

Reassessment of the nomenclature of some powdery mildew names introduced by M. C. Cooke and C. H. Peck

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Abstract: Mitchell, J. K., Braun, U. & Bradshaw, M. 2025: Reassessment of the nomenclature of some powdery mildew names introduced by M. C. Cooke and C. H. Peck. *Schlechtendalia* **42**: 267–274.

The confusing nomenclatural history of some names of powdery mildew species described by M. C. Cooke and C. H. Peck is discussed in detail, including reassessment of the nomenclatural status of some of the names concerned. As a result, it is necessary to reassess and correct several previously designated lectotypifications, such as the lectotypes of *Podosphaera biuncinata*, *Sphaerotheca pruinosa*, and *Uncinula polychaeta*. The status of the nomenclature of *Microsphaera extensa* requires a particular discussion. In addition, the nomenclature and typification of *Microsphaera extensa*, *M. quercina*, *M. semitosta*, and *M. vaccinii* are discussed.

Zusammenfassung: Mitchell, J. K., Braun, U. & Bradshaw, M. 2025: Neubewertung der Nomenklatur einiger von M. C. Cooke und C. H. Peck eingeführter Mehltauarten. *Schlechtendalia* **42**: 267–274.

Die verworrene Geschichte der Nomenklatur einiger Namen von Mehltauarten beschrieben von M. C. Cooke und C. H. Peck wird eingehend diskutiert, einschließlich der Neubewertung des nomenklatorischen Status einiger der betroffenen Namen. Als Ergebnis daraus ist es notwendig, einige früher vorgenommene Lectotypisierungen neu zu bewerten und zu korrigieren, wie die Lectotypen von *Podosphaera biuncinata*, *Sphaerotheca pruinosa* und *Uncinula polychaeta*. Der Status der Nomenklatur von *Microsphaera extensa* erfordert eine besondere Diskussion. Weiterhin werden die Nomenklatur und Typisierung von *Microsphaera extensa*, *M. quercina*, *M. semitosta* und *M. vaccinii* diskutiert.

Key words: *Erysiphaceae*, North America, denomination, typification, M. A. Curtis.

Published online 13 May 2025

Redundant introductions of new taxonomic names, often twice but occasionally more, were not unusual in the 19th century. Such cases creating isonyms (Art. 6, note 2) mostly do not have serious nomenclatural implications, even when the names concerned had previously not been ascribed to the earliest of the publications. Problems can arise when names are published in different sources that cite different original materials in the protologue, especially if a specimen mentioned only in a later publication has been designated as the lectotype. Because of the exclusion in the earlier publication of material from the later publication designated as lectotype, these names cannot be classified as isonyms in the strict sense of Art. 6, note 2, the two names not being based on the same type. The younger identical names must in this case rather be regarded as illegitimate later homonyms (Art. 53.1). Recently, the first author (JM) encountered a unique case involving certain powdery mildew (*Erysiphaceae*) names that were described twice—initially by Cooke & Peck (1872a) and later by Cooke and Peck in Peck (1873)—with differences in the cited original specimens between the two publications. Although Peck (1873) repeated original descriptions for the species concerned, it may be assumed that it was not his intent to repeat the introduction of these species' names, but merely to add new specimens that had since come to his attention. It may have been simply considered useful to cite the original descriptions once more and to again indicate his part in their description to the recipients of his report.

Braun (1987) designated lectotypes for the powdery mildew species introduced in Cooke & Peck (1872a). Some lectotypifications are acceptable, as the selected specimen is cited in both publications. However, in a few other cases reassessments are necessary because Braun (1987) designed as lectotypes specimens cited in Peck (1873) but not included in the protologue in Cooke & Peck (1872a). In these cases, the old lectotypifications are obsolete, incorrect, and must be superseded by new code-compliant typifications.

The following lectotypifications are in line with the Code (ICNafp) and unobjectionable:

Microsphaera diffusa Cooke & Peck [= *Erysiphe diffusa* (Cooke & Peck) U. Braun & S. Takam.]

Lectotype (designated by Braun 1987): USA, New York, Albany, on *Desmodium canadense*, Sep/Oct 1871, C.H. Peck (NYSf3480). Isolectotypes: K(M) 169041, NYSf1011.

Microsphaera pulchra Cooke & Peck [= *Erysiphe pulchra* (Cooke & Peck) U. Braun & S. Takam.]
Lectotype (designated by Braun 1987): USA, New York, North Greenbush, on *Cornus alternifolia*,
Oct., C. H. Peck (NYSf2487). Isolectotype: K(M) 169079.

Uncinula circinata Cooke & Peck [= *Takamatsuella circinata* (Cooke & Peck) U. Braun & A. Shi.]
Lectotype (designated by Braun 1987): USA, New York, Schuyler County, Watkins Glen, on *Acer
spicatum*, Sep., C. H. Peck (NYSf762). Isolectotype: K.

List of species names that require new code-compliant typifications

Podosphaera biuncinata Cooke & Peck, J. Bot. **10**: 11, 1872 [= *Erysiphe biuncinata* (Cooke & Peck)
M. Bradshaw, U. Braun & Pfister.]

Lectotype (designated here, MycoBank, MBT10026367): USA, New York, Sandlake, on *Hamamelis
virginiana*, 1 Sep. 1871, ex herb. M. C. Cooke (K(M) 169069). Epitype (designated here, MycoBank
MBT10026368): USA North Carolina, Raleigh, on *Hamamelis virginiana*, 6 Sep. 2021, S. Moparthi
(FH01131024). Ex-epitype sequences: PP681078 (ITS+28S); PP720964 (CAM); PP720337 (GAPDH);
PP720569 (GS); PP720444 (RPB2); PP720024 (TUB).

Notes: Braun (1987) designated a specimen as ‘lectotype’ [USA, New York, Poughkeepsie, on
Hamamelis virginiana, W. R. Gerard, ex herb. H. W. Ravenel (K(M) 169068)] which had not been
cited in Cooke & Peck (1872a), but in Peck (1873); this typification is not code-compliant. The
designated epitype is the same as the ‘epitype’ recently proposed for the non-code-compliant
‘lectotype’ of *P. biuncinata* (Bradshaw et al. 2025a).

Sphaerotheca pruinosa Cooke & Peck, J. Bot. **10**: 11, 1872 [= *Podosphaera pruinosa* (Cooke & Peck)
U. Braun & S. Takam.]

Lectotype (designated here, MycoBank, MBT10026369): [USA, New York], on *Rhus glabra*, Aug.
1866, [W. W. Denslow] 47, ex herb. Cooke (K(M) 1091484). Isolectotype: NYSf2457 (lost).

Note: The lectotypification proposed by Braun (1987) was not code-compliant. The cited ‘lectotype’
(USA, New York, Greenbush, Aug., C. H. Peck, NYSf2456) referred to a specimen cited in Peck
(1873), which is not included in Cooke & Peck (1872a). Of the original material listed, only the W. W.
Denslow (‘W. W. D.’) specimen could be traced. A piece is preserved in Cooke’s herbarium (K) and
this is designated lectotype. The duplicate of this specimen in Peck’s herbarium has been lost for
decades (pers. comm., P. Kaishian).

Notes on the herbarium and practices of M. A. Curtis

The remainder of the typifications involve either species described by Moses Ashley Curtis or
specimens which were sent by him to Miles Joseph Berkeley; it seems appropriate to discuss some of
his herbarium practices before proceeding.

The herbarium of M. A. Curtis is housed at the Farlow Herbarium (FH) at Harvard University (Stafleu
& Cowan 1976), where it is maintained separately from the general herbarium in the organization in
which Curtis had arranged it. Curtis’ specimens are generally mounted on small pieces of paper with
an animal glue; these mounts were placed in archival paper packets during a reuration effort in the
early 20th century. Specimens are accompanied with fairly limited collection data, usually consisting
only of an identification, host or substrate, a locality (often broad), and collecting date (frequently just
year or year and season). If the specimen was collected by someone other than Curtis, it will bear the
name of the collector and sometimes the collector’s number; specimens collected by Curtis himself do
not bear his name explicitly as collector. Specimens may also be accompanied by small illustrations of
microscopic structures made on the paper they are mounted on.

Many specimens bear other sets of numbers in Curtis’ hand. These numbers were assigned by Curtis
to specimens which he sent a portion of to Berkeley. Curtis kept an account of these specimens,
including some descriptive notes of his own (particularly for agarics and stinkhorns) as well as his
preliminary identifications and Berkeley’s eventual identifications, in a notebook. This notebook is
kept in the Farlow Library at Harvard University and has been fully digitized and is available online:
<https://www.biodiversitylibrary.org/bibliography/132442>.

Table 1: Sendings of specimens from Curtis to Berkeley, comparing information given in Petersen (1980) and Curtis' notebook. There are many notable points of disagreement, but also broad agreement in the composition of many of the 'envois.'

'Envoi' no.	Date (Petersen 1980)	Date (Notebook)	Curtis nos. (Petersen 1980)	Curtis nos. (Notebook)
[I]	Feb. 1847	-	1-656	1-624
II	Feb. 1848	1848	657-1751	625-1751
'In Litt.'	-	[1848]	-	1752-1817
III	Apr. 1849	1849	1818-2587	1818-2587
'In Litt.'	-	[1849]	-	2588-2643
'In Litt.'	-	Sep. 22, [1849]	-	2644-2676
IV	Feb. 1850	1850	2677-3041	2677-3041
'In Litteris'	-	[1850]	-	3042-3087
V	1851	1851	3088-3281	3088-3281
'In Litt.'	-	[1851]	-	3282-3292
VI	Jun. 1852	1852	3293-3765	3293-3765
'In Litt.'	-	[1852]	-	3766-3808
'In Litt.'	-	Jan. 1853	-	3809-3829
VII	Mid-1853	1853	3830-3985	3830-3985
'In Litt.'	-	[1853]	-	3986-4048
VIII	Apr. 1854	1854	4049-4914	4049-4871
'In Litt.'	-	[1854]	-	4872-4914
-	Jan. 1855	-	?	-
-	Early 1856	-	?	-
-	Apr. 1858	-	?	-
IX	Early 1859	Feb. 1856	4915-5475	4915-5455
'In Litteris'	-	[1856]	-	5456-5475
X	?	1856	5476-6190	5476-6190
Fendler	-	1856	-	1-304 (+58 s.n.)
Botteri	-	1866	-	[20 specimens]
XI	Mar. 1866	-	6191-6509	6191-6393
'In Litt.'	-	-	-	6394-6409
XII	-	1867	-	6410-6460, 6466-6471
-	-	1868	-	6472-6553
-	-	1871	-	6554-6616

The notebook primarily consists of a record of >6616 consecutively numbered specimens of North American fungi, sent in 12-14 'envois' and 'in litteris' (some specimens are given the same number but additional letter designations, and some numbers are missing). These sendings are assigned dates in the notebook; these are compared in Table 1 to the dates given by Petersen (1980) based on a typescript list at the New York Botanical Garden and Berkeley and Curtis' correspondence. The notebook also includes some 304 specimens collected by Augustus Fendler in Venezuela and 20 specimens collected by Mateo Botteri in Mexico. Absent are the Cuban fungi and fungi from the US North Pacific Exploring Expedition collected by Charles Wright and the fungus specimens which

Curtis had taken from the Schweinitz Herbarium, though these too were sent to Berkeley. The Fendler and Wright specimens frequently bear collector numbers, but Curtis assigned each set a new set of numbers of his own. The same is true of the North American fungi. Many of these were collected by Curtis in the areas he lived or visited (e.g., Massachusetts; Society Hill, South Carolina; Hillsborough, North Carolina) but a large number came from other collectors (primarily Henry William Ravenel, but also Thomas Minott Peters, Henry Parker Sartwell, Ezra Michener, David Allan Poe Watt, and others) and have their own original collector numbers as well as the numbers Curtis assigned them. It should be noted that the numbers Berkeley cited in his series *Notices of North American Fungi* (published after Curtis' death) are the numbers Curtis had assigned these specimens rather than the numbers the original collectors had given them. As only specimens sent to Berkeley were assigned these ~6616 numbers, many other specimens in Curtis' herbarium are bereft of any numbers or only bear the number of the original collector. Curtis' numbers therefore should not be considered his collecting numbers or even herbarium numbers. This is reinforced by the fact that Curtis' numbering scheme is not always consistently used; while the specimens sent to Berkeley presumably are consistently indicated by these numbers, the pieces Curtis kept are not always annotated with them.

The notebook reveals additional inconsistencies in Curtis' annotations. The original collector numbers may appear in the notebook and not on the specimen in Curtis' herbarium or vice versa. Further, Curtis' notebook sometimes contains more specific host identifications than do the specimens in the herbarium. This, along with the observation that the specimens in Berkeley's herbarium frequently lack pieces of collecting data for the specimens sent by Curtis, leads us to recommend that researchers seeking to use these specimens in the context of species described by Berkeley and Curtis look at both the notebook and Curtis' label information in addition to consulting material in Berkeley's herbarium and papers at Kew.

Nomenclature of the names *Uncinula polychaeta* and *Erysiphe polychaeta*

The publication history of the name *Uncinula polychaeta* is quite confused; as with many of the names proposed by Berkeley and Curtis, it was apparently in use for over two decades prior to those authors publishing a description. The name appears for the first time in Ravenel (1855), though it is without a description and thus invalid (Art. 38.1[a]); the same situation obtains in Curtis (1867). When Berkeley (1876) did finally publish a description—four years after Curtis' death—the manner in which he did it caused much confusion. Appearing on the same page were two similar names, *Erysiphe polychaeta* and *Uncinula polychaeta*. Despite using the name *Uncinula polychaeta* for over two decades to refer to a fungus with numerous appendages about the same length as the chasmothecial diameter, Berkeley described that species instead as *Erysiphe polychaeta* and used *Uncinula polychaeta* for a species with relatively few appendages about half again as long as the chasmothecial diameter. This resulted in many authors using the wrong name to refer to the fungus now known as *Pleochaeta polychaeta*. This confusion was pointed out by Masee (1889), who indicated type specimens in K of both species and tried to rectify the situation by publishing the illegitimate (Art. 53.1) combination *Uncinula polychaeta* (Berk. & M.A. Curtis) Masee based on *Erysiphe polychaeta* and proposing the superfluous (Art. 52.1) replacement name *Uncinula confusa* Masee for *Uncinula polychaeta* Berk. & M.A. Curtis.

It has apparently been overlooked that Cooke & Peck (1872a), four years prior to Berkeley's publication of the name *Uncinula polychaeta*, themselves validly published the name *Uncinula polychaeta*, providing a description apparently based on a specimen or specimens collected by M. A. Curtis ('M.A.C.'). Their description makes clear that the fungus in question is that which Berkeley later assigned the name *Erysiphe polychaeta*. Serendipitously, *Uncinula polychaeta* Berk. & M.A. Curtis then becomes an illegitimate later homonym (Art. 53.1) and Masee's *Uncinula confusa* is in fact legitimate. The nomenclature of *Pleochaeta polychaeta* remains unchanged due to the inability to create a legitimate combination in *Pleochaeta* based on *Uncinula polychaeta* Berk. & M.A. Curtis ex Cooke & Peck. The situation is laid out in full in the nomenclator below:

Pleochaeta polychaeta (Berk. & M.A. Curtis) Kimbr. & Korf, *Mycologia* 55: 623, 1963.

≡ *Erysiphe polychaeta* Berk. & M.A. Curtis, in Berkeley, *Grevillea* 4: 159, 1876.

Lectotype (designated by Masee 1889): USA, Alabama, [Moulton], on *Celtis* sp., [aut. 1852], T. M. Peters [82], [M. A. Curtis] 3876, ex herb. M. J. Berkeley (K(M) 168957). Isolectotype: FH00972526. Epitype (designated by Bradshaw et al. 2025c): USA, Alabama, on *Celtis occidentalis*, sub '*Uncinula polychaeta* Berk. & Curt. sp. nov.,' misit T. M. Peters, [Ravenel, *Fungi Carolin.* Exs.

Cent. 4, no.] 68 (FH00781068). Isoepitypes: Ravenel, Fungi Carolin. Exs. Cent. 4, no. 68 (e.g., BPI 1004537, FH01085059, FH01085060, FH01085061, K(M) 168958). Ex-epitype sequence: PQ585148 (ITS+28S).

≡ *Uncinula polychaeta* (Berk. & M.A. Curtis) Masee, Grevillea **17**: 78, 1889, nom. illegit. (Art. 53.1), non Berk. & M.A. Curtis ex Cooke & Peck, 1872 nec Berk. & M.A. Curtis 1876.

≡ *Uncinulopsis polychaeta* (Berk. & M.A. Curtis) Homma, J. Fac. Agric. Hokkaido Univ. **38**: 421, 1937 [also C.T. Wei, Nanking J. **11**(3): 112, 1942].

= *Uncinula polychaeta* Berk. & M.A. Curtis, in Ravenel, Fungi Carolin. Exs. Cent. **4**: no. 68, 1855, nom. inval. (38.1[a]).

= *Uncinula polychaeta* Berk. & M.A. Curtis, in Curtis, Geol. Nat. Hist. N. C. Bot.: 152, 1867, nom. inval. (38.1[a]).

= *Uncinula polychaeta* Berk. & M.A. Curtis ex Cooke & Peck, J. Bot. **10**: 12, 1872, non Berk. & M.A. Curtis 1876 nec (Berk. & M.A. Curtis) Masee 1889.

Lectotype (designated here, MycoBank, MBT10026370): USA, North Carolina, Hillsborough, on *Celtis [occidentalis]*, aest. 1857, [M. A. Curtis] 6379 (FH00972525). Isolectotype: K? Epitype (designated here, MycoBank MBT10026371): USA, Alabama, on *Celtis occidentalis*, sub '*Uncinula polychaeta* Berk. & Curt. sp. nov.,' misit T.M. Peters, [Ravenel, Fungi Carolin. Exs. Cent. 4, no.] 68 (FH00781068). Isoepitypes: Ravenel, Fungi Carolin. Exs. Cent. 4, no. 68 (e.g., BPI 1004537; FH01085059, FH01085060, FH01085061, K(M) 168958). Ex-epitype sequence: PQ585148 (ITS+28S).

= *Uncinula petersii* Seym., Host Index Fung. N. Amer.: xiii, 1929, nom. inval. (38.1[a]).

Notes: Cooke & Peck (1872a) say in the protologue: 'On leaves of *Celtis*, Carolina (M.A.C.)'; 'M.A.C.' is an abbreviation for M. A. Curtis. Peck's (NYS) and Cooke's (K) herbaria were searched for specimens consistent with this description, but none were found. Curtis' herbarium houses two specimens collected in North or South Carolina before the introduction of the name *U. polychaeta* by Cooke & Peck (1872a), viz., FH00972525 (North Carolina, Hillsborough, 1857) and FH00972524 (North Carolina, Hillsborough, Sep. 1869). While neither specimen lists a collector, it was not Curtis' habit to list himself as collector and he did live in Hillsborough from 1857 until his death in 1872 (Berkeley & Berkeley 1986). Of these, Curtis sent a duplicate of the first one to Berkeley under number '6379' in 1866. Because Cooke and Peck there and later (1872a, 1872b) appear to cite specimens Curtis had sent to Berkeley, we think it likely that this is the specimen Cooke examined. We have examined the specimen and found it to be a mixed collection of *Pleochaeta polychaeta* and *Erysiphe parvula*, but a poor specimen of both. We designate it lectotype of *Uncinula polychaeta* Berk. & M.A. Curtis ex Cooke & Peck but also designate an epitype. The designated epitype with an ex-epitype sequence is the same as the epitype proposed by Bradshaw et al. (2025c) for the lectotype of *Erysiphe polychaeta*.

Uncinula confusa Masee, Grevillea **17**: 78, 1889.

≡ *Uncinula polychaeta* Berk. & M.A. Curtis, in Berkeley, Grevillea **4**: 159, 1876, nom. illegit. (Art. 53.1), non Berk. & M.A. Curtis ex Cooke & Peck, 1872 nec (Berk. & M.A. Curtis) Masee 1889.

Lectotype (designated by Masee 1889): USA, 'Carolina', on *Celtis occidentalis*, undated, 5619, ex herb. Berkeley (K(M) 1063812).

Notes: The identity of this species has long been unclear. Berkeley's (1876) meagre description does not provide much information, though Masee's (1889) description of the lectotype furnishes additional clues. The combination of the large chasmothecial diameter and relatively few long, uncinuate appendages is unusual and agrees with no other known powdery mildew on *Celtis*. The type from Berkeley's herbarium fortunately is still in existence. How this specimen reached Berkeley is unclear; coming from the Carolinas it seems likely to have come from Curtis, but Curtis' number '5619' was assigned to a specimen of *Phallus duplicatus* collected in Connecticut (FH00601010). Further, Curtis' herbarium was searched and no specimen matching this description was found. Curtis' notebook also records only two powdery mildews on *Celtis* sent to Berkeley, the lectotype of *Erysiphe polychaeta* and the here-selected lectotype of *Uncinula polychaeta* Berk. & M.A. Curtis ex Cooke & Peck.

Nomenclature of the names *Microsphaera extensa*, *M. quercina*, *M. semitosta*, *Uncinula spiralis* and *M. vaccinii*

Microsphaera extensa Cooke & Peck, J. Bot. **10**: 12, 1872 [= *Erysiphe extensa* (Cooke & Peck) U. Braun & S. Takam.]

Notes: The protologue of *Microsphaera extensa* includes the citation as a synonym of the name *Erysiphe quercina* Schwein., including a direct reference to Schweinitz's (1832) original description of the latter name, which constitutes the inclusion of the type of *E. quercina* and renders *M. extensa* an illegitimate (superfluous) name (Art. 52.1). Therefore, the name *M. extensa* is automatically typified by the type of the replaced synonym (Art. 7.5), in this case by the type of *E. quercina*, a name previously considered dubious and recommended to be better excluded, above all due to lacking fruiting bodies in the type material deposited at FH and PH (Blumer 1933, Braun 1987, Braun & Cook 2012, Bradshaw et al. 2025b). Schweinitz (1832) classified *E. quercina* to be not rare in Pennsylvania, so this name cannot be considered to have been based on a single specimen that can be considered the holotype according to Art. 9.1, Note 1. Therefore, available original specimens (BPI 1052316, FH00972693, PH00062387) must be regarded as syntypes, so that lectotypification of the name *E. quercina* is required:

Erysiphe quercina Schwein., Trans. Amer. Phil. Soc., N.S., **4**(2): 270, [1834] 1832.

Lectotype (designated here, MycoBank, MBT10026372): USA, [Pennsylvania], on *Quercus* sp. [identified as *Q. rubra*], ex herb. Schweinitz, in herb. Curtis (FH00972693).

Notes: The re-examination of the lectotype deposited at FH revealed the existence of a few immature chasmothecia with short appendages and traces of mycelium and anamorph with typical conidiophore-like hyphal outgrowths with helicoid bases, up to 220 µm long, and allowed identification of the host as *Quercus rubra*. Based on the observed morphology of this powdery mildew together with *Q. rubra* as host, it was possible to identify *E. quercina* as being conspecific with *E. densissima* as recently circumscribed and determined by epitypification (Bradshaw et al. 2025b). *E. quercina* can be reduced to synonymy with *E. densissima*, published simultaneously by Schweinitz (1832).

Based on these results and conclusions, the superfluous, illegitimate name *M. extensa* must be considered a homotypic synonym of *E. quercina* and a heterotypic synonym of *E. densissima*. To maintain the long-prevailing application of the name *M. extensa* ($\equiv$ *E. extensa*), it is necessary to conserve this name with conserved type. A corresponding proposal is under preparation.

Microsphaera semitosta Berk. & M.A. Curtis, in Berkeley, Intr. Crypt. Bot.: 278, fig. 64c, 1857 [also Grevillea **4**: 160, 1876].

$\equiv$ *Erysiphe semitosta* (Berk. & M.A. Curtis) U. Braun & S. Takam, Schlechtendalia **4**: 13, 2000.

Lectotype (designated by Braun 1987): USA, North Carolina, [Wilmington], on *Cephalanthus occidentalis*, [Oct. 1851], [M. A. Curtis 3440], ex herb. Berkeley (K(M) 169065). Isolectotype: FH00972698.

Notes: This powdery mildew species has previously been cited as: *Microsphaera semitosta* Berk. & M.A. Curtis ex Cooke & Peck, J. Bot. **10**: 13, 1872 (Braun & Cook 2012). However, *M. semitosta* was first provided a description in Berkeley (1857) in an illustration showing a single chasmothecium and two asci which constitutes a valid publication of this species according to Art. 38.10. Berkeley stated of the plate that it was drawn 'from specimens communicated from the United States, by Rev. M. A. Curtis.' Curtis in his notebook only lists one specimen of *Microsphaera semitosta* sent to Berkeley, and this is the specimen numbered 3440. Since the lectotype of *M. semitosta* designated in Braun (1987) was from North Carolina, it was almost certainly sent by Curtis and represents Berkeley's piece of Curtis 3440. This specimen was sent as part of Curtis' 6th 'envoi' to Berkeley in June 1852; Berkeley in letters acknowledged receipt of the package prior to July 30, 1852 and indicated that he had nearly finished examining them by November 10, 1852 (Table 1, Petersen 1980). While not explicitly cited, we can thus be confident that Berkeley had examined this specimen prior to his 1857 publication and so Braun's (1987) lectotypification is code-compliant based on Art. 9.12.

In addition to *M. semitosta*, the first introduction of the name *Uncinula spiralis*, a synonym of *Erysiphe necator*, goes back to Berkeley (1857) as well:

Uncinula spiralis Berk. & M.A. Curtis, in Berkeley, Intr. Crypt. Bot.: 278, fig. 64a, 1857 [also Grevillea 4: 159, 1876].

Lectotype (designated here, MycoBank, MBT10026374): USA, Pennsylvania, [New Garden], on *Vitis labrusca*, 1851, E. Michener 538, in herb. Curtis 3610 (FH00972532). Isolectotypes: K(M), BPI 1052367.

Notes: Previously, this name was cited as published in 1876. The introduction of the name *U. spiralis* in Berkeley's (1857) illustration of appendages and an ascus fulfils the conditions for a valid publication (Art. 38.10). We propose a specimen, part of which was also sent in Curtis' 6th 'envoi' and most likely examined by Berkeley in 1852, as lectotype (Art. 9.12).

Microsphaera vaccinii Cooke & Peck, J. Bot. 10: 13, 1872 [= *Erysiphe vaccinii* Schwein.]

Lectotype (designated here, MycoBank, MBT10026373): USA, New York, West Albany, on *Vaccinium pallidum* (= *V. vacillans*), Oct., C. H. Peck 153a, ex herb. Cooke (K(M) 1062183).

Notes: The publication of the name *Microsphaera vaccinii* in Cooke & Peck (1872) has usually been interpreted as combination based on *Erysiphe vaccinii* Schwein. However, the authors merely cited '*Erysiphe vaccinii*, Schwz. Fung. Amer. Bor. No. 2491 (partly)'; the same reference is listed as a synonym under '*Microsphaera friesii* var. *vaccinii*.' This does not constitute definite inclusion of the type of *E. vaccinii* Schwein., and so the name *M. vaccinii* is not a combination based on *E. vaccinii*. *M. vaccinii* must be interpreted as the name of a new species based on a single specimen [Peck 153a, collected in West Albany on *Vaccinium pallidum* (= *V. vacillans*)]. A piece of this specimen was traced at K and is here designated lectotype. *M. vaccinii* should be considered a heterotypic synonym of *E. vaccinii*.

Acknowledgements

We are indebted to the fungal curators at the Royal Botanic Gardens, Kew (Lee Davies) and the New York State Museum (Dr. Patricia Ononiwu Kaishian) for searching for specimens from the Cooke, Berkeley, and Peck herbaria. We also thank the librarians at the Harvard Botany Libraries (particularly Kyle Boyd and Daniel Becker) for helping find Curtis' notebook and for having had it digitized. Furthermore, we would like to thank the National Science Foundation, USA, [award number 2402193], for supporting our monographic powdery mildew research.

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