

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

(Case 3579; see BZN 69: 29–36)

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The Commission is asked to turn down the application of Angus et al. (BZN 69: 29–36) in part, because the name *Aphodius fimetarius* in the sense of the applicants is not in current usage as claimed by them, and their proposed neotype designation would seriously threaten the stability of nomenclature. The Commission is asked to set aside Wilson's (2001) lectotype designation for *Scarabaeus fimetarius* Linnaeus, 1758, and to designate a neotype for this taxon other than that of the applicants. A neotype for *Aphodius cardinalis* Reitter, 1892 is designated. The Commission is asked to suppress all the names which might be considered senior subjective synonyms of *A. cardinalis*.

First it must be specified what is meant by the name *Aphodius fimetarius* in the present Comment, because this name might be understood in two totally different meanings: (a) in the sense of the huge majority of authors since 1758 and (b) in the sense of Angus et al. (BZN 69: 29–36). In the application the name *A. fimetarius* is used in a sense which is exactly contrary to the sense of almost all authors since 1758 (cf. more details in 1.1), and the reader might be totally misled when reading it (cf. Table 1).

Wilson (2001) showed that *Aphodius fimetarius*, as used until that time, included two different species. Whitehead (2006) was the first who clearly stated that one of these species has 'deep red elytra' (called by him *A. pedellus* (De Geer, 1774)) and the other one 'yellowish-red elytra' (called by him *A. fimetarius*) and he used for his key to species the elytral colour together with the other morphological characters given by Wilson (2001). Rößner [2012] studied several thousand specimens from large parts of the Holarctic and Australia and also distinguished two species, however he attributed the name *A. fimetarius* to the species with red elytra. Additionally, he found that the species with the red elytra (which can sometimes show slight tendencies to yellowish-red) has a more northern distribution and that the species with the yellowish-red elytra (which can sometimes become a somewhat darker red,

Table 1. A brief summary of the diverse usages of the names *A. fimetarius*, *A. pedellus* and *A. cardinalis*

usage	species with red elytra; more northern distribution in Europe	species with yellowish-red elytra; more southern distribution in Europe
as used for more than 250 years by a large majority of authors	<i>Aphodius fimetarius</i> (in part) (syn. <i>Aphodius pedellus</i>)	colour var. of <i>A. fimetarius</i> <i>A. cardinalis</i> (by Reitter, 1892)
as used by Angus et al. (BZN 69)	<i>Aphodius pedellus</i>	<i>Aphodius fimetarius</i>
usage proposed in the present Comment	<i>Aphodius fimetarius</i> (syn. <i>Aphodius pedellus</i>)	<i>Aphodius cardinalis</i>

but never as red as in the other species) has a more southern distribution (details in Rößner [2012]), e.g. the latter species does not occur in Sweden. I will call the former species the one ‘with red elytra’ or the ‘red species’. This species is called *Aphodius pedellus* by Wilson (2001) and Angus et al. (BZN 69). The other species will be called the one ‘with yellowish-red elytra’ or the ‘yellowish-red species’. This is the species which Whitehead (2006) and Angus et al. (BZN 69) call *Aphodius fimetarius* (Linnaeus, 1758). It is likely that this species has been described under some other names, such as *Aphodius nodifrons* Randall, 1838, *Aphodius fimetarius* var. *subluteus* Mulsant, 1842, and *Aphodius cardinalis* Reitter, 1892 (see paragraph 2.2). I avoid the phrase ‘*A. fimetarius* sensu Wilson (2001)’ because Wilson on the one hand meant a species with red elytra, but on the other hand unfortunately used the name in three different senses—her lectotype (= *A. foetens*), her paralectotypes (= the red species), and her karyotypes for *A. fimetarius* (= the yellowish-red species).

1. General considerations for rejection of the Application

The Commission should not vote in favour of the neotype proposed by Angus et al. (BZN 69: 34) because the proposal of the applicants is not in accordance with one of the most important recommendations of the Code (cf. Preamble and Appendix B): it by no means promotes the stability of nomenclature.

Wilson (2001) discovered through chromosomal studies the existence of two different species within the widespread taxon *Aphodius fimetarius*. This fact seems to be beyond any doubt, because it is confirmed by the study of the external and male genital morphology, and by the results of molecular studies (personal communication by R. Angus).

Thus, the main intention of the application—to eliminate possible confusion by fixing the name-bearing types—has my full support. However, it is quite unwarranted that a species with mostly yellowish-red elytra shall get the name of a species which is generally accepted as having red elytra, and this all in spite of the fact that an available name exists for the yellowish-red species (i.e. *A. cardinalis*, see below).

1.1. The proposed neotype for *A. fimetarius* is not in accordance with the original description

The specific name *fimetarius* for the red species has been in use for about 250 years (Linnaeus, 1758, p. 348: ‘elytris rubris’), and it has never been questioned that *A. fimetarius* is typically a species with red elytra (not even Wilson 2001 doubted it, since the different coloration of the two species is not discussed at all in her paper).

One might argue that whenever the name *A. fimetarius* was used in the period before Wilson (2001) both the red species and the yellowish-red species were included, so that the name *A. fimetarius* could be applied to the yellowish-red species without problems. This might be formally correct, however it contradicts the real understanding of the name *A. fimetarius* of almost all authors. Whenever authors studied *fimetarius* specimens with more yellowish elytra, they treated these specimens as more or less unimportant colour varieties or morphs at best. In the two single cases that the colour was given more attention, these yellowish-red specimens were described as new species (*A. cardinalis* and presumably *A. nodifrons* (‘bright reddish’ elytra); see 2.2) and by this the authors confirmed indirectly that their understanding of

A. fimetarius was that of a species with red elytra. I am also convinced that even Wilson herself never would have proceeded as she did if she had studied more material and recognised that the more southern species usually has yellowish-red elytra, while the more northern one has distinctly red elytra—then she certainly would have tried to find another name for the southern species and leave the name *fimetarius* for the northern one (thus leaving *A. pedellus* a junior subjective synonym of *A. fimetarius*).

Finally, I want to emphasise that even the applicants themselves do not question that (a) ‘Linnaeus described *S. fimetarius* as having a black body and red elytra’ BZN 69: 34, paragraph 4) and (b) there are no yellowish-red specimens among the original syntypes in the Linnean collection (Angus et al., BZN 69: 31, paragraph 6).

1.2. The proposed meaning of specific names is not in accord with the prevailing usage

With respect to the usage of the names involved, the entire period since Linnaeus’ description of *Scarabaeus fimetarius* must be considered; however, the period since the publication of Wilson (2001) is of particular interest. The applicants imply that the use of the name *A. pedellus* for the red species and the name *A. fimetarius* for the yellowish-red species have already been broadly accepted (in ‘current usage’; cf. the title and the Abstract of the application). They list 19 works of authors who have done so. However, the authors of five of these works by no means follow this usage unreservedly: M. Dellacasa & G. Dellacasa (2006) gave both names, but noted ‘DA’ (= doubtful assignment) under their entry for the distribution of *A. pedellus*. Elsewhere M. and G. Dellacasa followed Bordat (2002) and published/co-authored at least six articles/books after 2005 in which they mentioned only *A. fimetarius*, without giving the name *A. pedellus*, or if giving it, then only as a junior subjective synonym of *A. fimetarius* (see G. Dellacasa & M. Dellacasa, 2006; Cabrero Sañudo et al., 2007; Skelley et al., 2007; Dellacasa et al., 2010; Cabrero Sañudo et al., 2010; Carpaneto et al., 2011). Rößner (2006) discussed the situation on the basis of M. Dellacasa & G. Dellacasa (2006), but by no means fully adopted the view of Whitehead (2006) and that of the applicants. Gordon & Skelley (2007) discussed the situation of both taxa in northern America, but followed ‘the conservative approach’ and considered them all to be *A. fimetarius*. Roslin & Heliovaara (2009) considered it clear that there were two different species, but they were unable to explain unambiguously the external morphological differences and were not sure about the distribution of both species in Finland (personal communication by O. Biström). Forshage (2010) is merely a book review of M. Dellacasa & G. Dellacasa (2006), where Forshage gave a one-sentence comment on both taxa.

Angus et al. (BZN 69: 30) include in their argumentation only ‘those authors who have recognised that the former *A. fimetarius* comprises two species’; however, this is absolutely inadmissible, because, according to the letter and spirit of the ICZN, all the authors who have published on this species complex must be taken into account. Several colleagues placed at my disposal about 2100 references to publications which deal in some way with *A. fimetarius*, *A. pedellus* and other related names (see e.g. the list of synonyms in M. Dellacasa & G. Dellacasa, 2006, p. 113). Several works published before 2001 and about 85% of the works published after 2000 have been checked by me, but some were not at my disposal. In these cases I trust in the competence of my colleagues. The study of these references shows that in the period

from 2001 until today only 31 works follow the opinion of Angus et al. while 317 works do not. A list of these 348 recent references has been lodged with the Secretariat. According to the Glossary of the Code the prevailing usage of a name is defined as ‘that usage of the name which is adopted by at least a substantial majority of the most recent authors concerned with the relevant taxon, irrespective of how long ago their work was published.’ The literature shows that the name *A. fimetarius* has been in prevailing usage for the ‘red species’ for more than 250 years since its description, in more than 2050 works. Before 2001 it was used by ca. 850 authors. In the last decade, on the other hand, the usage of the names *A. fimetarius* and *A. pedellus* in the sense of Whitehead (2006) and the applicants only reaches just over 10% of all publications in 2006 (6 works), 2009 (4 works) and 2010 (4 works), and only a tiny minority of about 25 authors (less than 6%) accepted their interpretation of both taxa, while about 420 authors in the last decade did not do so. Thus, the view of Angus et al. can by no means be called ‘adopted by at least a substantial majority of authors’ and is definitely not in prevailing usage.

2. A better solution to this nomenclatural problem

In view of Wilson’s (2001) inappropriate choice of lectotype for *A. fimetarius* a neotype is needed which should correctly be a specimen with red elytra (see 2.1). At the same time, we no longer have any fixed name-bearing specimen for the species with the yellowish-red elytra which Angus et al. called *A. fimetarius*, and which is necessary for a complete understanding of this species complex. For this reason a neotype for this species is also designated (see 2.2).

2.1. Proposed neotype designation for *A. fimetarius*

The applicants proposed as a possible neotype a chromosomally defined specimen because both species showed overlapping variation in their diagnostic morphological characters. Whitehead (2006) concluded that both species under consideration could be separated with the aid of a x10 lens. Similar observations have been made by E. Rößner (personal communication; see also Rößner, [2012]): the morphological characters sometimes show tendencies to overlap, however, this is never the case with all characters in a single specimen. Thus, if all characters are taken into consideration the misidentification of a specimen is practically impossible. This may require some experience but this is not unusual in entomology. Actually, there is no need to use a chromosomally determined specimen for a neotype. Chromosomally defined specimens are available only from a few localities (see Wilson, 2001) which are different from the primary type localities (Sweden and Germany; see Angus et al. BZN 69: 29) of *A. fimetarius*. This is why I prefer to use morphologically determined specimens for neotype designations. In this case the neotype of *S. fimetarius* can be chosen from the remaining paralectotypes according to Recommendation 75A of the Code.

Three surviving paralectotypes are stored in the Linnean Collection under the numbers LIN 3382, LIN 3383 and LIN 3386. Photographs of these specimens can be found online (Linnean Society, 2012). All belong to the species with red elytra. LIN 3382 is additionally labelled *A. fimetarius* by Wilson (meaning the species with yellowish-red elytra), although Angus et al. (BZN 69: 31) corrected this misidentification after the specimen was cleaned. LIN 3383 bears no other label. LIN 3386 bears

no paralectotype label, but a label ‘*Aphodius pedellus* (DeGeer), C.J. Wilson det. 2001’ (meaning the species with red elytra). This is why we can be sure that this paralectotype is the ‘true’ *S. fimetarius*, the species with the red elytra.

2.2 Neotype designation for *A. cardinalis*

With respect to the yellowish-red species I find four taxa have been described which might be considered to fit the characters of this species: (a) *Scarabaeus bicolor* Geoffroy in Fourcroy, 1785 (p. 9) which is, however, a primary junior homonym of *Scarabaeus bicolor* Fabricius 1775 (p. 15) and thus permanently invalid; (b) *Aphodius nodifrons* Randall, 1838 (p. 20) is usually treated as a junior subjective synonym of *A. fimetarius*. It has been described from Maine (USA) and has ‘bright reddish’ elytra. According to Angus et al. (BZN 69: 30–31), both the species with red elytra and the one with yellowish-red elytra occur in North America. Thus the possibility cannot be excluded that Randall’s species is the one with yellowish-red elytra. Nothing is known to me about the syntypes studied by Randall (M. Dellacasa, 1988, p. 169; Horn et al., 1990 do not list the name of Randall’s taxon). A possible source for the whereabouts of Randall’s types might be Sprague (1871); however, I have not been able to find this paper. On the other hand, according to Sprague (1875, p. 374), Randall’s collection must be considered lost. Austin (in Sprague, 1875, p. 383) synonymised the taxon with *A. fimetarius*; (c) *Aphodius fimetarius* var. *subluteus* Mulsant, 1842 (p. 187) has been described only with the words ‘élytres d’un jaune rouge’ (elytra reddish-yellow). The type locality was not given explicitly, but according to the title of the work this is presumably France. M. Dellacasa (1988, p. 204) gives ‘?Algeria’, possibly because Algeria in Mulsant’s time was considered to be part of France. The name *subluteus* is available as a species group name (Article 45.6.4). According to Paulian (1944) Mulsant’s type material—often said to be stored in the ‘Collège Sainte-Marie de Saint-Chamond (Loire)’—must be considered lost with respect to *subluteus*; (d) *Aphodius cardinalis* Reitter, 1892 (p. 185) was described in detail as distinct from *A. fimetarius* (the red species) in a key to species. The description and the distribution provided strongly suggest that this is the species with the yellowish-red elytra. Reitter (1892, p. 186) gave Syria, Algeria and Andalusia (Spain) as the type locality of *A. cardinalis* and added ‘gemein’ (= common) for Syria. Thus, this author must have had several specimens at his disposal, these all being syntypes. According to Horn et al. (1990, p. 323) parts of the Reitter collection, which might have included SCARABAEIDAE, came to the Hungarian Natural History Museum, Budapest (HNHM), and eventually via Emmerich Reitter (son of Edmund) to the National Museum Prague. The answers to the enquiries made by E. Rößner to both museums (and also to the Museum für Naturkunde Berlin and the Zoologische Staatssammlung München) were, however, negative, and thus it must be assumed that all syntypes of *A. cardinalis* are lost (personal communication from E. Rößner).

The description of *A. cardinalis* is the most precise and the one which fits best the characters of the species with yellowish-red elytra, and thus this taxon is preferred for the neotype designation proposed below. The possible two senior subjective synonyms *A. nodifrons* and *A. subluteus*, however, have priority and thus must be suppressed.

Accordingly I hereby designate as neotype for the nominal species *cardinalis* Reitter, 1892 (as published in the binomen *Aphodius cardinalis*) the following male

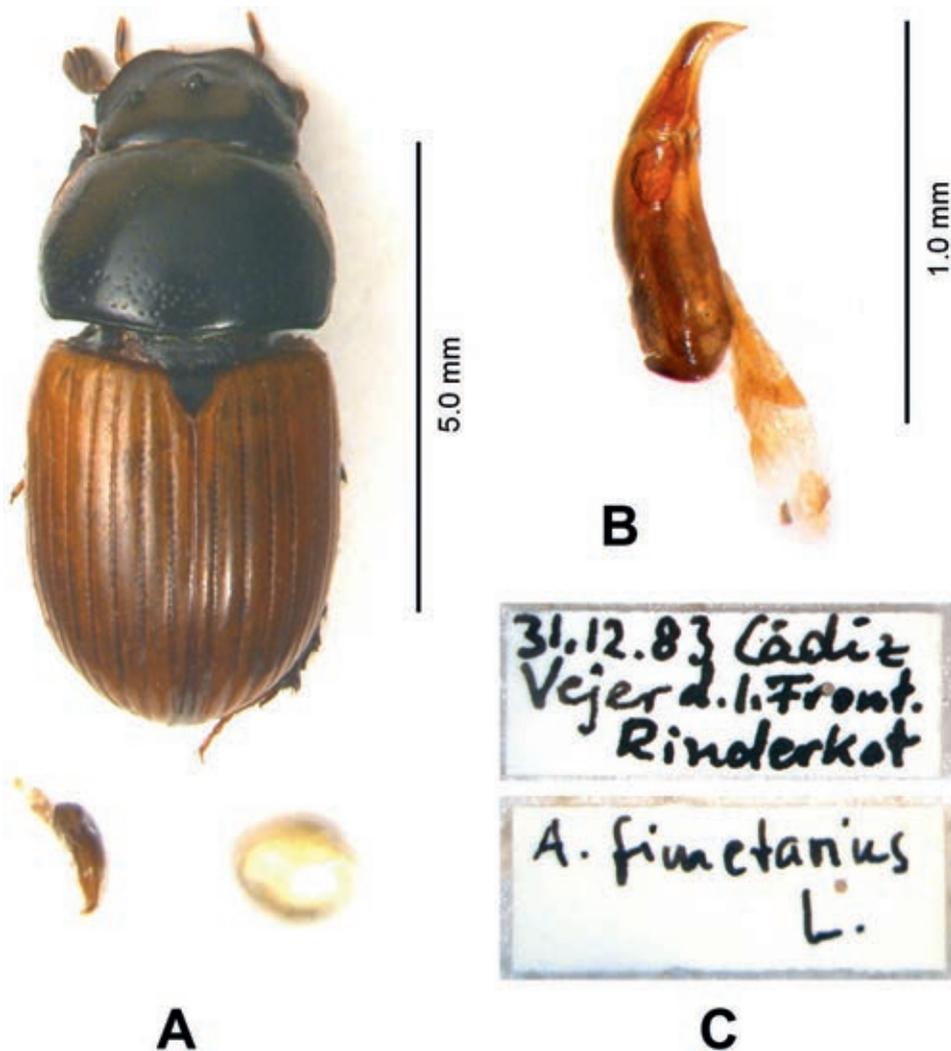


Fig. 1. *Aphodius cardinalis* Reitter, 1892, proposed neotype: A, habitus; B, parameres in lateral view; C, labels.

specimen: '31.12.[19]83 Cádiz, Vejer d. l. Front. [= Vejer de la Frontera], Rinderkot [= cowpat]' (handwriting Fery); on reverse 'Fery leg.' (stamp); 'A. fimetarius L.' (handwriting Fery); a rectangular red neotype label will be added. The specimen is glued on a card using the water-soluble gum Methylan. The aedeagus is glued behind the specimen. The length of the specimen is 7.2 mm, the maximum width 3.3 mm (Fig. 1). The specimen shows all morphological characters given by Wilson (2001, in part), Whitehead (2006) and Angus et al. (BZN 69: 33) for their *A. fimetarius*, i.e. the species with yellowish-red elytra. The locus typicus of *A. cardinalis* will become: Spain, Cádiz province (Andalusia), SSE Vejer de la Frontera, NW Barbate, co-ordinates ca. 36.20N 5.90W (decimal notation). The specimen is stored in the collection Hans Fery in the Zoologische Staatssammlung München, Germany.

This neotype is necessary to clarify the taxonomic status of the nominal taxon *A. cardinalis* and its type locality (Article 75.3) and to fix a name-bearing specimen for the species with the yellowish-red elytra which Angus et al. call *A. fimetarius*. The characters which differentiate *A. cardinalis* from other taxa are given in the original description and in Whitehead (2006) under the name *A. fimetarius*.

3. Application to the International Commission on Zoological Nomenclature

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 as neotype the specimen LIN 3386 in the Linnean Collection at Burlington House, London; the specimen is labelled ‘*Aphodius pedellus* (DeGeer), C.J. Wilson det. 2001’;
- (2) to use its plenary power to suppress the following names for the purposes of the Principle of Priority, but not for those of the Principle of Homonymy:
 - (a) *subluteus* Mulsant, 1842, as published as *Aphodius fimetarius* var. *subluteus*;
 - (b) *nodifrons* Randall, 1838, as published in the binomen *Aphodius nodifrons*;
- (3) to place on the Official List of Specific Names in Zoology the names:
 - (a) *fimetarius* Linnaeus, 1758, as published in the binomen *Scarabaeus fimetarius*, and as defined by the neotype designated in (1) above;
 - (b) *cardinalis* Reitter, 1892, as published in the binomen *Aphodius cardinalis*, and as defined by the neotype designated herein;
- (4) to place on the Official Index of Rejected and Invalid Specific Names in Zoology the following names:
 - (a) *subluteus* Mulsant, 1842, as published as *Aphodius fimetarius* var. *subluteus* and as suppressed in (2)(a) above;
 - (b) *nodifrons* Randall, 1838, as published in the binomen *Aphodius nodifrons* and as suppressed in (2)(b) above.

A summary of the various usages of the names in question is given in Table 1.

4. Advantages of the procedures proposed here

- (a) The stability of the nomenclature is not threatened, because *A. fimetarius* is understood as it essentially has been understood for the last 250 years.
- (b) The most well-known species of the genus, the one with the red elytra, still has the name *Aphodius fimetarius*.
- (c) The species with the yellowish-red elytra takes the name *A. cardinalis*, under which it was best described.
- (d) Possible senior synonyms of *A. cardinalis* are suppressed.

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The authors of Case 3579 try to find a solution for the nomenclatural problem caused by the choice of an *Aphodius foetens* (Fabricius, 1787) as lectotype for *Scarabaeus fimetarius* Linnaeus, 1758 by Wilson (2001). In this work Wilson demonstrated that the taxon which so far had been treated as *Aphodius fimetarius* (Linnaeus, 1758) consists in reality of two different species. After the publication of Wilson's paper, the *Aphodius* community was not really sure about how to identify the two species, because Wilson described in detail the chromosomal differences but gave external morphological characters which are difficult to observe and can not be verified unambiguously in all specimens. That is why some authors after 2001 interpreted Wilson's results to mean exactly the opposite (e.g. Dellacasa & Dellacasa, 2006). Other authors hesitated to follow Wilson's results (e.g. Gordon & Skelley, 2007).

One of us (E. Rößner) studied about 4500 specimens of both taxa from large parts of Europe, northern Africa, Middle Asia and Himalaya (a few also from Australia and USA) and came to the following conclusions:

- All specimens can be identified safely if all characters are given enough attention (colour of elytra, shape of elytral interstices, reticulation of elytral apex, shape and punctuation of head and pronotum, and shape of male parameres in lateral view).
- One of the species has a more northern distribution: Europe, most parts of Palearctic Asia (e.g. almost entire Asian Russia), including the Himalaya; in

America it is known from Alaska, Canada and mostly from the more northern states of the USA (including, however, Colorado and even Texas).

- The other species has a more southern distribution: southern Europe, parts of central Europe (where its range overlaps with that of the other species), Asia minor, Near East, parts of the Middle East; in America it is known only in more southern states of the USA (overlapping with the range of the other species in Colorado and Texas); introduced to Australia, where it is only known in the southern states.
- The more northern species has distinctly red, often dark red elytra, the more southern one lighter and more yellowish red elytra. In about 90% of all cases the species can be safely distinguished by the elytral colour alone. There is only a small overlap, but the southern species never has dark red elytra and the northern species never has light yellowish red elytra.

Wilson (2001) did not discuss at all the varying colours of the elytra of the species studied. In addition, she selected as lectotype a specimen of another species which has really distinctly red elytra. Thus, we assume that she believed that both of her taxa have red elytra. If Wilson had studied more specimens and realised that both species can be separated relatively safely by the elytral colour, then she possibly would have proceeded in exactly the opposite way and used other names for both species (and selected other lectotypes).

On the one hand, we support fully the essential result of Wilson's studies: the 'old' *A. fimetarius* consists of two different species. On the other hand, we strongly reject the intention of Wilson (2001) and that of the applicants to give the more southern species the name *A. fimetarius* and the more northern species the name *Aphodius pedellus* (De Geer, 1774).

The fact that Wilson (2001) has selected for *Scarabaeus fimetarius* a lectotype which does not belong to that species offers the opportunity to designate a new name-bearing type and, additionally, to find a satisfying solution for the confusion which came up over the last decade.

The solution intended by the application of Angus et al. (BZN 69: 29–36) is in strong contrast to the usage of the name *Aphodius fimetarius* not only over the last 250 years, but also over the last decade. As far as we know, almost all *Aphodius* specialists still treat *Aphodius fimetarius* as a species with red elytra. The authors named in the application as accepting the use of the names *A. fimetarius* and *A. pedellus* in the sense of Wilson (2001) are not at all representative of the vast majority of *Aphodius* specialists. If the Commission were to follow the suggestions of the applicants, the name *A. fimetarius* would apply to a species with yellowish red elytra. This proceeding would cause heavy confusion and considerably threaten nomenclatural stability.

We feel strongly that the neotype designation proposed by Angus et al. should not be approved by the Commission. If a neotype is to be proposed it should be a specimen with really red elytra and other characters which fit those given in Wilson (2001) for *A. pedellus* (sic!), and preferably it should be one of the remaining paralectotypes in the collection of Linné.

The advantages of these suggestions are:

- The essential result of Wilson's (2001) work (the existence of two species) is taken into account in an acceptable way.

- *Aphodius fimetarius* will remain the taxon it has been for the last 250 years since its description, i.e., a species with red elytra.
- *Aphodius pedellus* will retain the status it has had since shortly after its description – i.e. a junior synonym of *A. fimetarius*.
- In the future, the more southern species (with yellowish red elytra) can be given an available name, which should be selected from the known synonyms of *A. fimetarius* sensu lato (e.g. *Aphodius nodifrons* Randall, 1838, *Aphodius subluteus* Mulsant, 1842, *Aphodius cardinalis* Reitter, 1892, etc.).
- Considerable confusion among dung beetle specialists will be avoided and, thus, the stability of nomenclature will not be threatened at all.

(3) Tomas Roslin

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I wholeheartedly support the course of action proposed in this case. It is necessary to avoid the application of the name *fimetarius* Linnaeus to *A. foetens* (Fabricius), as this would result in hopeless confusion for anyone working on these key species from an ecological perspective. As far as I understand, the course of action proposed by Angus et al. is in accordance with the Code and legitimate and would avoid unnecessary name changes.

That *fimetarius* and *pedellus* are separate species is abundantly clear from research on DNA (CO1 sequencing) carried out in my group, where the two taxa form distinct clusters in perfect concordance with karyotype information. Hence, designating as neotype a well-resolved specimen of an unambiguous taxon would be effective not only in avoiding an unnecessary name change, but also in resolving a tricky pair of cryptic species.

(4) Alexey Solodovnikov

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Having read the case put forward by Angus et al (Case 3579) I support all of the authors' proposals. Given the subtle differences between the two species *Aphodius fimetarius* (Linnaeus) and *A. pedellus* (De Geer) and the unfortunate designation of a specimen of *A. foetens* (Fabricius) as a lectotype for *A. fimetarius* (Linnaeus), the setting aside of that lectotype and the designation of a carefully examined, chromosomally verified and well labelled specimen as a neotype of *Aphodius fimetarius* (Linnaeus) would eliminate a dangerous confusion. The proposed action seems reasonable because it fixes the identity of both species as they have been used in most of the literature. Given that both species seem rather common and are frequently cited in various ecological studies, any confusion between them is highly undesirable.

(5) Maxwell V. L. Barclay

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I am writing to register my full support for the proposals put forward by Angus, Wilson & Krell in Case 3579, and to offer further clarification and justification for this opinion.

Aphodius fimetarius (Linnaeus, 1758) sensu lato is a common and familiar dung beetle distributed in Europe, North Africa and Western Asia and introduced into Australia and the Americas. From the distinctive red elytra and black abdomen it is readily identifiable in the field. It is also the type species of *Aphodius*, one of the largest of all animal genera.

Wilson (2001), at that time a student of Robert Angus, recognised from study of chromosomes that *Aphodius fimetarius* sensu lato actually consists of two species, both common in southern Britain. Molecular evidence supports this split (J. Maté, pers. comm. 2005; T. Roslin pers. comm., 2011). In many, but not all, cases, the two species can be distinguished using morphological characters. I will refer to these two species as *fimetarius* #1 and *fimetarius* #2.

Linnaeus's original description of *fimetarius* is sufficiently general to encompass both species, as in his stated type locality 'Europe'. The type material on which the name was based almost certainly includes both *fimetarius* #1 and *fimetarius* #2 (the uncertainty because the description was partly based on dispersed or referred material which cannot be found, and because not all surviving specimens can be confidently distinguished on morphology, and are too old for chromosomal or molecular work). The next available name after *fimetarius* Linnaeus, 1758 is *pedellus* De Geer, 1774, and the type of *pedellus* is one of those specimens that can be confidently assigned to one of the species based on morphology, and corresponds clearly to Angus et al.'s *fimetarius* #2. Since the name *pedellus* De Geer could be linked to *fimetarius* #2, Wilson (2001) aimed to designate as lectotype of *fimetarius* one of the Linnaean syntypes that corresponded to *fimetarius* #1, so the 'first' species would be *A. fimetarius* (Linnaeus, 1758) and the 'second' species *A. pedellus* (De Geer).

Unfortunately, the Linnaean type series includes a third species, the third being *Aphodius foetens* (Fabricius, 1787), a superficially similar species with red elytra but with the abdomen also red (not black). Not expecting a third species, Wilson did not examine the undersides of the beetles while selecting her lectotype and since the upperside of *foetens* corresponds more closely to *fimetarius* #1 than to *fimetarius* #2, she regrettably selected the *foetens* specimen as lectotype of *fimetarius*. If this was allowed to stand it would cause nomenclatural chaos, because it would mean that *A. fimetarius* (Linnaeus) would be a senior synonym and thus the valid name of the beetle universally called *A. foetens* (Fabricius), a well known species of quite different ecology and distribution. This lectotype is therefore a major threat to stability, and needs urgently to be set aside.

To date, in post 2001 publications, the community has used *fimetarius* and *pedellus* as intended by Wilson (2001) unaware of her incorrect choice of lectotype, which was only recently noticed. Nobody has yet used the name *fimetarius* for the species universally known as *foetens*; it would be most desirable to resolve this situation before someone does use it this way.

If the lectotype is set aside as requested by Angus et al., a neotype will be required (since paralectotypes have no name-bearing status). While original material should ideally be preferred for a neotype, the uncertainty caused by the broad type locality 'Europe', the difficulty of reliably identifying old specimens, and the risk of new evidence emerging and altering morphology-based concepts in this group, would undermine the stability of any such neotype into the future. Angus et al. propose to circumvent these uncertainties by choosing a well localised modern neotype that has been verified based on chromosomes, and I strongly support their choice.

The proposal of Angus et al. supports the original intention of Wilson (2001) to refer to the two species formerly confused under *fimetarius* as *Aphodius fimetarius* (Linnaeus, 1758) and *A. pedellus* (De Geer, 1774). This system has been adopted by the vast majority of post-2001 workers that have acknowledged that two species are present.

As more data have become available on the distribution of the two species, which are sympatric and both common in England where the original study took place, it has become clear that to the south and west of Europe, *fimetarius* sensu stricto (sensu Angus et al.) is dominant, and to the north and east *pedellus* prevails. The fact that the two species are not fully sympatric throughout their range creates the possibility of conflict between local agendas. Since both populations were confused until 2001 under the name '*fimetarius*', it is likely that entomologists from the regions where one species dominates would prefer for 'their' species to retain the accustomed name '*fimetarius*' and for the 'other one' to have a different name. Inevitably, since it is not possible to call both species '*fimetarius*', one of the two groups of regional workers will ultimately be disappointed. It is fortuitous that the discoverers came from a country where both species occur, and so made the decision based on objective criteria. Their decision has been widely adopted in the subsequent 11 years, as shown by the list of references in their original application, and it would be very unfortunate for stability of the names if having started on this path any change was now made to the concepts of *pedellus* and *fimetarius* that Wilson (2001) established.

I think the case put forward by Angus, Wilson & Krell is very succinct and well argued, explaining the problems and setting out an admirable and satisfactory solution to them. I hope very much, in the interest of stability, that the Commission will vote in favour of the case.

Comment on the proposed designation of *Anaphes fuscipennis* Haliday, 1833 as the type species of *Anaphes* Haliday, 1833 (Insecta, Hymenoptera)

(Case 3554; see BZN 68: 122–126)

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With regard to the application of Huber et al., I agree that it is necessary to designate *Anaphes fuscipennis* Haliday, 1833 as the type species of *Anaphes* Haliday, 1833. This would be the best solution to avoid various nomenclatural changes that would be otherwise necessary.