

Checklist of Myanmar taxa updated from Gates' (1972) "Burmese Earthworms"

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Summary

The current review of megadrile earthworms from Myanmar lists approximately 30 genera and 195 specific taxa. Of these, ca. 130 species are known only from Myanmar and 65 are also found either in adjacent countries or are cosmopolitans, but 3-6 taxa are of uncertain status. Thus a total of about 195 species has a ratio of wholly-endemic to non-endemic taxa of roughly 2 : 1. This ratio is similar to that previously published by Stephenson (1923: 17, 29) who indexed 37 megadriles from Burma (then including Andamans and Nicobars) of which he thought about 20 were indigenous. In Gates (1972), an additional 63 often cosmopolitan species are described that, although they do not occur in Myanmar, are found in adjacent regions, to give a grand total of 258 megadriles described in his "Burmese" book (plus he mentioned a dozen microdriles). All are checklisted below. For some reason (political geography or subspecies?) these figures differ from totals quoted by Gates: In the Preface to his major opus on Burmese Earthworms that took 40 years "struggle" to collect and compile data, Gates (1972: 3) mentioned that there were then a total of 23 genera and 174 specific taxa from Myanmar. Moreover, to prepare his final draft, he said that his first draft about ten years earlier had required changing the name of only one exotic and adding a few new peregrine species reported from Andaman and Nicobar Islands with capital at Port Blair (that however later reverted from Burmese jurisdiction to territories of India). And despite that few full-time earthworm taxonomists remain working around the world, in the last 30 years there have been more than a few name changes that impact on Gates' comprehensive study. All names are updated and revised here while also allowing for Gates' codification for the various forms of degraded parthenogenetic morphs.

Materials and Methods

Family classification follows Blakemore (2000, 2002, 2005) that revised Acanthodrilidae and Megascolecidae so that New Zealand's *Rhododrilus*, Australian and New Zealand *Diploptrema* (syn. *Eodrilus*), and North American *Diplocardia* remain in the Acanthodrilidae. The genera *Pontodrilus* (circum-mundane), *Plutellus* (Australia), *Argilophilus* (North America and perhaps India), *Megascolides* and

Diporochaeta (Australasia) are now returned to the classical Megascolecidae of Michaelsen (1900) and Stephenson (1930). And while Octochaetidae is retained, *Megascolides Scolioscolides*, and *Celeriella* are now transferred to Megascolecidae from Octochaetidae *sensu* Gates (1972). Genera and species are revised to comply with most recent classifications (e.g. Blakemore, 1999, 2000, 2001, 2003; Sims & Easton, 1972; Sims & Gerard, 1985, 1999).

Classical texts for earthworm systematics are Michaelsen (1900) and Stephenson (1930), while Stephenson (1923) described the species from "British India" that then included Myanmar.

A brief political history is that on 1st Jan 1886 the remnants of the Kingdom of Awa ("Upper Burma") were annexed to British rule and later, in February, "Upper" and "Lower" Burma were united within British India, Burma becoming a separate colony on 1 Apr 1937. After Japanese and Thai occupation during the war, the Union of Burma gained independence on 4 Jan 1948 and finally on 18 Jun 1989 the name reverted to the Union of Myanmar and its capital Rangoon was changed to Yangon, but the name Burma still persists.

Gates (1972) devoted much study and page space to the problem of parthenogenetic degradation, especially in pheretimoid worms, and Gates' codes for the common forms of degraded morphs are:

- A** – for parthenogenetic **athecal** morphs (i.e., lacking spermathecae);
- R** – for parthenogenetic **anarsenosomphic** morphs (i.e., lacking male terminalia);
- Z** – for parthenogenetic morphs **lacking testes** (also testis sacs and/or seminal vesicles);
- AR** - athecal, anarsenosomphic, parthenogenetic morphs;
- ARZ** – athecal, anarsenosomphic, parthenogenetic morphs without testes;
- I** – for **intermediate** morphs with incomplete/asymmetrical deletion of the above organs;
- Hp** – for hermaphroditic parthenogenetic morphs in which the reproductive organs are present but remain in a juvenile state in adult specimens;
- H** – a **hermaphroditic** morph with biparental reproduction of a species also with parthenogenetic morphs. (Note: the H morph is not to be confused with the Holotype).

Systematics - Checklist

Full synonymies for cosmopolitan exotics are given in Blakemore (2002). The order presented here loosely follows the rather illogical order presented by Gates (1972), for ease of cross-reference, with the following codes:-

= regional (e.g. from India's adjacent Assam State or Andaman Islands or Yunnan, China) or exotic taxa but NOT from Myanmar proper, yet reported by Gates (1972);

* = found but also known outside Myanmar (i.e., exotic/introduced or widespread but not necessarily "peregrine");

- = only known from Myanmar (i.e., native/endemic);

? = some uncertainty of name or status;

syn. = synonyms shown in braces with occasional notes.

Family ACANTHODRILIDAE Claus, 1880 *sensu* Blakemore (2000; 2002).

Notes: Gates' (1959, 1972) concept of Acanthodrilidae differs from the current one and, for example, the genera *Plutellus* and *Pontodrilus* are no longer included being returned to MEGASCOLECIDAE in Blakemore (2000). Neither of the following *Microscolex* species was actually confirmed from Myanmar, but Gates (1972: 34) said "One anthropochorous taxon already has been recorded from Indian and another can be expected to turn up sooner or later in southeast Asia".

#*Microscolex dubius* (Fletcher, 1887).

#*Microscolex phosphoreus* (Duges, 1837).

EUDRILIDAE Claus, 1880

#*Eudrilus eugeniae* Kinberg, 1867.

GLOSSOSCOLECIDAE Michaelsen, 1900

**Pontoscolex corethrurus* (Müller, 1857) [syns. numerous, see Blakemore (2002)].

LUMBRICIDAE Claus, 1876

#*Allolobophora chlorotica* (Savigny, 1826).

Allolobophoridella eiseni (Levinsen, 1884).
Aporrectodea caliginosa (Savigny, 1826).
Aporrectodea longa (Ude, 1885).
Aporrectodea rosea (Savigny, 1826).
Aporrectodea trapezoides (Duges, 1828).
* *Bimastos parvus* (Eisen, 1874).
Dendrobaena hortensis (Michaelsen, 1890).
Dendrobaena octaedra (Savigny, 1826).
Dendrobaena rubida (Savigny, 1826).
Eisenia fetida (Savigny, 1826).
Eiseniella tetraedra (Savigny, 1826).
Lumbricus castaneus (Savigny, 1826).
Lumbricus rubellus Hoffmeiseter, 1843.
Lumbricus terrestris Linnaeus, 1758.
* *Octolasion cyaneum* (Savigny, 1826).
* *Octolasion tyrtaeum* (Savigny, 1826).

Family MEGASCOLECIDAE Rosa, 1891 sensu Blakemore (2000; 2002)

Notes: the following *Argilophilus* Eisen, 1893 species were originally in *Plutellus* Perrier, 1873 but Gates (1972: 38) argued that they would belong better in a genus such as the American *Argilophilus* rather than what we now know to be an Australian restricted *Plutellus* that has extramural calciferous glands and regularly alternating nephropores [see redescription of *Plutellus* in Blakemore (1994: 35; 2000a: 190)]. Probably Indo-Oriental species will have to go into another genus, but such a move is deferred pending resolution of the North American taxa and comparison with the Asian.

Argilophilus arborensis (Stephenson, 1914).
- *Argilophilus ambiguus* (Gates, 1931).
- *Argilophilus compositus* (Gates, 1933) (syn. *Plutellus inflexus* var. *compositus*).
- *Argilophilus comptus* (Gates, 1955).
- *Argilophilus geminatus* (Gates, 1961).
Argilophilus himalayanus (Gates, 1945).
- *Argilophilus inflexus* (Stephenson, 1931).
- *Argilophilus leucaspis* (Gates, 1955).
- *Argilophilus longus* (Gates, 1955).

-*Argilophilus macer* (Gates, 1955).
-*Argilophilus montanus* (Gates, 1961).
-*Argilophilus pandus* (Gates, 1933).
-*Argilophilus pauxillulus* (Gates, 1955).
-*Argilophilus pratensis* (Gates, 1932).
-*Argilophilus rudis* (Gates, 1961).
#*Argilophilus sikkimensis* (Gates, 1955).
-*Argilophilus subtilis* (Gates, 1955).
-*Argilophilus tenuis* (Gates, 1961).
-*Argilophilus thanbultanus* (Gates, 1955).

**Pontodrilus litoralis* (Grube, 1855) [syn. *marionis*; *bermudensis*, *matsushimensis*, *albanyensis*, *cygni*, *indica*, *gracilis*; full synonymy in Blakemore (2002)].

**Lampito mauritii* Kinberg, 1866.

**Lenoscolex javanica* (Michaelsen, 1910).

**Lenoscolex pumila* (Stephenson, 1931).

-*Nelloscolex burkilli* (Michaelsen, 1907) (formerly *Woodwardia* or, rather, *Woodwardiella*).

#*Nelloscolex strigosus* Gates, 1939 from Assam, India (now in *Notoscolex*).

-*Planapheretima arboricola* (Rosa, 1890) [Easton (1979: 76-77) explains in detail how Gates (1936; 1972: 141; 169), Sims & Easton (1972: 233) and Reynolds & Cook (1976: 71) have mixed re-descriptions and the holotype (Genoa 44017) of Rosa's inadequate *Perionyx arboricola* with Gates' "*Pheretima arboricola* Gates, 1936" that, however, belongs in synonymy. The paratype of *Perionyx arboricola* in Berlin (2270) is a juvenile of uncertain identity]. Having manicate intestinal caeca indicated that the genus is polyphyletic and that this species possibly warrants allocation to a new genus.

-*Perionyx ditheca* Stephenson, 1931 (non *Pheretima ditheca* Michaelsen, 1928)

**Perionyx excavatus* Perrier, 1872 [syns. numerous, see Blakemore (2002)].

#*Perionyx fossus* Stephenson, 1920.

#*Perionyx horai* Stephenson, 1924.

**Perionyx macintoshii* Beddard, 1883 (corr. of *m'intoshii* or *m'intoshi*).

#*Perionyx modestus* Stephenson, 1922.

-*Perionyx montanus* Gates, 1954.

-*Perionyx nemoralis* Gates, 1954.

#*Perionyx rufulus* Gates, 1945.

#*Perionyx shillongensis* Stephenson, 1920.

-*Perionyx tenuis* Gates, 1954.

#*Perionyx turaensis* Stephenson, 1920.

-*Perionyx viridis* Gates, 1933.

#*Amyntas aculeata* (Gates, 1936).

**Amyntas alexandri alexandri* Beddard, 1901 (syn. *lignicola* Stephenson, 1914), (A, R, AR, ARZ, I and Hp morphs reported by Gates, 1972) Gates (1931: 363) had earlier suggested that *Pheretima suctorica mullani* Stephenson, 1924: 340 was a further synonym of a *P. alexandri typica* sub-species.

**Amyntas alexandri gracilior* (Gates, 1931: 371) (overlooked or omitted by Gates, 1972: 155).

**Amyntas andersoni* (Michaelsen, 1907) (syn. *nemoralis* Gates, 1932; *velata alveata* Gates, 1932).

-*Amyntas analectus analectus* (Gates, 1932).

-*Amyntas analectus promotus* (Gates, 1932) (syn. *pannosa* Gates, 1936).

-*Amyntas analectus rufulus* (Gates, 1932).

#*Metaphire andamanensis* (Michaelsen, 1907).

-*Amyntas valatus* (Gates, 1930) (syn. *valata clavata* Gates, 1932).

**Amyntas comptus* (Gates, 1932).

**Amyntas longicauliculatus* (Gates, 1931).

**Amyntas labosus* (Gates, 1932).

-*Amyntas sonellus* (Gates, 1936).

-*Amyntas luxus* (Gates, 1936).

-*Amyntas choprai* (Stephenson, 1929) (originally *andersoni choprai*).

**Metaphire anomala* (Michaelsen, 1907) (syn. *insolita* Gates, 1925; *centralis* Stephenson, 1929), (H, A, R, I morphs known).

[-*Pheretima arboricola* Gates, 1936: 399 (In error - see *Planapheretima arboricola*)].

#*Amyntas balteolatus* (Gates, 1932: 425).

#*Amyntas bellatulus* (Gates, 1932: 427).

**Pithemera bicincta* (Perrier, 1875).

**Metaphire bipora* (Beddard, 1901) (syn. *annandalei* Stephenson, 1917; *gemella* Gates,

- 1931; *balingensis* Gates, 1949; *flocellana* Gates, 1949).
- **Metaphire birmanica* (Rosa, 1888) (introduced into western Himalayas, India).
- Amyntas bournei* (Rosa, 1890).
- **Metaphire californica* (Kinberg, 1867) (syns. numerous including *Pheretima molesta* Gates, 1932: 420, see Blakemore, 2002).
- Amyntas canaliculatus* (Gates, 1932).
- Amyntas carinensis* (Rosa, 1890: 107) (syn. *pinguis* Gates, 1930; ?*motus* Gates, 1932; ?*sectilis* Gates, 1932).
- Amyntas defectus* (Gates, 1930) (syn. *jacita* Gates, 1931).
- **Amyntas corticis* (Kinberg, 1867) (syn. numerous, see Blakemore, 2002).
- Amyntas doliarius doliarius* (Gates, 1931: 374) [syn. *referta* Gates, 1931; ?*Pheretima doliaria dolosa* Gates, 1932: 416 (non *P. dolosa* Gates, 1932: 443), provisionally regarded as a synonym by Sims & Easton (1972: 234) in their footnote but without any justification, possibly to avoid the problem of homonymy. Gates (1932: 415-419) had four sub-species: *typica*, *armillata*, *dolosa*, and *stercoraria*. However, Gates (1972: 180-181) only explicitly listed the *referta* synonym and we can only assume that he intended all the sub-specific names to be merged, thus they are all relisted here with a "?"].
- ? *Amyntas doliarius armillatus* (Gates, 1932: 415).
- ? *Amyntas doliarius dolosus* (Gates, 1932: 415) [non *Pheretima dolosa* Gates, 1932: 443 primary homonym (= *Amyntas gegatesi* Blakemore, 2006 nom. nov.)].
- ? *Amyntas doliarius stercoraria* (Gates, 1932: 415).
- Amyntas gegi* Blakemore, 2006 (published in this series in a separate paper on pheretimoids as a replacement name for *Pheretima dolosus* Gates, 1932: 443, a permanently invalid junior homonym of *P. doliarius dolosa* Gates, 1932: 416).
- **Polypheretima elongata* (Perrier, 1872) (syn. numerous, see Blakemore, 2002).
- **Amyntas exiguus austrinus* (Gates, 1932).
- **Amyntas exiguus exiguus* (Gates, 1930) (*Pheretima exigua* nom nov. pro *Pheretima minuta* Gates, 1929, non *Amyntas minutus* Beddard, 1900).
- #*Amyntas facetus* (Gates, 1932) [attributing specimens from Truk to "*P. faseta* Gates, 1932" by Ohfuchi (1941) were misidentifications and misspellings].
- **Amyntas feae* (Rosa, 1888) (name sometimes misspelt "feai").
- #*Amyntas fluvialis* (Gates, 1939) [= *Amyntas mekongianus* (Cognetti, 1922) by Blakemore (in press)].
- Amyntas fucosus* (Gates, 1933).
- **Amyntas glabrus* (Gates, 1932) (syn. *tenellula* Gates, 1932; *vieta* Gates, 1936;

Pheretima papilio : Ohfuchi, 1956: 140 [non Gates, 1930] - misidentification)
(athecate A morphs reported by Gates, 1932; 1936; 1972: 188).

#*Metaphire harrietensis* Stephenson, 1925 (from Mt Harriet, Andaman Island).

**Amyntas gracilis* (Kinberg, 1867) (many synonyms - see Blakemore, 2002, 2003;
I-morphs lacking some spermathecal batteries are known).

**Metaphire houletti* (Perrier, 1872) (?*Perichaeta campanulata* Rosa, 1890 [this
synonym doubted by Gates (1932: 377) after inspection of types was
apparently acceptable to Gates (1972: 191)]; *Perichaeta udekemi* Michaelsen,
1892: 240 [Michaelsen originally cited his species as "Grube (in
litteris)"]; ?*Perichaeta guillelmi* Michaelsen, 1895 [this synonymy by
Michaelsen (1900) doubted by Gates (1935, 1972)]; *Pheretima wimberleyana*
Stephenson, 1925 [name misspelt "wimberlayana" by Sims & Easton, 1972:
246 and Reynolds & Cook, 1976: 190]; *Pheretima houletti* var. *tortuosa* Gates,
1926: 454; *Pheretima houletti* var. *rugosa* Gates, 1926: 459; *Pheretima*
campanulata var. *penetrans* Gates, 1931: 435; *Pheretima campanulata* var.
meridiana Gates, 1932; ?*Pheretima yapensis* Ohfuchi, 1941 [this last synonym
from Gates (1972: 195)]). [The record of *P. houletti bidenryoana* Ohfuchi,
1956 from Ryukyu Islands is a synonym of *A. flavescens* and is not from
Myanmar]. [Name sometimes misspelt "houletti"; Gates (1972: 190-195)
reports all parthenogenetic morphs thus: H, A, I, AR, ARZ, Hp].

#*Amyntas hupbonensis* (Stephenson, 1931) (from Thailand).

?#*Amyntas illotus* (Gates, 1932) (from Yunnan, China).

?-*Amyntas* ? *immeritus* (Gates, 1931).

-*Amyntas inclarus* (Gates, 1932: 439) (syn. *porrecta* Gates, 1932: 444).

-*Metaphire insulanus* (Gates, 1930).

-*Metaphire kengtungensis* (Gates, 1931).

- *Metaphire lorella* (Gates, 1936).

#*Amyntas malacus* (Gates, 1936) (*Pheretima malaca* Gates, 1936 nom. nov. pro
Pheretima maculosa Gates, 1933 [non *Pheretima maculosus* [sic] Hatai, 1930
(= *A. acinctus*)]. Note: Nakamura (1999: 2) proposed the superfluous and
invalid replacement name "*Pheretima medimaculosa*" now a nomen nudum,
for Gates's *A. maculosus*]. Quite widespread in Myanmar, this species
subsequently reported from India's Andaman Islands by Julka (1975).

**Metaphire malayana* (Beddard, 1900: 893) (?*Pheretima baruana* Stephenson, 1932;
Pheretima fovella Gates, 1949: 21; *Pheretima strellana* Gates, 1949: 34). [Cf.
M. bipora and also *A. bosschae* and other synonyms of *Pheretima* (*Pheretima*)

darnleiensis. Note: Gates (1972: 199) dated this species as "1901" but other authors accept it to be "Beddard, 1900". [Some names included by Gates (1972: 199) in his synonymy of *M. malayana* [viz. *Perichaeta bosschae* Horst, 1892: 324; *Amyntas* (sic) *pulauensis* Beddard, 1900: 904; and *A. evansi* Beddard, 1900: 907], must be questioned as several of these names have been restored. It is with this synonymy by Gates (1972) that many other of his synonyms must be brought into doubt as his actions seem inconsistent and erroneous thereby inviting reversal, rejection, or restoration of several of his other nomenclatural acts].

**Amyntas manicatus decorosus* (Gates, 1932) [*Pheretima manicata supina* Gates, 1932: 528, 529; synonymy by Gates (1960: 268; 1972: 201)].

**Amyntas manicatus manicatus* (Gates, 1931) [*Pheretima manicata* Gates, 1931:414 comb. nov. pro *Pheretima suctoria manicata* Gates, 1931: 412 (Gates, 1932: 527; 1939: 97) (non *suctoria* Michaelsen, 1907) - see Sims & Easton (1972: 235 footnote) which states this much].

**Amyntas minimus* (Horst, 1893) (syn. *Perichaeta pusilla* Ude, 1893: 63 [non *Perichaeta pusilla* Ohfuchi, 1956 syn. *Pheretima medipusilla* Nakamura, 1999: 2 nom. nov. pro *Pheretima pusilla* Ohfuchi, 1956 (= *A. assacceus*); *Pheretima enchytraeoides* Michaelsen, 1916: 33; *Pheretima humilis* Gates, 1942: 120; *Pheretima zoysiae* Chen, 1933: 288; *Pheretima ishikawai* Ohfuchi, 1941: 248). (Parthenogenetic morphs common).

**Amyntas morrisoni* (Beddard, 1892) [?*Perichaeta barbadensis* (parts ?"a" and "c") Beddard, 1892 (July): 167; ?*Perichaeta mauritiana* Beddard, 1892: 170 [most likely a variety of *A. gracilis*]; ?*Perichaeta pallida* Michaelsen, 1892 (Sept.): 227; ?*Perichaeta amazonica* Rosa, 1894: 14; ?*Perichaeta sanctijacobi* Beddard, 1895: 61; ?*Perichaeta cupulifera* Fedarb, 1898: 445].

-*Amyntas nugalus* (Gates, 1931).

#*Amyntas osmastoni* (Michaelsen, 1907) (*Pheretima "osmatoni"* : Gates, 1960: 268 (lapsus for *osmastoni*); also sometimes misspelt "*osmantoni*"). (From Andaman Islands, India).

-*Amyntas papilio hiulcus* (Gates, 1932: 402).

-*Amyntas papilio vespertilio* Blakemore, 2006 [nom. nov. pro *Pheretima papilio insignis* Gates, 1932: 404 (non *Pheretima insignis* Michaelsen, 1921)].

-*Amyntas papilio papilio* (Gates, 1930) [Gates (1972: 205) rejects Ohfuchi's (1956) report of *P. papilio* from the Ryukyu Islands (?= *A. glabrus*)].

**Amyntas papulosus* (Rosa, 1896) (*Pheretima papulosa* var. *sauteri* Michaelsen, 1922

(non Ohfuchi, 1956 - misidentification); *Pheretima composita* Gates, 1932; ?*Pheretima rockefelleri* Chen, 1933 syn. *P. hsinpuensis* Kuo, 1985). [Gates (1972: 207) thought that the parthenogenetic *rockefelleri* morph (lacking prostates and sometimes with defective spermathecae) was only distinguished by quantitative differences, but recently Shen *et al.* (2003) disputed inclusion of *A. rockefelleri* in *A. papulosus* and retained both taxa but suggested adding *A. hsinpuensis* to synonymy of the former].

-*Amyntas pauxillulus* (Gates, 1936: 442).

**Metaphire peguana* (Rosa, 1890) (*Pheretima saigonensis* Omodeo, 1957). [Gates (1972: 208) disputes Ohfuchi's (1956) report from the Ryukus].

#*Metaphire bahli* (Gates, 1945) [possibly a junior synonym of *M. peguana*, but Gates (1972: 210) also went on to describe a *Pheretima* sp. from Thailand that was close to *M. bahli*].

**Metaphire planata* (Gates, 1926).

**Metaphire posthuma* (Vaillant, 1868) (*Perichaeta affinis* Perrier, 1872). [Various A and I-morphs mentioned by Beddard (1900) were thought possible misidentifications by Gates (1972: 214)].

- *Metaphire quadrigemina* (Gates, 1932).

**Amyntas rimosus rimosus* (Gates, 1931) (known from Myanmar and Yunnan, China). (R and Hp and possibly I-morphs mentioned).

?-*Amyntas rimosus effeminatus* (Gates, 1932) [from Myanmar but overlooked by Gates (1972: 215), probably an R morph of the nominal sub-species].

**Amyntas robustus* (Perrier, 1872) [*Perichaeta cingulata* (part) : Vaillant, 1867: 234 (err. non Schmarda, 1861); *Perichaeta masatacae* Beddard, 1892: 761 [note: Sims & Easton (1972: 181; 244), Reynolds & Cook (1976: 134), and Easton (1981: 56) misspell Beddard's species "mastakae", while Michaelsen (1900: 282) has it correctly, as here, as *P. masatacae*]; *Pheretima campestris* Goto & Hatai, 1898: 67 [non Lee, 1952 (= *A. corticis*)]; ?*Amyntas loehri* Michaelsen, 1899: 12 (sometimes misspelt "lohri"); ?*Pheretima lauta* Ude, 1905: 405 (429?) [syn. *Pheretima siemsseni* Michaelsen, 1931: 17 (?part.), *Pheretima fokiensis* Michaelsen, 1931: 19 - these synonyms from Chen (1933: 282) and Gates (1935: 15)]; ?*Pheretima zavattarii* Cognetti, 1909: 1 [syn. *zavattarii* : Gates, 1972: 217 (sic lapsus pro *zavattarii*)]; *Pheretima ornata* Gates, 1927: 20; *Pheretima corrugata* Chen, 1931: 131; ?*Pheretima sheni* Chen, 1935: 38 - this last questionable synonym proposed by Gates (1972: 217) cf. *A. corticis*, *A. illotus*]. [Gates (1972: 217) mentions Hp and possibly A and I-morphs].

- **Amyntas rodericensis* (Grube, 1879) (*Perichaeta dyeri* Beddard, 1892; *Perichaeta sinensis* Beddard, 1892; ?*Perichaeta trinitatis* Beddard, 1896; *Perichaeta monilicystis* Michaelsen, 1892: 251).
- #*Metaphire scitula* (Gates, 1936) [from Andaman Islands, Ohfuchi's (1956) report from the Caroline Islands is clearly mistaken].
- Metaphire subtilis* (Gates, 1943).
- #*Amyntas suctorius* (Michaelsen, 1907) (from Andaman and Nicobar Islands).
- Amyntas sulcatus* (Gates, 1932).
- * *Polypheretima taprobanae* (Beddard, 1892) (*Perichaeta pauli* Michaelsen, 1897) (not yet known from Myanmar).
- Amyntas terrigenus* (Gates, 1932).
- Metaphire umbraticola* (Gates, 1933).
- **Metaphire virgo* (Beddard, 1901) [? *Amyntas perichaeta* Beddard, 1901: 896; *Pheretima mamillana* Gates, 1931: 400; *P. mendosa* Gates, 1932: 538]. [These synonyms from Gates (1972: 223) who also listed A-morphs].
- **Amyntas youngi* (Gates, 1932: 406) (from Myanmar and Yunnan, China; possibly H-morph junior synonym of *Pheretima illota* Gates, 1932: 397).
- Tonoscolex birmanicus* (Gates, 1927) (originally *Notoscolex birmanicus*).
- Tonoscolex conversus* (Gates, 1930).
- Tonoscolex depressus* (Gates, 1929 - published "July or August, 1929) [*Notoscolex choprai* Stephenson, 1929 (presumably published after August); *N. sp. f. prima* Gates, 1932: 373 - later cited in Reynolds & Cook (1976: 159) as *Notoscolex* or *Tonoscolex primus*].
- Megascolex ferinus* (Gates, 1933) a perichaetine species from Myanmar that Gates, for some reason, included in his genus *Tonoscolex*. Now **comb. nov.**
- #*Megascolex horai* Stephenson, 1922, a perichaetine species from India that Gates, for some reason, included in his genus *Tonoscolex*, now restored to original genus.
- Tonoscolex lunatus* (Gates, 1929).
- #*Tonoscolex monorchis* (Stephenson, 1916) (originally *Megascolides "oneilli"* var. *monorchis*), probably belongs back in *Notoscolex*.
- Tonoscolex montanus* (Gates, 1936: 381) [*inquirenda* - Gates (1972: 230) lists his prior *Notoscolex* sp., f. *secunda* (sic) Gates, 1932: 373 in synonymy, but this is listed by Reynolds & Cook (1976: 168) as a sub-specific name and thus possibly competes with *montanus* for priority under ICZN (1999) code].
- **Tonoscolex oneilli* (Stephenson, 1914) [Emend. to "oneili" by Stephenson (1923: 212)]

and accepted by Gates (1936; 1972: 231) but possibly invalid emendation; probably belongs back in *Notoscolex*].

-*Tonoscolex parvus* (Gates, 1936: 386) [*inquirenda* - Gates (1972: 231) lists his prior *Notoscolex* sp., f. *tertia* (sic) Gates, 1932: 373 in synonymy, but this is listed by Reynolds & Cook (1976: 180) as a sub-specific name and thus possibly competes with *parvus* for priority under ICZN (1999) code].

-*Tonoscolex quartus* (Gates, 1932: 374) [*inquirenda* - Gates (1972: 232) lists this name cf. *T. depressus*, *T. montanus* and *T. parvus*].

#*Tonoscolex striatus* (Stephenson, 1914: 380) (*Notoscolex stewarti* Stephenson, 1914: 382) (from Assam, India), probably belongs back in *Notoscolex*.

-*Tonoscolex triquetrus* (Gates, 1932) (*T. depressus* var. *scutatus* Gates, 1933: 485).

#? *Megascolides antrophyes* Stephenson, 1924 (from Assam, India).

#*Scolioscolides bergtheili* (Michaelsen, 1907) (syn. *S. berghtheili* : Bahl, 1942: 446 - laps.). [From Bengal; Gates (1972) included this taxon under Octochaetidae, but in the classification of Blakemore (2000; 2002) it belongs in Megascolecidae].

MICROCHAETIDAE Beddard, 1895

-*Glyphidrilus birmanicus* Gates, 1958.

?**Glyphidrilus papillatus* (Rosa, 1890) (from Myanmar with possible reports from Lucknow, India and Hainan, China).

#*Glyphidrilus spelaeotes* Stephenson, 1924 (from Assam, India).

MONILIGASTRIDAE Claus, 1880

-*Desmogaster albalabia* Gates, 1930.

-*Desmogaster doriae* Rosa, 1890.

-*Desmogaster ferina* Gates, 1943.

-*Desmogaster planata* Gates, 1931.

-*Hastirogaster browni* (Michaelsen, 1907) [previously in the Sumatran and Borneo genus *Eupolygaster*].

-*Hastirogaster livida* Gates, 1930.

Drawida barwelli* (Beddard, 1886) [listed by Gates (1972: 246) as *D. beddardi* (Rosa, 1890) (syn. *D. barwelli* var. *hehoensis* + *D. "fluvaitilis"* Stephenson, 1924:324 + 325; *D. tecta* Gates, 1926), many other synonyms listed in Blakemore (2002 and in prep.) including **syn. nov. *Drawida glabella* Chen, 1938 from Hainan].

-*Drawida bullata* Gates, 1930 (*Drawida fucosa* Gates, 1933).

-*Drawida caerulea caerulea* Gates, 1926.

-*Drawida caerulea rasilis* Gates, 1933.

-*Drawida constricta* Gates, 1929.

#*Drawida decourcyi* Stephenson, 1914 (from Assam, India).

-*Drawida delicata* Gates, 1962.

-*Drawida flexa* Gates, 1929.

-*Drawida gracilis* Gates, 1925.

#*Drawida kempfi* Stephenson, 1914: 376 (*D. rotungana* Stephenson, 1914: 372; *D. pellucida* : Stephenson, 1914 non Bourne, 1894!). [NOTE: Gates (1972: 250) has again confused page priority and it seems that the prior taxon is *D. rotungana* rather than *D. kempfi*].

-*Drawida lacertosa lacertosa* Gates, 1930.

-*Drawida lacertosa sepulta* Gates, 1931 (originally *D. sepulta*).

#*Drawida limella* Gates, 1934 (from Assam, India).

**Drawida longatria longatria* Gates, 1925 (*Moniligaster straeleni* Michaelsen, 1930) (from Myanmar and Sumatra).

-*Drawida longatria deminuta* Gates, 1930.

-*Drawida longatria tortuosa* Gates, 1931.

-*Drawida longatria ordinata* Gates, 1930.

-*Drawida longatria planata* Gates, 1931.

-*Drawida longatria verrucosa* Gates, 1931.

-*Drawida molesta* Gates, 1933.

#*Drawida montana* Gates, 1945 (from Assam, India).

#*Drawida nagana* Gates, 1945 (from Assam, India).

-*Drawida nana* Gates, 1933 (originally *Drawida longatria nana* Gates, 1933).

**Drawida nepalensis* Michaelsen, 1907 (*D. burchardi* Michaelsen, 1909; *D. troglodytes* Stephenson, 1924; *D. cacharensis* Stephenson, 1926; *D. abscisa* Gates, 1931).

**Drawida papillifer papillifer* Stephenson, 1917: 370 (*Drawida affinis* Stephenson, 1917: 368 (non *Dichogaster affinis*); *D. hodgarti* Stephenson, 1917: 366

(listed in synonymy by Gates, 1972: 258; cf. *D. nepalensis*); *D. rosea* Stephenson, 1922; *D. ancisa* Gates, 1933). [NOTE: obviously this synonymy is out of (page) priority and the earliest taxon appears to be *D. hodgarti* that that should be restored with subsequent taxa as its synonyms].

-*Drawida papillifera peguana* Gates, 1925. [NOTE: with loss of priority from *papillifera* in favour of *hodgarti* it seems best to elevate this taxon to species status as *D. peguana*].

#*Drawida rangamatiana* Stephenson, 1917 (possibly a synonym of *D. papillifer* from Bengal, India).

#*Drawida pomella* Gates, 1934 (possibly a synonym of *D. papillifer* from Assam, India).

-*Drawida rangoonensis* Gates, 1925.

-*Drawida rara* Gates, 1925.

-*Drawida spissata* Gates, 1930.

-*Drawida tenellula* Gates, 1962.

-*Drawida tumida delta* Gates, 1931 (apparently overlooked by Gates, 1972).

-*Drawida tumida tumida* Gates, 1929.

-*Drawida victoriana* Gates, 1962.

**Drawida vulgaris* Gates, 1930 (from Myanmar and Thailand).

OCNERODRILIDAE Beddard, 1891.

Malabariinae Gates, 1966.

**Malabaria levis* (Chen, 1938) (from Hainan, China and Myanmar; Gates reports A and R-morphs).

**Thatonia gracilis* Gates, 1942 (from Andaman Islands, and Myanmar).

#*Curgiona narayani* (Michaelsen, 1921) (originally in *Curgia*, from South India).

**Eukerria kuekenthali* (Michaelsen, 1908) (emend. of *kükenthali*; syn. *Kerria selangorensis* Stephenson, 1931; *E. peguana* Gates, 1942; *K. kukanthali* (sic, lapsus by Reynolds & Cook, 1989: 30 who also misdate as "Michaelsen, 1916").

**Eukerria saltensis* (Beddard, 1895) (syn. *Acanthodrilus sydneyensis* Sweet, 1900 - from Fletcher's 'Museum Name' according to Michaelsen, 1907a; *Kerria gunningi* Michaelsen, 1913; *Kerria nichollsi* Jackson, 1931).

**Gorgiodrilus elegans* (?) Beddard, 1892 (Gates mentions many parthenogenetic morphs).

#*Nematogenia panamaensis* (Eisen, 1900) (originally *Ocnerodrilus (Nematogenia)*

lacuum var. *panamaensis* Eisen, 1900; *Nematogenia josephina* Cognetti, 1904).

**Ocnerodrilus occidentalis* Eisen, 1878 (?*Ilyogenia africana* Beddard, 1893; *Ocnerodrilus occidentalis sinensis* Eisen, 1900; *Ocnerodrilus tenellulus* Gates, 1945; ?*Ocnerodrilus occidentalis* var. *arizonae* Eisen, 1900).

OCTOCHAETIDAE Michaelsen, 1900

#*Celeriella quadripapillata* (Stephenson, 1924) (originally *Spenceriella duodecimalis* f. *quadripapillata*). (From India, a single Myanmar record was unconfirmed).

**Dichogaster (Diplotheodrilus) affinis* (Michaelsen, 1890) [syn. *Benhamia mexicana* Rosa, 1891; *Benhamia crassa* Beddard, 1893; *Benhamia floresina* Horst, 1893; ?*Dichogaster curgensis* var. *unilocularis* Stephenson, 1931: 69 [Gates (1972: 280) thought this a synonym of *D. curgensis* (= *D. annae*) and Csuzdi (1995: 103) has it as a syn. nov. there; Csuzdi (1996: 357) has it in synonymy with *D. affinis*; but Csuzdi (2000: 59) again has it within *D. annae*]; *Dichogaster sinuosus* Stephenson, 1931; *Dichogaster sinicus* Chen, 1938 (?nomen nudum *D. sinensis* Chen, 1938: 421, legend for fig. 18)].

**Dichogaster (Diplotheodrilus) bolau* (Michaelsen, 1891) [corr. *bolau*; syn. *Benhamia octonephra* Rosa, 1895; *Benhamia palmicola* Eisen, 1896; *Benhamia bolavi pacifica* Eisen, 1900; *Benhamia rugosa* Eisen, 1896; *Benhamia malayana* Horst, 1893; *Benhamia bolau pacifica* Eisen, 1900; *Dichogaster bolau decanephra* Michaelsen, 1915; *Benhamia lageniformis* Friend, 1916; *Dichogaster bolau malabaricus* Stephenson, 1920; ?*Dichogaster hatomaana* Ohfuchi, 1957 - thought to be *D. saliens* by Easton (1981: 46)].

**Dichogaster (Diplotheodrilus) annae* (Horst, 1893) [syn. *Benhamia parva* Michaelsen, 1896 non *Moniligaster parva* Bourne, 1894 (= *Drawida barwelli*) nec *Dichogaster parvus* Fedarb, 1898 (= *Trigaster parva*); *Benhamia travancorensis* Fedarb, 1898; *Dichogaster curgensis* Michaelsen, 1921; ?*Dichogaster curgensis* var. *unilocularis* Stephenson, 1931 [Gates (1972: 280) thought this a synonym of *D. curgensis* (= *D. annae*) and Csuzdi (1995: 103) has it as a syn. nov. and Csuzdi (1996: 357) has it in synonymy with *D. affinis*; but Csuzdi (2000: 59) again has it within *D. annae*]; *Dichogaster cheranganiensis* Cernosvitov, 1938; *Dichogaster silvestris cacaois* Righi, 1968; *Dichogaster servi* Righi & Ayres, 1975]. [Listed as *D. curgensis* by Gates (1972: 280), these synonyms are mostly from Csuzdi (1996: 357); Gates (1972: 278) noted that two taxa recorded from India, *Dichogaster parva* (Michaelsen, 1896), and *D. travancorensis*

(Fedarb, 1898) that was claimed to have calciferous glands in 14-16, were inadequately characterized although Csuzdi (1996: 107) inspected types and found both to be synonymous with *D. annae*].

**Dichogaster (Diplothecodrilus) modiglianii* (Rosa, 1896) [syn. *Benhamia papillata* Eisen, 1896; *Benhamia papillata* var. *hawaiiensis* Eisen, 1900; *Benhamia kafuruensis* Michaelsen, 1896; *Benhamia nana* Eisen, 1896; *Dichogaster doveri* Stephenson, 1931]. [These synonyms from Csuzdi, 1996: 358; Csuzdi, 2000: 65].

**Dichogaster (Diplothecodrilus) saliens* (Beddard 1893) [syn. *M. asiaticus* (lapsus) Beddard, 1893: 706; *Dichogaster crawi* Eisen, 1900].

#*Eutyphoeus aborianus* Stephenson, 1914 (from Assam, India).

#*Eutyphoeus callosus* Gates, 1939 (from Assam, India).

#*Eutyphoeus assamensis* Stephenson, 1926 (from Assam, India).

-*Eutyphoeus bifovis* Gates, 1929.

-*Eutyphoeus bullatus* Gates, 1933.

#*Eutyphoeus callosus* Gates, 1939 (from Assam, India).

-*Eutyphoeus cochlearis* Gates, 1931.

#*Eutyphoeus comillahnus* Michaelsen, 1907 (from E. Bengal, India).

-*Eutyphoeus compositus* Gates, 1933 (originally *E. annulatus* var. *compositus*).

-*Eutyphoeus constrictus* Gates, 1929.

-*Eutyphoeus excavatus* Gates, 1929.

-*Eutyphoeus ferinus* Gates, 1958.

#*Eutyphoeus festivus* Gates, 1938 (from Assam, India)

-*Eutyphoeus foveatus* (Rosa, 1890).

**Eutyphoeus gammiei* (Beddard, 1888) (syn. *Typhaeus gammii*: Beddard, 1895: 473; *E. chittagongensis* Michaelsen, 1907; *E. koboensis* Stephenson, 1914; *E. magnus* Stephenson, 1914) (naturally widespread species).

-*Eutyphoeus gigas* Stephenson, 1917 (syn. *E. longiseta typica* Gates, 1930: 332 and *E. longiseta postremus* (sic) Gates, 1930: 336).

-*Eutyphoeus hastatus* Gates, 1929 (syn. *E. hamatus* Gates, 1930; *E. montanus* Gates, 1933).

#*Eutyphoeus kempii* Stephenson, 1914 (from Assam, India).

-*Eutyphoeus levis* (Rosa, 1890) (*inquirenda* - originally *Typhaeus laevis* Rosa, 1890: 388; syn. *E. falcifer* Gates, 1933).

-*Eutyphoeus macer* Gates, 1933.

#*Eutyphoeus manipurensis manipurensis* Stephenson, 1921 (from Loktak Lake, Manipur, India).

- Eutyphoeus manipurensis chinensis* Gates, 1933.
- Eutyphoeus marmoreus* Gates, 1933.
- Eutyphoeus peguanus peguanus* Gates, 1925 [how many of the sub-species and (illegitimate) varieties mentioned by Gates (1972) that are valid taxa is unsure].
- Eutyphoeus peguanus simplex* Gates, 1930: 340.
- Eutyphoeus peguanus promotus* Gates, 1930: 339.
- Eutyphoeus peguanus intermedius* Gates, 1958: 141 (*inquirenda* - originally as *E. p. p. f. intermedius* Gates, 1958: 141).
- Eutyphoeus peguanus postremus* Gates, 1931: 427.
- Eutyphoeus peguanus similis* Gates, 1958: 141 (*inquirenda* - originally as *E. p. p. f. similis* Gates, 1958: 142).
- Eutyphoeus peguanus praecox* Gates, 1931: 426.
- Eutyphoeus peguanus tumidus* Gates, 1930: 341.
- Eutyphoeus pius* Gates, 1958.
- Eutyphoeus planatus* Gates, 1958.
- Eutyphoeus plenus* Gates, 1958.
- Eutyphoeus pusillulus* Gates, 1931.
- Eutyphoeus quinquepertitus* Gates, 1930.
- Eutyphoeus rarus* Gates, 1925.
- Eutyphoeus scutarius* Michaelsen, 1907.
- Eutyphoeus sejunctus* Gates, 1930.
- Eutyphoeus spinulosus* Gates, 1926.
- Eutyphoeus strigosus* Gates, 1933.
- #*Eutyphoeus turaensis* Stephenson, 1920 (from Assam, India).
- **Lenogaster chittagongensis* (Stephenson, 1917) (originally *Eudichogaster c.*). (From India, Bangladesh and Myanmar).
- Lenogaster yeicus* (Stephenson, 1931) (originally *Eudichogaster y.*).
- **Octochaetona beatrix* (Beddard, 1902) (syn. *Octochaetus dasi* Stephenson, 1914; *Octochaetus lunatus* Gates, 1929; *Octochaetus (Octochaetoides) fermori* Stephenson, 1931. (From India, Myanmar, Nepal, Malaysia, Philippines and recorded for the first time outside Asia, in Australia, by Blakemore (1994a; 1999; 2000).
- **Octochaetona surensis* (Michaelsen, 1910) (syn. *O. birmanicus* Gates, 1925). (From India and Myanmar).
- **Ramiella bishambari* (Stephenson, 1914) (syn. ?*R. parva* Stephenson, 1924; *R. cultrifera* Stephenson, 1931; ?*Howascolex sinicus* Chen, 1936). (From Andaman Islands,

India, Myanmar, Christmas Island (Australian Territory), Philippines, ?Amoy (China - identified as *Howascolex sinicus* Chen, 1936).

?-*Ramiella parva* Stephenson, 1924 (possibly synonymous with *R. bishambari* according to Gates, 1972: 313).

MICRODRILI (Noted by Gates, 1972 in an Appendix)

Enchytraeidae

?**Hemienchytraeus rangoonensis* (Stephenson, 1931). (Possibly junior synonym of *H. stephensoni*).

#*Hemienchytraeus stephensoni* (Cognetti, 1927) nom. nov. pro. *Enchytraeus cavicola* Stephenson, 1924 (preocc. non. *E. cavicola* Joseph, 1840).

Naididae

-*Chaetogaster diastrophus* (Gruithuisen, 1828) (syn. *C. annandalei* Stephenson, 1917).

?**Chaetogaster limnaei* Baer, 1827 (?syn. *C. bengalensis* Annandale, 1905).

#*Slavina appendiculata* (d'Udekem, 1855) (from Andaman Islands).

-*Aulophorus furcatus* (Oken, 1815).

#*Nais communis* Piguet, 1906 (from Assam, India).

Tubificidae

#*Bothrioneuron iris* Beddard, 1901 (from Thailand, India).

**Branchiura sowerbyi* Beddard, 1892 (from Myanmar and Assam, India).

-*Limnodrilus hoffmeisteri* Claparede, 1862 (syn. *L. socialis* Stephenson, 1912).

-*Limnodrilus grandisetosus* Nomura, 1932.

#*Tubifex blanchardi* Vejdovsky, 1891

= regional taxa (e.g. from India's Assam or Andaman Islands or Yunnan, China) but not from Myanmar proper yet reported by Gates (1972); * = also known outside Myanmar (i.e., exotic/introduced or widespread); - = only known from Myanmar (i.e., native/endemic); ? = some uncertainty of name.

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