

The genus *Crassolabium* Yeates, 1967 (Dorylaimida: Qudsianematidae): Diagnosis, list and compendium of species, and key to their identification

Reyes Peña-Santiago* and Marcel Ciobanu*,**

*Departamento de Biología Animal, Vegetal y Ecología, Universidad de Jaén, Campus "Las Lagunillas" s/n,
Edificio B3, 23071- Jaén, Spain, e-mail: rpena@ujaen.es

**Institute of Biological Research, Department of Plant and Animal Taxonomy and Ecology,
Str. Republicii 48, RO-400015 Cluj-Napoca, Romania

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Summary. An emended diagnosis of the genus *Crassolabium* is provided in the light of recent new evidence. *Thonus* is formally considered its junior synonym, and its species are transferred to *Crassolabium*. This genus is defined on the basis of a combination of key characters: cuticle two-layered, lip region variable, but usually weakly offset, odontostyle aperture less than half of total length, guiding ring simple, *pars refringens vaginae* present, and tail similar in both sexes, short and rounded. The relationships with its nearest relatives are discussed, and an updated list of species is provided, including several taxonomic and/or nomenclatorial changes. In addition, a compendium of species measurements and ratios, and a key to their identification are provided. *Crassolabium neohimalum* is a new name for *Takamangai himala apud* Andrásy, 1991. *Thonus hawaiiensis* and *T. digiticaudatus* are considered to be junior synonyms of *Crassolabium ettersbergense*. Finally, the status of 31 species previously placed in *Crassolabium* and/or *Takamangai* is discussed: *Takamangai pusilla* is transferred to the genus *Labronemella*, *Takamangai waenga* is transferred to *Aporcelaimellus*, *Thonus baqrii* is regarded as a synonym of *Labronema confusum*, *Takamangai tropica* is retained under *Aporcelaimellus*, *Thonus paracirculifer* is transferred to *Crassolabium* but regarded as *species inquirendae*, and ten species (*Takamangai goldeni*, *Thonus kirjanovae*, *T. laticollis*, *T. lentifer*, *T. metobtusicaudatus*, *Takamangai pavlovskii*, *Crassolabium robustum*, *Takamangai steineri*, *T. tulaganovae* and *T. uzbekistanicus*) are considered to be *species incertae sedis*.

Key words: Compendium, *Crassolabium*, key, nomenclatorial changes, species status, taxonomy, *Takamangai*, *Thonus*.

INTRODUCTION

Yeates (1967) described the genus *Crassolabium* from New Zealand, with *C. australe* as its type species, and characterized it, among other features, by having lateral lips with two thickenings in their outer portion, odontophore simple, tail rounded conoid and similar in sexes, and contiguous ventromedian supplements. Since its description, *Crassolabium* has had an intricate taxonomic history, having been formally or tentatively regarded as a junior synonym of *Eudorylaimus* Andrásy, 1959a, *Thonus* Thorne, 1974 and *Discolaimium* Thorne, 1939 by, respectively, Siddiqi (1969), Andrásy (1986) and Andrásy (1990). In the meantime, Andrásy (1976) and Jairajpuri & Ahmad (1992) accepted it as valid genus. Mukhina (1992) described a second species of *Crassolabium*, *C. robustum*, but Peña-

Santiago & Ciobanu (2007b) raised serious doubts about its true nature.

The genus *Thonus* was proposed by Thorne (1974) to accommodate two new and also five known species previously classified under *Eudorylaimus* and *Aporcelaimellus* Heyns, 1965. Although *Thonus* resembled *Crassolabium* in many features, Thorne did not compare or separate these two genera. The identity of *Thonus* has been controversial since its erection, in particular its relationships with the genera *Aporcelaimellus* and *Takamangai* Yeates, 1967. In a detailed comparative analysis of the three genera, Peña-Santiago & Ciobanu (2007a) have shown that *Thonus* differs from *Takamangai* and *Aporcelaimellus* in several significant morphological features, and that *Takamangai* is identical to *Aporcelaimellus*. *Thonus* is a well diversified taxon, with 31 valid species, and is widely distributed,

some of its species being almost cosmopolitan; however, no monographic study on its morphology and taxonomy is available.

Recently, Peña-Santiago & Ciobanu (2007b) discussed the identity of *Crassolabium* and compared it with *Thonus*, concluding that there is no significant evidence to support a separate status for these two genera, regarding them as synonyms. Nevertheless, the authors also announced an application to the International Commission of Zoological Nomenclature to propose the reversal of precedence in favour of *Thonus*; since this application has not been approved (ICZN, *in lit.* dated on November 19, 2007), *Thonus* remains the junior synonym of *Crassolabium*.

The new evidence on the identity and the status of *Crassolabium*, the synonymy of *Thonus*, and the relationships with its relatives *Takamangai* and *Aporcelaimellus*, justify the proposal of a new diagnosis for *Crassolabium*. This will enable the relationships with other relatives to be clarified, and requires the list of its species to be updated, including the obligatory nomenclatorial changes. These objectives are achieved below. In addition, a key to species identification and a compendium of their main measurements and ratios are also provided.

DIAGNOSIS AND RELATIONSHIPS

Genus *Crassolabium* Yeates, 1967

Syn. *Thonus* Thorne, 1974

Diagnosis (emended): Qudsianematidae, Qudsianematinae. Small to medium sized nematodes, 0.6-2.1 mm long. Cuticle with two layers. Lip region variable, but usually almost continuous or marked by depression, more rarely offset by constriction. Odontostyle typical dorylaimid, 8-24 μm long; aperture up to one-half of total length. Guiding ring simple. Odontophore rod-like. Pharyngeal expansion occupying two-fifths to one-half of total neck length. Female genital system amphidelphic. *Pars refringens vaginae* present. Vulva transverse, occasionally longitudinal, exceptionally pore-like. Two gland cells are often present close to vagina-vulva junction, one anterior, another posterior. Male with 3-18 spaced or, more rarely, contiguous ventromedian supplements; hiatus present. Tail similar in both sexes, short and rounded, hemispherical to convex conoid; abundant blister-like structures are present in several species.

Relationships: In having short and rounded tail, *Crassolabium* is close to the genera *Crassogula* Andr ssy, 1991, *Labronema* Thorne, 1939, *Labronemella* Andr ssy, 1985, *Skibbenema* Van

Reenen & Heyns, 1986a, and *Talanema* Andr ssy, 1991 in Qudsianematinae. Moreover, it also resembles the thorniid genera *Thorneella* Andr ssy, 1960 *Spheroamphis* Ahmad & Sturhan, 2000, the aporcelaimid genus *Aporcelaimellus* Heyns, 1965, and the (provisionally) tylencholaimid genus *Heynsnema* Pe a-Santiago & Ciobanu, 2008.

Crassolabium can be distinguished from *Crassogula* by its smaller size (*vs* $L=2.6-3.3$), lip region less offset (*vs* marked by deep constriction), guiding ring simple (*vs* double), pharynx enlarging not very gradually (*vs* very gradually), and fewer ventromedian supplements (*vs* 30-33).

Crassolabium basically differs from *Labronema* in the nature of the guiding ring (simple *vs* double). Moreover, and assuming that a wide variability exists in both genera in the following features, *Crassolabium* can be distinguished from *Labronema* in the lip region rarely offset by deep constriction (*vs* usually well offset by deep constriction); thin cuticle, slightly thickened at tail (*vs* thicker cuticle, distinctly thickened at tail); absence of dorsal and ventral cervical pores (*vs* present); odontostyle often less robust and not longer than lip region (*vs* odontostyle strong and always longer than lip region width); uterus a simple and short tube in general, only occasionally bi- or tripartite (*vs* tripartite in general); and vulva almost always transverse (*vs* almost always longitudinal). Thus, both genera show distinguishable morphological patterns but in some cases in which they might converge, the nature of guiding ring is useful to separate them with accuracy, since the existence of a double guiding ring in *Labronema* species, an infrequent morphological feature in qudsianematid taxa, is herein considered a major distinctive character (a remarkable apomorphic state) of its identity.

It differs from *Labronemella* in the nature of lip region (*vs* expanded, with sunken perioral area which bears distinct liplets), odontostyle (*vs* very slender, 10-15 times as long as wide), and guiding ring (*vs* double). From *Skibbenema* in the morphology of lip region (*vs* rounded, with amalgamated lips and perfectly continuous with the adjacent body) and pharynx (*vs* both sections of pharynx separated by a distinct constriction, and anterior fifth of basal expansion narrower than posterior four-fifths). And from *Talanema* by its lip region less offset in general (*vs* offset by distinct constriction), smaller (*vs* 19-27 μm) and less robust odontostyle, simple guiding ring (*vs* double), and tail not digitate (*vs* digitate).

From both thorniid genera it is separated by the shape of lip region (*vs* rounded and with

amalgamated lips), usual location of labial papillae (vs both circles shifted close to each other, and *pars refringens vaginae* developed (vs absent or very weakly developed). Moreover, *Crassolabium* differs from *Thorneella* by having simple guiding ring (vs double) and series of ventromedian supplements present (vs no ventromedian supplement); and from *Spheroamphis* in the cup-shaped amphid fovea with large aperture (vs globe-like fovea with very small aperture) and hiatus present (vs absent).

Crassolabium can be distinguished from *Aporcelaimellus* on the basis of a series of characters (see also Peña-Santiago & Ciobanu, 2007a): two-layered cuticle (vs three-layered), absence of cervical lacunae and dorsal as well as ventral body pores (vs present), lip region weakly differentiated (vs offset by constriction), lips mostly amalgamated (vs mostly separated), shorter odontostyle aperture (vs at least one-half of total length), and guiding ring fixed (vs plicate).

Finally, it differs from *Heynsnema* in its wider and not cap-like lip region (10-20 vs 6.5-9.5 µm and cap-like), shorter pharyngeal expansion (vs more than half of total neck length), and tripartite vagina with distinct *pars refringens* (vs bipartite vaginae, with *pars refringens* lacking or weakly developed).

LIST AND KEY TO SPECIES

Crassolabium currently contains 31 valid species:

Type species:

C. australe Yeates, 1967

= *Thonus australe* (Yeates, 1967) Andrásy, 1986

Other species:

C. angulosum (Ciobanu, Popovici, Abolafia & Peña-Santiago, 2007) n. comb.

= *Thonus angulosus* Ciobanu, Popovici, Abolafia & Peña -Santiago, 2007

C. baldum (Thorne, 1974) n. comb.

= *Thonus baldus* Thorne, 1974

Takamangai balda (Thorne, 1974) Andrásy, 1991

C. brachycephalum (Thorne & Swanger, 1936) n. comb.

= *Dorylaimus brachycephalus* Thorne & Swanger, 1936

Eudorylaimus brachycephalus (Thorne & Swanger, 1936) Andrásy, 1959

Thonus brachycephalus (Thorne & Swanger, 1936) Andrásy, 1986

Takamangai brachycephala (Thorne & Swanger, 1936) Andrásy, 1991

C. circuliferum (Loof, 1961) n. comb.

= *Dorylaimus intermedius apud* Thorne & Swanger, 1936 nec De Man, 1880

Eudorylaimus circulifer Loof, 1961

Thonus circulifer (Loof, 1961) Thorne, 1974

Takamangai circulifera (Loof, 1961) Andrásy, 1991

C. confusum (Thorne, 1939) n. comb.

= *Dorylaimus confusus* Thorne, 1939

Eudorylaimus confusus (Thorne, 1939) Andrásy, 1959

Thonus confusus (Thorne, 1939) Andrásy, 1986

Takamangai confusa (Thorne, 1939) Andrásy, 1991

*C. cylindricum*¹ (Thorne, 1974) n. comb.

= *Thonus cylindricus* Thorne, 1974

Takamangai cylindrica (Thorne, 1974) Andrásy, 1991

C. diversum (Ciobanu, Popovici, Abolafia & Peña -Santiago, 2007) n. comb.

= *Thonus diversus* Ciobanu, Popovici, Abolafia & Peña -Santiago, 2007

*C. dogieli*² (Tulaganov, 1949) n. comb.

= *Dorylaimus dogieli* Tulaganov, 1949

Eudorylaimus dogieli (Tulaganov, 1949) Andrásy, 1959

Thonus dogieli (Tulaganov, 1949) Andrásy, 1986

Takamangai dogieli (Tulaganov, 1949) Andrásy, 1991

*C. elegans*¹ (Thorne, 1974) n. comb.

= *Thonus elegans* Thorne, 1974

Takamangai elegans (Thorne, 1974) Andrásy, 1991

*C. eroshenkoi*³ (Andrásy, 1991) n. comb.

= *Takamangai eroshenkoi* Andrásy, 1991

Thonus eroshenkoi (Andrásy, 1991) Ciobanu, Popovici, Abolafia & Peña-Santiago, 2008

Pungentus parvus apud Eroshenko, 1976 nec Thorne, 1939

Thonus circulifer apud Choi, 1999

C. ettersbergense (de Man, 1885) n. comb.

= *Dorylaimus ettersbergensis* de Man, 1885

Eudorylaimus ettersbergensis (de Man, 1885) Andrásy, 1959

Thonus ettersbergensis (de Man, 1885) Andrásy, 1986

Takamangai ettersbergensis (de Man, 1885) Andrásy, 1991

Dorylaimus minutus Cobb, 1893 nec Bütschli, 1873 (syn. by Andrásy, 1959)

*Dorylaimus hawaiiensis*⁴ Cobb, 1906 n. syn.

Eudorylaimus hawaiiensis (Cobb, 1906) Andrásy, 1959

Thonus hawaiiensis (Cobb, 1906) Andrásy, 1986

Dorylaimus minimus Steiner, 1914 (syn. by Andrásy, 1959)

- Dorylaimus digiticaudatus*⁴ Schuurmans-Stekhoven, 1951 n. syn.
Eudorylaimus digiticaudatus (Schuurmans-Stekhoven, 1951) Andrásy, 1959
Thonus digiticaudatus (Schuurmans-Stekhoven, 1951) Andrásy, 1986
C. garhwaliense (Ahmad, Nath & Haider, 1985) n. comb.
 = *Thonus garhwaliensis* Ahmad, Nath & Haider, 1985
C. goaense (Ahmad, 1993) n. comb.
 = *Thonus goaensis* Ahmad, 1993
C. gracile (Eroshenko, 1976) n. comb.
 = *Pungentus gracilis* Eroshenko, 1976
Takamangai gracilis (Eroshenko, 1976) Andrásy, 1991
C. himalum (Jairajpuri & Ahmad, 1982) n. comb.
 = *Eudorylaimus himalus* Jairajpuri & Ahmad, 1982
Thonus himalus (Jairajpuri & Ahmad, 1982) Andrásy, 1986
Takamangai himala (Jairajpuri & Ahmad, 1982) Andrásy, 1991
C. kaszabi (Andrásy, 1959) n. comb.
 = *Dorylaimus kaszabi* Andrásy, 1959
Eudorylaimus kaszabi (Andrásy, 1959) Andrásy, 1959
Thonus kaszabi (Andrásy, 1959) Vinciguerra, 1980
Takamangai kaszabi (Andrásy, 1959) Andrásy, 1991
C. lautum⁵ (Andrásy, 1959) n. comb.
 = *Eudorylaimus lautus* Andrásy, 1959
Thonus lautus (Andrásy, 1959) Andrásy, 1986
Takamangai lauta (Andrásy, 1959) Andrásy, 1991
C. major (Thorne, 1974) n. comb.
 = *Thonus major* Thorne, 1974
Takamangai major (Thorne, 1974) Andrásy, 1991
C. medianum (Eroshenko, 1976) n. comb.
 = *Pungentus medianus* Eroshenko, 1976
Takamangai mediana (Eroshenko, 1976) Andrásy, 1991
Thonus medianus (Eroshenko, 1976) Ciobanu, Popovici, Abolafia & Peña-Santiago, 2008
C. montanum (Ciobanu, Popovici, Abolafia & Peña-Santiago, 2008) n. comb.
 = *Thonus montanus* Ciobanu, Popovici, Abolafia & Peña-Santiago, 2008
C. neohimalum⁶ nom. nov.
 = *Takamangai himala apud* Andrásy, 1991 *nec* Jairajpuri & Ahmad, 1982
C. nothus (Thorne & Swanger, 1936) n. comb.
 = *Dorylaimus nothus* Thorne & Swanger, 1936
Eudorylaimus nothus (Thorne & Swanger, 1936) Andrásy, 1959
Aporcelaimellus nothus (Thorne & Swanger, 1936) Heyns, 1971
Thonus nothus (Thorne & Swanger, 1936) Thorne, 1974
Takamangai nothus (Thorne & Swanger, 1936) Andrásy, 1991
C. parvulum (Thorne & Swanger, 1936) n. comb.
 = *Dorylaimus parvulus* Thorne & Swanger, 1936
Eudorylaimus parvulus (Thorne & Swanger, 1936) Andrásy, 1959
Thonus parvulus (Thorne & Swanger, 1936) Andrásy, 1986
Takamangai parvula (Thorne & Swanger, 1936) Andrásy, 1991
C. plica (Ciobanu, Popovici & Decraemer, 2004) n. comb.
 = *Labronema plica* Ciobanu, Popovici & Decraemer, 2004
Thonus plica (Ciobanu, Popovici & Decraemer, 2004) Ciobanu, Popovici, Decraemer & Peña-Santiago, 2008
C. porosum (Zell, 1986) n. comb.
 = *Pungentus porosus* Zell, 1986
Takamangai porosa (Zell, 1986) Andrásy, 1991
C. projectum⁷ (Thorne, 1939) n. comb.
 = *Dorylaimus projectus* Thorne, 1939
Eudorylaimus projectus (Thorne, 1939) Andrásy, 1959
Thonus projectus (Thorne, 1939) Andrásy, 1986
Pungentus projectus (Thorne, 1939) Andrásy, 1991
C. pumilum (Andrásy, 1963) n. comb.
 = *Pungentus pumilus* Andrásy, 1963
Takamangai pumila (Andrásy, 1963) Andrásy, 1991
C. rhopalocercum (de Man, 1876) n. comb.
 = *Dorylaimus rhopalocercus* de Man, 1876
Eudorylaimus rhopalocercus (de Man, 1876) Andrásy, 1959
Thonus rhopalocercus (de Man, 1876) Andrásy, 1986
Takamangai rhopalocercus (de Man, 1876) Andrásy, 1991
C. saccatum⁸ (Thorne, 1974) n. comb.
 = *Thonus saccatus* Thorne, 1974
Takamangai saccata (Thorne, 1974) Andrásy, 1991
C. tenuistylum (Ciobanu, Popovici, Abolafia & Peña-Santiago, 2008) n. comb.
 = *Thonus tenuistylus* Ciobanu, Popovici, Abolafia & Peña-Santiago, 2008

NOTES ON SEVERAL SPECIES

¹*C. cylindricum* and *C. elegans* are similar, if not identical, species. They can only be

distinguished on the base of minor differences (see key below).

²Tulaganov's original description of this species lacks many details, but its general pattern fits in well with that of *Crassolabium*. Thus, it is provisionally retained as a valid species. Nevertheless, some doubts persist on its precise identity due to pharyngeal features: neck rather short ($b > 5$) and pharyngeal expansion also short (about one-third of total neck length).

³Choi (1999) described three females from Korea, identified as *Thonus circulifer*. Nevertheless, their description and measurements perfectly fit those of *C. eroshenkoi*, excepting the relatively shorter pharynx.

⁴Andrássy (1991a) regarded these two taxa as *species inquirendae* under *Takamangai*. Although their descriptions are not detailed, the general morphology and morphometrics fit well with that of *C. ettersbergense*. Taking also into consideration that this is a cosmopolitan species, *T. digiticaudatus* and *T. hawaiiensis* are here considered to be junior synonyms of *C. ettersbergense*.

⁵*C. lautum* is only known from one male described by Andrássy (1959a; 1962) but, at present, it can be distinguished from other species of the genus.

⁶Andrássy (1991b) studied several Hungarian specimens identified as *Takamangai himala*. However, some significant and relevant differences may be observed when compared with type population described by Jairajpuri & Ahmad (1982): longer body (1.32-1.47 vs 1.18-1.32 mm), lip region asymmetrical and oblique (vs symmetrical); and tail of different shape (convex conoid vs conical with rounded tip and slightly digitate) and size (25-29 μm , $c=44-50$ vs 21-24, $c=53-57$). [Andrássy (*op. cit.*) described the lip region of his Hungarian specimens as asymmetrical, *i.e.* dorsal side higher than ventral side, but in Jairajpuri and Ahmad's original description and illustrations this feature is not mentioned or shown, thus contradicting Andrássy, who explicitly noted that "although the authors do not mention the obliqueness of the head, this phenomenon is clearly visible on their drawing".] Andrássy's material is here renamed *C. neohimalum* nom. nov.

⁷Andrássy (1991a) considered that, because of the long and slender odontostyle and the presence of small vestibular plates, this species seemed to belong to the genus *Pungentus*. However, according to Thorne's (1939) original description and illustrations, no vestibular plates are present, and the odontostyle bears a relatively wide

aperture (about one-third of total length). On the other hand, the general morphology of *C. projectum* resembles a group of *Crassolabium* species characterized by their relatively long and slender odontostyle. Thus, this species is retained as a valid species under the latter genus.

⁸*C. saccatum* is similar, if not identical, to *C. circuliferum*. Thorne's original description lacks many important morphological details. Nevertheless, it is herein regarded as a valid species because of its 'cephalated vagina' (*cf.* Thorne, 1974: p. 26) and absence of males (vs known in *C. circuliferum*). Many doubts persist on the identity of the material identified as *Thonus saccatus* by Khan and Fatima (1980) due to its large body ($L=2.3$) and mainly because of its excessively long odontostyle (29 μm !).

KEY TO SPECIES IDENTIFICATION

- 01a** – Small-sized species, 0.6-1.0 mm long **2**
- 01b** – Medium-sized species, almost always 1.0-2.1 mm long (including *C. nothus*, $L=0.8-1.2$) **6**
- 02b** – Longer odontostyle, 17 μm long or about 1.4 times the lip region width; *pars refringens vaginae* with three (an intermediate) pieces; vulva longitudinal **goense**
- 02a** – Shorter odontostyle, 8.0-12.5 μm long or about equal to lip region width; *pars refringens vaginae*, if present, with two pieces; vulva transverse **3**
- 03a** – Lip region continuous with the adjacent body; odontostyle aperture one-fifth of total length **parvulum**
- 03b** – Lip region offset by constriction; odontostyle aperture about one-third of total length **4**
- 04a** – Anterior part of cheilostom distinctly sclerotized; pharyngeal expansion occupying about one-third of total neck length; vagina lacking *pars refringens* **pumilum**
- 04b** – Anterior part of cheilostom not sclerotized; pharyngeal expansion occupying about two-fifths of total neck length; vagina having *pars refringens* **5**
- 05a** – *Pars refringens vaginae* with two very small pieces; tail lacking saccate bodies **ettersbergense**
- 05b** – *Pars refringens vaginae* with two well developed pieces; tail bearing abundant saccate bodies **medianum**
- 06a** – Odontostyle longer (21.0-24.0 μm , if known) and more slender (8.5-14.0 times as long as wide) **7**

- 06a** – Odontostyle shorter (8.0-22.0 μm long) and more robust (4.0-8.8 times as long as wide; including *C. tenuistylum* with odontostyle 7-10 times as long as wide) **12**
- 07a** – Female tail with abundant saccate bodies on ventral side **8**
- 07b** – Female tail lacking saccate bodies **10**
- 08a** – Lip region practically continuous with adjacent body; female tail comparatively longer ($c=39$), ventrally convex, dorsally straight *porosum*
- 08b** – Lip region offset by constriction; female tail comparatively shorter ($c=44-57$), ventrally straight, dorsally convex **9**
- 09a** – Shorter body ($L=1.18-1.32$); lip region symmetrical; shorter convex conoid female tail (22-24 μm , $c=53-57$) *himalum*
- 09b** – Longer body ($L=1.32-1.47$); lip region asymmetrical and oblique; longer conical female tail (25-29 μm , $c=44-50$) *neohimalum*
- 10a** – Longer body ($L=1.8-2.0$); odontostyle about 1.2 times the lip region width; 7-9 ventromedian supplements *brachycephalum*
- 10b** – Shorter body ($L=1.2-1.3$); odontostyle about 1.5 times the lip region width; ventromedian supplements, if present, four **11**
- 11a** – Odontophore lacking basal swellings; female tail more conoid; male present ... *confusum*
- 11b** – Odontophore bearing small, but distinct basal swellings; female tail more rounded; male absent *projectum*
- 12a** – Neck shorter, less than one-fifth of total body length; pharyngeal expansion occupying about one-third of total neck length *dogieli*
- 12b** – Neck longer, more than one-fifth of total body length; pharyngeal expansion occupying two-fifths to one-half of total neck length **13**
- 13a** – Tail with abundant saccate bodies **14**
- 13b** – Tail lacking saccate bodies **20**
- 14a** – Longer body ($L=1.4-2.1$)..... **15**
- 14b** – Shorter body ($L=1.2-1.4$; including *C. tenuistylum* with $L=1.2-1.6$) **18**
- 15a** – Cuticle with coarse transverse striations; longer odontostyle (20-22 μm); vulva longitudinal *montanum*
- 15b** – Cuticle with fine transverse striations; shorter odontostyle (less than 20 μm long); vulva transverse **16**
- 16a** – Lip region offset by depression or weak constriction; more posterior vulva ($V=54-59$) *diversum*
- 16b** – Lip region practically continuous; more anterior vulva ($V=45-51$) **17**
- 17a** – Not cephalated vagina; male known *circuliferum*
- 17b** – Cephalated vagina; male unknown *saccatum*
- 18a** – Shorter odontostyle, 12-13 μm long; vulva pre-equatorial ($V=46-48\%$); male absent *eroshenkoi*
- 18b** – Longer odontostyle, 16-20 μm long; vulva post-equatorial ($V=50-58\%$); male present **19**
- 19a** – Body more stout ($a=25-32$ in females, and $a=28-34$ in males); lip region more truncate; odontostyle more robust and shorter, 16-17 μm or as long as lip region width *gracile*
- 19b** – Body more slender ($a=33-39$ in females, and $a=34-43$ in males); lip region more rounded; odontostyle more slender and longer, 17-20 μm or about 1.2 times the lip region width *tenuistylum*
- 20a** – Longer odontostyle, 15-21 μm long or 1.3-1.5 times the lip region diameter **21**
- 20b** – Shorter odontostyle, 11-16 μm long or about equal to lip region diameter **24**
- 21a** – Female tail clavate; male absent *rhopalocercum*
- 21b** – Female tail not clavate; male present **22**
- 22a** – Odontostyle 15-16 μm long ... *garhwaliense*
- 22b** – Odontostyle 18-21 μm long **23**
- 23a** – Lip region offset by deep depression; spicules 34-38 μm long *australe*
- 23b** – Lip region continuous; spicules 50 μm long *lautum*
- 24a** – Cuticular wrinkles present at both sides of vulva *plica*
- 24b** – Cuticular wrinkles lacking at both sides of vulva **25**
- 25a** – Lip region cap-like, with the inner region distinctly elevated **26**
- 25b** – Lip region not cap-like, but more or less rounded or truncate **27**
- 26a** – Longer body ($L=1.39-1.75$); odontostyle 13-16 μm ; uterus a simple tube; *pars refringens vaginae* with two separated pieces; male absent *angulosum*
- 26b** – Shorter body ($L=0.95-1.24$); odontostyle 11-13 μm ; uterus tripartite; *pars refringens vaginae* with two close pieces; male present *kaszabi*

Table 1. Main measurements and ratios of species belonging to the genus *Crassolabium* Yeates, 1967 (measurements in μm , except L in mm).

Species	n	L	a	b	c	c'	V	Lip region diameter	Odontostyle	Neck	Prerectum	Tail	Spicule	Ventr. suppl.	Reference ¹
<i>C. angulosum</i> ²	8 ♀♀	1.39-1.75	26.7-31.5	3.8-4.9	44.7-55.8	0.8-1.0	54.0-59.9	12.5	13-16	335-385	88-107	30-35	—	—	1
<i>C. australe</i> ²	11 ♀♀	0.91-1.51	21.8-30.9	3.4-4.4	44-66	0.7-0.8	52.9-57.7	14.5*	18-20	?	?	?	—	—	2
	11 ♂♂	0.98-1.20	22.8-31.8	3.5-4.4	46-57	0.8-0.9	—	?	?	?	?	?	34-38	11-14	2
<i>C. baldum</i>	♀	1.5	35	4.3	60	0.8*	47	12	12	349*	?	25*	—	—	3
<i>C. brachycephalum</i>	♀	2.0	39	4.5	63	1.0*	51	20	24	444*	?	31.5*	—	—	4
	♂	1.8	41	5.2	63	1.0*	—	18	21.5	346*	?	28.5*	?	7-9	4
<i>C. circuliferum</i>	♀	1.5-2.0	41	5.0	71	0.7	50	?	?	?	?	?	—	—	4
	♂	1.5-2.0	47	5.0	83	0.9	—	?	?	?	?	?	?	10-14	4
2 ³	2 ♀♀	1.16-1.22	28-31	4.0	53-67	?	47-49	10	11	?	?	?	—	—	5
3	♀	1.36	30.5	4.0	71.3	?	47	7*	9	340	?	19*	—	—	6
4	♀	1.5	33	4.2	58	0.8	49	14*	14	?	?	?	—	—	3
5	10 ♀♀	1.3-1.7	27-34	3.7-4.5	54-66	0.8	53-54	?	17-19	?	?	?	—	—	7
	5 ♂♂	1.4-1.5	39-40	3.8-4.0	61-65	0.7-0.8	—	?	17-19	?	?	?	48-50	?	7
6	♀	1.5-2.0	33-41	4.2-5.0	58-71	0.9-1.0	49	?	?	?	?	?	—	—	8
	♂	1.5-2.0	47	5.0	83	1.0	—	?	?	?	?	?	?	10-14	8
7	♀	1.8	36	5.0	58	?	48	?	13	378	?	30	—	—	15
8	♀	1.10-1.78	29-40	4.0-4.9	53-73	0.8-1.1	45-50	12-13	12-14	?	?	19-35	—	—	9
	♂	1.52-1.62	34-43	4.5-4.9	64-66	0.8-1.0	—	10-11	12-13	?	?	?	46-47	6-7	9
9	3 ♀♀	1.21-1.34	29-32	4.3-4.8	56-61	0.7-0.8	47-49	12	12-14	?	44-72	20-24	—	—	10
10	♀	1.72	27.5	4.7	66.2	0.8	51.1	12.5	11.5	365	?	26	—	—	1
	♀	2.06	41.1	4.9	73.4	0.8	48.5	13	12	416	67	28	—	—	1

Table 1 (continued). Main measurements and ratios of species belonging to the genus *Crassolabium* Yeates, 1967 (measurements in μm , except L in mm).

Species	n	L	a	b	c	c'	V	Lip region diameter	Odontostyle	Neck	Prerectum	Tail	Spicule	Ventr. suppl.	Reference
<i>C. confusum</i>	5♀♀	1.3	33	5.2	50	1.1	56	?	?	250*	?	?	—	—	11
	3♂♂	?	?	?	?	?	?	?	?	?	?	?	?	4	11
<i>C. cylindricum</i>	?♀	1.6-1.9	38	4.8	66	1.0	48	11	11	?	?	24-29	—	—	3
	2 6♀♀	1.48-1.81	32-38	4.1-4.8	67-63	?	48-52	?	12-13	356-374	62-82	21-28	—	—	12
	3 ♀	1.66	39.5	4.5	61.5	1.0	46.6	13.0	11.5	368	64	27	—	—	1
<i>C. diversum</i> ²	17♀♀	1.41-1.78	29.8-41.0	3.9-4.5	64.5-87.2	0.6-0.9	52.9-57.0	15.0-17.5	15.0-17.0	350-410	35-73	18-25	—	—	1
	9♂♂	1.19-1.96	34.0-44.6	3.1-5.1	52.2-89.2	0.6-0.9	—	15.0-17.5	15.0-17.0	283-431	53-101	18-29	45.5-54	4-7	1
<i>C. dogieli</i>	?♀	1.36	26	5.7	54	1.0	47	?7	12	238	?	25	—	—	13
<i>C. elegans</i>	?♀	1.7	40	4.6	60	0.9	47	12	12	370*	?	28*	—	—	3
<i>C. eroshenkoi</i>	?♀	1.1	20	3.8	49	?	49	?	?	289*	?	22	—	—	14
	2 ?♀	1.19-1.28	32-34	3.8-4.0	50-58	0.8	46-48	12-13	12-13	300-315	?	21-23	—	—	15
	3 3♀♀	1.21-1.34	29-32	4.3-4.8	56-61	0.7-0.8	47-49	12	12-14	?	44-72	20-24	—	—	10
<i>C. ettersbergense</i>	?♀	0.8	24-26	3.7	45-48	?	?	?	?	?	?	?	—	—	16
	2 ?♀	0.62	25	3.6	52	0.8	68	?	?	170	?	12.5	—	—	17
	3 ♀	0.65	24	3.3	31	1.0	62	8	8	197*	?	21*	—	—	4
	4 2♀♀	0.60, 0.74	27, 39	2.5, 2.9	31, 39	?	57, 69	?	?	?	?	?	—	—	18
	5 ♀	0.74	31	3.5	37	1.0	66	?	?	212	?	20	—	—	19
	6 ?♀	0.65	24	3.3	31	1.0	62	?	8-10	?	?	?	—	—	8
	7 ?♀	0.58-1.00	22-29	3.5-3.9	37-52	0.6-1.0	59-62	8	9-11	?	?	?	—	—	9

Table 1 (continued). Main measurements and ratios of species belonging to the genus *Crassolabium* Yeates, 1967 (measurements in μm , except L in mm).

Species	n	L	a	b	c	c'	V	Lip region diameter	Odontostyle	Neck	Prerectum	Tail	Spicule	Ventr. suppl.	Reference
8	?♀	0.64	24	3.6	?77	1.0*	68	?		178*	?	?	—	—	20
9	?♀	0.58	23	3.0	35	1.0*	67	?	?	187	?	16	—	—	21
<i>C. garhwaliense</i>	5♀♀	1.02-1.13	28-29	3.7-4.0	60-71	0.6-0.7	56-59	11-12	15-16	261-279	35-50	15-17	—	—	12
	3♂♂	1.03-1.12	28-29	3.7-4.0	61-68	0.6-0.7	—	?	15-16	275-278	80-93	16-17	37-38	10	12
<i>C. goaense</i>	7♀♀	0.78-0.89	22-27	3.0-3.7	49-62	0.7-0.8	58-61	11-12	17	207-255	30-40	15-16	—	—	22
	2 5♀♀	0.82-1.00	19.5-25.5	3.0-4.0	49-65	0.5-0.7	58.5-63.5	11-12	15-17	226-274	32-50	14-17	—	—	40
<i>C. gracile</i>	10♀♀	1.2-1.4	25-32	3.3-3.9	43-56	0.9*	53-58	16-17	16-17	350	?	?	—	—	14
	10♂♂	1.3-1.4	28-34	3.6-3.7	44-52	0.78	—	?	?	?	?	?	44-45	4	14
<i>C. himalum</i>	4 ♀♀	1.18-1.31	26-31	3.6-3.9	53-57	0.9-1.0	51-55	18-19	21-24	308-363	54-77	21-24	—	—	23
<i>C. kaszabi</i>	♀	0.95	20	3.5	51	0.7	59	13	13	257*	?	18	—	—	24
	♂	1.05	29	4.1	45	0.8	—	?	11.5	256*	?	22	43	16	
2	?♀	1.0-1.2	27-32	4.0-5.0	37-56	?	53-55	?	12	?	?	?			25
	?♂	0.9-1.3	29-33	4.1-4.9	34-46	?		?	?	?	?	?		17-18	25
3	♀	0.8	26	4.0	?	?	54	?	?	193*	?	?			26
4	2♀♀	1.02, 1.19	23.2, 28.3	5.3, 6.0	53.7, 70.0	0.7, 0.8	57.0, 59.1	13, 13	11.0, 11.5	194, 200	84, 122	17, 19	—	—	27
<i>C. lautum</i>	♂	1.5	28	4.4	60	0.8*		15*	21	350*		26*	50	13	28
<i>C. major</i>	♀	1.5	30	4.2	56	0.76*	53	18	13	357*	?	27*	—	—	3
	♂	1.6	28	3.9	62	0.9*	—	?	?	410	?	26*	50	9	3
<i>C. medianum</i>	?♀	0.74-0.86	19-25	3.3-3.8	44-54	0.8*	53-59	?	10.5	233	?	16	—	—	14
	3♀ ³	0.80-0.89	24.0-27.4	3.8-4.4	38.3-43.5	0.9-1.0	55.8-58.0	12-14	11.0-12.5	205-232	58-83	20-23	—	—	27

Table 1 (continued). Main measurements and ratios of species belonging to the genus *Crassolabium* Yeates, 1967 (measurements in μm , except L in mm).

Species	n	L	a	b	c	c'	V	Lip region diameter	Odontostyle	Neck	Prerectum	Tail	Spicule	Ventr. suppl.	Reference
<i>C. montanum</i> ²	23♀♀	1.56-1.90	31.4-39.2	3.3-4.4	54.1-72.8	0.8-1.2	54.3-59.2	15.0-18.0	20.0-22.5	400-553	78-190	25-33	—	—	27
<i>C. neohimalum</i>	?♀	1.32-1.47	28-32	3.5-4.4	44-50	1.0-1.1	49-53	17	21-22	360-385	?	22-26	—	—	15
<i>C. nothus</i>	?♀	1.2	26	3.6	40	1.2*	52	13	13	340*	?	30*	—	—	4
	?♂	1.2	28	3.5	41	1.0*	—	13	13	340*	?	29*	?	6-8	4
2	♀	1.23	32	4.0	57	?	51	?	?	308*	?	21.5	—	—	29
	2♂♂	1.86-1.96	27-28	4.5-5.5	50-54	?	?	?	?	?	?	?	?	?	29
3	♀	1.24	31	3.2	54	0.9*	54	15.7	12	385	55	23*	—	—	30
	8♂♂	0.93-1.17	22-29	3.1-3.8	37-47	?	—	15.1	12	260-325	80-92	?	44	6?	30
4	10♀♀	0.84-1.08	20-25	3.1-3.6	37-45	?	52.8-58.3	14	12.5	?	45	?	—	—	30
	11♂♂	0.78-1.01	24-28	3.3-3.9	34-47	?	—	14	13	?	87	?	40	5?	30
5	?♀	1.0	28	3.3	56	1.0*	60	14	13	?	?	?	—	—	3
	?♂	1.0	27	3.3	52	0.9	—	?	?	?	?	?	?	5-6	3
6	7♀♀	0.7-0.8	19-26	3.0-3.7	30-40	0.9-1.2	56-59	?	12-13	?	?	?	—	—	7
<i>C. parvulum</i>	?♀	0.77	23	4.1	37	1.0*	52	12	12	214*	?	21	—	—	4
<i>C. plica</i> ⁴	2♀♀	1.31, 1.38	30.5, 30.7	4.2, 4.5	52.5, 53.1	0.9, 0.9	49.8, 53.3	13, 13.5	11, 12	310, 312	95, 140	25, 26	—	—	39
	♂	1.31	30.5	4.6	52.5	0.7	—	—	11	287	—	25	53	16	39
<i>C. porosum</i>	?♀	1.05	19.9	3.1	39	0.89*	50.9	18*	23	?	61	21.5*	—	—	31
<i>C. projectum</i>	?♀	1.2	32	4.7	48	1.0*	53	?	?	255*		25	—	—	11
<i>C. pumilum</i>	?♀	0.60-0.67	23-26	2.8-3.4	40	1.0*	58-60	?	9.0-9.5	224*		15*	—	—	32

Table 1 (continued). Main measurements and ratios of species belonging to the genus *Crassolabium* Yeates, 1967 (measurements in μm , except L in mm).

Species	n	L	a	b	c	c'	V	Lip region diameter	Odontostyle	Neck	Prerectum	Tail	Spicule	Ventr. suppl.	Reference
<i>C. rhopalocercum</i>	2♀♀	1.36, 1.56	?26, 30	3.7, 4.0	70, 71	?	45, 50	?	?	368, 390*	?	19, 22*	—	—	33
2	?♀	2.1	35-40	4.0-4.5	80-120	?	?	?	?	?	?	?	—	—	34
3	?♀	1.8	33	4.7	90	0.6*	50	?	?	380*		20	—	—	4
4	?♀	1.62	28	3.9	105	0.3*	56	?	18	415*	120	15	—	—	35
5	6♀♀	1.6-1.9	38-47	3.8-4.5	79-92	0.7-0.8	44-46	?	15-18	?	?	?	—	—	36
6	?♀	1.7-2.1	35-43	4.0-5.0	66-110	0.8-0.9	44-52	?	16-18	?	?	?	—	—	37
7	?♀	1.6-2.1	33-47	3.8-4.9	71-120	0.6-0.8	44-49	13-14	15-20	?	42-77	20-23	—	—	9
<i>C. saccatum</i>	?♀	1.6-2.1	37	4.3	55	1.1*	51	14*	15	?	?	?	—	—	3
?2	?♀	2.3	36	4.5	56	0.9*	54.8	16*	19*	?	?	?	—	—	38
<i>C. tenuistylum</i> ²	19♀♀	1.17-1.62	25.8-39.4	3.5-4.8	48.7-72.9	0.8-1.0	50.5-55.8	16.0-17.5	17.0-20.5	275-397	53-106	19-24	—	—	27
	19♂♂	1.22-1.61	34.4-43.1	3.5-4.7	46.8-74.0	0.8-1.0	—	15.0-18.0	17.5-20.0	287-403	47-161	21-28	38-43	3-6	27

*-measured/calculated from drawing.

¹ References for the corresponding numbers: 1-Ciobanu *et al.* (2007); 2-Yeates (1967); 3-Thorne (1974); 4-Thorne & Swanger (1936); 5-Loof (1971); 6-Vinciguerra & De Francisci (1973); 7-Winiszewska-Ślipińska (1987); 8-Bongers (1988); 9-Loof (1999); 10-Choi (1999); 11-Thorne (1939); 12-Ahmad *et al.* (1985); 13-Tulaganov (1949); 14-Eroshenko (1976); 15-Andrássy (1991b); 16-de Man (1885); 17-Cobb (1906); 18-Altherr (1950); 19-Schuurmans-Stekhoven (1951); 20-Cobb (1893); 21-Steiner (1914); 22-Ahmad (1993); 23-Jairajpuri & Ahmad (1982); 24-Andrássy (1959b); 25-Marinari *et al.* (1980); 26-Vinciguerra & Giannetto (1987); 27-Ciobanu *et al.* (2008); 28-Andrássy (1962); 29-Heyns & Lagerway (1965); 30-Tjepkema *et al.* (1971); 31-Zell (1986); 32-Andrássy (1963); 33-Loof (1961); 34-de Man (1880); 35-Altherr (1963); 36-Yeates (1970); 37-Zullini (1982); 38-Khan & Fatima (1980); 39-Ciobanu *et al.* (2004); 40-Baniyamuddin & Ahmad (2007).

² Various populations.

³ The numbers indicate various populations.

⁴ Reported as *Labronema plica*.

- 27a – Lip region offset by deep constriction; male present 28
- 27b – Lip region continuous or offset by weak depression; male absent 29
- 28a – Longer body ($L=1.5-1.6$); female tail with distinctly thickened cuticle and acute terminal core; male bearing nine spaced ventromedian supplements; spicules 50 μm long *major*
- 28b – Shorter body ($L=0.8-1.2$); female tail with not distinctly thickened cuticle and lacking an acute terminal core; male bearing 5-8 ventromedian supplements; spicules 40-44 μm long *nothus*
- 29a – Lateral chord with two rows of cells in zig-zag arrangement; no cells near the vagina-vulva junction; only one pair of caudal pores *baldum*
- 29b – Lateral chord lacking any peculiar differentiation; two cells are present near the vagina-vulva junction; two pairs of caudal pores 30
- 30a – Vagina escutcheon-shaped; prerectum 2.0-2.5 anal body diameters long; caudal pores located at the anterior half or the middle of tail *cylindricum*
- 30b – Vagina not escutcheon-shaped; prerectum 4-6 anal body diameters long; caudal pores located at the posterior half of tail ... *elegans*

Additional information on *Crassolabium* species is provided in Table 1, where a compendium of their main measurements and ratios is presented together with geographical distribution and the corresponding references.

OTHER SPECIES PREVIOUSLY PLACED IN *CRASSOLABIUM*, *THONUS* AND/OR *TAKAMANGAI*

There are many species that were classified under the genera *Crassolabium*, *Thonus* (here a junior synonym of *Crassolabium*) and/or *Takamangai* (currently a junior synonym of *Aporcelaimellus*, see Peña-Santiago & Ciobanu, 2007a) and whose true or tentative identity needs to be discussed or clarified. They are presented below, ordered alphabetically according to their specific epithet, and their status is discussed.

- Tylencholaimus accentuatus* (Thorne & Swanger, 1936) Andrassy, 1991
= *Dorylaimus accentuatus* Thorne & Swanger, 1936
- Eudorylaimus accentuatus* (Thorne & Swanger, 1936) Andrassy, 1959
- Thonus accentuatus* (Thorne & Swanger, 1936) Andrassy, 1986

Although this species resembles *Tylencholaimus* pattern by having lip region cap-like and short odontostyle, the body is relatively big ($L=1.6$) and excessively slender ($a=47$), and the odontostyle rather long (13 μm). Peña-Santiago and Coomans (1996) regarded it as *species inquirendae* under *Tylencholaimus*, a decision which is here confirmed.

***Thonus annae* Van Reenen & Heyns, 1986**

Recently, Peña-Santiago and Ciobanu (2008) have erected the new genus *Heynsnema* to accommodate the three *Thonus* species described by Van Reenen and Heyns (1986).

***Thonus baqrii* Jairajpuri & Ahmad, 1992**

Jana and Baqri (1982) described the (new) species *Thonus confusus*, which became a junior homonym of *T. confusus* (Thorne, 1939) Andrassy, 1986. Jairajpuri and Ahmad (1992) renamed it as *T. baqrii*. Some doubts persist on the taxonomic position of this species that is characterized by having dorsal and ventral body pores at cervical region (see original Fig. 2B), lip region offset by slight constriction (although the original Fig. 2B,C suggest a weak depression), double guiding ring (see original Fig. 2B), longitudinal vulva, thickened cuticle at tail, and numerous contiguous ventromedian supplements. This series of features conform to a morphological pattern which fits better that of the genus *Labronema* Thorne, 1939 than that of *Crassolabium*. Thus, Andrassy's (1986) action, transferring *Thonus confusus* *apud* Jana & Baqri, 1982 to *Labronema* is here followed, and, as a consequence, *Thonus baqrii* Jairajpuri & Ahmad, 1992 is regarded as its (new) junior synonym.

***Eudorylaimus brevidens* (Thorne & Swanger, 1936) Andrassy, 1959**

= *Dorylaimus brevidens* Thorne & Swanger, 1936.

***Thonus brevidens* (Thorne & Swanger, 1936) Andrassy, 1986.**

Andrassy (1959a, 1986) transferred this species from *Dorylaimus* to *Eudorylaimus* and *Thonus*, and later (1991a) retained it under *Eudorylaimus*. Taking into account that the body is relatively small ($L=1.0$), the tail is conical and the male is unknown, the last action by Andrassy is followed here. However, the most striking feature of this taxon is its excessively short odontostyle.

***Thonus christiani* Van Reenen & Heyns, 1986.**

See under *Thonus annae*.

***Takamangai goldeni* (Khan & Fatima, 1980) Andrassy, 1991**

= *Aporcelaimellus goldeni* Khan & Fatima, 1980

The original description of this species by Khan and Fatima (1980) lacks important morphological

details (precise nature of odontostyle, genital system, tail) and includes some incongruencies. Although Andrásy (1991a) transferred it to *Takamangai*, it fits better the *Aporcelaimellus* pattern, and even its synonymy with *A. obtusicaudatus* should not be discarded. It is herein regarded as *species incertae sedis*.

Aporcelaimellus insignis (Loos, 1945) Andrásy, 1991

= *Dorylaimus insignis* Loos, 1945

Eudorylaimus insignis (Loos, 1945) Andrásy, 1959

Thonus insignis (Loos, 1945) Andrásy, 1986

Two features of this species perfectly fit the *Aporcelaimellus* pattern: shape of the lip region and, in particular, the morphology of odontostyle, quite robust and with large aperture, well exceeding half of total length. Thus, Andrásy's (1991a) action, transferring it to *Aporcelaimellus*, seems to be totally justified.

Labronema khazariense (Tchesunov, 1985) Andrásy, 1991

= *Eudorylaimus khazariensis* Tchesunov, 1985

Thonus khazariensis (Tchesunov, 1985) Andrásy, 1986

Andrásy (1986, 1991a) transferred this species from *Eudorylaimus* to *Thonus* and *Labronema*, respectively. The identity of this material needs confirmation. Its general morphology (lip region offset, cervical pores present, apparently double guiding ring, ventromedian supplements numerous and contiguous, etc.) fits well that of *Labronema*, but the odontostyle has a short aperture (28-29% of total length) and practically nothing is known about the morphology of the female genital system. Its inclusion in *Labronema* is accepted provisionally.

Thonus kirjanovae (Tulaganov, 1949) Andrásy, 1986

= *Dorylaimus kirjanovae* Tulaganov, 1949

Eudorylaimus kirjanovae (Tulaganov, 1949) Andrásy, 1959

Many doubts persist on the identity of this species. The original description lacks important morphological details, and the true nature of the pharynx is a major question because its anterior region was originally described as very narrow (see also Tulaganov's Fig. 4A) and expanding abruptly, both unusual features in Qudsianematidae. Andrásy (1959a, 1986) transferred it from *Dorylaimus* to *Eudorylaimus* and *Thonus*, respectively. Here, it is regarded as *species incertae sedis*.

Thonus laticollis (de Man, 1906) Andrásy, 1986

= *Dorylaimus laticollis* de Man, 1906

Dorylaimus laticollis var. *pachycauda* Micoletzky, 1925

Eudorylaimus laticollis (de Man, 1906) Andrásy, 1959

Takamangai laticollis (de Man, 1906) Andrásy, 1991

The true identity of this species remains obscure. On one hand, de Man's original description is poor in both morphological details and measurements; for instance, odontostyle nature is not well known. On the other hand, later records of the species do not fit the original description or agree between them. Micoletzky (1925) described five Danish females which are significantly larger ($L=2.35-2.52$ vs $L=1.75-1.90$ in the original description) and have more stout ($a=22-29$ vs $a=32-38$) body with longer odontostyle ($37-38$ vs $20-23$ after Bongers, 1988), meanwhile the only male is very small ($L=1.48$) and with more ventromedian supplements ($9-12$ vs $7-9$). Meyl (1953, 1954) described Italian specimens which are comparatively smaller ($L=1.13-1.84$) and more stout (vs $a=16-22$). Thus, this species is herein regarded as *species incertae sedis*.

Thonus lentifer (Schhurmans-Stekhoven & Teunissen, 1938) Andrásy, 1986

= *Dorylaimus lentifer* Schuurmans-Stekhoven & Teunissen, 1938

Eudorylaimus lentifer (Schhurmans-Stekhoven & Teunissen, 1938) Andrásy, 1959

Thonus lentifer was originally described on the basis of one juvenile specimen whose true identity cannot be established with accuracy. Its relative big size, thick cuticle with distinct cervical pores, high and offset lip region, strong odontostyle and rounded conoid tail with short terminal digitation, conform to a morphological pattern that fits better that of the genera *Labronema* and *Talanema*, or even that of some aporcelaimid taxa. It is here regarded as *species incertae sedis*.

Thonus metobtusicaudatus (Schhurmans-Stekhoven & Teunissen, 1938) Andrásy, 1986

= *Dorylaimus metobtusicaudatus* Schuurmans-Stekhoven & Teunissen, 1938

Eudorylaimus metobtusicaudatus (Schhurmans-Stekhoven & Teunissen, 1938) Andrásy, 1959

Some doubts persist of the identity of *Thonus metobtusicaudatus*. First, the six specimens described by Schuurmans-Stekhoven (1938) could not be conspecific (cf. Andrásy, 1991a) because there are significant differences in their morphometrics, for instance body length (1.15, 1.08 vs 1.95, 2.00 mm), but also *a*- and *c*-ratios. Second, the vagina illustrated in the original Fig. 68F

seems to have a developed *pars proximalis* and to lack *pars refringens*, resembling a *nygolaim*. Andrassy (1991a) considered it as *species inquirenda*, but herein is regarded as *species incertae sedis*.

Eudorylaimus minutus (Bütschli, 1873) Andrassy, 1959

= *Dorylaimus minutus* Bütschli, 1873

Thonus minutus (Bütschli, 1873) Andrassy, 1986

Available information on this species is poor, lacking many important morphological details. The tail is conical, practically straight ventrally and dorsally convex, but with its posterior third somewhat concave, appearing sub-digitate; such tail shape is relatively frequent in *Eudorylaimus* (but not in *Crassolabium*) species. Thus, Andrassy's (1991a) action, retaining it under *Eudorylaimus*, is herein followed.

Eudorylaimus nitidus (Cobb in Thorne & Swanger, 1936) Andrassy, 1959

= *Dorylaimus nitidus* Cobb in Thorne & Swanger, 1936

Thonus nitidus (Cobb in Thorne & Swanger, 1936) Andrassy, 1986

This species is distinguished by having relatively small body ($L=0.9$), tail conical with rounded terminus, and male unknown. In this case, Andrassy's (1991a) action, retaining it under *Eudorylaimus*, is followed too.

Aporcelaimellus odhneri (Allgén, 1950) Andrassy, 1991

= *Dorylaimus odhneri* Allgén, 1950

Thonus odhneri (Allgén, 1950) Andrassy, 1986

The original description by Allgén (1950) was not available to the authors.

Thonus paracirculifer (Brzeski, 1962) Andrassy, 1986

= *Eudorylaimus paracirculifer* Brzeski, 1962

Available information on this species is confusing. Females of type population are always larger than males [1.3-1.6 (n=10) vs 1.1-1.3 (n=4) mm], and their pharyngeal expansion significantly longer (38-48% vs 32%, respectively). On the other hand, the odontostyle is 12-13 μm long or 1.1 times the lip region width, according with original description, but Brzeski's original Fig. 1 shows the odontostyle being about 14 μm long or 1.3 times the lip region width. Both Andrassy (1986) and Winiszewska-Slipinska (1987) transferred *Eudorylaimus paracirculifer* Brzeski, 1962 to *Thonus*, although, later, Andrassy (1991a) retained it under *Eudorylaimus*, but regarding it as *species inquirendae*; nevertheless, the general morphology of this species, in particular its

rounded tail, fits better the *Crassolabium* pattern. Thus, it is here transferred to *Crassolabium* and regarded as *species inquirendae*.

Takamangai pavlovskii (Tulaganov, 1949) Andrassy, 1991

= *Dorylaimus pavlovskii* Tulaganov, 1949

Eudorylaimus pavlovskii (Tulaganov, 1949) Goodey, 1963

The true identity of this species remains obscure because available information about it lacks many details. Moreover, some of its features (excessively short body, very long pharynx, apparently expanding abruptly, vagina almost spherical, *pars refringens vaginae* lacking, etc.) do not fit the *Crassolabium* pattern and rather resemble that of the genera *Dorylaimellus* and *Tylencholaimus*. Andrassy (1986) regarded it as a junior synonym of *Thonus ettersbergensis*, but the differences between the two taxa are relevant. Thus, this proposal is not followed here, and the taxon is regarded as *species incertae sedis*.

Aporcelaimellus planipediis (Merzheevskaya, 1951) Andrassy, 1991

= *Dorylaimus planipediis* Merzheevskaya, 1951

Thonus planipediis (Merzheevskaya, 1951) Andrassy, 1986

This taxon is characterized by having large body ($L=2.50-3.15$) and odontostyle (30 μm long), and relatively short tail ($c=74.8-79$). Thus, the last action by Andrassy (1991), transferring it to *Aporcelaimellus*, seems to be totally justified.

Eudorylaimus productus (Thorne & Swanger, 1936) Andrassy, 1959

= *Dorylaimus productus* Thorne & Swanger, 1936

Thonus productus (Thorne & Swanger, 1936) Andrassy, 1986

Andrassy's action (1991a), retaining this species under *Eudorylaimus*, seems to be justified since the tail is conical with rounded terminus, becoming slightly ventrad curved in male.

Takamangai pusilla (Andrassy, 1985) Andrassy, 1991

= *Labronema pusilla* Andrassy, 1985

Andrassy (1991a) transferred *Labronema pusilla* Andrassy, 1985 to *Takamangai*, but this action is not followed here. The general pattern of this species (lip region offset by very deep constriction, perioral region differentiated in liplets, odontostyle relatively slender, guiding ring double, vulva transverse, and spaced ventromedian supplements) fits better that of *Labronemella* and justifies its transferring to this genus (cf. Vinciguerra and Clausi, 1994). Thus, the new combination *Labronemella pusilla* is now proposed.

Crassolabium robustum Mukhina, 1992

Recently, Peña-Santiago and Ciobanu (2007b) suggested that this species might not belong to *Crassolabium*, but to *Aporcelaimellus*, and that further studies are needed to clarify its identity. It is here regarded as *species incertae sedis*.

Discolaimoides skrjabini (Tulaganov, 1949) Andrásy, 1991

= *Dorylaimus skrjabini* Tulaganov, 1949

Eudorylaimus skrjabini (Tulaganov, 1949) Andrásy, 1959

Thonus skrjabini (Tulaganov, 1949) Andrásy, 1986

This species is characterized by its very slender body ($a = 79$), lip region offset, relatively short odontostyle and conoid tail. Thus, it fits rather well the *Discolaimium/Discolaimoides* pattern, justifying Andrásy's (1991a) proposal. Nevertheless, the nature of vulva and vagina is not known and some doubts persist on its true identity.

Eudorylaimus sodakus Thorne, 1974

= *Thonus sodakus* (Thorne, 1974) Andrásy, 1986

This species is distinguished, among other features, by having conical tail with rounded terminus. Andrásy (1991a) retained it under *Eudorylaimus*, an action which seems justified.

Eudorylaimus solus Andrásy, 1962

= *Thonus solus* (Andrásy, 1962) Andrásy, 1986

This taxon is mainly characterized by its slender ($a=42$) body, 1.70 mm long, lip region practically continuous, relatively small odontostyle, 14 μ m long, and conical tail with broadly rounded terminus. The combination of a medium sized body with a relatively short odontostyle is a rather common feature in *Crassolabium*, but the tail resembles that of some species of *Eudorylaimus*. Actually, Andrásy first (1986) transferred it from *Eudorylaimus* to *Thonus*, but later (1991a) retained it under *Eudorylaimus*. This last proposal is tentatively followed here.

Takamangai steineri (Thorne & Swanger, 1936) Andrásy, 1991

= *Dorylaimus steineri* Thorne & Swanger, 1936

Eudorylaimus steineri (Thorne & Swanger, 1936) Andrásy, 1959

Dorylaimus vesuvianus var. *helvetica* Steiner, 1914

Thonus steineri (Thorne & Swanger, 1936) Andrásy, 1986

The available information on *Takamangai steineri* consists of an extremely brief description, a few measurements and ratios, and two illustrations provided by Steiner (1914), who identified his material as '*Dorylaimus vesuvianus* Cobb, var. *helvetica*, nov. var.'. Thorne and Swanger (1936) examined Cobb's balsam-preserved specimens of *Dorylaimus vesuvianus*, concluded that they

belonged to the genus *Dorylaimus*, and proposed the new name *Dorylaimus steineri* for Steiner's material. This might be classified under *Crassolabium* because of its short and rounded tail, but the nature of the odontostyle, apparently strong and about twice the lip region width long (cf. Thorne & Swanger, 1936) is atypical of this genus. Hence, it is herein regarded as *species incertae sedis*.

Thonus surikae Van Reenen & Heyns, 1986.

See under *Thonus annae*.

Aporcelaimellus tropicus Jana & Baqri, 1981

= *Takamangai tropica* (Jana & Baqri, 1981) Andrásy, 1991

Several features of this species, in particular its very slender body ($a=39-54$), *pars refringens vaginae* probably absent and, mainly, the odontostyle aperture (58-62% of total length), do not fit the *Crassolabium* pattern. It is tentatively retained under *Aporcelaimellus*.

Thonus tulaganovae (Erzhanova, 1964) Andrásy, 1986

= *Eudorylaimus tulaganovae* Erzhanova, 1964

The original description and illustrations of this species are not very detailed. However, the large ($L=2.4$) and obese ($a=17$) body, the lip region offset, and the short and rounded tail ($c = 100$) conform a general morphology more similar to *Aporcelaimellus* than to *Crassolabium*. Thus, it is regarded as *species incertae sedis*.

Thonus uzbekistanicus (Tulaganov, 1949) Andrásy, 1986

= *Dorylaimus uzbekistanicus* Tulaganov, 1949

Eudorylaimus uzbekistanicus (Tulaganov, 1949) Andrásy, 1959

Available information on this species lacks many important morphological details, but it can be distinguished by its slender ($a=52$) body, 1.3 mm long, pharynx expanding abruptly, *pars refringens vaginae* apparently absent (see Tulaganov's Fig. 47B), vulva quite anterior ($V = 40$), and tail with a visible narrowing at the middle and somewhat clavate at its posterior portion. Taking into account the low quality of the original description, and that the general morphology does not fit well the *Crassolabium* pattern, it is here regarded as *species incertae sedis*.

Eudorylaimus vanrosseni Loof, 1971

= *Thonus vanrosseni* (Loof, 1971) Andrásy, 1986

The general pattern of this species agrees with that of *Eudorylaimus*, in particular the tail shape, conical, practically straight ventrally and dorsally convex, with its posterior third somewhat concave, appearing slightly digitate. Andrásy (1991a)

retained it under *Eudorylaimus*, an action which seems to be justified.

Takamangai waenga Yeates, 1967

Recently, Peña-Santiago and Ciobanu (2007a) studied type material of this species and discussed the identity of the genus *Takamangai*, regarding it as a junior synonym of *Aporcelaimellus*. To accommodate the status of *T. waenga* to the new situation, the new combination *Aporcelaimellus waenga* is here proposed.

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Peña-Santiago R., Ciobanu M. Род *Crassolabium* Yeates, 1967 (Dorylaimida: Qudsianematidae): диагноз, полный список видов и ключ для определения.

Резюме. С использованием недавно полученных новых данных предложен измененный диагноз рода *Crassolabium*, причем род *Thonus* рассматривается как его младший синоним, с перенесением всех видов в род *Crassolabium*. Основные диагностические особенности рода: двуслойная кутикула, изменчивый, но всегда слегка отделенный перетяжкой губной отдел, отверстие одонтстиля меньше, чем половина всей его длины, простое направляющее кольцо, *pars refringens vaginae* имеется, хвостовой конец обоих полов – короткий и закругленный. Обсуждаются отношения с ближайшими группами, приводится обновленный список видов, включающий основные таксономическое и номенклатурные изменения. Кроме того, приводится полный аннотированный список видов со всеми морфометрическими данными, а также ключ для определения видов. Предложено новое название *Crassolabium neohimalum* для *Takamangai himala apud* Andrassy, 1991. *Thonus hawaiiensis* и *T. digiticaudatus* рассматриваются как младшие синонимы *Crassolabium ettersbergense*. Наконец, обсужден статус 31 вида ранее отнесенных к родам *Crassolabium* и *Takamangai*: *Takamangai pusilla* перенесен в род *Labronemella*, а *Takamangai waenga* перенесен в род *Aporcelaimellus*, *Thonus baqrii* рассматривается как синоним *Labronema confusum*, *Takamangai tropica* рассматривается в составе *Aporcelaimellus*, *Thonus paracirculifer* перенесен в *Crassolabium* но при этом рассматривается как *species inquirendae*, а 10 видов (*Takamangai goldeni*, *Thonus kirjanovae*, *T. laticollis*, *T. lentifer*, *T. metobtusicaudatus*, *Takamangai pavlovskii*, *Crassolabium robustum*, *Takamangai steineri*, *T. tulaganovae* и *T. uzbekistanicus*) рассматриваются как виды неясного систематического положения.
