

Case 3579***Scarabaeus fimetarius* Linnaeus, 1758 (currently *Aphodius fimetarius*; Insecta, Coleoptera, SCARABAEIDAE): proposed conservation of usage of the specific name by designation of a neotype**

Robert B. Angus

School of Biological Sciences, Royal Holloway, University of London, Egham, Surrey TW20 0EX, U.K. & Department of Entomology, Natural History Museum, Cromwell Road, London SW7 5BD, U.K.
(e-mail: r.angus@rhul.ac.uk)

Christine J. Wilson

School of Biological Sciences, Royal Holloway, University of London, Egham, Surrey TW20 0EX, U.K. (e-mail: drcwilson@btinternet.com)

Frank-Thorsten Krell

Department of Zoology, Denver Museum of Nature & Science, 2001 Colorado Boulevard, Denver, CO 80205-5798, U.S.A.
(e-mail: Frank.Krell@dmns.org)

Abstract. The purpose of this application, under Articles 75.5 and 75.6 of the Code, is to conserve the current usage of the name *Aphodius fimetarius* (Linnaeus, 1758) for a Holarctic species of aphodiine dung beetle. Since a different species has been erroneously designated as the lectotype, it is proposed that the previous type fixations for the species *Aphodius fimetarius* (Linnaeus, 1758) be set aside and a neotype consistent with the current usage be designated. Given that the species diagnostic morphological characters show variation overlapping with those of the most similar species, *Aphodius pedellus* (De Geer, 1774), we suggest a modern, chromosomally determined specimen as the neotype.

Keywords. Nomenclature; taxonomy; SCARABAEIDAE; APHODIINAE; *Aphodius*; *Aphodius fimetarius*; *Aphodius pedellus*; *Aphodius foetens*; dung beetle; Recent; Holarctic.

1. Linnaeus (1758, p. 348) described *Scarabaeus fimetarius* from Europe ('Habitat in Europae stercoratis') and referred to Frisch (1736), Rösel (1749), Uddman (1753) and his own works *Fauna Svecica* (Linnaeus, 1746) and 'Iter Oelandicum' which is *Öländska Resa* (Linnaeus, 1745). According to Article 72.4.1 of the Code, the type series comprises the material considered by those authors together with the original Linnaean material present in the Linnaean collection housed by the Linnean Society of London. With the type locality determined by Linnaeus as Europe, the specimens of the type series originated primarily from Sweden and Germany. Sweden at the time owned parts of northern Germany. It should be noted that the type series included more than one species: '*A. fimetarius*' = *A. pedellus* (De Geer, 1774), sensu Wilson (2001; see para. 2 below); *A. foetens* (Fabricius, 1787) (see para. 3 below);

potentially a sibling species formerly subsumed under *A. fimetarius* (*A. fimetarius* sensu Wilson, 2001, see para. 2 below); possibly *A. foetidus* (Herbst, 1783) (Linnaeus's variety β , synonymised with *Aphodius scybalarius* Fabricius by Schönherr (1806, p. 68), which he misidentified; *A. scybalarius* was mistakenly used for *A. foetidus* by several authors, see BZN 51: 121–127); or even *Aphodius sordidus* (Fabricius, 1775), which occurs in Öland from where Linnaeus (1746) described it and which can have four dark dots on the elytra as indicated by Uddman (1753) (see Ljungberg & Hall, 2009). Landin (1956) came to the same conclusions, but missed the presence of one *A. foetens* in the Linnaean material. Despite this inconsistent type series, the usage of *Aphodius fimetarius* had been consistent and undisputed for at least a century until 2001. It is the type species of the genus *Aphodius* Hellwig, 1798, designated by Latreille (1810).

2. Wilson (2001, p. 137), in the course of her PhD research, found that *Aphodius fimetarius* (Linnaeus, 1758 p. 348), as used by all authors in the preceding hundred years, comprises two species clearly separable on their karyotypes. She reported on relevant type material and designated lectotypes for *Scarabaeus fimetarius* Linnaeus, 1758 (p. 348), and *Scarabaeus pedellus* De Geer, 1774 (p. 266), which she considered to be the correct names for the two species.

3. Unfortunately, neither Wilson (as author of the paper) nor Angus (as supervisor of Wilson's PhD) had checked the underside of Linnaeus's specimens, and it now transpires that the chosen lectotype of *S. fimetarius* belongs to *Aphodius foetens* (Fabricius, 1787, p. 8), immediately recognisable by its red abdomen.

4. The species with a red abdomen has never been referred to *A. fimetarius* (Linnaeus), being known as *A. aestivalis* Stephens, 1839 (e.g. Kloet & Hincks, 1945; Britton, 1956; Balthasar, 1964), *A. vaccinarius* Herbst, 1789 (e.g. Paulian, 1959) or by the currently used name of *A. foetens* (Fabricius) (e.g. Thomson, 1863; Fowler, 1890; Joy, 1932; Machatschke, 1969; Jessop, 1986; Baraud, 1992; Krell & Fery, 1992; Dellacasa, G. & Dellacasa, M., 2006). Although Linnaeus described *S. fimetarius* as having a black body and red elytra, it is not possible to demonstrate that the specimen chosen by Wilson (2001) as lectotype was not part of Linnaeus's original material of *S. fimetarius* as Linnaeus gave no indication of knowing a species with a red abdomen as well as red elytra. In fact, it is clear from Wilson's account of the Linnaean material that this specimen does form part of Linnaeus's series, and the most likely explanation is that Linnaeus did not notice its red abdomen. Therefore the Commission is asked to use its plenary power to set aside the current lectotype and replace it with a neotype (as proposed in para. 6 below), as required by Article 75.6 of the Code.

5. The present interpretation of *A. fimetarius* and *A. pedellus* (sensu Wilson, 2001) is in use by those authors who have recognised that the former *A. fimetarius* comprises two species, notably Whitehead (2005, 2006) who keys out the two species, Mann in Lane et al. (2002), Denton (2005), Dellacasa, M. & Dellacasa, G. (2006), Ljungberg (2006), Rössner (2006), Mann (2006, 2008), Darby (2009), Nilsson (2009), Roslin & Heliovaara (2009), Forshage (2010), and Ljungberg & Hall (2009) who key and illustrate *A. pedellus* as a member of the Swedish fauna. *Aphodius pedellus* has been entering the ecological and conservation literature (Ljungberg & Vessby, 2009; Stenström & Holmberg, 2010; Ødegaard et al., 2011). The current American use of *Aphodius fimetarius* (e.g. Gordon & Skelley, 2007) includes both sibling species (from

Californian material chromosomally identified by Wilson & Angus, 2004, and newly studied Arizona and Colorado material (R. B. Angus, unpublished karyotype), both belonging to *A. fimetarius* sensu Wilson; *A. pedellus* is identified from several States (Krell, unpublished).

6. Choice of neotype: Recommendation 75A of the Code is that a neotype should if possible be chosen from surviving paralectotypes unless there are compelling reasons to the contrary. In the present case, because all possible species diagnostic characters show overlapping variation (colour, tip of elytra, pronotal punctures, genae, aedeagus), karyotypic data are necessary to allow unequivocal identification, so that the choice of a modern, chromosomally determined specimen is justified. Although the paralectotypes on the Linnaean series are considered inadequate for neotype designation, they are among the material available to guide the choice of the species to be defined by the neotype. However, it should be noted that this material does not constitute the total available for consideration (see para. 1 above). Both Frisch (1736) and Rösel (1749) discussed and figured the *Aphodius* with red elytra, and are concerned with German material which becomes part of the basis for interpretation of *A. fimetarius*. Linnaeus's own *Fauna Svecica* (1746) explicitly refers to the Swedish Realm, which at that time included parts of northern Germany. This is important as while only *A. pedellus* is known in present day Sweden, both *A. pedellus* and *A. fimetarius* sensu Wilson occur in Germany, and Linnaeus gave Europe, not Sweden, as the type locality for his *Scarabaeus fimetarius*. Wilson (2001), in her account of the Linnaean series, mentions, as well as the specimen designated lectotype, four Linnaean specimens, two males and two females, as well as one non-Linnaean English specimen. Wilson identified one Linnaean male and one female as *A. fimetarius* (Linnaeus) in the sense adopted in her paper, and one male and one female as *A. pedellus* (De Geer). Further study of the material shows this to be not entirely correct. All the specimens were coated with a fine partly greasy layer and this gave their surface sculpture a muted appearance. Angus has now cleaned the material and as a result of this it is clear that both of the females, as well as one male, are *A. pedellus* (De Geer). The remaining male, which has the Linnean Society's catalogue number 3385 and is the male on the finer pin, at one time pinned immediately to the right of Linnaeus's name label, may be *A. fimetarius* (Linnaeus) as interpreted by Wilson (2001), as the head has the cheeks not expanded laterally in front of the eyes, their lateral margins being parallel to one another posteriorly. However, the pin of this specimen is not a typical Linnaean pin (Mikkola, 1983) which allows for the possibility that it is not an original Linnaean specimen. Dissection of the aedeagus might clarify the identification of this specimen but is considered unnecessary as the specimen is not adequate for designation as neotype. Despite the existing paralectotypes very probably lacking a specimen of *A. fimetarius* sensu Wilson, it is possible that Frisch's or Rösel's material referred partly to this species. Both Frisch's and Rösel's collections are probably lost (see Horn et al., 1990). The least disruptive choice of neotype is a specimen corresponding to Wilson's (2001) interpretation of *A. fimetarius*, followed by those who have recognised that two species are involved (see para. 5) and that is the procedure adopted here.

7. Neotype designation. Neotype ♂ *Scarabaeus fimetarius* Linnaeus 1758. The specimen is mounted on Bristol board using gum tragacanth, though for added

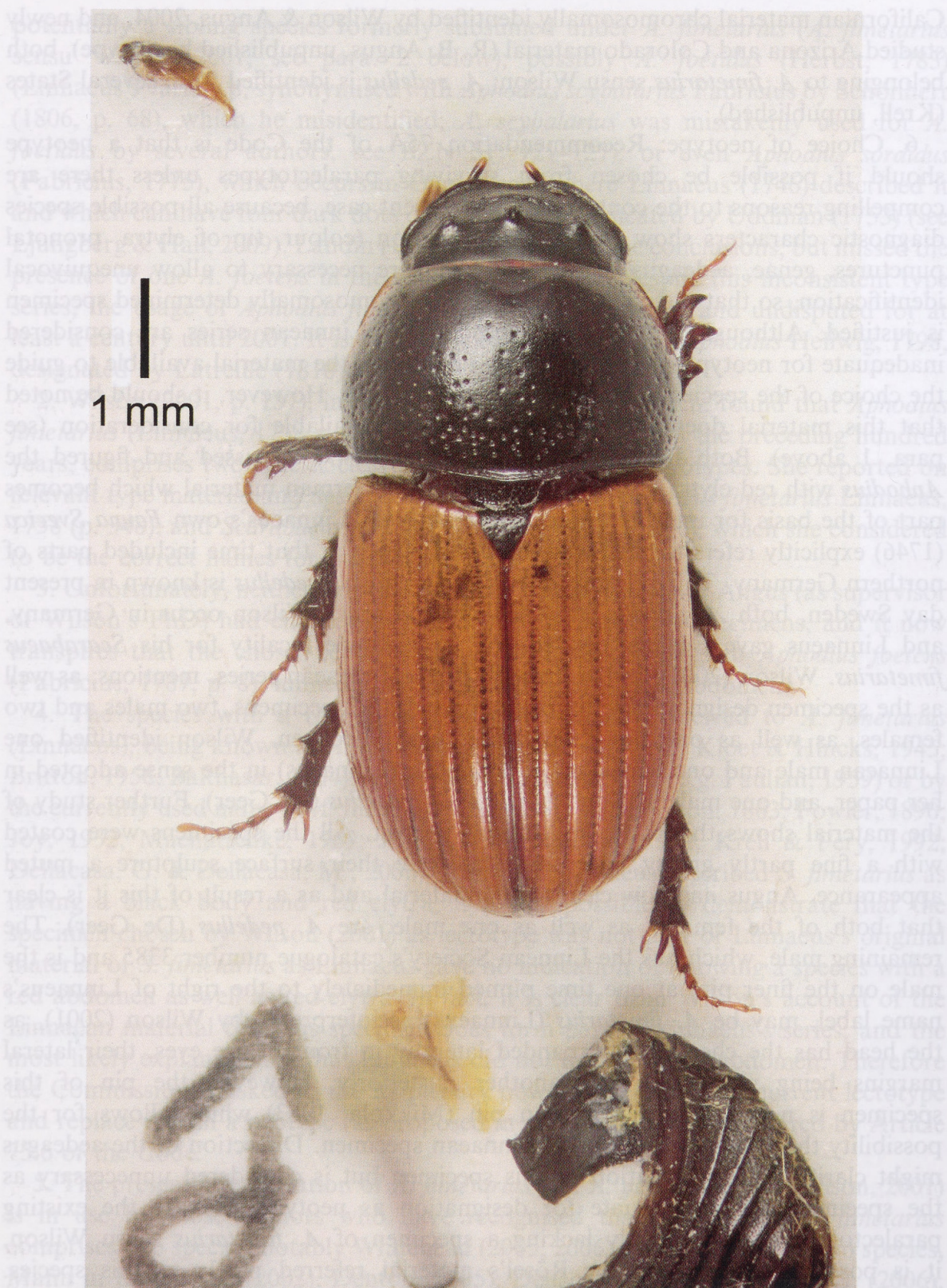


Fig. 1. *Scarabaeus fimetarius* Linnaeus, 1758. Proposed neotype.

strength the aedeagus is glued to the face of the card with 'Hercules' water-soluble glue. It is labelled 'England, E. Kent. Deal. 10.v.2000. Wilson, Angus & Carr.' and 'Chromosome prep. 1: 10.v.2000.' It is housed in the Coleoptera collection of

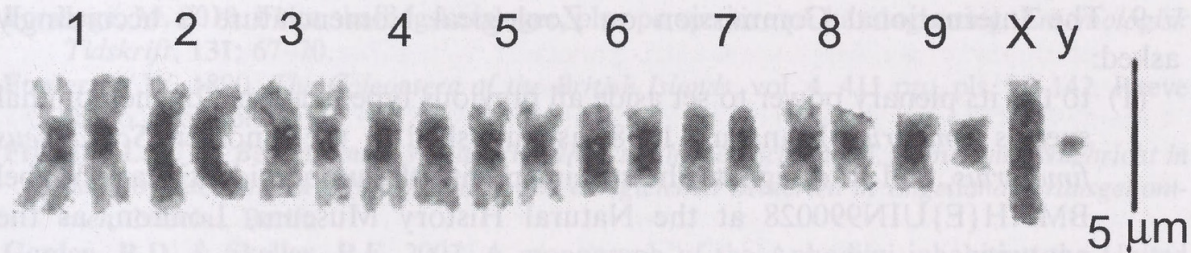


Fig. 2. *Scarabaeus fimetarius* Linnaeus, 1758. Mitotic chromosomes from mid-gut cell of proposed neotype, arranged as a karyotype.

the Natural History Museum, London and has the unique identification label BMNH{E}UIN990028. It is illustrated in Fig. 1 and a C-banded karyotype prepared from mitotic chromosomes from mid gut of this specimen is shown in Fig. 2.

Its length is 7.0 mm, its breadth 3.4 mm. The head is shining black with the frontoclypeal suture strongly trituberculate. The cheeks do not protrude laterally in front of the eyes and their lateral margins are not divergent from the base, so that they are more or less parallel to one another on each side of the head. The antennae are reddish brown. The pronotum is shining black, with yellowish red patches at anterior angles. The anterior margin has a distinct median impression and the posterior margin is entirely bordered. The hind angles are obliquely truncate. The pronotal puncturation is double, with sparse, even, fine punctures over the entire surface, but the coarser punctures are more restricted, diffuse over most of the surface but absent from an area behind the anterolateral pale patches and very sparse over the median part of the anterior quarter. The scutellum is small, triangular, black, sparsely punctate except for the impunctate apical third. The elytra are yellowish red with the interstices weakly but distinctly convex. Interstice 4 (between striae 3 and 4) on the left elytron is about as long as interstice 3, but on the right elytron it is distinctly shorter than interstice 3. On both elytra it is as long as interstice 5 and extends to the reticulate apical section of the elytra (the subapical field) which extends between the apices of striae and interstices 1 – 6 and the apical margin of the elytra. The subapical field is flat, matt, with even, fine reticulation and scattered fine punctures, without any wrinkles. The legs are blackish brown, with the tarsi paler, reddish brown. The aedeagus in lateral view has the apices of the parameres deflexed at almost a right angle.

A C-banded karyotype from mitotic chromosomes of a mid gut cell of this beetle is shown as Fig. 3 by Wilson (2001) and as Fig. 48.2 by Angus (2006).

Designation of this neotype conforms to the interpretation of *Scarabaeus fimetarius* Linnaeus used by Wilson (2001) and those authors who have considered *Aphodius fimetarius* and *A. pedellus* (De Geer) to be separate species.

8. Strict application of the Code without asking the Commission to apply its plenary power would mean transferring the name *Aphodius foetens* from one fairly well known species to one of the most common Holarctic dung beetle species, which would cause immense confusion. Choosing a neotype from the paralectotypes of *Aphodius fimetarius* would acknowledge the species identity of probably most of the specimens that Linnaeus had in hand when describing *S. fimetarius*, but would go against the use by those authors who have recognised that the former *A. fimetarius* comprises two species (see para. 5 above).

9. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to set aside all previous type fixations for the nominal species *fimetarius* Linnaeus, 1758, as published in the binomen *Scarabaeus fimetarius*, and to designate the specimen with the unique identification label BMNH{E}UIN990028 at the Natural History Museum, London, as the neotype;
- (2) to place on the Official List of Specific Names in Zoology the name *fimetarius* Linnaeus, 1758, as published in the binomen *Scarabaeus fimetarius*, and as defined by the neotype designated in (1) above.

Acknowledgements

We are greatly indebted to Eckehard Rößner (*Schwerin*), who raised the possibility of the lectotype of *Aphodius fimetarius* being *A. foetens* and for revealing the unpublished results of his morphological studies to us; to Max Barclay (*London*), Darren Mann (*Oxford*) and Jason Maté (*Madrid*) for helpful comments on a former draft of this petition. Following consultation with specialists (Recommendation 75B) we thank Hans Fery (*Berlin*) and Eckehard Rößner (*Schwerin*) for their clear, critical arguments against our procedure; and Alberto Ballerio (*Brescia*), Andrey Frolov (*St. Petersburg*), Darren Mann (*Oxford*), Jason Maté (*Madrid*) and Tomas Roslin (*Helsinki*) for supporting comments. We thank the Entomology Department, Natural History Museum, London for supporting the preparation of this submission.

References

- Angus, R.B. 2006. Chromosome differences. Pp. 346–351 in Cooter, J. & Barclay, M.V.L. (Eds.), *A Coleopterist's Handbook*, 4th edition. 439 pp. Amateur Entomologists' Society, Orpington, Kent.
- Balthasar, V. 1964. *Monographie der Scarabaeidae und Aphodiidae der palaearktischen und orientalischen Region*. 3, *Aphodiidae*. 562 pp. Tschechoslowakische Akademie der Wissenschaften, Prag.
- Baraud, J. 1992. *Coléoptères Scarabaeoidea d'Europe. Faune de France*, 78. 856 pp, 11 pls. Fédération Française des Sociétés de Sciences Naturelles, Paris.
- Britton, E.B. 1956. Coleoptera Scarabaeoidea. *Handbooks for the Identification of British Insects*, 5(11). 29 pp. Royal Entomological Society, London.
- Darby, M. 2009. *Wiltshire beetles. History, status, distribution and use in site assessment*. viii, 345 pp. Malthouse Books, Sutton Mandeville, Salisbury.
- De Geer, C. 1774. *Mémoires pour servir à l'Histoire des Insectes* 4. 456 pp. Stockholm.
- Dellacasa, G. & Dellacasa, M. 2006. Coleoptera Aphodiidae, Aphodiinae. *Fauna d'Italia*, 41. 484 pp. Calderini, Bologna.
- Dellacasa, M. & Dellacasa, G. 2006. Tribe Aphodiini Leach, 1815. Pp. 105–143 in Löbl, I. & Smetana, A. (Eds.), *Catalogue of Palaearctic Coleoptera, Volume 3*. Apollo Books, Stenstrup.
- Denton, J. 2005. *The beetles of Surrey. A checklist*. 115 pp. Surrey Wildlife Trust, Woking, Surrey.
- Fabricius, J.C. 1775. *Systema entomologiae, sistens insectorum classes, ordines, genera, species, adiectis synonymis, locis, descriptionibus, observationibus*. xxxii, 832 pp. Officina Libraria Kortii, Flensburgi & Lipsiae.
- Fabricius, J.C. 1787. *Mantissa Insectorum: sistens eorum species nuper detectas: adiectis characteribus genericis, differentiis, specificis emendationibus, observationibus*. 348 pp. Christ. Gottl. Proft, Hafniae.

- Forshage, M.** 2010. Flera skalbagskataloger, plus perspective på katalogisering. *Entomologisk Tidskrift*, **131**: 67–70.
- Fowler, W.W.** 1890. *The Coleoptera of the British Islands*, vol. 4. 411 pp., pls. 99–142. Reeve & Co., London.
- Frisch, J.L.** 1736. *Beschreibung von allerley Insecten in Teutschland. 4, Samt einer Nachricht in der Vorrede von Hr Albin Buch, so von der gleichen Materien in Engelland herausgekommen*. Nicolai, Berlin.
- Gordon, R.D. & Skelley, P.E.** 2007. A monograph of the Aphodiini inhabiting the United States and Canada (Coleoptera: Scarabaeidae: Aphodiinae). *Memoirs of the American Entomological Institute*, **79**: 1–580.
- Hellwig, J.C.L.** 1798. [without title; book preview]. *Intelligenzblatt der Allgemeinen Literatur-Zeitung*, **1798** (13): 100–101.
- Herbst, J.F.W.** 1783. Kritisches Verzeichniss meiner Insektensammlung. *Archiv der Insectengeschichte*, **4**: 1–72.
- Herbst, J.F.W.** 1789. *Natursystem aller bekannten in- und ausländischen Insekten als eine Fortsetzung der Büffonischen Naturgeschichte*. Pp. 1–16, 1–64, 1–330. Pauli, Berlin.
- Jessop, L.** 1986. Dung beetles and chafers Coleoptera: Scarabaeoidea. In: *Handbooks for the Identification of British Insects*, **5**(11) (New edition). 53 pp. Royal Entomological Society, London.
- Joy, N.H.** 1932. *A practical handbook of British beetles*, vol. 1. 622 pp. Witherby, London.
- Kloet, G.S. & Hincks, W.D.** 1945. *A check list of British insects*. 483 pp. Kloet & Hincks, Stockport.
- Krell, F.-T. & Fery, H.** 1992. Familienreihe Lamellicornia. Pp. 200–252 in Lohse, G. A. & Lucht, W.H. (Eds.), *Die Käfer Mitteleuropas*, vol. 13 (2 Supplementband mit Katalogteil). Goecke & Evers, Krefeld.
- Landin, B.-O.** 1956. The Linnean species of Lamellicornia described in ‘Systema Naturae’, Ed. X (1758). (Col.). *Entomologisk Tidskrift*, **77**: 1–18.
- Lane, S.A., Wright, R.J. & Forsythe, T.G.** 2002. *An atlas of Warwickshire beetles*. 217 pp. Warwickshire Biological Records Centre, Warwick.
- Latreille, P.A.** 1810. *Considérations générales sur l'ordre naturel des animaux composant les classes des crustacés, des arachnides, et des insectes*. 444 pp. Schoell, Paris.
- Linnaeus, C.** 1745. *Öländska och Gothländska resa på rikens högloflige ständers befallning förrättad åhr 1741*. 344 pp. Kiesewetter, Stockholm & Upsala.
- Linnaeus, C.** 1746. *Fauna Svecica sistens animalia sveciae regni: quadrupedia, aves, amphibian, pisces, insecta, vermes, distributa per classes & ordines, genera & species*. Pp. 1–28, 1–411, 1 pl. Wishoff, Lugduni Batavorum.
- Linnaeus, C.** 1758. *Systema Naturae*, Ed. 10, vol. 1. 824 pp. Salvii, Holmiae.
- Ljungberg, H.** 2006. Inventering av dyngbaggar på Gotland, en metodstudie. *Rapporter om Natur och Miljö, Länsstyrelsen i Gotlands Län*, **2006**(5): 1–44.
- Ljungberg, H. & Hall, K.** 2009. Nyckel till svenska dyngbaggar. *Länsstyrelsen i Gotlands Län*, **2009**: 1–33.
- Ljungberg, H. & Vessby, K.** 2009. *Information om hotade arter. Dyngbaggar*. Länsstyrelserna, Kalmar. 4 pp.
- Machatschke, J.W.** 1969. Familie: Scarabaeidae, Blatthornkäfer. Pp 266–366 in Freude, H., Harde, K.W. & Lohse, G.A. (Eds.), *Die Käfer Mitteleuropas*, vol. 8. 388 pp. Goecke & Evers, Krefeld.
- Mann, D.J.** 2006. Scarabaeoidea. Pp. 47–58 in Cooter, J. & Barclay, M.V.L. (Eds.), *A Coleopterist's Handbook, 4th edition*. 439 pp. Amateur Entomologists' Society, Orpington, Kent.
- Mann, D.J.** 2008. Family Scarabaeidae Latreille, 1802. Pp. 55–58 in: *Checklist of beetles of the British Isles*. 164 pp. A.G. Duff, Wells, Somerset, U.K.
- Mikkola, K.** 1983. Diagnostic insect pins: some problems of the Linnean insect collection solved. *Antenna*, **7**: 16–17.
- Nilsson, P.** 2009. Dyngbaggar i Blekinge – inventering av dyngbaggefaunan in Blekinge 2007. *Rapporter Länsstyrelsen Blekinge Län*, **2009**(10): 1–68.

- Ødegaard, F., Hanssen, O. & Sverdrup-Thugeson, A. 2011. Dyremøkk – et hotspot-habitat. Sluttrapport under ARKO-prosjektets periode II. *NINA Rapport*, **715**: 1–42.
- Paulian, R. 1959. *Coléoptères Scarabéides. Faune de France*, vol. 63. 298 pp. Lechevalier, Paris.
- Rössner, E. 2006. Neuheiten für die Fauna der Blatthornkäfer Deutschlands (Coleoptera, Scarabaeoidea). *Entomologische Nachrichten und Berichte*, **50**: 209–211
- Rösel, A.J. 1749. *Der monatlich-herausgegebenen Insecten-Belustigung zweyter Theil, welcher acht Classen verschiedener sowohl inländischer / als auch einiger ausländischer Insecte enthält*. Pp. [1–7], 1–24, 1–72, 1–28, 1–16, [1–3], 1–32, [1–7], 1–70, 1–200, 1–64, 1–52, [1–19], Tab. [1], A–B, I–IX, I–III, I–VI, I–IV, I–XVII, I–XXX, I–XV, I–X. Fleischmann, Nürnberg.
- Roslin, T. & Heliovaara, K. 2009. *Suomen lantakuoriaiset. Opas santiaisista*. 244 pp. Gaudeamus Helsinki University Press, Helsinki.
- Schoenherr, C.J. 1806. *Synonymia Insectorum, oder, Versuch einer Synonymie: aller bisher bekannten Insecten; nach Fabricii Systema Eleutheratorum geordnet. Erster Band, Eleutherata, oder Käfer*. Nordström, Stockholm.
- Stenström, A. & Holmberg, T. 2010. Miljöövervakning av dyngbaggar i västra Götalands län. *Länstyrelsen i Västra Götalands län, Naturvårdsenheten, Rapport*, **2010**(63): 1–20.
- Stephens, J.F. 1839. *A manual of British Coleoptera, or beetles*. 443 pp. Longman, London.
- Thomson, C.G. 1863. *Skandnaviens Coleoptera*. 5. 340 pp. Lundbergska Boktryckeriet, Lund.
- Uddman, I. 1753. *Novae insectorum species*. [6], 48 pp. Merckell, Aboae.
- Whitehead, P.F. 2005. Notable Coleoptera records 5. *Entomologist's Gazette*, **56**: 251–260.
- Whitehead, P.F. 2006. *Aphodius* (A.) *fimetarius* (L., 1758) and *Aphodius* (A.) *pedellus* (De Geer, 1774) (Col., Aphodiidae) are distinct species, with new evidence for their European distribution. *Entomologist's Monthly Magazine*, **142**: 85–86.
- Wilson, C.J. 2001. *Aphodius pedellus* (De Geer), a species distinct from *A. fimetarius* (Linnaeus) (Coleoptera: Aphodiidae). *Tijdschrift voor Entomologie*, **144**: 137–143.
- Wilson, C.J. & Angus, R.B. 2004. Chromosomal analysis of the West European species of *Aphodius* Illiger, subgenus *Aphodius* s. str. (Coleoptera: Aphodiidae). *Tijdschrift voor Entomologie*, **147**: 247–264.

Acknowledgement of receipt of this application was published in BZN **68**: 240.

Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to the Executive Secretary, I.C.Z.N., c/o Natural History Museum, Cromwell Road, London



Angus, Robert B., Wilson, Christine J, and Krell, Frank-Thorsten. 2012. "Case 3579 *Scarabaeus fimetarius* Linnaeus, 1758 (currently *Aphodius fimetarius* ; Insecta, Coleoptera, scarabaeidae): proposed conservation of usage of the specific name by designation of a neotype." *The Bulletin of zoological nomenclature* 69(1), 29–36. <https://doi.org/10.21805/bzn.v69i1.a12>.

View This Item Online: <https://www.biodiversitylibrary.org/item/333698>

DOI: <https://doi.org/10.21805/bzn.v69i1.a12>

Permalink: <https://www.biodiversitylibrary.org/partpdf/377982>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: International Commission on Zoological Nomenclature

License: <https://creativecommons.org/licenses/by-nc-sa/4.0/>

Rights: <http://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.