes exoticos a professore W. Nylander descriptos vel recognitos et in herbario musei parisiensis pro maxima parte asservatos in ordine systematico deposuit. – *Nouvelles Archives du Muséum d'Histoire Naturelle* (3ème série) **2:** 209–322. – This remarkable work provides a detailed synthesis of herbarium and published material; in all, 109 taxa are cited for Algeria.

Stizenberger E. 1890: Lichenaea africana. – *Bericht über die Thätigkeit der St. Gallischen Naturwissenschaftlichen Gesellschaft* **1890:** 105–249. – In his first compilation of African lichens, Stizenberger listed c. 150 taxa reported from Algeria.

1891

Flagey C. 1891a: Lichenes algerienses exsiccati. – *Revue Mycologique* **1891:** 83–87. – Even if this title evokes Flagey's well-known exsiccatae, important information is provided on the main geographical areas of Algeria, the major components of its lichen flora and details of its lichenological exploration.

Flagey C. 1891b: Lichenes algerienses. – *Revue Mycologique* **1891:** 107–117. – This first century of Flagey's exsiccatae lists 100 taxa, mostly from the contiguous districts of Constantine (D25), Mila (D43), Batna (D5), Jijel (D18) and Bordj Bou Arreridj (D34), including 4 species new to science. [Leg. & det. author].

Hue A. M. 1891: Lichenes exoticos a professore W. Nylander descriptos vel recognitos et in herbario musei parisiensis pro maxima parte asservatos in ordine systematico deposuit. – *Nouvelles Archives du Muséum d'Histoire Naturelle* (3ème série) **3:** 33–192. – This second detailed synthesis of herbarium and published material cites a further 161 taxa for Algeria.

Stizenberger E. 1891: Lichenaea africana. – *Bericht über die Thätigkeit der St. Gallischen Naturwissenschaftlichen Gesellschaft* **1891:** 133–268. – In this second compilation of African lichens, Stizenberger listed c. 50 taxa additional to those previously reported.

1892

Flagey C. 1892: Lichenes algerienses exsiccati. Cent. II. – *Revue Mycologique* **1892:** 70–79. – The second century of Flagey's exsiccatae lists a further 100 taxa, mostly from the contiguous districts of Constantine (D25), Mila (D43), Batna (D5), Jijel (D18) and Bordj Bou Arreridj (D34), including ten new to science. [Leg. & det. author].

Hue A. M. 1892: Lichenes exoticos a professore W. Nylander descriptos vel recognitos et in herbario musei parisiensis pro maxima parte asservatos in ordine systematico deposuit. – *Nouvelles Archives du Muséum d'Histoire Naturelle* (3ème série) **4:** 103–210. – This third and final detailed synthesis of herbarium and published material cites a further 37 taxa for Algeria, making in total 307 taxa for the country. – Note: one should bear in mind that no account has been taken in calculating this figure in respect of synonymy, but it is a fair reflection of the knowledge accumulated after almost 100 years of lichenological exploration in Algeria.

1893

Stizenberger E. 1893: Supplementa ad lichenaeam africanam I. Denuo addenda et corrigenda. – *Bericht über die Thätigkeit der St. Gallischen Naturwissenschaftlichen Gesellschaft* **1893:** 86–96. – In his first addenda/corrigenda to *Lichenaea africana*, Stizenberger added *Cladonia pityrea* to those taxa previously listed for Algeria.

1894

Julien A. 1894: *Flore de la région de Constantine*. – Constantine: Imprimerie Louis Marle. – 332 pages [lichens p. 310]. – Observation of four lichens (all previously known from Algeria) in the area of Constantine (D25). [Leg. & det. author].

1895

Flagey C. 1895: Lichenes algerienses. – *Revue Mycologique* **1895:** 101–115. – The third century of Flagey's exsiccatae lists 105 taxa from the contiguous districts of Constantine (D25), Mila (D43), Batna (D5), Jijel (D18) and Bordj Bou Arreridj (D34), including six taxa new to science. [Leg. & det. author]. – Note: at the beginning of this contribution Flagey provided a corrigenda of nine taxa determinations reported in the first and second centuries of his exsiccatae.

Steiner J. 1895: Ein Beitrag zur Flechtenflora der Sahara. – *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften. Wien. Mathematisch-naturwissenschaftliche Classe. Abteilung 1*, **104:** 383–393. – Reports of 18 taxa in the district of Biskra (D7), including four (*Collemopsidium calcicola*, *Endocarpon subcompactum*, *Heppia subrosulata*, *Lecanora platycarpa*) new to science. [Leg. F. Kerner von Marilaun, det. author].

Stizenberger E. 1895: Supplementa ad lichenaeam africanam II. Addenda et corrigenda ex annis 1893–94. – *Bericht über die Thätigkeit der St. Gallischen Naturwissenschaftlichen Gesellschaft* **1895:** 215–264. – In his second addenda/corrigenda to *Lichenaea africa-*

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na, Stizenberger added 16 taxa to those he previously listed for Algeria.

1896

Flagey C. 1896: Catalogue des lichens d'Algérie. – In: Battandier J. & Trabut L., *Flore de l'Algérie* **3(1, 1).** – Alger: Adolphe Jourdan. – 139 pages. – Flagey listed c. 650 taxa, of which c. 25 were new to science; also included are additional lichens he observed in the contiguous districts of Skikda (21), Constantine (D25), Mila (D43), Batna (D5) and Jijel (D18), as well as those previously reported by other authors from several areas of Algeria (e.g. M. C. Durieu, L. C. Trabut and W. Nylander). – Note: this contribution is still the main reference for Algerian lichenology.

1898

Hue A. M. 1898: Lichenes extra-europaei a pluribus collectoribus ad museum parisiense missi. – *Nouvelles Archives du Muséum d'Histoire Naturelle* (3ème série) **10:** 213–280. – In this first part of Hue's four contributions on the extra-European lichens held by the Paris Museum of Natural History, 22 taxa from Algeria are listed.

1899

Hue A. M. 1899: Lichenes extra-europaei a pluribus collectoribus ad museum parisiense missi. – *Nouvelles Archives du Muséum d'Histoire Naturelle* (4ème série) **1:** 27–220, 6 plates. – In this second contribution on the extra-European lichens held by the Paris Museum of Natural History, Hue listed 26 taxa from Algeria.

1900

Hue A. M. 1900: Lichenes extra-europaei a pluribus collectoribus ad museum parisiense missi. – *Nouvelles Archives du Muséum d'Histoire Naturelle* (4ème série) **2:** 49–122. – In this third contribution on the extra-European lichens held by the Paris Museum of Natural History, Hue listed 13 taxa from Algeria.

1901

Hue A. M. 1901: Lichenes extra-europaei a pluribus collectoribus ad museum parisiense missi. – *Nouvelles Archives du Muséum d'Histoire Naturelle* (4ème série) **3:** 21–122, 12 plates. – In this final contribution on the extra-European lichens held by Paris Museum of Natural History, Hue listed three taxa from Algeria.

1902

Steiner J. 1902: Zweiter Beitrag zur Flechtenflora Algiers. – *Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien* **52:** 469–487. – In his second contribution on Algerian lichens, Steiner listed 60 taxa observed in the districts of Blida (D9), Djelfa (D17), Laghouat (D3), Ghardaia (D47) and Tlemcen (D13), including one new genus (*Gonohymenia*) and 11 species new to science. [Leg. F. Kerner von Marilaun, det. author].

1904

Hochreutiner B. P. G. 1904: Le Sud-Oranais. Études floristiques et phytogéographiques faites au cours d'une exploration dans le sud-ouest de l'Algérie en 1901. – *Annuaire du Conservatoire et du Jardin Botaniques de Genève* **7–8:** 22–276 [lichens pp. 244–247]. – In this contribution published under the sub-heading "Lichenes Oranenses Hochreutinerani auctore Dr. A. Zahlbruckner", Hochreutiner listed 14 taxa from the district of Naama (D45), including *Physcia hochreutineri*, new to science. [Leg. Hochreutiner, det. A. Zahblbruckner].

1905

Harmand J. 1905a: *Lichens de France. Catalogue systématique et descriptif. Collémacés*. – Paris: Homeyer & Ehret. – 147 pages, 7 plates. – In this first volume of his catalogue of lichens of France, Harmand cited c. 30 lichens that occur in Algeria.

Harmand J. 1905b: *Lichens de France. Catalogue systématique et descriptif. Coniocarpés*. Paris: P. Klincksieck. – 45 pages, 1 plate. – In this second volume of his catalogue of lichens of France, Harmand cited five lichens that occur in Algeria.

1906

Flahault C. 1906: Rapport sur les herborisations de la Société. – *Bulletin de la Société Botanique de France* **53**(Sess. Extr.): lxxxviii–clxxix. – The author listed about ten lichens (all previously known from Algeria), mostly from the district of Oran (D31). [Leg. & det. author].

Maheu J. 1906: Lichens récoltés pendant la session extraordinaire de la Société botanique de France dans la province d'Oran et déterminés. – *Bulletin de la Société Botanique de France* **53**(Sess. Extr.): ccxviii. – The author reported the collection of c. 30 lichens (all previously known from Algeria) from the districts of Oran (D31), Saïda (D20) and Bechar (D8). [Leg. & det. author].

1907

Bouly de Lesdain M. 1907: Notes lichénologiques VII. – *Bulletin de la Société Botanique de France* **54:** 442–446 [Algerian lichens p. 445]. – Descriptions of two species (*Arthonia crozalsiana*, *Catillaria* (*Biatorina*) *algerica*), both new to science and collected from Murdjadjo plateau in the district of Oran (D31). [Leg. A. de Crozals, det. author].

Harmand J. 1907: *Lichens de France. Catalogue systématique et descriptif. Stratifiés-Radiés, Radiés*. – Paris: P. Klincksieck. – 267 pages, 4 plates. – In this

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third volume of his catalogue of lichens of France, Harmand cited c. 40 lichens that occur in Algeria.

1909

Harmand J. 1909: *Lichens de France. Catalogue systématique et descriptif. Phyllodés*. – Paris: P. Klincksieck. – 272 pages, 6 plates. – In this fourth volume of his catalogue of lichens of France, Harmand cited c. 60 lichens that occur in Algeria.

Lapie G. 1909: *Étude phytogéographique de la Kabylie du Djurjura*. – Paris: Delagrave. – 154 pages, 1 map [lichens pp. 49, 55, 60, 88, 91, 92, 97, 126]. – 30 taxa are reported from the Djurdjura mountains in the districts of Tizi Ouzou (D15), Béjaïa (D6) and Bouira (D10), including *Pertusaria lapieana*, new to science. [Leg. author, det. Bouly de Lesdain].

1911

Bouly de Lesdain M. 1911: Lichens du Sud algérien recueillis par M. Seurat. – *Bulletin de la Société d'Histoire Naturelle de l'Afrique du Nord* **3:** 95–98. – Reports of c. 30 lichens from the districts of Médéa (26), Djelfa (D17) and Msila (D28), including three taxa new to science (*Caloplaca epixantha* var. *macrospora*, *Gyalolechia lactea* f. *rubra*, *Sporastatia seuratii*). [Leg. L. G. Seurat, det. author].

1912

Rikli M. & Schröter C. 1912: *Vom Mittelmeer zum Nordrand der Sahara. Eine botanische Frühlingsfahrt nach Algerien*. – Zürich: Institut Orell Füssli. – 178 pages, 25 plates [lichens pp. 110, 120]. – Observation of *Psora decipiens* and *P. globifera* at Beni-Ounif in Bechar district (D8) and a reference to the manna lichen (*Aspicilia esculenta*) without mention of localities.

1913

Harmand J. 1913: *Lichens de France. Catalogue systématique et descriptif. Crustacés*. – Paris: P. Klincksieck. – 424 pages, 3 plates. – In this final volume of his catalogue of lichens of France, Harmand cited c. 70 lichens that occur in Algeria.

1914

Battandier J. A., Maire R. & Trabut L. C. 1914: Rapport sur les herborisations faites par la Société pendant la session d'Alger. – *Bulletin de la Société Botanique de France* **61**(Sess. Extr.): xxxvii–cvi [lichens pp. xlviii, lvi, lxxx]. – The authors listed 39 lichens (all most likely previously known from Algeria) from mountains in the districts of Blida (D9) and Tizi Ouzou (D15). [Leg. Maire, det. authors].

1916

Maire R. 1916: La végétation des montagnes du Sud Oranais. – *Bulletin de la Société d'Histoire Naturelle de l'Afrique du Nord* **7:** 210–292, 17 plates [lichens pp. 220, 236, 247]. – Twenty taxa (all previously known from Algeria) are reported from the mountains of the district of Naama (D45). [Leg. & det. author].

1921

Hue A. 1921: Lichenes in Africa tropica occidentali et praecipue in Mauritania a Cl. Chudeau, annis 1908–1912 lectos descripsit. – *Mémoires de la Société Botanique de France* **30:** 1–17. – Four Algerian lichens (*Aspicilia gibbosa* f. *applanata*, *Heppia ahaggariana*, *Heterina nigra*, *Lecanora asekremensis*), collected by R. Chudeau from the Assekrem Mountain in the district of Tamanrasset (D11), were new to science. [Leg. R. Chudeau, det. author].

1925

Tits D. 1925: Le Sahara occidental (contribution phytogéographique). – *Bulletin de la Société Royale de Botanique de Belgique* **58:** 39–91, 3 plates [lichens pp. 49–50]. – In his exploration of the W Algerian Sahara area, Tits observed ten lichens in the district of Bechar (D8), including *Lempholemma mouretii*, new to Algeria. [Leg. author, det. M. Bouly de Lesdain].

1928

Maire R. & Senevet G. 1928: La flore murale du Tombeau de la Chrétienne. – *Bulletin de la Société d'Histoire Naturelle de l'Afrique du Nord* **19:** 23–28 [lichens p. 24]. – Ten lichens (all previously known from Algeria) are noted from an archaeological site in the district of Tipaza (D42) explored by Jourdan (1867). [Leg. & det. R. Maire].

1929

Szatala Ö. 1929: Enumeratio lichenum a cl. Barone G. de Andreanszky in Africa boreale lectorum. – *Magyar botanikai lapok* **28:** 162–166. – The Hungarian lichenologist Szatala listed 17 Algerian lichens (all previously known from Algeria) collected by G. Andreansky from mountains in the districts of Oran (D31) and Laghouat (D3). [Leg. G. Andreanszky, det. Szatala].

1933

Maire R. 1933: Études sur la flore et la végétation du Sahara central. Mission du Hoggar II. – *Mémoires de la Société d'Histoire Naturelle de l'Afrique du Nord* **3:** 1–272, 36 plates, 2 maps [lichens pp. 33–35]. – About ten lichens (all previously known from Algeria) are noted from the desert area of the Hoggar Mountains in the district of Tamanrasset (D11). [Leg. author, det. M. Bouly de Lesdain & A. H. Magnusson].

1934

Andreanszky G. 1934: Plantae in Africa boreali lectae I. – *Index horti botanici universitatis budapesti-*

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nensis **2:** 67–110 [lichens pp. 71–80]. – Twenty-five lichens (all previously known from Algeria) are listed, observed mostly on mountains in the districts of Oran (D31) and Laghouat (D3). [Leg. author, det. Ö Szatala].

1935

Maire R. & Wilczek E. 1935: Florule des Iles Habibas. – *Bulletin de la Société d'Histoire Naturelle de l'Afrique du Nord* **26bis:** 61–78, 2 plates. – Seven lichens (all previously known from Algeria) were observed on the two small Habibas Islands situated close to the district of Oran (D31). [Leg. authors, det. E. Frey & C. Meylan].

1936

Reichert I. 1936: L'Afrique du Nord et sa position phytogéographique au point de vue lichénologique. – *Bulletin de la Société Botanique de France* **83:** 836–841. – A phytogeographic synthesis of the lichenological flora of North Africa with some references to Algerian lichens.

1937

Fourment P. & Roques H. 1937: Contribution à l'étude des drogues indigènes nord-africaines. (Suite). *Lecanora esculenta* Eversmann. – *Bulletin de la Société Botanique de France* **28:** 298–306. – A note on the manna lichen (*Aspicilia esculenta*) in Algeria, its discovery, chemical composition, and trials for animal and human feeding.

1938

Werner R. G. 1938a: Bryologie et phytogéographie. – *Comptes Rendus de l'Académie des Sciences* **207:** 251–253. – A discussion on the ecological distribution of North African cryptogams (lichens and mosses) and a comparison with the one established for higher plants (Emberger L. 1930: La végétation de la région méditerranéenne: essai d'une classification des groupements végétaux. – *Revue Générale de Botanique* **42**: 641–662, 705–721).

Werner R. G. 1938b: La plasticité écologique des cryptogames méditérranéennes. – *Bulletin de la Société Botanique de France* **85:** 496–499. – Similar to the previous entry (Werner 1938a), with some necessary revisions.

1939

Bouly de Lesdain M. 1939: Notes lichénologiques XXXI. – *Bulletin de la Société Botanique de France* **86:** 81–84. – A note on the characters of an Algerian specimen of *Lecania erysibe* var. *grisea* from Flagey's herbarium.

Werner R. G. 1939: Aperçu phytogéographique sur la flore cryptogamique méditerranéenne de l'Afrique du Nord. L'endémisme et les caractères propres au Maroc, à l'Algérie et à la Tunisie. – Pp. 219–244 in: *Actes du 4ème Congrès de la Fédération des Sociétés Savantes de l'Afrique du Nord*. – Rabat: Société Historique Algérienne. – In this synthesis of the comparative phytogeography of the cryptogamic flora of North Africa (Algeria, Morocco, Tunisia), 65 of the cited lichens occur in Algeria.

1940

Maire R. 1940: *Mission du Hoggar III. Études sur la flore et la végétation du Sahara central*. – Alger: Imprimeries "La Typo-Litho" et Jules Carbonel Réunies. – 433 pages [lichens pp. 348, 374, 378, 381]. – In this contribution on the Central Sahara flora, 15 lichens observed in the desert area of the Hoggar Mountains in the district of Tamanrasset (D11) are listed. [Leg. author, det. M. Bouly de Lesdain & A. H. Magnusson].

1941

Werner R. G. 1941: Contribution à l'étude de la flore cryptogamique de l'Algérie et de la Tunisie. – *Bulletin de la Société des Sciences Naturelles du Maroc* **20:** 113–121. – In this synthesis of the cryptogamic flora of Algeria and Tunisia, Werner cited 50 lichens mainly collected by Faurel, mostly from the cedar forests in the districts of Batna (D5), Tissemsilt (D38) and Béjaïa (D6); it also includes three Algerian species new to science (*Bacidia* (*Weitenwebera*) *cedricola*, *Buellia boitardii*, *Heppia faurelii*), one species new to Algeria and Africa (*Heppia nevadensis*), and six taxa new to Algeria (*Cornicularia tenuissima* var. *sorediata*, *Parmelia conspersa* var. *stenophylla*, *P. jacquesii*, *Rinodina atrocinerella*, *Umbilicaria corrugata*, *Usnea dasypoga* var. *plicata*). [Leg. L. Faurel (40 taxa), R. Maire (ten taxa), det. R. G. Werner]

1945

Dubuis A. & Faurel L. 1945: Note sur quelques espèces nouvelles ou intéressantes pour la flore du Djurdjura. – *Bulletin de la Société d'histoire naturelle de l'Afrique du Nord* **36:** 12–22 [lichens pp. 13–15]. – Thirty lichens are reported from the mountains of Djurdjura in the district of Bouira (D10), of which *Cyphellium tigillare* was new to North Africa and *Leptogium saturninum* was new to Algeria. [Leg. & det. authors].

1946

Servít M. 1946: The new lichens of the *Pyrenocarpae*-group I. – *Studia Botanica Čechoslovaca* **7:** 49–111. – First descriptions of *Verrucaria bernaicensis* f. *azebana* and *V. simillima* based on Algerian material are included.

Werner R. G. 1946: Nouvelle contribution à l'étude des lichens reliquaires en Afrique du Nord. – *Compte*

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rendu du 65ème Congrès de l'Association Française pour l'Avancement des Sciences, Nice. – Paris: Association Française pour l'Avancement des Sciences. – 8 pages. – In this contribution on relict lichens of North Africa, several lichens that occur in Algeria are cited and phytogeographic information on them is provided.

1948

Servít M. 1948: Species novae generis lichenum *Verrucaria*. – *Věstik Královske České Společnosti Nauk, Praha* **10:** 1–20. – This paper includes a description of the new species *Verrucaria flageyana* from Algeria.

1949

Werner R. G. 1949: Les origines de la flore lichénique de l'Algérie d'après nos connaissances actuelles. – *Mémoires hors série de la Société d'Histoire Naturelle de l'Afrique du Nord* **2:** 299–312. – In this phytogeographic synthesis of the lichen flora of Algeria (listing c. 270 taxa), a comparison with Morocco is provided.

1951

Faurel L., Ozenda P. & Schotter G. 1951a: Matériaux pour la flore lichénologique d'Algérie et de Tunisie (*Caliciaceae–Cypheliaceae*, *Peltigeraceae*, *Pertusariaceae*). – *Bulletin de la Société d'Histoire Naturelle de l'Afrique du Nord* **42:** 62–112. – In this synthesis of the lichen floras of Algeria and Tunisia, c. 60 lichens mostly occur in Algeria, of which three were new to North Africa (*Pertusaria henrici* var. *zoniosora*, *P. lecanorodes*, *P. melanochlora*) and six were new to Algeria. This work also contains an extensive bibliography on North African lichenology. [Leg. authors & al., det. authors].

Faurel L., Ozenda P. & Schotter G. 1951b: Notes lichénologiques nord-africaines I. Trois lichens rares à aire très disjointe. – *Bulletin de la Société d'Histoire Naturelle de l'Afrique du Nord* **42:** 113–118, 1 plate. – Reports of three Algerian lichens new to Africa (*Acarospora nodulosa*, *Cladonia mediterranea*, *Dermatocarpon vellereum*) with very disjunct distributions. [Leg. & det. authors].

1952

Faurel L., Ozenda P. & Schotter G. 1952: Notes lichénologiques nord-africaines II. Quelques lichens inédits pour l'Algérie. – *Bulletin de la Société d'Histoire Naturelle de l'Afrique du Nord* **43:** 137–145. – Seven lichen taxa from N Algeria (D16, D15, D6, D25, D38), including one taxon new to science (*Ramalina feldmannii*), five new to North Africa (*Calicium hyperellum*, *Endocarpon adnatum*, *Lobaria laetevirens* var. *microphyllina*, *Thelopsis isiaca*, *Umbilicaria crustulosa*) and one new to Algeria (*Dermatocarpon aquaticum* var. *decipiens*). [Leg. & det. authors].

1953

Faurel L., Ozenda P. & Schotter G. 1953a: Matériaux pour la flore lichénologique d'Algérie et de Tunisie II (*Graphidaceae*). – *Bulletin de la Société d'Histoire Naturelle de l'Afrique du Nord* **44:** 12–50, 4 plates. – In this revision of the *Graphidaceae*, c. 60 Algerian lichens are cited, of which four were new to science (*Opegrapha arthonioidea* var. *macrospora*, *O. grumulosa* var. *rubescens*, *O. leucocarpa*, *O. werneri*), and nine were new to Algeria and North Africa. [Leg. & det. authors].

Faurel L., Ozenda P. & Schotter G. 1953b: Les lichens du Sahara algérien. – Pp. 310–317 in: *Desert research: proceedings, international symposium held in Jerusalem, May 7–14, 1952*. – Jerusalem: Research Council of Israel. – A synthesis of the lichen flora of Algeria, which includes 120 taxa from the Algerian Sahara (almost all from the districts of Biskra (D7), Ghardaïa (D47) and Laghouat (D3)), of which 35 according to the authors are endemic to the Sahara. [Leg. & det. authors & al.].

Faurel L., Ozenda P. & Schotter G. 1953c: Notes lichénologiques nord-africaines III. Quelques Lichens d'Afrique du Nord nouveaux, rares ou peu connus. – *Bulletin de la Société d'Histoire Naturelle de l'Afrique du Nord* **44:** 367–384, 2 plates. – Records of 20 lichen taxa present in Algeria, including two new to science (*Porina keissleri*, *Solorinaria abbiatiana*), seven new to North Africa (*Arthopyrenia sphaeroides*, *Bacidia albescens*, *B. effusa*, *Baeomyces rufus* f. *sessilis*, *Porina byssophila*, *Protoblastenia metzleri*, *Sarcogyne pruinosa* var. *decipiens*) and two new to Algeria (*Bacidia rosella*, *Parmelia melanothrix* subsp. *werneri*). [Leg. authors & al., det. authors].

1954

Faurel L., Ozenda P. & Schotter G. 1954: Matériaux pour la flore lichénologique d'Algérie et de Tunisie III (*Arthoniaceae*, *Dirinaceae*, *Roccellaceae*). – *Bulletin de la Société d'Histoire Naturelle de l'Afrique du Nord* **45:** 275–298, 2 plates. – Records of c. 30 lichens, including two (*Arthonia caesiella*, *A. pinastri*) that were new to Algeria and North Africa. [Leg. authors & al., det. authors].

Faurel L. & Schotter G. 1954: Remarques à propos du *Pleolecis geophana* (Nyl.) Clements. – *Bulletin de la Société d'Histoire Naturelle de l'Afrique du Nord* **45:** 126–133. – Discussion on the systematic position of *Pleolecis* (*Steinia*) *geophana* based on two specimens collected from the district of Algiers (D16). [Leg. & det. authors].

Werner R. G. 1954: Lichens et champignons nord-africains. – *Revue Bryologique et Lichénologique* **23:** 197–213. – Identification and description of c. 90 lichens, of which three (*Lecidea glomerulosa*, *Parmelia furfuracea* var. *scobicina*, *P. saxatilis* var. *aizoni*) were collected by R. Maire from the Djurdjura moun-

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tains in the district of Bouira (D10). [Leg. R. Maire, det. Werner].

1955

Werner R. G. 1955: Étude sur la migration de quelques lichens. – *Bulletin de la Société des Sciences de Nancy* **14:** 104–115, 1 map. – A discussion on the migration of lichens based on the distribution of eight species, of which three (*Evernia prunastri*, *Parmelia saxatilis*, *Umbilicaria cylindrica*) occur in Algeria.

1956

Runemark H. 1956: Studies in *Rhizocarpon* I. Distribution and ecology of the yellow species in Europe. – *Opera Botanica* **2(2):** 1–150. – Two records of *R. tinei* subsp. *tinei* from Algeria are included (p. 67 & 128).

Werner R. G. 1956: Synthèse phytogéographique de la flore lichénique de l'Afrique du Nord française d'après les données récentes et essai de paléogéographie lichénique. – *Bulletin de la Société Botanique de France. Mémoires* **102:** 35–50. – In this phytogeographic synthesis of the lichen flora of North Africa, 216 taxa that occur in Algeria are cited.

1958

Poelt J. 1958: Die lobaten Arten der Flechtengattung *Lecanora* Ach. sensu ampl. in der Holarktis. – *Mitteilungen aus der Botanischen Staatssammlung*, *München* **2:** 411–589. – This monograph includes some Algerian records (e.g. *Squamarina concrescens*).

1960

Collenot A., Dubuis A. & Faurel L. 1960: Note sur la flore du Tassili N'Ajjer. – *Bulletin de la Société d'Histoire Naturelle de l'Afrique du Nord* **51:** 233–253, 1 map. – Three lichens from the district of Illizi (D33) (*Collema tenax*, *Endocarpon pallidum*, *Heppia endocarpaea*), all new to the central Sahara, are cited. [Leg. Collenot, det. Dubuis & Faurel].

1966

Poelt J. 1966: Zur Kenntnis der Flechtengattung *Physconia*. – *Nova Hedwigia* **12:** 107–135. – References are made to six taxa (five *Physconia*, one *Anaptychia*) in Algeria, including taxonomic information on two new combinations (*P. grisea* subsp. *algeriensis*, *P. grisea* subsp. *lilacina*). Inconsistency is shown in a Flagey exsiccata (Lich. Alg. 24), the material in herb. H and herb. M being determined as *P. pulverulenta* and *P. venusta*, respectively.

1970

Ozenda P. & Clauzade G. 1970: *Les lichens: étude biologique et flore illustrée*. – Paris: Masson et Cie. – 816 pages. – The occurrence of c. 20 taxa in Algeria is noted in this important book on the biology and systematics of lichens.

Poelt J. & Wunder H. 1970: *Anaptychia ulotrichoides* in Europa und ihre Gesamtverbreitung. – *Herzogia* **1:** 459–463. – Two records from Algeria are mentioned.

1971

Hertel H. 1971: Beiträge zur Kenntnis der Flechtenfamilie *Lecideaceae* IV. – *Herzogia* **2:** 231–261. – Under *Lecidella carpathica* from Algeria, reference is made (p. 254) to a Flagey exsiccata (Lich. Alger. 158 as *Lecidea latypiza*).

1973

Hermann S., Leuckert C. & Poelt J. 1973: Zur Kenntnis der Flechtengruppe *Lecanora radiosa* s. ampliss. – *Willdenowia* **7:** 9–30. – In this examination of the *L. radiosa* group, the authors were the first to identify a specimen collected in 1954 by Doppelbaur from a mountain of the district of Batna (D10) as *L. praeradiosa*, new to Algeria.

1974

Wunder H. 1974: Schwarzfrüchtige, saxicole Sippen der Gattung *Caloplaca* (*Lichenes*, *Teloschistaceae*) in Mitteleuropa, dem Mittelmeergebiet und Vorderasien. – *Bibliotheca Lichenologica* **3:** 1–198. – Algerian records are mentioned for several taxa (e.g. *C. alociza*, *C. circumalbata* var. *candida*, *C. circumalbata* var. *circumalbata*).

1975

Hertel H. 1975: Ein Vorläufiger Bestimmungsschlüssel fur die kryptothallinen, schwarzfrüchtigen, saxicolen Arten der Sammelgattung *Lecidea* (*Lichenes*) in der Holarktis. – *Dechemiana* **127:** 37–78. – Under *L. squamata* from Algeria, reference is made (p. 72) to Flagey type material and an exsiccata (Lich. Alger. 160).

Werner R. G. 1975: Quelques lichens nord-africains intéressants des territoires arides. – *Bulletin de l'Académie et de la Société Lorraines des Sciences* **14:** 157–162. – Discussion on the presence of some lichens belonging to different floral regions in oceanic and continental Mediterranean deserts, including *Lecanora chlarotera*, new to Algeria.

1976

Hale M. E. 1976: A monograph of the lichen genus *Pseudoparmelia* Lynge (*Parmeliaceae*). – *Smithsonian Contributions to Botany* **31:** 1–62. – In a distribution map, *P. caperata* is given for Algeria.

Schwarz W. 1976: Ökophysiologische Untersuchungen in den Bergen der zentralen Sahara. – *Bericht des Naturwissenschaftlich-Medizinischen Vereins Innsbruck* **63:** 139–164 [lichens p. 160]. – Records of c. 20 lichens (all previously known from Algeria) on mountains of the district of Tamanrasset (D11). [Leg. author, det. J. Poelt].

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1977

Leuckert C., Poelt J. & Hähnel G. 1977: Zur Chemotaxonomie der eurasischen Arten der Flechtengattung *Rhizoplaca*. – *Nova Hedwigia* **28:** 71–129. – This chemotaxonomic study includes records of *R. peltata* chemotype 3 from Algeria.

1978

Jorgensen P. M. 1978: The lichen family *Pannariaceae* in Europe. – *Opera Botanica* **45:** 1–123. – Two Algerian records of *Pannaria ignobilis* noted (pp. 33–34).

Leuckert C. & Buschardt A. 1978: Chemosystematische Untersuchung einiger Arten von *Acarospora* subgenus *Xanthothallia*. – *Nova Hedwigia* **30:** 799–814. – This chemotaxonomic study includes a record of *A. sulphurata* from the Hoggar mountains in the district of Tamanrasset (D11).

1979

Mayrhofer H. & Poelt J. 1979: Die saxicolen Arten der Flechtengattung *Rinodina* in Europa. – *Bibliotheca Lichenologica* **12:** 1–186. – Despite its title, records of some extra-European taxa are included with several from Algeria.

1981

Clauzade G. & Roux C. 1981: Les *Acarospora* de l'Europe occidentale et de la région méditerranéenne. – *Bulletin du Muséum d'Histoire Naturelle de Marseille* **41:** 41–93. – In this synthesis of *Acarospora* of W Europe and the Mediterranean, nine taxa that occur in Algeria are cited, including *A. assimulans*, probably new to the country.

Kilias H. 1981: Revision gesteinsbewohnender Sippen der Flechtengattung *Catillaria* Massal. in Europa (*Lecanorales*, *Lecideaceae*). – *Herzogia* **5:** 209–448. – Reference to Algerian records by Flagey (*C. athallina*, *C. chalybeia*, *C. philippea*) and his type material (*C. chalybeia* f. *clarior*, *Lecidea lutosa* var. *pustulata*).

1982

Steiner M. & Poelt J. 1982: *Caloplaca* sect. *Xanthoriella*, sect. nov.: Untersuchungen über die "*Xanthoria lobulata*-Gruppe" (*Lichenes*, *Teloschistaceae*). – *Plant Systematics and Evolution* **140:** 151–177. – In this synthesis of the *X. lobulata* group, a new combination, *C. polycarpoides*, is proposed. It is new to Algeria, and supported by a specimen (in herb. M) collected by Doppelbaur in 1954.

1983

Hankó B. 1983: Die Chemotypen der Flechtengattung *Pertusaria* in Europa. – *Bibliotheca Lichenologica* **19:** 1–297. – Specimens from Algeria (e.g. *P. albescens*, *P. hymenea*, *P. leucosora*) were treated in this detailed study of chemical data.

Semadi A. 1983: Incidence de la pollution fluorée d'origine industrielle sur la végétation de la région de Annaba-Algérie. – Paris: doctor-engineer thesis, University Paris VII. – 79 pages. – In this work performed under the supervision of M. A. Letrouit-Galinou, A. Semadi (1949–2002) listed 37 lichen taxa (all previously known from Algeria) that occur in the area of Annaba city (D23). – Note: this lichenological contribution is the first by an Algerian researcher since Independence (1962). [Leg. author, det. author & M. A. Letrouit-Galinou].

Tehler A. 1983: The genera *Dirina* and *Roccellina* (*Roccellaceae*). – *Opera Botanica* **70:** 1–86. – Some Algerian localities of *D. massiliensis* f. *massiliensis* are provided on a map (p. 79).

1984

Clauzade G. & Roux C. 1984: Les genres *Aspicilia* Massal. et *Bellemerea* Hafellner & Roux. – *Bulletin de la Société Botanique du Centre-Ouest*, Nouvelle Série **15:** 127–141. – This is a synthesis of the genera *Aspicilia* and *Bellemerea* with reference to Algerian specimens. The authors state that *A. circummunita* is endemic to Algeria.

Mayrhofer H. 1984: Die saxicolen Arten der Flechtengattungen *Rinodina* und *Rinodinella* in der alten Welt. – *Journal of the Hattori Botanical Laboratory* **55:** 327–493. – This paper includes numerous Algerian records.

1985

Esnault J. 1985: Le genre *Aspicilia* Mass. (Lichens) en Algérie: étude des caractères taxonomiques et de leur variabilité. – Rennes: doctorate thesis, Université de Rennes I. – 258 pages. – The author surveyed lichens, especially *Aspicilia* representatives, in 127 localities mostly in N Algeria; almost 40 taxa of *Aspicilia* were determined, 24 of which were new to Algeria, including 17 new to North Africa. [Leg. & det. author].

1987

Esnault J. & Roux C. 1987: *Amygdalaria tellensis* (Lichens), nouvelle espèce du Tell algérien. – *Anales del Jardín Botánico de Madrid* **44:** 211–225. – Description of *A. tellensis*, a new lichen species discovered in the mountains of the district of Blida (D9) and Bouira (D10). Observations are also provided for ten other lichens, of which *Lecanora agardhiana* subsp. *sapaudica* is probably new to Algeria. [Leg. Esnault, det. authors].

Hertel H. 1987: *Lecideaceae exsiccatae*: Fasc. IX (No. 161–180). – München: Botanische Staatssammlung. – No. 168 *Lecidella elaeochroma* from Massif de l'Aures in the district of Batna (D5).

1989

Clauzade G., Diederich P. & Roux C. 1989: Nelikeniĝintaj fungoj likenloĝaj. Ilustrita determinlibro [in Esperan-

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to]. – *Bulletin de la Société Linnéenne de Provence* (Numéro Spécial) **1:** 1–142. – In this worldwide synthesis of lichenized and lichenicolous fungi, five taxa that occur in Algeria are cited (*Didymella perigena*, *Kiliasia episema*, *Nectria insidiosa*, *Polyschistes mairei*, *Sphaeronemia lichenophilum*), the last listed probably new to the country.

Egea J. M. 1989a: Prospecciones liquenológicas en África del Norte. III. Líquenes saxícolas del cabo Tres Forcas (Nador, Marruecos) y cabo Falcón (Orán, Argelia). – *Collectanea Botanica* **17:** 183–189. – In this lichenological study of W coastal areas of North Africa, 70 taxa are recorded, including 39 from the district of Oran (D31), five of which were new to Algeria (*Caloplaca gloriae*, *Dimelaena radiata*, *Diploicia subcanescens*, *Lecania spadicea* var. *gennarii*, *Roccella canariensis*). [Leg. & det. author].

Egea J. M. 1989b: Los géneros *Heppia* y *Peltula* (Liquenes) en Europa occidental y Norte de Africa. – *Bibliotheca Lichenologica* **31:** 1–122. – This taxonomic, ecological and biogeographical study includes numerous references to Algeria.

Semadi A. 1989: Effets de la pollution atmosphérique (pollution globale, fluorée et plombique) sur la végétation dans la région de Annaba (Algérie). – Paris: doctorate thesis, University Paris VI. – 339 pages. – In this contribution on the effects of pollution on vegetation, 88 lichen taxa, no doubt all previously known from Algeria, that occur in the area of the industrial city of Annaba (D23) are listed. [Leg. author, det. author & C. van Haluwyn].

Torrente P. & Egea J. M. 1989: The identity of *Opegrapha diaphoroides* Nyl. – *Lichenologist* **21:** 386–387. – In this short communication the authors were, to our knowledge, the first to state that *Opegrapha ochrocincta* Werner occurs in Algeria.

Zouaoui S. 1989: Étude de la flore lichénique du massif forestier Akfadou et Beni-Ghobri. – Tizi Ouzou: master's thesis, Université de Tizi Ouzou. – 108 pages. – In this important contribution to our knowledge of the Algerian lichen flora, S. Zouaoui (The first Algerian woman involved in lichenology, now established in Canada where she continues her lichen studies) listed c. 150 lichens from forests of the mountains of Djurdjura in the districts of Béjaïa (D6) and Tizi-Ouzou (D15). Of the taxa observed, 66 were new to Algeria, and two (*Caloplaca luteoaurantia*, *C. quercina*) were considered as rare or absent in the Mediterranean area and Europe. [Leg. author, det. author & C. van Haluwyn]. – Note: the author had the opportunity to consult several herbaria that hold Algerian lichens, including the Hue herbarium at MNHN, and the personal herbaria of C. van Haluwyn (University of Lille) and M. A. Letrouit-Galinou (University of Paris VI).

1990

Egea J. M., Torrente P. & Rowe J. G. 1990: Contribución a la flora de Argelia y Túnez: liquenes y hongos lichenícolas. – *Cryptogamie*, *Bryologie*, *Lichénologie* **11:** 409–417. – Reports of 103 lichens and lichenicolous fungi collected in two Tunisian and four Algerian coastal areas (D27, D42, D35–D15, D21) are provided, of which five taxa (*Acarospora subrufula*, *Caloplaca aetnensis*, *C. necator*, *Porina oleriana* var. *ginbergeri*, *Rhizocarpon constrictum*) were new to Algeria and North Africa, and two taxa (*Arthonia meridionalis*, *Dirina paradoxa* subsp. *africana*) were new to Algeria. [Leg. & det. authors].

Grube M. & Hafellner J. 1990: Studien an flechtenbewohnenden Pilzen der Sammelgattung *Didymella* (*Ascomycetes*, *Dothideales*). – *Nova Hedwigia* **51:** 283–360. – In this study of the *Didymella* group, two taxa that occur in Algeria are cited (*D. sphinctrinoides* var. *aspiciliicola*, *Didymellopsis perigena*).

Hale M. E. 1990: A synopsis of the lichen genus *Xanthoparmelia* (Vainio) Hale (*Ascomycotina*: *Parmeliaceae*). – *Smithsonian Contributions to Botany* **74:** 1–250. – In this synopsis of the genus *Xanthoparmelia*, *X. tinctina* was, to our knowledge, first recorded from Algeria.

Haluwyn C. van & Letrouit-Galinou M. A. 1990: La flore lichénique de *Pinus halepensis* dans la région de Tebessa (Algérie orientale). – *Cryptogamie*. *Bryologie*, *Lichénologie* **11:** 31–42. – Reports of 27 lichens associated with Aleppo pine (*Pinus halepensis*) in the district of Tebessa (D12) are provided, of which *Thelenella justii* and *Vouauxiella verrucosa* were new to Algeria and Africa. [Leg. authors, det. authors, C. Roux & H. Mayrhofer].

Knoph J.-G. 1990: Untersuchungen an gesteinsbewohnenden xanthonhaltigen Sippen der Flechtengattung *Lecidella* (*Lecanoraceae*, *Lecanorales*) unter besonderer Berücksichtigung von außereuropäischen Proben exclusive Amerika. – *Bibliotheca Lichenologica* **36:** 1–183. – This monograph contains some Algerian records, e.g. *L. carpathica*, *L. elaeochromoides*, *L. patavina* and *L. stigmatea*.

1991

Egea J. M. & Llimona X. 1991: Phytogeography of silicicolous lichens in Mediterranean Europe and NW Africa. – *Botanika Chronika (Patras)* **10:** 179–198. – In this synthesis of Mediterranean lichen associations, the authors cited several that occur in Algeria.

Timdal E. 1991: A monograph of the genus *Toninia* (*Lecideaceae*, *Ascomycetes*). – *Opera Botanica* **110:** 1– 137. – Important Algerian records of numerous species are included; further details of these are available in an archived list in Oslo Botanical Museum herbarium (O).

1992

Litterski B. 1992: Verbreitung einiger Flechtenarten in Europa. – *Herzogia* **9:** 149–166. – This biogeograph-

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ical study includes six distribution maps of species shown to be present in Algeria.

Moreno P. P. & Egea J. M. 1992a: El genero *Lichinella* Nyl. en el sureste de España y norte de Africa. – *Cryptogamie. Bryologie*, *Lichénologie* **13:** 237–259. – In this revision of the genus *Lichinella* in the SE Iberian Peninsula and North Africa, the authors determined six species that occur in Algeria (*L. algerica*, *L. cribellifera*, *L. iodopulchra*, *L. nigritella*, *L. robusta*, *L. sinaica*) after an examination of herbarium specimens collected by themselves (at MUB) and others.

Moreno P. P. & Egea J. M. 1992b: Estudios sobre el complejo *Anema-Thyrea-Peccania* en el sureste de la Peninsula Iberica y norte de Africa. – *Acta Botanica Barcinonensia* **41:** 1–66, 12 plates. – In this revision of the genera *Anema*, *Digitothyrea*, *Peccania* and *Thyrea* from the SE Iberian Peninsula and North Africa, the authors, after examination of herbarium specimens of Algerian lichens collected by themselves (at MUB) or others, determined eight species that occur in Algeria, including *P. fontqueriana*, new to science.

1993

Egea J. M. & Torrente P. 1993: The lichen genus *Bactrospora*. – *Lichenologist* **25:** 211–255. – In this revision of the genus *Bactrospora*, the authors, after examination of specimens from several herbaria, defined a new species, *B. carneopallida*, for which corresponding Algerian specimens that they collected in 1985 have been found (see Egea & al. 1990).

1994

Breuss O. 1994a: Die Flechtengattungen *Catapyrenium* und *Placidiopsis* (*Verrucariaceae*) in Nordafrika. – *Nova Hedwigia* **58:** 229–237. – In this synthesis of the genera *Catapyrenium* and *Placidiopsis* in North Africa, seven species that occur in Algeria are listed, including *C. phoeocarpoides*, new to Algeria and Africa.

Breuss O. 1994b: Über einige wenig bekannte *Verrucaria*-Arten (*Lichenes*, *Verrucariaceae*). – *Österreichische Zeitschrift für Pilzkunde* **3:** 15–20. – *Verrucaria fuscula* is reported from Algeria.

Haluwyn C. van, Semadi A., Deruelle S. & Letrouit M. A. 1994: La végétation lichénique corticole de la région d'Annaba (Algérie orientale). – C*ryptogamie*. *Bryologie*, *Lichénologie* **15:** 1–21. – The authors report 90 corticolous lichens from the area of Annaba (D23), including *Waynea stoechadiana*, new to Algeria and Africa. [Leg. authors, det. authors & C. Roux].

1995

Ropin K. & Mayrhofer H. 1995: Über corticole Arten der Gattung *Rinodina* (*Physciaceae*) mit grauem Epihymenium. – *Bibliotheca Lichenologica* **58:** 361–382. – The Algerian record for *R. colombina*, based on Flagey's exsiccata (Lich. Alg. 96), is noted.

Roux C., Clerc P., Clauzade G. & Bricaud O. 1995: La genre *Waynea* Moberg (*Ascomycetes*, *Lecanorales*, *Bacidiaceae*). – *Bibliotheca Lichenologica* **58:** 383–404. – A note (p. 400) and map (p. 396) of *W. stoechadiana* in Algeria are provided.

Semadi A. & Tahar A. 1995: Une méthode biologique pour la détection de la pollution globale dans la région d'Annaba (Algérie). – *Pollution Atmosphérique* **146:** 50–58. – In this contribution on the use of lichens for the measurement of pollution the authors listed c. 20 lichens that occur in the area of the industrial city of Annaba (D23). [Leg. & det. Semadi].

1996

Boom P. P. G. van den, Alonso F. L. & Egea J. M. 1996: *Lecania poeltii*, a new lichen species from Portugal and northern Africa. – *Lichenologist* **28:** 395–399. – A description of *L. poeltii*, a new species that occurs in Portugal, Morocco and Algeria, where Egea collected it in the area of Cap Falcon (D31) in 1985 (see Egea & al. 1990).

Grube M. & Giralt M. 1996: Studies on some species of *Arthothelium* occurring in the western mediterranean. – *Lichenologist* **28:** 15–36. – The authors surveyed the six known species of *Arthothelium* from the W Mediterranean area, including two species that occur in Algeria: *A. crozalsianum* and *A. sardoum*, the latter, to our knowledge, new to Algeria.

1997

Semadi A., Tahar A., Fadel D. & Benoit-Guyod J. L. 1997: The behaviour of some lichen species in Annaba area (Algeria). – *Synthèse: revue des sciences et de la technologie* **2:** 17–24. – In this study of the lichen flora in a polluted environment, the authors listed 21 species (all previously known from Algeria) that occur in the area of the industrial city of Annaba (D23).

2000

Navarro-Rosinés P., Gaya E. & Roux C. 2000: *Caloplaca calcitrapa* sp. nov. (*Teloschistaceae*) un nuevo liquen saxícolo-calcícola mediterráneo. – *Bulletin de la Société Linnéenne de Provence* **51:** 145–152. – A description of *C. calcitrapa*, a new species observed in Spain, which, according to the authors, had been found in Algeria by Gateffosé (Bc-Herb. Werner, Barcelona). Actually, the locality cited by the authors for the Algerian specimen (Sidi Smain – Doukkala) is situated on the Atlantic side of Morocco. However, in this same contribution, the authors noted that *C. saxorum*, a species they considered to be a possible synonym of *C. inconnexa*, occurs in Algeria.

2001

Hertel H. 2001: Floristic and taxonomic notes on saxi-

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colous lecideoid lichens. – *Sendtnera* **7:** 93–136. – In this synthesis of saxicolous lecideoid lichens, three species that occur in Algeria are cited, including *Lecidella pataviana* (= *L. inamoena*), which, to our knowledge, was new to the country.

2002

Litterski B. & Otte V. 2002: Biogeographical research on European species of selected genera. – *Bibliotheca Lichenologica* **82:** 83–90. – Distribution map of *Physconia venusta*, including Algerian records (with published and herbarium sources).

Meyer B. 2002: Die Flechtengattung *Clauzadea*. – *Sendtnera* **8:** 85–154. – Several species (e.g. *C. chondrodes*, *C. monticola*) from Algeria are mentioned.

2003

Alonso F. L. & Egea J. M. 2003: Hongos liquenizados y liquenícolas epífitos de algunas localidades costeras de Argelia y Túnez. – *Anales de Biología, Facultad de Biología, Universidad de Murcia* **25:** 73–79. – In this contribution on the lichen floras of Algeria and Tunisia, the authors reported 74 taxa from 13 coastal localities in several districts of Algeria (D2, D6, D15, D16, D21, D27, D31, D36, D42), including several taxa (*Arthopyrenia punctiformis*, *Bacidia circumspecta*, *Peridiothelia grandiuscula*, *Physconia subpulverulenta*) that, to our knowledge, were new to Algeria.

Jørgensen P. M. 2003: Notes on African *Pannariaceae* (lichenized ascomycetes). – *Lichenologist* **35:** 11–20. – In this synthesis on African *Pannariaceae*, the author cited *Protopannaria pezizoides* from Algeria, which, to our knowledge, was new to the country.

Rahali M. 2003: Étude de la pollution plombique et globale dans la région d'Alger, en utilisant les lichens comme indicateurs biologiques. – Algiers: doctorate thesis, National Institute of Agronomy. – 302 pages. – In this work on the use of lichens as bioindicators, performed under the supervision of A. Semadi, S. Deruelle and M. Rahali (1950–2007), 62 taxa (all most likely previously known from Algeria) are listed for the area of Algiers city (D16). [Leg. author, det. author & C. van Haluwyn].

Rico V. J., Calatayud V. & Giralt M. 2003: *Buellia tesserata* and *Dimelaena radiata*, two closely related species. – *Lichenologist* **35:** 117–124. – In this revision of the genus *Buellia* in the Iberian Peninsula, the authors were the first, to our knowledge, to state that *B. tesserata* occurs in Algeria.

2006

Bendaikha Y. 2006: Les lichens de la région d'Oran: Systématique et application à la qualité de l'air atmosphérique. – Oran: master's thesis, University of Es-Sénia. – 172 pages. – The authors listed 53 lichens (all most likely previously known from Algeria) for the district of Oran (D31). [Leg. & det. author].

Vondrák J. & Šoun J. 2006: An appraisal of the syntype material of *Caloplaca aurantiomurorum* (*Teloschistaceae*, lichenized fungi). – *Mycotaxon* **97:** 67–71. – An examination of Flagey's exsiccatae led the authors to synonymize *C. aurantiomurorum* with *C. aurantia*, and to identify other Flagey material as *Candelariella senior*, a species new to the country.

2007

Ajjaj A., El-Assfouri A., Ouazzani-Touhami A., Benkirane R., Fennane M. & Douira A. 2007: Inventaire de la collection des lichens et champignons lichénicoles de l'Herbier national "RAB" de l'Institut Scientifique (Rabat, Maroc). – *Documents de l'Institut Scientifique*, *Rabat* **21:** 1–70. – This inventory of the lichens and fungi of herbarium RAB (Morocco) includes 52 taxa collected from Algeria.

Esslinger T. L. 2007: A synopsis of the North American species of *Anaptychia* (*Physciaceae*). – *Bryologist* **110:** 788–797. – In this synopsis of American *Anaptychia*, the author mentioned an Algerian specimen collected by B. P. G. Hochreutiner from a mountain in the district of Naama (D45) to *A. ulotricoides*, which, to our knowledge, was new to the country.

Rico V. J., Aragón G. & Esnault J. 2007: *Aspicilia uxoris*, an epiphytic species from Algeria, Morocco and Spain. – *Lichenologist* **39:** 109–119. – A detailed examination of several *Aspicilia* specimens collected from *Juniperus* bark in Spain led the authors to publish the new combination *A. uxoris* (based on *Lecanora uxoris*), previously reported from the bark of various conifers in Morocco, and to which several Algerian specimens collected by J. Esnault (Esnault personal herbarium) were assigned.

2008

Ait Hammou M., Maatoug M. & Hadjadj Aoul S. 2008: Contribution to the determination of the lichens in the forest pines in Tiaret area (Algeria) [in Arabic]. – *Damascus University Journal for the Agricultural Sciences* **24:** 289–303. – The authors reported 16 lichen species (all previously known from Algeria) in a pine forest in the district of Tiaret (D14). [Leg. & det. authors].

2009

Breuss O. 2009: A synopsis of the lichen genus *Placopyrenium* (*Verrucariaceae*), with descriptions of new taxa and a key to all species. – *Bibliotheca Lichenographica* **99:** 93–112. – Type material from Algeria of *Dermatocarpon subcrustosum* f. *erubescens* (sub *Endocarpon subcrustosum* in Flagey Lich. Alger. 274) = *Placopyrenium bucekii*.

Navarro-Rosinés P., Gueidan C., Hladun N. L. & Roux C. 2009: Sinopsis del género *Sarcopyrenia* (*Ascomycota*, hongos liquenícolas), con la descripción de tres nuevas especies. – *Revista Catalana de Micologia* **31:**

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49–69. – First reference, to our knowledge, of the occurrence of *S. gibba* var. *gibba* in Algeria.

2010

Timdal E. 2010: *Porpidinia* (*Porpidiaceae*), a new genus for *Toninia tumidula*. – Pp. 333–337 in: Hafellner J., Kärnefelt I. & Wirth V. (ed.), Diversity and ecology of lichens in polar and mountain ecosystems. – *Bibliotheca Lichenologica* **104.** – The author described a new genus *Porpidinia* for *T. tumidula*, a frequently occurring species in Algeria.

2011

Ait Hammou M., Hadjadj Aoul S., Miara M. D. & Zerrouki D. 2011: Aspects taxonomiques des lichens du pin d'Alep (*Pinus halepensis*) et du cyprés (*Cupressus sempervirens*) de la forêt de Guezoul (Tiaret). – *Revue d'Écologie et Environnement* **7:** 15–26. – The authors reported c. 30 lichens (all previously known from Algeria) for a forest area in the district of Tiaret (D14). [Leg. & det. authors].

Rebbas K., Boutabia L., Touazi Y., Gharzouli R., Djellouli Y. & Alatou D. 2011: Inventaire des lichens du Parc National de Gouraya (Béjaïa, Algérie). – *Phytothérapie* **9:** 225–233. – Observations of almost 50 lichens (all previously known from Algeria) in a forest in the Djurdjura mountains in the district of Bejaïa (D6). [Leg. & det. authors].

Roux C., Masson D., Bricaud O., Coste C. & Poumarat S. 2011: Flore et végétation des lichens et champignons lichénicoles de quatre réserves naturelles des Pyrénées–Orientales (France). – *Bulletin de la Société Linnéenne de Provence, n° spécial* **14:** 3–151. – Reference to the presence in Algeria of *Xanthoparmelia pulla* var. *glabrans* and most likely *Collema dichotomum*, both, to our knowledge, new to the country.

2012

Khedim R. 2012: Contribution à l'étude de la flore lichénique épiphyte du Parc National de Theniet El Had (Tissemsilt, Algérie). – Tiaret: master's thesis, University of Tiaret. – 130 pages. – The author listed 31 epiphytic lichens (all previously known from Algeria) that occur in the mountains of the National Park of Theniet El Had in the district of Tissemsilt (D38). [Leg. & det. author].

RADP 2012: Décret exécutif n° 12–03 du 4 janvier 2012 fixant la liste des espèces végétales non cultivées protégées. – *Journal Officiel de la République Algérienne Démocratique et Populaire* **3:** 12–39 [lichens pp. 36–39]. – A decree protecting a large number of non-cultivated plant species, including almost 100 lichens.

Sohrabi M., Stenroos S., Myllys L., Søchting U., Ahti T. & Hyvönen J. 2012: Phylogeny and taxonomy of the 'manna lichens'. – *Mycological Progress* **12:** 231–269. – *Circinaria fruticulosa* and *C. jussuffii* appear to be the correct names for Algerian material previously identified as *Aspicilia esculenta*.

2013

Ait Hammou M., Miara M. D., Hadjadj Aoul S., Khedim R. & Safa A. 2013: Inventaire des lichens du chêne vert (*Quercus rotundifolia*) de la forêt communale Guezoul de Tiaret. – *Revue d'Écologie et Environnement* **9:** 1–6. – The authors reported 28 epiphytic lichens (all previously known from Algeria) in a forest of holm oak (*Quercus ilex* subsp. *rotundifolia*) in the district of Tiaret (D14). [Leg. & det. authors].

Khedim R., Ait Hammou M. & Maatoug M. 2013: Importance de l'éco-conscience dans la préservation des écosystèmes forestiers, cas du Parc National de Theniet El Had (Tissemsilt, Algérie) [In Arabic]. – *Revue d'Écologie et Environnement* **9:** 66–72. – The authors reported 23 lichens (all most likely previously known from Algeria) for the National Park of Theniet El Had in the district of Tissemsilt (D38). [Leg. & det. authors].

Serradj A. A. M., El Oualidi J., Slimani A. & Boumedris Z. 2013: Contribution to the lichens inventory from the Oubeira lake (NE Algeria). – *Bulletin de l'Institut Scientifique, Rabat*, *Section Sciences de la Vie* **35:** 15–17 [online at http://www.israbat.ac.ma/?page_id=277]. – The authors reported 27 lichen taxa (all previously known from Algeria) around Oubeira lake in the district of El Kala (D36), including *Teloschistes chrysophthalmus*, which, according to the authors, is known only from a few locations in North Africa. [Leg. & det. authors].

Slimani A., Serradj A. A. M., Hamel T. & Coste C. 2013: Contribution à l'étude de la flore lichénique dans la zéenaie de Bougous (forêt de Ramel Toual) au niveau du Parc National d'El Kala Nord Est algérien. – *Synthèse: revue des sciences et de la technologie* **27:** 22–29. – The authors reported 47 lichen taxa (all previously known from Algeria) in a forest of Algerian (Mirbeck's) oak (*Quercus canariensis*) in the National Park of El Kala in the district of El Kala (D36). [Leg. & det. authors].

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