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(currently *Copris hispanus cavolinii*) to be maintained as prevailing usage
(Coleoptera: Scarabaeoidea: Scarabaeidae: Coprini)

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Subsequent spelling *cavolinii* for *Scarabaeus cavolini* Petagna, 1792 (currently *Copris hispanus cavolinii*) to be maintained as prevailing usage (Coleoptera: Scarabaeoidea: Scarabaeidae: Coprini)

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Abstract. The specific name in *Scarabaeus cavolinii* Petagna, 1792 (currently *Copris hispanus* ssp. *cavolinii*) (Coleoptera: Scarabaeidae: Coprini) is an incorrect subsequent spelling—the original spelling is *cavolini*—but, because of its prevailing usage here documented, is to be preserved.

Key words. Scarabs, nomenclature, International Code of Zoological Nomenclature.

Introduction

In 1792, Petagna described *Scarabaeus cavolini* (Coleoptera: Scarabaeidae) as a tribute to the famous Italian biologist Filippo Cavolini (1756–1810), whose Latinized name was *Philippus Cavolinus* (Petagna 1785; Smith 1804). To dedicate the new species to him, Petagna (1792) declined the name to the genitive singular case of the second Latin declension, which is *Cavolini*.

The original spelling “*cavolini*” was maintained until Balthasar (1963) who used the incorrect spelling “*cavolinii*”, without an explicit statement of intention. Oddly enough, Balthasar (1963) spelled the name “*cavolinii*” in the index of his book, whereas in the text he used the original spelling “*cavolini*”. Also, Dellacasa (1968) used the subsequent spelling “*cavolinii*”, stating that since the species was dedicated to Filippo Cavolini, the name had to end with the double “*i*”.

Since then, the spelling “*cavolinii*” has been used by the most authors dealing with the subject. Very recently, Zidek (2020) used “*cavolini*” because “prevailing usage of the subsequent spelling *cavolinii* has not been officially demonstrated”.

Zidek (2020) is right, and in this paper the prevailing usage of the spelling “*cavolinii*” is presented.

Methods

As explained above, the name “*cavolini*” is grammatically correct and the interpretation of Dellacasa (1968) is not compelling. Therefore, according to Article 32.1 and following of the International Code of Zoological Nomenclature (ICZN 1999), from now on called the Code, “*cavolini*” is the correct original spelling.

The subsequent spelling “*cavolinii*” proposed by Balthasar (1963) without an explicit statement of intention, and by Dellacasa (1968) with an explanation of change, differing from the correct original spelling for the use of *-ii* for *-i*, is not an emendation but has to be deemed an incorrect subsequent spelling (Article 33.4 of the Code (ICZN 1999)). Nevertheless, Article 33.3.1 of the Code (ICZN 1999) specifies that when an incorrect subsequent spelling is in prevailing usage and is attributed to the publication of the original spelling, the subsequent spelling and attribution are to be preserved and the spelling is deemed to be the correct original spelling.

But what is the “prevailing usage”? The Glossary of the Code (ICZN, 1999) defines the prevailing usage of a name as that 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.

A literature search of primary publications was undertaken for references using both spellings in the last 20 years (2000–2020) and two lists were produced. Such lists are not pretending to be exhaustive, but I do believe that they are a reasonably accurate representation of the rates of usage of both spellings.

Results

Works in which the subsequent spelling “*cavolini*” is used, listed in chronological order:

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2. **Rastelli M. 2000.** Catalogo dei Coleoptera Scarabaeoidea conservati nella collezione entomologica del Museo Civico di Storia Naturale di Carmagnola. *Rivista Piemontese di Scienze Naturali* 21: 193, 208.
3. **Arnone M, Lo Cascio P, Nistri A. 2001.** I popolamenti a Scarabaeoidea delle Isole Eolie (Mar Tirreno) (*Insecta Coleoptera*). *Il Naturalista Siciliano* 25 (1–2): 109, 138.
4. **Carpaneto GM, Maltzeff P, Piattella E, Facchinelli L. 2001.** Nuovi reperti di Coleotteri lamellicorni della tenuta presidenziale di Castelporziano e delle aree limitrofe. *Bollettino dell'Associazione Romana di Entomologia* 56 (1–4): 311, 329.
5. **Tauzin P. 2001.** Coléoptères Scarabaeoidea de Turquie: deuxième note. *Le Coléoptériste*, Paris 42: 111, 118.
6. **Dellacasa M. 2004.** Scarabaeoidea “Laparosticta” di Corsica. *Atti della Società toscana di scienze naturali. Memorie, serie B, supplemento* 60 (2003): 1, 361.
7. **Pignataro C, Vicidomini S, Contiero M. 2005.** Scarabaeoidea (Coleoptera) presenti nelle collezioni entomologiche del Museo Naturalistico degli Alburni (Corleto Monforte - SA): reperti della Campania (Sud Italia). Poster, XX Congresso Nazionale di Entomologia, Perugia.
8. **Agoglietta R, Barbero E, Ragusa E, Zunino M. 2006.** Catalogo sistematico e topografico dei Geotrupidae e Scarabaeidae degradatori della Sicilia e delle isole circumsiciliane (Coleoptera: Scarabaeoidea). *Boletín de la Sociedad Entomológica Aragonesa* 39: 181, 204.
9. **Angelini F. 2006.** Coleotterofauna reperita mediante trappola luminosa in due stazioni umide dalla Basilicata (Italia meridionale) (Coleoptera). *Quaderni della Stazione di Ecologia del Civico Museo di Storia Naturale di Ferrara* 11: 7, 37.
10. **Krajcik M. 2006.** Checklist of Scarabaeoidea of the World. 1. Scarabaeinae (Coleoptera: Scarabaeidae: Scarabaeinae). *Animma.x supplementum* 3: 1, 190.
11. **Lapiana F, Sparacio I. 2006.** I coleotteri lamellicorni delle Madonie (Sicilia) (*Insecta Coleoptera Lucanoidea et Scarabaeoidea*). *Il Naturalista Siciliano* 30 (2): 227, 292.
12. **Löbl I, Krell F-T, Král D. 2006.** Scarabaeidae, Scarabaeinae, Coprini. *In*: Löbl I, Smetana A (eds). *Catalogue of Palaearctic Coleoptera* 3. Apollo Books; Stenstrup. 690 p.
13. **Nádai L, Vig K. 2006.** A Savaria Múzeum Lemezescsápú Bogarai (Coleoptera: Scarabaeoidea). *Praenorica. Folia historico-naturalia* 9: 81, 122.
14. **Pignataro C, Vicidomini S. 2006.** Scarabaeoidea (Coleoptera) presenti nelle collezioni entomologiche del Museo Naturalistico degli Alburni (Corleto Monforte, Salerno): reperti della Campania. *Giornale Italiano di Entomologia* 11: 343, 346.
15. **Angus RB, Wilson JC, Mann DJ. 2007.** A chromosomal analysis of 15 species of Gymnopleurini, Scarabaeini and Coprini (Coleoptera: Scarabaeidae). *Tijdschrift voor Entomologie* 150: 201, 211.
16. **Blanco Villero JM, Sáez Bolaño JA, Bahillo de la Puebla P, López-Colón JI. 2007.** Scarabaeoidea (Coleoptera) de la Sierra de Tudía (Badajoz, Extremadura, España): ii. inventario preliminar de especies. *Boletín de la Sociedad Entomológica Aragonesa* 41: 347, 357.
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18. **Gobbi G, Piattella E. 2008.** Ricerche entomologiche nel biotopo di Policoro (Matera) - 1. Nota introduttiva. I coleotteri lamellicorni (Coleoptera, Scarabaeoidea). *Bollettino dell'Associazione Romana di Entomologia* 63 (1–4): 3, 41.
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21. **Rozner I, Rozner G. 2009.** Additional data to the Lamellicornia fauna of Turkey (Coleoptera: Lamellicornia). *Natura Somogyiensis* 15: 69, 100.
22. **Arnone M. 2010.** Quinto contributo alla revisione della collezione coleotterologica di Enrico Ragusa: Scarabaeoidea. *Il Naturalista Siciliano* 34 (1–2): 61, 172.
23. **Ballerio A, Rey A, Uliana M, Rastelli M, Rastelli S, Romano M, Colacurcio L. 2010.** Piccole Faune. Coleotteri Scarabeoidei d'Italia. Marco Serra Tarantola editore; Brescia. DVD.
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29. **Khalaf-Sakerfalke von Jaffa NABAT 2013.** Checklist of the family Scarabaeidae (Scarab Beetles) from Palestine. *The Palestine Biological Bulletin* 105: 1, 25.
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32. **Koren T, Trkov D. 2014.** The Fauna of Dung Beetles (Scarabaeidae: Aphodiinae, Scarabaeinae and Geotrupidae) of Konavle Region, Southern Croatia. *Natura Croatica* 23 (2): 389, 399.
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35. **Král D, Bezděk A. 2016.** Scarabaeidae, Scarabaeinae, Coprini. *In: Löbl I, Löbl D (eds)*. Catalogue of Palaearctic Coleoptera. Scarabaeoidea – Scirtoidea – Dascilloidea – Buprestoidea – Byrrhoidea. Revised and Updated Edition 3. Brill; Leiden-Boston. 983 p.
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38. **Draghici A-C. 2017.** *Copris hispanus cavolinii* (Coleoptera: Scarabaeidae) in the Collection of "Grigore Antipa" National Museum of Natural History (Bucharest). *Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa"* 60 (1): 373, 375.
39. **Montreuil O. 2017.** New records of Geotrupidae and Scarabaeidae dung beetles (Insecta, Coleoptera) from Iran. *Journal of Entomological Society of Iran* 36 (4): 259, 277.
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41. **Byk A, Gazurek T, Rutkiewicz A, Tylkowski S. 2019.** New data on the occurrence of scarabeoid beetles (Coleoptera: Scarabaeoidea) in Albania. *Acta Zoologica Bulgarica* 71 (3): 365, 376.

42. **Shokhin IV. 2019.** The fauna of lamellicorn beetles (Coleoptera: Scarabaeoidea) of Azerbaijan. *Caucasian Entomological Bulletin*. 15 (1): 61, 106.
43. **Angelini F. 2020.** Contribution to the knowledge of beetles (Insecta Coleoptera) of some protected areas of Apulia, Basilicata and Calabria (Italy). *Biodiversity Journal* 11 (1): 85, 254.

Works in which the original spelling “*cavolini*” is used, listed in chronological order:

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2. **Ádám L. 2001.** Faunisztikai adatok a Kárpát-medencéből (Coleoptera: Scarabaeoidea). *Folia Historico Naturalia Musei Matraensis* 27: 101, 136.
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4. **Guéorguiev B, Lobo JM, Chehlarov E. 2011.** The scarabaeoid beetles (Insecta: Coleoptera: Scarabaeoidea) in the Bulgarian section of the Western Rhodopes. p. 237–264. *In: Beron P (ed.). Biodiversity of Bulgaria. 4. Biodiversity of Western Rhodopes (Bulgaria and Greece). Pensoft & National Museum of Natural History; Sofia. 974 p.*
5. **Polat A, Yıldırım E, Ziani S. 2017.** A contribution to the knowledge of the Aphodiinae and Scarabaeinae fauna of Turkey (Coleoptera: Scarabaeoidea: Scarabaeidae). *Linzer Biologische Beiträge* 49 (1): 733, 744.
6. **Zidek J. 2020.** (see “Literature Cited”).

Discussion

I have listed 43 works, published in the last 20 years by 88 authors (36 first authors) in which the spelling “*cavolini*” is used, and six works, published in the last 20 years by 10 authors (six first authors) in which the spelling “*cavolini*” is used.

Are 43 primary publications (out of 49 total, more than 87%) and 88 authors (out of 99 total, more than 89%), a “substantial majority”, as the Glossary provided for? Even if the expression is quite ambiguous, I think they are: 43 papers, published by 88 authors after 2000, can be deemed as a substantial majority.

Therefore, the specific name in *Scarabaeus cavolini* Petagna, 1792 (now *Copris hispanus cavolinii* (Petagna, 1792)) is in prevailing usage but is spelled “*cavolini*”. Following Article 33.3.1 of the Code (ICZN 1999) “*cavolini*” is deemed to be correct and its use is to be maintained.

Note. During the bibliographic research for this paper I found a statement by Petagna (1792, p. 715) in which the author, many pages after the description of *Scarabaeus cavolini*, wondered if his new species could actually be conspecific with *Scarabaeus paniscus* Fabricius, 1775. Costa (1853) also expressed such doubts, and placed *Copris cavolini* as a synonym of *C. paniscus*. If these two taxa are conspecific, then *Copris hispanus cavolinii* would become a junior synonym of *Copris paniscus*—now deemed a junior synonym of *Copris hispanus hispanus* Linnaeus, 1764—with consequences for their systematics. This topic is clearly beyond the purpose of this paper. It is left for a deeper study and discussion at a later date.

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