

## A DUMP Guide to Dung beetles - Key to the species *Aphodius*

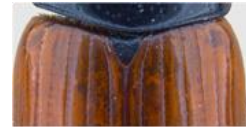


This key is based on Jessop (1986) with added images, corrections and updates in nomenclature and taxonomy.

1. - Scutellum long, one third to one fifth length of elytral suture ..... 2
- Scutellum short, one eighth to one tenth length of elytral suture ..... 5



Long



Short

2. (1) - Small, length less than 6 mm. Elytra black with posterior third red and often an ill-defined red spot at the shoulder ..... *haemorrhoidalis*



- Large, length greater than 6 mm, colour not as above ..... 3

3. (2) - Pronotum evenly covered with fine punctures. Elytra dark yellow to brown with the first interval darker. Elytral intervals finely punctured. Head and pronotum black. Length 6-9 mm ..... *erraticus*



- Pronotum with scattered coarse punctures. Elytral intervals without punctures, not as above ..... 4

4. (3) - Broad, rounded body width 4-6 mm. Elytral striae (lines) narrow, about one tenth as wide as intervals. Elytral intervals broad and not strongly convex. Uniformly shining black or rarely dark red. Length 6-12 mm but not usually less than 9 mm ..... *fossor*



- Narrow, width 2 – 3 mm. Elytral striae wide, as wide as intervals. Elytral intervals strongly convex. Head and pronotum black, elytra dark red to black. Length 6-8 mm ..... **subterraneus**

NOTE: This species is very rare and has not been recorded for over 50 years.



- 5. (1) - Large, length 9-13mm. Pronotum with few scattered coarse punctures as well as regularly distributed fine punctures. Colour dark red to black, head and pronotum slightly darker than elytra. Front of head (clypeus) semi-circular ..... **rufipes**



- Smaller, length 2-9 mm. If as large as 9 mm (some specimens of *luridus* and *depressus*) then pronotum evenly punctate and uniformly black or elytra brown with dark markings ..... 6

- 6. (5) - Head strongly convex with a transverse ridge in the anterior third, without tubercles (bumps). Anterior three-quarters of the head dull and without punctures, posterior one-quarter with a shining, finely punctured band. Front of head black, often with a narrow red margin, antennae yellow. Length 3-5 mm ..... **brevis**

NOTE: This species is very rare and only found in Ainsdale, Merseyside on sand dunes. If this is where you found it, please retain a voucher specimen for an expert to check.



- Not with the above combination of characters ..... 7

- 7. (6) - 9<sup>th</sup> elytral interval ridged and joining with the 7<sup>th</sup> interval posteriorly. Head and pronotum black, elytra dark red to black. Length 2-4 mm ..... **arenarius**



- 9<sup>th</sup> elytral interval not ridged, even if it joins with the 7<sup>th</sup> ..... 8

8. (7) - Colour black with two sharply defined red spots on each elytra, a large spot near the apex and a much smaller one near the shoulder. Length 3-4 mm ..... ***quadrимaculatus***



- Elytra without two red spots each ..... 9

9. (8) - First tarsomere of hind leg widened apically. Head and pronotum black, elytra dark red to black. Length 3-5 mm ..... ***coenosus***



- First tarsomere of hind leg not widened apically ..... 10



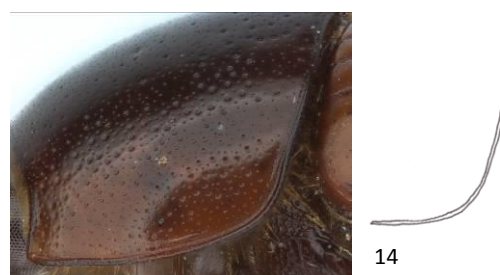
10. (9) - Surface of pronotum covered with short backwardly facing pale hairs. Dark brown to black. Length 3-4 mm ..... ***scrofa***

NOTE: This species is very rare in the UK, with recent records from the Channel Islands only. If your beetle looks similar, it could be *Euheptaulacus villosus*, *E. sus* or *Heptaulacus testudinarius*



- Surface of pronotum without hairs (a fringe of hairs may be present along the lateral sides) ..... 11

11. (10) - Posterolateral angles of pronotum sinuous (wavy, convoluted). Head black, pronotum black with yellow edges anteriorly, elytra orange to reddish brown without dark markings ..... 12
- Posterolateral angles of pronotum not curved or if slightly curved colour not as above ..... 14



12. (11) - Abdominal sternites reddish yellow to light brown. Lateral raised border of pronotum continuing to the anterior margin. Length 6-9 mm ..... ***foetens***

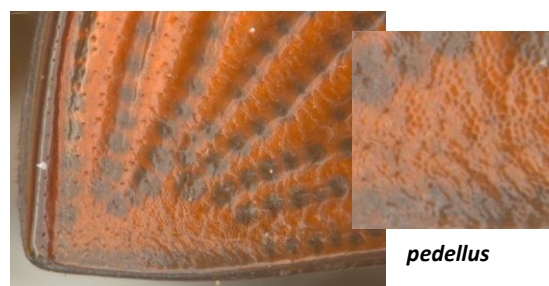


- Abdominal sternites black or dark down. Lateral raised border of pronotum not continuing to the anterior margin ..... 13



13. (12) - Tip of elytra with dense, fine micro punctures and an overall smooth appearance. Length 5-8 mm ..... ***fimetarius***
- Tip of elytra with fine and coarse micro punctures and an overall rough appearance. Length 5-8 mm ..... ***pedellus***

Note: *A. pedellus* has been split from *A. fimetarius* based on chromosomal analysis and morphological characters (see Miraldo *et al.*, 2014). The above character also works well.



14. (11) - Elytra yellow or light red, much lighter than head and pronotum, often with dark spots or with sutural interval darker than the rest of elytra (best seen with the naked eye) ..... 15
- Elytra dark red or black, not or only slightly lighter than head and pronotum (if elytra black with a red streak see couplet 40) ..... 33

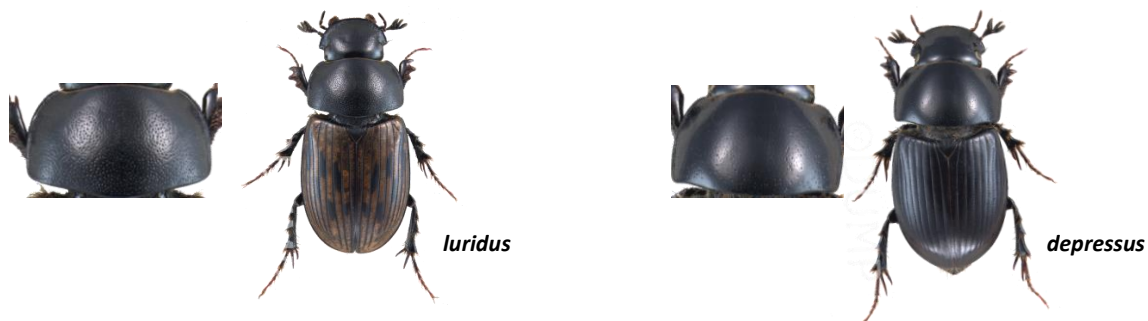
15. (14) - Pronotum all the same colour - not at all lighter laterally ..... 16  
 - Pronotum lighter laterally ..... 18
16. (15) - Sides of head sinuous, scarcely angled in front of the eye. Punctures on pronotum irregularly scattered. Abdominal sternites black. Elytra lacking discrete markings, colour light yellow brown, often with darker patches at the sides but rare all black forms exist. Length 5-8 mm ..... **foetidus**



- Front of head (clypeus) semi-circular and sides of head strongly angled in front of the eye. Punctures on pronotum evenly distributed ..... 17



17. (16) - Disc of pronotum finely and evenly punctured. Elytra red or black without a pattern, apical third with no hairs. 2<sup>nd</sup> and 4<sup>th</sup> intervals broader than 1<sup>st</sup> and 3<sup>rd</sup>, shining. Length 6-9 mm ..... **depressus**  
 - Disc of pronotum with both coarse and fine punctures. Elytra with discrete dark markings (rarely all black), apical third with sparse hairs, intervals matt and all the same width. Length 6-9 mm ..... **luridus**



18. (15) - Elytra with large patches of darker colour or first interval darker than remaining intervals. This often gives the appearance of a V shape lighter area pointing towards the posterior ..... 19



- Elytra with dark colour present as discrete dashes on elytral intervals. First interval not darker than remaining intervals ..... 27

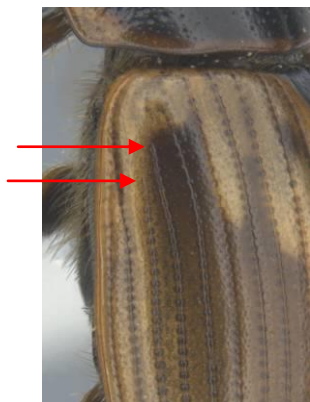




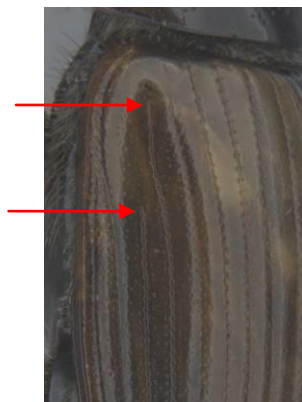
19. (18) - Elytra hairy, at least in the posterior half ..... 20  
 - Elytra without hairs ..... 22

**Note:** This couplet from Jessop should be used with caution. It works well for males but not females as females have micro hairs only. Careful examination is required.

20. (19) - Elytra with 8<sup>th</sup> stria continuing almost to the base where it almost joins the 7<sup>th</sup> stria as a series of punctures ..... 21  
 - Elytra with 8<sup>th</sup> stria ending abruptly, at least 1.5 scutellum lengths from the base with a few punctures towards the base only ..... 23



21



23

21. (20) - Posterior margin of pronotum yellow. Length 4-6 mm ..... *sphacelatus*  
 - Posterior margin of pronotum black. Length 4-6 mm ..... *punctatosulcatus*



*sphacelatus*



*punctatosulcatus*

NOTE: This species is very rare in the UK, with old records from Kent only.

22. (19) - Clypeus with a yellow spot well separated from each side and with fine evenly distributed punctuation. Apical spur of front tibia in male pointed. Length 3-6 mm ..... *consputus*  
 - Clypeus with at most some pale colouration (often reddish), but never with clear yellow patches, punctuation always irregular, with a mixture of large and small punctures. Apical spur of front tibiae truncated in the male, with a tooth on the apex inner margin. Length 4-7 mm ..... *prodromus*



*consputus*



*prodromus*

- 23. (20)** - Elytra mostly yellow-brown, with 1st interval dark thus giving the appearance of a dark band along the elytral suture (often faint). Pronotum with a broad yellow margin at the base and sides. Scutellum constricted in the basal half. Maxillary palps light brown. Length 3-6 mm ..... *lividus*



- Elytra lacking a dark band and without the above combination of characters ..... 24

- 24. (23)** - Legs, abdominal sternites, antennae and maxillary palps black or dark brown although the tip of the palps may be lighter. Head black. Elytra orange yellow with a central well-defined black line. Length 4-5 mm ..... *merdarius*



- Not the above combination of colours - legs, antennae and maxillary palps light brown..... 25

- 25. (24)** - Smaller, length 3-5 mm. Legs, abdominal sternites, antennae and maxillary palps light brown. Distinctive dark central band on elytra. Pronotum with narrow yellow lateral margins ..... *ictericus*



- Larger, length 5-8 mm and not with the above combination of characters ..... 26

- 26. (25)** - Apex of elytra dull, duller than the rest of the elytra and without punctures ..... *sordidus*  
 - Apex of elytra shining and with fine punctures ..... *rufus*



*sordidus*



*rufus*

27. (18) - Elytra with pale hairs, at least in the apical half. Front angles of clypeus with long hairs ..... 28  
 - Elytra lacking hairs. Front angles of clypeus lacking long hairs ..... 29



28



29

28. (27) - Pronotum fringed with long hairs. Elytra with hairs to the base and dark spots well defined, clearly demarcated from the background colour. Length 5-7 mm ..... *contaminatus*  
 - Pronotum not fringed with long hairs. Elytra lacking hairs at the base and dark spots not well defined, poorly demarcated from the background colour. Length 4-7 mm ..... *obliteratus*



*contaminatus*



*obliteratus*

29. (27) - Sides of the head straight. Clypeus with fine punctures and smooth surface, black with yellow patches in front of the eye on both sides. Length 4-6 mm ..... *sticticus*



- Sides of the head project laterally. Clypeus with coarse punctures and a rough surface ..... 30



30. (29) - Colour pattern of elytra comprising of a few poorly defined dark marks, none in the anterior third. Elytral striae with a row of punctures on each side. Pronotum densely covered with coarse punctures. Length 4-6 mm ..... *zenkeri*





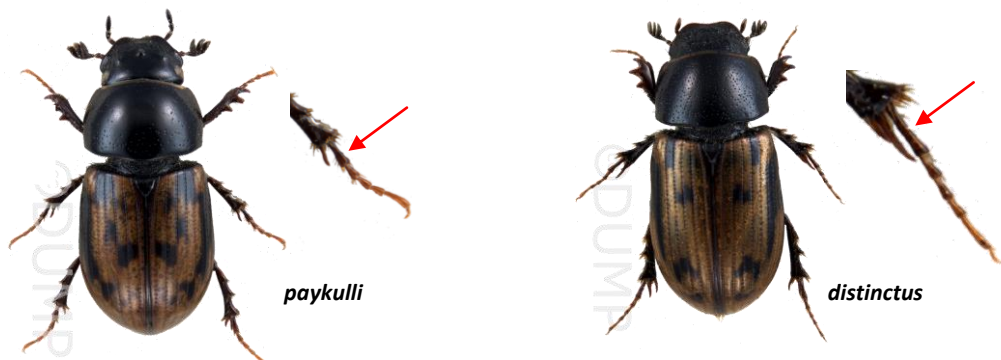
- Colour pattern of elytra with dark markings in the anterior third. Elytral striae without a row of punctures on each side. Pronotum less densely covered with punctures ..... 31

- 31. (30)** - Clypeus with a red patch in front of the eye on both sides. Yellow lateral margins on pronotum complete. Elytra with a characteristic pattern of rectangular marks. Length 4-5 mm ..... *conspurcatus*



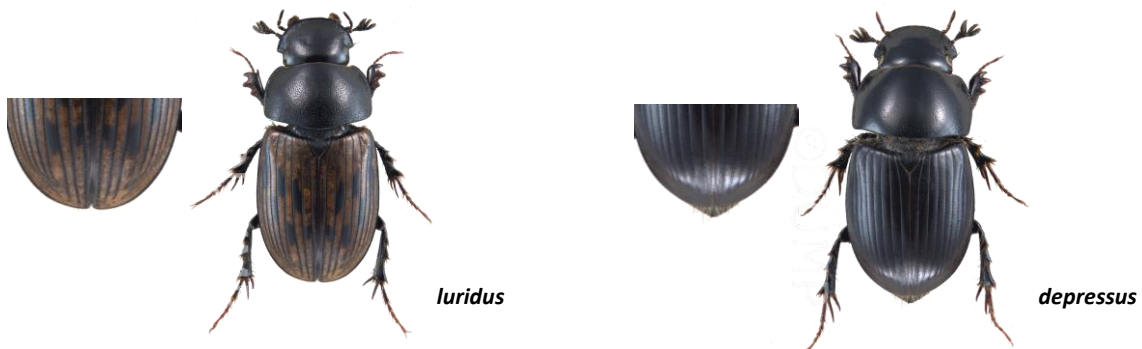
- Clypeus black, lacking a red patch in front of the eyes. Yellow lateral margins on pronotum restricted to the anterolateral margin ..... 32

- 32. (31)** - Dark pattern on elytra extends to the base of 4<sup>th</sup> and 5<sup>th</sup> intervals. Basal tarsomere of middle leg shorter, as long as the next two segments together. Length 3-5 mm..... *paykulli*  
 - Dark pattern on elytra includes base of 5<sup>th</sup> interval only and pattern generally less extensive. Basal tarsomere of middle leg longer, as long as the next three segments together. Length 3-6 mm ..... *distinctus*

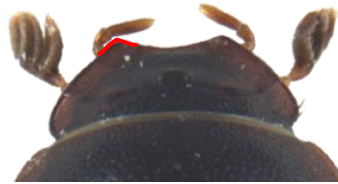


- 33. (14)** - Large size, length 6-9 mm. Sides of head angled in front of the eyes, clypeus semi-circular ..... 34  
 - Smaller, if as long as 6 mm then either sides of the head not angled in front of the eyes and clypeus sinuous ..... 35

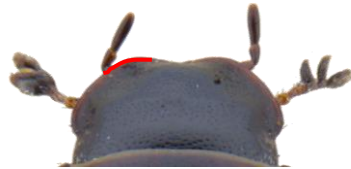
- 34. (33)** - Apical third of elytra with sparse hairs, intervals matt (see also couplet 17) ..... *luridus*  
 - Apical third of elytra with no hairs, intervals shining (see also couplet 17) ..... *depressus*



35. (33) - Clypeus with obtuse anterior angles ..... 36



- Clypeus with anterior angles not obtuse ..... 37



36. (35) - Pronotum black, lighter anteriorly and laterally and densely covered with coarse punctures. Elytra dark red, striae with a row of punctures on each side. Length 4-6 mm ..... *zenkeri*

- Head, pronotum and elytra shining black. Pronotum often with faint red anterolateral markings. Elytral intervals with fine irregularly scattered punctures. Length 4-6 mm ..... *nemoralis*



*zenkeri*



*nemoralis*

37. (35) - Elytral striae broad, often as broad as intervals. Intervals concave, bounded laterally on each side by a carina (ridge). Length 4-6 mm ..... *porcus*



- Elytral striae narrow, one tenth to one fifth as broad as intervals. Intervals not concave or bounded laterally by a ridge ..... 38

- 38.** (37) - Apex of elytra with a raised margin about twice as wide as 2<sup>nd</sup> elytral stria near its apex. Head and pronotum black, pronotum finely and sparsely punctured. Elytra dark red or black.  
Length 3-5 mm ..... *granarius*

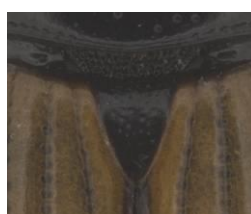


- Apex of elytra with a raised margin narrow, narrower than 2<sup>nd</sup> elytral stria near its apex ..... 39

- 39.** (38) - Scutellum constricted in the basal half ..... 40  
- Scutellum triangular, regularly narrowed from base to apex ..... 41

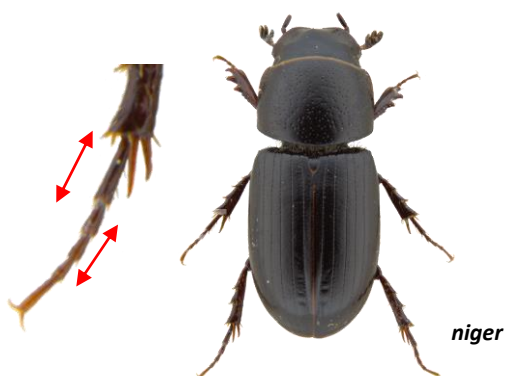


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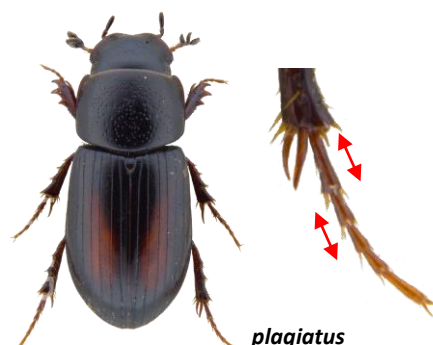


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- 40.** (39) - First tarsomere on hind legs long, as long as the next three segments together. Elytral striae with strong punctures. Length 4-5 mm ..... *niger*  
- First tarsomere on hind legs short, as long as the next two segments together. Elytral striae less strongly punctured. Length 4-5 mm ..... *plagiatus*



*niger*



*plagiatus*

- 41.** (39) - Apex of elytra with a matt surface. Striae strongly shining, more so than the intervals, at least in the apical third ..... 42  
- Apex of elytra a shining surface. Striae not shining more than the intervals ..... 43
- 42.** (41) - Elytra matt black or rarely dark red. Pronotum black, more shining than elytra. Broader, width 2-2.5 mm. Length 4-6 mm ..... *ater*

- Elytra dark red with ill-defined brighter red marks near the apex and base. Pronotum black with red anterolateral angles. Narrower, width 1.5 mm. Length 3-5 mm ..... *borealis*



*ater*



*borealis*

- 43.** (41) - Clypeus with a transverse ridge and obtuse anterior angles. Head, pronotum and elytra shining black, pronotum often with faint red anterolateral markings. Length 4-5 mm ..... *nemoralis*



- Clypeus usually without a transverse ridge. Anterior margin of the head broadly rounded, lacking distinct angles ..... 44

- 44.** (43) - Antennae and maxillary palps light brown. Head and pronotum dark brown. Length 5-7 mm (see also couplet 26) ..... *rufus*



- Antennae and maxillary palps dark brown (antennal club sometimes black) ..... 45

- 45.** (44) - First segment of hind tarsi as long as segments two and three together ..... 46
- First segment of hind tarsi longer, about 1.3 times segments two and three together ..... 47

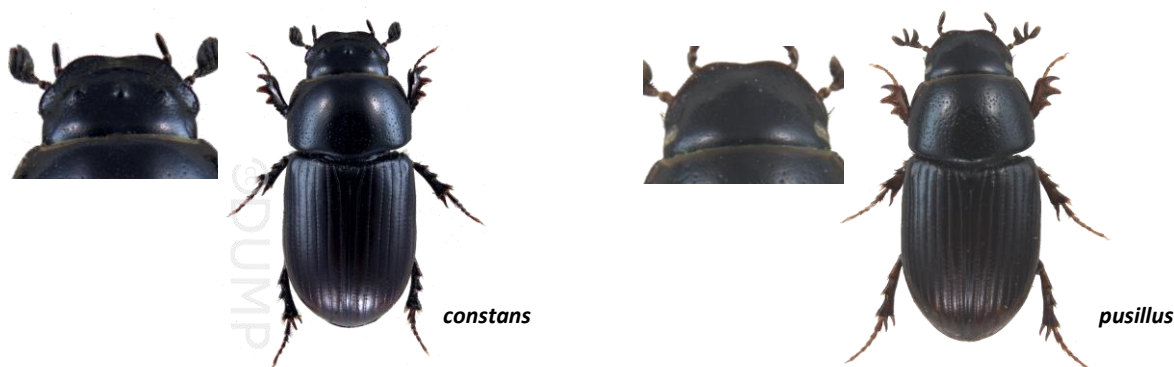


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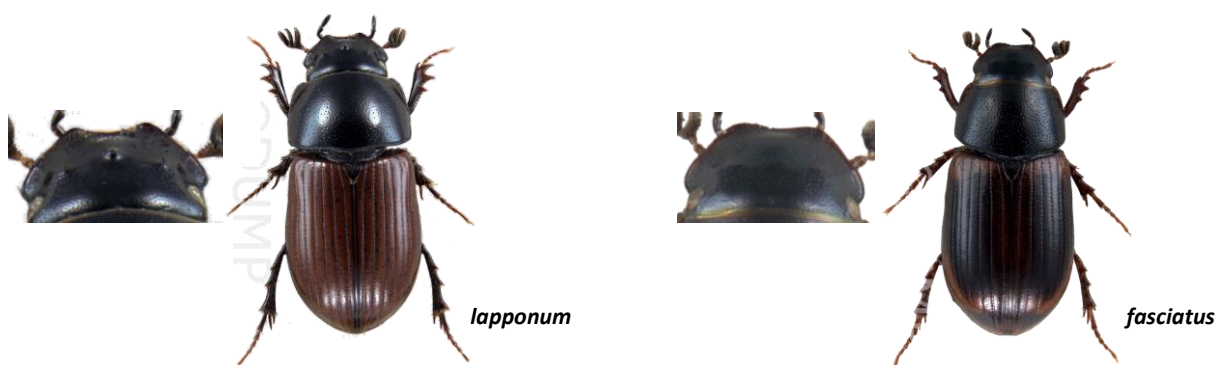


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46. (45) - Larger, length 5-6 mm. Elytral striae narrow. Head with dorsal tubercles. Pronotum black, rarely with faint red markings antereolaterally. Elytra black to dark red, rarely paler apically ..... ***constans***  
 - Smaller, length 3-5 mm. Elytral striae broad. Head without three dorsal tubercles. Pronotum black with faint red markings antereolaterally. Elytra black to dark red but usually paler apically ..... ***pusillus***



47. (45) - Head black, with three dorsal tubercles (bumps). Pronotum black, sometimes with anterolateral yellow markings. Elytra dark red to black. Length 4-6 mm ..... ***lapponum***  
 - Head black, lacking dorsal tubercles and distinctly angular. Pronotum black with red markings anterolaterally. Elytra dark red with a slightly darker patch in the middle, rarely with more extensive and much darker red to black patches. Length 3-5 mm ..... ***fasciatus***



## References

Jessop, L. 1986. *Dung beetles and chafers – Coleoptera: Scarabaeoidea*. Handbooks for the Identification of British Insects, 5(11) Royal Entomological Society of London.

Miraldo, A., Krell, F.T., Smalen, M., Angus, R.B., & Roslin, T. 2014. Making the cryptic visible—resolving the species complex of *Aphodius fimetarius* (Linnaeus) and *Aphodius pedellus* (de Geer) (Coleoptera: Scarabaeidae) by three complementary methods. *Systematic Entomology*, 39(3) 531-547.

## Acknowledgements

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