Puccinia thymi revisited

Uwe BRAUN & Friedemann KLENKE

Abstract: Braun, U. & Klenke, F. 2021: *Puccinia thymi* revisited. Schlechtendalia **38**: 169–171.

The name *Aecidium thymi* has previously often been confused and misapplied as synonym of *Puccinia schneideri*. The intricate nomenclature and taxonomy of *A. thymi* is discussed, including its lectotypification in 1982. This name belongs into the synonymy of *Puccinia stipina*. Based on the current Code (ICNafp), above all owing to the changes of Art. 59 (now chapter F.8) since the Melbourne Code of 2012, *Puccinia thymi* is the oldest valid name for the species concerned, with *P. stipina* as heterotypic synonym.

Zusammenfassung: Braun, U. & Klenke, F. 2021: *Puccinia thymi* neu aufgegriffen. Schlechtendalia **38**: 169–171.

Der Name *Aecidium thymi* wurde früher oft verwechselt und falsch als Synonym von *Puccinia schneideri* verwendet. Die komplizierte Nomenklatur und Taxonomie von *A. thymi* wird besprochen, einschließlich der Lectotypisierung aus dem Jahr 1982. Auf Grund des gegenwärtigen Codes (ICNafp), vor allem wegen der Änderungen des Artikels 59 (jetzt Kapitel F.8) seit dem Melbourne Code im Jahr 2012, ist *Puccinia thymi* jetzt der älteste gültige Name für die betreffende Art, mit *P. stipina* als heterotypisches Synonym.

Key words: *Puccinia stipina*, nomenclature, taxonomy, typification.

Published online 19 Apr. 2021

Aecidium thymi was validly described by Fuckel, in Fungi Rhen. Exs., Suppl., Fasc. 7: no. 2113, 1868, with a description on the label (see Braun & Bensch 2021: 130). The confusion around this name began with Karsten (1884), who introduced the combination *Puccinia thymi* and cited *P. caulincola* W.G. Schneid. as synonym. Saccardo (1888: 677) supposed that *A. thymi* might belong into the life cycle of *Puccinia schneideri*. Bubák (1902) examined the biology of *A. thymi* and showed that this aecial stage belongs into the life cycle of "*Puccinia stipae*" (= *P. stipina*). Sydow (1904: 30) considered *P. schneideri* (as *P. caulincola* W.G. Schneid.) a microcyclic *Puccinia* and excluded *A. thymi* with reference to Bubák (1902), but the combination *P. thymi* was undoubtedly unknown to him. Klebahn (1913) reduced *A. thymi* to synonymy with *Puccinia stipina*. Based on the observation of telia of *P. schneideri* in duplicates of the original material of *A. thymi*, Henderson (1966) proposed the combination *P. thymi*, followed by Henderson & Bennell (1979), who pointed out that this combination had already been made by Karsten (1884). Braun (1982) took issue with Henderson's (1966) conclusions and emphasized that Fuckel (l.c.) had clearly described aecia and aeciospores and not telia with two-celled teliospores. This issue required a clarification by means of lectotypification, which was proposed in Braun (1982) by the designation of a lectotype that is in concordance with Fuckel's original description [the designated lectotype (Fungi Rhen. Exs., Suppl., 2113, HAL) only contains aecia]. However, the treatment of the name *Puccinia thymi* in Henderson (1966) and Henderson & Bennell (1979) influenced its application for a long time. In Index fungorum and MycoBank, *P. thymi* has been cited as "current name" for *P. schneideri* until recently. Majewski (1979) accepted *P. thymi* as name for the microcyclic *Puccinia* on *Thymus* spp. Poelt (1985) used the name *P. thymi* but added a footnote with a reference to Braun (1982) that *P. schneideri* represents the valid name for the microform on *Thymus* spp. Minkevičiūtė & Ignatavičiūtė (1993), who used the name *P. schneideri*, described a microcyclic life cycle, but cited *P. thymi* as synonym. Urban & Marková (2009) reduced *P. thymi* to synonymy with *P. schneideri*. Even Braun & Bensch (2021) cited *A. thymi* together with *P. schneideri*. Other authors, such as Azbukina (2005: 339), reduced *A. thymi* to synonymy with *Puccinia stipina*, which was correct in that time. The *Puccinia* originally described as *P. caulincola* W.G. Schneid. is a microcylic species (Sydow & Sydow 1904, Gäumann 1959, etc.), i.e., *Aecidium thymi* has to be excluded from its synonymy. *P. schneideri* is the correct name for this species:

Puccinia schneideri J. Schröt., in Schneider, Herb. Schles. Pilze: no. 448, 1879.
≡ *Puccinia caulincola* W.G. Schneid., Jahresber. Schles. Ges. Vaterl. Cult. **48**: 120, 1870, nom. illeg. (Art. 53.1), non Spreng., 1828.
≡ *Dicaeoma schneideri* (J. Schröt.) Kuntze, Revis. gen. pl. **3**(3): 470, 1898.
≡ *Micropuccinia schneideri* (J. Schröt.) Rostr., Bot. Tidsskr. **25**: 291, 1903.

Notes: *Puccinia ruebsaamenii* on *Origanum vulgare*, which has previously often been assigned to *P. schneideri*, either as synonym of as variety, should be maintained as a species of its own (see Klenke & Scholler 2015: 586):

Puccinia ruebsaamenii Magnus, Bull. Inst. Bot. Univ. Belgrade **22**: 344, 1904.

≡ *Puccinia schneideri* var. *ruebsaamenii* (Magnus) U. Braun, Feddes Repert. **93**(3-4): 278, 1982.

Bubák (1902) was the first author who proved that *Aecidium thymi* pertains into the life cycle of *Puccinia stipina* (as "*P. stipae*"). The taxonomic status of this name has been clarified and determined by Braun's (1982) lectotypification. The lectotype has recently been re-examined (description, see below). The aecia fully agree with those of *P. stipina* (see Gäumann 1959). Previously, until 2012, the status of the name *Aecidium thymi* did not play any nomenclaturally important role and was only relevant in relation to its synonymy. However, based on the current Code (ICNafp), above all with regard to Art. F.8.1, the nomenclatural situation is to be reassessed.

Puccinia thymi (Fuckel) P. Karst., Bidr. Känn. Finl. Nat. Folk **39**: 44, 1884.

≡ *Aecidium thymi* Fuckel, Fungi Rhen. Exs., Suppl., Fasc. 7: no. 2113, 1868.

Lectotype (designated by Braun, Feddes Repert. **93**(3-4): 279, 1982, MycoBank, MBT10000614): Germany, Rheinland-Pfalz, Landkreis Mainz-Bingen, near Budenheim, on *Thymus serpyllum* [Fuckel, Fungi Rhen. Exs., Suppl., 2113] (HAL, s.n.).

= *Puccinia graminis* c. *foliorum* β. *stipae* Opiz, Seznam Rost. Kvet. Ceské: 138, 1852, nom. nud. [unranked name].

≡ *Puccinia stipae* Hora [as "(Opiz) Hora"], in Syd., Uredineen: no. 28, 1888, nom. nud.

= *Puccinia stipina* Tranz., Trudy Bot. Muz. Imp. Akad. Nauk., St. Petersburg, **7**: 114, 1909, nom. nud.

≡ *Puccinia stipina* Tranz. ex Kleb., Krypt.-Fl. Mark Brandenb. **5a**: 477, 1913. Lectotype (designated here, Mycobank, MBT10000639): Germany, Thuringia, Erfurt, Schwellenburg, on leaves of *Stipa capillata*, May 1907, H. Diedicke [Syd., Mycoth. Germ. 563] (B, s.n.). Isolectotypes: Syd., Mycoth. Germ. 563, numerous herbaria, including BPI 104704, 104711; CUP, M, PH 319684, F-C0289177F, ILL 68393, MICH 293287, NEB 75323, S-F26370, etc.

≡ *Puccinia stipae* var. *stipina* (Tranzschel ex Kleb.) H.C. Greene & Cummins, Mycologia **50**(1): 21, 1958.

Description based on the lectotype of *Aecidium thymi*: Aecia hypophyllous, in groups, infected leaves discoloured, reddish to purple, outline of aecia circular to subcircular, cupulate, ochraceous-orange, rupturing the epidermis, pseudoperidial cells oblong, 20–35 × 13–19 µm, inner wall thin, 1–1.5 µm, outer wall thick, about 5–10 µm, wall coarsely verrucose, distance between verrucae mostly 0.5–2 µm; aeciospores globose, subglobose, about 18–22 µm diam., to broad ellipsoid-ovoid, 17–28 × 13–19 µm, on average 21.5 × 18.0 µm (N = 20), young spores colourless, spores later ochraceous to brownish, wall (1–)1.5–2.5(–3) µm thick, very densely verruculose, distance between verrucae < 0.5 µm.

Notes: The name "*Puccinia graminis* c. *foliorum* β. *stipae* Opiz" (Opiz (1852: 138) is a nom. nud. It was based on Central European material on *Stipa* sp. (probably *St. capillata*). Formae of plant pathogenic species differentiated from the type by a differing host are recognized as valid taxa. However, "β. *stipae*" is an unranked name, so that this usage cannot be applied in this case. *Puccinia stipae* Hora [as "(Opiz) Hora"], 1888, was also published without any description. *Puccinia stipina* Tranz. ex Kleb. was the first valid, teleomorph-typified name for the European *Stipa* rust, with *Lamiaceae*, including *Thymus* spp., as aecial hosts. Greene & Cummins (1958: 22) cited the following type for *P. stipina*: "Type: Diedicke, on *Stipa capillata*, Schwellenburg bei Erfurt, Thüringen, Germany (Sydow, Mycoth. Germ. No. 563 as *Puccinia stipae*)." However, a formal lectotypification with citation of a particular herbarium was not made in this publication. Klebahn's herbarium is deposited at B (Berlin). Therefore, we designate the duplicate of Syd., Mycoth. Germ. 563 deposited at B as lectotype. *Puccinia stipae* Arthur is the correct name for the North American *Stipa* rust with *Asteraceae* as aecial hosts. Although previously sometimes cited as combination, "*Puccinia stipae* (Opiz) Arthur", this name has to be ascribed to Arthur (1884: 160), who provided a description based on North America collections.

Puccinia stipae Arthur [as "(Opiz) Arthur"], Bull. Bot. Dept. State Agric. Coll, Ames, **1**: 160, 1884.

≡ *Dicaeoma stipae* (Arthur) Kuntze, Revis. gen. pl. **3**(3): 470, 1898.

Syntypes: USA, Iowa, Ames, on *Heterostipa spartea* (≡ *Stipa spartea*), Oct. 1878, C. E. Bessey (NEB 75316), ibid., Oct. 1882 (BPI 104651, NCU-F-0021494, NEB 75317).

= (?) *Aecidium bigeloviae* Peck, Bot. Gaz. **3**(4): 34, 1878.

= *Aecidium crepidicola* Ellis & Galloway, J. Mycol. **6**(1): 31, 1890.
= *Aecidium compositarum* var. *lygodesmiae* Webber, Rep. Bot. Surv. Nebraska: 70, 1889.
≡ *Aecidium lygodesmiae* (Webber) Shear, in Ellis & Everhart, Fungi Columb.: no. 1476, 1901.
= *Aecidium solidaginicola* Ellis & Everh. [as "*solidaginicolum*"], Erythea **1**: 206, 1893.
= *Aecidium sclerothecioides* Ellis & Everh., Amer. Nat. **31**: 428, 1897.
= *Aecidium incurvum* Tracey & Earle, in Greene, Plant. Bak. **1**(1): 18, 1901.
= *Aecidium grindeliae* Syd. & P. Syd., Hedwigia **40**(Beibl.): [(1)], 1901.
= *Aecidium recedens* Arthur, Bull. Torrey bot. Club **31**: 7, 1904.

The synonymy of the cited *Aecidium* names with *Puccinia stipae* goes back to Greene & Cummins (1958), including *Aecidium bigeloviae* which was described from North America on *Chrysothamnus viscidiflorus* (= *Bigelovia douglasii*). This name is older than *P. stipae* and would have priority. However, the connexion between aecia on *Chrysothamnus* and telia on *Stipa* spp. has not yet been experimentally proven, in contrast to aecia on *Aster*, *Erigeron*, *Grindelia*, and *Solidago* (Greene & Cummins 1958). Therefore, final conclusions and formal nomenclatural measures should be postponed until the conspecificity between *Aecidium bigeloviae* and *Puccinia stipae* is clarified.

Literature

Arthur, C. 1884: Preliminary list of Iowa Uredineae. Bulletin of the Botanical Department of the State Agricultural College, Ames, Iowa **1**: 151–171.

Azbukina, Z. M. 2005: Nizshie rasteniya, gryby I mokhoobraznye Dal'nego Vostoka Rosii. Gryby, Tom 5, Rzhavchinnye Griby. Vladivostok.

Braun, U. 1982: Die Rostpilze (*Uredinales*) der Deutschen Demokratischen Republik. Feddes Repertorium **93**(3-4): 213–331.

Braun, U. & Bensch, K. 2021: Annotated list of taxonomic novelties published in "Fungi Rhenani Exsiccati" Supplementi Fasc. 6 to 12, issued by K. W. G. L. Fuckel between 1867 and 1874. Schlechtendalia **38**: 118–159.

Bubák, F. 1902: Infektionsversuche mit einigen Uredineen. Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten, Zweite Abteilung, **9**: 913–925.

Greene, H. C. & Cummins, G. R. 1958: A synopsis of the *Uredinales* which parasitizes grasses of the genera *Stipa* and *Nasella*. Mycologia **50**(1-6): 6–36.

Henderson, D. M. 1966: *Puccinia thymi*. Notes from the Royal Botanic Garden Edinburgh **26**: 359–361.

Henderson, D. M. & Bennell, A. P. 1979: British Rust Fungi: Additions and Corrections. Notes from the Royal Botanic Garden Edinburgh **37**: 475–501.

Karsten, P. A. 1884: Finlands Rost- och Brandsvampar (Hypodermii). Bidrag till Kännedom af Finlands Natur och Folk **39**: I–VI, 1–118.

Klebahn, H. 1914: Kryptogamenflora der Mark Brandenburg und angrenzender Gebiete. Band Va. Pilze III. Uredineen. Leipzig.

Majewski, T. (1979): Flora Polska. Grzyby (*Mycota*). Tom. II. Podstawczaki (*Basidiomycetes*). Rdzawnikowe (*Uredinales*). Warszawa-Kraków.

Minkevičiūtė, A. & Ignatavičiūtė, M. 1993: Mycota Lithuaniae V. *Uredinales* 2. Genus *Puccinia*. Vilnius.

Opiz, P. M. 1852: Seznam Rostlin Květeny České. Praze.

Poelt, J. 1985: Catalogus Florae Austriaceae. Ein systematisches Verzeichnis aller auf österreichischem Gebiet festgestellter Pflanzennamen. III Teil. Thallophyten (Algen und Pilze). Heft 1: *Uredinales*. Wien.

Saccardo, P. A. 1888: Sylloge fungorum. Vol. 7. Patavii.

Sydow, P. & Sydow, H. 1904: Monographia Uredinearum. Vol. I: Genus *Puccinia*. Leipzig.

Urban, Z. & Marková, J. (2009): Catalogue of Rust Fungi of the Czech and Slovak Republics. Charles Univ. Prague (ed.). Karolinum Press.

Address of the authors

Uwe Braun, Martin-Luther-Universität, Institut für Biologie, Bereich Geobotanik und Botanischer Garten, Neuwerk 21, 06099 Halle (Saale), Germany.
(E-mail: uwe.braun@botanik.uni-halle.de)

Friedemann Klenke, Grillenburger Straße 8b, 09627 Bobritzsch-Hilbersdorf, Germany.
(E-mail: Friedemann.Klenke@smul.sachsen.de)

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: Schlechtendalia

Jahr/Year: 2021

Band/Volume: 38

Autor(en)/Author(s): Braun Uwe, Klenke Friedemann

Artikel/Article: Puccinia thymi revisited 169-171