

Nomenclatural notes on some Palaearctic Gyrinidae (Coleoptera)

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Abstract. Several names of Gyrinidae taxa have been found in the literature which are given with incorrect publishing dates. The correct data could be assigned to these taxa by specifying the true publishing dates mainly of five important works: Aubé's '*Species général*' is dated September 29, 1838, and the third part of his '*Iconographie*' December 31, 1838; Hatch's '*Phylogeny of Gyrinidae*' is dated 1926 instead of 1925; Modeer's work on Gyrinidae is dated 1780 instead of 1776; Ochs' works on Dineutini are dated again 1926 instead of 1927. Incorrectly cited publishing data of a few further works are also rectified. Nomenclatural notes on several names in the family Gyrinidae are provided. These are on generic level *Potamobius* Stephens, 1829b, and *Potamobius* Hope, 1838, which are both junior subjective synonyms of *Orectochilus* Dejean, 1833 as well as junior primary homonyms of *Potamobius* Samouelle, 1819 (Decapoda), and thus they are permanently invalid. Five specific names were found to be junior primary homonyms. One of them, *Gyrinus orientalis* Régimbart, 1883 is replaced by *Gyrinus mauricei* nom. nov. Three names are not only junior homonyms, but also junior subjective synonyms, and thus no replacement name is currently needed: *Gyrinus striatus* Olivier, 1795, *Gyrinus urinator* Drapiez, 1819, and *Gyrinus lineatus* Lacordaire, 1835. *Gyrinus oblongus* Boisduval, 1835 is another junior primary homonym, but this name is conserved by application of Articles 23.9.1 and 23.9.2 of the ICZN (1999). The lectotype of *Dytiscus natator* Linnaeus, 1758 (currently in *Gyrinus* Geoffroy, 1762) is designated as the neotype of *Gyrinus pygolampis* Modeer, 1780 for stabilising the nomenclature; *Gyrinus pygolampis* thus becomes a junior objective synonym of *G. natator*. Miscellaneous notes are provided on *Gyrinus brinki* Ali & Jasim, 1989, *G. curtus* Régimbart, 1883, *G. strigosus* Ghiliani, 1887, *G. thurtharus* Ali & Jasim, 1989, *G. violaaquatica* Modeer, 1780, *G. viridimaculatus* Atkinson 1891, and *Orectochilus villosus seidlitzii* Jacobson, 1908. Additionally, some infrasubspecific names are shortly dealt with.

Key words. Coleoptera, Gyrinidae, nomenclature, homonymy, synonymy, doubtful name, new replacement name, neotype designation, first reviser action, date of publication

Introduction

With nearly 900 species, Gyrinidae is the second largest family of aquatic Adephaga. However, in contrast to all other hydradephagan families, there is no recent comprehensive catalogue for the Gyrinidae. The only World Catalogue is that by AHLWARTH (1910), and the Catalogue of Palaearctic Coleoptera, in which Gyrinidae were compiled by MAZZOLDI (2003). GUSTAFSON & MILLER (2013) treated the family-group names and the generic names on a world-wide scale, but species names were not dealt with. In course of preparing a new and updated edition of the Palaearctic Catalogue of Gyrinidae we found several nomenclatural inconsistencies and errors in the 2003 edition (MAZZOLDI 2003), as well as some omitted names of taxa described before 2003. Because the new catalogue is not a good platform for the respective corrections, comments and nomenclatural acts, we summarise and explain them in the present paper. To support the understanding of the reader, the most important results of our studies are additionally illustrated in Table 1 by giving a comparison of the nomenclatural situations before and after our studies.

Appeal: All colleagues are encouraged to send their comments, communicate eventual mistakes and overlooked homonymies and by this support the stability of the nomenclature as well as eventual future applications to the International Commission on Zoological Nomenclature.

Material and methods

Frequently discussed works are abbreviated in the text as follows:

' <i>Iconographie</i> '	full title see AUBÉ (1838a);
' <i>Species général</i> '	full title see AUBÉ (1838b);
' <i>PalCat</i> '	Gyrinidae part of the first edition of <i>Catalogue of Palaearctic Coleoptera</i> (MAZZOLDI 2003)

Authors' comments and translations are given in square brackets.

The new edition of the Palaearctic Catalogue will include only available names. This is one of several reasons why some names which were given in the *PalCat* will lack in the new edition. We comment all these cases in the sections below. Names are treated in alphabetic order according to the name in original combination. A few infrasubspecific names are mentioned in a separate section, although such names will not be included in the new edition of the Palaearctic Catalogue either. In general, we do not deal with 'sensu names', 'museum names', 'in litteris names' and misidentifications. Names occurring in diverse catalogues and price-lists etc. of the 19th century can often be considered *nomina nuda* and thus unavailable: e.g. GRAVENHORST (1807), DEJEAN (1821, 1833, 1836), STURM (1826, 1843), MOTSCHULSKY (1853), and numerous others. We did not check all such names whether they have been made available since they were published. Thus, the detection of still more homonymies in the future cannot be excluded. DAHL (1823) is a special case. He published a price list which contained about 150 hydradephagan names to several of which an 'author' Dahl might be attributed formally (as was often done e.g. by Dejean and Aubé), but all names are *nomina nuda* because no descriptive note at all was included. Additionally, Dahl's list was 'suppressed for the purposes of zoological nomenclature' in Opinion 710 of the ICZN (1964). This Opinion seems still to be relatively unknown, and thus we here make note of it.

In some of their works authors like Aubé, Guignot and Régimbart have described the same hydradephagan species twice (rarely even three times in Dytiscidae) without giving a reference to the first description. Such ‘second descriptions’ will be included in the new edition of the Palaearctic Catalogue, but not dealt with in the present work. However, as all names produced in this way are junior synonyms and also junior homonyms, here we want to point out a potential problem that could arise when the descriptions are based on syntype series: Possible future lectotype designations of those taxa may lead to some kind of confusion. Authors, who in their future work will designate lectotypes from such type series, are encouraged to explicitly designate the same lectotype specimen for both names, in order to make them stay objective synonyms (see also NILSSON 2016: 13).

Several of the names treated in the present work are homonyms for which we propose a solution. We do not deal with homonyms which have been already replaced in the past. Secondary homonyms are also not dealt with because none of those we have found causes a nomenclatural conflict. According to Article 57.2 of the ICZN (1999), junior primary homonyms are (without additional action) permanently invalid, except those which are specified in Articles 57.2.1–57.2.3. None of the homonyms treated by us belongs to these exceptions, and thus we do not refer in each case to Article 57.2.

Comments on publication dates

Publication dates of AUBÉ’s ‘*Iconographie*’ (1836–1838a) and ‘*Species général*’ (1838b)

Dating AUBÉ’s ‘*Iconographie*’ and AUBÉ’s ‘*Species général*’ is especially complicated because both works must have been prepared more or less at the same time (e.g. descriptions of many species as well as several figures in the text are largely identical) and in several cases in the ‘*Species général*’ a reference is given to the ‘*Iconographie*’, the former most probably intended to be published after the latter. There are several taxa which are described as new in both works; thus, these are homonyms and synonyms and so far it was never dealt with which of the respective names has priority.

This is why we made intensive research into the publishing dates of Aubé’s works. We have studied not only books and periodicals which are given as relevant for this problem in EVENHUIS (1997a), but also many others of which only the most important shall be cited here (in alphabetic order): BALFOUR-BROWNE (1936), BOUSQUET (2016), ERICHSON (1837, 1838, 1839), FALKENSTRÖM (1929, 1940), GEMMINGER & HAROLD (1868), GUIGNOT (1931–1933), LACORDAIRE (1854) and SHERBORN (1922).

The results of our research are the following:

- The complete ‘*Iconographie*’ has been issued in ten ‘livraisons’ during the years 1836, 1837 and 1838, each ‘livraison’ containing several ‘feuilles’ of 16 pages and one or two plates.
- According to GUIGNOT (1932: 547–548), pages 1–64 [= the first four ‘feuilles’] of Aubé’s ‘*Iconographie*’ have been published in the period from November until December 1836. This seems to be in contrast to BOUSQUET (2016: 49) who refers to BALFOUR-BROWNE (1936: 105) and counts pages 1–48 [= the first three ‘feuilles’] as published between October 1st and December 1st, 1836. However, BALFOUR-BROWNE (1936) did not deal with

the publishing date of the fourth ‘feuille’. Here, we trust in Guignot’s data because (1) these cover not only the year 1836, but instead the complete time span from 1836 until 1838 and (2) because plates 4 and 5 – which were no doubt published in 1836 – belong to species which are dealt with on pages 52–58 [included in the fourth ‘feuille’] of the ‘Iconographie’. If we accept BALFOUR-BROWNE’S (1936) data for the first three ‘feuilles’ as well as GUIGNOT’S (1932) data for the fourth ‘feuille’, we can finally conclude in accordance with Article 21.3 of the ICZN (1999) that pages 1–48 of Aubé’s ‘Iconographie’ must be dated December 1, 1836, and pages 49–64 December 31, 1836.

- Pages 65–224 of the ‘Iconographie’ have been published in 1837. Since no exact issuing dates of the ‘livraisons’ of the ‘Iconographie’ are known, these all must be dated December 31, 1837 (see also BOUSQUET 2016: 49).
- Pages 225–415 have been published in 1838 and again no exact issuing dates of the ‘livraisons’ are known; thus, these must be dated December 31, 1838.
- There is little doubt about the issuing date of Aubé’s ‘*Species général*’ – it was published as a complete book in September 1838 (SHERBORN 1922: xix; see also the issue of September 29 of the weekly published ‘*Bibliographie de la France*’ where the ‘*Species général*’ is noted as already published; see also BOUSQUET 2016: 49). Thus, according to Article 21.3 of the ICZN (1999) the publishing date of AUBÉ’S ‘*Species général*’ must be adopted as September 29, 1838.

It follows that of all names, which have been published twice as new by Aubé in the year 1838, those published in the ‘*Species général*’ have priority over the same names which have been published in the 1838 part of the ‘*Iconographie*’ (see Table 1).

Publication date of MODEER’S ‘*Anmärkningar angående släktet Gyrinus*’

MODEER’S work was published in the ‘*Physiographiska Sällskapets Handlingar*’ and is usually dated to the year 1776. This year is given e.g. in HAGEN (1862: 544) and HORN & SCHENKLING (1928: 829) – both usually quite reliable and broadly accepted sources of publishing dates. To our knowledge only one volume (‘Första Dele’) of the ‘*Handlingar*’ was published which contains four parts (‘Stycke’). Since the first three parts are usually bound together and on the title page of the first part is given the year 1776, it was widely accepted that the first three parts have been published all together in 1776. At the end of the last page of the fourth part (‘Fjerde Stycke’) the issuing date ‘Maj 1786’ is printed; thus, here seems to be little doubt about the year of issuing.

MODEER’S work contains (among others) the description of *Gyrinus violaaquatica* (see below) which is deemed to be a subjective synonym of *Orectochilus villosus* (O. F. Müller, 1776). The priority conflict between both names induced us to search for an acceptable solution. In particular, we had the idea to check the publishing dates of the first three Stycke, because it seemed to us to be quite unlikely that they all should have been published in 1776 and the fourth only in 1786. Among others we found an online biography of Adolph Modéer [sic!] (<https://sok.riksarkivet.se/sbl/Presentation.aspx?id=9392>; last access May 2016) where his Gyrinidae article is given with the year 1781: ‘Anmärkningar angående släktet Gyrinus (Physiographiska säll-skapets handlingar, d 1, Sthlm 1776–86, s 155–162 8, nr 21, 1781)’.

In GMELIN (1799: 596) is given: ‘a) Physiographiska Sällskaps Handlingar. Stockholm. 8. Första Delens Första Stycke [= first part]. 1776. Andra [= second part]. 1778. Tredj [= third part]. 1781. Fjerde [= fourth part]. 1786’. Generally, we trusted strongly in these data because J. F. Gmelin was a very skilled scientist and contemporary of A. Modeer and A. J. Retzius (see below).

Another strong indication that the date 1776 is incorrect for the third ‘Stycke’ can be found in an article by RETZIUS regarding the plant genus *Thunbergia* (Acanthaceae: Thunbergioideae) which is printed on pp. 163–165, and thus directly after Modeer’s article: here this author cites an article which was published on p. 65 of the ‘Kongliga Svenska Svetenskaps-Academiens Handlingar’ of the year 1776. It seems to be quite impossible that at this time in a work, which shall have been published in 1776, an article can be cited which was published in the same year. Additionally, we found that the genus *Thunbergia* Retzius has been conserved in 1978 by a congress of the ICBN (International Congress of Botanical Nomenclature) with the year 1780. We have not been able to find any justification for this ruling of the congress, but this date seems to be widely accepted by the botanist community.

Accidentally, we found the following entry in the ‘*Magazin des Buch- und Kunst-Handels*’ (BREITKOPF 1780: 941): ‘Von den Physiographiska Sällskapets [not Sällskapets!] Handlingar ist des ersten Theils 3tes Stück in Norströms Druckerey auf 5 ½ Bogen in 8. mit einem Kupfer erschienen. ... Modeer, Anmerkungen über die Species von *Gyrinus*. Retzius *Thunbergia capensis*. ...’ [= The third part of the first volume of the Physiographiska Sällskapets Handlingar came out at Norström’s printers on 5 ½ sheets in 8. with one copperplate ... Modeer, remarks on the species of *Gyrinus*. Retzius *Thunbergia capensis* ...].

BREITKOPF’S (1780) work has two volumes, each volume containing six parts. According to the preface in volume I, he tried to collect interesting literature published in one month and to give an overview about these works in the following month (he conceded that he was not always successful in doing so). The short note about Modeer and Retzius (pp. 936–943) is given in a section ‘Ausländ[ische] Neue Schriften. 15. Litteratur’ [= Foreign new writings ...] in the last part of volume II which was issued in late 1780 (most probably in December 1780, but by no means in the year 1781). Thus, there cannot be any doubt that Modeer’s article has not been published in 1781 and by no means in 1776.

MODEER (1780) in his work dealt with seven species, five of which were described as new: *Gyrinus grossus* Modeer, 1780: 156, *G. orientalis* Modeer, 1780: 160 (both currently in *Dineutus* W. S. Macleay, 1825), *G. formosus* Modeer, 1780: 157 (currently in *Aulonogyrus* Motschulsky, 1853), *G. pygolampis* Modeer, 1780: 158, and *G. violaaquatica* Modeer, 1780: 160 (before all dated 1776). Fortunately, the new dating of MODEER’S work does not cause any new priority conflict. On the contrary, the new dating of *G. violaaquatica* avoids an eventual conflict with *Gyrinus villosus* O. F. Müller, 1776 (currently in *Orectochilus* Dejean, 1833; MÜLLER’S (1776) work was published May 20, 1776; see EVENHUIS 1997b: 557) which is a subjective synonym of the former and in use as a valid name for a long time. The two taxa *G. pygolampis* and *G. violaaquatica* are treated in more detail below, in the section ‘Miscellaneous notes’.

Since the ‘*Handlingar*’ seems to be widely unknown, we conclude here with some information about the four parts (a digitised version of the journal is available under <http://>

resolver.sub.uni-goettingen.de/purl?PPN608224766; last access May 2016) and add the year of publication on the four ‘Stycke’:

- Part 1: ‘Första Delens Första Stycke’; 13 pp. [unpaginated] + pp. 1–64 + 1 pl.; published in 1776;
- Part 2: ‘Första Delens Andra Stycke’; pp. 65–131 + 1 p. [unpaginated] + 1 pl.; published in 1778;
- Part 3: ‘Första Delens Tredje Stycke’; pp. 133–218 + 2 pp. [unpaginated] + 1 pl.; published in 1780;
- Part 4: ‘Första Delens Fjerde Stycke’; pp. 221–318 + 6 pp. [unpaginated]; published in 1786.

Publication date of HATCH’s ‘*Phylogeny of Gyrinidae*’

In the *PalCat*, as well as in many other papers (most recently in GUSTAFSON & MILLER 2013) the outstanding work by Hatch regarding the classification of Gyrinidae is cited as being published in 1925. However, the fifth volume of the ‘*Papers of the Michigan Academy of Sciences, Arts and Letters*’ was published on February 8, 1926 – the date is stated on p. viii of the sixth volume of ‘the *Papers*’ (1927). Accordingly, the year of publication of the subgenus *Spinodineutes* Hatch is 1826.

Publication date of OCHS’s work from 1926 on Dineutini

OCHS’ (1926a,b,c,d) work on Dineutini was published in four separate issues (numbers 3–4, 5, 6 and 8) in the year 1926 with dates May 16, May 29, June 12 and July 8 (dates printed on the frontispieces of the issues). *Dineutus longimanus cubensis* Ochs was mentioned by name only on p. 138 of the third issue and described one month later on p. 192 in the fourth issue. GUSTAFSON & MILLER (2015: 66) dated this subspecies to the year 1927 instead of the year 1926 and justified the change by the dates printed on the frontispiece of their copy. Unfortunately, these authors got copies of the four parts of Ochs’ work which lack the frontispieces of the separate issues and were only provided with the frontispiece for the complete volume where is given ‘1926–1927’ (G. Gustafson, pers. comm.).

Homonyms

Gyrinus lineatus Stephens, 1828 and *Gyrinus lineatus* Lacordaire, 1835

The name *Gyrinus lineatus* appeared for the first time in DEJEAN’S (1821: 20) second catalogue, where it was attributed to J. C. Hoffmannsegg and as a synonym of ‘*Urinator*. Germ[ar].’ The name is nomen nudum because it was not accompanied by a description and no previous description exists. It was also given as a nomen nudum in several other catalogues from the first half of the 19th century, e.g. in STURM (1826: 145) with authorship ‘Il.’ [= Illiger] and as synonym of ‘*urinator*. Germ.’

However, the taxon was subsequently described as available by STEPHENS (1828: 97) and by Lacordaire in BOISDUVAL & LACORDAIRE (1835: 342; giving a hint on that name in DEJEAN

1833: 58) – both authors assigned the authorship to Hoffmannsegg as well. As there is no hint in Lacordaire’s description, that he was aware of the previous description of STEPHENS (1828), we consider both descriptions as original. Both names have appeared in the subsequent literature as junior subjective synonym of *Gyrinus urinator* Illiger, 1807 – the synonymy of *Gyrinus lineatus* Stephens was first established by BRULLÉ (1835: 236) and the synonymy of *Gyrinus lineatus* Lacordaire with *G. urinator* by AUBÉ (1838b: 704) – however never have both names appeared in the same work, and both names were missing in the ‘PalCat’.

We treat both names as junior subjective synonyms of *G. urinator*, and *Gyrinus lineatus* Lacordaire also as a junior primary homonym of *Gyrinus lineatus* Stephens.

***Gyrinus oblongus* Boisduval, 1835**

Recently, we found a work of Ludwig Heinrich Freiherrn von Block (BLOCK 1799) in which also eight hydradephagan species are dealt with. This work is mainly a list of species which have been found at that time in the ‘Plauischer Grund’, a landscape in the south-west of Dresden (Germany). In this list are included descriptions of a few new taxa, the single hydradephagan of them is *Gyrinus oblongus* Block, 1799 on page 100 (see also BOUSQUET 2016: 81). The only other Gyrinidae species listed is *Gyrinus natator*. The description is rather short and scarce, and can be applied to several *Gyrinus* species known to occur near Dresden. We have no information on the whereabouts of Block’s collection, and thus it seems to be impossible to clear the identity of his species. As far as we know, *Gyrinus oblongus* Block was never mentioned as the valid name of any species since its description, in particular not after 1899. Accordingly, *Gyrinus oblongus* Boisduval, 1835: 52 (currently in *Macrogyrus*) described from ‘Nouvelle-Hollande’ [= Australia] is a junior primary homonym of *Gyrinus oblongus* Block, 1799, and thus Boisduval’s name should be permanently invalid.

However, mainly due to the fact, that *Macrogyrus oblongus* was one of the first Coleoptera species with completely sequenced mitochondrial genome, there exist at least 30 works published during last 50 years and by more than 10 authors (see Appendix) in which *M. oblongus* is mentioned as a valid name of the species. According to Article 23.9.2 of the ICZN (1999), we fix here the precedence of the younger name *Gyrinus oblongus* Boisduval, 1835 over the older name *Gyrinus oblongus* Block, 1799, and thus Boisduval’s name is qualified by the term nomen protectum and Block’s invalid, but older, name by the term nomen oblitum.

***Gyrinus orientalis* Régimbart, 1883**

Gyrinus orientalis Régimbart, 1883: 167 is a junior primary homonym of *Gyrinus orientalis* Modeer, 1780: 160 (currently in *Dineutus*), and thus Régimbart’s name is permanently invalid. At present both taxa are treated as different valid species. Article 23.9.5 of the ICZN (1999) cannot be applied because Modeer’s name was transferred to the genus *Dineutus* only by OCHS (1926a: 73) and not before 1900. There is no name available to replace *G. orientalis* Régimbart. OCHS (1929: 2) published a ‘female form’ *politus* of *G. orientalis* Régimbart, but this is an infrasubspecific entity, and thus not an available name according to Article 45.6.4 (ICZN 1999).

This is why we hereby replace the permanently invalid name *Gyrinus orientalis* Régimbart, 1883 by a new replacement name, *Gyrinus mauricei* nom. nov. The name is a substantive in the singular genitive formed from the forename of Maurice Régimbart and in honour of that great entomologist.

***Gyrinus striatus* Olivier, 1795**

Gyrinus striatus Olivier, 1795: 11 was missing in the 'PalCat'. It is a junior primary homonym of *G. striatus* Fabricius, 1792: 203 (currently in *Aulonogyrus*), and thus it is permanently invalid.

It is quite clear that *Gyrinus striatus* Olivier denotes one of the two *Aulonogyrus* species known from Europe: *A. concinnus* (Klug, 1834) or *A. striatus* (Fabricius, 1792) – both have been recorded from Spain which is the type locality of Olivier's taxon. However, the two species are externally very similar and the description of this taxon does not allow a safe attribution to one of the two species. OLIVIER (1795) described his taxon on the basis of material from the 'Cabinet de M. Gigot d'Orcy'. According to HORN et al. (1990: 138) Gigot's collection should be preserved in the Muséum d'Histoire Naturelle, Genève; however, no syntypes of this taxon were found in this museum. Since the name is a junior primary homonym and thus permanently invalid, we do not consider it necessary to designate a neotype and clarify the identity of the taxon, but instead leave *Gyrinus striatus* Olivier as nomen dubium.

***Gyrinus urinator* Drapiez, 1819**

Gyrinus urinator Drapiez, 1819: 42 was missing in the 'PalCat'. It is a junior primary homonym of *Gyrinus urinator* Illiger, 1807: 299, and thus Drapiez's name is permanently invalid. The identity of this taxon might be objected because the author did not mention the bronzed shiny longitudinal stripes on the elytra; however, the yellowish brown ventral surface together with the type locality (Piedmont, Italy) leave no doubt that the species Drapiez studied is in fact *G. urinator* Illiger. Thus, Drapiez's name is not only a homonym but also a junior subjective synonym of Illiger's name.

***Potamobius* Stephens, 1829 and *Potamobius* Hope, 1838**

The generic name *Potamobius* was missing in the 'PalCat'. GUSTAFSON & MILLER (2013) attributed the name to HOPE (1838) who mentioned it with authorship of W. E. Leach and with the type species *Gyrinus modeeri* Marsham, 1802 [= *Orectochilus villosus villosus* O. F. Müller, 1776]. However, *Potamobius* is for the first time mentioned as a gyrid genus already in STEPHENS (1829b: 54), again attributed to 'Leach MMS' (manuscript name). The synonymy of Stephens' name with *Orectochilus* was already stated by BALFOUR-BROWNE (1945: 111) who recognised also the homonymy with *Potamobius* Samouelle, 1819: 95 (Decapoda). As both *Potamobius* Stephens as well as *Potamobius* Hope, are junior primary homonyms of *Potamobius* Samouelle, they are permanently invalid. We want to add that Hope's *Potamobius* is introduced on p. 145 and not on p. 54 of HOPE (1838) as it is mistakenly cited in GUSTAFSON & MILLER (2013: 87).

Synonymic and taxonomic notes

Gyrinus pygolampis Modeer, 1780

MODEER (1780: 158) adapted this name from ALDROVANDI (1602: 706). He introduced it deliberately to replace *Gyrinus natator* (Linnaeus, 1758). His arguments were (1) that already ALDROVANDI (1602) used this name and (2) that all species in the genus are ‘natores’ (swimmers). MODEER (1780) gave also a description of the species, but this description can be applied to many more than one *Gyrinus* species known today. At first the name was attributed to *G. natator* (we know of only four works), but OCHS (1967: 183) suspected that it might be attributed to *G. substriatus* Stephens, 1828, and wrote ‘... what eventually even might cause a change of the name [*substriatus*] ...’ OCHS (1967) added, however, that it is by no means clear which species ALDROVANDI (1602) as well as MODEER (1780) had in their mind when describing the species. In the following years the name *G. pygolampis* was attributed by some authors to *G. substriatus*, however, always with hesitation (we know of only five works). ÁDÁM (1996: 61) was the only author who treated Modeer’s name as valid and *G. substriatus* as its junior subjective synonym. However, ÁDÁM (1996) gave no explanation, not a single argument for his proceeding – he even did not cite MODEER’S (1780) work. Nobody followed ÁDÁM’S (1996) view until today. We know almost 600 works (about 350 published during the last 50 years) in which *G. substriatus* is treated as a valid name. Of *G. natator* we know about 650 works in total, almost 200 of them published during the last 50 years. Thus, it would be easy to suppress the name *Gyrinus pygolampis* by applying Articles 23.9.1 and 23.9.2 of the ICZN (1999) – if ÁDÁM (1996) would not have had the totally unwise and unjustified idea to use *Gyrinus pygolampis* as valid instead of *G. substriatus*.

To solve the identity of *G. pygolampis*, we searched for Modeer’s collection. According to HORN et al. (1990: 266) Modeer’s collection came to the Swedish Museum of the Natural History (Naturhistoriska Riksmuseet) in Stockholm. We sent an inquiry to the staff of this museum and got the answer that no Gyrinidae material can be safely identified as having been studied by Modeer. This is why we hereby designate the lectotype of *Dytiscus natator* Linnaeus, 1758 as neotype of *Gyrinus pygolampis* Modeer, 1780. This specimen has been designated as lectotype of *D. natator* by ANGUS & CARR (1982: 224) who designated also the lectotype of *Gyrinus substriatus* Stephens, 1828 (ANGUS & CARR 1982: 225). Both designations were done for stabilising the nomenclature as well as does our designation of the neotype of *G. pygolampis*. By this nomenclatural act *G. pygolampis* becomes a junior objective synonym of *D. natator*. The lectotype of *D. natator* is in the Linnean collection (London) and has an additional red label with the following printed text: ‘Neotype, *Gyrinus pygolampis* Modeer, 1780, des. Fery & Hájek 2016’.

Miscellaneous notes

‘*Gyrinus bistriatus* Omer-Cooper, 1930’

OMER-COOPER (1930: 72) published the name ‘*bistriatus*’ as a variety of *Gyrinus natator* Linnaeus (1758). From the context of the work, it is rather clear that the name is only an

incorrect subsequent spelling of *Gyrinus substriatus* Stephens, 1828, and thus it is an unavailable name.

‘*Gyrinus curtus* Régimbart, 1883’

The name *Gyrinus curtus* Régimbart, 1883: 168 was given in the ‘*PalCat*’ as available and as junior subjective synonym of *Gyrinus japonicus* Sharp, 1873. In this case it would be a junior primary homonym of *Gyrinus curtus* Motschulsky, 1866: 165. However, RÉGIMBART (1883) clearly did not intend to describe a new species, but only misinterpreted (redescription based on incorrectly identified specimens) Motschulsky’s species, what he subsequently corrected in RÉGIMBART (1886: 254). Therefore, this unavailable name will not be included in the new edition of the *Palaearctic Catalogue*.

‘*Gyrinus strigosus* Ghiliani, 1887’

The name *Gyrinus strigosus* Ghiliani, 1887: 229 was given in the ‘*PalCat*’ as junior subjective synonym of *Aulonogyrus striatus* (Fabricius, 1792). However, GHILIANI (1887) mentioned from Piemonte ‘*Gyrinus strigosus* Aubé’, i.e. AUBÉ’s (1838b: 719) misinterpretation of the Australian species *Aulonogyrus strigosus* Fabricius, 1801 and not an available name. Therefore, the name will not be included in the new edition of the *Palaearctic Catalogue*.

***Gyrinus thurtharus* Ali & Jasim, 1989 and *G. brinki* Ali & Jasim, 1989**

ALI & JASIM (1989: 81) described *G. thurtharus* as a new species from the area of Lake Tharthar (also spelled Therthar or Thurthar), western Iraq. The description is accompanied by several figures in two plates; strange enough, in the legends of these plates (ALI & JASIM 1989: 83, 84) the new species is called ‘*Gyrinus brinki* sp. nov.’ instead of *G. thurtharus*. We assume that initially the authors intended to name the new species ‘*Gyrinus brinki*’ after the Swedish Gyrinidae specialist Per Brinck, but afterwards the authors changed their intention and called the species *G. thurtharus* and forgot to change the name in the figure legend.

To our knowledge the name *Gyrinus brinki* and the name *G. thurtharus* have never been dealt with together in any work after that of ALI & JASIM (1989). This is why we hereby act as First Revisers according to Article 24.2 of the ICZN (1999) and fix the precedence of the name *Gyrinus thurtharus* Ali & Jasim 1989: 81 over the name *G. brinki* Ali & Jasim, 1989: 83, syn. nov.

Additionally, we want to deal shortly with the identity of *G. thurtharus*: We had no possibility to study the type material of this taxon. However, the drawing of the male aedeagus of this taxon (under the name *G. brinki*) is quite distinctive and typical for the widely distributed Palaearctic *Gyrinus distinctus* Aubé, 1838b: 666, known to occur also in Iraq. Therefore, we consider *Gyrinus thurtharus* Ali & Jasim, 1989, syn. nov. (and with this also its objective synonym *G. brinki*) to be a junior subjective synonym of *Gyrinus distinctus* Aubé, 1838b.

***Gyrinus violaaquatica* Modeer, 1780**

The taxon was originally published as '*Gyrinus Viola aquatica*'. MODEER (1780: 160) adapted this name from ALDROVANDI (1602: 706). One might argue that this name does not agree with Article 5 ('Principle of Binominal Nomenclature') of the ICZN (1999), and thus would be an unavailable name. However, '*Viola aquatica*' is the name of a plant ('water violet', currently named *Hottonia palustris* Linnaeus, 1753), and thus 'a compound species-group name published as separate words that are deemed to form a single word' (Article 32.5.2.2 of the ICZN 1999; see also Article 11.9.5), which makes it an available name. The species was mentioned as '*aquatica*' in the '*PalCat*'. Without any exception *G. violaaquatica* was always considered a junior subjective synonym of *Orectochilus villosus* (O. F. Müller, 1776).

'*Gyrinus viridimaculatus* Atkinson, 1891'

This name was given by ATKINSON (1891: 154) with the following words: 'viridimaculatus, Régimbart, Ann. Soc. Ent. Fr. (6a) x, 1890 [sic!]. Hab. India, Khasiya Hills.' On p. 153 of the same work is given 'smaragdinus, Régimbart. Hab. Assam [*Ind. Mus.*, N. Khasiya Hills]'.

Régimbart published *G. smaragdinus* twice, the text in both versions being largely identical – in the *Annali del Museo Civico di Storia Naturale* (RÉGIMBART 1891: 547) and in the *Annales de la Société Entomologique de France* (1892: 682). It is notable that Atkinson did not cite any journal under his entry for *G. smaragdinus*, although he did so in all other Gyrinidae species. We have also checked all volumes of the *Annales de la Société Entomologique de France* published between 1888 and 1892 whether anywhere a taxon with the specific name *viridimaculatus* might have been given – without any result.

For finding an explanation for Atkinson's name, we assume on the one hand that he has studied RÉGIMBART's earlier work from 1891, but mixed up by mistake the titles of the journals and, additionally, gave the incorrect year 1890. On the other hand, Atkinson may have been misguided because in RÉGIMBART's works appears the Latin 'viridi-fulgens'. Although *viridimaculatus* most probably means nothing else than *G. smaragdinus*, we refrain from making further speculations and interpret *viridimaculatus* either as lapsus calami or as nomen nudum. In both cases it is an unavailable name.

***Orectochilus corniger* Zaitzev, 1910**

ZAITZEV (1910: 224) described this species from Japan (Kobe) on the basis of six specimens collected by V. Pliginski and as being similar to *Orectochilus scalaris* Régimbart, 1880. Subsequently, HATCH (1926: 453) associated the species with subgenus *Patrus* Aubé, 1838b (elevated from subgeneric to generic rank by MILLER & BERGSTEN 2012).

OCHS (1930: 69) studied one specimen of *O. corniger* from 'Annam, Song-Dinh' (central Vietnam, ca. 100 km NW Hue) which was also collected by Pliginski. OCHS (1930) doubted the collecting data of the type specimens and assumed that most probably these must have been mislabelled and collected together with the specimen from Vietnam. As far

as we know, *Patrus corniger* is a strictly Oriental species which has never been recorded again from Japan. This is why we follow OCHS' (1930) assumption and do not include the species in the new edition of the Palaearctic Catalogue although its type locality remains the Palaearctic Kobe in Japan.

***Orectochilus nipponensis* Zaitzev, 1910**

Like in *Orectochilus corniger*, ZAITZEV (1910: 224) most probably described *O. nipponensis* on the basis of mislabelled specimens with the type locality 'Kobe' and collector Pliginski too, and as being similar to *Orectochilus oblongiusculus* Régimbart, 1886 (currently also in the genus *Patrus*). The identity of the taxon is not clear (see also OCHS 1930: 70), and at least we are convinced that the taxon is not occurring in the Palaearctic Region, and thus it will not be included in the new edition of the *Palaearctic Catalogue*.

***Orectochilus villosus seidlitzii* Jacobson, 1908**

SEIDLITZ (1887: 117, 118) keyed in his 'Bestimmungs-Tabelle' the genus *Orectochilus*, including *Orectochilus involvens* Faldermann, 1836. However, RÉGIMBART (1892: 708) doubted Seidlitz's interpretation of the taxon and suggested that it might be another species which he called '*Orectochilus involvens* Seidlitz'. This is formally an unavailable name; however, JACOBSON (1908: 439) interpreted it as a junior homonym of Faldermann's name and replaced it with '*Orectochilus villosus* var. *seidlitzii* nom. nov.' This name was subsequently mentioned also in the '*PalCat*' as a replacement name, and as a junior subjective synonym of *O. v. villosus*. However, because JACOBSON (1908) used in his book both terms 'ssp.' [= subspecies] and 'var.' [= variety] (see e.g. '*Orectochilus villosus* ssp. *bellierei*'), it is clear that he proposed the name 'var. *seidlitzii*' for an infrasubspecific entity, and thus this name is unavailable according to Article 45.6.1 of the ICZN (1999). Therefore, this name will not be included in the new edition of the *Palaearctic Catalogue*.

Infrasubspecific names

We add notes on some infrasubspecific names which have been treated in some works (possibly unintentionally) as synonyms of specific names and thus might be interpreted as available names. All these names will not be given in the new edition of the *Palaearctic Catalogue*.

Gyrinus evertsi Klynstra, 1939: 114: an aberration of *Gyrinus minutus* Fabricius, 1798.

Gyrinus francki Ochs, 1929: 2: a female form of *Gyrinus japonicus* Sharp, 1873

Gyrinus marani Bechyně, 1942: 41: an aberration of *Gyrinus marinus* Gyllenhal, 1808.

Gyrinus nitidior Brinck, 1946: 152: a female form of *Gyrinus pullatus* Zaitzev, 1908.

Gyrinus ochsi Franck, 1932: 133: an aberration of *Gyrinus paykulli* Ochs, 1927.

Gyrinus politus Ochs, 1929: 2: a female form of *Gyrinus orientalis* Régimbart, 1883b.

Gyrinus zimmermanni Franck, 1932: 130: an aberration of *Gyrinus aeratus* Stephens, 1835.

Table I. Summary of provided nomenclatural changes

Former state/situation	Current state/situation
<i>Dineutus longimanus cubensis</i> Ochs, 1927: 192 [incorrect year]	<i>Dineutus longimanus cubensis</i> Ochs, 1926: 192 [year corrected]
<i>Gyrinus angustatus</i> Aubé, 1838a: 387 [= junior subjective synonym of <i>Gyrinus caspius</i> Ménétriés, 1832]	junior primary homonym of <i>Gyrinus angustatus</i> Aubé, 1838b: 681 [= junior subjective synonym of <i>Gyrinus caspius</i> Ménétriés, 1832]
<i>Gyrinus brinki</i> Ali & Jasim, 1989: 83 [overlooked name]	junior subjective synonym of <i>Gyrinus distinctus</i> Aubé, 1838b: 666, and objective synonym of <i>Gyrinus</i> <i>thurtharus</i> Ali & Jasim, 1989: 81
' <i>Gyrinus curtus</i> Régimbart, 1883b: 168'	unavailable name; Régimbart's misinterpretation of <i>Gyrinus curtus</i> Motschulsky, 1866: 165
<i>Gyrinus distinctus</i> Aubé, 1838a: 383 [valid name, homonymy not recognised]	junior primary homonym of <i>Gyrinus distinctus</i> Aubé, 1838b: 666
<i>Gyrinus elongatus</i> Aubé, 1838a: 384 [= junior subjective synonym of <i>Gyrinus caspius</i> Ménétriés, 1832]	junior primary homonym of <i>Gyrinus elongatus</i> Aubé, 1838b: 676 [= junior subjective synonym of <i>Gyrinus caspius</i> Ménétriés, 1832]
<i>Gyrinus formosus</i> Modeer, 1776: 157 [incorrect year]	<i>Gyrinus formosus</i> Modeer, 1780: 157 [year corrected; currently in <i>Aulonogyrus</i>]
<i>Gyrinus grossus</i> Modeer, 1776: 156 [incorrect year]	<i>Gyrinus grossus</i> Modeer, 1780: 156 [year corrected; currently in <i>Dineutus</i>]
<i>Gyrinus lineatus</i> Lacordaire, 1835: 342 [= junior subjective synonym of <i>Gyrinus urinator</i> Illiger, 1807: 299]	junior primary homonym of <i>Gyrinus lineatus</i> Stephens, 1828: 97 [= junior subjective synonym of <i>Gyrinus urinator</i> Illiger, 1807: 299]
' <i>Gyrinus natator</i> var. <i>bistriatus</i> Omer-Cooper, 1930: 72' [nomenclatural situation unclear]	unavailable name; incorrect subsequent spelling of <i>Gyrinus substriatus</i> Stephens, 1828
<i>Gyrinus oblongus</i> Block, 1799: 100 [= senior primary homonym of <i>Gyrinus oblongus</i> Boisduval, 1835: 52]	<i>Gyrinus oblongus</i> Block, 1799: 100, nomen oblitum; suppressed according to Articles 23.9.1 and 23.9.2 of the ICZN (1999)
<i>Gyrinus oblongus</i> Boisduval, 1835: 52 [= junior primary homonym of <i>Gyrinus oblongus</i> Block, 1799: 100]	<i>Gyrinus oblongus</i> Boisduval, 1835: 52, nomen protec- tum; conserved according to Articles 23.9.1 and 23.9.2 of the ICZN (1999) [currently <i>Macrogyrus oblongus</i>]
<i>Gyrinus orientalis</i> Modeer, 1776: 160 [incorrect year]	<i>Gyrinus orientalis</i> Modeer, 1780: 160 [year corrected; currently in <i>Dineutus</i>]
<i>Gyrinus orientalis</i> Régimbart, 1883b: 167 [= junior primary homonym of <i>Gyrinus orientalis</i> Modeer, 1780: 160]	substituted with <i>Gyrinus mauricei</i> nom. nov.
<i>Gyrinus pygolampis</i> Modeer, 1776: 158 [year incorrect; nomenclatural situation unclear]	<i>Gyrinus pygolampis</i> Modeer, 1780: 158 [year corrected] junior objective synonym of <i>Dytiscus natator</i> Linnae- us, 1758, designation of neotype

(table continues on the next page)

Table 1. (continues from the previous page).

Former state/situation	Current state/situation
' <i>Gyrinus strigosus</i> Ghiliani, 1887: 229' [junior subjective synonym of <i>Aulonogyrus striatus</i> (Fabricius, 1792) in 'PalCat']	unavailable name
<i>Gyrinus thurtharus</i> Ali & Jasim, 1989: 81 [valid name]	junior subjective synonym of <i>Gyrinus distinctus</i> Aubé, 1838b: 666, and objective synonym of <i>Gyrinus brinki</i> Ali & Jasim, 1989: 81
<i>Gyrinus urinator</i> Drapiez, 1819: 42 [= junior primary homonym of <i>Gyrinus urinator</i> Illiger, 1807: 299]	junior primary homonym and junior subjective synonym of <i>Gyrinus urinator</i> Illiger, 1807: 299
<i>Gyrinus violaaquatica</i> Modeer, 1776: 160 [year incorrect; nomenclatural situation unclear; ' <i>G. aquatica</i> ' and junior subjective synonym of <i>Orectochilus villosus</i> (O. F. Müller, 1776) in 'PalCat']	<i>Gyrinus violaaquatica</i> Modeer, 1780: 160 [year corrected; = junior subjective synonym of <i>Orectochilus villosus villosus</i> (O. F. Müller, 1776)]
' <i>Gyrinus viridimaculatus</i> Atkinson, 1891: 154' [nomenclatural situation unclear]	unavailable name
<i>Potamobius</i> Hope, 1838: 145 [= junior primary homonym of <i>Potamobius</i> Samouelle, 1819: 95 (Decapoda) and junior subjective synonym of <i>Orectochilus</i> Dejean, 1833: 39]	junior primary homonym of <i>Potamobius</i> Stephens, 1829b: 54 [= junior primary homonym of <i>Potamobius</i> Samouelle, 1819: 95 (Decapoda) and senior subjective synonym of <i>Orectochilus</i> Dejean, 1833: 39]
<i>Spinodineutes</i> Hatch, 1925: 447 [incorrect year]	<i>Spinodineutes</i> Hatch, 1926: 447 [year corrected; subgenus of <i>Dineutus</i> W. S. Macleay, 1825]
<i>Orectochilus villosus</i> var. <i>seidlitzii</i> Jacobson, 1908: 439 [junior subjective synonym of <i>Orectochilus villosus</i> (O. F. Müller, 1776) in 'PalCat']	unavailable name; infrasubspecific entity

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Appendix

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