KEYS TO THE IDENTIFICATION OF THE GENERA AND SUBGENERAE OF ADULT DYTISCIDAE (SENSU LATO) OF THE WORLD
(Coleoptera Dytiscidae)

ABSTRACT - Pederzani F., 1995 - Keys to the identification of the genera and subgenera of adult Dytiscidae (sensu lato) of the world (Coleoptera Dytiscidae).
Simplified keys for collectors and amateurs. Noterids are included as a subfamily of Dytiscidae (s.l.). Genus-group taxa are updated about summer 1994. Traditional nomenclature and classification are followed as a rule. Recent proposals of changes not followed in the keys are reported in the notes. Some changes of classification are recommended, including the convenience to establish some new genera, but new genus-group names are not introduced in any case. Detailed summary at page 83.

KEY WORDS - Coleoptera, Dytiscidae.

RIASSUNTO - Tabelle per il riconoscimento dei generi e sottogeneri degli adulti dei Dytiscidae (sensu lato) della fauna mondiale (Coleoptera Dytiscidae).
La letteratura sulla tassonomia dei Dytiscidae (che si intendono estesi alla sottofamiglia Noterinae) è stata esaminata per costruire tabelle di determinazione dei generi e principali sottogeneri della fauna mondiale. I risultati sono raccolti in questo lavoro, con alcune integrazioni e modifiche. È adottata la nomenclatura della più recente revisione dei nomi di gruppo famiglia e di gruppo genere (Nilsson & al., 1989), tuttavia per salvaguardare il più possibile la stabilità si sono conservate la classificazione e la nomenclatura tradizionali in alcuni casi controversi. In particolare non è ripreso l’uso dei nomina obita provenienti dai cataloghi faunistici White (1847) e Motschulsky (1853), che per oltre un secolo non furono ritenuti utilizzabili ai fini del principio di priorità, cominciando da Sharp (1882) o prima. Si conservano pertanto i nomi dei generi Hydrocoptus Motschulsky e Homoeodytes Réginhart e si raccomanda l’ uso di Guignotus Houlbert invece di Hydrogypebus Motschulsky (sensu Biström & Silverberg).
Per ragioni di simmetria tassonomica si attribuisce rango di genere a Hypoclypeus Guignot (n.stat.) e si pone il genere Carabdytes Balke & al. nella nuova tribù Carabdytini (nova tribus).
Viene adottata solo in parte la riclassificazione del genere Deronecetes (s.l.) proposta da Nilsson & Angus (1992). Nebriactorus e Stictotarsus sono riproposti nei loro limiti tradizionali e Potamonectes è reintegrato come genere distinto, tuttavia in base ai risultati
dello studio filogenetico degli AA. citati, il gruppo *griseostriatus* con parameri semplici di tipo idroporino viene rimosso dal sottogenere nominale *Potamonectes* s.str., che ha parameri modificati in parte membranosi, ed è unito al sottogenere *Trichonecetes* insieme alla maggior parte dei *Potamonectes* nord americani, ad eccezione di quelli del gruppo *depressus*. *Trichonecetes* è l'unico nome di gruppo genere disponibile per questo taxon di *Potamonectes* a parameri semplici.

I *Deronecetes* (s.l.) del gruppo *croftii* ed il *Deronecetes* (s.l.) *grammicus* Sharp e specie vicine, da qualche Autore considerati anche *Potamonectes* o *Stictotarsus*, costituiscono probabilmente due nuovi generi distinti, che non si ritiene opportuno denominare nel presente lavoro, anche perché per il primo di essi la descrizione fu annunciata da *Zimmerman* (1982) e per il secondo l' autore non dispone di materiale sufficiente.

Si propone infine di isolare in taxa di rango superiore (da denominare) le specie *Uvaris chappuis* (Peshet) e *Deronecetes bertrandii* Légros, che per diverse ragioni risultano mal collocate nei generi attuali. La descrizione dei nuovi taxa esula dagli scopi del presente lavoro.

**Parole chiave** - Coleoptera, Dytiscidae.

The existing keys to the identification of the genera and subgenera of *Dytiscidae* Leach are scattered in a lot of different papers and often lack recently described taxa; moreover they are usually limited to the fauna of one zoogeographic region. That makes it difficult to identify material from unknown provenance and to realize the differences between similar genera from different parts of the World. This difficulty is a problem in the taxonomy of *Dytiscidae*, in spite of some praiseworthy exceptions, such as the tribe *Bidessini*, that was revised by *Biström* (1988).

I have investigated the literature on *Dytiscidae* (sensu lato), to find suitable keys to an easy identification of the subfamilies, tribes, genera and subgenera of the world fauna, and I have condensed the results in this paper, with some additions and changes endeavouring to fill the gap of the available keys. The purpose of this paper is to facilitate the identification of material and the arrangement of collections, not surely to solve the taxonomic and phylogenetic problems of the family. The investigation was made for my personal use and copies were distributed to some colleagues, but later I was encouraged to publish an English translation of the keys, although they are far from satisfactory.

I have adopted as a rule the nomenclature from the review of the genus- and family-group names by *Nilsson* & al. (1989), except in a few cases of reinstatement of *nomina obita* from the catalogues *White* (1847) and *Motschulsky* (1853), which were not accepted as valid for the priciple of priority by the principal authors of the past, beginning from Sharp or before. Although that reinstatement of *nomina obita* follows at the letter the new rules of the I.C.Z.N., it is likely to endanger
the universality of the nomenclature, since some of the authors are going on with the use of traditional names. In my opinion that reinstatement does not go by the spirit of the Code.

The classification adopted in the keys follows recent authors (updated approximately summer 1994) except in a few cases of reclassifications suggested by phylogenetic studies or cladistic analyses. In some cases the selection and the weight of the taxonomic characters considered by the phylogenetic studies or used as the input to cladistic analyses are just a matter of opinion and consequently the results represent subjective conclusions only.

The notes at the end of the paper [square brackets] explain the reasons why some advanced reclassifications and changes of names are not adopted in the keys. The cause of the conservative approach is that I believe stability must have priority in all debatable cases, for practical reasons. That is worth especially for amateur collectors, the principal addressees of the keys.

Frequent changes of names and classification give rise to confusion in the literature, misunderstandings and errors of identification and oblige to relabel and move materials with high muddle-risk. In my opinion there is no hurry to follow novelties, as for changes of names and classification, and consequently I believe the traditional arrangement should be conserved in collections until the majority of authors share the latest changes.

There are some exceptions to the pursuit of stability, for instance the treatment of Deronectes Sharp (sensu lato). That genus was conveniently subdivided into different genera in the Old World by continental authors, but I believe it is still in need of rearrangement, especially in America. I will emphasize the convenience to establish some new genera from highly differentiated groups of Deronectes (sensu lato), however I deem this paper is not the right place to investigate the matter and to propose new genus-group names.

Noterids are treated in the keys as a subfamily of Dytiscidae, following the classic authors of Middle Europe, although most of the American and North European authors usually treat Noteridae as a distinct family. To prevent misunderstanding I call Dytiscidae (sensu lato) the wider family including Noterinae.

I acknowledge the friendly co-operation of Saverio Rocchi (Florence) and the late, beloved friend Nino Sanfilippo (Genoa), who read with patience and criticism the Italian text of the keys and suggested several improvements. I thank also dr. Roberto Poggi (Genoa) for his valuable advice and dr. Antonio Galvagni (Rovereto) and prof. Cesare Conci
(Milan) for their advice and the encouragement to the publication of this paper. Lastly I have to apologize for mistakes occasionally occurring in the English translation.

Family **Dytiscidae** (sensu lato)

Key to subfamilies [1]

1. Inner laminae of hind coxae raised above the outer laminae their whole length and expanded laterally into plates, which can shield hind femora in part. Hind coxal plates and metasternal process conjointly forming a common ventral plate (fig. 1) in the same plane as prosternal process and its base. Underside almost flat at the middle; dorsum fairly convex **Noterinae** [2] (page 12)

   - Inner laminae of hind coxae at the same level as outer laminae (fig. 2), hardly separated by coxal lines, which are sometimes incomplete or missing. Hind femora cannot be shielded by coxal plates. Sometimes the outer lobes of hind coxal process cover in part the bases of trochanteres. Underside more or less convex at the middle **Dytiscidae** s. str. 2

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*Fig. 1 - Ventral aspect of a Noterus sp.*


The metepisternum (27) not reaching the coxal cavity (26) is a character of Dytiscids Fragmentati. The hind coxal-metasternal plate (30) is a typical feature of Noterids.
2. Apex of elytra and last abdominal segment acutely pointed behind and produced into a sort of apical spine. Body form elongate; elytra parallel sided

- Apex of elytra and last abdominal segment not acutely pointed behind or if so never spiniform; in that case (gen. Hydrovatus and Pseudhydrovatus) body form very broad and elytra not parallel sided

3. Scutellum concealed, rarely a small tip visible

- Scutellum fully exposed

4. Fore and middle tarsi with 4th segment smaller than 3rd (fig. 3) or even concealed between apical lobes of 3rd, so that 5th segment appears to be 4th (tarsi pseudotetramerous) (fig. 4). Posterior (apical) margins of first four segments of hind tarsi transversely straight and lacking swimming hairs

- Fore and middle tarsi distinctly 5 segmented, 4th segment approximately as long as 3rd. Posterior margins of first four segments of hind tarsi sinuate, their outer half produced into an apical lobe (fig. 5) (Laccophilinae) or if not so, provided with swimming hairs (Aubehydrinae)

5. Prosternal process in the same plane as prosternum, not projecting ventrally; its apex acuminate, either simple or three-pointed. First

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Fig. 2 - Ventral aspect of a male Dytiscus sp.
Metepisternum (27) reaching middle coxal cavity (26) is a typical feature of Dytisci Complicati. The thickened fore margin of metepisternum simulates an additional piece.
four segments of hind tarsi produced into apical lobes in their outer half, without swimming hairs at their posterior margins **LACCOPHILINAE** (page 42)

- Prosternal process not on a plane with prosternum, but obviously projecting ventrally (in lateral view) and with blunt apex, never trifid. Posterior margins of hind tarsi almost straight, without apical lobes, but provided with swimming hairs **AUBEHYDRINAE** (page 44)

6. Eyes emarginate (fig. 6) above bases of antennae, the indentation caused by edges of clypeus. First three segments of fore tarsi of male broadened but not forming adhesive discs, although usually provided with plenty of very small adhesive tubes or setae **COLYMBETINAE** (page 44)

- Eyes not emarginate above bases of antennae, their outline fairly round. First three segments of fore tarsi of male strongly modified and expanded into round or transversely-oval adhesive discs **DYTISCINAE** (page 56)

**Subfamily NOTERINAE**

**Key to tribes**[^1]

1. Fore tibia expanded beyond base of tarsi, with a fringe of marginal spines and a strong hooked spur at the outer apical angle (figures 1 and 9) 2

- Fore tibia not expanded beyond base of tarsi, with a few apical spines and weak apical spurs (fig. 10) **NOTOMICRINAE** (page 16)

[^1]: Figures 3 to 6, 9 and 10 drawn from White & al. in Merritt & Cummins, 1984.
2. Body form very broad, almost hemispherical. Apex of elytra slightly produced behind (fig. 11), because of preapical indentations (elytra mucronate). Colour opaque black with irregular, confuse reddish marks. Pronotum never paler than elytra. Posterior margin of hind coxal process almost straight with two symmetric indentations on either side of median line SUPHISINI (page 14)

- Body form elongate, not hemispherical, usually narrowed behind. Elytra uniformly black, reddish brown or yellowish brown, either lacking marks or with well delimited yellowish spots, never with confuse reddish markings. Pronotum sometimes paler than elytra. Posterior margin of hind coxal process with one broad indentation medially 3

3. Inner (posterior) margin of hind femur with a submarginal fringe of short setae (fig. 1), but lacking an isolated group of long setae at the inner apical angle NOTERINI (page 14)

- Inner (posterior) margin of hind femur with both a submarginal fringe of short setae and an isolated group of long setae at the apical angle HYDROCANTHINI (page 15)

Subfamily NOTERINAE

Tribe SUPHISINI

This tribe includes one genus. (fig. 11). Neotropical Suphis (= Colpius sec. SPANGLER & FOLKERTS, 1973)

Subfamily NOTERINAE

Tribe NOTERINI

Key to genera [1]

1. Prosternal process trapezoid with hind margin subsinuate. Posterior margin of hind coxal process with some brittle setae 2

- Prosternal process spatulate with hind margin rounded. Posterior margin of hind coxal process without setae 3
2. Length less than 4 mm. Neotropical
   – Length over 6 mm. African

3. Fore margin of pronotum with a simple and irregular row of punctures not engraved into a stria. African
   – Fore margin of pronotum with a fairly regular row of punctures engraved into a thin submarginal stria, usually interrupted at the middle. Palaearctic

Subfamily NOTERINAE

Tribe HYDROCANTHINI

Key to genera [5]

1. Prosternal process not broader than long; its apex about 2 to 2.5 times as wide as its breadth between anterior coxae. Longer spur of hind tibia not serrulate. Length less than 3.5 mm
   2

   – Prosternal process broader than long; its apex very broad, at least 2.5 to 3 times as wide as its breadth between anterior coxae. Longer spur of hind tibia serrulate. Length over 3.5 mm. Tropical and subtropical, world-wide
       Hydrocanthus

Key to the subgenera of Hydrocanthus [6]

a. Row of punctures at anterior margin of pronotum deeply impressed. African, Oriental and Australian
   s.gen. Sternocanthus

   – Row of punctures at anterior margin of pronotum weakly impressed. American

b. Length less than 4.1 mm
   s.gen. Guignocanthus

   – Length over 4.1 mm
       Hydrocanthus s.str.
2. Body form broadly oval, apically attenuate. Dorsal surface almost
dull. Pronotum with thin lateral borders and short submarginal
striae originating at hind angles and disappearing about the mid-

teropical

Suphisellus

- Body form oblong, apically attenuate. Dorsal surface shining.
Pronotum with broader lateral borders but lacking submarginal
striae at hind angles. Tropical and subtropical, world-wide

Canthydrus

Key to the subgenera of Canthydrus [7]

a. Body elongate, almost lacking dorsal microsculpture. 
Metasterno-metacoxal plates almost impunctate and smooth. 
Neotropical s.gen. Liocanthydrus

- Body fairly oblong but less elongate, with a weakly impressed 
dorsal microsculpture. Metasterno-metacoxal plates with 
setigerous punctures. African, Oriental and South Palaeartic 
Canthydrus s.str.

Subfamily NOTERINAE

Tribe NOTOMICRINI

Key to genera [8]

1. Hind femur with an isolate group of long setae at the inner (poste-
rior) apical angle 2
Hind femur without an isolate group of long setae at the inner (posterior) apical angle

2. Metasternal plate (medially protruding process of metasternum) broadened in front. Fore tibiae short and stout, with outer apical angle fairly sharp. Neotropical
   **Pronoterus**

   Metasternal plate narrowed in front. Fore tibiae fairly long and slender, with outer apical angle almost rounded. Neotropical
   **Mesonoterus**

3. Side margins of metasternal plate not bordered by a lateral ridge. Sutural lines between metasternal and hind coxal plates disappearing at sides. Length less than 2 mm. Neotropical
   **Notomicrus**

   Side margins of metasternal plate with a lateral ridge. Sutural lines between metasternal and hind coxal plates distinct at sides. Length over 2 mm. African, Oriental and Australian
   **Hydrocoptus**
   (or *Neohydrocoptus* for those students who deem *Hydrocoptus* a junior synonym of *Hydroporus*).

Key to the subgenera of *Hydrocoptus* [*¹⁰*]

a. Hind coxal process with setigerous punctures and sharp apical angles. Oriental
   s.gen. **Neohydrocoptus**

   Hind coxal process without setigerous punctures and with rounded apical angles
   **Hydrocoptus** s.str.

Subfamily **METHLINAE** [*¹¹*]

1. Scutellum entirely hidden by pronotum. African, Oriental and South Palaearctic
   **Methles**

   Scutellum fully exposed. Holamerican
   **Celina**
Subfamily HYDROPORINAE

Key to tribes

1. Metepisterna not reaching the mesocoxal cavities, excluded by mesepimera. Prosternal process not reaching metasternum but terminating in front of middle coxae, which are contiguous. Body oblong. Legs long and slender VATELLINI [12] (page 20)

   - Metepisterna reaching the mesocoxal cavities (fig. 2). Apex of prosternal process reaching metasternum between the middle coxae, which are fairly separated, except for Siettitiini and the South African genus Andex 2

2. Hind claws obviously unequal, the outer claw inconspicuous or almost invisible. Parameres with a long apical tuft of hairs. Body fairly convex HYPHYDRINI (page 21)

   - Hind claws almost of equal length. Parameres without long apical hairs, usually with a few short setae apically. (Lioporeus has a long tuft of hairs inserted shortly before apex, not apically) 3

3. Parameres formed by two or three segments BIDESSINI in part (page 26)

   - Parameres formed by one segment 4

4. Hind coxal process not in the same plane as abdomen, but protruding like a step, in lateral view HYDROPORINI (page 34)

   - Hind coxal process in the same plane as the abdominal segments or if not so, linked to abdomen by a slope, without discontinuity or step in lateral view 5

5. Prosternal process widened posteriorly and fairly broad at apex. Middle coxae widely separated. Apex of hind coxal process very broad, divided into three parts by two lateral indentations forming a wide depressed middle region and two extrarimal (beyond hind coxal lines) lateral lobes which cover in part the bases of trochanteres. Sides of hind tibiae almost straight from near base to apex. Parameres with a hook-like, inward bent apex HYDROVATINI (page 25)
- Prosternal process never widened toward apex. Middle coxae relatively approximated. Hind coxal process narrower, its apical margin not divided into three parts by two indentations at each side of midline and not covering the bases of hind trochanteres. Sides of hind tibiae sinuate or arcuate their whole length. Apex of parameres never hook-like bent onto the inner side

6. Eyes reduced or absent. Body testaceous with long sensorial hairs. Wings reduced. Fore and middle coxae enlarged. Prosternal process short, not attaining metasternum. Hind coxal process linked to abdomen without a step-like discontinuity
(A polyphyletic tribe grouping troglobiontic genera from four Continents, which share adaptations to the subterranean habitat)
SIETTTIINI [13] (page 33)

- Eyes usually normal. Body not testaceous with long sensorial hairs. Tribes grouping genera not adapted to the subterranean habitat, as above. (Terressessus has reduced eyes but it does not share other characters of Sietttiini)

7. Body outline fairly continuous. Pronoto-elytral angle weak. Mid of prosternum not in the same plane as prosternal process. Elytra without longitudinal grooves
BIDESSINI in part [14] (page 26)

- Body outline discontinuous, strongly narrowed at base of pronotum. Pronoto-elytral angle fairly deep. Middle of prosternum in almost same plane as prosternal process. Each elytron with two wide, shallow longitudinal grooves
CARABHYDRINI (page 33)

Subfamily HYDROPORINAE

Tribe VATELLINI
Key to genera [15]

1. Ventral sutures of abdomen deeply incised. Neotropical
   Vatellus
   - Ventral sutures of abdomen not very deep, sometimes disappearing at the middle
   2
2. Mesosternum very largely visible. Length 5 to 8 mm. Neotropical  Macrovatellus
   - Mesosternum but little visible. Length less than 5 mm. Tropical, world-wide, mostly African  Derovatellus

Key to the subgenera of *Derovatellus* [16]

a. Pronotum broadest near base. Lateral borders broad. Colouring uniformly dark brown or black. Spermatheca including a globular piece  s.gen. Varodetellus
   - Pronotum broadest in the middle. Lateral borders narrow. Mostly bicoloured species with head and pronotum lighter than elytra. Spermatheca without globular piece  Derovatellus s.str.

Subfamily *HYDROPORINAE*

Tribe *HYPHYDRINI*

Key to genera [17]

1. Posterior margins of hind coxae not soldered to the first abdominal segment; their sutural lines distinct. This group of genera is distributed only in the Old World and Australia  2
   - Posterior margins of hind coxae completely soldered to the first abdominal segment; their sutural lines obsolete. This group of genera comprises the American *Hyphydrini*, the African genus *Heterhydrus* and three small hydrovatoioid genera from East Asia, less than 2.3 mm long  8

2. Hind tibia narrowed toward base. Apical segment of fore tarsi about twice as long as 3rd. South African genera  3
   - Hind tibia almost parallel sided. Apical segment of fore tarsi as long as 3rd or slightly shorter  6

3. Epipleura gradually tapering from base to apex. Anterior margin of clypeus upturned and gently rimmed. Elytra with longitudinal costae  Darwinhydrus
4. Pronoto-elytral angle fairly deep. Prosternal process short, not attaining metasternum (that is an exception in *Hyphydrini*). South African

5. Anterior margin of clypeus rounded. Basal corners of pronotum obtuse and not prominent. South African

   - Pronoto-elytral angle open or indistinct. Prosternal process attaining metasternum between the middle coxae

6. Fore margin of clypeus not bordered or with an obsolete rim. African and Oriental

   - Fore margin of clypeus obviously bordered. Palaeartic, African, Oriental and Australian

Key to the subgenera of *Hyphydrus* [18]

a. Principal spur at apex of hind tibia straight or sinuate, never serrate. African, Oriental and Australian b

   - Principal spur at apex of hind tibia serrate. Palaeartic, including South China and Tonkin


   - Anterior margin of clypeus simply bordered; no parallel groove behind the marginal rim c

   c. Outer face of hind tibia with irregular punctation, not forming a regular row. African s.gen. *Allophyrus* [21]

   - Outer face of hind tibia with irregular punctation and a regular
row of setigerous punctures longitudinally at the middle. African, Oriental and Australian s.gen. Apriophorus

7. Prosternal process broadly triangular. Length over 3.2 mm. South African Coelhydrus
   - Prosternal process not broadly triangular (not described in Hyphovatus). Length less than 3.2 mm. Very close to Hyphhydrus

8. Penis stout, with one medial point in dorsal view. Malagasy Hovahydrus
   - Penis with a deep medial indentation, in dorsal view, and two lateral points, resembling long, irregular horns. Oriental Hyphovatus

9. Middle coxae conspicuously separated, by about width of a middle coxa. Prosternal process broad and short, spatulate, with obtuse or rounded hind margin. Body very convex
   - Middle coxae more approximate, separated by only one half width of a mid coxa. Prosternal process rhomboidal, about as broad as long, with acute termination, sometimes forked in male. Body either convex or slightly depressed

10. On the undersurface of head the labrum is obviously exserted. African Heterhydrus
    - Only the anterior border and fringes of labrum visibly exserted on underside of the head. Holamerican, principally Neotropical Pachydrus

11. Clypeus anteriorly bordered
    - Clypeus not bordered. Although some features link this group of genera to Hydrovatini (Nilsson & al., 1989), they are conventionally placed in Hyphhydrini because of the different length of hind claws

Body form short ovate, moderately convex or slightly depressed. Dorsal surface more or less reticulate or iridescent. Holamerican Desmopachria

Key to the subgenera of Desmopachria [22]


- Long spur of hind tibia usually slender, not serrate on edges. Body form variable, convex or flattened. Length 1 to over 3 mm b

b. Pronotum with impressed striae or fold-like furrows on either side of base. Body form ovate, somewhat flattened. Dorsum with distinct pattern of dark markings. Length over 2 mm. SW USA, Mexico, Florida s.gen. Pachriodesma

- Pronotum without impressed basal striae c

c. Elytra with impressed striae on either side of suture, variable in length but usually clearly detectible at middle 1/3 of elytra even if indistinct otherwise. Body form stout, convex. Length 1.6 to 2.8 mm. Neotropical (Brasil to Florida) s.gen. Pachriostrix

- Elytra without sutural striae, rarely with a few irregular punctures suggesting striae d

d. Elytra and usually head, pronotum and venter with distinctive microsculpture giving an iridescent sheen, or if not so (Desmopachria minuta), length less than 1.2 mm e

- Microsculpture, if detectible, without an iridescent sheen f

e. Dorsal punctuation moderate to very coarse. Body form ovate, somewhat flattened. Male prosternal process forked, not reaching mesosternum at middle. Body length usually over 2 mm. Neotropical (Brasil to Trinidad) s.gen. Pachiridis

- Dorsal punctures very fine. Body form ovate, convex. Male prosternal process similar to that of female, but male clypeus
protuberant and expanded. Length less than 2 mm. Neotropical
(Brasil to Ecuador) s.gen. Hintonella
(= Hintonia preoccupied)

f. Male prosternal process forked, not reaching mesosternum at
middle. Length usually over 2 mm. Neotropical, extending to
Western USA s.gen. Portmannia

– Prosternal process in male much as in female, the pointed apex
reaching mesosternum. Length 1.3 to over 3 mm. Holamerican
Desmopachria s.str.

13. Prosternal process lanceolate with rounded apex. Outer face of
hind tibia with two rows of setigerous punctures. Oriental and SE
Palaeartic Microdytes

– Prosternal process subdiscoidal, with apex obtuse. One row of
setigerous punctures on the outer face of hind tibia. SE Palaeartic
(Tibet to Japan) Nipponhydrus

Subfamily HYDROPORINAE

Tribe HYDROVATINI

Key to genera [23]

1. Clypeal margin almost semicircular and broadly bordered.
Labrum concealed; only the labial fringe of cilia visible in ventral
view. Posterior margin of hind coxal process with indentations fairly
broad and shallow. Lateral extrarimal expansions of hind coxal
process broad and covering bases of trochanteres. Neotropical
Queda

– Clypeal margin gently rounded or truncate, with anterior border weak
or obsolete. Labrum visible in part in ventral view. Posterior margin
of hind coxal process with indentations relatively narrow and deep.
Lateral extrarimal expansions of hind coxal process less widened
and covering only in part the bases of trochanteres. World-wide
Hydrovatus [24]

(= Vathydrus, debatable subgenus with obsolete clypeal rim)
Subfamily HYDROPORINAE

Tribe BIDESSINI

Key to genera [25]

1. Head without impressed cervical line
   2
   - Head with impressed cervical line (fig. 13) 17

2. Legs lacking swimming hairs. Not adapted to aquatic life. Living in forest litter
   3
   - Aquatic. Legs with swimming hairs 5

3. Elytra with five longitudinal costae. Pronotum with protruding posterior corners. Eyes absent. Parameres in one segment. Australian (endemic to New Caledonia) Typhlodessus
   - Elytra without longitudinal costae 4

4. Eyes not reduced. Parameres two-segmented. Oriental (endemic to India) Geodessus
   - Eyes reduced. Parameres in one segment. Australian Terradessus

5. Pronotum with two latero-basal striae (fig. 13) 6
   - Pronotum without latero-basal striae (or striae obsolete) 15

6. Epipleuron with a basal cavity in which middle knee can be housed, posteriorly limited by a diagonal carina (fig. 8). Australian Limbodessus
   - Epipleuron without diagonal carina crossing near base 7

7. Elytra flattened, with two discal rows of punctures. Australian (endemic to New Zealand) Huxelhydrus
   - Elytra not depressed or slightly so, lacking two discal rows of punctures 8
8. Elytra with discal striae, being the prosecution of the latero-basal striae of pronotum. Discal striae of elytra sometimes very short and reduced to small basal pits. Fore and middle tarsi pseudotetramerous (fig. 4), with 4th segment inconspicuous, so that 5th segment appears to be 4th 9

- Elytra lacking both discal and sutural striae. Fore and middle tarsi with 4th segment small but not concealed between lobes of 3rd (fig. 3) 14

9. Elytra with sutural striae 10

- Elytra without sutural striae, or sutural striae reduced to indistinct preapical traces 11

10. Surface dwelling, not normally confined to caves. Eyes normal. Palaeartic, Oriental and Australian **Guignotus** [26] (= *Hydroglyphus*)

- Cavernicolous, confined to caves in Venezuela. Eyes reduced. Neotropical **Troglouignotus**

11. Parameres three-segmented. Discal striae of elytra reduced to basal pits. One African species **Pseudeguvarus**

- Parameres two-segmented. Discal striae of elytra not reduced to basal pits (longer than wide) 12

12. Penis with conspicuous apical processes. Metasternum without rows of punctures parallel to midline. One Neotropical species **Microdesmus**

- Penis not strongly modified by apical processes. Rows of punctures parallel to midline of metasternum 13

13. Surface dwelling, not normally confined to subterranean water. Eyes normal. Nearctic and African **Uvarus**

- Eyes reduced. Phreatobiotic. One West African species **Uvarus chappuis** (Peschel) [27] (questionable taxonomic status: maybe a distinct genus)
14. Latero-basal striae of pronotum connected by a transverse furrow between them. Parameres with one segment. Neotropical

   - Latero-basal striae of pronotum not connected by a transverse furrow. Parameres two-segmented. Neotropical and Australian

   Bidessodes

Key to the subgenera of Bidessodes [28]

a. Males with prosternal process carinate at the base (anterior to procoxae) and with a few apical spines at the fore (basal) end. Last two segments of labial palpi broad and subtriangular. Neotropical  

   s.gen. Hughbosdinius

   - Males with prosternal process not carinate and without spines at the anterior end. Last two segments of labial palpi slender and regular in outline  

b. Hind trochanteres widened and almost square in both sexes. Hind femora fairly broad. Neotropical (Colombia)  

   s.gen. Youngulus

   - Hind trochanteres and femora not modified as above, although somewhat widened in males. Neotropical and Australian

     Bidessodes s.str.


   Hydrodessus  

   (= Brinckius)

   - Latero-basal striae of pronotum almost obsolete but detectible at least as a few punctures or shallow depressions. Parameres two-segmented. Hind coxal lines slightly divergent anteriorly, not continued on metasternum as rows of punctures. Colour pattern maculate or uniformly black  


   Hypodessus  

   (= Brachbybidessus)
- Prosternal process narrow and lanceolate. Body form almost hydroporine. Uniformly black. Neotropical (Venezuela)  
  **Tepuidessus**

  **Tyndallhydrus**

- Prosternal process fairly long, reaching metasternum. Base of pronotum almost as broad as base of elytra. Epipleura with or without carinae  
  18

18. No striae either on pronotum or elytra. Epipleura with diagonal carina crossing near base. Neotropical  
  **Hemibidessus**

- Pronotum with latero-basal striae  
  19

19. Latero-basal striae of pronotum not continued on elytra, the latter lacking either discal striae or carinae, with the exception of *Pachynectes* s.gen. *Yoloidea* from Madagascar (which has low and indistinct elytral carinae, formed beside fairly distinct elytral rows of punctures)  
  20

- Latero-basal striae of pronotum continued on elytra, either as discal striae (sometimes very short) or discal carinae  
  24

20. Epipleuron with basal cavity posteriorly limited by a diagonal carina crossing near base  
  21

- Epipleura without basal cavities posteriorly limited by diagonal carinae  
  23

21. Anterior margin of clypeus thickened, with minute tubercles. Neotropical, extending to Central America and USA  
  **Brachyvatus**

- Anterior margin of clypeus not thickened and without tubercles; sometimes gently rimmed  
  22
22. Metasternum with lateral carinae. Malagasy  

Pachynectes

Key to the subgenera of *Pachynectes* \(^{[29]}\)

a. Elytra with indistinct discal carinae formed beside fairly distinct rows of punctures. Metasternum strongly depressed posterior to middle coxae

- Elytra without traces of carinae. Metasternum not depressed posterior to middle coxae  
Pachynectes s.str.

- Metasternum without lateral carinae. Oriental  
Hypoclypeus stat.nov. \(^{[30]}\)

\(=\) Hypodytes preoccupied

*Hypoclypeus*, here proposed as a distinct genus, may include also *Chydeoptyus* (*Paracyclopeus*) *bemani* Vazirani as a monospecific subgenus. In that case one may use the following key to the subgenera of *Hypoclypeus*:

a. Elytra with low submarginal carinae  

Hypoclypeus s.str.

- Elytral carinae inconspicuous or missing. (India)  
(s.gen. Paracyclopeus)

23. Anterior margin of clypeus not bordered. South African  

Sharphydrus

- Anterior margin of clypeus bordered, although sometimes very finely so. African  

Platydytes \(^{[31]}\)

24. Elytra lacking discal carinae but with distinct discal striae. Epipleura with or without diagonal carinae at the base  

25

- Elytra with discal carinae. Epipleura without diagonal carinae at the base  

34

25. Elytra with submarginal carinae, sometimes split into a marginal and a submarginal carina. Epipleura with or without basal diagonal carinae  

26
26. Epipleura with basal diagonal carinae. African, Oriental and Australian  
   **Clypeodytes**

- Epipleura without basal diagonal carinae. African  
  **Africodytes**

27. Anterior margin of clypeus bordered  
   **28**

- Anterior margin of clypeus not bordered  
  **29**

   **Leiodytes**  
   (= *Liochlorus*, unnecessary replacement name)  
   [32]

- Metasternum coarsely punctured but lacking distinct rows of punctures at midline. Elytra with suture thickened and with presutural rows of punctures. Nearctic, extending to Central America  
   **Neoclypeodytes**

29. Penis asymmetric, with laminar apex angulated almost at right angle. Fore and middle tarsi clearly 5 segmented, the 4th small but not concealed by lobes of 3rd. Remarkable sexual dimorphism. Middle tibiae of male arched. Neotropical, extending to Central America and USA  
   **Bidessonotus**

- Penis not angulated at right angle. Fore and middle tarsi pseudotetramerous. Less dimorphic. Middle tibiae of male not distinctly arched  
  **30**

30. Elytra with presutural striae along the whole length or only in the anterior half; this striae sometimes represented by rows of punctures. Palaeartic and African  
   **Bidessus**

- Elytra lacking both presutural striae and presutural rows of punctures  
  **31**

31. Each elytron with an accessory discal row of punctures between basal stria and suture. Neotropical, extending to Central America and USA  
   **Neobidessus**
- Elytron without an accessory row of punctures between basal stria and suture

32. Hind coxal lines short, separated by about their own length and not prolonged forward by rows of punctures. Australian (one species) Gibbidessus

- Hind coxal lines longer than distance between them

33. Hind coxal lines prolonged forward by distinct rows of punctures, to metasternum. Australian (one species) Alloessus

- Hind coxal lines not prolonged forward by rows of punctures, to metasternum. Nearctic and East Palaearctic Liodessus

34. Latero-basal striae of pronotum connected by an impunctate transverse depression. Elytra with suture not thickened and without presutural striae. Neotropical, extending to Central America and USA Anodocheilus

- Latero-basal striae of pronotum not connected by a transverse depression

35. Body fairly globular or subrhombooidal, more convex at the ventral side, with elytral suture somewhat thickened. Discal carinae strong and well defined also at their outer sides. Elytra lacking rows of punctures between carinae and suture. Fore tarsi with 4th segment small, but fairly visible and not fully locked by lobes of 3rd (not pseudotetramerous), with the exception of the Yola dobrni group (formerly s.gen. Yolula). African and South Palaearctic, extending to India Yola

(= Yolula, a debatable subgenus)

- Body fairly oblong. Discal carinae low and not well defined at their outer sides. Each elytron with a row of punctures between discal carinae and suture. Fore tarsi pseudotetramerous. African and South Palaearctic (SW Asia) Yolina
Subfamily HYDROPORINAE

Tribe CARABHYDRINI

This tribe includes one genus. Australian Carabhydrus

Subfamily HYDROPORINAE

Tribe SIETTITIINI

Key to genera [33]

1. Pronotum with a longitudinally impressed line or stria on each side. Dorsal aspect of a pale Graptodytes. West Palaearctic (France) Siettitia
   – Pronotum without submarginal impressed lines or striae 2

2. Length less than 2.6 mm. Australian (New Zealand) 3
   – Length over 2.6 mm. From other Continents 4

3. Anterior margin of clypeus rounded. Side margins of pronotum bisinuate, basal corners of pronotum acute. Elytra narrowed at base. Sides of elytra fairly curved Phreatodessus
   – Anterior margin of clypeus subtruncate. Side margins of pronotum evenly arcuate, basal corners of pronotum right. Elytra almost parallel-sided Kuschelydrus

4. Length over 3.5 mm. Side margins of pronotum evenly arcuate. Elytra narrowed at base, sides curved. Nearctic (Texas) Haideoporus
   – Length less than 3.5 mm. Side margins of pronotum sinuate with basal corners acute. Elytra parallel-sided. East Palaearctic (Japan) Morimotoa
Subfamily **HYDROPORINAE**

Tribe **HYDROPORINI**

Key to genera [34]

1. Fore and middle tarsi obviously pentamerous, with 4th segment smaller than 3rd but clearly visible and not locked by lobes of 3rd (fig. 3)  
   – Fore and middle tarsi pseudotetramerous (fig. 4), with 4th segment rudimentary, concealed or locked by apical lobes of 3rd

2. Posterior margin of hind coxal process incised medially. Hind coxal cavities approximated. Length over 4.2 mm. Australian Necterosoma
   – Posterior margin of hind coxal process more or less prominent at the middle. Hind coxal cavities separated. Length less than 4.5 mm

3. Mesosternum well exposed, almost in the same plane as metasternum. Fore tibiae strongly modified in male, usually also antennae. Australian Sternopriscus
   – Mesosternum not in the same plane as metasternum, fairly difficult to observe. Fore tibiae and antennae not obviously modified in male. West Palaearctic (Madeira and Canarias) Hydrotarsus

4. Pronotum with rudimentary latero-basal striae (like in Bidessini). Each elytron with five pairs of longitudinal geminate striae, deeply incised with sharp edges. Length 4.2 to 4.5 mm. Australian Barretthydrus
   – Pronotum without latero-basal striae. Elytra without deeply incised geminate striae, at most with shallow longitudinal depressions or longitudinal carinae

5. Each epipleuron with a basal cavity, posteriorly limited by a diagonal carina crossing near base (fig. 8)
   – Epipleura without diagonal carinae crossing near base
6. Epipleura gradually tapering from base to apex, not abruptly narrowed at the middle. Length over 4 mm. Australian Chostonectes

- Epipleura fairly broad at the base, abruptly narrowed at the middle, hence very thin to apex 7

7. Fore margin of clypeus not bordered or exceptionally with traces of a rim, in a few Nearctic species of Coelambus 8

- Fore margin of clypeus distinctly bordered, but the border is sometimes widely interrupted at the middle in some Hyphoporus and in Herophydrus s.gen. Dryeophorus 9

8. Hind coxal process with outer extrarimal lobes very narrow, not covering bases of trochanteres. Middle region of hind coxal process, between coxal lines, wide and prominent hindward at the middle. Hind coxal cavities widely separated. Inner face of each elytron lacking a preapical costa. Australian Paroster

- Hind coxal process with broader extrarimal lobes, covering bases of trochanteres in part. Middle region between hind coxal lines narrower and coxal cavities less widely separated. Inner face of each elytron with a conspicuous preapical costa. Holarctic Coelambus [35]

9. Prosternal process triangular, short and broad, tuberculolate at base. Elytra slightly mucronate at apex (acutely projecting, like in some Hydrovatus sp.). African Pseudhydrovatus

- Prosternal process oval elongate; its base simple, not tuberculolate. Apex of elytra not mucronate 10

10. Fore margin of clypeus arcuate at the middle, gently bordered by a continuous rim. Body short and broad. Holarctic Hygrotus

- Fore margin of clypeus almost straight or slightly concave, broadly bordered but with border sometimes obsolete at the middle or even limited to traces near eyes 11

11. Intermediate segments of antennae widened in both sexes; 2nd segment hardly longer than wide. Malagasy Heroceras
12. Head with evenly distributed punctuation. Penis asymmetric, slender and pointed at apex. African (NE African) and South Palaearctic (SW Asiatic) extending to India

**Hyphoporus**

- Head with clypeal punctuation obsolete. Penis symmetrical and not pointed at apex. African, Oriental and South Palaearctic

**Herophydrus**

Key to the subgenera of *Herophydrus* [16]

a. Clypeal border widely interrupted at middle, sometimes reduced to traces near eyes

- Clypeal border almost continue

**Herophydrus** s.str.

13. Epipleura gradually tapering from base to apex, not abruptly narrowed at the middle

- Epipleura broad at base, abruptly narrowed at the middle, hence very thin to apex

14. Abdomen with transverse furrows and foveoles. Elytra with longitudinal carinae. African, extending to Pakistan and India

**Peschetius**

- Abdomen without transverse furrows and foveoles. Elytra lacking carinae. Australian

15. Hind tibiae with one row of setigerous punctures, otherwise almost smooth. Ventral side reticulate, usually shining. Fore tarsi of male with two claws

**Megaporus**

(= *Macroporus* preoccupied)

- Hind tibiae densely punctured. Ventral side microreticulate, dull. Fore tarsi of male with one claw

16. Shoulders of elytra regularly rounded. Segments of fore tarsi with apical lobes fairly equal in size

**Antiporus**
Shoulders of elytra obliquely bent upwards. Inner (anterior) lobes of fore tarsi broader than outer lobes  

**Tiporus**  
 (= Hypodes preoccupied)

17. Posterior margin of hind coxal process either truncate or angularly prominent medially. (*Hydoporodes* sensu lato)  

18. Eyes present, normal or reduced. Apex of the prosternal process exposed, ventral to metasternum, usually received into an impression of metasternum  

19. Metasternum deeply sulcate at midline. Posterior margin of hind coxal process prominent at the middle as a triangle with hollow sides (fig. 22). Elytral colour pattern maculate. Head and pronotum usually lighter than elytra. Nearctic  

Stygobiontic. Monospecific genus of Western USA  

**Stygoporodes**  

19. Metasternum not sulcate at midline. Posterior margin of hind coxal process either truncate or prominent at the middle  

20. Prosternal process not protuberant, in lateral view, in front of procoxae. Male with 4th or 4th and 5th antennal segments enlarged. Basal segment of male protarsus with a ventral cupule of sensillae. Parameres with a long preapical tuft of hairs and a few short apical setae. Length 3.5 to 4.5 mm. Nearctic  

**Lioporeus**  
 (= Fallopores)

20. Prosternal process protuberant, in lateral view, in front of procoxae, except in a few species shorter than 3.3 mm (*Hydoporodes vittatipennis* group) and other species longer than 5 mm (*Neoporus*...

\textbf{Heterosternuta}

\textit{ (= Heterosternus preoccupied)}

\begin{itemize}
  \item Body usually less narrowed behind. Penis in dorsal view simply pointed at apex \textbf{Neoporus}
\end{itemize}

22. Prosternal process broad, spatulate, slightly convex, without marginal rim, at the base lacking transverse file. Pronoto-elytral angle fairly deep. Length 4.5 to 5.5 mm. Palaearctic \textbf{Suphrodytes}

\begin{itemize}
  \item Prosternal process less broad, subcarinate and usually not bordered. Base of prosternal process usually with a file of transverse rugae. Pronoto-elytral angle weak or negligible \textbf{23}
\end{itemize}

23. Eyes reduced, cavernicolous (Mexico) \textbf{Sanfilippodytes}

\begin{itemize}
  \item Eyes normal, not cavernicolous. Holarctic \textbf{Hydroporus}
\end{itemize}

Key to the subgenera of \textit{Hydroporus} \cite{37}

\begin{enumerate}
  \item Posterior margin of hind coxal process almost straight or gently bisinuate (fig. 20) \textbf{Hydroporus s.str.}
  \begin{itemize}
    \item Posterior margin of hind coxal process projecting hindward as a triangular process \textbf{b}
  \end{itemize}
  \item Triangular process with straight sides and apical angle obtuse \textit{s.gen. Hydroporidius}
  \begin{itemize}
    \item Triangular process with hollow sides and apical angle right or acute (fig. 21), sometimes joined to abdomen by an exposed interlaminal bridge \textit{s.gen. Sternoporus}
      \textit{ (= Hydroporinus)}
  \end{itemize}
\end{enumerate}

24. Underside punctured, lacking other microsculpture \textbf{25}

\begin{itemize}
  \item Underside either obviously reticulate or shagreened \textbf{26}
\end{itemize}
25. Scutellum hidden. Elytra without preapical denticles. West Palaearctic
   \textit{Scarodytes}

   - Scutellum usually exposed in part. Each elytron with a preapical
denticle. African (Mt. Kilimanjaro) \textit{Nebrioporus} \textsuperscript{[18]}

26. Underside reticulate

   - Underside shagreened (alutaceous or granulate), never distinctly
   reticulate

27. Pronotum and elytra alutaceous. West Palaearctic \textit{Porhydrus}

   - Pronotum and elytra reticulate

28. Pronotum with a sublateral, longitudinally impressed stria on each
side. (\textit{Graptodytes sensu lato})

   - Pronotum lacking sublateral impressed striae or creases

29. Sublateral striae of pronotum as long as the whole length of
pronotum. Penis with hooked apex. Palaearctic (West Mediterrane-
anean) \textit{Rhithrodytes}

   - Sublateral striae of pronotum fairly short, only present at the mid-
dle. Penis not hooked at apex. Western and Central Palaearctic
   \textit{Graptodytes}

30. Prosternal process slender, long and narrow. Palaearctic (West
Mediterranean) \textit{Metaporus}

   - Prosternal process stout, short and broad. (This group of genera
may be included in a separate tribe, the \textit{Laccornini}) \textsuperscript{[19]}

31. Parameres short and broad. African \textit{Canthyporus}

   - Parameres much narrower. Not African

32. Dorsal punctuation almost simple. Holarctic \textit{Laccornis}

   (= \textit{Agaporus})
33. Apical segment of labial palpi deeply notched at tip. 4th segment of antennae smaller than adjacent ones. West Palaeartic \textit{Stictonetes}

34. Elytral surface reticulate. Pronotum with a longitudinally impressed crease on each side. Holarctic \textit{Oreodytes}

35. Prosternal process broadly oval, spoon-shaped, rounded at tip, with a weak rim at sides. East Palaeartic \textit{Neonectes}

36. Body broad and convex, tapering hindward. Ratio length to width less than 1.77. Prosternal process behind fore coxae fairly round-shaped, flat or slightly concave, with a narrow medial ridge and with a briefly protruding pointed apex. Middle coxae widely separated (more so than in other \textit{Deronecetes} sensu lato). Hind coxae markedly corrugate. Hind coxal process with interlaminar bridge sometimes markedly exposed. Nearctic (SW USA and Mexico) \textit{Deronecetes} s.l. \textit{roffii} (Clark) and its allied \cite{40} (undescribed new genus)

37. Posterior margin of hind coxal process with a long interlaminar bridge at midline, apparently splitting the median emargination into lateral indentations at each side. Join of the interlaminar bridge to the abdomen widened into a double hook, separating the coxal cavities
Posterior margin of hind coxal process deeply emarginate medially, without exposed interlaminar bridge (figures 18 and 19). Hind coxal cavities contiguous. Holarctic and African Potamonectes \(^{[41]}\)

**Key to the subgenera of Potamonectes**

**a.** Parameres with an irregularly translucent median zone and apparently with a hook-shaped apex, the hook indentation being usually occupied by a membrane (potamonectine parameres). Elytra with or without preapical denticles. Colour pattern maculate or vittate

\[(\text{Nebrioporus} \text{ in part, sensu Nilsson & Angus, 1992})\]

**b.** Parameres not modified as above, without translucent zones and with apex regularly pointed or rounded (hydroporine parameres). Elytra always lacking preapical denticles. Colour pattern of elytra usually vittate. This subgenus comprises all American Potamonectes s.l. except the depressus group (depressus-machronychus complex).

In Palaearctic it is represented by Dytiscus griseostriatus De Geer and its allied and by Potamonectes (Trichonectes) otini Guignot, the latter confined to Maroc. Holarctic

\[\text{s.gen. Trichonectes s.l.} \quad ^{[42]}\]

\[(\text{Stictotarsus} \text{ in part, sensu Nilsson & Angus, 1992})\]

**b.** Hind tibia with a row of setigerous punctures, plus other punctures sometimes forming an additional row. In the Old World only

\[\text{s.gen. Zimmermannius} \quad ^{[43]}\]

\[= \text{Bistictus}\]

**b.** Hind tibia with one row of setigerous punctures, otherwise almost impunctate. Holarctic Potamonectes s.str.

**38.** Punctuation of hind tibiae consisting of setigerous punctures. Prosternal process narrow and strongly carinate. Western and Central Palaearctic (fig. 15)

Deronectes

**b.** Punctuation of hind tibiae usually simple, sometimes with a median
row of setigerous punctures. Prosternal process flat or transversely convex but not obviously carinate 39


- Prosternal process behind fore coxae transversely convex and finely bordered. Pronoto-elytral angle weak. Penis symmetric. Valvae without an additional lobe near base 40

40. Each elytron with seven deep longitudinal furrows. One West Palaeartic species, endemic to Spain Deronecetes bertrandi Legros [45] (probable distinct genus that needs a new genus-group name)

- Elytra not furrowed, with regular rows of punctures. A few Nearctic species recognizable by their coarsely punctured tibiae and the exposed interlaminal bridge. Maybe they constitute an undescribed new genus Deronecetes s.l. grammicus Sharp, and its allied [46]

Subfamily LACCOPHILINAE

Key to genera [47]


- Hind tibiae with two apical spurs. Antennae neither widened nor flattened in male 2


- Prosternal process with one point. Basal corners of pronotum never spinose and not projecting 3
3. Longer spur of hind tibia apically notched or bifid (usually also the shorter one). Cosmopolite Laccophilus
   - Longer spur of hind tibia simple, apically acute 4

4. Pronotum projecting hindwards in a distinct angle at the middle of the base 5
   - Base of pronotum almost straight 9

5. Prosternal process laterally compressed behind procoxae 6
   - Prosternal process fairly broad behind procoxae 7

6. Length not exceeding 5 mm. Fore and middle femora and tibiae densely punctured. Prosternal process markedly carinate. South-East Palaeartic (endemic to Tibet) Laccoporus
   - Length about 5.5 mm. Fore and middle femora as well as tibiae never densely punctured. Prosternal process only slightly carinate. African Philodytes

7. Prosternal process heart-shaped behind procoxae, rounded at apex. Oriental (SE Asia) Laccosternus
   - Prosternal process triangular behind procoxae, pointed at apex, somewhat diamond-shaped 8

8. Body oval. Hind coxal lines not parallel. Neotropical, extending to Central America and Southern USA Laccodytes
   - Body oblong, narrowed behind. Hind coxal lines fairly parallel. East Palaeartic Japanolaccophilus

9. Network of elytral reticulation consisting of longitudinal or broad polygonal meshes. Hind coxal lines almost parallel in front. African Africophilus
   - Network on elytra consisting of small, transversal meshes. Hind coxal lines slightly diverging anteriorly 10
10. Hind coxal process reticulate with round meshes; its posterior margin bilobed. Australian
   **Australphilus**

   - Hind coxal process reticulate with transversal meshes; its posterior margin not bilobed but fairly rounded. Anomalous distribution (Africa and New Guinea)
   **Philacculus**

   Key to the subgenera of **Philacculus**[^8]

   a. Hind tarsi with outer apical lobes markedly widened. New Guinea
   **s.gen. Philaccolius**

   - Hind tarsi with outer apical lobes simply widened, like in other Laccophilinae. African
   **Philacculus s.str.**

Subfamily **AUBEHYDRINAE**

This subfamily includes one genus. Neotropical **Notaticus**

(=Aubehydrus)

Subfamily **COYMBETINAE**

Key to tribes[^9]

1. Hind femora with a group of more or less dense short setae situated in a linear depression on the ventral side, near the inner (posterior) apical corner (fig. 14)
   **AGABINI** (page 46)

   - Hind femora without a group of setae in a linear depression on the ventral side as above, or with traces of a linear depression or a group of punctures without setae
   2

2. Basal four segments of hind tarsi with apical margin transversely straight or slightly sinuate, never forming a lateral lobe projecting hindwards onto the base of the next segment. Hind claws usually equal in length, except in tribe **Carabaytini**

   - Basal four segments of hind tarsi (only two segments in genus **Bunites**) with apical margin markedly sinuate, so that each segment
appears to be prolonged half its width, onto the base of the next segment. Hind claws fairly different in length

3. Second pleurite with transverse rugae (elytron must be lifted up). Hind claws markedly different, outer claw about two third of the inner claw. Tribe comprising one genus from New Guinea
   **CARABDYTINI n.trib. [56]** (page 52)
   - Second pleurite either smooth or with obsolete rugae. Hind claws of equal length

4. Epipleura gradually tapering from base to apex, not abruptly narrowed at the middle **AGABINI** (genus *Platambus*) (page 46)
   - Epipleura broad at base, abruptly narrowed at the middle, hence very thin to apex

5. Ovipositor with ventral lobe serrulate (fig. 7), such as in *Laccophilinae*. Body outline continuous. Pronotum laterally not bordered. Elytra with a dense sculpture which consists of many short needle-shaped grooves. The abdominal sternite is traversed its entire length by two parallel grooves which make it almost carinate along the middle. One genus with anomalous distribution: USA and Iran **AGABETINI [51]** (page 52)
   - Ovipositor not serrulate

6. Ventral side of hind tibia with two rows of setigerous punctures, otherwise smooth or with a few punctures only. Body outline fairly continuous (fig. 12) **COPELATINI** (page 53)
   - Ventral side of hind tibia with dense punctuation. Body outline with a deep constriction between pronotum and elytra, forming a marked pronoto-elytral angle

7. Ventral side of hind tibia with rows of setigerous punctures, otherwise covered with simple punctuation. Hind femora with traces of a linear depression near inner apical corner, like in *Agabini*, but lacking group of setae. Hind claws slightly different in size, the inner claw shorter. Parameres narrowed at the middle. Tribe from the Southern Hemisphere **ANISOMERIINI** (page 53)
Ventral side of hind tibiae covered with setigerous punctures. Hind femora without traces of a linear depression near the inner apical corner, but with a group of punctures in the same place. Hind claws of equal length. Parameres tapering to apex without median constriction. Tribe formed by one genus from the Northern Hemisphere

**HYDRONEBRINI**  (page 54)

8. Hind tarsi with apical lobes at inner (posterior) corner. Base of prosternal process with a median longitudinal groove. Second pleurite without transverse rugae  **MATINI**  (page 54)

9. Palpi markedly modified, with apical segment notched or emarginate at tip. Pronotum narrowly bordered. Second pleurite lacking transverse rugae. Tribe formed by one genus from North America  **COPTOTOMINI**  ([22])  (page 54)

10. Elytral apex truncate. Parameres fairly short, rounded at apex and lacking hairs and setae. Penis asymmetric. Second pleurite lacking transverse rugae. Tribe formed by one genus from South America and Australia  **LANCETINI**  (page 54)

Subfamily **COLUMBETINAE**

Tribe **AGABINI**

Key to genera  ([33])

1. Epipleura abruptly narrowed at half their length, hence very thin to apex. Hind femora with a group of setae in a linear depression on the ventral side, near inner (posterior) apical corner  **2**
Epipleura gradually tapering from base to apex. Hind femora usually with a group of setae near apical corner, as above, but sometimes with setae reduced or missing or with a group of punctures taking place of the linear depression (in subgenera *Anagabus* and *Agraphis*). Palaearctic, extending to Northern India. **Platambus**

Key to the subgenera of *Platambus* [*4*]

   - Body outline continuous. Pronoto-elytral angle open or negligible. Apex of elytra conjointly rounded **b**

2. Elytra with coarse and deeply impressed punctuation, dark unicoloured, without red or yellow pattern. South-East Palaearctic (North India and China) s.gen. **Agraphis**
   - Elytra with normal rows of medium sized punctures, otherwise smooth or densely and finely punctured (in *Platambus* *wittmeri*, *lunulatus*, *angulicollis*, etc.). Colour pattern usually maculate. Palaearctic **Platambus** s.str.

2. Hind coxal lines almost straight, fairly long and deep and parallel. Hind coxal process parallel-sided, lateral margins straight to apex. Posterior border of hind coxal process triangularly produced hindwards. Nearctic **Agabinus**
   - Hind coxal lines, if present, anteriorly divergent, not parallel. Hind coxal process not parallel-sided, lateral margins each forming a rounded lobe laterally. Posterior border of hind coxal process never triangularly produced hindwards **3**

3. Labial palpi markedly modified. Nearctic **4**
   - Labial palpi not modified (somewhat widened only in the Palaearctic genus *Metronectes*) **5**

4. Labial palpi short and broad; apical segment quadrata. Hind claws of equal length. Nearctic **Hydrotrupes**
Labial palpi with penultimate segment triangular in cross section, the faces concave and unequal. Hind claws slightly different in length. Nearctic

Carrydrus

5. Pronotum without lateral border or with a negligible rim. Neotropical

6. Pronotum usually bordered at sides, except in a few Asiatic Platyneuctes, which have an exceedingly thin border

7. Hind coxal lines distinct. Neotropical

Leuronectes

8. Hind coxal lines absent. Neotropical

Agametrus

8. Antennae and palpi short and stout. Hind coxal lines obsolete (traces may be perceivable). Pronotum lacking anterior submarginal row of punctures. West Palearctic ( endemic to the Tyrrhenian isles)

Metronectes


Andonectes

9. The linear depression with a group of setae on the ventral side of hind femur lies shortly before the inner apical corner. Parameres in one segment, lacking an apical lobe except in Agabus s.gen.

Eriglenus


Platyneuctes

Key to the subgenera of Platyneuctes [59]

a. Prosternal process narrow and carinate at least in the anterior half. Australian (group I of Sharp, 1882) s.gen. Carinonectes

b. Prosternal process transversely more or less convex but not carinate
b. Prosternal process with blunt or rounded apex. Parameres strongly bent at middle, fairly half-moon shaped. Neotropical (group III of Sharp, 1882) **Platynectes** s.str.

- Prosternal process sharp at apex. Parameres not strongly bent at middle (group II of Sharp, 1882) c

c. Hind coxal lines anteriorly obsolete, not reaching hind margin of metasternum. Penis somewhat asymmetric but with regular outline. Oriental and Australian s.gen. **Gueorguievtes**

- Hind coxal lines entire, reaching hind margin of metasternum. Penis markedly asymmetric, with small spines on the dorsal side and upturned tip. Australian s.gen. **Australonectes**

10. Hind claws of different length, the outer claw shorter. Posterior margins of first four segments of hind tarsi prolonged hindwards with an apical lobe in their outer half, the apical lobe fairly distinct in *Ilybius*, less distinct in *Colymbinectes*. (These two genera are separated sometimes as tribe *Ilybiini*)

- Hind claws of almost equal length, although sometimes of different shape. Posterior margins of first four segments of hind tarsi almost straight or slightly sinuate, not forming a distinct apical lobe in their outer half. Holarctic and African **Agabus**

Key to the subgenera of *Agabus* [56]

a. Inner (posterior) apical corners of hind femora markedly produced in a thin plate. First segment of hind tarsi lacking inferior spines at lower margin. Palaeartic (Iran) s.gen. **Ranagabus**

- Inner apical corners of hind femora regularly rounded, not produced in a thin plate. First segment of hind tarsi with at least one series of small spines at lower margin b

b. Elytra with needle-shaped (acicular) sculpture consisting of short longitudinally impressed dashes on the basal half and short transversal dashes on the apical half. East Palaeartic and Nearctic s.gen. **Aptor** [57]
- Elytra lacking acicular sculpture and more or less distinctly reticulate

c. Lateral wings of metasternum narrow and subparallel

- Lateral wings of metasternum broadly triangular

d. First segment of hind tarsi more than twice longer than second and twisted. Antennal segments markedly widened (clubbed) in male. Holarctic

Agabus s.str.

- First segment of hind tarsi twice as long as second, straight. Antennae of male simple or slightly serrate

e. Upper side weakly reticulate. Hind coxal lines fairly long, reaching metasternum. Outer face of hind tibia lacking a row of setigerous punctures at the lower margin. Palaearctic

s.gen. Eriglenus

- Upper side strongly reticulate. Hind coxal lines obsolete in front, not reaching metasternum. Outer face of hind tibia with a row of setigerous punctures at the lower margin. Nearctic

s.gen. Ilybiosoma


s.gen. Nebriogabus

- Prosternal process oval or lanceolate, never flat but either convex or carinate. Pronotum broadest at base or before middle. Pronoto-elytral angle usually weak or negligible, with the exception of some Dichonectes, which are easily identified by the oblique impressions in front of the basal corners of pronotum

g. Row of punctures beside fore margin of pronotum interrupted in the middle. Pronotum with oblique impressions in front of basal corners

h. Row of punctures beside fore margin of pronotum sometimes less distinct in the middle but never interrupted. Pronotum with-
out oblique impressions in front of basal corners, rarely with shallow, indistinct impressions  

h. First two segments of fore and middle tarsi strengthened and felted in males. Palaeartic  
s.gen. Dichoneuctes  

- First three segments of fore and middle tarsi strengthened and felted in males. Nearctic and African (?) (Ethiopian, teste Guignot, 1959 b)  
s.gen. Allogabus  

i. Inner elytral row formed by isolated groups of punctures, each group consisting of 5 - 6 small punctures. Hind tarsal segments markedly short and stout; first segment much shorter than apical spur of hind tibia; 2nd to 4th segments hardly longer than wide.  
Palaeartic and African (Ethiopian)  
s.gen. Agabinectes [38]  

- Inner elytral row formed by isolated large punctures. Hind tarsal segments of normal length; first segment longer than apical spur of hind tibia; 2nd to 4th segments almost twice as long as wide  

j. Median segments of antennae slightly serrate. Fore tibiae triangularly widened and flattened. Last segment of fore and middle tarsi of the male fairly long and with a denticle on the ventral side.  
Holarctic  
s.gen. Arctodytes  

- Median segments of antennae not serrate. Fore tibiae normal. Last segment of fore and middle tarsi of the male with straight margin on the ventral side  

k. Outer face of hind tibia with a scattered punctuation consisting of setigerous punctures. Lateral margins of pronotum with a shallow indentation near the anterior corners, especially in the male, so that corners face outwards. First two segments (sometimes also 3rd and 4th) of hind tarsi of the male with a shallow longitudinal depression beside the outer margin. Hind claws slightly different in shape.  
Holarctic  
s.gen. Parasternus  

- Outer face of hind tibia lacking setigerous punctures (except Agabus tristis, recognizable by hind femora with dense longitudinal dashes). Anterior corners of pronotum normal. First two
segments of hind tarsi of the male without longitudinal depression. Hind claws fairly alike. Holarctic and African (Ethiopian) s.gen. Gaurodytes


Key to the subgenera of Ilybius [39]

a. Elytra with small punctures at the crossing of the loops. Outer face of hind tibia with the marginal row and a basal goup of large punctures, otherwise smooth. Hind tarsi with outer apical lobes only slightly produced. This subgenus comprises two East Palaearctic species s.gen. Agabidius

- Elytra without small punctures at the crossing of the loops. Outer face of hind tibia with scattered punctuation. Hind tarsi with outer apical lobes more evidently produced Ilybius s. str.

Subfamily COLYMBETINAE

Tribe CARABDYTINI

This tribe includes one genus from New Guinea Carabdytes

Subfamily COLYMBETINAE

Tribe AGABETINI

This tribe includes one genus. USA and Iran Agabetes
Subfamily **Colymbetinae**

**Tribe COPELATINI**

Key to genera $^{[60]}$

1. Hind coxal lines well impressed, anteriorly divergent, nearly touching median line, then turning outward almost at right angle onto hind coxal process  
   - Hind coxal lines obsolete or absent  
   2

3. Pronotum narrowly but clearly bordered laterally. Cosmopolite **Copelatus**
   - Pronotum without lateral borders. Neotropical **Agaporomorphus**

   - Hind femora without an apical indentation. Parameres with an apical pear-shaped lobe. Fore tarsi not markedly widened in the male, and lacking dense fringe of cilia marginally. Oriental **Lacconectus** (= **Paralacconectus**, debatable subgenus) $^{[61]}$

Subfamily **Colymbetinae**

**Tribe ANISOMERIINI**

Key to genera $^{[62]}$

1. Pronotum with lateral border. Neotropical (Chile and South Pacific) **Anisomeria**
   - Pronotum without lateral border. Neotropical (endemic to Tristan da Cunha) **Senilites**
Subfamily **COLYMBETINAE**

**Tribe HYDRONEBRIINI**

This tribe includes one genus. Nearctic *Hydronebrius*

Subfamily **COLYMBETINAE**

**Tribe MATINI**

Key to genera [63]

1. Epipleura in apical half as wide as the base of longer spur of hind tibia. Parameres almost parallel sided with rounded apex. Outer (shorter) hind tarsal claw straight. Nearctic *Matus*

2. Epipleura in apical half more than twice as wide as the base of longer spur of hind tibia. Parameres abruptly narrowed near middle. Outer hind tarsal claw curved

2. Elytra not reticulate, but densely and finely punctured. Australian *Batrachomatus*

3. Elytra reticulate, lacking dense punctation. Australian *Allomatus*

Subfamily **COLYMBETINAE**

**Tribe COPTOTOMINI**

This tribe includes one genus. Nearctic *Coptotomus*

Subfamily **COLYMBETINAE**

**Tribe LANCETINI**

This tribe includes one genus. Neotropical, Australian and South Pacific *Lancetes*
Subfamily **COLUMBETINAE**

**Tribe COLUMBETINI**

Key to genera [64]

1. Prosternal process flat. Upper side of the body markedly flattened. Side margins of pronotum widely bordered. Nearctic **Hoperius**

   - Prosternal process convex to carinate. Upper side more or less convex

2. Metasternum anteriorly lowered, slightly furrowed in front, to receive apex of prosternal process. Elytral sculpture usually consisting of numerous parallel transverse grooves, with the exception of a few Asiatic species. Pronotum lacking lateral borders. Holarctic **Colymbetes**

   - Metasternum not or slightly lowered anteriorly, but markedly furrowed longitudinally between middle coxae to match apex of prosternal process. Pronotum either bordered or not. Elytral sculpture never consisting of dense transverse grooves

3. Elytral sculpture consisting of broad, deeply impressed irregular meshes. Fore tibiae emarginate near base at the inner side, particularly so in the male. Pronotum lacking lateral borders. Nearctic **Neoscutopterus**

   - Elytral sculpture never consisting of broad, deeply impressed irregular meshes; meshes either small or squamose. Fore tibiae not or slightly emarginate near base at the inner side. Pronotum either bordered or not

4. Last segment of hind tarsi much longer than penultimate. Elytral sculpture consisting of arcuate dashes that shape squamiform meshes. Pronotum lacking lateral borders. Colour black to brown. West Palaearctic **Meladema**

   - Last segment of hind tarsi slightly longer than penultimate. Elytral sculpture consisting of small regular meshes. Pronotum usually with lateral borders, although sometimes very thin

- Body form oval, with a continuous outline. Pronoto-elytral angle negligible. Base of pronotum as wide as base of elytra. First four segments of hind tarsi apically lobate 6

6. Base of pronotum strongly sinuate, with basal corners acutely projecting hindwards. Colour black. Holarctic nartus

- Base of pronotum not strongly sinuate, with basal corners not acutely projecting hindwards 7

7. Outer face of hind tibia covered with setigerous punctures. Reddish-black unicoloured. West Palaearctic (endemic to Tyrrenian countries) melanodytes

- Outer face of hind tibia with rows of setigerous punctures, otherwise almost unpunctured. Usually yellow with dense black speckles on elytra, except a few species from America which are prevalently black or blackish brown, with a light pattern. Cosmopolite rhantus

Subfamily dytiscinae

Key to tribes [65]

1. Posterior margins of first four segments of hind tarsi transversely with a coarse fringe of flat, adpressed, golden-yellow cilia or setae 2

- Posterior margins of first four segments of hind tarsi without such fringe or with cilia only in the outer apical angle 4

2. Prosternal process pointed at the end. Side margins of pronotum bordered. Side margins of elytra on the posterior half serrate with a series of spines  eretini (page 57)
Prosternal process rounded at posterior tip. Pronotum usually lacking lateral borders. Side margins of elytra not serrate on the posterior half

3. Main spur of hind tibia acute. Anterior outer margins of lateral wings of metasternum straight **HYDATICINI** (page 57)

- Main spur of hind tibia bifid. Anterior outer margins of lateral wings of metasternum strongly arcuate **THERMONECTINI** (page 58)

4. Hind tibia more than twice as long as wide; outer apical spur slender, as broad as inner or slightly thicker **DYTISCINI** (page 60)

- Hind tibia almost as long as wide; outer apical spur very thick, almost 2 - 3 times thicker at the base than the inner spur **CYBISTRINI** [66] (page 60)

Subfamily **DYTISCINAE**

Tribe **ERETINI**

This tribe includes one genus. Cosmopolite **Eretes**

Subfamily **DYTISCINAE**

Tribe **HYDATICINI**

Key to genera [67]

1. Hind claws of equal length. Anomalous distribution (SW Asia and Somaliland) **Prodaticus**

- Hind claws of different length; inner claw about twice as long as outer

2. Epipleura very wide to apex. Side margins of elytra flattened in the apical half, like in *Dineutus (Gyrinidae)*. Dorsal surface uniformly black and mat. Oriental **Pleurodytes**
Epipleura tapering to apex. Elytra not flattened laterally in the apical half. Dorsal surface usually black or brown with yellow pattern. Cosmopolite

Key to the subgenera of *Hydaticus* [*8*]

a. Outer (lower) face of hind tibia with deep oblong punctures on the whole surface, interspersed with small punctures. Hind femora with a dense, double punctuation on the ventral side. Holarctic

Hydaticus s.str.

b. Inner (upper) face of hind tibia with a row of setigerous punctures oblique as to the margins. Upper face of hind femora (facing abdomen) with a double or triple row of setigerous punctures. Cosmopolite (mostly Tropical) s.gen. Guignotites

Subfamily DYTISCINAE

Tribe THERMONECTINI

Key to genera [*8*]

1. Hind coxal lines obsolete behind on the coxal process, very thin in front or replaced by rows of punctures 2

2. Length less than 11 mm. Mid femora with hind margin provided with hairs as long as about 1/4 the length of a mid femur. African, Oriental and Australian Rhantaticus 3

- Hind coxal lines clearly impressed on the coxal process

3. Hind coxal lines obsolete behind on the coxal process
- Length over 12 mm. Mid femora with hind margin provided with hairs almost as long as one half the length of a mid femur. Oriental and Australian Sandracottus

3. Dorsum shining, with very fine punctuation, either simple or double. Fore tarsi of male with several large and numerous small suckers of similar structure. Female sometimes with a sexual sculpture not consisting of broad and shallow longitudinal grooves on elytra 4

- Dorsum fairly mat, with dense double punctuation. Fore tarsi of male with one large and 2 small suckers (or 3 suckers of equal size) and a large number of very small adhesive tubes. Elytron of female often with 4 broad longitudinal grooves covered with dense short hairs. Holarctic Acilius

Key to the subgenera of Acilius[70]

a. Larger punctuation of pronotum spaced and not very strong, almost missing on the disc. Secondary (smaller) punctuation prevailing. The broader sucker of male is less than twice as wide as the intermediate suckers. Female without elytral grooves. Holarctic (two species) s.gen. Homoeolytrus

- Larger punctuation of pronotum very strong and dense. The broader sucker of male is up to 4 times as wide as the intermediate sucker. Female with furrowed elytra, except in two species (one from Japan and the other from N.America) Acilius s.str.

4. Middle tarsi of male with several small suckers (except in the palaeartic species Graphoderus australicus which has no suckers at mid tarsi). Female sometimes with sexual sculpture on elytra, consisting of coarse broad granulations. Elytra with black and yellow speckles, usually not forming a definite colour pattern. Pronotum usually transversely fasciate. Holarctic Graphoderus

- Middle tarsi not modified in the male and lacking suckers. Female with sexual sculpture never consisting of coarse elytral granulations. Elytra with black and yellow speckles, usually forming a definite black and yellow colour pattern (except in a few Thermonectus from S.America, which greatly resemble Graphoderus) 5
5. Hind margin of mid femora with series of stiff setae which are as long or longer than the femur is wide. Holamerican
   Thermonectus \(^7\)

   - Hind margin of mid femora with series of stiff setae which are only about 1/2 as long as femur is wide. African

6. Outer face of hind tibia smooth and lacking spines. Inner face of hind tibia with an oblique series of bifid spines. This genus looks like Eretes. South African
   Tikoloshanes

   - Outer face of hind tibia with some spines. Inner face of hind tibia with a series of bifid spines almost parallel to the posterior margin. African
   Aethionectes

Subfamily DYTISCINAE

Tribe DYTISCINI

Key to genera \(^7\)

   Hyderodes

   - Clypeo-frontal suture distinct also at the middle. Pronotum not bordered. Elytra with yellow marginal band. Holarctic

Subfamily DYTISCINAE

Tribe CYBISTRINI

Key to genera \(^7\)

1. Hind coxal lines distinct

   - Hind coxal lines missing. Hind tarsi with two claws, both in male and in female. Australian
   Homoeodytes \(^7\)
   ( = Onychohydrus )
Key to the subgenera of *Homoeodytes* [75]

a. Prosternal process with a deep longitudinal groove at midline of its base. Inner apical angle of hind femora almost right. One species
   s.gen. *Sternhydrus*
   - Prosternal process with a shallow longitudinal depression in its basal part. Inner apical angle of hind femora acute
     *Homoeodytes* s.str.

2. Prosternum with a deep longitudinal groove at the middle. Anterior margins of hind coxae relatively approximate to mid coxal cavities; their distance is shorter than mid trochanter is long. Australian
   *Spencerhydrus*
   - Prosternum without a longitudinal groove at the middle, but with a shallow longitudinal depression in some *Megadytes*. Anterior margins of hind coxae relatively distant from mid coxal cavities, at least as far from mid coxal cavities as the mid trochanter is long 3

3. Hind tarsi with two claws in male
   4
   - Hind tarsi with one claw in male. Female often with a second rudimentary claw. Cosmopolite
     *Cybister*

Key to the subgenera of *Cybister* [76]

a. Middle tarsi lacking adhesive sole in the male. Female with a double fringe of swimming hairs, both at the inner and the outer margin of hind tarsi. Palaearctic (two species)
   s.gen. *Trochalus*
   - Middle tarsi with adhesive sole in the male. Female with one fringe of swimming hairs at the inner margin of hind tarsi  b

b. Side margins of elytra without yellow lateral band. Pronotum either unicoloured or with an indistinct yellow or reddish longitudinal band at sides. Penis tapering to apex. Female sometimes with a second claw at hind tarsi
   s.gen. *Melanectes*
- Both elytra and pronotum with distinct yellow lateral band. Penis usually widened towards apex. Female usually with two claws at hind tarsi

4. Posterior margin of hind coxal process with a fringe of setae. Dorsum light green with scattered black dots. African

Regimbartina

- Posterior margin of hind coxal process without a fringe of setae. Dorsum olive-green or greenish brown without scattered black dots. American or Australian

5. Last segment of hind tarsi widened at base. Australian (one species)

Austrodytes

- Last segment of hind tarsi not widened at base. Neotropical, extending to Central America and USA

Megadytes

Key to the subgenera of Megadytes [77]

a. Shorter apical spur of hind tibia bifid or trifid at tip. Hind tarsal claws almost alike in male and female. Length 27 to 47 mm

b. Shorter apical spur of hind tibia acutely pointed at tip. Hind tarsal claws alike in male but different in female: inner claw distinctly smaller. Length 16 to 32 mm

c. Shorter apical spur of hind tibia with two points. Very large: 39 to 47 mm

Bifurcatus

d. Shorter apical spur of hind tibia with three points. Length 27 to 36 mm

Trifurcatus

e. Broader: 28 to 32 mm. Lateral wings of metasternum fairly short, about as long as one half of metasternum medially. First two segments of middle tarsi with felted soles of small adhesive tubes

Paramegadytes

f. Smaller: 16 to 23 mm. Lateral wings of metasternum fairly longer, almost as long as metasternum medially. First three segments of middle tarsi with felted soles of small adhesive tubes

Megadytes s.str.
NOTES

[1] The monospecific subterranean genus *Phreatodites* Ueno, 1957 from Japan has some affinities with *Noterinae*, such as the common ventral plate of metasternum and hind coxae, and some characters of the larvae. Nevertheless it cannot be included in *Dytiscidae* sensu lato, because it has no metepisterna and the abdomen has only four visible segments. It is currently assigned to the family *Phreatodytidae*.

[2] The differences between *Noterinae* and other subfamilies of *Dytiscidae* extend far beyond the few characters mentioned in the key. Actually the principal differences concern both the morphology and the biology of the larvae. For instance, the larvae of Noterids feed by means of normal buccal pieces, while the larvae of other Dytiscids have a locked mouth and feed directly from mandibles through mandibular ducts. As a result of the above differences, the North American and North European authors usually keep the family *Noteridae* distinct from *Dytiscidae*. GUIGNOT (1947, page 3) argued in favour of the conservation of one family and since I believe his arguments have not been validly refuted, I continue using *Noterinae*. This is a pointless question.


[5] Key to *Hydrocanthini* from ZIMMERMANN (1919), ZIMMERMANN (1921) and GUIGNOT (1959 b).


[8] Key to *Notocerini* from GUIGNOT (1948). The taxonomic position of *Pronoterus* and *Mesonoterus* is debatable. These two genera are often assigned to *Noterini* because of the submarginal fringe of short setae at the posterior margin of hind femur. The serrulate ovipositor of *Notocerinae* and *Hydrocanthus* is fairly distinctive (BURMEISTER, 1976). I have not seen the ovipositor of *Pronoterus* and *Mesonoterus*. I believe that such structure should be conclusive of their correct taxonomic position.

[9] *Hydrocanthus* Motschulsky, 1859 *sensu* SHARP (1882, page 834), following the current usage. The name *Hydrocanthus* was first used by MOTSCHULSKY (1853) in a list of species with some *Hydroporus* and no Noterids listed under that genus (NILSSON & al., 1989). For that reason *Hydrocanthus* Motschulsky, 1853 is a junior synonym of *Hydroporus*. Nevertheless the generality of authors, beginning from SHARP (1882), have deemed the catalogue MOTSCHULSKY (1853) not utilizable for the principle of priority, during more than one hundred years. The next paper by the same author (MOTSCHULSKY, 1859) is usually accepted as the valid publication of *Hydrocanthus*. In 1859 the genus included also *Hydrocanthus subtotius*, later designated as the type species of *Hydrocanthus*.


Some authors deem *Methlini* a tribe of *Hydroporinae* (NILSSON & al., 1989).

[12] The structure of the metepisterna was used by SHARP (1882) to subdivide *Dytiscidae* into Dytisci Fragmentati with metepisterna not attaining the middle coxae (*Noterinae*, *Laccophilinae* and tribe *Vatellini of Hydroporinae*) and Dytisci Complicati, including all other members of the family. The above subdivision is somewhat obsolete, but the structure of the metepisterna is still a fundamental character of *Vatellini*. 
[13] *Sicuticii* Smrz, 1982 is a polyphyletic tribe that was introduced for grouping some subterranean *Hydroporinae* from four Continents, which separately reached convergent morphological adaptations to the phreatic environment. Their ventral structure is modified in such an extent that they cannot be included in either *Bidessini* or *Hydroporini*. Other cavernicolous genera of *Hydroporinae* with reduced eyes have conserved the principal features of *Bidessini* (*Trogloglugegnatus* and *Uvarus chappatti*) or *Hydroporini* (*Sanfilippodytes*) and may be keyed in those tribes.

[14] Four genera with parameres in one piece, currently assigned to *Bidessini*, should be separated from *Bidessini* and reclassified (Biström, 1988). Their best placing is probably in new tribes ranging between *Bidessini* and *Hydroporini*. They all are very rare in collections and unknown to the author. The blind terrestrial genera *Typhlodesmus* and *Terradesmus*, in particular, have such anomalous characters as to be hardly assigned to *Hydroporinae*. In practice I suggest to maintain these four genera in the tribe *Bidessini* for classificatory purpose only, until their taxonomic position is defined.


[17] Key to *Hyphrydini* from various sources, principally Guignot (1959 a) and Leech & Chandler (1956).

[18] Key to the subgenera of *Hyphyrus* from Guignot (1959 a). In his masterly revision of *Hyphyrus*, Biström (1982) overlooked the previous subdivision into subgenera, but I find that subdivision fairly natural and handy and insist upon it for the classification of *Hyphyrus*.


[21] *Allophydrys* corresponds to the *Hyphyrus grandis*-group and in part to the *separandus- and schoutedeni*-groups in Biström (1982), the remaining species of these groups being members of the subgenus *Aprionopus*.

[22] Key to the subgenera of *Desmopachria* from Young (1980).

[23] Key to *Hydrovaatini* from Sharp (1882).

[24] That is *Hydrovatus* Motschulsky, 1855, following the current usage. This name was first introduced by Motschulsky (1853) in a list not accepted for the principle of priority by the generality of authors during more than one hundred years. Nilson et al. (1989) argue in favour of adopting the first date (1853). In that case the only consequence is that a new type species of *Hydrovatus* should be designed. The genus was split by Guignot into subgenera: *Vathydyrus* with clypeal border, and *Hydrovatus* s.str. without clypeal border. Unfortunately some species have an exceedingly weak clypeal border and cannot be easily assigned to either subgenus. Actually recent authors overlook the subdivision of *Hydrovatus* into subgenera.


[26] Biström & Silverberg (1981) reinstated the "nomen oblitum" *Hydroglyphus* Motschulsky, 1853 although the generality of authors did not accept the names from Motschulsky (1853) during more than one hundred years. The seven species listed under *Hydroglyphus* were recognized by Biström & Silverberg (1981) as one species of *Liodessus*, two *Guignotus* (including *Dytiscus geminus*) and four unidentified *nomina nuda*. From that mixture of species, *Dytiscus geminus* was chosen as the type species of *Hydroglyphus* and *Guignotus* was put in synonymy. Such a forcing of the I.C.Z.N.
rules resulted in an unnecessary confusion of names, since some authors accepted *Hydrolyphus* Biström & Silverberg, 1981 as the valid name of the genus, while other authors are still using *Guignotus*. I agree with Schaepelein (1993), who stressed to conserve *Guignotus*.

[27] I believe that the blind subterranean species *Uvarus chappuisi* deserves at least subgeneric status, but I deem it inopportune to assign new genus-group names in this paper.

[28] Key to the subgenera of *Bidessodes* from Young (1986). *Hughbosdinius* and *Youngulus* were described as valid genera but a few years later they were incorporated in *Bidessodes*.

[29] Key to the subgenera of *Pachynectes* from Biström (1988).

[30] In the revision of *Bidessini*, Biström (1988) subdivided the formerly genus *Clypeodytes* s.l. (=sensu Guignot) into some genus-group taxa principally on the basis of the following three characters:

- A = Transverse carina obliquely crossing near base of epipleura.
- B = Discal impressed striae at the base of elytra.
- C = Submarginal carinae (simple or double) at sides of elytra.

If value 1 is assigned to the presence of each A-B-C character, and value 0 to the absence, the genus-group taxa derived from *Clypeodytes* s.l. may be tabulated as follows:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clypeodytes</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Leiodytes</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Africodytes</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Platydytes</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hypoclypeus</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Paraclypeus</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Leiodytes* and *Platydytes* differ principally in character “B” as well as *Clypeodytes* and *Hypoclypeus*. Since *Leiodytes* and *Platydytes* were given full generic rank, the same should apply to the case of *Clypeodytes* and *Hypoclypeus*, for symmetry. Therefore I propose to treat *Hypoclypeus* as a distinct genus, not a subgenus of *Clypeodytes*.

Little is known on the Indian species *Clypeodytes* (*Paraclypeus*) *benami* Vazirani. If an oblique carina is present at the base of epipleuron (as in all Oriental *Clypeodytes* s.l.) in that case *Paraclypeus* is either a subgenus of *Hypoclypeus* or a distinct genus depending on whether it has either traces of a submarginal carina on elytron or not. That is an open question.

[31] The type species of *Platydytes* is *Clypeodytes* coarctaticollis Régimbart. Guignot (1959 a) stated that it has a submarginal carina at the side of elytron. Biström (1988) stated that it has no carina. I studied some specimens and found a weak lateral keel (angulated margin) that can justify both statements.

[32] If *Leiodytes* is a homonymy of *Lioodytes* (preoccupied), then Guignot is right to propose the substitutive name *Lioclypeus* n.nov. However, as this case of homonymy does not apply to the genus-group names (Art.58 of the I.C.Z.N.), *Lioclypeus* is unnecessary and it is a junior synonym of *Leiodytes*.

[33] Key to *Stettitiini* made using of the original descriptions of the species.
[34] Key to *Hydroporini* from several sources, principally ZIMMERMANN (1919), ZAITZEV (1953), GUIGNOT (1959 b), WATTS (1978) and WOLFE & MATT (1981). The key to the genera formerly belonging to *Deronectes* s.l. is original but incomplete, due to the presence of some unnamed new genera.

[35] Some characters of *Coelambus* and *Hygotrus* overlap for instance in *Coelambus masculinus* (Crotch) from North America, which has the habitus of *Coelambus* and the clypeal border of *Hygotrus*. The problematic separation of these two genera in North America may be the reason why the American authors usually treat *Coelambus* as a junior synonym of *Hygotrus*, whereas the European authors usually keep these genera distinct.

[36] Key to the subgenera of *Herophydrus* from GUIGNOT (1959 b).

[37] Key to the subgenera of *Hydroporus* from FRANCISCOLO (1979), simplified. Although NILSSON (1989 a) synonymized the subgenera of *Hydroporus*, I keep them distinct, as usual. *Hydroporidius* is poorly characterized indeed, but *Sternoporus* is a very distinctive taxon, both in the metacoxal and the genital structure, as well as in the ecological behaviour.

[38] Although a small tip of the scutellum is usually exposed in *Nebrioporus*, there is no doubt that it is a member of *Hydroporinae*. The only species of this genus is *Nebrioporus kilimandjarensis* Régimbart, endemic to Mt. Kilimanjaro. It developed acute marginal spines, close to the apex of the elytra, like other *Hydroporinae* such as some *Potamonectes*, *Oreodytes* and *Bidessodes*. It shares with *Potamonectes* s.str. the structure of the parameres “du type potamonectien”, quoting GUIGNOT (1959 b). However some characters of *Nebrioporus* are so distinctive that I cannot accept merging this genus with *Potamonectes* (in part), as it was recently proposed by NILSSON & ANGUS (1992).

[39] *Laccornini* is a tribe of *Hydroporinae* proposed by WOLFE & ROUGHLEY (1990) for *Laccornis*, *Laccornellus* and *Cantibyporus*.

[40] *Deronectes* s.l. *roffii* and some eleven closely related species belong to a new subgenus of *Deronectes* s.l. (or preferably to a new genus of *Hydroporini*) “to be described later”, quoting ZIMMERMAN (1982). Unfortunately the announced description of the new taxon is still in print, as far as I know.

[41] The genus *Potamonectes* (sensu Auctorum) includes species with both potamonectine and hydroporine parameres (see description in the key). NILSSON & ANGUS (1992) splitted *Potamonectes* (sensu Auctorum) on the basis of the different structure of the parameres. The species with potamonectine parameres, including the type species of *Potamonectes* (*Dytiscus elegans* Panzer), were transferred to *Nebrioporus* and those with hydroporine parameres were transferred to *Stictotarsus*.

The students who deem *Nebrioporus* and *Stictotarsus* distinct genera and do not accept the above-said reclassification, may conserve the genus *Potamonectes*, however as a result of the phylogenetic analysis they should remove from *Potamonectes* s.str. the species with hydroporine parameres, viz. the *griseostriatus* group. In America *Potamonectes* s.str. includes only the *depressus* group. The species with hydroporine parameres formerly belonging to *Potamonectes* s.str. should be assigned to another genus-group taxon (see below).

[42] The species of *Potamonectes* (sensu Auctorum) with hydroporine parameres should be separated from those with potamonectine parameres. They are fairly homogeneous in habitus and in several other features and form a distinct taxon, at least at the rank of a subgenus of *Potamonectes*. I believe they cannot be transferred to *Stictotarsus*, which is exceedingly different from *Potamonectes*.

Since *Potamonectes* (*Trichonectes*) *otini* Guignot was included by NILSSON & ANGUS
(1992) in this group of species, I deem Trichonecetes Guignot is the only genus-group name available for this taxon. It is given here a wider sense. It comprises besides Potamonectes otini also the Holarctic griseostriatus group and all Nearctic species of Potamonectes, except those belonging to the depressus group.

Unfortunately the name Trichonecetes reminds the hairy dorsal surface of Potamonectes otini and may be somewhat misleading.

Bistictus and Zimmermannius were synonymized by Balfour-Browne (1944). The inner row of punctures on the posterior tibia of Bistictus is often shortened and sometimes irregular. In that case, the punctuation of the tibia of Bistictus is almost indistinguishable from the random punctuation of Zimmermannius. I agree of course with that synonymy.

Bistictus was described shortly before Zimmermannius and should have priority. Balfour-Browne (1944) argued in favour of the conservation of Zimmermannius instead of Bistictus, because the former includes several species and the latter only one.

The separation of Zimmermannius from Potamonectes s.str. presents some difficulties in case of hind tibiae sparsely punctured or with a few punctures only. Balfour-Browne (1951) although treating Zimmermannius as a distinct genus, remarked this problem.

The presence of preapical teeth on the elytra cannot be an useful character to divide subgenera. Sometimes the teeth become obsolete, as it is the case, for instance, of Potamonectes fenestratus and Potamonectes sardus. The afore-said character may be helpful only to isolate groups of species. In conclusion I deem Zimmermannius poorly characterized and insignificant as a subgenus of Potamonectes, nevertheless I keep this subgenus in the key.

In my opinion Stictotarsus Zimmermann is a distinctive West Palaearctic genus, containing two species only.

Zimmerman (1982) used the generic name Stictotarsus for the American species of Deronecetes s.l. with hind tibiae densely punctured and exposed interlaminar bridge, namely the grammicus group.

Nilsson & Angus (1992) used Stictotarsus in an even wider sense, ranging from Stictotarsus (sensu Auctorum) to Deronecetes bertrandii, Potamonectes (Trichonecetes) otini, the griseostriatus group and all Nearctic species of Deronecetes s.l. previously assigned to Potamonectes, except the depressus group. For that reason one may find in literature plenty of recent combinations with the generic name Stictotarsus.

In the description of Deronecetes bertrandii, Legros (1956) wrote: “Je range avec doute et provisoirement cet Insecte ... dans le genre Deronecetes”. In fact it is fairly different from Deronecetes s.str. Nilsson & Angus (1992) put this species in Stictotarsus s.l., but I do not share that opinion. I deem Deronecetes bertrandii a remarkable Iberian endemism, that deserves generic status.

This matter shall be better investigated later.

Deronecetes grammicus and D. titulus are somewhat intermediate between the s.gen. Trichonecetes (sensu meo) of Potamonectes and Stictotarsus. They have densely punctured tibiae and exposed interlaminar bridge at the posterior margin of hind coxae, like Stictotarsus, whereas the genital structure and the elytral pattern resemble those of subgenus Trichonecetes. I wonder whether they belong to a distinct genus. I have not seen the species of this group, but the revision by Zimmerman (1982) provides a lot of magnificent photos and figures.

Key to the genera of Laccoophilinae from Steiner (1981) and Brancucci (1983).

Key to the subgenera of Philacolus from Guignot (1937).
[69] A key to the tribes of Colymbetinae is not available at the moment. The principal taxonomic character used to subdivide Colymbetinae into tribes (Sharp, 1882) was the group of setae at the apical corner of hind femur. That character is still valid with some exceptions, since Nakane (1964) and Brancucci (1988) put together Anagabus and Agrabhis as subgenera of Platambus, although they have no preapical group of setae at the apex of hind femur. Zimmermann (1919) introduced a second taxonomic character into the key to Colymbetinae, that is the length of the hind tarsal claws. Unfortunately the hind tarsal claws have sometimes such a slightly different length that one cannot decide whether they are different or nearly alike. Other characters used by successive authors, such as the apical lobes at the posterior margins of hind tarsi and the transverse rugae on the second pleurite are sometimes unreliable as well (Brinck, 1948) (Balfour-Browne, 1950).

[69] The statement concerning the length of the hind tarsal claws results from the figure 1 of Balke & al. (1992). I propose the new tribe Carabytini for Carabdytes upin, the remarkable endemic of New Guinea, that was originally placed in the tribe Colymbetini. The new tribe is recognizable by the straight posterior margins of hind tarsi and the body form closer to some primitive genera of Agabini.

[71] The taxonomic position of Agabites is debatable. The genus was placed in its own tribe Agabetini van den Branden, but that tribe was overlooked by all major authors of our century, who accepted Agabites as a member of Copelatini (Gueorguiev, 1968), until its unusual ovipositor with serrate margin suggested a closer relationship with Laccophilinae (Burmeister, 1976). The genus was even transferred to Laccophilinae (Nilsson, 1989 b) though all other features of Agabites are closer to Colymbetinae. For that reason I have reinstated Agabetini in the subfamily Colymbetinae.

[72] The larvae of Coptotomini have distinctive respiratory organs. This tribe probably deserves a higher rank in the classification (Boving & Craighead, 1931).

[72] Key to Agabini from Brinck (1948) and Leech & Chandler (1956), with some additions and changes.


[72] Key to the subgenera of Platynectes based on Gueorguiev & Rocchi (1992), with Carinonectes reinstated as a subgenus. Other subgenera usually not accepted are: Hypoplatynectes, Metaplatynectes and Notoplataynectes.

[72] Key to the subgenera of Agabus from Guignot (1951) with some additions and changes. Only 12 of the 20 described subgenera of Agabus are keyed. Their validity and status are debatable. Some of them should be raised to distinct genera, while other should be put in synonymy, however they are convenient as to classification and are conserved in the key. The following subgenera are omitted: Aecotodes, Allonychus, Asternus, Diebodies, Mesogabus, Neonecites, Scytodytes and Xanthodytes.

[72] Apator was excluded from the key to the subgenera of Agabus by Guignot (1951) because it was considered a distinct genus. On the contrary, Leech (1942) considered Apator a synonym of Enipleus. I deem Apator should be provisionally reinstated as a subgenus of Agabus.

[72] As a consequence of a misprint, Guignot (1931) published Gabinecites instead of Agabinecites. The misprint was promptly corrected by Guignot (1932). That is an evident case of incorrect original spelling, since the subgeneric name is clearly derived from the generic name Agabus. The emended name Agabinecites should take the date of the first publication, that is Agabinecites Guignot, 1931.
Agabidius was reinstated as a subgenus of Illybius by Larson (1987, page 407).

Key to Copelatini from Gueorguiev (1968) with some changes.

Synonymy by Brancucci (1986).

Key to Anisomeriini from Brinck (1948).

Key to Matini from Mouchamps (1964) with several changes.

Key to Colymbetini from Guignot (1947) and Spangler (1972), with some additions and changes.

Key to the tribes of Dytiscinae from Guignot (1961).

Cybistrini Sharp derives from the genitive of Cybister, Cybistris. Cybisterini Auctorum is an incorrect spelling.

Key to Hydaticini from Zimmermann (1919). Notice that Pleurodystes, usually accepted as a distinct genus, was regarded as a subgenus of Hydaticus by Roughley & Pengelly (1981).

Key to the subgenera of Hydaticus from Guignot (1950).

Key to Thermonectini from Zimmermann (1919), with the addition of the genus Tikolosbanes and other minor changes.

Key to the subgenera of Acilius from Guignot (1932).

I take for granted the conservation of the name Thermonectus (Nilsson & al., 1989).

Key to Dytiscini from Sharp (1882) and Zimmermann (1919).

Key to Cybistrini from Zimmermann (1919), Brinck (1945) and Watts (1978).

Onychobodrus was created for Onychobodrus bookeri (formerly Cybister bookeri) in the catalogue White (1847), without description and comments. The name was forgotten by the generality of authors. Regimbart (1878) described the genus Homoeodystes and the successive authors, including Sharp (1882), accepted that name. Wilke (1920) discovered the "nomen oblitum" and stressed its priority. Brinck (1945) confirmed Homoeodystes with the argument that Onychobodrus is only a "Katalogname", that is a nomen nudum. Other authors continued using Homoeodystes, until Nilsson & al. (1989) reinstated the debated "nomen nudum et oblitum". I believe that both names will remain alternatively in use, although I prefer the widely used Homoeodystes, that better serves stability.

Key to the subgenera of Homoeodystes from Brinck (1945).

Key to the subgenera of Cybister from Brinck (1945) and Guignot (1961), modified by Nilsson & al. (1989) as follows: Cybister triplunctatus is reinstated as the type species of the genus, therefore Meganectes becomes a synonym of Cybister s.str. The senior subgeneric name available for Cybister lateralimarginalis and C. japonicus is Trochulus, an old name used also as a trivial name many years ago (Figuer, 1871). Melanectes is conserved. The remaining subgenera introduced by Brinck (1945): Megadystoides, Gschwendnerhydus, Alacomorou and Nealacomorou, are principally based on a different coloration and are usually overlooked by recent authors.

Key to the subgenera of Megadystes from Tremouilles & Bachmann (1980).
CHECKLIST OF THE GENUS- AND FAMILY- GROUP TAXA
OF DYTISCIDAE Leach, 1817 (sensu lato)

Arranged in the same order as in the keys

Subfam. NOTERINAE Thomson
(Thomson, 1860 Skand.Col. 2: 34)

Tribe SUPHISINI Sharp, 1882 Scient. Trans. R. Dubl. Soc. (2) 2: 267

Tribe NOTERININI Thomson, 1860 Skand. Col. 2: 34
Renotus Guignot, 1936 Bull. Soc. ent. Fr. 41: 10
Synchortus Sharp, 1882 Scient. Trans. R. Dubl. Soc. (2) 2: 264
Noterus Clairville, 1806 Ent. Helvet. 2: 222

Tribe HYDROCANTHININI Sharp, 1882 Scient. Trans. R. Dubl. Soc. (2) 2: 268
Hydrocanthus Say, 1823 Trans. Amer. Phil. Soc. (n.s.) 2: 105
s.g. Sternocanthus Guignot, 1948 Expl. Parc natn. Albert 16: 11
s.g. Guignocanthus Young, 1985 Proc. Acad. nat. Sci. Philad. 137: 91
Sophysellus Zimmermann, 1921 Arch. Naturgesch. 87: 187
Canthhydrus Sharp, 1882 Scient. Trans. R. Dubl. Soc. (2) 2: 269
s.g. Liocanthhydrus Guignot, 1937 Rev. fr. Ent. 24: 42

Tribe NOTOMICRININI Zimmermann, 1919 Arch. Naturgesch. 83 (1917): 111
Pronoterus Sharp, 1882 Scient. Trans. R. Dubl. Soc. (2) 2: 263
Hydrocoptus Motschulsky, 1859 Ent. Ent. 8: 43 (sensu Auctorum)
s.g. Neohydrocoptus Satô, 1972 Annls Hist.-Nat. Mus. natn. Hung. 64: 144

Subfam. METHLINAEN van den Branden
(van den Branden, 1885 Annls Soc. ent. Belg. 29: 65)

Methles Sharp, 1882 Scient. Trans. R. Dubl. Soc. (2) 2: 489

Subfam. HYDROPORINAE Erichson
(Erichson, 1837 Kif. Mark Brandenb. 1: 116)

Tribe VATELLINII Sharp, 1882 Scient. Trans. R. Dubl. Soc. (2) 2: 258
Derovatellus Sharp, 1882 Scient. Trans. R. Dubl. Soc. (2) 2: 286
s.g. Varodetellus Biström, 1979 Acta ent. fenn. 35: 13

Tribe HYPHYDRINII Sharp, 1882 Scient. Trans. R. Dubl. Soc. (2) 2: 320
Darwinhydrus Sharp, 1882 Scient. Trans. R. Dubl. Soc. (2) 2: 373
Hyphodyrus Illiger, 1802 Magazin Insektenk. 1(3-4): 299
  s.g. Allohydrus Zimmermann, 1930 Koleopt.Rdsch. 16: 65
Hovahydrus Biström, 1982 Ent.scand. 13: 430
Hyphovatus Wewalka & Biströ, 1994 Koleopt.Rundschr. 64: 37
Heterhydru Fairmaire, 1889 Annls Soc.ent.Fr. (4): 186
Allopachria Zimmermann, 1924 Ent.Mitt. 13: 195
Desmopachria Babington, 1841 Trans.ent.Soc.London 3: 16
  s.g. Nectosserrula Guignot, 1949 Bull.Soc.ent.Fr. 54: 152
  s.g. Pachriodesma Guignot, 1949 Bull.Soc.ent.Fr. 54: 152
  s.g. Pachriostrix Guignot, 1950 Bull.Instr.r.Sci.nat.Belg. 26: 3
  s.g. Pachiridus Young, 1980 Rev.Biol.trop. 28(2): 307
  s.g. Hintonella Young, 1981 Coleopt.Bull. 35: 212
  s.g. Portmannia Young, 1980 Rev.Biol.trop. 28(2): 307

Hydrotatus Motschulsky, 1855 Entedent. 4: 82 (sensu Auctorum)

Thyphlodessus Brancucci, 1985 Mitt.schweiz.ent.Ges. 58: 467
Geodessus Brancucci, 1979 Entomologica basil. 4: 214
Terradesus Watts, 1982 Mem.Qld.Mus. 20: 527
Guignotus Houlbert, 1934 Faun.Ent.Arbor.: 53-54
Pseuvelvarus Biströ, 1988 Acta zool.fenn. 184: 10
  s.g. Hughbosdinius Spangler, 1981 Pan-Pacific Ent. 57: 65
  s.g. Youngulus Spangler, 1981 Pan-Pacific Ent. 57: 69
Tepudessus Spangler, 1981 Aquatic Insects 3: 2
Hemibodesus Zimmermann, 1921 Arch.Naturgesch. 87: 196
Brachyhydrus Zimmermann, 1919 Arch.Naturgesch. 83 (1917): 134
Pachynectes Régimbart, 1903 Annls Soc.ent.Fr. 72: 7
  s.g. Yoloide Guignot, 1960 Natural.malagache 11 (1959): 97
Hypocylenus Guignot, 1950 Rev.fr.Ent. 17: 97 (stat.n.)
  s.g. (?)Pachydelphys Vazirani, 1971 J.Bombay nat.Hist.Soc. 68: 481
Sharphydrus Omer-Cooper, 1958 Proc.Rent.Soc.London (B) 27: 21
Clypeodytes Régimbart, 1894 Annls Soc.ent.Fr. 63: 230
Neoclypeodytes Young, 1967 Coleopts Bull. 21: 78
Bidessonotus Régimbart, 1895 Annls Soc.ent.Fr. 64: 331
Neobidessus Young, 1967 Coleopts Bull. 21: 79
Allobidessus Guignot, 1953 Rev.fr.Ent. 20: 110
Anodocheilus Babington, 1841 Trans.ent.Soc.London 3: 15
Yola Des Gozis, 1886 Recher.esp.typ.anc.Genr. : 8


Siettitia Abelle de Perrin, 1904 Bull.Soc.ent.Fr. : 226
Phreatodessus Ordish, 1976 N.Z.J.Zool. 3: 5
Kuschelydrus Ordish, 1976 N.Z.J.Zool. 3: 6
Haideoporus Young & Longley, 1976 Ann.ent.Soc.Amer. 69: 787
Morimotoa Ueno, 1957 Arch.Hydobiol. 53: 260

Tribe HYDROPORINI Erichson, 1837 Käf.Mark Brandenbg. 1(1): 166
Necterosoma Mac Leay, 1873 Trans.ent.Soc.N.S.W. 2: 124
Barrettthydrus Lea, 1927 Rec.S.Aust.Mus. 3: 279
Coelambus Thomson, 1860 Skand.Col. 2: 13
Heroceras Guignot, 1949 Bull.Soc.ent.Fr. 54: 150
s.g. Dryeophorus Guignot, 1949 Bull.Soc.ent.Fr. 54: 150
Pescetiuss Guignot, 1935 Rev.fr.Ent. 2: 131
Lioporeus Guignot, 1950 Rev.fr.Ent. 17: 101
Heterosternuta Strand, 1935 Folia zool.hydrobiol. 7: 291
Neoporus Guignot, 1931 Miscneana ent. 33: 46
Sulphydrus Des Gozis, 1914 Miscneana ent. 21(1919): 110
Sanfilippydtes Franciscolio, 1979 Fragm.ent. 15: 233
Hydroporus Clairville, 1806 Ent.Helvet. 2: 182
s.g. Sternoporus Falkenström, 1930 Zool.Anz. 87: 24
Scarodytes Des Gozis, 1914 Miscnea ent. 21(1913): 110
Nebrioporus Régimbart, 1906 Annls Soc.ent.Fr. 75: 237
Rhithrodymes Bameul, 1989 Annls Soc.ent.Fr.(n.s.) 25(4): 481
Canthyporus Zimmermann, 1919 Arch.Naturgesch. 83(1917): 147,160
Laccornis Des Gozis, 1914 Miscnea ent. 21(1913): 111
Neonectes Balfour-Browne, 1944 Entomologist 77: 189
Potamonectes Zimmermann, 1921 Ent.Blatt. 17: 87
s.g. Trichonectes Guignot, 1941 Bull.Soc.Sci.nat.Moroc 21: 58
Stictotarsus Zimmermann, 1919 Arch.Naturgesch. 83(1917): 184,186

Subfam. **LACCOPTILINAE** Bedel
(Bedel, 1881 Fauna.Col.Bass.Seine 1: 230)

Napodytes Steiner, 1981 Pan-Pacific Ent. 57: 251
Laccophilus Leach, 1815 Edinburgh Encycl. 9: 84
Philodytes Balfour-Browne, 1939 Linn.Soc.J.Zool. 40: 479
Lacosternus Brancucci, 1983 Aquatic Insects 5: 251
Laccodytes Régimbart, 1895 Annls Soc.ent.Fr. 64: 345
Africophilus Guignot, 1947 Bull.Soc.ent.Fr. 52: 164
Philacculus Guignot, 1937 Bull.Soc.ent.Fr. 42: 138
s.g. Philacculus Guignot, 1937 Bull.Soc.ent.Fr. 42: 138

Subfam. **AUBEHYDRINAE** Guignot
(Guignot, 1942 Bull.mens.Soc.linn.Lyon 11: 11)

Notaticus Zimmermann, 1928 Wien.ent.Ztg. 44: 182

Subfam. **COLOMBETINAE** Erichson
(Erichson, 1837 Käf.Mark Brandenb. 1(1): 149)

Platambus Thomson, 1859 Skand.Col. 1: 14
s.g. Anagabus Jakowlew, 1897 Abeille 29: 38
s.g. Agraphis Guignot, 1954 Rev.fr.Ent. 21: 199
Agabinus Crotch, 1873 Trans.Am.ENT.Soc. 4: 397
Cardhydrous Fall, 1922 Rev.N.Amer.Sp.Agabus. 35
Platynectes Régimbart, 1878 Annls Soc. ent. Fr. (3): 454, 462
s. g. Carinonecetes Vazirani, 1976 Rec. zool. Surv. India 71: 171
s. g. Gueorguievtes Vazirani, 1976 Rec. zool. Surv. India 71: 170
s. g. Australonecetes Guéorguiev, 1972 Izv. zool. Inst. Sofia 34: 34, 55
Agabus Leach, 1817 Zool. Misc. 3: 69, 72
s. g. Ranagabus Balfour-Browne, 1939 Annls Mag. nat. Hist. (11): 106
s. g. Apator Semenov, 1899 Horae Soc. ent. Ross. 32: 512
s. g. Eriglenus Thomson, 1859 Skand. Col. 1: 14
s. g. Ilybiosoma Crotch, 1873 Trans. Am. ent. Soc. 4: 413
s. g. Nebriogabus Guignot, 1936 Bull. Soc. ent. Fr. 41: 187
s. g. Dichonecetes Guignot, 1945 Bull. Soc. ent. Fr. 50: 21
s. g. Allogabus Guignot, 1951 Bull. mens. Soc. linn. Lyon 20: 84
s. g. Agabinecetes Guignot, 1931 Bull. Soc. ent. Fr. 36: 202
s. g. Arctodytes Thomson, 1874 Opusc. ent. 6: 541
s. g. Parasternus Guignot, 1936 Bull. Soc. ent. Fr. 41: 187
s. g. Gauroides Thomson, 1859 Skand. Col. 1: 14
Colyblinecetes Falkenström, 1936 Lingnan Sci. J. 15: 97
Ilybius Erichson, 1832 Gen. Dyt.: 18, 34
s. g. Agabidius Seidlitz, 1887 Verh. naturforsch. Ver. Brün 25: 97, 98

Tribus CARABDYTIN (nova tribus)
Carabdytes Balke, Hendrich & Wewalka, 1992 Ent. Ztg. 102(6): 93

Tribe AGABETINI van den Branden, 1885 Annls Soc. ent. Belg. 29: 87
Agabates Crotch, 1873 Trans. Am. ent. Soc. 4: 398, 401

Tribe COPELATINI van den Branden, 1885 Annls Soc. ent. Belg. 29: 82
Copelatus Erichson, 1832 Gen. Dyt.: 18, 38
Agaporormorphus Zimmermann, 1921 Arch. Naturgesch. 87: 202
Lacconectus Motschulsky, 1855 Etud. Ent. 4: 83


Hydronebris Jakowlew, 1897 Abeille 29: 37

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SUMMARY - PEDERZANI F., 1995 - Keys to the identification of the genera and subgenera of adult Dytiscidae (sensu lato) of the world.

The taxonomic literature on Dytiscidae (sensu lato), including Noterids as Noterinae, was investigated to find suitable keys to the identification of the subfamilies, tribes, genera and subgenera of the world fauna. The keys found in literature are assembled, with some additions and changes. The nomenclature adopted in the keys follows the recent review of the family- and genus-group names (NILSSON & al. 1989) with a few exceptions: the nomina oblitae reinstated from catalogues WHITE (1847) and MOTSCHULSKY (1853) are not used in the keys. Those names have not been validated for the principle of priority during more than one century, beginnings from SHARP (1882) or before, and are likely to add confusion to the nomenclature of Dytiscidae; therefore the generic names Hydroebius Motschulsky and Homoeodytes Régimbart are conserved and Guignotus Houlbert is preferred to Hydroclypus Motschulsky (sensu Biström and Silverberg).

For reasons of taxonomic symmetry Hypoclypes Guignot (n.stat.) is raised to full generic rank and the genus Carabodytes Balke & al. is placed in a new tribe, the Carabodytini (nova tribus).

The phylogenetic reclassification of Deronectes (s.l.) (NILSSON & ANGUS, 1992) is followed only in part. Potamonectes is restored as a distinct genus, while Nebrioporus and Stictotarsus are given their original limits. As a result of the phylogenetic analysis, the griseostriatus group of Potamonectes, with hydroponine parameres, is removed from the nominal subgenus Potamonectes s.str. (with potamonectine parameres) and put together with Potamonectes (Trichonectes) ottini and most of the Nearctic Potamonectes, except the depressus group. Therefore the subgenus Trichonectes is given a wider sense. It comprises all Potamonectes with hydroponine parameres.

Deronectes (s.l.) roffii (Clark) and Deronectes (s.l.) grammicus Sharp and their allied are treated as members of two distinct unnamed genera. Neither of them is described in this paper: the former because its description was announced early by ZIMMERMAN (1982), the latter because the author has no materials at his disposal.

It is pointed out that both Usurus chappuisi (Peschet) and Deronectes bertrandii Legros are badly placed in their present genera and should be assigned to distinct, genus-group taxa. Their descriptions and naming exceed the limits of this paper.