



Clarification of the status of the genus names *Leiodes* Latreille 1796 (Coleoptera), *Liodes* von Heyden 1826 (Acari) and *Neoliodes* Berlese 1888 (Acari)

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Abstract

The genus name *Liodes* and the family name Liodidae have been the cause of much confusion in zoology. The genus name *Liodes* has been used in Acari, Lepidoptera, Opiliones, and Coleoptera, and has often been misused, misspelled, or misunderstood. This paper reviews the history of these names and the related names *Leiodes* and *Neoliodes*, and concludes that (1) the names *Leiodes* Latreille 1796 and Leiodidae Fleming 1821 are available for a genus and family of beetles; (2) the names *Neoliodes* Berlese 1888 and Neolioididae Sellnick 1928 are available for a genus and family of mites; (3) the names *Liodes* and Liodidae are not available for any group of animals, and should not be used.

Key words: *Liodes*, *Leiodes*, Liodidae, Leiodidae, *Neoliodes*, Neolioididae, nomenclature

Introduction

The generic names *Liodes* and *Leiodes*, and the related family names Liodidae and Leiodidae, have had a long and complicated history in zoology. They have been confused with each other and with other names in the Acari, Coleoptera, Lepidoptera, and Opiliones. They have been the subject of an extraordinary series of mistakes, emendations, and misunderstandings, which makes a study of the literature on these groups very confusing. In Acari, the names *Liodes* and Liodidae have recently been used by Marshall *et al.* (1987), Fernandez *et al.* (1995), Halliday (1998), Colloff & Halliday (1998), and Mahunka (2006), among others. In Coleoptera, the names *Liodes* and Liodidae have been used by Gottwald (1967), Hlisikovskiy (1972), Emetz (1975), Decelle (1988), and Troukens (2005), among others. Also in Coleoptera, the names *Leiodes* and Leiodidae have been used for the same taxa by many authors including Daffner (1986), Baranowski (1993), Newton (1998), Peck (2000), Park & Ahn (2007), Hochberg *et al.* (2003), Majka & Langor (2008), Marske *et al.* (2009), and Seago & Newton (2009). These names are also in use with variable spelling in a range of on-line catalogues and faunal lists. However, this instability of nomenclature is completely unnecessary. The purpose of this paper is to stabilise the nomenclature of these genera and families, by drawing attention to a simple solution that is already in place.

Historical background in Coleoptera

Within the Coleoptera, the genus *Leiodes* was erected by Latreille (1796, 22) to accommodate a group of what are now called "round fungus beetles". Latreille did not explain the etymology of this name. Subsequently Fleming (1821) proposed the Family Leiodidae to accommodate these and other related staphylinoid beetles. The names Leodinae, for the corresponding subfamily, and Leiodini for the tribe, followed.

The nomenclature of this group was, however, bedevilled with a series of historical confusions and errors (reviewed by Baranowski, 1993). Schmidt (1841) confused *Leiodes* Latreille with *Anisotoma* Panzer 1797, a

superficially similar genus of fungus beetles, now placed in the tribe Agathidiini Westwood 1838. As a consequence, for almost a century, almost all the species of *Leiodes sensu* Latreille were assigned to *Anisotoma sensu* Panzer and *vice versa*. Erichson (1845) proposed the name *Liodes* as a deliberate but unjustified emendation of *Leiodes*, but applied this name to *Leiodes sensu* Schmidt (i.e. *Anisotoma sensu* Panzer) and not to *Leiodes sensu* Latreille. Reitter (1885) then applied the name *Liodes* to *Leiodes sensu* Latreille. Subsequently some authors followed Reitter (1885) in applying the name to the correct genus, however, still employing the erroneous nomenclatural emendation. Other authors followed the erroneous taxonomy and nomenclature proposed by Schmidt (1841) and Erichson (1845). In North America Le Conte (1850, 1859, 1866), Mannerheim (1852, 1853), Horn (1880), Fall (1910), and Brown (1928) all described species of *Leiodes sensu* Latreille under the generic name *Anisotoma*.

Leng (1920) and Hatch (1929) pointed out that *Leiodes* was the correct spelling for the name of the genus, but some authors in Europe overlooked this correction and continued to publish papers using the name *Liodes* (e.g. Hlisikovskiy, 1972; Emetz, 1975, and others). In recent years, comprehensive taxonomic treatments of the genus (Daffner, 1983, 1986; Baranowski, 1993) and of the family (Newton, 1998; Peck, 2000) have consistently and correctly employed the names *Leiodes* and Leiodidae, but occasional uses of *Liodes* still survive.

Historical background in Acari

The name *Liodes* von Heyden 1826 was established for a genus of mites, and was used in that context by various authors until 1850 (reviewed by Oudemans, 1937). Von Heyden did not explain the etymology of this name. Berlese (1888) reported that *Liodes* von Heyden was a junior homonym of *Liodes* Latreille, and created the new name *Neoliodes* to replace *Liodes* von Heyden. Berlese refers to the beetle genus as *Liodes* Latreille, apparently using this emended name following Erichson and Reitter. Berlese's decision was adopted by some acarologists (e.g., Sellnick, 1928; Jacot, 1929; Willmann, 1931), but some other prominent acarologists did not agree with Berlese's analysis. Grandjean (1936) pointed out that Latreille's name was spelled *Leiodes* and not *Liodes*, and argued that therefore *Liodes* von Heyden and *Leiodes* Latreille were different names and were both available. Oudemans (1937) also argued that *Liodes* von Heyden was available and correctly spelled. Acarologist Arthur P. Jacot realised that these alternative spellings might lead to confusion, and in 1937 Jacot wrote to the International Commission on Zoological Nomenclature (ICZN) to seek a ruling on whether *Liodes* and *Leiodes* were homonyms. In his letter Jacot noted that *Liodes* von Heyden "has been in use", following its original description, it "was subsequently abandoned", apparently referring to Berlese's introduction of the replacement name *Neoliodes*, and "now an acarologist is reviving it", apparently referring to Grandjean (Jacot, 1947; ICZN, 1954). After correspondence and public discussion, ICZN declared in Opinion 218 that *Liodes* von Heyden and *Leiodes* Latreille were homonyms, because they had the same origin and meaning, and ruled that *Liodes* was invalid (ICZN, 1954). This decision draws upon an earlier ruling in Opinion 147, which states that two generic names with the same origin and meaning, and which differ only in the use of *ei* or *i*, are homonyms (ICZN, 1943; Hemming, 1947). In 1954 the name *Liodes* von Heyden was placed on the *Official Index of Rejected and Invalid Generic Names in Zoology*, where it remains (Melville & Smith, 1987). That should have been the end of the matter, but the ICZN ruling was either overlooked or ignored by many authors. Acarologists continued to use the name *Liodes*, for example Aoki (1963), Wallwork (1963), Hammer (1966), and later authors as cited above.

Sellnick (1959) correctly argued that the beetle genus should be spelled *Leiodes* and not *Liodes* but, confusingly, he reversed his 1928 position and maintained that *Liodes* was an available name for a genus of mites, and that *Neoliodes* Berlese was incorrect. Sellnick (1959) added to the confusion further by placing the genus *Liodes* in the family Neolioididae, and attributed the authorship of the name Neolioididae to Willmann (1931) instead of Sellnick (1928).

Since *Liodes* is a rejected name, the family name Liodidae Grandjean 1936 is also invalid (*International Code of Zoological Nomenclature*, Article 39). Furthermore, it is a junior synonym of Neolioididae Sellnick

1928. However, the names *Liodes* and Liodidae are still used in acarology even by some modern authors (references cited in Introduction). At the same time, the names *Neoliodes* and Neolioididae have also been in use in acarology for the same taxa (e.g. Aoki, 2006; Norton, 2006; Emilov, 2009; Heethoff *et al.*, 2009).

Colloff & Halliday (1998) argued that the names *Liodes* and Liodidae should be used to maintain stability and universality, but it is now clear that stability and universality have not been achieved. The persistent use of *Neoliodes* alongside *Liodes* for the mite genus makes it impossible to defend *Liodes* on the grounds of prevailing usage.

Related names in other animal groups

We must also take two other names into account. *Liodes* Guenée, 1857 (Lepidoptera) is a junior homonym of *Liodes* von Heyden, and was replaced by *Xantholepidote* Gumpfenberg, 1887 (reviewed by McQuillan, 1996). *Liodes* Koch, 1869 (Opiliones) is also a junior homonym of *Liodes* von Heyden, and was replaced by *Prosalpia* Koch, 1872 (reviewed by Crawford, 1992).

Conclusions

The ICZN decision published as Opinion 218 was made at a time when two generic names that differed only in the use of “ei” instead of “i”, and which had the same origin and meaning, were considered to be homonyms, following Opinion 147. That policy was reversed before the first edition of the modern *International Code of Zoological Nomenclature* was published (ICZN, 1961). The names *Liodes* and *Leiodes* would not now be considered as homonyms, because they differ in one letter. Under the present *International Code of Zoological Nomenclature* (ICZN, 1999), as well as previous editions, this would be enough to allow the continued use of both names. However, the Commission’s intention was that the change of policy on this point in the 1950s was made “without prejudice to any individual case on which a decision by the International Commission has already been published” (Hemming, 1953). Opinion 218 made it very clear that its findings would not be affected by later changes in the rules regarding homonymy (ICZN, 1954, paragraph 10). Since ICZN has already ruled that *Liodes* von Heyden is invalid, and a new replacement name is in use, we believe that stability of nomenclature is best served by complying with Opinion 218.

This analysis leads to three definite conclusions: (1) the names *Leiodes* Latreille 1796 and Leiodidae Fleming 1821 are available for a genus and family of beetles; (2) the names *Neoliodes* Berlese 1888 and Neolioididae Sellnick 1928 are available for a genus and family of mites; (3) the names *Liodes* and Liodidae are not available for any group of animals, and should not be used.

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