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ANNOTATED CATALOGUE OF THE DILARIDAE (INSECTA: NEUROPTERA) OF THE WORLD

Oswald, J. D., 1998. Annotated Catalogue of the Dilaridae (Insecta: Neuroptera) of the World. – *Tijdschrift voor Entomologie* 141: 115-128. [ISSN 0040-7496]. Published 30 November 1998. The neuropteran family Dilaridae is catalogued. Data on the status, primary type, type locality and original place of publication are given for 67 valid species and 14 synonymous species-group names. Status, type species, etymology and gender information are given for four valid genera and seven synonymous genus-group names. *Nepal* is reported as a previously unrecognized synonym of *Dilar*. *Dilar grandis* and *Dilar marmoratus* are new combinations from *Rexavius*. *Berothella bannana* is removed from the Dilaridae and transferred to the family Berothidae as *Berotha bannana*, comb. n.

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Key Words. – Dilarinae, Nallachiinae, pleasing lacewings, systematics, taxonomy

The neuropteran family Dilaridae, ‘pleasing lacewings’, is a small family presently composed of 67 valid recent species, with a combined distribution encompassing parts of North and South America, Europe, Asia and Africa. Dilarids form a distinct clade within the order Neuroptera, and are characterized by males with pectinate antennae, females with elongate ovipositors (a feature that they share with raphidiopterans and some mantispids), and distinctive details of the terminalia in both sexes. Dilarids are relatively rare both in the field and in collections and are of no known economic importance. Immatures are associated with soil or dead wood. No fossil dilarids are currently known. The purpose of the present work is to provide a concise bibliographic, nomenclatural and taxonomic foundation for the family that can serve the twin aims of providing an entry point into the scattered dilarid literature and a stimulus for further systematics study of the group.

History

The rarity of dilarids in the field is underscored by the fact that the first known species, *Dilar nevadensis*, does not appear in the scientific literature until 1838 (Rambur 1838, illustrated), and was not formally described until four years later (Rambur 1842) – a comparatively late date for a genus of insects that possesses several species with an aggregate distribution stretching broadly across southern Europe. *Dilar nevadensis* was treated at its inception as a new species

and genus, and it and its relatives have long been recognized as a distinctive group within the Neuroptera. The genus *Dilar* was originally placed by Rambur in his ‘Tribu Semblides’, together with several genera now placed in the orders Megaloptera and Raphidioptera. Soon thereafter, Newman (1853), in his reclassification of the Neuroptera *sensu lato*, provisionally placed the ‘Dilaridae’ as a division of his group Stegoptera, subgroup Corydalina, along with taxa now attributed to the Ithonidae and Megaloptera. Newman’s classification was not widely adopted and his name Dilaridae appears not to have come into general use. By the late 1800’s *Dilar* was recognized as a neuropteran (planipennian) genus, and was typically included within a broad concept of the family Hemerobiidae. During the first two decades of the twentieth century, the taxonomic concept of the Hemerobiidae was radically altered. Many genera and groups of genera were formally aggregated or reaggregated into family-group taxa during this period, and several of these were widely accorded full family rank. Among these groups was the Dilaridae, which was treated as a tribe (Dilarini, e.g., Navás 1914), subfamily (Dilarinae, e.g., Banks 1913) and full family (Dilaridae, e.g., Handlirsch [1906]) during this time. Current usage accords dilarids family rank, with two subfamilies, the Dilarinae and Nallachiinae.

Navás ([1909a], 1914), in the earliest revisionary studies of the group, synthesized the prior descriptive work of nineteenth century authors and his own early twentieth century work on the fauna of Spain and

neighbouring regions. In his 1914 review of the family for the Genera Insectorum, Navás recognized seven genera and 26 species. Of these, 21 species, but only 2 genera, are presently considered valid. During the Navásian era heavy emphasis was placed on venational traits as diagnostic characters for the identification and justification of new neuropteran taxa at all ranks. During this period, however, the full extent of venational variation was frequently not well known for taxa established at both the specific and generic levels. Subsequent reevaluation of generic limits, based principally on male terminalic traits, has led to a reduction in the number of accepted dilarid genera, and it is now widely recognized that considerable venational plasticity exists in many dilarid species. Characters of the male terminalia have now come to replace venational traits as the characters of choice for delimiting dilarid taxa, especially species. Although male terminalic characters were figured as early as 1909 (Navás [1909a]), the added effort and difficulties of studying, describing and figuring this complex character system hindered its use and the full recognition of its value during the early twentieth century. As in other neuropterid groups, however, dilarid studies profited from the growing realization throughout the 1930's that the male terminalia provided a significant new source of novel, stable and reliable species-level characters. Subsequent reviews and revisions of dilarid taxa (e.g., Carpenter 1940, 1947, Nakahara 1955b) made extensive use of male terminalic traits, and modern descriptions and revisions (e.g., Adams 1970, Aspöck et al. 1980, Monserrat 1988b) rely heavily on male terminalic characters to delimit species.

Future Research

The most pressing current need in dilarid systematics is for a comprehensive revision of Old World dilarine species. The last complete revisions covering the Old World are the seriously outdated works of Navás ([1909a], 1914). Since that time, the number of nomenclaturally valid Old World dilarid species has approximately tripled. The European dilarid fauna has recently been the subject of several good revisionary treatments (Aspöck et al. 1980, Monserrat 1988b), but the lack of a synthetic work for the Oriental region and the adjacent parts of central and eastern Asia renders positive identification of material from these areas extremely difficult. The size of such a project (ca. 50 species) would be quite appropriate for a Ph.D.-level dissertation. Questions of interest include:

(i) How variable are male terminalic traits among Old World dilarids?

- (ii) What monophyletic subgroups can be recognized within this fauna?, based on what characters?
- (iii) What is(are) the phylogenetic relationship(s) between Old and New World dilarids?
- (iv) How old is the dilarid clade?
- (v) Why are there no known dilarid fossils?
- (vi) Why are dilarids absent from Australia?

Any study of the higher phylogeny of the family should include representatives of New World *Nallachius*, Old World *Dilar* and *Berothella* and the actual or possible Old World nallachiine taxa *Nallachius krooni* (southern Africa), *Nallachius ponomarenkoi* (Vietnam) and *Neonallachius annandalei* (India).

Biology

Dilarid biology is poorly known. The larvae of only five species are known, only four of which have been described. The best known of these is the Nearctic-Neotropical species *Nallachius americanus*, whose larvae have been reported from under the bark of both recently- and long-dead broadleaf trees, where they undoubtedly feed on soft-bodied arthropod prey that occur in the same microhabitat (Gurney 1947, MacLeod & Spiegler 1961). Larvae of *Dilar turcicus* and *Dilar septentrionalis* have been collected from soil samples, Ghilarov (1962) and Makarkin (pers. comm., larvae not described), respectively. The larvae of two additional species, *Nallachius krooni* and *Dilar pumilus*, have been reared from eggs laid by captive females, see Minter (1992) and Monserrat (1988b). Until recently, all known adult dilarids were fully macropterous and presumed to be volant. However, Pantaleoni & Letardi (1996) report the capture of a brachypterous *Dilar* female that is probably attributable to *Dilar parthenopaues*.

Keys

A key is provided below to the two subfamilies of the Dilaridae. The subfamily Nallachiinae currently contains only a single valid genus, *Nallachius*. The three nomenclaturally valid dilarine genera listed in the following catalogue are widely considered only doubtfully distinct. For this reason, a key to these taxa has not been attempted. The construction of a reliable key to supraspecific taxa within the Dilarinae cannot proceed until revisionary studies that identify more rigorously diagnosable subgroups within this taxon have been completed. Bibliographic references to published species-level keys in the genera *Dilar* and *Nallachius* are cited below under their respective catalogue entries.

KEY TO THE SUBFAMILIES OF THE DILARIDAE

(after Adams 1970, New 1989)

1. Forewing MA branching from R basal to fork R1-Rs (i.e., as a branch from the 'radial stem'; or, rarely, MA entirely free from R); male antenna with more than 3 apical flagellomeres that lack lateral processes [Europe, northern Africa, Asia].....Dilarinae
 + Forewing MA branching from R distal to fork R1-Rs (i.e., as a branch from RS); male antenna never with more than 3 apical flagellomeres that lack lateral processes [North and South America, southern Africa, Asia]Nallachiinae

CATALOGUE

Format

All known family-, genus- and species-group names that have been applied to taxa presently placed within the family Dilaridae are treated in the catalogue below. Information on taxon diversity and distribution, important systematics literature and biology and immature stages is summarized for all valid family- and genus-group taxa. Genus-group name records provide, additionally, data on type species, etymology and gender, with appropriate bibliographic references. Species citations provide information on original publication, distribution, type locality and primary type kind, sex and depository (to the extent known). Type locality data is presented in a standardized format using current political subdivision names, with verbatim quotes from the literature provided parenthetically where confusion might arise. Latitude and longitude coordinates are provided for all sites that could be rigorously located. Coordinate data are shown in brackets if they were derived from secondary sources (e.g., maps or gazetteers), but are shown unbracketed if they were cited in the original description of a species. Synonymical citations are given under the subheading 'Synonymy'. Under the subheading 'Status', a recent (where possible) authoritative work is cited that uses the name in the nomenclatural form in which it is treated in the catalogue. The third edition of the International Code of Zoological Nomenclature has been applied to questions of nomenclature, and relevant articles and sections of the Code are referenced throughout the catalogue text.

Collection Acronyms

The following collection acronyms are used in the catalogue to indicate type repositories:

- ASPOCK Horst & Ulrike Aspöck, private collection, Wien [=Vienna], Austria;
 BAU Beijing Agricultural University Insect

- Collection, Beijing, China;
 BMNH Natural History Museum [formerly the British Museum (Natural History)], London, England, United Kingdom;
 INBIO Instituto de Biodiversidad, Santo Domingo de Heredia, Costa Rica;
 INPA Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil;
 ISNB Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium;
 IZASB Institute of Zoology, Academia Sinica, Beijing, China;
 MCNM Museo Nacional de Ciencias Naturales, Madrid, Spain;
 MCZ Museum of Comparative Zoology, Cambridge, MA, USA;
 MNHP Museum National d'Histoire Naturelle, Paris, France;
 MONSERRAT Victor J. Monserrat, private collection, Madrid, Spain;
 MZB Museo Zoologia, Barcelona, Spain
 MZUN Museo di Zoologia, Università di Napoli, Napoli [=Naples], Italy;
 NCIP National Collection of Insects, Pretoria, South Africa;
 NHMB Naturhistorisches Museum Basel, Basel, Switzerland;
 NHMW Naturhistorisches Museum, Wien [=Vienna], Austria;
 NSMT National Science Museum (Natural History), Tokyo, Japan;
 NZSI Zoological Survey of India, National Zoological Collection, Calcutta, West Bengal, India;
 PMY Peabody Museum of Natural History, Yale University, New Haven, CT, USA;
 REAL P. Réal, private collection, Aix-en-Provence, France;
 ZMHA Zoologisches Museum für Hamburg, Hamburg, Germany;
 ZMHB Museum für Naturkunde, Humboldt Universität, Berlin, Germany;
 ZMUM Zoological Museum, Moscow State University, Moscow, Russia;
 ZSM Zoologische Staatssammlung, Munich, Germany.

Family Dilaridae Newman, 1853

Dilaridae Newman, 1853 (as a 'division' of the Corydalina).
 Type genus: *Dilar* Rambur, [1838].

Species and distribution. – 67 species; Eastern United States south to Argentina, including the West Indies (17 spp.), Oriental and southern Palearctic regions (49 spp.), southern Africa (1 sp.). No dilarids

are currently known from tropical Africa, Australia, Oceania or extreme northerly or southerly latitudes. No fossils attributable to the Dilaridae are currently known.

Reviews, revisions and keys. – Navás [1909a] (World, revision, keys); Navás 1914 (World, review, keys); see also *Dilar* and *Nallachusius* below.

Biology and immature stages. – See *Dilar* and *Nallachusius* below. The larva described and figured by Takahashi (1942) as a dilarid is probably the larva of a nevrorthid of the genus *Nipponneurorthus*, not a dilarid. Tjeder (1937) compared the adult morphology of dilarids and raphidiopterans.

Subfamily Dilarinae Newman, 1853

Dilarinae – Banks 1913: 211 (as a subfamily of the Hemerobiidae). Type genus: *Dilar* Rambur, [1838].

Dilarini – Navás, 1914: 5 (as a tribe of the Dilaridae). Type genus: *Dilar* Rambur, [1838].

Species and distribution. – 48 species; Oriental and southern Palearctic regions.

Reviews, revisions and keys. – See *Dilar* below.

Biology and immature stages. – See *Dilar* below.

Genus *Berothella* Banks, 1934

Berothella Banks, 1934: 567. Type species: *Berothella phantoma* Banks, 1934: 568, by monotypy. Etymology: Unexplained, probably Beroth- (< *Beroth[al]*), a berothid genus-group name) – -ella (< L. -ellus, a diminutive suffix), in reference to the original supposed berothid affinities of this genus. Gender: Feminine, from the gender appropriate to the suffix -ella, Art. 30b. Status: Oswald & Penny 1991: 12.

Notes: *Berothella* was originally placed in the family Berothidae; it was transferred to the family Dilaridae by MacLeod and Adams ([1968]: 256).

Species and distribution. – 2 species; China and continental Malaysia. A third species described in this genus, *Berothella bannana*, belongs to the Berothidae, see 'Taxa removed from the Dilaridae' below.

Reviews, revisions and keys. – None.

Biology and immature stages. – Unknown.

Berothella phantoma Banks, 1934 [Malaysia]

Berothella phantoma Banks, 1934: 568. Holotype, male, BMNH. Type locality: Malaysia: Selangor: Bukit Kutu (hill) [3°33'N 101°43'E]. Status: MacLeod & Adams ([1968]: 256).

Notes: Type citation by MacLeod & Adams ([1968]: 256). This species was originally described as a berothid. It was confirmed as a dilarid by Kimmins in MacLeod & Adams ([1968]: 256).

Berothella pretiosa Banks, 1939 [China]

Berothella pretiosa Banks, 1939: 469. Holotype, male, MCZ. Type locality: China: Kwangtung: Hainan (island), 'Tahan'. Status: MacLeod & Adams ([1968]: 256).

Notes: This species was originally described as a berothid. It was confirmed as a dilarid by MacLeod & Adams ([1968]: 256).

Genus *Dilar* Rambur, [1838]

Dilar Rambur, [1838]: pl. 9. Type species: *Dilar nevadensis* Rambur, [1838]: pl. 9, by monotypy. Etymology: From Dilar, a river flowing west from the western edge of the Sierra Nevada (mountains) of southern Spain, see Navás ([1909a]: 628). Gender: Masculine, no originally attributed or implied gender, here considered masculine, Art. 30d. Status: Oswald & Penny 1991: 21. Known incorrect subsequent spellings: *Dillar*, *Dialar*, *Didar*.

Cladocera Hagen, 1860: 56, nomen nudum. Included species: *Cladocera marmorata* Hagen, 1860: 56, nomen nudum. Etymology: Unexplained, probably Clado- (< Gr. *klados*, branch or twig) – -cera (< Gr. *keras*, horn), in reference to the branched antennae, a characteristic of male dilarids. Status: Oswald & Penny 1991: 21.

Notes: '*Cladocera marmorata* Hoffm. Mus. Berol.' was cited by Hagen (1860: 56) without description, definition or indication, and is therefore unavailable, Art. 12a. The binomen *Cladocera marmorata* apparently originated as a manuscript name that was recorded by Hagen from the identification label of a specimen in the Hoffmannsegg Collection of the Museum für Naturkunde, Humboldt Universität, Berlin. Hagen subsequently (1866b: 399) synonymized *Cladocera* with *Dilar*, and *C. marmorata* with *Dilar nevadensis* Rambur, without either name ever having been made available.

Lidar Navás, 1909b: 153. Type species: *Dilar meridionalis* Hagen, 1866a: 295, by original designation. Etymology: An anagram of *Dilar*, a dilarid genus-group name, see Navás (1909b: 153). Gender: Masculine, inferred from the combination '*Lidar nemorosus*', Art. 30d. Synonymy: H. Aspöck et al. 1980: 187. Status: Oswald & Penny 1991: 21. Known incorrect subsequent spellings: *Lider*.

Fuentenus Navás, 1909b: 154. Type species: *Dilar campestris* Navás, 1903a: 380 (= *Dilar saldubensis* Navás in Laguna, 1902), by original designation. Etymology: From the surname of Reverend D. José Maria de la Fuente, Spanish priest and entomologist, see Navás (1909b: 155; [1909a]: 657). Gender: Masculine, no originally attributed or implied gender, here considered masculine, Art. 30d. Synonymy: H. Aspöck et al. 1980: 187. Status: Oswald & Penny 1991: 21.

Rexavius Navás, [1909a]: 664. Type species: *Dilar nietmeri* Hagen, 1858b: 482, by subsequent designation by Navás 1914: 10. Etymology: An anagram of Xaverius, from the Latinized surname of Saint Francisco Javier, Spanish missionary to India and Japan, see Navás ([1909a]: 664). Gender: Masculine, inferred from the combination '*Rexavius japonicus*', Art. 30d. Synonymy: Kuwayama 1962: 376. Status: Oswald & Penny 1991: 21.

Notes: *Rexavius* was synonymized with *Dilar* without explicit comment by Kuwayama (1962: 376). Kuwayama's synonymy was presumably based on his placement of the species *japonicus* in the genus *Dilar*, rather than in *Rexavius*, where it had been placed by Navás (1909a: 665) as one of the two species originally included in *Rexavius*. The type species of *Rexavius* has also been transferred back to *Dilar* from *Rexavius* by H. Aspöck & U. Aspöck (1968: 3). Two additional species, *grandis* and *marmoratus*, also nominally exist in the genus *Rexavius*. Both are here transferred to *Dilar*. I have examined syntypical ma-

terial of both *grandis* and *marmoratus* from the MCZ, and both species clearly fall within the broad concept of *Dilar* adopted in this catalogue.

Nepal Navás, [1909a]: 661. *syn. n.* Type species: *Nepal harmandi* Navás, [1909a]: 661, by original designation. Etymology: From Nepal, a region (later country) of the Indian subcontinent that contains, or lies near, the type localities of the two species originally included in this genus, see Navás ([1909a]: 661). Gender: Masculine, not originally attributed or implied gender, here considered masculine, Art. 30d.

Notes: All four species that have at one time or another been placed in this genus have subsequently been removed to *Dilar*, *formosanus* and *kanoi* by Nakahara (1955b) and *hornei* and *harmandi* by H. Aspöck & U. Aspöck (1968). Thus, although it has not previously been listed as such, *Nepal* is currently a junior subjective synonym of *Dilar*.

Species and distribution. – 45 species; Oriental and southern Palearctic regions.

Reviews, revisions and keys. – Navás 1903a (Spain, review); Kuwayama 1921 (Japan, review, key); Nakahara 1955b (Japan & Taiwan, revision); Kuwayama 1962 (Japan, review, key); Aspöck et al. 1980 (Europe, review, key); Minter 1986 (Africa, review); Dorokhova 1987 (European USSR, key); Monserrat 1988a (Navás species, revision); Monserrat 1988b (Iberian Peninsula, revision, keys); Zakharenko 1988 (USSR, review); Makarkin 1995 (Far Eastern Russia, key).

Biology and immature stages. – Ghilarov 1962 (*turcicus*: biology, larva, figs); Popov 1973 (*turcicus*: egg, larva); Gepp 1984 (*turcicus*: larva, fig); Monserrat 1988b (*pumilus*: larva, figs); Gepp 1990 (*turcicus*: egg, fig). The larva of *Dilar septentrionalis* is known (Makarkin, pers. comm.), but undescribed.

Dilar algericus Navás, 1909 [Algeria] *Nomen dubium*

Dilar algericus Navás, [1909a]: 638. Holotype, male, MNHP. Type locality: Algeria: Alger [36°50'N 3°00'E, =Algiers, =Argel (Spanish)] (as: 'Argel'). Status: Monserrat 1988a: 19. Notes: See Legrand & Lachaise (1994: 87) for a detailed account of the holotype; earlier type citations by Navás (1925: 188) and Monserrat (1988b: 199).

Dilar aspersus C. Yang in Huang et al., 1988 [China]

Dilar aspersus C. Yang in Huang et al., 1988: 197. Holotype, male, BAU. Type locality: China: Tibet: Nyingchi County (as: 'Xizang: Nyingchi County'). Status: C. Yang in Huang et al. 1988: 197.

Dilar bolivari Navás, 1903 [Algeria, Tunisia]

Dilar bolivari Navás, 1903b: 116. Lectotype, male, MCNM, designated by Monserrat (1988a: 16). Type locality: Algeria: Oran [35°45'N 0°38'W]. Status: Monserrat 1988a: 16.

Dilar caesarulus H. Aspöck & U. Aspöck, 1967 [Afghanistan]

Dilar caesarulus H. Aspöck & U. Aspöck, 1967: 57. Holotype, male, ASPÖCK. Type locality: Afghanistan: 125 km SW of Ghazni [G = 33°33'N 68°28'E]. Status: H. Aspöck & U. Aspöck 1967: 57.

Dilar corsicus Navás, 1909 [France]

Dilar corsicus Navás, [1909a]: 636. Holotype, female, BMNH. Type locality: France: Corsica, 'La Foca' [=Foce, 41°38'N 9°04'E]. Status: Monserrat 1988a: 17.

Notes: Type citation by Navás (1925: 188).
Dilar budtzi Esben-Petersen, 1913: 27. Syntypes, male & female, repository unknown. Type locality: France: Corsica (island). Synonymy: H. Aspöck et al. 1980: 188.

Dilar dissimilis Navás, 1903 [Spain]

Dilar dissimilis Navás, 1903a: 374. Lectotype, male, MNHP, designated by Monserrat (1988b: 192). Type locality: Spain: Zaragoza: Monasterio Santa María de Veruela [41°48'N 1°42'W], near Moncayo (mountain) (as: 'Veruela (Zaragoza) al pie del Moncayo'). Status: Monserrat 1988b: 189.

Notes: See Legrand & Lachaise (1994: 88) for a detailed account of the lectotype.

Dilar nepos Navás, 1909b: 151. Lectotype, male, MNHP, designated by Legrand & Lachaise (1994: 90). Type locality: Spain: Zaragoza: Muel [41°28'N 1°04'W]. Synonymy: H. Aspöck et al. 1980: 188. Status: Monserrat 1988: 189. Notes: Earlier type citations by Navás (1925: 188) and Monserrat (1988b: 192).

Dilar kolbei Navás, [1909a]: 635. Lectotype, male, MNHP, designated by Navás (1925: 188). Type locality: Spain: Andalucía (region). Synonymy: H. Aspöck et al. 1980: 188. Status: Monserrat 1988: 189.

Notes: The type series of *kolbei* consisted of two male syntypes, both of which were originally contained in the ZMHB (Navás [1909a]: 635). One syntype, however, was apparently retained by Navás in his personal collection, and ultimately came to be deposited in the MNHP. Navás (1925: 188) clearly states that the specimen in the MNHP is the 'Type'. This statement constitutes a valid lectotype designation under Art. 74(b) of the Code, and fixes the MNHP specimen as the lectotype of *kolbei*. The subsequent designation of the ZMHB specimen as the lectotype by Legrand and Lachaise (1994: 89) is therefore invalid, Art. 74a(i). Navás' ([1909a]: 635) statement: 'El tipo se halla en el museo de Berlín', is not a valid lectotype designation because it does not identify a single specimen as the type – Navás having earlier clearly referred to two specimens in this collection ('He visto dos ejemplares que del museo de Berlín ...'). It might be argued that Navás' 'tipo' statement referred to the single specimen remaining in the ZMHB after he removed the second specimen of the type series to his own personal collection. Under this interpretation, Navás' statement would constitute a holotype designation (which would then also invalidate the lectotype designation of Legrand & Lachaise). However, as Navás gives no indication that only one specimen remained in the ZMHB at the time of his writing, there is no concrete support for this interpretation. See also the discussion by Monserrat (1988b: 192), who treated the MNHP and ZMHB specimens as syntypes.

Dilar distinctus Nakahara, 1955 [Taiwan]

Dilar distinctus Nakahara, 1955b: 139. Holotype, male, NSMT. Type locality: Taiwan: Nantou: Sungkang (as: 'Tattaka'). Status: Stange & Wang 1997: 49.

Dilar dochaner H. Aspöck & U. Aspöck, 1968

[Afghanistan]

Dilar dochaner H. Aspöck & U. Aspöck, 1968: 5. Holotype, male, ASPOCK. Type locality: Afghanistan: Kabul: Khurd-Kabul [34°24'N 69°24'E], SE of Kabul. Status: H. Aspöck & U. Aspöck 1968: 5.

Dilar dongchuanus C. Yang, 1986 [China]

Dilar dongchuanus C. Yang, 1986: 155. Holotype, male, BAU. Type locality: China: Yunnan: Dongchuan [26°24'N 103°08'E; =Tung-ch'uan, =Tungchwan, =Hweitsch, =Tangdan]. Status: C. Yang 1986: 155.

Dilar duelli U. Aspöck & H. Aspöck, 1995 [France]

Dilar duelli U. Aspöck & H. Aspöck, 1995: 50. Holotype, male, NHMW. Type locality: France: Var: Massif de l'Estérel, Col du Mistral, ENE of Fréjus, ca. 43°26'N 6°44'E. Status: U. Aspöck & H. Aspöck 1995: 50.

Dilar formosanus (Okamoto & Kuwayama, 1920)

[Taiwan]

Dilar formosanus Okamoto & Kuwayama, 1920: 341. Holotype, female, repository unknown. Type locality: Taiwan: 'Arisan' [=Chiayi Prefecture: Alishan or A-li-shan, 23°30'N 120°49'E]. Status: Stange & Wang 1997: 49.

Dilar geometroides H. Aspöck & U. Aspöck, 1968

[Nepal]

Dilar geometroides H. Aspöck & U. Aspöck, 1968: 3. Holotype, male, ZSM. Type locality: Nepal: 'Prov. Nr. 3 East, Sete'. Status: H. Aspöck & U. Aspöck 1968: 3.

Dilar grandis (Banks, 1931) [Malaysia (Sabah)]**comb. n.**

Rexavius grandis Banks, 1931a: 413. Syntypes, male, MCZ. Type locality: Malaysia: Sabah: Borneo, Mt. Kinabalu, Kamborangah. Notes: See discussion under *Rexavius* above.

Dilar harmandi (Navás, 1909) [India]

Nepal harmandi Navás, [1909a]: 661. Holotype, male, MNHP. Type locality: India: West Bengal: Darjeeling [27°02'N 88°20'E] (as: 'Darjeeling en el Himalaya'). Status: H. Aspöck & U. Aspöck 1968: 3.

Notes: See Legrand & Lachaise (1994: 88) for a detailed account of the holotype; earlier type citation by H. Aspöck & U. Aspöck (1968: 3).

Dilar hikosanus Nakahara, 1955 [Japan]

Dilar hikosanus Nakahara, 1955b: 137. Holotype, male, probably in the NSMT. Type locality: Japan: Fukuoka / Oita: Kyushu (island), Hiko-san (mountain) [33°29'N 130°58'E] (as: 'Hikosan, Kyushu'). Status: Kuwayama 1962: 376.

Dilar hornei McLachlan, 1869 [India]

Dilar hornei McLachlan, 1869: 239. Syntype(s), male, BMNH. Type locality: Northwestern India. Status: Ghosh & Sen 1977: 281.

Notes: Type citation by H. Aspöck & U. Aspöck (1968: 3).

Dilar indicus Monserrat, 1989 [India]

Dilar indicus Monserrat, 1989: 420. Holotype, male, NHMB. Type locality: India: 'Cachemira, Rampur'. Status: Monserrat 1989: 420.

Dilar japonicus McLachlan, 1883 [Japan]

Dilar japonicus McLachlan, 1883: 220. Holotype, male, BMNH. Type locality: Japan: Fukushima: Honshu (island), Fukushima [37°44'N 140°28'E] (as: 'Japan (Fukushima in the main Island, ...)'). Status: Kuwayama 1962: 376.

Dilar nohirae Nakahara, 1914: 297. Syntype(s), sex(es) unknown, possibly in the NSMT. Type locality: Japan: Nara: Yoshino [34°21'N 135°51'E] (as: 'Yoshino, Province Yamato'). Synonymy: Nakahara 1955b: 134. Status: Kuwayama 1962: 376.

Dilar japonicus var. *gracilis* Kuwayama, 1921: 71.

Syntype(s), male, Okamoto collection (current repository unknown). Type locality: Not fixed, see Notes. Synonymy: Nakahara 1955b: 134. Status: Kuwayama 1962: 376.

Notes: Kuwayama (1921: 80) mentions three specimens from southern Honshu (island), Japan, in the type series, all in the Okamoto collection.

Dilar juniperi Monserrat, 1988 [Spain]

Dilar juniperi Monserrat, 1988b: 198. Holotype, male, MONSERRAT. Type locality: Spain: Jaén: Collado de los Jardines [38°20'N 3°30'W]. Status: Monserrat 1988b: 198.

Dilar kanoi (Nakahara, 1955) [Taiwan]

Nepal kanoi Nakahara, 1955a: 6. Holotype, male, NSMT. Type locality: Taiwan: Nantou: Sungkang (as: 'Tattaka'). Status: Stange & Wang 1997: 49.

Dilar kirgisus H. Aspöck & U. Aspöck, 1967

[Kirgizia]

Dilar kirgisus H. Aspöck & U. Aspöck, 1967: 59. Holotype, male, ASPOCK. Type locality: Kirgizia: Issyk-Kul (lake). Status: Zakharenko 1988: 764.

Dilar lineolatus Navás, 1909 [Turkey] Nomen

dubium

Dilar lineolatus Navás, [1909a]: 645. Syntype(s), female, ZMHB. Type locality: Turkey: Tekke [40°08'N 29°41'E] (as: 'Tekke en la Turcomania'). Status: Monserrat 1988a: 20. Notes: Earlier type citation by H. Aspöck & U. Aspöck (1968: 3).

Dilar marmoratus (Banks, 1931) [Thailand] **comb. n.**

Rexavius marmoratus Banks, 1931b: 385. Syntypes, male & female, MCZ. Type locality: Thailand: Nakhon Si Thammarat [8°24'N 99°58'E], Khao Luang (mountain) [8°31'N 99°47'E] (as: 'Peninsular Siam: Nakhon Sri Tamarat, Khao Luang'). Notes: See discussion under *Rexavius* above.

Dilar megalopterus C. Yang, 1986 [China]

Dilar megalopterus C. Yang, 1986: 154. Holotype, male, BAU. Type locality: China: Yunnan: Dongchuan [26°24'N 103°08'E; =Tung-ch'uan, =Tungchwan, =Hweitsch, =Tangdan]. Status: C. Yang 1986: 154.

Dilar meridionalis Hagen, 1866 [Andorra, France, Spain]

Dilar meridionalis Hagen, 1866a: 295. Holotype, sex unknown, repository unknown. Type locality: Spain: probably from the Sierra Nevada (mountains) near Granada.

Status: Monserrat 1988b: 184.

Notes: The original description does not indicate where the single specimen of the type series of *meridionalis* was collected. Hagen (1866b: 402) subsequently cited the species from Spain, and McLachlan (1869: 239) states the type locality as 'the Sierra Nevada in the South of Spain'.

Dilar pictus Navás, 1903a: 377. Holotype, female, MCNM. Type locality: Spain: Madrid: near Madrid [M = 40°25'N 3°43'W]. Synonymy: Navás 1909a: 652 (as a variety of *meridionalis*). Status: Monserrat 1988b: 185.

Notes: Subsequently incorrectly cited as a new name by Navás ([1909a]: 652).

Lidar nemorosus Navás, 1909b: 153. Syntype(s), male, repository unknown (see Notes). Type locality: Spain: Huesca: Sierra de Guara (mountains) near the Santuario de San Cosme [SdSC = 42°15'N 0°16'W] (as: 'Sierra de Guara (Huesca), cerca del santuario de San Cosme'). Synonymy: Navás [1924]: 229. Status: Monserrat 1988b: 185.

Notes: Types presumed lost or destroyed. Probably formerly in the Navás collection. Types not listed by Monserrat (1985) as being in the remnants of the Navás collection in the MZB.

Dilar mateui Réal, 1968: 111. Holotype, male, REAL. Type locality: France: Pyrénées-Orientales: 'Vallée de Nohèdes' [Nohèdes (town) = ca. 11 km W of Prades, P=42°38'N 2°25'E]. Synonymy: H. Aspöck et al. 1980: 189. Status: Monserrat 1988b: 185.

Dilar montanus C. Yang, 1992 [China]

Dilar montanus C. Yang, 1992b: 441. Holotype, male, IZASB. Type locality: China: Szechwan [=Sichuan]: Zhongrewu, Xiangcheng [X = 28°54'N 99°40'E; = Hsiangch'eng, = Hsiangcheng]. Status: C. Yang 1992b: 441.

Dilar nevadensis Rambur, 1838 [Spain]

Dilar nevadensis Rambur, [1838]: pl. 9. Syntype(s), sex(es) unknown, ISNB. Type locality: Spain: Granada: Sierra Nevada (mountains), near Granada [G = 37°10'N 3°35'W] (as: 'aux environs de Grenade, dans les petits bois des parties élevée de la Sierra-Nevada'). Status: Monserrat 1988b: 182.

Notes: Type locality from Rambur (1842: 446). At least two syntypes are stated by Navás ([1909a]: 632) to be in the ISNB. Navás ([1909a]: 629) cites his earlier use of the name '*niuatensis*' as an error for *Dilar nevadensis* Rambur.

Cladocera marmoratus Hagen, 1860: 56, nomen nudum. Status: Hagen 1866b: 399.

Notes: '*Cladocera marmorata* Hoffm. Mus. Berol.' was cited by Hagen (1860: 56) without description, definition or indication, and is therefore unavailable, Art. 12a. The binomen *Cladocera marmorata* apparently originated as a manuscript name that was recorded by Hagen from the identification label of a specimen in the Hoffmannsegg Collection of the Museum für Naturkunde, Humboldt Universität, Berlin. Hagen (1866b: 399) subsequently synonymized *Cladocera* with *Dilar*, and *C. marmorata* with *Dilar nevadensis* Rambur, without either name ever having been made available.

Dilar nietneri Hagen, 1858 [Sri Lanka]

Dilar nietneri Hagen, 1858b: 482. Syntype(s), sex(es) unknown, ZMHB. Type locality: Sri Lanka: 'Rainbodde'. Status: H. Aspöck & U. Aspöck 1968: 3.

Notes: Type citations by Navás ([1909a]: 664) and H.

Aspöck & U. Aspöck (1968: 3).

Dilar pallidus Nakahara, 1955 [Taiwan]

Dilar pallidus Nakahara, 1955b: 140. Holotype, male, NSMT. Type locality: Taiwan: Nantou: Sungkang (as: 'Tattaka'). Status: Stange & Wang 1997: 49.

Dilar parthenopaues A. Costa, 1855 [Italy]

Dilar parthenopaues A. Costa, 1855: 19. Lectotype, male, MZUN. Type locality: Italy: Campania: Salerno: Cava de' Tirreni [40°42'N 14°42'E]. Status: H. Aspöck et al. 1980: 190.

Notes: Type locality information and lectotype designation from Pantaleoni (pers. comm.); data from manuscript in preparation on Costa types).

Dilar pumilus Navás, 1903 [Spain]

Dilar pumilus Navás, 1903a: 380. Holotype, male, MNHP. Type locality: Spain: Murcia: near Cartagena [C = 37°36'N 0°59'W]. Status: Monserrat 1988b: 195.

Notes: See Legrand & Lachaise (1994: 90) for a detailed account of the holotype; earlier type citations by Navás (1925: 188) and Monserrat (1988b: 195).

Dilar pusillus C. Yang in Huang et al., 1992

[China]

Dilar pumilus C. Yang in Huang et al., 1988: 197. Holotype, male, probably in the BAU or IZASB. Type locality: China: Tibet [=Xizang]: Medoge County, Beibeng. Status: C. Yang 1992a: 379.

Notes: A junior primary homonym of *Dilar pumilus* Navás, 1903. The objective replacement name is *Dilar pusillus* C. Yang, 1992.

Dilar pusillus C. Yang, 1992a: 379. Status: C. Yang 1992a: 379.

Notes: An objective replacement name for *Dilar pumilus* C. Yang in Huang et al., 1988, nec Navás, 1903.

Dilar saldubensis Navás in Laguna, 1902 [Portugal, Spain]

Dilar saldubensis Navás in Laguna, 1902: 134. Neotype, male, MNHP, designated by Monserrat 1988b: 188. Type locality: Spain: Zaragoza: Zaragoza [41°39'N 0°54'W]. Status: Monserrat 1988b: 187.

Notes: The original type series was formerly in the Navás collection. The specimens of this series are not present in the remnants of the Navás collection in the MZB (Monserrat 1985), and are now presumed lost or destroyed. See also Legrand & Lachaise (1994: 90) for a detailed account of the neotype.

Dilar campestris Navás, 1903a: 380. Lectotype, male, MNHP, designated by Legrand & Lachaise (1994: 88). Type locality: Spain: Ciudad Real: Pozuelo de Calatrava [38°55'N 3°50'W]. Synonymy: H. Aspöck et al. 1980: 189. Status: Monserrat 1988b: 187.

Notes: Earlier type citations by Navás (1925: 188) and Monserrat (1988b: 188).

Fuentenus lusitanicus Navás, [1909a]: 660. Holotype, sex unknown, ZMHB. Type locality: Northern Portugal. Synonymy: Navás [1924]: 232 (as a synonym of *campestris*). Status: Monserrat 1988b: 188.

Notes: Type in poor condition and missing its abdomen. This species was considered to be a nomen dubium by

- Monserrat (1988b: 188), but he accepted Navás' ([1924]: 232) synonymy of *lusitanicus* with *campestris*.
- Dilar septentrionalis*** Navás, 1912 [China, Korea, Russia]
- Dilar septentrionalis* Navás, 1912: 420. Lectotype, male, MNHP, designated by Monserrat (1988a: 20). Type locality: Russia: Vladivostok [43°09'N 131°53'E]. Status: Makarkin 1990: 38.
Notes: See Legrand & Lachaise (1994: 91) for a detailed account of the lectotype.
- Dilar similis*** Monserrat, 1989 [Pakistan]
- Dilar similis* Monserrat, 1989: 419. Holotype, male, NHMB.
Type locality: Pakistan: North-West Frontier: 'Salf-ui-Maluk Sar'. Status: Monserrat 1989: 419.
- Dilar sinicus*** Nakahara, 1957 [China]
- Dilar sinicus* Nakahara, 1957: 31. Holotype, male, probably in the NSMT. Type locality: China: Shansi: between Henglingkuan [35°25'N 111°36'E; =Heng-ling-kuan, =Henglingguan] and Wangmaochen. Status: Nakahara 1957: 31.
- Dilar subdolos*** Navás, 1932 [China] Nomen dubium
- Dilar subdolos* Navás, 1932: 921. Holotype, male, repository unknown (see Notes). Type locality: China: Kiangsu: Chinkiang [32°03'N 119°26'E; =Chen-chiang, =Chenkiang, =Zhenjiang]. Status: Monserrat 1988a: 22.
Notes: Holotype formerly in the Navás collection, now presumed lost or destroyed. Type not listed by Monserrat (1985) as being in the remnants of the Navás collection in the MZB.
- Dilar syriacus*** Navás, 1909 [Syria] Nomen dubium
- Dilar syriacus* Navás, [1909a]: 644. Holotype, male, MNHP.
Type locality: Lebanon: near Beirut [B = 33°52'N 35°30'E] (as: 'Siria, Creo que es de los alrededores de Beirut'). Status: Monserrat 1988a: 19.
Notes: See Legrand & Lachaise (1994: 91) for a detailed account of the holotype.
- Dilar taiwanensis*** Banks, 1937 [Taiwan]
- Dilar taiwanensis* Banks, 1937: 276. Syntype(s), sex(es) unknown, probably in the MCZ. Type locality: Taiwan: Chiayi [=Chia-i]; Alishan [=A-li-shan, 23°30'N 120°49'E] (as: 'Arizan'). Status: Stange & Wang 1997: 49.
- Dilar tibetanus*** C. Yang, 1987 [China]
- Dilar tibetanus* C. Yang, 1987: 197. Holotype, male, probably in the BAU or IZASB. Type locality: China: Tibet: Bomi Co., Yigang. Status: C. Yang 1987: 197.
- Dilar turcicus*** Hagen, 1858 [Southern Europe from Yugoslavia east to Dagestan (Russia)]
- Dilar turcicus* Hagen, 1858a: 129. Holotype, sex unknown, repository unknown. Type locality: Turkey. Status: H. Aspöck et al. 1980: 190.
- Dilar corcyraeus* Navás, [1909a]: 642. Holotype, female, NHMW. Type locality: Greece: Corfu (island). Synonymy: H. Aspöck et al. 1980: 190. Status: Monserrat 1988a: 19.
- Dilar varianorum*** H. Aspöck & U. Aspöck, 1967 [Afghanistan]
- Dilar varianorum* H. Aspöck & U. Aspöck, 1967: 57. Holotype, male, ASPOCK. Type locality: Afghanistan: Nuristan, 25 km N of Barikot [B = 35°18'N 71°36'E]. Status: H. Aspöck & U. Aspöck 1967: 57.
- Dilar vietnamensis*** Zakharenko, 1991 [Vietnam]
- Dilar vietnamensis* Zakharenko, 1991: 142. Holotype, male, ZMUM. Type locality: Vietnam: 'Onang Ninh, Dongkho'. Status: Zakharenko 1991: 142.
- Dilar wangi*** C. Yang, 1992 [China]
- Dilar wangi* C. Yang, 1992b: 441. Holotype, male, IZASB.
Type locality: China: Yunnan: Wengshui, Zhongdian [Z = 27°46'N 99°45'E; =Chung tien]. Status: C. Yang 1992b: 441.
- Dilar yunnanus*** C. Yang, 1986 [China]
- Dilar yunnanus* C. Yang, 1986: 154. Holotype, male, BAU.
Type locality: China: Yunnan: Dehong Dai-Jingpo [=Tehung Shan-kachin] Autonomous District: Ruili [24°01'N 97°52'E; =Jui-li]. Status: C. Yang 1986: 154.
- Genus *Neonallachius*** Nakahara, 1963
- Neonallachius* Nakahara, 1963: 77. Type species: *Neonallachius annandalei* Nakahara, 1963: 77, by original designation. Etymology: Unexplained, probably Neo- (< Gr. *neos*, new) – *-nallachius* (< *Nallachius*, a dilarid genus-group name). Gender: Masculine, no originally attributed or implied gender, here considered masculine, Art. 30d. Status: Oswald & Penny 1991: 42.
- Species and distribution. – 1 species; India, Sri Lanka; see Hynd (1992), Nakahara (1963).
Reviews, revisions and keys. – None.
Biology and immature stages. – Unknown.
- Neonallachius annandalei*** Nakahara, 1963 [India]
- Neonallachius annandalei* Nakahara, 1963: 77. Holotype, male, NZSI. Type locality: India: Orissa: Barkuda Island, Chilka Lake, near Ganjam [G = 19°28'N 85°05'E]. Status: Adams 1970: 7.
- Subfamily *Nallachiinae*** Navás, 1914
- Nallachini* Navás, 1914: 11 (as a tribe of the Dilaridae).
Type genus: *Nallachius* Navás, 1909. Notes: Name incorrectly formed from the type genus.
Nallachiini – Carpenter, 1947: 100 (as a tribe of the Dilariidae). Type genus: *Nallachius* Navás, 1909.
Nallachiinae – Adams, 1970: 8 (as a subfamily of the Dilaridae). Type genus: *Nallachius* Navás, 1909.
- Species and distribution. – See *Nallachius* below.
Reviews, revisions and keys. – See *Nallachius* below.
Biology and immature stages. – See *Nallachius* below.
- Genus *Nallachius*** Navás, 1909
- Nallachius* Navás, [1909a]: 666. Type species: *Dilar prestoni* McLachlan, 1880: 39, by subsequent designation by

Navás 1914: 11. Etymology: An anagram of Lachlanus, from the Latinized surname of Robert McLachlan, English entomologist, see Navás ([1909a]: 665). Gender: Masculine, inferred from the combination '*Nallachus americanus*', Art. 30d. Status: Oswald & Penny 1991: 39.

Nulema Navás, 1914: 12. Type species: *Nulema championi* Navás, 1914: 12, by monotypy. Etymology: An arbitrary combination of letters, see Navás (1914: 12). Gender: Feminine, no originally attributed or implied gender, here considered a natural Latin feminine, Art. 30d. Synonymy: Adams 1970: 8. Status: Oswald & Penny 1991: 39. Known incorrect subsequent spellings: *Nurema*.

Neodilar Carpenter, 1947: 107. Type species: *Dilar hermosa* Banks, 1913: 220, by original designation. Etymology: Unexplained, probably Neo- (< Gr. *neos*, new) – *-dilar* (< *Dilar*, a dilarid genus-group name). Gender: Masculine, no originally attributed or implied gender, here considered masculine, Art. 30d. Synonymy: Adams 1970: 8. Status: Oswald & Penny 1991: 39.

Species and distribution. – 19 species; Eastern United States south to Argentina, including the West Indies (17 spp.), southern Africa (1 sp.) and Vietnam (1 sp.); see Adams (1970), Hoffman (1990), Maes & Flint (1994), Penny ([1978], [1982]), Penny et al. (1997).

Reviews, revisions and keys. – Carpenter 1940 (Nearctic, review); Carpenter 1947 (New World, review); Adams 1970 (New World, revision, key); Penny [1982] (Amazon Basin, review, key).

Biology and immature stages. – Steyskal 1944 (*americanus*: biology); Gurney 1947 (*americanus*: biology, egg, larva, pupa, figs); Peterson 1967 (*americanus*: larva, fig); MacLeod & Spiegler 1961 (*americanus*: biology, egg, larva); Tauber 1991 (*americanus*: larva, fig); MacLeod 1964 (*americanus*: larva, figs); Gepp 1984 (*americanus*: larva, fig); Minter 1992 (*krooni*: egg, larva, figs).

Nallachus adamsi Penny, 1982 [Brazil]

Nallachus adamsi Penny, [1982]: 385. Holotype, male, INPA. Type locality: Brazil: Amazonas: Manaus [3°06'S 60°00'W]. Status: Penny [1982]: 385.

Nallachus americanus (McLachlan, 1881) [Eastern

USA south to Venezuela, West Indies]

Dilar americanus McLachlan, 1881: 55. Holotype, female, MCZ. Type locality: USA: Kentucky: Edmonson Co.: Bee Spring [37°17'N 86°17'W]. Status: Penny et al. 1997: 63. Notes: Type citation by Adams (1970: 27).

Nallachus bruchi Navás, 1923 [Argentina]

Nallachus bruchi Navás, 1923: 195. Holotype, female, repository unknown (see Notes). Type locality: Argentina: Córdoba: Alta Gracia [31°42'S 64°25'W]. Status: Penny [1978]: 30.

Notes: Holotype formerly in the Navás collection, now presumed lost or destroyed. Type not listed by Monserrat (1985) as being in the remnants of the Navás collection in the MZB.

Nallachus championi (Navás, 1914) [Guatemala]

Nulema championi Navás, 1914: 12. Lectotype, male, BMNH, designated by Adams (1970: 22). Type locality:

Guatemala: Cerro Zunil [14°44'N 91°27'W]. Status: Penny [1978]: 30.

Nallachus bicolor Adams, 1970 [Argentina, Brazil]

Nallachus bicolor Adams, 1970: 19. Holotype, male, PMY. Type locality: Brazil: Santa Catarina: Nova Teutonia, 27°11'S 52°23'W. Status: Penny [1978]: 30.

Nallachus hermosa (Banks, 1913) [Colombia]

Dilar hermosa Banks, 1913: 220. Holotype, female, MCZ.

Type locality: Colombia: Cundinamarca: Cordillera Oriental, Pacho [5°09'N 74°08'W]. Status: Penny [1978]: 30. Notes: Type citation by Adams (1970: 25).

Nallachus infuscatus Penny, 1982 [Brazil]

Nallachus infuscatus Penny, [1982]: 386. Holotype, male, INPA. Type locality: Brazil: Amazonas: Reserva Ducke [2°54'S 59°57'W], 26 km N of Manaus [3°07'S 60°02'W]. Status: Penny [1982]: 386.

Nallachus krooni Minter, 1986 [Malawi, Namibia, South Africa]

Nallachus krooni Minter, 1986: 88. Holotype, male, NCIP.

Type locality: South Africa: Transvaal: Wylliespoort, 22°55'S 29°56'E. Status: Minter 1986: 88.

Nallachus limai Adams, 1970 [Brazil]

Nallachus limai Adams, 1970: 23. Holotype, male, PMY.

Type locality: Brazil: Santa Catarina: Nova Teutonia, 27°11'S 52°23'W. Status: Penny [1978]: 30.

Nallachus loxanus Navás, 1911 [Ecuador]

Nallachus loxanus Navás, 1911: 219. Holotype, male,

MNHP. Type locality: Ecuador: Loja: Loja [3°59'S 79°16'W] (as: 'Équateur, Loja'). Status: Penny [1978]: 30. Notes: See Legrand & Lachaise (1994: 89) for a detailed account of the holotype.

Nallachus maculatus Penny, 1982 [Brazil]

Nallachus maculatus Penny, [1982]: 389. Holotype, male, INPA. Type locality: Brazil: Rondonia: 48 km E of Porto Velho [PV = 8°45'S 63°54'W]. Status: Penny [1982]: 389.

Nallachus ovalis Adams, 1970 [Brazil]

Nallachus ovalis Adams, 1970: 17. Holotype, male, PMY.

Type locality: Brazil: Santa Catarina: Nova Teutonia, 27°11'S 52°23'W. Status: Penny [1978]: 30.

Nallachus parkeri Penny, 1994 [Costa Rica]

Nallachus parkeri Penny, 1994: 309. Holotype, male, IN-

BIO. Type locality: Costa Rica: Guanacaste: 3 km SE of Rio Naranjo (town) [RN = 10°41'N 85°06'W]. Status: Penny 1994: 309.

Nallachus phantomellus Adams, 1970 [Brazil]

Nallachus phantomellus Adams, 1970: 12. Holotype, male,

PMY. Type locality: Brazil: Mato Grosso do Sul: Rio Caraguatã, 21°48'S, 52°27'W. Status: Penny [1978]: 30.

Nallachus ponomarenkoi Zakharenko, 1991

[Vietnam]

Nallachus ponomarenkoi Zakharenko, 1991: 143. Holo-

type, male, ZMUM. Type locality: Vietnam: Kien Giang: 'Tho Tu'. Status: Zakharenko 1991: 143.

Nallachus prestoni (McLachlan, 1880) [Brazil]

Dilar prestoni McLachlan, 1880: 39. Holotype, male, BMNH.

Type locality: Brazil: Rio de Janeiro: near Rio de Janeiro [RdJ = 22°53'S 43°17'W]. Status: Penny [1978]: 30.
Notes: Type citation by Adams (1970: 17).

Nallachius pulchellus (Banks, 1938) [Southwestern USA, Cuba, Costa Rica]

Dilar (*Nallachius*) *pulchellus* Banks, 1938: 289. Holotype, male, MCZ. Type locality: Cuba: Cienfuegos: Soledad, near Cienfuegos [C = 22°10'N 80°27'W]. Status: Penny et al. 1997: 62.

Notes: Type citation by Adams (1970: 14).

Nallachius pupillus (Navás, 1930) [Paraguay]

Nulema pupillus Navás, 1930: 62. Holotype, male, ZMHA (see Notes). Type locality: Paraguay: Cordillera: San Bernardino [25°16'S 57°16'W]. Status: Penny [1978]: 30.

Notes: Type citation by Adams (1970: 29). Type presumed destroyed in the Hamburg Museum during WWII.

Nallachius reductus Carpenter, 1947 [Paraguay]

Nallachius reductus Carpenter, 1947: 104. Holotype, male, MCZ. Type locality: Paraguay: Italyria (as: 'Ualyaia, Paraguay'). Status: Penny [1978]: 30.

Notes: Type citation by Adams (1970: 15).

TAXA REMOVED FROM THE DILARIDAE

Berotha bannana (C. Yang, 1986) [China] **comb. n.**

Berothella bannana C. Yang, 1986: 156. Holotype, female, BAU. Type locality: China: Yunnan: Xishuangbanna Dai [=Hsi-shuang-pan-na Thai] Autonomous District, Menghai [21°59'N 100°35'E; = Meng-hai].

Notes: Yang's figure clearly shows that this species belongs in the Berothidae, where it appears to be a species of the genus *Berotha* (U. Aspöck, pers. comm.). The species is here transferred to the Berothidae under the new combination *Berotha bannana*.

ACKNOWLEDGMENTS

I thank Ulrike Aspöck, Vladimir Makarkin, Victor Monserrat and Roberto Pantaleoni for answering my queries to a variety of questions, as attributed in the text above. Horst Aspöck, Ulrike Aspöck, Vladimir Makarkin, Victor Monserrat and Norm Penny kindly reviewed an earlier draft of the manuscript.

INDICES

(valid names italicized)

Genus-group name	valid genus
<i>Berothella</i> Banks	<i>Berothella</i>
Cladocera Hagen	<i>Dilar</i>
<i>Dilar</i> Rambur	<i>Dilar</i>
Fuentenus Navás	<i>Dilar</i>
Lidar Navás	<i>Dilar</i>
<i>Nallachius</i> Navás	<i>Nallachius</i>
Neodilar Carpenter	<i>Nallachius</i>

<i>Neonallachius</i> Nakahara	<i>Neonallachius</i>
Nepal Navás	<i>Dilar</i>
Nulema Navás	<i>Nallachius</i>
Rexavius Navás	<i>Dilar</i>

Species-group name	valid species
<i>adamsi</i> Penny	<i>Nallachius adamsi</i>
<i>algericus</i> Navás	<i>Dilar algericus</i>
<i>americanus</i> McLachlan	<i>Nallachius americanus</i>
<i>annandalei</i> Nakahara	<i>Neonallachius annandalei</i>
<i>aspersus</i> C. Yang in Huang et al.	<i>Dilar aspersus</i>
<i>bannana</i> C. Yang	<i>Berothella bannana</i>
<i>bolivari</i> Navás	<i>Dilar bolivari</i>
<i>bruchii</i> Navás	<i>Nallachius bruchii</i>
<i>budtzi</i> Esben-Petersen	<i>Dilar corsicus</i>
<i>caesarulus</i> H. Aspöck & U. Aspöck	<i>Dilar caesarulus</i>
<i>campestris</i> Navás	<i>Dilar saldubensis</i>
<i>championi</i> Navás	<i>Nallachius championi</i>
<i>corcyraeus</i> Navás	<i>Dilar turcicus</i>
<i>corsicus</i> Navás	<i>Dilar corsicus</i>
<i>dicolor</i> Adams	<i>Nallachius dicolor</i>
<i>dissimilis</i> Navás	<i>Dilar dissimilis</i>
<i>distinctus</i> Nakahara	<i>Dilar distinctus</i>
<i>dochaner</i> H. Aspöck & U. Aspöck	<i>Dilar dochaner</i>
<i>dongchuanus</i> C. Yang	<i>Dilar dongchuanus</i>
<i>duelli</i> U. Aspöck & H. Aspöck	<i>Dilar duelli</i>
<i>formosanus</i> Okamoto & Kuwayama	<i>Dilar formosanus</i>
<i>geometroides</i> H. Aspöck & U. Aspöck	<i>Dilar geometroides</i>
<i>gracilis</i> Kuwayama	<i>Dilar japonicus</i>
<i>grandis</i> Banks	<i>Dilar grandis</i>
<i>harmandi</i> Navás	<i>Dilar harmandi</i>
<i>hermosa</i> Banks	<i>Nallachius hermosa</i>
<i>hicosanus</i> Nakahara	<i>Dilar hicosanus</i>
<i>hornei</i> McLachlan	<i>Dilar hornei</i>
<i>indicus</i> Monserrat	<i>Dilar indicus</i>
<i>infuscatus</i> Penny	<i>Nallachius infuscatus</i>
<i>japonicus</i> McLachlan	<i>Dilar japonicus</i>
<i>juniperi</i> Monserrat	<i>Dilar juniperi</i>
<i>kanoi</i> Nakahara	<i>Dilar kanoi</i>
<i>kirgisus</i> H. Aspöck & U. Aspöck	<i>Dilar kirgisus</i>
<i>kolbei</i> Navás	<i>Dilar dissimilis</i>
<i>krooni</i> Minter	<i>Nallachius krooni</i>
<i>limai</i> Adams	<i>Nallachius limai</i>
<i>lineolatus</i> Navás	<i>Dilar lineolatus</i>
<i>loxanus</i> Navás	<i>Nallachius loxanus</i>
<i>lusitanicus</i> Navás	<i>Dilar saldubensis</i>
<i>maculatus</i> Penny	<i>Nallachius maculatus</i>
<i>marmoratus</i> Banks	<i>Dilar marmoratus</i>
<i>marmoratus</i> Hagen	<i>Dilar nevadensis</i>
<i>mateui</i> Réal	<i>Dilar meridionalis</i>
<i>megalopterus</i> C. Yang	<i>Dilar megalopterus</i>
<i>meridionalis</i> Hagen	<i>Dilar meridionalis</i>
<i>montanus</i> C. Yang	<i>Dilar montanus</i>
<i>memorosus</i> Navás	<i>Dilar meridionalis</i>

nepos Navás *Dilar dissimilis nevadensis* Rambur *Dilar nevadensis nietneri* Hagen *Dilar nietneri nohirae* Nakahara *Dilar japonicus ovalis* Adams *Nallachus ovalis pallidus* Nakahara *Dilar pallidus parkeri* Penny *Nallachus parkeri parthenopaeus* A. Costa *Dilar parthenopaeus phantoma* Banks *Berothella phantoma phantomellus* Adams *Nallachus phantomellus pictus* Navás *Dilar meridionalis pomomarenkoi* Zakharenko *Nallachus pomomarenkoi prestoni* McLachlan *Nallachus prestoni pretiosa* Banks *Berothella pretiosa pulchellus* Banks *Nallachus pulchellus pumilus* C. Yang in Huang et al. *Dilar pusillus pumilus* Navás *Dilar pumilus pupillus* Navás *Nallachus pupillus pusillus* C. Yang *Dilar pusillus reductus* Carpenter *Nallachus reductus saldubensis* Navás in Laguna *Dilar saldubensis septentrionalis* Navás *Dilar septentrionalis similis* Monserrat *Dilar similis sinicus* Nakahara *Dilar sinicus subdolos* Navás *Dilar subdolos syriacus* Navás *Dilar syriacus taiwanensis* Banks *Dilar taiwanensis tibetanus* C. Yang *Dilar tibetanus turcicus* Hagen *Dilar turcicus vartianorum* H. Aspöck & U. Aspöck *Dilar vartianorum vietnamensis* Zakharenko *Dilar vietnamensis wangi* C. Yang *Dilar wangi yunnanus* C. Yang *Dilar yunnanus*

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Received: 8 May 1998

Accepted: 4 June 1998

Bibliography of the Neuropterida

Bibliography of the Neuropterida Reference number (r#):
9236

Reference Citation:

Oswald, J. D. 1998 [1998.??.??]. Annotated catalogue of the Dilaridae (Insecta: Neuroptera) of the World. Tijdschrift voor Entomologie 141:115-128.

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