Case 3745 – *Heteronychus* Dejean, 1833 (Coleoptera: Scarabaeidae: Dynastinae): proposed conservation of usage by conserving *Heteronychus cricetus* Hausmann, 1807 as the type species

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**Abstract.** The purpose of this application, under Articles 70.2 and 80 of the Code, is to conserve the current and universal usage of the genus name *Heteronychus* Dejean, 1833 for a genus of rhinoceros beetles (Scarabaeidae: Dynastinae). Several species in this genus are important pests in Africa, Asia and Australia. The correct, long-overlooked type species is *Geotrupes syrichtus* Fabricius, 1775, designated by Duponchel (1845), is currently recognized as a valid species and the type species of *Syrictes* Prell, 1935, a genus placed in a different tribe of Dynastinae. Acceptance of this type species would transfer a widely used name from an economically important to a rarely cited genus, and the economically important genus would need to be named by the scarcely used subjective junior synonym *Heteronychidius* Paulian, 1954 with a dubious taxonomic identity. To conserve the usage of the widely used name *Heteronychus*, it is proposed that all type fixations for this genus preceding that of *Heteronychus cricetus* Hausmann, 1807 by Krell (2002) be set aside.

**Keywords.** Nomenclature; taxonomy; Scarabaeidae; Dynastinae; *Heteronychus*; *Syrictes*; *Geotrupes syrichtus*; *Heteronychus cricetus*; type species; African black beetle; black sugarcane beetle.

1. Dejean (1833: 152) introduced the name *Heteronychus* by indication, namely a list of five available nominal species: *Scarabaeus aries* Fabricius, 1781, *Geotrupes cricetus* Hausmann, 1807, *Scarabaeus morator* Fabricius, 1798, *Scarabaeus piceus* Fabricius,
1775 and *Scarabaeus syrichtus* Fabricius, 1775. Burmeister (1847: 90) later provided a description for this genus, explicitly referring to Dejean’s name, and included additional species. From this point on, Burmeister had generally been considered the author of *Heteronychus* until Krell (2002: 40) stated the validity of Dejean’s authorship.

2. Desmarest (1860: 110) designated “*Scarabaeus arator; Illig.*” (in the sense of *Scarabaeus arator* Fabricius, 1775 (p. 18); currently in *Heteronychus*, see Landin, 1964) as the type species for *Heteronychus*. Later Arrow (1910: 294) used the same species (as *Geotrupes arator* Fabricius, 1775), with correct authorship, as the type species for *Heteronychus*. This species was included by Burmeister, but not originally by Dejean, hence the designations are invalid. Krell (2002: 40) noted this error and designated *Geotrupes cricetus* Hausmann, 1807 from southern Africa as the type species of *Heteronychus* Dejean, 1833 because this was the only species originally included by Dejean still in this genus. Krell overlooked that Prell (1936: 149) had already designated this nominal species as the type species following the same reasoning. After having stated “*H. cricetus* Hausman” to be the type species of *Heteronychus* Dejean, 1833, and without having studied specimens from Dejean’s collection himself, Prell (1936) claimed that the just designated nominal species was misidentified by Dejean and “*H. cricetus* Dejean 1833 (nec Hausmann 1807)” was identical with *Heteronychus transvaalensis* Périnçuey, 1901, which was undescribed in 1833, rendering Dejean’s genus unavailable. This reasoning is not supported by the current Code. *Heteronychus transvaalensis* is currently a junior synonym of *H. arator* (Fabricius, 1775) (Landin, 1964; Endrödi, 1985). Prell then designated this species (i.e., *H. transvaalensis*) as type species of “*Heteronychus* Burmeister, 1847”. This problematic procedure disqualifies Prell’s (1936) paper as source of an undisputable type species designation. We therefore propose the acceptance of Krell’s (2002) unequivocal designation as valid.

3. During nomenclatural research on genus-group names used by Dejean, Bousquet & Bouchard (2013: 36) discovered that Duponchel (1845) had designated a type species for *Heteronychus* much earlier: *Heteronychus syrichtus* (*Geotrupes syrichtus* Fabricius, 1775). Bousquet & Bouchard’s (2013) discovery was previously published by Löbl & Smetana (2011: 27) and again recently by Bousquet et al. (2016). While Duponchel’s (1845) designation was republished in a second edition of the work (Duponchel, 1868), it had never been adopted by any other author and fell into oblivion. Bousquet & Bouchard (2013), Löbl & Smetana (2011) and Bousquet et al. (2016) suggested to maintain Prell’s (1936) type species designation (*H. cricetus*) until this issue has been resolved by an ICZN Opinion.

4. *Geotrupes syrichtus* Fabricius, 1775 is currently in the genus *Syriectes* Prell, 1936 and is the type species of this genus. *Syriectes* Prell, 1936 contains four species from South and East Africa (Dupuis, 2013) and is undisputedly distinct from *Heteronychus* Dejean, 1833 as the former is in the tribe Phileurini and the latter in Pentodontini (Endrödi, 1995; Krajcik, 2005). The homonymy of *Syriectes* Prell, 1936 and *Syriectes* Jordan & Evermann, 1927 (Pisces: Syngnathidae), also discovered by Bousquet & Bouchard (2013), will be resolved in a separate paper.

5. *Heteronychus* Dejean, 1833 has no objective junior synonym, but a subgenus *Heteronychidius* Paulian, 1954 (type species: *Heteronychus minutus* Burmeister, 1847), originally described as a genus. This name can be considered a subjective synonym although its description contains a character atypical for *Heteronychus*: the missing stridulatory stripes on the propygidium. The name *Heteronychidius* has rarely been used,

6. *Heteronychus* contains 59 valid species-group taxa from Africa, Madagascar, India, and southeast Asia (Krajcik, 2012; *Zoological Record*), including several economically important species: The African black beetle, *Heteronychus arator* (Fabricius, 1775), is a common and widespread polyphagous pest of potato, maize, pineapple, and vegetables in Africa, introduced to New Zealand and Australia (Agnew, 1997: 36; Bell et al., 2011; Abdallah et al., 2016; Wilson et al., 2016), where it became a pest in vineyards (Fisher & Learmonth, 2001); its larvae feed on grass roots and are of concern in pasturelands (King et al. 1981). The black sugarcane beetle, *H. licas* (Klug, 1835), is a sugarcane pest in western, eastern and southern Africa (Cackett, 1992; Elnour et al., 2008) and invaded Mauritius (Prior, 1992). *Heteronychus consimilis* Kolbe, 1900 was reported to be a serious wheat pest in Kenya (Le Pelley & Goddard, 1952). *Heteronychus robustus* Arrow, 1910, *H. sublaevis* Fairmaire, 1891 and *H. annulatus* Bates, 1891 are pest of sugar cane in India (Mukunthan & Nirmala, 2002). Several other species of the genus have been recorded as pests from several crops (e.g., Box, 1953: 13; Heinrichs & Barrion, 2004: 24; Razafindrakoto Raeliarisoa et al., 2010; Chihire et al., 2014). Google Scholar found 2,120 references for *Heteronychus* (18 April 2017).

7. Accepting the valid type species designation of *Geotrupes syrichtus* Fabricius, 1775 for *Heteronychus* would render this genus a senior synonym of *Syrictes* Prell, 1936. While this would resolve the homonymy problem of *Syrictes* (paragraph 4), it would change the concept and even the tribal classification of *Heteronychus*, a very well-known and highly cited genus name in Dynastinae. It also would result in the use of a scarcely used name, *Heteronychidius* Paulian, 1954 for *Heteronychus* because it is the only available, yet subjective synonym. In the future, *Heteronychidius* might turn out to be a different taxon as Paulian (1954) described it without propygidial stridulatory stripes whereas *H. minutus* Burmeister, 1847 the only species Paulian included in his new genus, in fact shows distinct propygidial stridulatory stripes (Dechambre, 1986). Both consequences of strictly applying the Code in accepting a valid, yet forgotten type species designation are undesirable as they cause nomenclatural confusion and potential taxonomic instability in a genus of global economic relevance. Accepting *Geotrupes cricetus* as the type species for *Heteronychus* Dejean, 1833, would maintain stability and avoid confusion.

8. The International Commission on Zoological Nomenclature is accordingly asked to:

1. use its plenary power to set aside all previous type species designations for the nominal genus *Heteronychus* Dejean, 1833 (gender: masculine) before that of *Geotrupes cricetus* Hausmann, 1807 by Krell (2002);
2. place on the Official List of Generic Names in Zoology the name *Heteronychus* Dejean, 1833, type species *Geotrupes cricetus* Hausmann, 1807 by subsequent designation by Krell (2002), as ruled in (1) above;
3. place on the Official List of Specific in Zoology the name *cricetus* Hausmann, 1807, as published in the binomen *Geotrupes cricetus* (specific name of the type species of *Heteronychus* Dejean, 1833, as ruled in (1) above).
References
Fabricius IC (1781) Species Insectorum Exhibentes eorum Differentias Specificas, Synonyma, Auctorum, Loca Natalia, Metamorphosin Adiectis Observationibus, Descriptionibus. Tom II. Bohni, Hamburghi et Kilonii.
Fabricius IC (1798) Supplementum Entomologiae Systematicae. Proft et Storch, Hafniae.
Landin B-O (1964) The identity of ‘Scarabaeus arator’ Fabricius, 1775’ (Col. Lamellicornia) with the designation of neotypes of arator Fabr. and arator Illig. and a list of the insects from the Cape Colony described by Fabricius 1775. Opuscula Entomologica 29: 117–142.
Péringuey L (1901) Descriptive catalogue of the Coleoptera of South Africa (Lucanidae and Scarabaeidae) [part 1]. Transactions of the South African Philosophical Society 12: 1–563.


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Comments on this case are invited for publication (subject to editing) in the Bulletin; they should be sent to the Secretariat, ICZN, Lee Kong Chian Natural History Museum, 2 Conservatory Drive, Singapore 117377, Republic of Singapore (e-mail: iczn@nus.edu.sg).