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Dichotomous and polytomous identification keys for females of the genera *Prodorylaimus* Andrassy, 1959 and *Laimydorus* Siddiqi, 1969 (Nematoda: Dorylaimoidea)

Pieter A. A. Loof

Department of Nematology, Agricultural University, P.O.Box 8123, 6700 ES Wageningen, the Netherlands.

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Summary. Dichotomous and polytomous identification keys are given for females of species in the genera *Prodorylaimus* and *Laimydorus*. It is necessary to give combined keys for these two genera, because female specimens do not show any characters to indicate to which genus they belong. The genera *Prodorylaimium* Andrássy, 1969 and *Apodorylaimus* Andrássy, 1988 are considered identical with *Prodorylaimus*, and, the genus *Calodorylaimus* Andrássy, 1969 identical with *Laimydorus*. Because *Idiodorylaimus* Andrássy, 1969 is very similar to *Laimydorus*, and because occasionally the distinguishing character (transverse cuticular striation) is difficult to observe, the species of *Idiodorylaimus* are included except one which possesses longitudinal cuticular ridges. As the morphology of females of the genus *Afrodorylaimus* Andrássy, 1964 does not differ from that of *Laimydorus* and *Prodorylaimus*, *Afrodorylaimus* is also included.
Key words: identification, *Laimydorus, Prodorylaimus, Apodorylaimus, Calodorylaimus, Prodorylaimium, Idiodorylaimus, Afrodorylaimus.*

The genera *Prodorylaimus* Andrássy, 1959 and *Laimydorus* Siddiqi, 1969 are differentiated by male characters only, as females are indistinguishable (Loof, 1983). However, many species have been described from females only, and in species with males, only female specimens may be found, therefore a key covering both genera is essential.

It is difficult to choose between a dichotomous and a polytomous key, as many species descriptions are incomplete. This presents difficulties in the construction of a dichotomous key. However, morphological diversity in both of these genera is much less than in others, e. g. in *Xiphinema* (see Luc & Dalmasso, 1975; Loof & Luc, 1990), which imposes limits to the usefulness of a polytomous key. The use of many numerical characters is inevitable when it is necessary to provide sufficient diagnostic information to enable a large number of states in a character to be distinguished; four or more states may occur within one species, and morphometric data for many species overlap.

To overcome these difficulties identification keys have been prepared: a dichotomous key facilitates the simple addition of further morphological details, and a polytomous key can facilitate the identification of incompletely/inadequately described species.

Existing identification keys (Andrássy,1959; Andrássy, 1964a; Andrássy, 1969; Baqri & Jana, 1983) use a combination of male and female characters and thus are frequently inappropriate for determining females. Females of *Prodorylaimus* and *Laimydorus* can be difficult to distinguish from those of long-tailed species of the genera *Mesodorylaimus* Andrássy, 1959 and *Miodorylaimus* Andrássy, 1986, in which the pharynx usually widens more posteriorly and consequently DN is situated also more posterior (>60% *vs* <60%). In the identification keys only differences in the species descriptions and personal observations are used but this does not imply that all species are regarded as being valid. Several were described from one female specimen, and several species from only small numbers, which results in the range of variability being largely unknown. Therefore, the diagnostic validity of several differences used for species determination cannot be assessed. All available information has been reviewed and is presented here to provide a basis for further investigation. *Prodorylaimus dalmassoi* Loof, 1985, which was transferred to a new genus *Protodorylaimus* by Andrássy (1988), is included here, but this does not imply a judgement

on the validity of this genus. The species of the genus *Crocodorylaimus* Andrássy, 1988 have not been included except *C. fecundus* (Cobb, 1914), which is here considered a *Laimydorus* species as there are no indications that four yellowish bodies are present.

The synonymization of the genus *Chrysodorus* Jiménez-Guirado & Cadenas, 1985 with *Laimydorus* by Jairajpuri & Ahmad (1992) is considered valid as the only differentiating character is the somewhat thinner odontostyle in *Chrysodorus*.

The genus *Aporcedorus* Jairajpuri & Ahmad, 1983 was described in the family Aporcelaimidae, but transferred to Dorylaimidae by Andrássy (1988). As the odontostyle is aporcelaimid (with very large aperture) and the values of K and K' (see Loof & Coomans, 1970) are small (K = 55, K' = 62; computed from Fig. 1F of the original description) it is considered to belong in Aporcelaimidae. As *Aporcedorus* species are readily distinguished by the abovementioned characters from the *Laimydorus-Prodorylaimus* complex, they are not included here.

Females of the genus *Amphidorylaimus* Andrássy, 1960 are characterized by their relatively small body lengths (< 1 mm) and strongly offset lip regions with well separated lips (see Andrássy, 1988). These characters readily distinguish these species from those of the *Laimydorus-Prodorylaimus* complex and thus they are not included here.

The genus *Afrodorylaimus* Andrássy, 1964 is characterized by male characters, but the females are indistinguishable from those of the *Laimydorus-Prodorylaimus* complex. Therefore, *Afrodorylaimus* species are included here.

The genus *Halodorylaimus* Andrássy, 1988 was based upon *Dorylaimus marinus* Dujardin, 1845. This species is insufficiently known, and the redescription by Thorne & Swanger (1936) probably refers to a different species. Therefore, this species is omitted, and the the other species, *H. micramphis* (Gagarin, 1981) is placed under *Laimydorus*.

Several species of *Laimydorus* possess a distinct *pars musculosa uteri*. As the structure of the uterus has not been described for most species it is not used as a key character. However, it is considered desirable that future descriptions include details of this character.

General characteristics of females of the genera *Laimydorus* and *Prodorylaimus*

Body length ranges from about 1.1 to 6.4 mm. The body tapers to a varying degree towards the head end. The index "a" is mostly 30-50, but some species are very slender (a = 60-90) and cylindrical over the greater part of their length. The cuticle is thin (1 μm) to very thick (about 8 μm) and does not possess longitudinal ridges (these features distinguish them from *Dorylaimus* and *Ischiodorylaimus* species). The lip region is mostly truncate, somewhat angular, offset by a depression, but it ranges from continuous-rounded with wholly amalgamated lips to almost aporcelaimid (lips strongly offset and separate). The amphids are goblet-shaped, the aperture usually is equal to half of the corresponding body width or more, but may also be shorter. The odontostyle in many species is 25-35 μm long, but the range is 11-70 μm; the aperture usually is 30-40% of its length, occasionally up to, but never exceeding, 50% (by this feature the species differ from *Aporcedorus*). The odontophore is simple, linear. The guiding ring is generally double, but - especially in short-speared species - may be single; this can be determined only in specimens with retracted odontostyle. The pharynx widens about halfway along its length. The vulva is usually equatorial, but may lie more anterior (up to 32%); it may be longitudinal, pore-like or transverse. Genital branches two, opposed, symmetrical. Generally the ovaries are much longer in amphimictic species than in species reproducing uniparentally. The tail tapers, eventually becoming elongate, attenuated to filiform; usually it is straight to irregular, but never curved regularly ventrad (this can be used as a distinguishing feature from *Chrysonema*). *Laimydorus* and *Prodorylaimus* are very heterogeneous, but proposals to separate groups of species showing one easily observable character into different genera are not supported here, as such a procedure does not reflect a tenable phylogenetic relationship.

Several other genera of Dorylaimida which have (partly or wholly) longtailed females can be recognized as follows:

- *Opisthodorylaimus* Ahmad & Jairajpuri, 1982: only the posterior genital branch developed.
- *Xiphinema* Cobb, 1913: odontostyle needle shaped, very long; odontophore flanged; guiding ring very far back; basal part of pharynx only about one quarter of neck length.
- Actinolaimidae: walls of stoma strongly sclerotized, with four large onchia.
- *Oxydirus* Thorne, 1939: lip region slightly asymmetrical; odontostyle very short; basal part of pharynx enveloped in a sheath of spiral muscles.
- *Discomyctus* Thorne, 1939: lip region with disc-like projection; only anterior genital branch developed.
- *Loncharionema* Goseco, Ferris & Ferris, 1974: basal part of pharynx short, offset by constriction; only anterior genital branch developed.
- *Mumtazium* Siddiqi, 1969: odontostyle asymmetrical with scerotized tip; only posterior genital branch

developed.

- *Athernema* Ahmad & Jairajpuri, 1978: lip region continuous, conoid; only posterior genital branch developed.

- *Agmodorus* Thorne, 1964 and *Oostenbrinkella* Jairajpuri, 1965: basal part of pharynx bulb-like, offset.

- *Dorylaimoides* Thorne & Swanger, 1936: basal part of pharynx about 1/3 of neck length; odontostyle asymmetrical.

- *Calolaimus* Timm, 1964: body very long and slender (a = 100 or more); odontostyle small, irregular; basal part of pharynx short with locally sclerotized lumen.

- *Timmus* Goseco, Ferris & Ferris, 1976: basal part of pharynx only 1/5 of neck length.

- *Miranema* Thorne, 1939: odontophore strongly sclerotized; odontostyle very small; basal part of pharynx 40% of neck length or less.

-*Aulolaimoides* Micoletzky, 1915: stoma walls ribbed; odontophore with basal flanges; basal part of pharynx very short.

- *Afronygus* Heyns, 1968: mural tooth instead of axial odontostyle; tail curved ventrad.

The genus *Prodorylaimium* Andrássy, 1969

This genus was differentiated from *Prodorylaimus* only on male characters, number of, and distance between supplements: in *Prodorylaimus* there are 13 or more closely spaced supplements, in *Prodorylaimium* 6-7 widely spaced ones. Loof & Coomans (1970) stated that DO-DN is greater in *Prodorylaimium* (11-17μm) than in *Prodorylaimus* (6-12 μm), but re-examination showed that the specimens then identified as *Prodorylaimium brigdammense* actually belonged to one of the long-tailed *Eudorylaimus* species of the *E. lugdunensis*-group. Subsequently, it has been found that a long DO-DN distance occurs also in species of *Prodorylaimus* and that there is no correlation between DO-DN and supplement number (Loof, 1985). Moreover, Andrássy (1978) described a species of *Prodorylaimium* with 10 supplements. Therefore, the genus *Prodorylaimium* Andrássy, 1969 is here synonymized with *Prodorylaimus* Andrássy, 1959. The valid names of the four *Prodorylaimium* species thus become:

- *P. brigdammense* (de Man, 1876) (type species of *Prodorylaimium*) becomes *Prodorylaimus brigdammensis* (de Man, 1876) Goodey, 1963;

- *P. alpinum* Andrássy, 1978 becomes *Prodorylaimus alpinus* (Andrássy, 1978) n. comb.;

- *P. goaense* Ahmad & Jairajpuri, 1985 becomes *Prodorylaimus goaensis* (Ahmad & Jairajpuri, 1985) n. comb.;

- *P. stenosoma* (de Man, 1876) becomes *Prodorylaimus stenosoma* (de Man, 1876) n. comb.

The genus *Idiodorylaimus* Andrássy, 1969

Loof (1973) revised the genus *Idiodorylaimus*, recognizing four species, all from South America. Andrássy (1969) had also included *Dorylaimus novaezealandiae* Cobb, 1904, based upon the redescription by Thorne & Swanger (1936). Cobb's description was meagre and not accompanied by illustrations. The cuticle probably is not idiodorylaimid (see Loof, 1973). Measurements of female: L = 6.7 mm; a = 36; b = 5.0; c = 20; c' = 5; V = 45; LRW = 33 μm; ABW = 54 μm; tail length = 335 μm; prerectum 3 x rectum; as the rectum is 1.5-2.0 x ABW, the length of the prerectum would be 4.5-6.0 x rectum or between 243 and 324 μm. Odontostyle length was not given.

The situation was confused when Thorne & Swanger (1936) described and illustrated under the name *D. novaezealandiae* a female recovered from Potomac River, Washington D.C., U.S.A., copying the measurements (and description of the male) from Cobb. This female had distinct idiodorylaimid striae. It was available for the present study; it was found to be broken into two parts but otherwise was in good condition; it had been remounted in canada balsam. The idiodorylaimid striation is no longer visible, but the peculiar crenate base of the cuticle always associated with it is, in part, still distinct. Measurements: L = 6.20 mm; a = 54; b = 5.7; c = 20.2; c' = 5.0; V = 39; LRW = 24 μm; odontostyle = 56 μm; tail length = 307 μm; ABW = 62 μm; prerectum = 480 μm; prerectum/ABW = 8. The tail terminus is truncate, therefore a small part of the tail may be missing.

Apart from the idiodorylaimid cuticle this specimen differs from that described by Cobb (1904) in a, V, LRW, prerectum and prerectum/ABW. Fig. 34 of Thorne & Swanger (1936), which is accurate and correct, shows an odontostyle of 50 mm and thus the magnification is 900 and not 1000-fold as stated. Their Fig. 34a shows ABW = 18 μm and tail length = 96 μm, and therefore the magnification is 320 and not 500 fold as stated.

An idiodorylaimid striation (weakly developed) is present in *Idiodorylaimus robustus* Gagarin, 1985 and in *Dorylaimus pseudostagnalis* apud Meyl (1957) from Nicaragua. Thus, the zoogeographical argument proposed by Loof (1973) that this feature occurs in species from a limited geographical area, is not valid.

The status of the genus (type species *D. annulatus* Daday, 1905) is uncertain. Thorne & Swanger, in their identification key, separated *D. annulatus* (but not *D. novaezealandiae*) by its having a heavily striated cuticle, evidently a decision based upon

Daday's illustration. However, Andrássy's (1969) redescription of the holotype of *annulatus* shows a picture similar to Fig. 34 of Thorne & Swanger. It may therefore be concluded that there is not a sharp distinction between a normal cuticle (*Laimydorus*), or a weakly (*I. robustus*) or a strongly idiodorylaimid one (*I. annulatus*, *I. kreisi*). However as the holotype of *I. annulatus* was not examined, this question remains unanswered; *robustus*, *kreisi* and *homalopapillatus* are kept in *Idiodorylaimus*, and *Dorylaimus novaezealandiae* apud Thorne & Swanger is renamed as *Idiodorylaimus washingtonensis*.

The genus *Apodorylaimus* Andrássy, 1988

Andrássy (1988) described this genus as being similar to *Amphidorylaimus*, but with the body being much longer, the shape of the lip region similar to that as the *Laimydorus-Prodorylaimus* complex, the supplements more numerous (5-8 *vs* 1-2) and the spicules not correctly "alaimid" as in *Amphidorylaimus*. The type species *A. bini* Andrássy, 1988 appears very similar to *Prodorylaimus goaensis* (Ahmad & Jairajpuri, 1985), the principal difference being the arrangement of the supplements: in *A. bini* 2+2+2+2 (generic character), in *P. goaensis* 2+6. Such small differences in supplement arrangement should not be considered of generic importance, therefore *Apodorylaimus* is synonymized with *Prodorylaimus*, the name of the type species becoming *Prodorylaimus bini* (Andrássy, 1988) n. comb.

The genus *Calodorylaimus* Andrássy, 1969

Originally Andrássy (1969) differentiated this genus on the basis of two characters, *viz.* 8-shaped amphidial aperture and supplements forming two groups. Subsequently, he dropped the first and redefined the arrangement of the supplements as being in three groups, the anterior and the posterior contiguous, and the middle one spaced. He included then nine species, among which the middle supplements in some species were only slightly more spaced than those lying more anteriorly and posteriorly. Such small irregularities may be best considered of specific rather than generic importance. In all other respects *Calodorylaimus* is similar to *Laimydorus*, therefore these genera are here synonymized, with *Laimydorus* being the valid name (published May 30, 1969, whereas Andrássy's paper appeared in July, 1969). Thus, the valid names of the *Calodorylaimus* species are:

- *Laimydorus andrassyi* (Baqri & Jana, 1983) n. comb.;
- *L. chassanicus* (Alekseev & Naumova, 1977) n. comb.;
- *L. densus* (Andrássy, 1988) n. comb.;
- *L. gravidus* (Andrássy, 1986) n. comb.;
- *L. indicus* (Ahmad & Jairajpuri, 1982) n. comb.;
- *L. insignis* (Gagarin, 1981) Loof, 1985;
- *L. mongolicus* (Andrássy, 1988) n. comb.;
- *L. octo* (Andrássy, 1969) n. comb.;
- *L. parhomalopapillatus* (Schuurmans Stekhoven, 1944) Baqri & Coomans, 1973;
- *L. simplex* (Baqri & Jana, 1983) n. comb. (considered identical with *L. indicus* by Andrássy, 1988).

Species transferred to *Prodorylaimus*

In Loof (1985) three long-tailed *Dorylaimus* species without longitudinal cuticular ridges were overlooked. All are known from females only. One is transferred to *Prodorylaimus*: *Dorylaimus cashmerensis* Altherr, in Altherr & Delamare Deboutteville, 1972 becoming *Prodorylaimus cashmerensis* (Altherr, in Altherr & Delamare Deboutteville, 1972) n. comb.

The two others, *D. selangorensis* de Man, 1929 and *D. exilicaudatus* Altherr, 1953 were synonymized with *L. pseudostagnalis* by Andrássy (1969) which was supported by Loof (1996b).

In addition, *Laimydorus pinguis* Andrássy, 1988 is transferred (the male being unknown), to become *Prodorylaimus pinguis* (Andrássy, 1988) nov. comb.

As the genus *Paradorylaimus* Andrássy, 1969 is not considered valid (see Loof & Coomans, 1986), *P. lordelloi* (Meyl, 1957) and *P. jankowskyi* (Tsalolikhin, 1977) are here transferred to *Laimydorus*.

Loof (1985) transferred all *Laimydorus* species known only from females to *Prodorylaimus*. The principle of parsimony supports these transfers, as placing these species in *Prodorylaimus* implies only a loss of amphimixis which is undeniable (as far as females do not contain sperm), whereas placing these species in the genus *Laimydorus* would suggest the requirement of two successive evolutionary steps to have occurred: firstly, a shortening of the male tail (which is conjectural), subsequently followed by a loss of amphimixis.

List of valid species in the genera *Laimydorus* and *Prodorylaimus*

Genus *Laimydorus* Siddiqi, 1969:

syn. *Paradorylaimus* Andrássy, 1969
Calodorylaimus Andrássy, 1969
Chrysodorus Jiménez-Guirado & Cadenas, 1985

Type species: *L. prolificus* (Thorne & Swanger, 1936) Siddiqi, 1969

L. africanus Botha & Heyns, 1993
L. andrassyi (Baqri & Jana, 1983) n. comb.

= *Calodorylaimus andrassyi* Baqri & Jana, 1983
L. baldus Baqri & Jana,1983
L. beaumonti (Altherr, 1952) n. comb.
= *Mesodorylaimus beaumonti* (Altherr, 1952) Andrássy, 1959
= *Afrodorylaimus beaumonti* (Altherr, 1952) Andrássy, 1969
L. bongersi Loof, 1996
L. chassanicus (Alekseev & Naumova, 1977) n. comb.
= *Dorylaimus chassanicus* Alekseev & Naumova, 1977
= *Calodorylaimus chassanicus* (Alekseev & Naumova, 1977) Andrássy, 1988
L. conurus (Thorne, 1939) Siddiqi, 1969
= *Dorylaimus conurus* Thorne, 1939
L. constrictus Loof, 1996
L. coomansi Baqri, 1991
L. coroniceps Loof, 1996
L. crassoides (Jägerskiöld, 1908) Siddiqi, 1969
= *Dorylaimus crassoides* Jägerskiöld, 1908
L. cryptosperma (Loof, 1969) Baqri & Coomans, 1973
= *Mesodorylaimus cryptosperma* Loof, 1969
= *Dorylaimus agilis* apud Thorne & Swanger, 1936 nec de Man, 1880
L. dadayi (Thorne & Swanger, 1936) Andrássy, 1969
= *Dorylaimus dadayi* Thorne & Swanger, 1936
= *Dorylaimus pusillus* Daday, 1905 nec Cobb, 1893
L. densus (Andrássy,1988) n. comb.
= *Calodorylaimus densus* Andrássy, 1988
L. dhanachandi Jairajpuri & Ahmad, 1983
= *Chrysodorus dhanachandi* (Jairajpuri & Ahmad, 1983) Jiménez-Guirado & Cadenas, 1985
L. distinctus Dey & Baqri, 1986
L. flevensis Loof, 1996
L. gazella Andrássy, 1970
L. gravidus (Andrássy,1986) n. comb.
= *Calodorylaimus gravidus* Andrássy, 1986
L. indicus (Ahmad & Jairajpuri, 1982) n. comb.
= *Calodorylaimus indicus* Ahmad & Jairajpuri, 1982
L. insignis (Gagarin, 1981) Loof, 1985
= *Drepanodorylaimus insignis* Gagarin, 1981
= *Halodorylaimus insignis* (Gagarin, 1981) Andrássy, 1988
L. jankowskyi (Tsalolikhin,1977) Andrássy, 1986
= *Mesodorylaimus jankowskyi* Tsalolikhin, 1977
= *Paradorylaimus jankowskyi* (Tsalolikhin, 1977) Andrássy, 1988
L. kherai Baqri, 1985
= *Eudorylaimus odhneri* partim apud Khera, 1970
L. longicaudatus (Jiménez-Guirado & Cadenas, 1985) Jairajpuri & Ahmad, 1992
= *Chrysodorus longicaudatus* Jiménez-Guirado & Cadenas, 1985
L. lordelloi (Meyl,1957) n. comb.
= *Dorylaimus lordelloi* Meyl, 1957
= *Chrysodorus lordelloi* (Meyl, 1957) Jiménez-Guirado & Cadenas, 1985
= *Paradorylaimus lordelloi* (Meyl, 1957) Andrássy, 1986
= *Drepanodorylaimus lordelloi* (Meyl, 1957) Jairajpuri & Ahmad, 1992
L. luettichaui (Meyl,1957) Siddiqi, 1969
= *Chrysonema luettichaui* Meyl, 1957
L. massachussetsensis nom. nov.
= *Dorylaimus marinus* apud Thorne & Swanger, 1936 nec Dujardin, 1844
L. merogaster (Steiner,1916) n. comb.
= *Dorylaimus merogaster* Steiner, 1916
L. micramphis Chesunov, 1985
L. minimus Baqri, 1991
L. mongolicus (Andrássy, 1988) n. comb.
= *Dorylaimus montanus* apud Tsalolikhin, 1985
= *Calodorylaimus mongolicus* Andrássy, 1988
L. multialaeus (Khera, 1970) Baqri, 1985
= *Dorylaimus multialaeus* Khera, 1970
L. octo (Andrássy, 1969) n. comb.
= *Calodorylaimus octo* Andrássy, 1969
L. oryzae Dey & Baqri, 1986
L. parabastiani (Paetzold, 1958) Siddiqi, 1969
= *Dorylaimus parabastiani* Paetzold, 1958
L. parafecundus (De Coninck, 1935) Loof & Coomans, 1986
= *Dorylaimus parafecundus* De Coninck, 1935
= *Paradorylaimus parafecundus* (De Coninck, 1935) Andrássy, 1969
= *Drepanodorylaimus parafecundus* (De Coninck, 1935) Jairajpuri & Ahmad, 1992
L. parhomalopapillatus (Schuurmans Stekhoven, 1944) Baqri & Coomans, 1973
= *Dorylaimus parhomalopapillatus* Schuurmans Stekhoven, 1944
= *Calodorylaimus parhomalopapillatus* (Schuurmans Stekhoven, 1944) Andrássy, 1988
L. prolificus (Thorne & Swanger, 1936) Siddiqi, 1969
= *Dorylaimus prolificus* Thorne & Swanger, 1936
L. proximus (Thorne & Swanger, 1936) Siddiqi, 1969
= *Dorylaimus proximus* Thorne & Swanger, 1936
L. pseudostagnalis (Micoletzky, 1927) Siddiqi, 1969
= *Dorylaimus pseudostagnalis* Micoletzky, 1927
= *Dorylaimus selangorensis* de Man, 1929
= *Dorylaimus imamurae* Thorne & Swanger, 1936
= *Dorylaimus filiformis* var. *papillatus* Imamura, 1931

= *Dorylaimus exilicaudatus* Altherr, 1953
L. reversus Thorne, 1974
L. siddiqii Baqri & Jana, 1983
L. simplex (Baqri & Jana, 1983) n. comb.
= *Calodorylaimus simplex* Baqri & Jana, 1983
= *L. olifanti* Botha & Heyns, 1991
L. stenopygus (Andrássy, 1968) Siddiqi, 1969
= *Dorylaimus stenopygus* Andrássy, 1968
L. sylphus (Thorne, 1939) Siddiqi, 1969
= *Dorylaimus sylphus* Thorne, 1939
L. tenuistriatus (Schneider, 1935) Loof & Coomans, 1986
= *Dorylaimus tenuistriatus* Schneider, 1935
= *Paradorylaimus tenuistriatus* (Schneider,1935) Andrássy, 1969
= *Drepanodorylaimus tenuistriatus* (Schneider, 1935) Jairajpuri & Ahmad, 1992
L. unipapillatus (Daday, 1905) Andrássy, 1969
= *Dorylaimus unipapillatus* Daday, 1905
L. uterinus Loof, 1996
L. vacillans Loof, 1996

Genus *Prodorylaimus* Andrássy, 1959
syn. *Drepanodorylaimus* Jairajpuri, 1966
Prodorylaimium Andrássy, 1969
Apodorylaimus Andrássy, 1988
Type species: *P. longicaudatoides* Altherr, 1968

P. acris (Thorne, 1939) Loof, 1985
= *Dorylaimus acris* Thorne, 1939
= *Laimydorus acris* (Thorne, 1939) Andrássy, 1969
P. alpinus (Andrássy, 1978) n. comb.
= *Prodorylaimium alpinum* Andrássy, 1978
P. andrassyi (Zullini, 1973) Loof, 1985
= *Afrodorylaimus andrassyi* Zullini, 1973
P. arganoi (Zullini, 1973) Loof, 1985
= *Drepanodorylaimus arganoi* Zullini, 1973
P. bini (Andrássy, 1988) n. comb.
= *Apodorylaimus bini* Andrássy, 1988
P. brasiliensis (Meyl, 1956) Andrássy, 1959
= *Dorylaimus brasiliensis* Meyl, 1956
P. brevicaudatus (Andrássy, 1970) Loof, 1985
= *Drepanodorylaimus brevicaudatus* Andrássy, 1970
P. brigdammensis (de Man, 1876) Goodey, 1963
= *Dorylaimus brigdammensis* de Man, 1876
= *Prodorylaimium brigdammense* (de Man, 1876) Andrássy, 1969
Prodorylaimus brzeski (Winiszewska, 1987) n. comb.
= *Drepanodorylaimus brzeskii* Winiszewska, 1987
= *Prodorylaimus renwicki* apud Loof, 1985
P. cashmerensis (Altherr,1972) n. comb.
= *Dorylaimus cashmerensis* Altherr, 1972
P. dahli (Altherr, 1960) Andrássy, 1964
= *Dorylaimus dahli* Altherr, 1960
P. dalmassoi Loof, 1985
= *Protodorylaimus dalmassoi* (Loof, 1985) Andrássy, 1988
= *Oxydiroides dalmassoi* (Loof, 1985) Jiménez-Guirado, 1990
P. depressus Loof, 1973
P. dolichurus (Loos, 1946) Siddiqi, 1969
= *Enchodelus dolichurus* Loos, 1946
P. ensis Kleynhans, 1970
P. filiarum Andrássy, 1964
P. filiformis (Jairajpuri, 1966) Loof, 1985
= *Drepanodorylaimus filiformis* Jairajpuri, 1966
P. finalis (Thorne, 1975) Loof, 1985
= *Laimydorus finalis* Thorne, 1975
= *Laimydorus crassus* (de Man, 1884) apud Thorne, 1974
nec *Dorylaimus crassus* de Man,1884
P. flexus (Thorne & Swanger, 1936) Loof, 1985
= *Dorylaimus flexus* Thorne & Swanger, 1936
= *Laimydorus flexus* (Thorne & Swanger, 1936) Thorne, 1974
= *Drepanodorylaimus flexus* (Thorne & Swanger, 1936) Andrássy, 1969
P. goaensis (Ahmad & Jairajpuri,1985) n. comb.
= *Prodorylaimium goaense* Ahmad & Jairajpuri, 1985
P. hamatus Loof, 1973
= *Drepanodorylaimus similis* Dhanachand & Jairajpuri, 1981
P. longicaudatoides Altherr, 1968
= *Dorylaimus longicaudatus* auctt. nec Bütschli, 1874
P. longissimecaudatus (Altherr, 1977) Loof, 1985
= *Laimydorus longissimecaudatus* Altherr, 1977
P. magnus Alekseev & Dolgova, 1993
P. maqsoodi (Dhanachand & Jairajpuri, 1981) Loof, 1985
= *Drepanodorylaimus maqsoodi* Dhanachand & Jairajpuri, 1981
P. mas Loof, 1985
P. nyongi (Altherr, 1960) Loof, 1985
= *Dorylaimus nyongi* Altherr, 1960
P. obesus Ahmad & Jairajpuri, 1982
P. paraagilis (Altherr, 1953) Andrássy, 1986
= *Dorylaimus paraagilis* Altherr, 1953
P. paralongicaudatus (Micoletzky, 1925) Andrássy, 1959
= *Dorylaimus paralongicaudatus* Micoletzky, 1925
P. picardi (Altherr, 1963) Loof, 1985
= *Dorylaimus picardi* Altherr, 1963
= *Drepanodorylaimus picardi* (Altherr, 1963) Monteiro, 1970
P. ranzii (Zullini, 1973) Loof, 1985
= *Afrodorylaimus ranzii* Zullini, 1973
P. renwicki (van der Linde, 1938) Loof, 1985

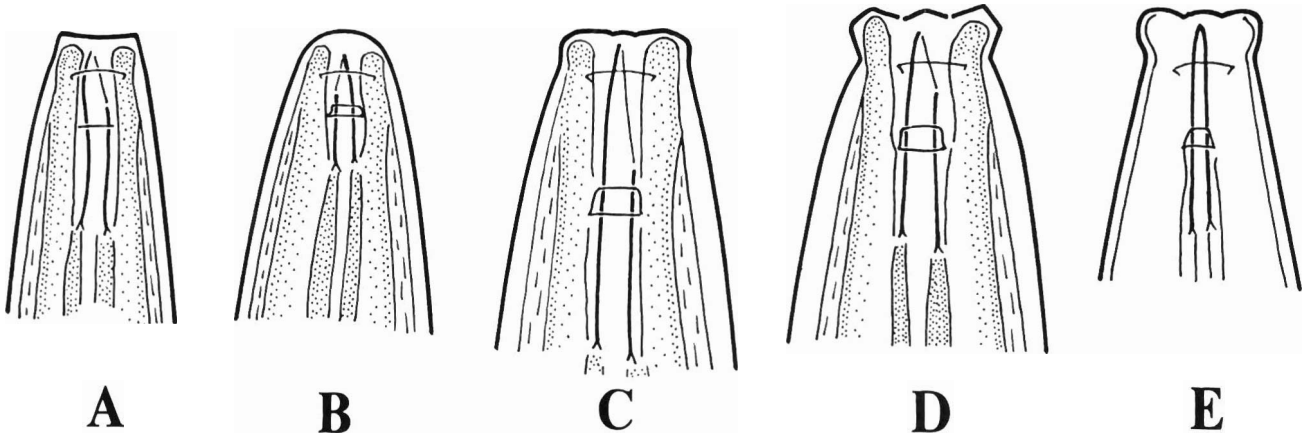

Fig. 1. Various shapes of lip region. A: Continuous-truncate (code D 1); B: Continuous-rounded (code D 2); C: Offset by depression (code D 3); D: Offset by constriction (code D 4); E: Expanded (code D 5). E - Redrawn from Tsalolikhin (1977); others original.

= *Dorylaimus renwicki* van der Linde, 1938
P. rionensis (Gerlach, 1954) Andrássy, 1959
= *Dorylaimus rionensis* Gerlach, 1954
P. rotundiceps Loof, 1985
P. serpentinus (Thorne & Swanger, 1936) Loof, 1985
= *Dorylaimus serpentinus* Thorne & Swanger, 1936
= *Laimydorus serpentinus* (Thorne & Swanger, 1936) Siddiqi, 1969
P. stenosoma (de Man, 1876) n. comb.
= *Dorylaimus stenosoma* de Man, 1876
= *Prodorylaimium stenosoma* (de Man, 1876) Andrássy, 1973
P. szekessyi (Andrássy, 1960) Loof, 1985
= *Mesodorylaimus szekessyi* Andrássy, 1960
= *Drepanodorylaimus szekessyi* (Andrássy, 1960) Andrássy, 1969
P. thornei (Andrássy, 1969) Loof, 1985
= *Laimydorus thornei* Andrássy, 1969
= *Dorylaimus filicaudatus* Daday, 1905 apud Thorne & Swanger, 1936
P. uliginosus Loof, 1985
P. vixamictus (Andrassy, 1962) Loof, 1985
= *Dorylaimus vixamictus* Andrássy, 1962
= *Laimydorus vixamictus* (Andrássy,1962) Siddiqi, 1969

The following species have been omitted from the identification keys proposed here:

1. - Species of which only males are known: *L. unipapillatus* (Daday,1905), *L. chassanicus* (Alekseev & Naumova, 1977), *I. annulatus* (Daday, 1905) and *P. alpinus* (Andrássy,1978). Also, if *Laimydorus gaussi* (Steiner, 1916) Andrássy, 1986 belongs to *Laimydorus*, which appears probable, then *Dorylaimus gaussi* apud Micoletzky, 1922 and 1925 is a different species.

2. - Species for which insufficient information is available:

- *L. fecundus* (Cobb, 1914) Andrássy, 1986. Cobb's formula gives c = 25, c' = 3.3, tail length = 136 µm, ABW = 41 µm. However, the illustration of the female posterior end shows ABW = 8 mm and tail = 48 mm, hence c' would be 6.0. The magnification of this illustration was given as 280 x, hence ABW would be 29 µm and tail length 170 µm. If ABW is 41 µm then the magnification would have been 195 x. The magnification of the drawing of the head end (given as 532 x, so that LRW would be 13 µm and odontostyle length 22 µm) also is probably incorrect, all the drawings evidently being reproduced at a reduced size. Thorne & Swanger (1936) listed the species under those "known to have a transverse vulva" but Cobb's description does not mention vulva shape. As a result of such uncertainties *L. fecundus* is here considered *species inquirenda.*

- *L. filiformis* (Bastian, 1865) Siddiqi, 1969. *Species inquirenda et incertae sedis* (see Loof, 1996b).

- *L. halophilus* (Daday, 1897) Andrássy, 1969 *Species inquirenda.*

- *L. marinus* (Dujardin, 1844) Siddiqi, 1969. *Species inquirenda. Dorylaimus marinus* apud Thorne & Swanger, 1936 probably is not identical with it (L = 2 mm *vs* 3 mm) and is here considered as being a separate species *L. massachussetsensis* nom. nov.

- *L. mongolicus* (Andrássy, 1988). Description not available.

- *L. saprophilus* (Peters, 1930) Siddiqi, 1969. *Species inquirenda.* The type specimens no longer

exist (Hooper, *in litt.*).

- *P. eliavai* Tsalolikhin, 1977. *Species inquirenda.* Shape of guiding ring (odontostyle protruded) and vulva unknown; index "c" extremely variable (5-17).
- *P. gurvitshi* Eliava, 1971 (?). Description not available.
- *P. kazakhstanicus* Sagitov, 1973. Description not available. Andrássy (1988) placed it in *Protodorylaimus.*
- *P. kralli* Tsalolikhin, 1975. *Species inquirenda.* Shape of guiding ring unknown (odontostyle protruded). Odontostyle length was given as 75-80 µm, but in a paratype was only 33 µm. Andrássy (1988) considered it identical with *P. longicaudatoides* which is probably correct.
- *P. kukuy* Tsalolikhin, 1977. *Species inquirenda.* Shape of guiding ring (odontostyle protruded), c', odontostyle/LRW and tail length are unknown.
- *Prodorylaimus longicaudatus* var.*aquatilis* Steiner, 1919. *Species inquirenda.*
- *Prodorylaimus pinguis* (Andrássy, 1988), syn. *Dorylaimus crassus* apud Thorne & Swanger, 1936. Was described and illustrated from a female collected in the U.S.A., but the authors copied the measurements of *D. crassus* from de Man (1884). Thus the actual dimensions of *P. pinguis* are unknown (the indication: "head ends magnification about 1000 x" is unreliable, see Loof, 1996b). It is known that the species does not have longitudinal cuticular ridges, it does have a double guiding ring and a longitudinal vulva, but this information is insufficient for identifying the species.
- *Dorylaimus unipapillatus* apud Kreis, 1932. *Species inquirenda,* (see Loof, 1996b).
- *Dorylaimus macrourus* Linstow, 1876. Description very incomplete. Functional odontostyle = 100 µm (certainly incorrect), replacement odontostyle (in female !) = 26 µm. These data suggest that the species is not identical with *P. brigdammensis* as assumed by de Man (1880), or with *Mesodorylaimus bastiani* as assumed by Micoletzky (1914).
- *Paradorylaimus wilhelmschneideri* (Andrássy, 1969), declared *species inquirenda* by Loof & Coomans (1986).

Dichotomous identification key for species in the genera *Afrodorylaimus, Idiodorylaimus, Laimydorus* and *Prodorylaimus*, with morphological and morphometric data given for each species

Figs. 1 & 2.
Abbreviations used:
ABW = anal body diameter; GR = guiding ring; LR = lip region; LRW = lip region width.

1. Terminus hooked or at least sharply curved; GR always double 2
- Terminus straight or slightly bent, not hooked... 10

2. Tail exceptionally long (over 800 µm); c' = 26-30, c = 2.8-3.6. ..... *P. ensis* (L = 2.8-2.9 mm; a = 37-44; b = 5.3-5.8; V = 38-39; LRW = 17-18 µm; odontostyle = 30-33 µm = 1.8 x LRW; tail = 858-1012 µm; prerectum = 66-130 µm; vulva longitudinal; LR offset by depression. South Africa).
- Tail length under 800 µm 3

3. Body length over 2.8 mm 4
- Body length under 2.9 mm 6

4. c' = 5-6; c = 21; body plump (a = 26) .... *L. crassoides* (L = 2.8-3.7 mm; cuticle 6 µm thick. LR offset by deep depression. General morphology similar to *Dorylaimus s. str.* Switzerland. Inadequately described).
- c' = 8-12; c = 8-13, body slender (a = 43-55).. 5

5. Body length 3.3 mm; odontostyle 34-35 µm long ..... *P. dahli* (L = 3.3 mm; a = 43; c = 8; c' = 11.7; V = 39; vulva longitudinal; LR offset by slight depression, 17 µm wide; odst/LRW = 2; tail length = 415 µm; prerectum = 71 µm. Cameroon).
- Body length over 4.5 mm; odontostyle more than 50 µm long ..... *A. bwana* (L = 4.6-5.2 mm; a = 51-55; c = 11-13; c' = 8-10; V = 47-50; LRW = 22-23 µm; odontostyle = 55-58 µm; LR offset by depression; vulva longitudinal; tail length about 400 µm. Kenya).

6. c = under 5; c' = over 13 7
- c = over 6; c' = under 12..... 8

7. Odontostyle straight..... *P. thornei* (L = 1.7 mm; a = 36; c = 4.5; c' = 14; V = 44; LRW = 12 µm; odontostyle = 24 µm = 2 LRW; vulva longitudinal; LR truncate, amalgamated; tail length about 380 µm. Brazil)
- Odontostyle sinuate ..... *P. picardi* (L = 1.5 mm; a = 35; c = 4.4; c' = 15; V = 43; LRW = 11-12 µm; odontostyle =23 µm = 2 LRW; vulva longitudinal; LR offset by depression; tail length about 340 µm. France).

8. LR offset by depression, lips partly amalgamated; odontostyle not distinctly sinuate .....

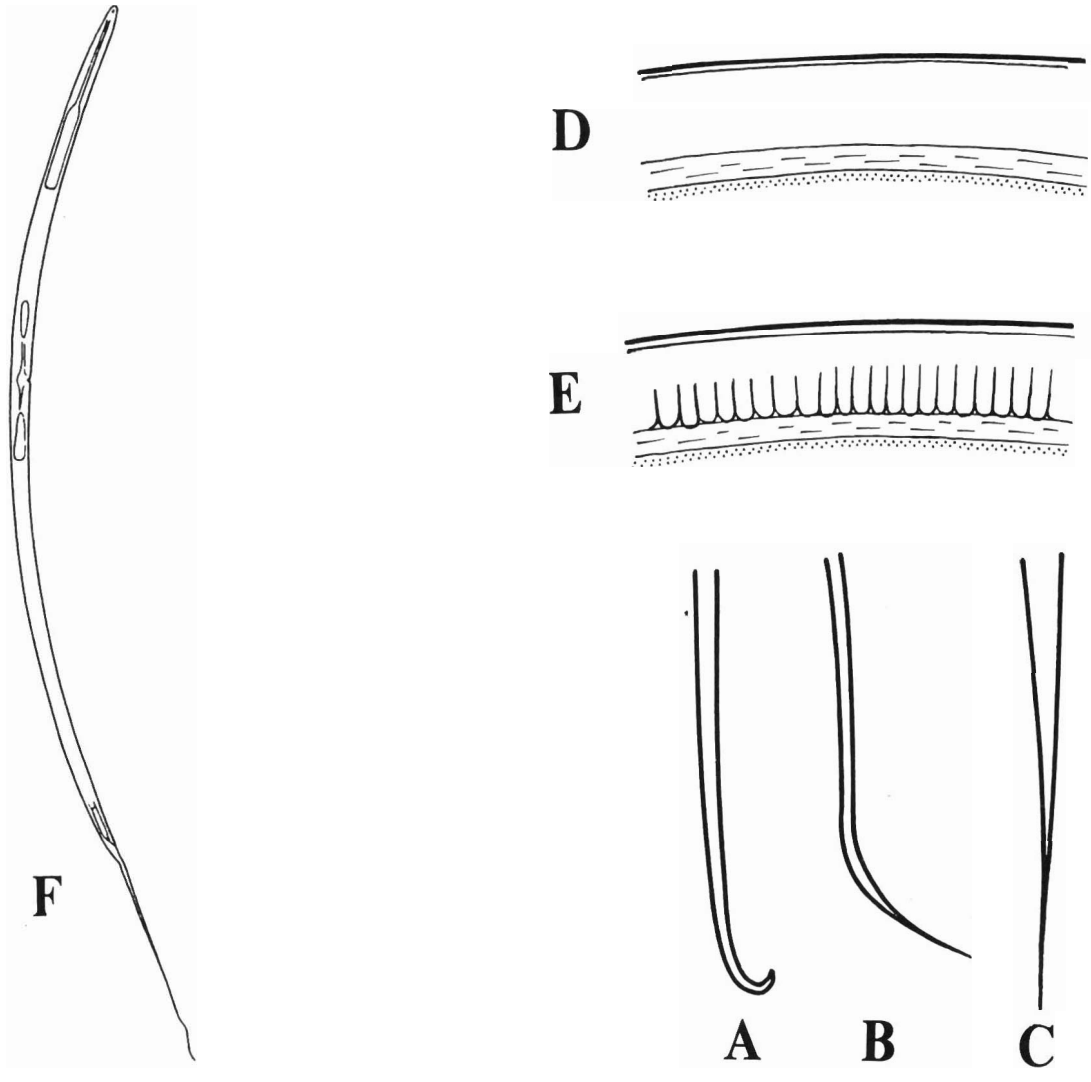

Fig. 2. A-C; Shape of terminus. A: Hooked (hamate); B-C: Not hooked. D-E; Cuticle. D: Normal; E: Idiodorylaimid, F:General habitus of a female of *Laimydorus* and *Prodorylaimus* (From Loof, 1985). A-E- original; F- from Loof (1985)by courtesy *of Fundamental and Applied Nematology.*

..... *P. andrassyi* (L = 1.7-2.1 mm; a = 33-36; c = 7.5-8.2; c' = 8; V = 49-52; LRW = 14 μm; odontostyle= 34 μm = 2.4 LRW; vulva circular; LR truncate; tail length about 230-260 μm. Mexico).

- LR truncate, continuous, amalgamated; odontostyle sinuate..... 9

9. Odontostyle 20-25 μm, V = 44-49; prerectum 1.5 x rectum or less ..... *P. hamatus* (L = 1.5-1.7 mm; a = 35-42; c = 7.2-8.8; c' = 8-10; LRW = 10-11 μm; odontostyle 2.1-2.3 x LRW; vulva probably transverse; odontostyle slightly sinuate; tail length = 190-230 μm. Surinam, India).

- Odontostyle 27-33 μm, V = 50-55;prerectum more than twice as long as rectum ..... *P. flexus* (L = 1.7-2.5 mm; a = 29-44; c =6.7-8.2; c' = 8-12; odontostyle distinctly sinuate, 2.0-2.4 LRW long; vulva longitudinal; prerectum 55-90 μm. USA). (See Remark 1).

10. Odontostyle length over 48 μm 11
- Odontostyle length 46 μm or less 17

11. Cuticle distinctly idiodorylaimid..... 12
- Cuticle not idiodorylaimid..... 13

12. LR continuous; a = 54..... *I. washingtonensis* (L = 6.20 mm; c = 20; c' = 5; V = 39; LRW = 26 μm; odontostyle = 56 μm; GR double; vulva longitudinal; prerectum= 480 μm = 8 ABW; tail length = 307 μm. U.S.A).

- LR offset by constriction; a = 31-35. *I. robustus*

(L = 4.7-5.8 mm; c = 13-22; c' = 4.1-6.0; V = 40-46; odontostyle = 48-55 µm = 1.6-2.0 LRW; GR double; prerectum = 299-408 µm; tail = 238-321 µm. Russia).

13. V = 38-43 14
- V = 47-50 15

14. Odontostyle = 60 µm; LR offset by constriction; prerectum 376 µm = 5.2 ABW; vulva transverse (?) ..... *L. merogaster*
(L = 4.7 mm; a = 41; c = 12; c' = 5.4; V = 38; LRW = 25 µm (but males have LRW =27-28 µm); odontostyle 2.4 LRW; tail = c.390 µm. Namibia). (See Remark 2).
- Odontostyle = 53 µm; LR offset by deep depression; prerectum 440 µm = 6.6 ABW; vulva longitudinal ..... *L. parhomalopapillatus*
(L = 5.40 mm; a = 50; c = 13 (terminal part of tail missing); c' = 5; V = 40; odontostyle 2.3 LRW; LRW = 23-24 µm; GR double; tail = 335 µm. Zaire).

15. Odontostyle = 49-50 µm; GR double; body very plump, a = 25-26 (probably flattened) ..... *P. magnus*
(L = 4.47-4.51 mm; c = 18-20; c' = 3.5-3.6; odontostyle = 2.1-2.2 LRW; LRW = 22-24 µm; vulva longitudinal; prerectum = 357-368 µm; tail = 250-264 µm. Siberia).
- Odontostyle = 55-62 µm; GR single; body slender (a = 51-59) 16

16. L = 6.4 mm; c = 25 ..... *L. distinctus*
(a = 59; c' = 6.6; V = 47; odontostyle = 62 µm = 3.1 LRW; LR = 20 µm wide, offset by constriction; vulva longitudinal; prerectum = 346 µm; tail = 258 µm. India).
- L = 4.6-5.2 mm; c = 11-13 ..... *A. bwana*
(See under No.5).

17. c' = 6 or less 18
- c' = over 6 34

18. Odontostyle length 26-46 µm 19
- Odontostyle length 11-25 µm 26

19. LR offset by constriction 20
- LR offset by depression or continuous 21

20. Odontostyle = 25-27 µm; c' = 5.3-8.6 ..... *L. oryzae*
(L = 3.9-4.4 mm; a = 66-71; c = 19-26; V = 42-46; odontostyle 1.6-1.8 LRW; vulva longitudinal; LR 15-16 µm wide; GR double; prerectum = 339-460 µm = 12-15 ABW; tail length = 150-260 µm. India).
- Odontostyle = 37-41 µm; c' = 3-5 ..... *A. mediterraneus*
(L = 3.3-4.0 mm; a = 35-44; c = 14-20;V = 47-52; vulva longitudinal; LRW = about 19-20 µm; odontostyle about 2 x LRW; GR double; tail length about 200-240 µm. Sicily, Italy).

21. Vulva transverse ..... *L. kherai*
(L = 2.92 mm; a = 45; b = 5.1; c = 12; c' = 5; V = 44; LRW = 18 µm; odontostyle = 31 µm or 1.7 LRW; prerectum = 150 µm; GR double. India).
- Vulva longitudinal 22

22. Odontostyle = 45 µm = 2.5 x LRW;L = 3.8 mm ..... *P. finalis*
(a = 42; c = 17; c' = 5.6 (See Remark 3); V = 48; vulva longitudinal; GR double. USA).
- Odontostyle 26-36 µm = 1.3-2.1 x LRW; L = 2.0-3.3 mm 23

23. c = 21-27; c' = 2.9-4.1; odontostyle= 32-36 µm = 1.3 x LRW ..... *P. rionensis*
(L = 2.5-3.3 mm; a = 35-52; b = 4.5-5.9;V = 45-48; vulva longitudinal; LR offset by depression, 25-27 µm wide; length of prerectum 228-300 µm = 6-7 x ABW; GR double; tail length 120-130 µm. Brazil).
- c = 10-16; c' = 5.8; odontostyle = 26-30 µm =1.8-2.1 x LRW 24

24. Prerectum 120-185 µm long = 5-6 ABW; odontostyle = 26-30 µm; uterus with well developed *pars musculosa* ..... *L. uterinus*
(L = 2.0-2.8 mm; a = 32-43; c = 11-16; c' = 5-8; V = 41-48; odontostyle length = 1.8-2.1 x LRW; vulva longitudinal; LR offset by constriction, amalgamated; 14 µm wide; GR double. Nigeria).
- Prerectum less than 100 µm long = 2-3 ABW; odontostyle = 30-34 µm; V = 50-54; uterus without distinct *pars musculosa* 25

25. LR continuous-truncate; L = 2.8 mm; a = 52; LRW = 15 µm; tail length = 280 µm ..... *P. cashmerensis*
(c = 10; c' = 6; V = 53; odontostyle length = 30 µm = 2 x LRW; GR double; vulva longitudinal; prerectum = 60 µm = 2 ABW. USA).
- LR offset by depression; L = 1.7-2.3 mm; a = 28-39; LRW = 16-17 µm; tail length less than 200 µm ..... *L. vacillans*
(c = 12-16; c' = 4-6; V = 50-54; odontostyle slightly sinuate, 31-34 µm long = 2 x LRW; GR

double; vulva longitudinal; prerectum = 74-99 µm; tail length = 108-196 µm. Venezuela).

26. Body length over 2.8 mm; body very slender (a = over 65), cylindrical 27
- Body length under 2.44 mm; body less slender (a = under 55) 28

27. Vulva longitudinal; odontostyle length 20-22 µm ..... *L. bongersi* (L = 3.0-3.9 mm; a = 69-84; c = 27-35; c' = 3.3-5.0; V = 45-50; LRW = 13-15 µm; odontostyle 1.4-1.5 x LRW; GR single; vulva longitudinal; LR continuous; prerectum = 101-168 µm = 3.5-6.5 ABW; tail length = 88-128 µm. Europe).
- Vulva transverse; odontostyle length15-16 µm... ..... *L. lordelloi* (L = 3.0-3.2 mm; a = 71-93; c = 26-31; c' = 5; V = 46-48; LR continuous, 12-13 µm wide; GR double; prerectum 9-10 x ABW; tail length about 100-115 µm. Brazil).

28. Odontostyle length 15-18 µm 29
- Odontostyle length 20-25 µm 31

29. Body length 2.4 mm; tail length = about 200 µm ..... *P. paraagilis* (a = 50; c = 12; c' = 5.7; V = 50; LRW = about 13 µm; odontostyle 15-16 µm or 1.1 x LRW; shape of vulva unknown; shape of LR difficult to make out from description; GR single (?). Switzerland).
- Body length 1.4-2.0 mm; tail length 90-130 µm 30

30. Body length 1.8 - 2.0 mm; LRW = 11-13 µm, odontostyle/LRW = 1.1-1.4 ..... *L. micramphis* (a = 34-44; c = 14-23; c' = 4-6; V = 42-52; odontostyle 15-16 µm; vulva longitudinal; LR offset by depression; GR double; tail length = 90-130 µm. Shore of Caspian Sea).
- Body length 1.4-1.5 mm; LRW = 8-9 µm; odontostyle/LRW = 2 ..... *L. africanus* (a = 29-33; c = 14-16; c' = 5.3-5.9; V = 44-48; odontostyle = 18-19 µm; LR offset by depression; GR double; vulva longitudinal; prerectum = 64-78 µm; tail = 90-107 µm. South Africa). (Appears intermediate between *Laimydorus* and *Mesodorylaimus*).

31. Odontostyle length 2 x LRW or more; c = 8-9 ..... *P. brevicaudatus* (L = 1.3 mm; a = 26-29; c' = 5.5-6.0; V = 48-53; odontostyle = 23-25 µm, slightly sinuate; LR = 11 µm wide, offset by depression, amalgamated,truncate; GR double; vulva transverse; prerectum length 32 µm = 0.9 ABW; tail length = 148-160 µm. Vietnam).
- Odontostyle length 1.0-1.4 LRW; c = 26-31 .32

32. Body length 1.1 - 1.3 mm ..... *P. brasiliensis* (a = 40-53; c = 27-31; c' = 2.7; V =41-48; LRW = 15 µm; odontostyle length 20 µm = 1.3-1.4 x LRW; lips separate, offset; GR double; shape of vulva unknown; length of prerectum 5 ABW; tail length about 40-50 m. Brazil).
- Body length over 1.6 mm 33

33. Body slender (a = over 40) ..... *L. reversus* (L = 2.1 mm; c = 28; c' = 2.6; V = 53; LRW = about 15 µm; odontostyle length = 20 µm = 1.3 LRW; vulva transverse; LR partly amalgamated, offset by depression; GR double; tail = 75 µm. USA).
- Body stout (a = 26-30) ..... *P. obesus* (L = 1.6-1.8 mm; c = 26-30; c' = 2; V =50-56; LRW = about 18 µm; odontostyle length = 23-25 µm = 1.3-1.4 x LRW; vulva transverse; LR partly amalgamated, offset by depression; GR double; tail length about 60 µm. India).

34. Body very slender (a = 60 or more) 35
- Body less slender (a = 55 or less) 41

35.- Tail length over 300 µm 36
- Tail length under 200 µm 38

36. LR offset by constricton; body length under 3.6 mm; tail length under 380 µm ..... *L. andrassyi* (L = 2.93-3.47 mm; a = 60-65; c = 8-11; c' = 12-15; V = 44-46; LRW = 15-17 µm; odontostyle = 26-29 µm = 1.5-2.0 x LRW; GR double; vulva transverse (?; Fig. 3E suggests that it is longitudinal); tail length = 312-367 µm. India).
- LR offset by depression; body length over 4.0 mm; tail length more than 400 µm 37

37. Odontostyle length 11-12 µm; prerectum over 700 µm long ..... *P. dalmassoi* (L = 4.0-4.7 mm; a = 73-81; c = 9-14; c' = 12-14; V = 38-41; length of prerectum 722-865 µm; GR single; LR rounded, slightly offset, partly amalgamated, 11-12 µm wide; vulva longitudinal; tail length = 404-504 µm. France. Recently also found in Netherlands). (See Remark 4).
- Odontostyle length 25 µm; prerectum under 300 µm long ..... *L. longicaudatus* (L = 4.35 mm; a = 82; c = 8; c' = 20; V = 40; prerectum = 227 µm; tail = 532 µm; GR double; LR truncate, slightly offset, 20 µm wide; vulva a pore. Spain).

38. Length of odontostyle 15-17 µm.... *L. flevensis* (L = 2.30-3.32 mm; a = 60-80; c = 16-21; c' = 5.9-7.8; V = 44-49; GR single; LR angular, offset by distinct depression, 11-13 µm wide; vulva longitudinal; tail length = 130-173 µm; advulvar papillae mostly present. Netherlands).
- Length of odontostyle over 21 µm 39

39. V = 32-40; odontostyle length 21-22 µm .... *L. luettichaui* (L = 3.0-3.5 mm; a = 67-86; c = 21-29; c' = 6-7; V = 32-40; LR amalgamated, continuous, 14-15 µm wide; odontostyle straight, 1.5 x LRW; GR double; vulva longitudinal (see Remark 5); uterus with distinct *pars musculosa*; prerectum = 250-300 µm; tail length = 120-140 m; cuticle very thin. Tanzania).
- V = 42-48; odontostyle length 24-27 µm 40

40. V = 47-48; prerectum length less than 180 µm; odontostyle very slender ..... *L. dhanachandi* (L = 2.8-3.0 mm; a = 65-74; c = 17-20; c' = 6.5-7.4; V = 47-48; LRW about 17-18 µm; odontostyle straight, very slender, 24-25 µm= 1.4 x LRW; vulva transverse; GR double; prerectum = 160-167 µm; tail length = 150-177µm; lip region truncate, amalgamated, continuous. India).
- V = 42-46; prerectum length over 320 µm; odontostyle normal ..... *L. oryzae* (See under No.20)

41. Tail length over 400 µm 42
- Tail length under 400 µm 60

42. Length of odontostyle under 28 µm 43
- Length of odontostyle over 29 µm 52

43. GR single; odontostyle length 21-28 µm 44
- GR double; odontostyle length 16-27 µm 48

44. c = < 4 45
- c = > 5 47

45. L = 1.7-2.0 mm ..... *P. goaensis* (a = 44-55; c = 3.1-3.8; c' = 18-26; V = 41-43; LR narrowed, amalgamated, about 11 µm wide; odontostyle sinuate, 25 µm long = 2.2-2.3 x LRW; vulva longitudinal; tail length = 434-630 µm; prerectum = 46-63 µm. India).
- L = 1.2-1.7 mm 46

46. LR almost continuous; odontostyle 21-24 µm long ..... *P. filiformis* (L = 1.4-1.6 mm; a = 35-52; c = 3.3-3.7; c' = 22; V = 40-43; odontostyle 1.9 LRW long; LR truncate, amalgamated; LRW = 12 µm; vulva transverse; tail length 420-430 µm;prerectum = 50-53 µm. India).
- LR offset by deep depression; odontostyle 24-26 µm long ..... *P. bini* (L = 1.2-1.7 mm; a = 37-42; c = 3.1-3.9; c' = 18-22; V = 38-43; LRW = 12 µm; odontostyle = 2.0-2.1 LRW long; vulva pore-like; tail length = 380-490 µm. India).

47. LR continuous-rounded, 14-15 µm wide; odontostyle length = 1.7 x LRW ..... *P. uliginosus* (L = 2.0-2.4 mm; a = 39-49; c = 5.2-7.9; c' = 11-12; V = 39-44; odontostyle slightly curved, 23-26 µm long; vulva transverse; tail length 312-430 µm. Europe).This species is also entered under "tail length under 400 µm"
- LR offset by depression, 10-11 µm wide; odontostyle length = 2.3-2.5 x LRW..... *L. indicus* (L = 2.2-2.6 mm; a = 35-48; c = 5-7; c'= 14-20; V = 44-45; vulva transverse (according to the description, but the illustration suggests that it may be longitudinal); odontostyle = 26-28 µm; tail length = 326-482 µm. India). (See Remark 6).

48. Tail length over 650 µm; c under 3.5 49
- Tail length under 600 µm; c over 4.0 50

49. Body length 2.1 mm; tail length 682 µm..... ..... *P. dolichurus* (a = 48; c = 3.1; c' = 27; V = 40; LRW= about 13 µm; odontostyle straight, 22 µm long = 1.7 x LRW; LR offset by depression; shape of vulva unknown; prerectum 70-75 µm. Sri Lanka).
- Body length 2.9 mm; tail length= 900 µm .... *P. longissimecaudatus* (a = 48; c = 3.3; c' = 38; V = 38; LRW = about 11 µm; odontostyle straight, 22 µm long = 2 x LRW; LR partly amalgamated, offset by depression; shape of vulva unknown. Brazil).

50. Vulva transverse ..... *P. acris* (L = 1.5-2.1 mm; a = 40-53; c = 4.2-5.5; c' = 14-20; V = 40-43; LRW = 9-11 µm; odontostyle straight, 16-18 µm long = 1.5-1.9 x LRW; LR amalgamated, offset by depression; prerectum = 42-75 µm; tail= 306-419 µm, therefore it is also entered under "tail length< 400 µm". Europe, USA);
- and *P. stenosoma*:
(L = 1.8-2.5 mm; a = 45-50; c = 4.3-6.0; c' unknown; V = 36-42; LRW = 11-13 µm; odontostyle = 20 µm; tail = 360-380 µm. Netherlands). (See Remark 7).
- Vulva longitudinal 51

51. LR continuous; odontostyle = 19-21 µm;

V = 35-42; tail base strongly asymmetrical..... ..... *P. rotundiceps* (L = 2.3-2.9 mm; a = 48-63; c = 4.5-6.5; c' = 15-23; odontostyle straight, 1.5 x LRW long; LR rounded, LRW = 13-14 µm; tail length= 407-561 µm. Europe).

- LR offset by depression; odontostyle = 25-27µm; V = 45-47; tail base symmetrical....*A. bizane* (L = 1.77-2.00 mm; a = 31-33; c = 4.5-5.1; c' = 13-14; LRW = 14-16 µm; odontostyle =1.7 x LRW; tail length = 376-417 µm. South Africa).

52. Vulva transverse..... 53
- Vulva longitudinal..... 54

53. LR offset by deep constriction, lips separate; odontostyle length = 40-44 µm.....*L. coroniceps* (L = 2.7-3.4 mm; a = 33-46; c =5.7-7.6; c' = 10-16; V = 44-47; LRW = 23-26 µm; odontostyle straight, 1.6-1.9 LRW long; tail = 388-563 µm; prerectum 92-189 µm; GR double. Brazil).

- LR offset by slight depression,lips not separate; odontostyle length = 34-36 µm..... *L. tenuistriatus* (L = 2.5-3.1 mm; a = 43-55; c =4.2-4.6; c' = 17-21; V = 42-45; LRW = 17-18 µm; odontostyle somewhat sinuate, 2 x LRW long; tail length = 572-688 µm; prerectum about 100 µm; GR double. Former French West Africa).

54. c = 14.....*P. nyongi* (L = 3.8 mm; a = about 40; c' = 7.5; V = 41; LRW = 18 µm; odontostyle straight, 34 µm long = 1.9 x LRW; tail length = 265 µm; prerectum = 222 µm; LR offset by constriction, lips partly amalgamated; GR double. Cameroon).(Note: a - probably small - part of the tail is missing).

- c = under 7 55

55. Odontostyle length = 41 - 46 µm .... *L. parafecundus* (L = 2.8-2.9 mm; a = 36-39; c = 4.6-5.3; c' = 13-15; V = 43-48; LRW = 21-23 µm; odontostyle straight, 2 LRW long; LR offset by shallow constriction; GR uncertain; prerectum = 85-110 µm; tail length = 523-637 µm. Zaire).

- Odontostyle length under 40 µm..... 56

56. LR offset by deep constriction .... *P. longicaudatoides* (L = 2.6-3.1 mm; a = 34-40; c = 4.4-6.2; c' = 17; V = 42-45; LRW = about 18 µm; odontostyle straight, 32-36 µm = 1.8-2.0 x LRW; GR double; tail length = 500-570 µm; cuticle very thick. Europe).

- LR continuous, or offset by depression..... 57

57. Body length 3.0-3.7 mm 58
- Body length under 3 mm.....59

58. GR double; c' = 13-18; V = 41-45; odontostyle = 29-32 m ..... *P. serpentinus* (L = 3.1-3.7 mm; a = 40-50; c = 5.1-6.1; LRW = 14-18 m; odontostyle straight,1.7-2.0 x LRW; LR continuous, amalgamated; prerectum = 106-162 µm; tail length 510-660 µm. USA. (See Remark 1)).

- GR single; c' = 20-27; V = 36-37; odontostyle = 32-35 µm.....*L. octo* (L = 3.0-3.6 mm; a = 40-45; c = 5.0-5.5; odontostyle length = 2.0-2.3 x LRW; LR 15-16 µm wide, offset by distinct depression; tail length = 600-630 µm. Ivory Coast).

59. Odontostyle 30-31 µm, 1.5 x LRW..... ..... *P. vixamictus* (L = 2.27-2.54 mm; a = 32-35; c = 5.4-5.5; c' = 13; V = 43; LRW = about 20 µm; odontostyle straight; GR double; LR offset by depression, partly amalgamated; prerectum 52 µm = 1.6-1.7 ABW; tail length = 420-460 µm. Hungary).

- Odontostyle 38-39 µm, about twice as long as LRW ..... *P. paralongicaudatus* (L = 1.83-2.58 mm; a = 29-44; c = 3.7-6.0; c' = 10-16; V = 40-48; odontostyle slightly sinuate; GR double; LR 19-21 µm wide, offset by depression; tail length = 371-605 µm. Tanzania).

60. Cuticle distinctly idiodorylaimid.....61
- Cuticle not idiodorylaimid.....62

61. Body length = 2.6 - 3.3 mm; odontostyle = 34-40 m .....*I. kreisi* (a = 35-41; c = 10-12; c' = 8.4-10.0; V = 41-45; LR offset by shallow depression, 19 µm wide; vulva longitudinal; tail length 290-300 µm. Surinam). (See Remark 8).

- Body length = 2.1-2.7 mm; odontostyle = 29-31 µm.....*I. homalopapillatus* (c = 10-12; c' = 6-8; V = 43-49; LRW =13 µm, shape of LR uncertain (illustration shows a medial view); vulva longitudinal; tail length = 206-220 µm. Paraguay). (See Remark 8).

62. Body length over 3.4 mm; GR double.....63
- Body length under 3.4 mm.....64

63. Odontostyle length = 32-38 µm; c = 10-15; c' = 8-12.....*L. pseudostagnalis* (L = 3.40-4.59 mm; a = 38-68; V = 36-45; LRW = 17-19 µm; tail = 285-432 µm. Europe, Malaysia).

- Odontostyle length 44-46 µm; c = 17-19; c' = 6-7..... *L. prolificus* (L = 4.6-5.1 mm; a = 32-37; V = 44-50; LRW =

17-19 µm; odontostyle straight, 44-46 µm = 2.4-2.6 x LRW; prerectum = 250-292 µm; tail length = 242-292 µm.USA). (See Remark 9).

64. LR continuous, rounded .....*P. uliginosus* (See under No. 47).
- LR truncate, not rounded; if rounded, then offset by depression 65

65. LR offset by constriction..... 66
- LR continuous or offset by depression..... 72

66. Body length = 2.8-3.3 mm 67
- Body length = 1.7-2.3 mm..... 68

67. L = 2.8-3.0 mm; V = 45-51; odontostyle = 30-31 µm; vulva transverse..... *L. densus* (a = 44-49; c = 12-15; c' = 6.5-8.2; LR 15-16 µm wide, offset by a deep depression; GR double; tail length= 194-246 µm. India).
- L = 3.2-3.3 mm; V = 42-43; odontostyle =38-40 µm; vulva longitudinal..... *L. coomansi* (a = 40-43; c = 13; c' = 9; LRW = about 19-20 µm; LR offset by shallow constriction; GR double; tail length = 241-242 µm. India).

68. Tail length 240 µm; body length 1.7 mm .... *L. dadayi* (a = 28; c = 7.1; c' = 8; V = 50; LR offset by constriction; odontostyle straight,length unknown; GR double; shape of vulva unknown. South America.
- Body length 1.9 - 2.3 mm; tail length less than 200 µm 69

69. Odontostyle length 26-33 µm..... 70
- Odontostyle length 19-22 µm..... 71

70. LR expanded, rounded.....*L. jankowskyi* (L = 2.1-2.9 mm; a = 42-53; c = 13-18; c' = 6-7; V = 42-50; LRW = 14-15 µm; odontostyle = 26-28 µm; shape of vulva and GR unknown; prerectum = 90-100 µm; tail length about 160-170 µm. Siberia).
- LR not expanded..... *L. uterinus* (See under No.24)

71. Vulva transverse; advulvar papillae present..... .....*L. parabastiani* (L = 2.0-2.3 mm; a = 34-37; c = 10-14; c' = 6.4; V = 44-49; LRW = about 15-17 µm; odontostyle straight, 19-21 µm = 1.25 LRW; LR offset by constriction; GR double; prerectum = 90-130 µm; tail length = 183 µm. Europe).
- Vulva longitudinal; advulvar papillae absent..... .....*L. cryptosperma* (L = 1.9-2.3 mm; a = 28-38; c = 10-12; c' = 6-7; V = 45-48; LR offset by constriction, about 16-17 µm wide; odontostyle straight, 20-22 µm = 1.3 x LRW; GR double; prerectum = 100 µm; tail length = 190 µm. USA).

72. Length of odontostyle 1.1-1.3 x LRW.....73
- Length of odontostyle 1.5 x LRW or more 75

73. GR single; odontostyle length = 14 -15 µm; LRW = 11-12 µm .....*P. brigdammensis* (L = 1.5-1.7 mm; a = 40-48; b = 4.7-5.0; V = 41-42; odontostyle straight; LRW = 11-12 µm; LR offset by depression; tail = 230-270 µm. Europe). (See Remark 10).
- GR double; odontostyle length = 20-25 µm; LRW = 18-20 µm.....74

74. L = 2.4 mm; V = 46; c' = 6.8 ..... *L. proximus* (a = 39; c = 7.7; LR offset by depression, about 19-20 µm wide; odontostyle straight, about 24 µm long; shape of vulva unknown; tail = 312 µm.USA). (See Remark 11).
- L = 1.8 mm; V = 41; c' = 13.6 .....*L. sylphus* (a = 36; c = 5.5; LR offset by depression, about 16 µm wide; odontostyle straight, about 20 µm long; vulva longitudinal; tail length = 330 µm. USA).

75. Odontostyle length over 25 µm 76
- Odontostyle length 25 µm or less 86

76. Odontostyle length 38-44 µm..... *P. ranzii* (L = 2.2-2.4 mm; vulva circular; V = 49-51; odontostyle slightly sinuate; a = 30-36; c = 8-11; c' = 6-9; V = 49-51; odontostyle slightly sinuate, 2.4 x LRW; GR double; tail = 220-280 µm; LR offset by depression, about 16-19 µm wide; lips partly amalgamated. Mexico).
- Odontostyle length 25-34 µm 77

77. c = 9-16.....78
- c = 4-9.....82

78. Body length 1.3-1.6 mm; GR single 79
- Body length 1.9-2.6 mm; GR double.....80

79. LR continuous, truncate; vulva transverse ....*P. maqsoodi* (L = 1.4-1.6 mm; a = 37-43; b = 3.3-3.6; c = 10-12; c' = 6-7; V = 52-56; LRW = about 17-18 µm; odontostyle sinuate, 33-35 µm or 2 LRW; prerectum = 75-90 µm; tail = 142-150 µm. India).
- LR offset by depression; vulva longitudinal..... .....*L. minimus* (L = 1.3-1.5 mm; a = 34-36; c = 8.7-9.6; c' =

6.1-7.5; V = 49-52; LRW = 14-15 µm; odontostyle = 33-38 µm = 2.3-2.7 LRW; vulva longitudinal; tail length = 143-180 µm. India).

80. Vulva longitudinal ..... *L. gazella* (L = 2.4-2.6 mm; a = 38-41; c = 14-15; c' = 6-7; V = 48-49; odontostyle = 28-29 µm or 1.8-1.9 LRW, straight; vulva longitudinal (?); tail about 170 µm long; LR about 15-16 µm wide, round-truncate, offset by deep depression, lips amalgamated; prerectum = 165-214 µm. South Africa).
- Vulva transverse 81

81. V = 41-43; body length = 1.9 - 2.2 mm; b = 4.0-4.3 ..... *L. stenopygus* (a = 33-38; c = 11-12; c' = 7-9; LRW = about 16 µm; odontostyle straight, 25-29 µm or 1.6-1.8 x LRW; LR offset by depression; GR double; prerectum about 100 µm; tail = 176 µm; vulva probably transverse; lip region offset by depression. Zaire).
- V = 43-47; body length = 2.4-2.6 mm; b = 5.3-5.9 ..... *L. multialaeus* (a = 35-38; c = 10-12; c' = 7-10; LR = 15-16 µm wide, rounded, offset by shallow depression; odontostyle straight, 25-28 µm = 1.6-1.9 x LRW; GR double; tail = 200-256 µm. India).

82. LR continuous-truncate 83
- LR offset by depression 84

83. c' = 16; GR single ..... *P. szekessyi* (L = 1.6 mm; a = 33; b = 3.8; c = 4; V = 47; LRW = 12 µm; odontostyle = 28 µm or 2.3 LRW; vulva ?; LR truncate, continuous; prerectum = 41 µm; tail = 388 µm. China).
- c' = 7-10; GR double ..... *L. beaumonti* (Switzerland); *P. brzeskii* (Poland); *P. renwicki* (USA, Switzerland). (See Remark 12).

84. LRW = 10-11 µm; GR single ..... *L. indicus* (See under No. 47; See Remark 6).
- LRW = 14-16 µm; GR double 85

85. L = 2.7-2.9 mm; a = 40-49; c = 8. *L. siddiqii* (a = 40-49; b = 4.0-4.6; c' = 12-13; V = 45-48; LR about 15 µm wide, offset by depression; odontostyle 29-31 µm or 2 LRW long, straight; tail = 320 µm; prerectum = 177-208 µm. India).
- L = 1.8-2.0 mm; a = 31-33; c = 4.5-5.1 ..... *A. bizane* (See under No. 51).

86. Tail constricted dorsally and ventrally ..... *L. constrictus* (L = 1.95-2.54 mm; a = 38-51; c = 5.7-8.8; c' = 7-12; V = 44-52; odontostyle = 20-24 µm = 1.5-1.8 LRW; LR narrow, truncate, offset by depression, 12-14 µm wide; GR double; vulva longitudinal; prerectum = 60-120 µm; tail = 272-405 µm. Europe).
- Tail not constricted dorsally and ventrally 87

87. c' = 10-16, odontostyle 18-25 µm 88
- c' = 6-9 94

88. L = under 1.3 mm 89
- L = over 1.6 mm 90

89. GR double ..... *P. arganoi* (L = 1.1-1.3 mm; a = 37-47; c = 4.7-5.8; c' = 11-16; V = 46-50; odontostyle = 21-22 µm or 2.1-2.5 LRW, sinuate; vulva longitudinal; LR continuous, truncate, amalgamated, about 9-10 µm wide; tail = 220-240 µm. Mexico).
- GR single ..... *A. geniculatus* (L = 1.14-1.22 mm; a = 25-36; c = 5.4-6.5; c' = 10-12; LRW = 10 µm; LR offset by depression; odontostyle = 20-22 µm = 2.0-2.3 x LRW; vulva transverse (?); prerectum about 25-30 µm; tail length = 190-210 µm. Tanzania).

90. Odontostyle length 18-20 µm 91
- Odontostyle length 22-25 µm 93

91. V = 40-43; vulva transverse; uteri without sperm ..... *P. acris* (See No. 50)
- V = 42-48; vulva longitudinal; uteri filled with sperm 92

92. LR about 11 µm wide; odontostyle length = 1.6-1.8 x LRW ..... *P filiarum* (L = 1.8-2.3 mm; a = 41-52; b = 5.4-6.5; c = 5.5-7.9; c' = 10-16; V = 42-48; odontostyle straight, 18-20 µm; LR truncate, amalgamated, offset by depression; GR double; tail = 260-388 µm; prerectum = 52-112 µm. Europe).
- LR very narrow (8 µm); odontostyle length = 2.4-2.6 x LRW ..... *L. gravidus* (L = 1.62-1.65 mm; a = 27-29; c = 9-11; c' = 9-10; V = 44-47; LR rounded, offset by slight depression; odontostyle = 19 µm; GR single; prerectum about 60 µm; tail length = 160-168 µm. Ethiopia).

93. Vulva longitudinal; prerectum = 109-180 µm; tail length = 357-406 µm ..... *L. simplex* (L = 2.37-2.74 mm; a = 41-51; c = 6.1-6.8; c' = 13-19; V = 41-45; LR 12-14 µm wide, offset by depression; odontostyle 23-27 µm or 1.9-2.1 LRW; GR double. South Africa).(See Remark 6).
- Vulva transverse; prerectum = 89-105 µm; tail

Codes used in the polytomous identification key for species in the genera *Laimydorus* and *Prodorylaimus*

A: Length of odontostyle:
1: 11-14 µm; 2: 15-18 µm; 3: 19-21 µm; 4: 22-24 µm; 5: 25-27 µm; 6: 28-30 µm; 7: 31-33 µm; 8: 34-36 µm; 9: 37-40 µm;10: 41-44 µm; 11: 45-48 µm; 12: 49 µm or more.

B: Ratio odontostyle length to width of lip region:
1: 1.2 or less; 2: 1.3-1.5; 3: 1.6-1.8; 4: 1.9-2.1;5: 2.2 or more.

C: Width of lip region:
1: 9-11 µm; 2: 12-14 µm; 3: 15-18 µm; 4: 19-21 µm; 5: 22-24 µm; 6: 25-28 µm; 7: 29-33 µm.

D: Shape of lip region (See Fig. 1):
1:continuous-truncate (Fig. 1A); 2: continuous-rounded (Fig. 1B); 3: offset by depression (Fig. 1C); 4: offset by constriction (Fig. 1D); 5: expanded, rounded (Fig. 1E).

E: Shape of terminus (See Fig.2):
1: hamate (Fig. 2A); 2: not hamate (Fig. 2BC).

F: Vulva shape:
1: longitudinal; 2: circular; 3: transverse.

G: Guiding ring when odontostyle is retracted:
1: single; 2: double.

H: Body length:
1: 1.1-1.3 mm; 2: 1.4-1.6 mm; 3: 1.7-2.0 mm; 4: 2.1-2.4 mm; 5: 2.5-2.8 mm; 6: 2.9-3.2 mm; 7: 3.3-3.6 mm; 8: 3.7-4.0 mm; 9: 4.1-4.4 mm; 10: 4.5-4.8 mm; 11: 4.9 mm and more.

I: Vulva position:
1: 32-34; 2: 35-37; 3: 38-40; 4: 41-43; 5: 44-46; 6: 47-49; 7: 50-52; 8: 53 and more.

J: Index "c":
1: 3.0 or less; 2: 3.1-3.5; 3: 3.6-4.0; 4: 4.1-4.5; 5: 4.5-5.0; 6: 5.1-7.0; 7: 7.1-9.0; 8: 9.1-11.0; 9: 11.1-13.0; 10: 13.1-16.0; 11: 16.1-20.0; 12: over 20.0

K: Index "c' ":
Same divisions as J.

L: Tail length:
1: under 50 µm; 2: 51-80 µm; 3: 81-100 µm; 4: 101-140 µm; 5: 141-180 µm; 6: 181-220 µm; 7: 221-260 µm; 8: 261-300 µm; 9: 301-350 µm; 10: 351-400 µm; 11: 401-450 µm; 12: 451-500 µm; 13: 501-600 µm; 14: over 600 µm.

M: Occurrence of males:
1: Males unknown or very rare, female genital tracts mostly without sperm; 2: Males common, female genital tracts usually with sperm.

N: Structure of cuticle (See Fig. 2):
1: normal, *i.e.* not idiodorylaimid (Fig. 2D); 2: idiodorylaimid, *i.e.* with strong transverse striation (Fig. 2E).

Table 2. Polytomous identification key for species in the genera *Laimydorus* and *Prodorylaimus*.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
L. merogaster	12	5	6	4	2	3	2	9-11	3	9	6	9-10	2	1
I. washingtonensis	12	5	5-6	2	2	1	2	11	3	11	5	9	1	2
L. parhomalopapillatus	12	5	5	4	2	1	2	11	3	9	5	9	2	1
A. bwana	12	5	5	3	1-2	1	1	10-11	6-7	9	7-8	10	2	1
L. distinctus	12	5	4	4	2	1	1	11	6	12	6	7	2	1
I. robustus	12	4	6	4	1	1	2	11	4	11	6-7	8	2	2
P. magnus	12	3	4-5	3	2	1	2	10	6-7	11	2-3	7	2	1
P. finalis	11	5	3	3	2	1	2	8	6	11	?	9	1	1
L. prolificus	10-11	5	3	3	2	1	2	10-11	5-7	11	6	7-8	2	1
L. parafecundus	10-11	4	4-5	4	2	1	2	5-6	4-6	5-6	10	13-14	2	1
P. ranzii	9-10	5	3	3	2	1	2	4	6-7	7-8	6-7	7-8	2	1
L. coroniceps	9-10	3-4	5-6	4	2	3	2	5-7	5-6	6-7	7-10	9-13	2	1
L. coomansi	9	4	4	3-4	2	1	2	6	4	9	7	7	2	1
P. paralongicaudatus	9	4	4	3	2	1	2	3-5	3-6	3-6	8-10	10-14	2	1
I. kreisi	9	4	4	3	2	1	2	6	4-5	8-9	7-8	8	2	2
A. mediterraneus	9	3	4	4	2	1	2	7-8	6-7	10-11	2-5	6	2	1
P. andrassyi	8	5	2	1	1	2	2	3-4	6-7	7	7	7	2	1
P. dahli	8	4	3	3	1	1	2	7	3	7	6	11	2	1
L. tenuistriatus	8	4	3	3	2	3	2	5-6	4-5	4-5	11-12	13-14	2	1
P. nyongi	8	4	3	4	2	1	2	8	4	10	7	8	2	1
L. minimus	7-9	5	2-3	3	2	1	1	1-2	6-7	8	6-7	5	1	1
L. pseudostagnalis[1]	7-9	4	3-4	3	2	1	2	8-10	2-5	8-10	7-9	8-11	2	1
L. octo	7-8	4-5	3	3-4	2	1	1	6-7	2	6	12	14	2	1
P. maqsoodi	7-8	4	3	1	2	3	1	2	7-8	8-9	6	5	1	1
L. vacillans	7-8	4	3	3	2	1	2	3-4	7-8	9-10	4-6	4-5	2	1
P. longicaudatoides	7-8	3-4	3	4	2	1	2	5-6	4-5	4-6	11	13	2	1
P. rionensis	7-8	2	6	3	2	1	2	5-7	5-6	12	1-3	4	2	1
L. kherai	7	3	3	2	2	3	2	6	5	9	5	7	2	1
L. siddiqii	6-7	4	3	4	2	1	2	5-6	5-6	7	9	9	2	1
L. densus	6-7	4	3	4	2	3	2	5-6	5-7	9-10	6-7	6-7	2	1
P. serpentinus	6-7	3-4	3	1/3	2	1	2	6-8	4-5	6	9-11	13-14	2	1
P. ensis	6-7	3	3	3	1	1	2	5-6	3	1-3	12	14	2	1
P. vixamictus	6-7	2	4	3	2	1	2	4-5	4	6	9	11-12	2	1
P. szekessyi	6	5	2	1	2		1	2	6	3	10	10	1	1

Table 2 (continued). Polytomous identification key for species in the genera *Laimydorus* and *Prodorylaimus*.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
P. renwicki	6	5	2	1	2	1	2	3	7	6	8	9	1	1
P. cashmerensis	6	4	3	1	2	1	2	5	8	8	6	6	1	1
L. gazella	6	3-4	3	3	2	?	2	4-5	6	10	6	5	2	1
L. beaumonti	6	3-4	3	1	2	?	2	3-4	6-7	6	7	8-9	2	1
P. flexus	5-7	4-5	2	1	1	1	2	3-5	7-8	6-7	7-9	7-10	1	1
P. brzeskii	5-6	5	2	1	2	1	2	2	6-8	6-7	6-7	6-7	1	1
L. indicus	5-6	5	1	3	2	1	1	4-5	5	6	10-11	9-12	2	1
L. jankowskyi	5-6	4	2-3	5	2	?	2	4-6	4-7	9-11	6	4-5	2	1
L. uterinus	5-6	4	2	4	2	1	2	3-5	4-6	9-11	6-7	4-7	2	1
L. andrassyi	5-6	3-4	3	4	2	3	2	6-7	5	7-8	9-10	9-10	2	1
L. stenopygus[2]	5-6	3	3	3	2	3	2	3-4	4	9	7	5-6	2	1
L. multialaeus[2]	5-6	3	3	3	2	3	2	5	4-6	8-9	7-8	6-7	2	1
P. goaensis	5	5	1	3	2	1	1	3	4	2-3	11-12	11-14	2	1
L. oryzae	5	3	3	4	2	1	2	8-9	4-5	11-12	6-7	5-7	2	1
A. bizane	5	3	2-3	3	2	1	2	3	5-6	5	10	10-11	2	1
L. proximus	5	1	4	3	2	?	2	4	5	7	6	9	2	1
L. longicaudatus	5	1-2	4	3	2	2	2	9	3	7	11-12	13	2	1
P. brevicaudatus	4-5	4-5	1-2	3	2	3	2	1	6-8	7	6	5	1	1
P. bini	4-5	4-5	2	3	2	2	1	1-3	3-4	2-3	11-12	10-12	2	1
P. mas	4-5	4	2	3	2	3	2	3-4	4-6	6-7	9-10	8-10	2	1
L. simplex	4-5	4	2	3	2	1	2	4-5	4-5	6	10-11	10-11	2	1
I. homalopapillatus	4-5	4	2	?	2	1	?	4-5	5-6	8-9	6-7	6	2	2
L. baldus	4-5	3-4	2	3	2	3	1	4	4-6	9	7	6	2	1
P. uliginosus	4-5	3	2-3	2	2	3	1	3-4	3-5	6-7	9	9-11	1	1
P. obesus	4-5	2	3	3	2	3	2	2-3	7-8	12	1	2	2	1
L. dhanachandi	4-5	2	3	1	2	3/2	2	5-6	6	11	6-7	5	2	1
P. thornei	4	4	2	1	1	1	2	3	5	4	10	10	1	1
P. picardi	4	4	1-2	3	1	1	2	2	4	4	10	9	1	1
P. longissimecaudatus	4	4	1	3	2	?	2	6	3	2	12	14	1	1
L. massachussetsensis	4	3	3	3	2	3	2	3	3		6	7	2	1
P. dolichurus	4	3	2	3	2	3	2	4	3	2	12	14	1	1
P. brasiliensis	4	2	3	4	2	?	2	1	4-6	12	1	1	2	1
A. geniculatus	3-4	4-5	1	3	2	3?	1	1	6	6	8-9	6	2	1
P. arganoi	3-4	4-5	1	1	2	1	2	1	5-7	5-6	9-10	7	1	1

Table 2 (continued). Polytomous identification key for species in the genera *Laimydorus* and *Prodorylaimus*.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
P. hamatus	3-4	4-5	1	1	1	3	2	2-3	5-6	7	7-8	6	1	1
P. filiformis	3-4	4	1-2	1	2	3	1	2	3-4	2-3	12	11	1	1
L. insignis	3-4	4	1-2	1	2	1	2	2-3	5-6	10	6	4	2	1
L. constrictus	3-4	2-3	2	3	2	1	2	4-5	5-7	6-7	7-9	8-10	2	1
L. cryptosperma	3-4	2	3	4	2	1	2	3-4	5-6	8-9	6	6	2	1
L. luettichaui	3-4	2	2-3	2	2	1	2	6-7	1-3	12	6	4	2	1
L. bongersi	3-4	2	2-3	1-2	2	1	1	6-8	5-7	12	2-5	3-4	2	1
L. gravidus	3	5	1	3	2	3	1	2	5-6	8	8	5	2	1
L. conurus	3	3	1	1	2	?	2	2	6	7	7	5	2	1
P. stenosoma	3	3	1-2	3	2	3	2	4-5	2-4	4-6	?	10-12	2	1
L. reversus	3	2	3	3	2	3	2	4	8	12	1	2	2	1
P. rotundiceps	3	2	2	2	2	1	2	4-6	2-4	4-6	10-12	11-13	2	1
L. parabastiani	3	1-2	3	4	2	3	2	3-4	5-6	8-10	6	6	2	1
L. sylphus[3]	3	1-2	3	3	2	1	2	3	4	6	9	9-10	2	1
P. filiarum[3]	2-3	3	1	3	2	1	2	3-4	4-6	6-7	7-10	8-10	2	1
P. depressus	2	4	1	1	2	1	1	1-4	4-6	8-10	6-7	4	1	1
P. acris	2	3	1	3	2	3	2	2-4	3-4	4-6	10-11	9-11	1	1
L. lordelloi	2	1-2	2	2	2	3	2	6	5-6	12	5-6	4	2	1
L. flevensis	2	2	1-2	3-4	2	1	1	5-7	5-6	10-11	6-7	4-5	2	1
L. micramphis	2	1-2	1-2	3	2	1	2	3	4-8	10-12	4-6	3-4	2	1
L. africanus	2	1-2	1	3	2	1	2	2	5-6	10	6	3-4	2	1
P. paraagilis	2	1	2	1	2	?	1	4	7	9	6	6	1	1
P.brigdammensis	1-2	2	1-2	3	2	3	1	2-3	3-4	6	8-9	8-9	2	1
P. dalmassoi	1	1	1-2	3	2	1	1	8-10	3-4	8-10	9-10	11-12	2	1
L. crassoides	?	5	?	3	1	?	2	5-8	?	12	6	5-6	2	1
L. dadayi	?	?	?	4	2	?	2	3	7	7	?	7	2	1

[1]- For completeness the codes are given here for *L. pseudostagnalis* apud Andrássy (1964b), Ahmad & Jairajpuri (1982) and Meyl (1957):
Andrássy: A-9-10; B-4; C-4; D-3; E-2; F-1; G-2; H-6-8; I-5-6;J-8-9;K-7-8; L-9; M-2; N-1.
A. & J.: A-5; E-2;H-4-5;I-5-6; J-8; K-8; L-8; M-2; N-1.
Meyl: A-7; B-4; C-3; D-3; E-2; G-2; H-6; I-4; J-11; L-5; N-2.

[2] - *L. stenopygus* and *L. multialaeus*. The codes are clearly different only in H (L=1.9-2.2 mm in *L. stenopygus*. 2.4-2.6 mm in *L. multialaeus*). The species might be differentiated by index b: *L. stenopygus* 4.0-4.3, *L. multialaeus* 5.3-5.9; and by shape of the tail base: dorsally depressed in *L. stenopygus*, not so in *L. multialaeus*.

[3] - *L. sylphus* and *P. filiarum*. The only clear difference is in the code B: odontostyle/LRW=1.1-1.2 in *L. sylphus*, 1.6-1.8 in *P. filiarum*. Furthermore, C is different: LRW=about 16 µm in *L. sylphus*, about 11 µm in *P. filiarum*, but this based on the assuption that the magnification of Thorne's (1939) Fig.13 is 1000 fold. The magnification of his Fig.13a was given as 500 fold; tail length is 80 mm which indicates a real tail length of 160 µm. The formula (L=1.8 mm, c=5.5) shows that tail length is 327 µm, so the magnification is rather about 245 fold.

length = 292-366 µm..... *P. mas* (L = 1.9-2.4 mm; a = 42-51; b = 5.4-5.8; c = 5.8-7.7; c' = 12-15; V = 43-48; LRW = 11-12 µm; odontostyle 22-25 µm or 2 LRW long, slightly sinuate; GR double; LR offset by depression, truncate, amalgamated. Europe).

94. Odontostyle length 23-27 µm..... 95
- Odontostyle length under 22 µm..... 96

95. Body stout (a = 28); V = 39; c = 8.8; GR double..... *L. massachussetsensis* (L = 2 mm; b = 5.2; c' = 6.5; odontostyle = 24 µm (?) = 1.6 LRW; LR offset by depression, about 15 µm wide; vulva transverse; tail = 230 µm. USA).
- Body more slender (a = 34-36); V = 43-48; GR single ..... *L. baldus* (L = 2.1-2.4 mm; c = 11-12; c' = 7-8; V = 43-48; odontostyle straight, 24-25 µm or 1.8-2.0 x LRW; vulva transverse; LR offset by depression, truncate, amalgamated; tail = 190-224 µm. India).

96. GR single ..... *P. depressus* (L = 1.2-2.2 mm; a = 40-57; c = 10-16; c' = 6-8; V = 43-48; LR continuous-truncate, 8-9 µm wide; odontostyle sinuate, 17-18 µm or 2 LRW; tail = 104-140 µm. Surinam).
- GR double..... 97

97. Odontostyle straight; c = 9 ..... *L. conurus* (L = 1.6 mm; a = 35; b = 4.3; c' = 9; V = 48; odontostyle 19 µm or 1.8 LRW; LR offset by depression, truncate, about 11 µm wide; lips partially free; vulva ?; tail = 174 µm; prerectum = 76 µm. USA). (The specimens with an odontostyle length of 26 µm, reported by Meyl (1957) probably do not belong to this species).
- Odontostyle sinuate; c = 13-16..... *L. insignis* (L = 1.5-1.8 mm; a = 30-33; b = 4.5-5.0; c' = 6; V = 44-47; odontostyle = 21-22 µm = 1.9 LRW; LR 11-12 µm wide, truncate, hardly offset; vulva longitudinal (?); tail = 110-114 µm; prerectum = 54 µm. Former USSR).

REMARKS

1. (No. 9, 58). From examination of syntypes.
2. (No. 14). For measurements see Loof (1996b).
3. (No. 22). As the magnification of the drawing of the head end is 800 and not 1000 fold (the 45 µm long odontostyle measures 36 mm in the drawing), magnification of the tail illustration would be 400 and not 500 fold, which results in ABW being about 40 µm. This fits well to maximum body width 3800: 42 = 90 µm. As tail length is 3800: 17 = 224 µm, c' = 5.6.
4. (No. 37). Because of the excessively long prerectum and length of odontostyle this species probably does not belong in *Oxydiroides*.
5. (No. 39). Meyl (1957) stated that the vulva is transverse. However, Coomans (1965) reported it as being longitudinal in topotypes, and also noted that the uteri possess a distinct *pars musculosa*.
6. (No. 47, 84, 93). Andrássy (1988) synonymized *L. indicus* and *L. simplex*. However, the guiding ring is single in the former, double in the latter; LRW is 10-11 µm *vs* 12-14 µm; odst./LRW = 2.5-2.6 *vs* 2 (the original description of *indicus* gives 2.2-2.5 but this is not correct, LRW being 10-11 µm and odontostyle length 26-28 µm). The original descriptions of both species state that the vulva is transverse; however, the illustrations suggest that it is rather longitudinal.

The original description of *L. olifanti* Botha & Heyns, 1991 is identical to that of *L. simplex*, even in the number and arrangement of supplements. Therefore, *L. olifanti* is considered here as being a junior synonym of *L. simplex*.

7. (No. 50). It appears that females of *P. stenosoma* can hardly be distinguished from those of *P. acris*, which was found to be very common at the type locality of *P. stenosoma* and *P. brigdammensis*. De Man (1876) stated that *P. stenosoma* had numerous males, so that the uteri were probably filled with sperm. In the present study only one male of *P. stenosoma* was found (not at the type locality), although de Man stated that this species was very common.
8. (No. 61). Both these species were described from specimens with protruded odontostyles, therefore the structure of GR is unknown.
9. (No. 63). From examination of types, see Loof (1996b).
10. (No. 73). Data from de Man (1876) and from a population found in Switzerland. Despite extensive sampling at the type locality *P. brigdammensis* was not found.
11. (No. 74). According to the formula LRW = 0.8% of 2.4 mm = 19 µm. Fig. 50 shows LRW = 21 µm, therefore the magnification is 1100 and not 1000 fold, consequently the odontostyle length is 24 µm.
12. (No. 83). These three species cannot be differentiated. Each has a continuous-truncate lip region, V = 48-53, odontostyle 27-30 µm = 2 x LRW or slightly more. The dimensions are shown in Table 1. Only *L. beaumonti* might be recognizable by its having a longer rectum, prerectum and odontophore. Males are known only in *L. beaumonti*; the tail shape appears different from that of the other species of *Afrodorylaimus*. The latter genus is known from

Table 1. Comparative measurements of *L. beaumonti, P. renwicki* and *P. brzeskii.*

	L. beaumonti	*P. renwicki* (original description)	*P. renwicki* (apud Loof, 1985)	*P. brzeskii*
n	96	3	3	11
L mm	1.78 - 2.10	1.88	1.60 - 1.64	1.4 - 1.6
a	30 - 38	51	35 - 37	32 - 36
b	3.7 - 4.1	4.1	4.2 - 4.3	3.4 - 4.3
c	5.5 - 6.7	6.1	7.7 - 8.1	5.8 - 7.8
c'	8.4	10	7.5 - 7.8	7 - 10
Tail µm	273 (ill) 310-320 (text)	310	197 - 213	206 - 250
V	49 - 51	51	50 - 53	48 - 53
LRW µm	c.15	c.15	13 - 14	12 - 14
Odst. µm	30	30 (lapsus 0.3 mm)	27 - 29	27 - 30
Odph. µm	34	?	25 - 27	25 - 27
ABW µm	32	30	26 - 27	28
Rectum µm	65	39	39 - 41	32 - 44
PR µm	130	<39	51 - 56	45 - 80

Africa and Italy, whereas *L. beaumonti* occurs in Switzerland. Therefore, *Dorylaimus beaumonti* is here referred to the genus *Laimydorus.*

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Резюме. Предлагаются дихотомические и политомические ключи для определения по самкам видов родов *Prodorylaimus* и *Laimydorus.* Оказалось необходимым дать объединенные ключи для этих двух родов, поскольку у относящихся к ним самок нет морфологических признаков, позволяющих быстро определить родовую принадлежность. Роды *Prodorylaimium* Andrassy, 1969 и *Apodorylaimus* Andrassy, 1988 признаются синонимами *Prodorylaimus,* а род *Calodorylaimus* Andrassy, 1969 сводится в синоним *Laimydorus.* Так как род *Idiodorylaimus* Andrassy, 1969 весьма сходен с *Laimydorus,* и дифференцирующий признак (поперечная кутикулярная исчерченность) иногда плохо выявляется, виды *Idiodorylaimus* также включены в определительный ключ за исключением одного вида с хорошо выраженными продольными кутикулярными ребрами. Включены и самки рода *Aphrodorylamus* Andrassy, 1964, поскольку их морфология неотличима от таковой самок родов *Laimydorus* и *Prodorylaimus.*