A taxonomic review of the genera *Aporcelaimus* Thorne & Swanger, 1936 and *Metaporcelaimus* Lordello, 1965 (Nematoda, Aporcelaimidae)

By

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Abstract. Two genera of the family Aporcelaimidae are briefly discussed, their species enumerated and outlined by main morphological-morphometrical characters. *Aporcelaimus* Thorne & Swanger, 1936 contains large to very large nematodes, 4 to 10 mm. Out of the 50 nominal species, eighteen are regarded as valid. *Metaporcelaimus* Lordello, 1965 consists of smaller species, 2 to 4 mm. Thirteen species are listed. *Aporcelaimium* Loof & Coomans, 1970 is considered a junior synonym of *Metaporcelaimus*.

Several new synonyms, combinations (comb. n.) and new names (nom. n.) are proposed. Identification keys to species of both genera are added. Both *Aporcelaimus* and *Metaporcelaimus* are demonstrated by some figures.

In a previous paper dealing with some *Aporcelaimus* species (Andrássy, 2000 a, page 153), I wrote: „Within the scope of the present paper there is no way of going over all the nominal or »good« species of *Aporcelaimus,* later on, however, I want to come back to some taxonomic problems within the genus". Well, I take now the opportunity and make an attempt to come closer to this group in order to solve one or other problems in their taxonomy.

In their fundamental works, first Thorne and Swanger (1936), then Thorne (1939, 1974), T. and J. B. Goodey (1951, 1963), Heyns (1965) and Jairajpuri and Ahmad (1992) outlined *Aporcelaimus* and grouped its species. Several other authors published additional morphological-taxonomical data to the knowledge of the genus. Of them, Altherr, Meyl and Loof shall be mentioned by name. Myself also have endeavoured to add new observations to the topic.

However, who once dealt with this group of nematodes, knows it from experience that an orientation within the „mass" of species needs a very hard work. The reason is complex. The great quantity of nominal species (half a hundred) and the often so insufficient or not clear descriptions of, particularly older, taxa, on the one hand, the rather inexact definition of the genus *Aporce-*

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laimus itself, or the uncertain distinguishing marks between it and related genera, on the other hand, all these increase the difficulties.

This paper does not want to present a complete classification of the Aporcelaimidae nor *Aporcelaimus* proper. I am only trying to give a little clearer picture of these nematodes. The emphasis falls on the more exact outlining of the genus *Aporcelaimus* and a closely relative, *Metaporcelaimus,* as well as on the characterization of their species, in order to give some assistance in orientation among them.

Aporcelaimus Thorne & Swanger, 1936

Aporcelaimidae. Large to exceedingly large nematodes, body size varying between (3–) 4 and 10 mm. Body strongly tapering towards the anterior end, head as wide as 1/4 or 1/5 of body width at neck base. Cuticle thick, marked with fine criss-cross lines especially visible on tail. Labial region offset by a deep constriction, lips large, practically not separated from one another. Amphids stirrup-shaped with fine medial support. Oral opening a dorso-ventral slit. Odontostyle 17 to 42 µm, nearly equal to labial width or little longer, aperture large, either measuring 2/3 to 3/4 of the stylet length or occupying uits total dorsal side. Guiding sheath thin. Oesophagus strongly muscular, gradually widening from before its middle. Oesophageal nucleus AS_1 closer to AS_2 than to D. Female genital system amphidelphic, vulva transverse, predominantly with cuticularized lips, vagina often very strongly developed. Spicula of two types: either slender, dorylaimoid, or strongly swollen, with spacious lumen. Male supplements varying in number from 7 to 30, mostly spaced, rarely contiguous, the posterior ones sometimes lying within range of spicula. Tails similar in both sexes, predominantly shorter than anal body diameter, conoid-rounded or bluntly rounded, occasionally with slightly subdigitate terminus. Males generally as common as females.

Type species: *Dorylaimus superbus* de Man, 1880 = *Aporcelaimus superbus* (de Man, 1880) Goodey, 1951.

The genus contains eighteen species considered valid:

A. americanus Thorne & Swanger, 1936

A. bestiarius Isatullaeva, 1967
A. jugeti Altherr, 1974 syn. n.

A. boreus Andrássy, 2000

A. brzeskii Andrássy, 2000

A. caesar Andrássy, 2000

A. cobbi Thorne, 1937

A. digiticaudatus nom. n.

Aporcelaimus superbus apud T. Goodey, 1951
Aporcelaimus superbus apud Bongers, 1988 syn. n.

A. **eurydoris** (Ditlevsen 1911) Thorne & Swanger, 1936
Dorylaimus eurydoris Ditlevsen, 1911
A. wilhelmschneideri Altherr, 1965 syn. n.
Aporcelaimellus wilhelmschneideri (Altherr, 1965) Altherr, 1974
Aporcelaimus amphidysis Anderson, 1966 syn. n.
Aporcelaimus elegans Thorne, 1974 syn. n.

A. **femineus** Andrássy, 2000

A. **fortis** Gagarin, 1992

A. **ingens** nom. n.
Aporcelaimus eurydoris apud Thorne & Swanger, 1936

A. **macrohystera** Altherr, 1974
Dorylaimus regius apud Steiner, 1925 syn. n.
Aporcelaimus regius apud Thorne & Swanger, 1936 syn. n.

A. **pachydermus** Thorne, 1937
A. ronnebergeri Altherr, 1968 syn. n.

A. **paraspiralis** Thorne & Swanger, 1936
Dorylaimus spiralis apud Micoletzky, 1922

A. **pseudospiralis** Botha & Heyns, 1990
Aporcelaimus spiralis apud Thorne & Swanger, 1936 (nec Cobb, 1893) syn. n.

A. **sicus** Gagarin, 1992

A. **subdigiticaudatus** Altherr, 1965

A. **superbus** (de Man, 1880) Goodey, 1951
Dorylaimus superbus de Man, 1880
Aporcelaimus minor Altherr, 1954 (nec Loos, 1945)
Aporcelaimus parvus Altherr in Lordello, 1955

Remarks. Thorne and Swanger (1936) originally designated *Dorylaimus regius* de Man, 1876 as type species of *Aporcelaimus.* Loof and Heyns (1997) pointed out, that this species was insufficiently described, never found again with certainty, and the only specimen (a female) destroyed. They asked the International Commission on Zoological Nomenclature for accepting *Dorylaimus superbus* de Man, 1880 as the type of the genus.

Aporcelaimus can generally be characterized in having large body, practically not separate lips, short odontostyle with long aperture, AS_1 nucleus lying closer to AS_2 than D, gradually widening oesophagus, transverse vulva, short and broadly rounded tail, and males mostly as common as females.

Within the family Aporcelaimidae there is a genus, *Aporcelaimellus* Heyns, 1965, which especially resembles *Aporcelaimus* in several morphological features. The line between them is not quite sharply drawn. And what is more, *Aporcelaimellus* is also a very rich genus including not less than 70 nominal species. Still, who has got some experience in studying these genera, that can distinguish them with more or less certainty. *Aporcelaimellus* can be distinguished from *Aporcelaimus* as follows. First, *Aporcelaimellus* consists

of smaller and plumper species, between 1 and 3 mm. Then, the exocuticle shows very fine striation but no criss-cross lines, and the endocuticle is composed of two layers (as seen through the optical microscope) of different refraction which is especially prominent on the tail; the outer layer seems to be „transparent", the inner layer more „compact". Furthermore, the stylet aperture is never so long than in *Aporcelaimus,* it occupies maximal half the odontostyle length; the vulva is small, pore-like or a short slit. It is possible that some difference between the two genera exists also in the map of the oesophageal gland nuclei, in this field, however, our observations are still incomplete. Non-morphological features may also characterise our two genera. While *Aporcelaimus* species, as big nematodes in general, occur in small individual numbers, but usually in both genders, the species of *Aporcelaimellus* are in great individual number present, but predominantly in female form only.

Out of the half-a-hundred nominal species of *Aporcelaimus,* I first present those which can be considered valid representatives of the genus. I make an attempt to outline and separate them by their brief morphological or morphometrical characters. In a separate list the remaining (nominal) species are enumerated with their recent taxonomic or nomenclatorial status.

Distribution. The members of the genus are probably at home over the Globe; as far as known, merely Australia lacks data of their distribution. Most records have been published from Europe, from 18 countries.

Aporcelaimus americanus Thorne & Swanger, 1936

a) Thorne and Swanger, 1936, Virginia, Ohio *(Aporcelaimus americanus):*

Females: L = 5.0–7.0 mm, a = 45; b = 5.2; c = 100; V = 49 %; c' = 0.7.
Males: L = 5.0–7.0 mm; a = 41; b = 4.7; c = 100; c' = 0.7.

Cuticle much thicker than odontostyle. Odontostyle fairly slender, equally long to labial width, aperture 2/3 of its length. Eggs as long as body diameter. Spicula slightly swollen. Supplements 12–15, spaced, posterior one or two levelling with the spicula. Tail broadly rounded.

b) Loof and Coomans, 1970, Holland, France, USA *(Aporcelaimus americanus):*

Map of oesophageal gland nuclei:

D = 52–54 %	AS_1 = 33–34 % AS_2 = 54 % PS_1 = 75–76 %
K = 58–66 %	PS_2 = 76–77%

c) Andrássy, 2000 b, Hungary *(Aporcelaimus americanus):*

Females: L = 7.00–7.27 mm; a = 50–53; b = 5.5–6.8; c = 104–125; V = 50–54 %; c' = 0.8–0.9.

Males: L = 7.70–7.74 mm; a = 50–51; b = 5.8–6.0; c = 116–118; c' = 0.7–0.8.

Labial region 29–30 µm wide, 1/4 to 1/5 of body width at posterior end of oesophagus. Cuticle thicker than odontostyle. Odontostyle 28–29 µm, as long as labial width, aperture 2/3 of its length. Eggs as long as body diameter. Spicula 200–210 µm, moderately swollen. Supplements 15–16, separate, posterior one or two within the range of spicula. Tail 50–57 µm (female) or 65–71 µm (male), conoid-rounded with blunt tip. Oesophageal glands:

D = 51–55 %	AS_1 = 26–30 % AS_2 = 48–52 % PS_1 = 70–71 %
K = 57–60 %	PS_2 = 72–73 %

Remarks. In the percentage arrangement of the oesophageal gland nuclei there is some difference in Loof and Coomans and in Andrássy: the AS_1 and PS nuclei were located more posteriorly according to the observation of the former authors. There are two possibilities: either the not too great differences are still within the range of the species, or the West-European authors have studied a though similar but different species. In their paper, Loof and Coomans gave no other morphological data; thus, their animals cannot be compared with my Hungarian ones.

Aporcelaimus americanus can be characterized by its large body size, thick cuticle, comparatively long odontostyle, short eggs, large and swollen spicula and presence of 12–16 supplements of which one or two lie within the range of the spicula.

Distribution. Europe: Holland, France, Poland, Hungary; North America: United States (Virginia, Ohio).

Aporcelaimus bestiarius Isatullaeva, 1967
(Fig. 1 A–E)

a) Isatullaeva, 1967, Kazakhstan *(Aporcelaimus bestiarius):*

Females: L = 3.69–4.00 mm; a = 31–36; b = 4.7–5.0; c = 69–83; V = 47–49 %.
Males: L = 4.60–5.00 mm ; a = 28; b = 4.7–5.0; c = 78–80; c' = 0.9.

Cuticle somewhat thinner than stylet. Odontostyle massive, about 22–23 µm, as long as labial diameter; aperture 2/3 of its length. Vagina half the body width. Spicula slender, about 110 µm long. Supplements 24, posterior one or two within range of spicula. Tail conoid-rounded with narrow terminus.

b) Altherr, 1974, Germany *(Aporcelaimus jugeti):*

Male: L = 4.0 mm; a = 37; b = 4.5; c = 75; c' = 1.0.

Cuticle a little thinner than stylet. Head as wide as 1/4 body diameter at posterior end of oesophagus. Odontostyle stout, 26–28 µm, equal to head width, aperture 2/3. Spicula 115 (–120) µm, slender. Supplements 17, posterior 2 within spicular range. Tail conoid with slightly dorsally bent tip.

c) Present specimens, Hungary, one female, two males:

Female: L = 4.05 mm; a = 35; b = 5.3; c = 70; V = 45 %; c' = 0.8.
Males: L = 4.28–4.56 mm; a = 37–38; b = 5.5–65; c = 80–85; c' = 0.7.

Cuticle thinner than stylet. Labial region 23–27 µm wide. Odontostyle robust, 23–27 µm, as long as cephalic width; aperture occupying 2/3 its length. Vulva strongly sclerotized, vagina half as long as body diameter. Spicula slender, 120–130 µm. Supplements 17–21, mostly spaced, the posterior 2 within range of spicula. Female tail 54 µm, male tail 50–52 µm long, the former more bluntly rounded than the latter.

Locality: Buda Mountains in central Hungary, soil and fallen leaves from an oak forest, April 1970.

Remarks. Altherr described *Aporcelaimus jugeti* in both sexes, queried however if the female was conspecific with the male. Indeed, I mention in a recent paper (Andrássy, 2000 a) that the female belongs in all likelihood to an other species of the Swiss author, *Aporcelaimus conicaudatus* (now: *Metaporcelaimus labiatus;* see there). Luckily, Altherr has designated the male specimen for holotype, thus that represents the species *A. jugeti.*

Aporcelaimus bestiarius and *A. jugeti* (the male!) agree in all main characters with each other: body size and figure, thin cuticle, stout stylet, slender spicula, great number of supplements of which the posterior two levelling with spicula. Slight differences can be found only in length of odontostyle (22 *vs.* 26–28 µm) and number of supplements (24 *vs.* 17). However, the recent animals from Hungary show a fine transition in these latter characters: odontostyle 23–27 µm, supplements 17–21. I feel well-founded to consider them to be one and the same species.

A smaller and less slender species. The shape and length of odontostyle, the slender spicula and the number and arrangement of supplements are characteristic for it.

Distribution. Germany, Hungary, Kazakhstan.

Aporcelaimus boreus Andrássy, 2000

Andrássy, 2000 a, Alaska *(Aporcelaimus boreus):*

Males: L = 3.46-4.06 mm; a = 30–33; b = 4.2–4.6; c = 56–70; c' = 0.9-1.0.

Lip region 28–29 µm wide, about 1/4 of body width at neck base. Cuticle as thick as or somewhat thinner than spear. Odontostyle 30–32 µm, nearly equal in length to the labial width, aperture 2/3 of its length. Spicula slender, 135–147 µm. Supplements 18–23, contiguous, their series begin a little before the spicula. Tail 55–61 µm, convex-conoid with narrowly rounded tip. Map of oesophageal nuclei:

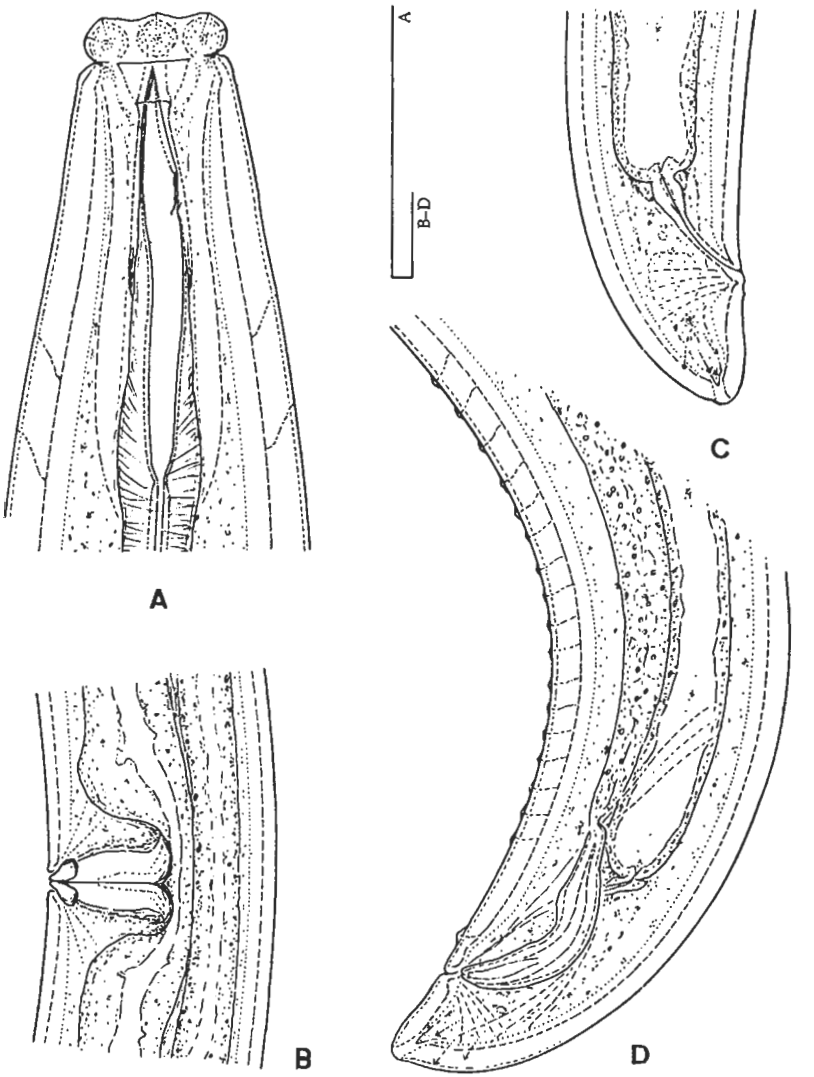

Fig. 1. *Aporcelaimus bestiarius* Isatullaeva, 1967 from Hungary - a typical representative of the genus. A: anterior end; B: vulval region; C: female tail; D: male posterior end. (Scale bars 50 µm each)

D = 51–52 %	AS_1 = 21–22 % AS_2 = 42–46 % PS_1 = 71–73 %
K = 47–52 %	PS_2 = 72–73 %

Remarks. *Aporcelaimus boreus* belongs to the smaller species of the genus. It resembles *A. superbus*, the odontostyle is however much longer (30–32 *vs.* 17–22 µm), the spicula as well (*vs.* 80–100 µm), the supplements are more numerous (*vs.* 14–19) and in most part contiguous.

Distribution. United States (Alaska).

Aporcelaimus brzeskii Andrássy, 2000

Andrássy, 2000 a, Alaska *(Aporcelaimus brzeskii):*

Females: L = 4.10–4.26 mm, a = 26–30; b = 4.5–4.8; c = 60–72; V = 52–55 %; c' = 10.7–0.8.

Males: L = 3.89–4.41 mm; a = 27–34; b = 4.5–5.0; c = 70–82; c' = 0.7–1.0.

Lip region 27–29 µm wide, about 1/4 of body width at posterior end of oesophagus. Cuticle nearly as thick as spear. Odontostyle 30–33 µm, a little longer than labial width, aperture measuring 2/3 of its length. Eggs shorter than body width. Spicula 170–190 µm, slender. Supplements 12–18, separate, the posterior 4 to 6 levelling with spicula. Female tail 63–70 µm, male tail 48–60 µm, the latter somewhat more conoid than the former. Oesophagus nuclei:

D = 51–52 %	AS_1 = 20–23 % AS_2 = 42–45 % PS_1 = 73–74 %
K = 48–52 %	PS_2 = 74–76 %

Remarks. *Aporcelaimus brzeskii* is a relatively small representative of the genus. It is distinctive because of the slender vagina, short eggs, slim and long spicula and the number and arrangement of supplements (a fairly great number of them levelling with spicula).

Distribution. United States (Alaska).

Aporcelaimus caesar Andrássy, 2000

Andrássy, 2000 b, Hungary *(Aporcelaimus caesar):*

Females: L = 10.05–10.50 mm; a = 58–60; b = 6.8–7.0; c = 128–132; V = 46–52 %; c' = 0.8.

Males: L = 7.50–8.64 mm; a = 45–57; b = 5.4–6.4; c = 94–138; c' = 0.7–0,8.

Labial region 35–36 µm wide. Cuticle thicker than stylet. Odontostyle 35–37 µm, equal to labial width, aperture occupying 3/4 of its length. Eggs 1.5 times longer than body width. Spicula 210–230 µm, of slender type. Supplements 23 to 27, contiguous or nearly so, all before the spicula. Female

tail 63–68 µm, male tail 67–68 µm, both bluntly conoid-rounded. Oesophageal gland nuclei:

D = 56–59 %	AS_1 = 28–31 % AS_2 = 47–52 % PS_1 = 72–75 %
K = 58–62 %	PS_2 = 73–76 %

Remarks. This is the biggest species within the genus and the whole family: body length to 10.5 mm. Its other characteristics are the very thick cuticle, posterior position of nucleus D, very large and slender spicula and the great number of male supplements. There is a sole species that has more supplements (30): *Aporcelaimus fortis.*

Distribution. Hungary.

Aporcelaimus cobbi Thorne, 1937

Thorne, 1937 and 1939, Italy *(Aporcelaimus cobbi):*

Male: L = 5.0 mm; a = 43; b = 5.0; c = 77; c' = 1.1.

Aperture 3/4 of odontostyle. Spicula fairly slender. Supplements 17, the anterior ones spaced, the posterior ones contiguous; 3 or 4 supplements to be found within range of spicula. Tail conoid with slightly dorsally bent tip.

Remarks. Primary diagnostic feature distinguishing *Aporcelaimus cobbi* is the dorsally bent tail; it differs in this respect from all the other species of the genus. The relatively large number of supplements levelling with the spicula is also characteristic for it.

Distribution. Italy.

Aporcelaimus digiticaudatus nom. n.

a) T. Goodey, 1951, England *(Aporcelaimus superbus):*

Females: L = 3.22–4.40 mm; a = 27–33; b = 4.4–5.9; c = 60–69; V = 45–48 %.
Males: L = 3.00–4.10 mm; a = 30–34; b = 4.5–5.5; c = 62–68; c' = 0.8.

Cuticle as thick as odontostyle. Odontostyle about 28 µm, equal to head diameter, aperture 2/3 of its length. Spicula slender, about 180 µm long. Supplements 13–17, separate, the posterior two lying within range of spicula. Tail spherical with digitate tip.

b) Bongers, 1988, Holland *(Aporcelaimus superbus,* microphotos*):*

Cuticle a little thinner than odontostyle. Odontostyle 25 µm, aperture 2/3 of its length. Spicula slender. Tail with broadly digitate tip.

Remarks. The nematodes *„Aporcelaimus superbus"* of Goodey and Bongers are hardly conspecific with *superbus* of de Man (1880), but undoubtedly identical with each other. The spicula are longer (180 µm *vs.*

hardly 100 µm), the posterior supplements lie within range of spicula and, what is also important, the tail is clearly digitate. I think, it is more advisable to give a new name to this species: *Aporcelaimus digiticaudatus* nom. n.

This species is differentiated from all the others by its tail shape. It belongs to the small members of the genus, and can be characterized also by the rather plump body, long odontostyle, slender spicula and number and arrangement of supplements.

Distribution. Holland and United Kingdom. It is not impossible that some data of *A. superbus* also refer to this species.

Aporcelaimus eurydoris (Ditlevsen, 1911) Thorne & Swanger, 1936

a) Ditlevsen 1911, Denmark *(Dorylaimus eurydoris):*

Male: L = 7.0 mm; c' = 0.8.

Cuticle about as thick as odontostyle. Neck slightly constricted at stylet level. Odontostyle shorter than labial width with very large aperture. Spicula swollen. Supplements 16, mostly separate, lying far before the spicula. Tail conoid-rounded.

b) Heyns, 1965 *(Aporcelaimus eurydoris,* figures only*):*

Odontostyle about 18–20 µm, shorter than labial width, aperture 3/4 of its length.

c) Thorne, 1974, South Dakota *(Aporcelaimus eurydoris,* male*):*

Male: L = 6.5 mm; a = 68; b = 5.8; c = 117; c' = 1.1.

Cuticle about as thick as odontostyle. Neck with slight constriction. Odontostyle 21 µm, aperture as long as the ventral wall of stylet. Spicula thick. Supplements 12, spaced, anterior to the spicula. Tail conoid-rounded.

As supposed by Loof (1999), the immature females illustrated under moulting very probably belong to *Epacrolaimus declinatoaculeatus* (Kreis, 1924) Andrássy, 2000.

d) Loof, 1999 *(Aporcelaimus eurydoris):*

Vagina slender, about half body width long.

e) Altherr, 1965, Germany *(Aporcelaimus wilhelmschneideri):*

Male: L = 5.75 mm, a = 57; b = 7.0; c = 110; c' = 0.9.

Cuticle as thick as odontostyle. Odontostyle fairly slender, 21 µm, shorter than cephalic diameter, aperture nearly as long as the ventral wall. Spicula 90 µm, fairly plump. Supplements 11, spaced, far before the spicula. Tail broadly rounded.

f) Anderson, 1966, Canada *(Aporcelaimus amphidysis):*

Females: L = 6.2–7.3 mm; a = 51–60; b = 5.1–5.8; c =106–147; V = 53–58 %; c' = 0.8.
Males: L = 6.3–6.4 mm; a = 46–48; b = 5.0–5.2; c = 105–107, c' = 0.8.

Cuticle as thick as odontostyle. Head 28 µm wide. Odontostyle 19–20 µm, aperture about 3/4 of its length. Spicula of swollen type, 113–139 µm. Supplements 9–12, well spaced, far before the spicula. Tail broadly rounded.

g) Thorne, 1974, Minnesota, North and South Dakota *(Aporcelaimus elegans):*

Females: L = 7.5–8.2 mm; a = 65–82; b = 5.7–6.2; c = 95–110; V = 52 %; c' = 0.9.
Males: L = 7.5–9.3 mm; a = 68–85; b = 5.2–7.2; c = 130–158; c' = 0.8.

Neck slightly constricted. Cuticle about as thick as odontostyle. Odontostyle 18–20 µm, shorter than labial width, aperture nearly as long as the ventral wall. Spicula strongly swollen. Supplements 9–16, spaced, far anterior to spicula. Tail broadly rounded in both sexes.

Remarks. To all probability, *Aporcelaimus eurydoris* sensu Thorne and Swanger (1936) is a different species (see *A. ingens*). It is obvious that *Aporcelaimus eurydoris* of Schuurmans Stekhoven and Teunissen (1938) is also another species. Though it is nearly as large as the true *eurydoris* and has swollen spicula, the odontostyle is slender with quite short aperture and, in addition, the supplements are uncommonly few, only three. As Baqri and Coomans (1973) noted, the single original specimen was lost.

According to Anderson, *Aporcelaimus amphidysis* differs only in length of the oesophagus and position of the nerve ring from Altherr's *A. wilhelmschneideri.* These are however minor and insignificant differences. What is more, both these taxa completely correspond to the diagnosis of *A. eurydoris* (in shape of head, shape and length of odontostyle and its aperture, swollen spicula, number and arrangement of supplements, broadly rounded tail as well as in the body size). I consider therefore both *Aporcelaimus wilhelmschneideri* and *A. amphidysis* junior synonyms of *A. eurydoris.* (In 1974 Altherr suggested to transfer his *wilhelmschneideri* to *Aporcelaimellus,* but I agree with Loof, 1999, that was not a lucky step.)

Aporcelaimus elegans Thorne, 1974 is also identical with *A. eurydoris.* The shape of head, neck, odontostyle, its aperture, the size of body and tail all are similar in both taxa. The higher number of the supplements (16) is the same as on Ditlevsen's animal, the lower number (9) either may be within the range of the species or it concerns another species found in one of the localities mentioned by Thorne.

Loof (1999) supposed that *Dorylaimus regius* of Steiner (1925) is conspecific with *A. eurydoris.* Indeed, it is reminiscent of that species (especially in shape and length of the odontostyle), their spicula are however expressively of the slender type, and the last supplement lies within the spicular range. In my opinion, the nematodes of Steiner are the same as *Aporcelaimus macrohystera* (see there).

Aporcelaimus eurydoris is a very large and slender nematode with unusually short odontostyle in comparing its body size, very large spear

aperture, massive spicula and with a slight constriction on the neck.

Distribution. Europe: Holland, Germany, Denmark, Poland, Austria, Slovakia, Spain, Ukraine, Russia; North America: United States (Minnesota, North and South Dakota), Canada.

Aporcelaimus femineus Andrássy, 2000

Andrássy, 2000 a, Alaska *(Aporcelaimus femineus):*

Females: L = 4.28–5.00 mm; a = 35–41; b = 3.9–4.2; c = 65–80; V = 49–51 %; c' = 0.8–0.9.

Labial region 32–35 µm, about as wide as 1/4 body width at posterior end of oesophagus. Cuticle thicker than stylet. Odontostyle long and fairly slender, 40–42 µm, 1.2–1.3 labial diameters, aperture occupying less than 2/3. Vulval lips practically not sclerotized. Eggshell sculptured. Tail 55–63 µm, conoid-rounded with a minute projection directed dorsad. Spermatozoa not observed in uteri even in gravid females. Oesophageal nuclei:

D = 47–49 %	AS_1 = 29–33 % AS_2 = 50–52 % PS_1 = 73–74 %
K = 58–59 %	PS_2 = 75–76 %

Remarks. The long and slender odontostyle, the position of nucleus D in oesophagus, the mammillate eggshell, as well as the tail shape are good distinguishing characters for this species. Whether or not it is a true monosexual form? There is another species known in female gender only, *A. pseudospiralis;* it has however a much shorter odontostyle (23–26 µm).

Distribution. United States (Alaska).

Aporcelaimus fortis Gagarin, 1992

Gagarin, 1992, Russia *(Aporcelaimus fortis):*

Male: L = 7.18 mm; a = 26; b = 7.0; c = 73; c = 0.65.

Body plump. Cuticle much thinner than odontostyle. Labial region 35 µm wide. Odontostyle 30 µm, aperture longer than ventral wall. Spicula very large and robust, 228 µm. Supplements 30, contiguous, the posterior one nearly levelling with anterior tips of spicula. Tail short, broadly rounded.

Remarks. A large species characterized by the very long odontostyle aperture, thin cuticle and strongly swollen spicula. In addition, *Aporcelaimus fortis* has the most numerous supplements within the genus.

Distribution. Russia (Asian part).

Thorne & Swanger, 1936, Utah, Arizona *(Aporcelaimus eurydoris):*

Female: L = 7.9 mm; a = 52; b = 5.6; c = 143; V = 49 %; c' = 0.8.
Male: L = 7.1 mm; a = 56; b = 5.2; c = 111; c' = 0.9.

Cuticle thinner than odontostyle. Odontostyle about 28 µm, somewhat longer than labial width, aperture 2/3 of its length. Spicula about 180 µm, swollen. Supplements 8 to 14, spaced, before the spicula. Tail in female broader than in male.

Remarks. *Aporcelaimus eurydoris* of Thorne and Swanger (1936) appears to be different from the „true" *eurydoris* of Ditlevsen (1911), as well as from *A. elegans* Thorne, 1974 (which is a synonym of *eurydoris*; see there). Although it agrees with them in the large body size and shape of spicula, clearly differs in having a thinner cuticle (*vs.* as thick as or thicker than odontostyle), a longer odontostyle with shorter aperture (28 µm, aperture 2/3 *vs.* 18–21 µm, distinctly shorter than cephalic diameter, aperture occupying the whole dorsal side) and a less slender body (*vs.* a = 65–85).

A new name, *Aporcelaimus ingens* nom. n. is suggested for this species. (The word *ingens* comes from Latin and means „huge" or „very large".) This species belongs to the biggest representatives of the genus. It strongly resembles *A. sicus* (similar length of body and odontostyle, swollen spicula, nearly the same number of supplements), but this latter species has a very large aperture being equal in length to the ventral wall of the stylet.

Distribution. United States (Utah, Arizona).

Aporcelaimus macrohystera Altherr, 1974

a) Altherr, 1974, Germany *(Aporcelaimus macrohystera):*

Female: L = 6.15 mm; a = 55; b = 5.0; c = 133; V = 49 %; c' = 0.6.

Cuticle thicker than odontostyle. Odontostyle 28 µm, equal to head diameter, aperture longer than 3/4. Vagina very strong, 3/4 body width long. Tail 45 µm, hemispherical.

b) Steiner, 1925, Germany, Norway, Pennsylvania *(Dorylaimus regius):*

Females: L = 5.68–7.82 mm; a = 38–51; b = 6.1–6.4; c = 93–154; V = 47–52 %; c' = 0.5–0.8.
Male: L = 5.85 mm; a = 47; b = 5.7; c = 101; c' = 0.8.

Odontostyle as long as or somewhat shorter than labial width, aperture very large, as long as the ventral wall of odontostyle. Spicula slender. Supplements 17, the anterior ones slightly spaced, the posterior ones contiguous, posterior one or two within range of spicula. Female tail broadly rounded, hemispherical, male tail convex-conoid with blunt tip.

c) Thorne and Swanger, 1936, Germany, England, Norway *(Aporcelaimus regius):*

Female: L = 6.9 mm; a = 47; b = 6.7; c = 100; c' = 0.7.
Male: L = 5.8 mm; a = 47; b = 5.9; c = 71; c' = 0.8.

Cuticle nearly as thick as spear. Odontostyle shorter than cephalic diameter, aperture very large, equal to ventral length of odontostyle. Spicula of the slender type. Supplements 16, contiguous, the series beginning within range of spicula. Tail bluntly rounded.

d) Coomans, 1966, Zaire *(Aporcelaimus* sp.*):*

Male: L = 3.65 mm; a = 26; b = 4.8; c = 61; c' = 0.9.

Cuticle as thick as odontostyle. Odontostyle 27 µm, nearly equal to labial diameter, aperture as long as its ventral wall. Spicula slender, 138 µm. Supplements 16, irregularly spaced, posterior two within range of spicula. Tail 63 µm, conoid, narrowly rounded on tip.

Remarks. As already mentioned (Page 5), *Dorylaimus regius* de Man, 1876 – designated as the type of *Aporcelaimus* by Thorne and Swanger – is a rather badly described species and hardly belongs to the genus *Aporcelaimus* (it was probably a *Sectonema).* Hence, the under the name *„Dorylaimus regius"* or *„Aporcelaimus regius"* mentioned species of Steiner, and Thorne and Swanger, respectively, are no way identical with de Man's nematode. They are *Aporcelaimus,* and most probably identical with each other. *Aporcelaimus* sp. of Coomans may also belong to them; it shows the same very characteristic shape of the odontostyle and a more or less similar arrangement of the supplements. However, the latter species is considerably smaller, the odontostyle longer and the tail more conoid.

The species of Steiner and Thorne and Swanger are in all probability the same as *Aporcelaimus macrohystera.* Loof (1999) also supposed the identity between *macrohystera* and *regius* sensu Thorne and Swanger.

This *Aporcelaimus* species belongs to the group possessing an extremely long stylet aperture. The large body, relatively short odontostyle, very strong vagina, slender spicula, presence of 16–17 supplements of which the posterior ones level with spicula, are further characters of this species.

Distribution. Germany, Norway, United Kingdom, United States, and (maybe) Zaire.

Aporcelaimus pachydermus Thorne, 1937
(Fig. 2 A–E)

a) Thorne, 1937 and 1939, Mississippi *(Aporcelaimus pachydermus):*

Female: L = 4.7 mm; a = 36; b = 5.1; c = 100; V = 51 %; c' = 0.7.
Male: L = 4.8 mm; a = 33; b = 5.6; c = 83; c' = 0.5.

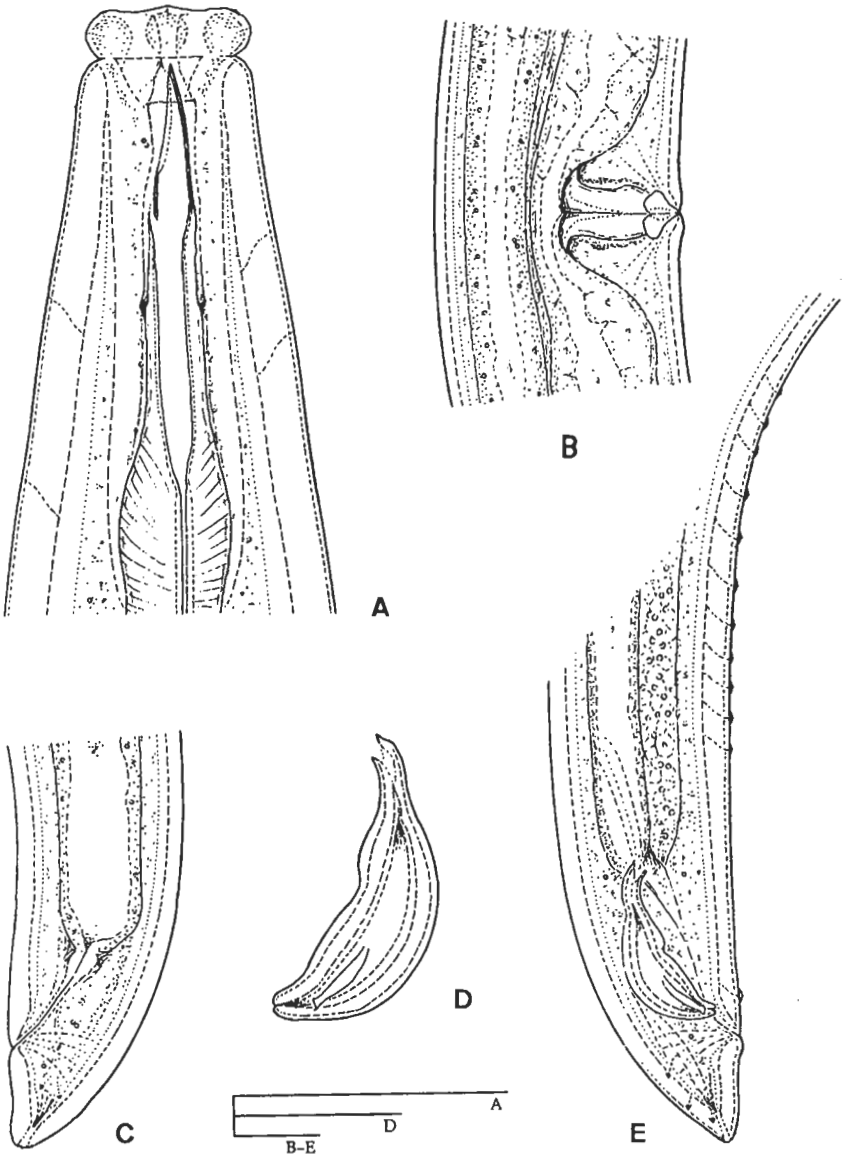

Fig. 2. *Aporcelaimus pachydermus* Thorne, 1937 from Hungary – a typical representative of the genus. A: anterior end; B: vulval region; C: female tail; D: spiculum; E: male posterior end. (Scale bars 50 μm each)

Cuticle very thick, occupying almost half the neck width at latitude of the odontostyle. Odontostyle as long as labial width, aperture occupying 3/4 (rather 2/3) of its length. Spicula strongly swollen in their posterior half. Supplements 8, spaced, before the spicula. Tail broadly rounded, especially in male.

b) Thorne, 1974, Nebraska, South Dakota *(Aporcelaimus pachydermus):*

Female: L = 6.5 mm; a = 38; b = 5.9; c = 108; V = 48 %; c' = 0.7.
Male: L = 6.4 mm; a = 57; b = 7.0; c = 134; c' = 0.7.

Cuticle thicker than spear. Odontostyle 30 µm, as long as labial diameter, aperture 2/3 of its length. Spicula very massive. Supplements 10, irregularly spaced, all before the spicula. Tail broadly rounded, especially in male.

c) Altherr, 1968, Germany *(Aporcelaimus ronnebergeri):*

Male: L = 5.70 mm; a = 40; b = 5.4; c = 70; c' = 1.2.

Head as wide as 1/4 body width at cardial region. Cuticle thicker than stylet. Odontostyle 30 µm, equal to labial width, opening 2/3. Spicula 120 µm, plump. Supplements 7, spaced, lying before the spicula. Tail slightly subdigitate.

d) Altherr, 1974, Germany *(Aporcelaimus ronnebergeri):*

Females: L = 3.86–5.55 mm; a = 46–52; b = 4.6–6.0; c = 71–105; V = 44–55 %.
Males: L = 4.00–6.20 mm; a = 37–57; b = 4.5–5.4; c = 72–120.

Head as wide as 1/3 or 1/4 body width at cardial region. Cuticle thick. Odontostyle 30–31 µm, aperture 2/3 of its length. Vagina strong, 2/3 body width long. Spicula 100–120 µm. Supplements 7 to 10, spaced. Tail conoid-rounded, sometimes subdigitate.

e) Present specimens, Hungary, 3 females, 4 males:

Females: L = 5.60–6.14 mm; a = 44–59; b = 5.0–5.6; c = 97–114; V = 51–52 %; c' = 0.8.
Males: L = 5.21–6.17 mm; a = 45–53, b = 4.9–5.6, c = 82–107; c' = 0.9.

Cuticle thicker than stylet, occasionally very thick (almost half the neck width at same level). Labial region 27–30 µm, 1/4 body width at posterior end of oesophagus. Odontostyle 27–29 µm, equal to labial diameter; aperture 2/3 of stylet length. Vulva well sclerotized, vagina occupying half the body diameter or more. Spicula strongly swollen, 106–112 µm long. Supplements 10–12, separated, all before the spicula. Female tail 54–58 µm, male tail 57–65 µm, the former more bluntly rounded on terminus than the latter. Map of oesophageal gland nuclei:

D = 51–57 %	AS_1 = 26–28 % AS_2 = 47–49 % PS_1 = 68–72 %
K = 54–60 %	PS_2 = 69–74 %

Locality: Buda Mountains, Hungary, soil from an oak forest, January 1971.

Remarks. According to their descriptions, *Aporcelaimus pachydermus* and *A. ronnebergeri* cannot be separated from each other. They are equal in all principal characters, *viz.* body size and shape, thickness of cuticle, length and shape of odontostyle, figure and length of spicula, number and arrangement of supplements, etc. Moreover, the present Hungarian specimens completely fit the diagnosis of both of them. *Aporcelaimus ronnebergeri* is therefore regarded as junior synonym of *A. pachydermus.*

Its medium size, very thick cuticle, plump spicula, number and arrangement of supplements and shape of tail may characterize *Aporcelaimus pachydermus.*

Distribution. Germany, Austria, Hungary, United States (Mississippi, Nebraska, South Dakota).

Aporcelaimus paraspiralis Thorne & Swanger, 1936

a) Micoletzky, 1922, Austria, Rumania *(Dorylaimus spiralis?):*

Female: L = 5.80–6.35 mm; a = 41–44; b = 5.0; c = 100–105; V = 46–51 %.
Male: L = 6.40 mm; a = 42, b = 5.7; c = 97; c' = 0.8.

Cuticle thicker than odontostyle. Odontostyle about as long as labial width, aperture seemingly as long as ventral wall of stylet. Spicula slim. Supplements 23, almost contiguous, the posterior 4 levelling with spicula. Tail nearly hemispherical.

b) Thorne and Swanger, 1936 *(Aporcelaimus paraspiralis):*

The same data as above.

Remarks. Since *Dorylaimus spiralis* apud Micoletzky appeared to be different from Cobb's *spiralis* (Micoletzky himself also queried their identity), Thorne and Swanger proposed a separate name for it.

Aporcelaimus paraspiralis is very close to *A. macrohystera* in having the same body size, very long odontostyle aperture, thick cuticle, short tail. The only difference between them can be found in the supplements: they are more in *paraspiralis* (23 *vs.* 16–17). Whether this difference is or not enough to separate them?

Distribution. Austria, Rumania.

Aporcelaimus pseudospiralis Botha & Heyns, 1990

a) Botha and Heyns, 1990, South Africa *(Aporcelaimus pseudospiralis):*

Females: L = 3.64–4.42 mm; a = 31–35; b = 4.5–5.1; c = 58–73; V = 50–53 %; c' = 1.0.

Cuticle nearly as thick as stylet. Labial region 23–27 µm wide. Odontostyle 23–26 µm, equal to cephalic diameter, aperture 2/3 of its length. Vulva not sclerotized. Tail narrowly rounded. No sperms in mature females.

b) Thorne and Swanger, 1936, Sumatra *(Aporcelaimus spiralis):*

Female: L = 4.3 mm; a = 43; b = 5.2; c = 83; V = 55 %; c' = 1.0.

Cuticle thinner than odontostyle. Odontostyle about as long as labial width, aperture nearly 2/3 of its length. Eggs longer than body width. Tail narrowly rounded. No sperms in gravid females.

Remarks. *„Aporcelaimus spiralis* (Cobb, 1893)" of Thorne and Swanger (1936) is surely not identical with *Dorylaimus spiralis* Cobb, 1893. Although Cobb described his species without any figures, so much can be ascertained, he had a nematode being very different from any *Aporcelaimus.* He wrote: „The rather slender spear slides in a pharyngeal ring and can be clearly traced back a distance three times as great as the width of head". That means, his animal possessed a very long odontostyle, maybe a longidoroid one. Therefore, it is difficult to understand, how could Thorne and Swanger identify their species with that of Cobb? Because of the insufficient description, Cobb's *spiralis* cannot be realised. It remains a *species inquirenda.*

According to Botha and Heyns, their South African species, *A. pseudospiralis,* somewhat differs in the shape of labial region and amphid from *spiralis* sensu Thorne and Swanger. These are however quite insignificant differences. In the validity, these species cannot be separated from each other. A plus argument to their identity: *pseudospiralis* has been found only in females without spermatozoa in uteri, just as *spiralis* of Thorne and Swanger. Since the species name of the American authors cannot be retained, the next valid name must be used, *Aporcelaimus pseudospiralis.*

„Aporcelaimus spiralis" of Williams (1959) is an *Aporcelaimellus:* the body is small (2.1–2.5 mm), the aperture only half the stylet length and the tail shows double cuticle layers just being typical for the latter genus. I agree with Heyns who suggested a separate name for this species within *Aporcelaimellus: A. williamsi* Heyns, 1965.

Aporcelaimus discoides Jain, Saxena & Sharma, 1994 seems to be close to *A. pseudospiralis,* it is possibly identical with that. This species has been described in female gender only with not sclerotized vulval lips. Unfortunately, I know this species only from „second hand"; my efforts for obtaining the original description were unsuccessful.

Aporcelaimus pseudospiralis is the second species of the genus known in female gender only, and with non-sclerotized vulval lips; the other one is *A. femineus* (see there). *A. pseudospiralis* clearly differs from the latter in having an essentially shorter odontostyle (23–26 *vs.* 40–42 µm). If it is also a true monosexual species?

Distribution. South Africa, Sumatra.

Aporcelaimus sicus Gagarin, 1992

Gagarin, 1992, Russia *(Aporcelaimus sicus):*

Female: L = 7.62 mm; a = 56; b = 5.2; c = 115; V = 47 %; c' = 0.6–0.8.
Males: L = 6.5–7.8 mm; a = 31–37; b = 5.2–5.5; c = 91–118; c' = 0.6–0.8.

Labial region 27–30 µm wide. Cuticle thinner than odontostyle. Odontostyle 26–30 µm, aperture seemingly as long as the ventral wall. Spicula very plump, 190–200 µm. Supplements 10–13, separate, all lying far before the spicula. Tail conoid-rounded.

Remarks. *Aporcelaimus sicus* is a large nematode characterized by the very long odontostyle aperture, the uncommonly swollen spicula and the number and arrangement of supplements. It seems to be closely related to *A. eurydoris,* its stylet is however longer (26–30 *vs.* 18–21 µm, shorter than labial width).

Distribution. Russia (Asian part).

Aporcelaimus subdigiticaudatus Altherr, 1965

Altherr, 1965, Germany *(Aporcelaimus subdigiticaudatus):*

Females: L = 5.50–5.90 mm; a = 36–44; b = 6.4–6.7; c = 98–130; V = 48–51 %.
Males: L = 4.70–5.95 mm; a = 39–40; b = 4.6–6.2; c = 95–98; c' = 1.0.

Cuticle nearly as thick as odontostyle. Labial region 1/4 or 1/5 as wide as body at proximal end of oesophagus. Odontostyle 28 µm, 1.2 times head diameter, aperture as long as its ventral wall. Vagina massive, half the body width. Eggs often very numerous, up to 25 in one female. Spicula slender, 150 µm. Supplements 15–16, spaced, before the spicula. Tail subdigitate.

Remarks. *Aporcelaimus subdigiticaudatus* is of average body length with very long stylet aperture, large number of eggs, slender spicula and medium number of supplements. The subdigitate tail seems to be especially characteristic for it.

Distribution. Germany.

Aporcelaimus superbus (de Man, 1880) Goodey, 1951

a) De Man, 1880 and 1884, Holland, Germany *(Dorylaimus superbus):*

Females: L = 4.5 mm; a = 30–40; b = 5; c = 60–85; V somewhat before mid-body; c' = 1.1.
Males: L = 4.5 mm; a = 30–40; b = 5; c = 60–75; c' = 0.9.

Spicula slender. Female genital organ very long, eggs numerous. Supplements 14–18, separate, all anterior to the spicula. Tail conoid, narrowly tipped.

b) Loof, 1961, Holland *(Aporcelaimus superbus):*

Holo- and paratype females: L = 3.67–3.73 mm; a = 30; b = 4.8; c = 59–62; V = 44 %; c' = 1.0.

Paratype males: L = 3.16–3.64 mm; a = 37–41; b = 4.5–4.8; c = 63–65; c' = 1.2.

Cuticle thinner than odontostyle. Anterior end strongly tapered, head as wide as 1/5 body diameter at neck base. Odontostyle 17–18 µm, 1.1–1.4 times the labial width, aperture 2/3 of stylet. Spicula slender, 100 µm. Supplements 15–19. Tail conoid, narrowly rounded, at male more pointed than at female.

c) Altherr, 1954, Switzerland *(Aporcelaimus minor):*

Female: L = 3.00 mm; a = 28; b = 4.3; c = 63; V = 50 %.

Cuticle thinner than spear. Odontostyle 22 µm, equal to labial width, aperture 2/3 of its length. Tail narrowly rounded on tip.

d) Radu and Popovici, 1967, Rumania *(Aporcelaimus superbus):*

Females: L = 2.4–4.2 mm; a = 18–28; b = 4.6–6.0; c = 67–80; V = 46–51 %.
Male: L = 2.4 mm; a = 23; b = 4.1; c = 58.

Cuticle thick. Odontostyle about as long as labial width, aperture 2/3 its length. Spicula slender. Supplements 14, anterior to spicula.

Remarks. Thorne and Swanger (1936) designated *Dorylaimus regius* de Man, 1880 for type species of their genus, *Aporcelaimus.* Loof and Heyns (1997) pointed out that this species of de Man was rather insufficiently described, never discovered again with certainty, and the single original specimen was destroyed. They suggested therefore to the Commission on the Zoological Nomenclature to accept *Dorylaimus superbus* de Man, 1880 as type species of *Aporcelaimus.*

As Meyl (1961) also noted, *Aporcelaimus minor* Altherr, 1954 (nec Loos, 1945, therefore renamed by Altherr in Lordello, 1955 as *A. parvus*) agrees with *A. superbus* very well. In accordance with him, I propose to consider *A. parvus* a junior synonym of de Man's species.

The species of Radu and Popovici appears very similar to *A. superbus,* only the cuticle is thicker than the stylet.

Aporcelaimus superbus is a short species. The thin cuticle, short stylet, long female genital organ, numerous small eggs, slender spicula, number and arrangement of supplements, and the conoid tail are characteristic for it.

Distribution. Holland, Belgium, Germany, Switzerland, Scotland, Poland, Austria, Slovakia, Spain, Italy, Rumania, Moldavia, Lithuania, Belorussia, Russia, Uzbekistan, Kazakhstan. (If all these data refer to *A. superbus* indeed?)

Other species described in, or transferred to *Aporcelaimus* ,

In addition to the eighteen species discussed above as valid, there is a good number of further species (32) that have been either described as

Aporcelaimus or transferred from other genera to it. Unfortunately, there is no way here to enter the details, therefore I only enumerate them and indicate their current taxonomic status.

A. amphidysis Anderson, 1966 = synonym of *Aporcelaimus eurydoris* syn. n.

A. balticus (Schulz, 1934) Andrássy, 1986 = *species inquirenda seu incertae sedis.*

A. cocophilus Loos, 1949 = *Aporcelaimellus cocophilus* (Loos, 1949) comb. n.

A. conicaudatus Altherr, 1953 = synonym of *Metaporcelaimus labiatus* syn. n.

A. declinatoaculeatus (Kreis, 1924) Thorne & Swanger, 1936 = *Epacrolaimus declinatoaculeatus* (Kreis, 1924) Andrássy, 2000.

A. digitalis Loos, 1949 = *Metaporcelaimus digitalis* (Loos, 1949) comb. n.

A. discoides Jain, Saxena & Sharma, 1994 = probably identical with *A. pseudospiralis.* (The original paper was not obtainable.)

A. elegans Thorne, 1974 = synonym of *Aporcelaimus eurydoris* syn. n.

A. ferrugineus Lordello, 1955 = *Tubixaba ferruginea* (Lordello, 1995) comb. n.

A. gerlachi Meyl, 1956 = *Aporcelaimellus gerlachi* (Meyl, 1956) Heyns, 1965.

A. jugeti Altherr, 1974 = synonym of *Aporcelaimus bestiarius* syn. n.

A. krygeri (Ditlevsen, 1928) Brzeski, 1962 = *Aporcelaimellus krygeri* (Ditlevsen, 1928) Heyns, 1965.

A. laetificans (Andrássy, 1956) Andrássy, 1958 = *Paraxonchium laetificans* (Andrássy, 1956) Altherr & Loof, 1969.

A. mamillatus Williams, 1959 = *Aporcelaimellus mamillatus* (Williams, 1959) Heyns, 1965.

A. minor Altherr, 1954 = synonym of *Aporcelaimus parvus* [Altherr in Lordello, 1955].

A. minor Loos, 1945 = *Makatinus minor* (Loos, 1945) Ahmed, 1997.

A. mulveyi Brzeski, 1962 = synonym of *Eudorylaimus arcus* [Andrássy, 1992].

A. nivalis (Altherr, 1952) Altherr, 1952 = *Aporcelaimellus nivalis* (Altherr, 1952) Heyns, 1965.

A. obscurus (Thorne & Swanger, 1936) Goodey, 1961 = *Aporcelaimellus obscurus* (Thorne & Swanger, 1936) Heyns, 1965.

A. papillatus (Bastian, 1865) Andrássy, 1986 = *species inquirenda seu incertae sedis.*

A. paraconicaudatus Meyl, 1956 = *Aporcelaimellus paraconicaudatus* (Meyl, 1956) Heyns, 1965.

A. parvus Altherr in Lordello, 1955 = synonym of *Aporcelaimus superbus.*

A. profundis (Cobb, 1904) Andrássy, 1986 = *species inquirenda seu incertae sedis.*

A. regius (de Man, 1880) Thorne & Swanger, 1936 = *species inquirenda seu incertae sedis* [Loof and Heyns, 1997].

A. romanicus Popovici, 1978 = *Metaporcelaimus romanicus* (Popovici, 1978) comb. n.

A. ronnebergeri Altherr, 1968 = synonym of *Aporcelaimus pachydermus* syn. n.

A. seinhorsti Meyl, 1957 = *Aporcelaimellus seinhorsti* (Meyl, 1957) Heyns, 1965.

A. spiralis (Cobb, 1893) Thorne & Swanger, 1936 = *species inquirenda seu incertae sedis.*

A. sublabiatus (Thorne & Swanger, 1936) Brzeski, 1962 = *Metapor-celaimus sublabiatus* (Thorne & Swanger, 1936) comb. n.

A. vanderlaani Meyl, 1957 = *Aporcelaimellus vanderlaani* (Meyl, 1957) Heyns, 1965.

A. vorax Thorne & Swanger, 1936 = synonym of *Epacrolaimus declinato-aculeatus* [Andrássy, 2000 b].

A. wilhelmschneideri Altherr, 1965 = synon. of *Aporcelaimus eurydoris* syn. n.

Key to species of Aporcelaimus

1 Aperture very long, equal to the ventral wall of odontostyle 2
– Aperture 2/3 to 3/4 of odontostyle 7

2 Spicula strongly swollen, particularly in their posterior half 3
– Spicula slender, of general dorylaimoid type 5

3 Supplements 30, contiguous. – L = 7.2 mm ..... **fortis** Gagarin
– Supplements 9 to 16, separate 4

4 Odontostyle 26–30 µm, equal to labial diameter. – L = 6.5–7.8 mm ..... **sicus** Gagarin
– Odontostyle 18–21 µm, distinctly shorter than labial diameter. – L = 5.8–7.3 mm . **eurydoris** (Ditlevsen)

5 Tail subdigitate. – L = 4.7–5.9 mm ..... **subdigiticaudatus** Altherr
– Tail broadly rounded, not subdigitate 6

6 Supplements 23, contiguous. – L = 5.8–6.4 mm ... **paraspiralis** Thorne & Swanger
– Supplements 16–17, separate. – L = 5.7–7.8 mm ..... **macrohystera** Altherr

7 Monosexual (?) species, no sperms in uteri of gravid females; vulval lips not sclerotized 8
– Bisexual species, males nearly as common as females; vulval lips sclerotized ... 9

8 Odontostyle 40–42 µm long. – L = 4.3–5.0 mm ..... **femineus** Andrássy
– Odontostyle 23–26 µm long. – L = 3.6–4.4 mm ..... **pseudospiralis** Botha & Heyns

9 Tail conoid, dorsally bent. – L = 5.0 mm ..... **cobbi** Thorne
– Tail conoid-rounded to hemispherical, not bent dorsally 10

10 Very big nematodes, average body length 6 to 10 mm 11
– Smaller nematodes, average body length 4 to 5 mm 13

11 Odontostyle 35–37 µm, aperture 3/4; spicula slender. – L = 7.5–10.5 mm .....
caesar Andrássy
– Odontostyle 28–29 µm, aperture 2/3; spicula swollen 12

12 Cuticle thicker than odontostyle; supplements 12–16. – L = 5.0–7.7 mm .....
americanus Thorne & Swanger
– Cuticle thinner than odontostyle; supplements 8–14. – L = 7.1–7.9 mm .....
ingens nom. n.

13 Cuticle distinctly thinner than stylet; odontostyle 17–20 µm long. – L = 3.0–4.5 mm ..... **superbus** (de Man)
– Cuticle as thick as or thicker than stylet; odontostyle 23 to 33 µm long 14

14 Spicula swollen; supplements 7–10. – L = 3.9–6.5 mm ..... **pachydermus** Thorne
– Spicula slender; supplements 12 to 23; body 3–4 (–5) mm 15

15 Tail digitate: hemispheric with a terminal peg. – L = 3.0–4.4 mm .....
digiticaudatus nom. n.
– Tail not digitate 16

16 All supplements lying before the spicula. – L = 3.5–4.1 mm ..... **boreus** Andrássy
– Posterior supplements within range of spicula 17

17 Spicula 170–190 µm long; supplements 12–18, 4–6 within spicular range. – L = 3.9–4.4 mm ..... **brzeskii** Andrássy
– Spicula 110–130 µm long; supplements 17–24, 2 within spicular range. – L = 3.7–5.0 mm ..... **bestiarius** Isatullaeva

Metaporcelaimus Lordello, 1965

Syn. *Aporcelaimium* Loof & Coomans, 1970.

Aporcelaimidae. Body size between 1.6 and 4.1 mm. Cuticle thick, mostly with fine transverse striae; its layers apparently similar in structure (refraction). Labial region sharply offset, high and narrow, only as wide as 1/5 to 1/8 body width at posterior end of oesophagus. Lips hardly separate. Odontostyle 14 to 23 µm, equal to labial diameter or slightly longer; aperture large, 1/2 to 3/4 of its length. Guiding sheath thin, aporcelaimoid. Oesophagus rather gradually widened at its mid-region. Oesophageal nucleus AS_1 lying closer to D than to AS_2. Female genital system amphidelphic, vulva

transverse, predominantly with sclerotized lips. Spicula slender with narrow lumen. Male supplements 2 to 16, spaced; except for one species, all supplements lying before the spicula. Tails in both sexes similar, conoid, longer (up to twice) than anal body width, terminus often slightly subdigitate. Males generally present, and nearly as frequent as females.

Type species: *Metaporcelaimus mombucae* Lordello, 1965.

For the moment, thirteen species may be placed here:

M. adoxus (Tjepkema, Ferris & Ferris, 1971) comb. n.
Aporcelaimellus adoxus Tjepkema, Ferris & Ferris, 1971

M. angusticollis nom. n.
Aporcelaimellus capitatus apud Thorne, 1974

M. capitatus (Thorne & Swanger, 1936) comb. n.
Dorylaimus capitatus Thorne & Swanger, 1936
Eudorylaimus capitatus (Thorne & Swanger, 1936) Andrássy, 1959
Aporcelaimellus capitatus (Thorne & Swanger, 1936) Heyns, 1965
Drepanodorus monohystera Brzeski, 1964 syn. n.
Paraxonchium monohystera (Brzeski, 1964) Altherr & Loof, 1969 syn. n.

M. coomansi (Baqri & Khera, 1975) comb. n.
Aporcelaimellus coomansi Baqri & Khera, 1975

M. digitalis (Loos, 1949) comb. n.
Aporcelaimus digitalis Loos, 1949
Aporcelaimellus shamimi Ahmad, 1995 syn. n.
Aporcelaimellus sublabiatus apud Thorne, 1974 syn. n.

M. efficiens (Cobb in Thorne & Swanger, 1936) comb. n.
Dorylaimus efficiens Cobb in Thorne & Swanger, 1936
Eudorylaimus efficiens (Cobb in Thorne & Swanger, 1936) Andrássy, 1959
Aporcelaimellus efficiens (Cobb in Thorne & Swanger, 1936) Baqri & Khera, 1975

M. invisus (Tjepkema, Ferris & Ferris, 1971) comb. n.
Aporcelaimellus invisus Tjepkema, Ferris & Ferris, 1971

M. labiatus (de Man, 1880) comb. n.
Dorylaimus labiatus de Man, 1880
Eudorylaimus labiatus (de Man, 1880) Andrássy, 1959
Aporcelaimium labiatum (de Man, 1880) Loof & Coomans, 1970
Aporcelaimus conicaudatus Altherr, 1953 syn. n.
Aporcelaimellus conicaudatus (Altherr, 1953) Monteiro, 1970 syn. n.

M. mombucae Lordello, 1965
Aporcelaimellus mombucae (Lordello, 1965) Loof, Jairajpuri & Ahmad, 1995
Aporcelaimellus indicus Baqri & Jairajpuri, 1968 syn. n.
Aporcelaimellus conicaudatus apud Monteiro, 1970 syn. n.

M. oceanicus nom. n.
Aporcelaimus conicaudatus apud Williams, 1959
Aporcelaimellus conicaudatus apud Heyns, 1995

M. romanicus (Popovici, 1978) comb. n.
Aporcelaimus romanicus Popovici, 1978

M. simplex (Thorne & Swanger, 1936) comb. n.
Dorylaimus simplex Thorne & Swanger, 1936
Aporcelaimellus simplex (Thorne & Swanger, 1936) Loof & Coomans, 1970

M. sublabiatus (Thorne & Swanger, 1936) comb. n.
Dorylaimus sublabiatus Thorne & Swanger, 1936
Eudorylaimus sublabiatus (Thorne & Swanger, 1936) Andrássy, 1959
Aporcelaimus sublabiatus (Thorne & Swanger, 1936) Brzeski, 1962
Aporcelaimellus sublabiatus (Thorne & Swanger, 1936) Thorne, 1974
Aporcelaimus conicaudatus apud Andrássy, 2000 syn. n.

Remarks. When studying the positions of the oesophageal gland nuclei in dorylaimoid nematodes, Loof and Coomans (1970) called the attention that *Eudorylaimus labiatus* (de Man, 1880) Andrássy, 1959 clearly belongs to the family Aporcelaimidae. According to them, it differs from *Aporcelaimus* species by transversally striated cuticle without criss-cross lines, absence of an oesophago-intestinal disc and a hexagonal oral opening, furthermore by the very low value of K in the oesophageal gland map (K = 30–32 *vs.* 50–70). It differs from the representatives of *Aporcelaimellus* by the transverse vulva, thin outer layer of cuticle and also by the low value of K. They suggested a new genus for *labiatus: Aporcelaimium* Loof & Coomans, 1970.

Some years prior to the publication of Loof and Coomans, Lordello described a new aporcelaimoid nematode from Brazil and erected at the same time a separate genus for it: *Metaporcelaimus mombucae* Lordello, 1965. He regarded the structure of the oesophagus as main distinguishing character for his genus: „*Metaporcelaimus* differs from its closely resembling genus, *Aporcelaimus* Thorne & Swanger, 1936, in having oesophagus made up of three regions, a cardia-like structure being seen between the posterior and middle parts". It is hardly questionable that Lordello's nematode was a wounded specimen in its oesophagus: this organ was either broken or twisted or bent in, and showed therefore that unusual appearance. What is however much more important, the Brazilian nematode is in all other characters very closely related to the type species of *Aporcelaimium*. No question, they (together with a number of further species, see below) belong to one and same genus; in other words, *Metaporcelaimus* is a senior synonym of *Aporcelaimium*.

As defined above, *Metaporcelaimus* is a good genus for a group of closely related species of the family Aporcelaimidae. The shape of labial region and stylet, the arrangement of oesophageal nuclei and the shape and length of tail can mainly characterize it. It is reminiscent of both the genera *Aporcelaimus* Thorne & Swanger, 1936 and *Aporcelaimellus* Heyns, 1965. It differs from *Aporcelaimus* in the higher and narrower labial region, the comparatively anterior position of the AS_1 nucleus (*vs.* it is closer to AS_2 than to D, hence the value of K is higher), the always slender (dorylaimoid) spicula (*vs.* they are often strongly swollen with wide lumen), the shape and length of tail (*vs.* this is always shorter than one anal diameter and more broadly rounded), and the smaller body (*vs.* to 10 mm). From *Aporcelaimellus* it may be separated in the

above mentioned characters (except for body length) as well as in the structure of cuticle (the „inner" cuticle is seemingly homogeneous under light microscope in *Metaporcelaimus*, but it shows two distinct layers in *Aporcelaimellus* with different refraction of light, especially expressed on the tail), the generally longer aperture of the odontostyle (*vs.* 1/2 odontostyle length or shorter) and the slender body. In addition, males are much more frequent (or know at all) in *Metaporcelaimus* than in *Aporcelaimellus*.

After going through the nominal species of the genera *Aporcelaimus* Thorne & Swanger, 1936, *Aporcelaimellus* Heyns, 1965, and in part of *Eudorylaimus* Andrássy, 1959, I found some of them to be very similar to both *Metaporcelaimus mombucae* and *Aporcelaimium labiatum*. We may suppose that these species are congeneric with the latter ones. True however, one important character of *Aporcelaimium*, namely the fairly close position of the oesophageal nucleus AS_1 to the dorsal nucleus (and hence the lower value of K), is known only in four of these species *(coomansi, labiatus, simplex* and *sublabiatus)*. But also the remaining species fit the diagnosis of *Metaporcelaimus* (syn. *Aporcelaimium*) in all other morphological-anatomical structures very well. Of course, our knowledge on taxonomy of *Metaporcelaimus* – as well as of *Aporcelaimus* and *Aporcelaimellus* – is far from complete. Further investigations would be welcome in order to paint a clearer picture on both these genera themselves and the species placed in them. So, it is easily possible that additional species of the genus *Aporcelaimellus* may actually belong to *Metaporcelaimus*.

Distribution. As far as known, the genus *Metaporcelaimus* is distributed in Europe, Asia, Africa, North and South America.

Metaporcelaimus adoxus (Tjepkema, Ferris & Ferris, 1971) comb. n.

Tjepkema, Ferris and Ferris, 1971, Indiana *(Aporcelaimellus adoxus)*:

Females: L = 1.60–1.95 mm; a = 26–33; b = 3.6–4.0; c = 38–45; V = 48–54 %; c' = 1.2–1.3.

Cuticle very finely annulated, nearly as thick as stylet. Head 18–20 µm wide. Odontostyle 20–23 µm, a little longer than labial diameter, aperture 2/3 of its length. Vulval lips sclerotized. One egg, 1.5 times as long as body width. Female tail 39–45 µm long, dorsally convex, conoid, occasionally slightly subdigitate on tip.

Remarks. *Metaporcelaimus adoxus* is very close to *M. simplex*, and only differs from that in having shorter eggs (*vs.* twice the body width) and a somewhat different shape of tail. It is similar to *M. mombucae* as well, the odontostyle is however longer (20–23 *vs.* 14–19 µm) and the tail shorter (1.2–1.3 times *vs.* 1.6–1.9 times anal body width).

Distribution. United States (Indiana).

Thorne, 1974, Colorado, Montana *(Aporcelaimellus capitatus):*

Female: L = 2.8 mm; a = 44; b = 4.6; c = 55; V = 56 %; c' = 1.4.

Head somewhat discoid, but very narrow, body at posterior end of oesophagus 8 times wider than head. Cuticle as thick as stylet. Odontostyle 14 µm, shorter than labial width, opening half its length. Tail with relatively blunt tip.

Remarks. *„Aporcelaimellus capitatus"* of Thorne, 1974, is hardly identical with the original species of Thorne & Swanger, 1936. The head is somewhat discoid and extremely narrow, only 1/8 (!) of the body width at neck base, the odontostyle smaller (14 *vs.* 20–22 µm), shorter than labial diameter, and the cuticle thicker (as thick as spear). The two *„capitatus"* agree essentially in one character: the relatively short (1/2) aperture of the odontostyle. It seems to be advisable if we use a separate species name for the nematode of Thorne, 1974 as proposed above.

Metaporcelaimus angusticollis is clearly distinctive because of its very strongly narrowed anterior region. The shape of head, and the short odontostyle with relatively small aperture are further important characters for this species.

Distribution. United States (Colorado, Montana).

Metaporcelaimus capitatus (Thorne & Swanger, 1936) comb. n.

a) Thorne and Swanger, 1936, Utah *(Dorylaimus capitatus):*

Female: L = 2.3 mm; a = 41; b = 5.0; c = 59; V = 49 %; c' = 1.5.
Male: L = 2.5 mm; a = 52; b = 5.2; c = 63; c' = 1.3.

Head 1/3 as high as wide. Cuticle thinner than odontostyle. Odontostyle about 20–22 µm, 1.3 times the labial width; opening about 1/2 of its length.

Supplements 5–9, well spaced, all lying far before the spicula. Tail comparatively blunt on tip.

b) Tjepkema, Ferris and Ferris, 1971, Indiana *(Aporcelaimellus capitatus):*

Females: L = 2.17–2.40 mm; a = 35–44; b = 4.4–4.9; c = 49–62; V = 52–58 %; c' = 1.1–1.3.
Males: L = 2.05–2.44 mm; a = 38–45; b = 4.4–5.4; c = 50–72; c' = 1.0–1.1.

Cuticle finely annulated. Labial region 15–18 µm wide. Odontostyle 1.2–1.3 times as long as labial width, 21–23 µm, aperture half its length. Vulva a short transverse slit with sclerotized lips. Eggs twice as long as body diameter. Spicula 52–54 µm. Supplements 4–5. Female tail 37–44 µm, male tail 33–45 µm, both dorsally convex with fairly blunt tip.

c) Brzeski, 1964, Poland *(Drepanodorus monohystera):*

Female: L = 3.1 mm; a = 32; b = 4.5; c = 41; V = 47 %; c' = 1.6.

Body at posterior end of oesophagus about 5 times wider than head. Cuticle thinner than stylet. Odontostyle 20 µm, 1.1 times the labial width, opening about 1/2. Tail comparatively bluntly rounded. „Monodelphic".

d) Heyns, 1989, Poland *(Paraxonchium monohystera):*

Holotype female: L = 3.04 mm; a = 30; b = 4.6; c = 46; V = 48 %; c' = 1.4.

Cuticle thinner than spear. Odontostyle 20.5 µm, 1.2 times the labial width, aperture somewhat longer than 1/2 of its length. Dorsal oesophageal gland in 54 % of oesophagus length. Tail quite exactly the same as drawn by Thorne and Swanger.

Remarks. Already Tjepkema, Ferris and Ferris noted that „*A. capitatus* is rather atypical of *Aporcelaimellus,* and may be more typical of *Aporcelaimium"* (now: *Metaporcelaimus*).

Heyns studied and redescribed the holotype (and only specimen) of Brzeski's *Drepanodorus (=Paraxonchium) monohystera,* and stated that the species did have two gonads; the anterior branch of the genital system was overlooked by Brzeski. Heyns also emphasized, this species is not a typical *Paraxonchium,* but it shows a close resemblance to *Aporcelaimellus.* In fact, *monohystera* shows all the criteria of the genus *Metaporcelaimus,* even completely agrees with *M. capitatus.* Therefore, I consider the species of Brzeski a junior synonym of *A. capitatus.*

It is strongly queried whether „*Aporcelaimus capitatus*" of Thorne, 1974 is identical with the *capitatus* of Thorne and Swanger. The labial region is extremely narrow and the odontostyle distinctly shorter. I suggest a new species name for it (see *M. angusticollis*).

Metaporcelaimus capitatus can be characterized by the moderately long body, rather thin cuticle, relatively short opening of odontostyle, long eggs, more or less bluntly rounded tail terminus as well as by the number (4–9) of male supplements.

Distribution. Poland and the United States (Utah, Indiana).

Metaporcelaimus coomansi Baqri & Khera, 1975

a) Baqri and Khera, 1975, India *(Aporcelaimellus coomansi):*

Females: L = 1.68–1.90 mm; a = 30–33; b = 3.5–4.1; c = 34–35; V = 53–58 %; c' = 1.5–1.7.

Cuticle distinctly striated, as thick as stylet. Odontostyle 17–18 µm, nearly equal to labial width, aperture 2/3 of its length. Vulva a transverse slit with sclerotized lips. Egg as long as 1.8 body diameters. Female tail 50–55 µm, convex-conoid with slightly dorsally bent tip. The map of the oesophageal gland nuclei is calculated from the original Loof's formula:

D = 49–54 %	AS_1 = 17–18 % AS_2 = 43–47 % PS_1 = 67–70 %
K = 37–43 %	PS_2 = 70–72 %

b) Ahmad, 1995, India *(Aporcelaimellus coomansi):*

Females: L = 1.88–2.27 mm; a = 38–51; b = 4.3–4.8; c = 32–53; V = 55–58 %; c' = 1.4–2.1 (?).

Males: L = 2.21–2.33 mm; a = 45–47; b = 4.6–4.8; c = 53–57; c' = 1.2–1.3.

Cuticle transversely striated, thinner than stylet. Lip region 14–16 µm wide. Odontostyle 16–18 µm, 1.1–1.2 lip region widths long, aperture occupying nearly 2/3 of its length. Spicula 49–52 µm. Ventromedial supplements only two. Female tail 39–59 µm, male tail 41–42 µm, both more or less subdigitate, at male more pointed than at female.

Remarks. This species differs from all others (where males are known) in having merely two supplements. It is very similar to *Metaporcelaimus adoxus* and *M. efficiens.* It only differs from *adoxus* by the somewhat shorter stylet (16–18 µm *vs.* 20–23 µm; it must be noted however that the stylet length according to the figure of *adoxus* is only 18 µm!), and from *efficiens* by the shorter stylet aperture (*vs.* 3/4) and the somewhat longer tail. Unfortunately the males of *efficiens* and *adoxus* are not known, so these species cannot be fully compared with *coomansi.*

Distribution. India.

Metaporcelaimus digitalis (Loos, 1949) comb. n.

a) Loos, 1949, Sri Lanka *(Aporcelaimus digitalis):*

Females: L = 3.04–3.32 mm; a = 33; b =4.1–4.6; c = 47–53; c' = 1.2.

Anterior region markedly tapered. Cuticle about as thick as the stylet. Odontostyle more than 20 µm, as long as or slightly shorter than labial width, aperture occupying 3/4 of its length. Tail 62–65 µm, subdigitate.

b) Thorne, 1974, Nebraska, South Dakota *(Aporcelaimellus sublabiatus):*

Female: L = 4.0 mm; a = 46; b = 4.2; c = 58; V = 56 %; c' = 1.3.

Male: L = 4.0 mm; a = 45; b = 4.5; c = 56.

Cuticle apparently thicker than stylet. Lip region about 1/4 as wide as body width at neck base. Odontostyle 20 µm, nearly as long as labial width, aperture 3/4 of its length. Supplements 8–9, spaced, well before the spicula. Tail with rather blunt tip, slightly subdigitate.

c) Ahmad, 1995, India *(Aporcelaimellus shamimi):*

Females: = L = 2.78–2.81 mm; a = 35–43; b = 3.9–4.6; c = 45–57; V = 59–61 %; c' = 1.3–1.4.

Males: L = 2.52–3.17 mm; a =37–42; b = 4.7–5.3; c = 44–50; c' = 1.1–1.3.

Cuticle with transverse striae, about as thick as stylet. Lip region 20–23 µm wide. Odontostyle 20–21 µm, aperture 2/3 of its length or so. Vulva slit-like with sclerotized lips. Spicula 66–74 µm long. Supplements 6–8, spaced, lying well anterior to spicula. Female tail 49–63 µm, male tail 57–63 µm, both subdigitate with finely rounded tip.

Remarks. *Aporcelaimellus shamimi* completely agrees with *M. digitalis,* so that their identity can hardly be queried.

It seems improbable that *A. sublabiatus* of Thorne, 1974 would be conspecific with the „true" *sublabiatus.* The cuticle is thicker, the odontostyle more slender, the tail shorter (c' = 1.3 *vs.* 1.6–1.9) and the supplements are essentially less in number (6–9 *vs.* 13–16). Thorne's species strongly resembles *M. digitalis;* their identity may be supposed.

Metaporcelaimus digitalis is a comparatively big species with thick cuticle, large stylet aperture, subdigitate tail and moderate number of supplements.

Distribution. India, Sri Lanka and (probably) the United States (Nebraska, South Dakota).

Metaporcelaimus efficiens (Cobb in Thorne & Swanger, 1936) comb. n.

Thorne and Swanger, 1936, Japan *(Dorylaimus efficiens):*

Female: L = 1.8 mm; a = 43; b = 3.6; c = 50; V = 59 %; c' =1.4.

Cuticle about as thick as odontostyle. Odontostyle 16 µm, slender, as thick as 1/4 labial width, equal in length to cephalic diameter, aperture occupying 3/4 of its length. Tail rather bluntly tipped, slightly subdigitate.

Remarks. The short and slender body, the thick cuticle and the large odontostyle aperture may characterize this species. It is close to *M. simplex,* which is also a small species, but the slender figure, thick cuticle and the thinner odontostyle distinguish *efficiens* from that.

Distribution. Japan.

Metaporcelaimus invisus (Tjepkema, Ferris & Ferris, 1971) comb. n.

Tjepkema, Ferris and Ferris, 1971, Indiana *(Aporcelaimellus invisus):*

Females: L = 1.91–2.20 mm; a = 37–47; b = 3.7–5.2; c = 55–69; V = 47–52 %; c' = 1.1–1.2.

Cuticle finely annulated. Labial region 16–18 µm wide. Odontostyle 19–21 µm, aperture 2/3 of its length. Vulval lips sclerotized. Eggs as long as two body diameters. Female tail 31–36 µm, dorsally convex with blunt tip.

Remarks. The American authors noted: *„A. invisus,* like *A. capitatus,* is atypical of *Aporcelaimellus,* may fit as well or better in *Aporcelaimium"* (=

Metaporcelaimus). *Metaporcelaimus invisus* is very similar to *M. simplex* (e.g. both have long eggs), it only differs by a longer and more slender stylet.

Distribution. United States (Indiana).

Metaporcelaimus labiatus (de Man, 1880) comb. n.

a) De Man, 1880, Holland *(Dorylaimus labiatus):*

Females: L = 3.5 mm; a = 50–55; b = 4.5–5.0; c = 45–50; V a little behind mid body; c' = 1.8.

Neck region posterior to the odontostyle with a distinct constriction.

b) Schuurmans Stekhoven, 1951, Zaire *(Dorylaimus labiatus):*

One juvenile, hardly conspecific with de Man's species: as illustrated, the odontostyle is slender with an aperture occupying only 1/3 of its length.

c) Loof, 1961, Holland *(Eudorylaimus labiatus):*

Lectotype female: L = 3.75 mm; a = 48; b = 4.9; c = 54; V = 53 %; c' = 1.7.
Other female: L = 2.49 mm; a = 33; b = 4.4; c = 45; V = 53 %.

Body at proximal end of oesophagus 4–5 times as wide as head. Cuticle much thinner than the stylet. Labial region unusually high, about 1/3 as high as wide. Odontostyle about 14 µm, 1.2 times the labial width, aperture 2/3 of its length. Tail finely rounded, not subdigitate.

d) Loof and Coomans, 1970, Holland, Switzerland *(Aporcelaimium labiatum):*

Cuticle finely transversely striated. Oesophageal gland nuclei:

D = 49–53 %	AS_1 = 13–14 % AS_2 = 40–43 % PS_1 = 70–71 %
K = 30–32 %	PS_2 = 71–72 %

e) Zell, 1986, Germany *(Eudorylaimus labiatus):*

Juvenile: L = 1.62 mm.

Lips spherical and high. Tail finely rounded.

f) Altherr, 1953, Switzerland *(Aporcelaimus conicaudatus):*

Female: L = 3.25 mm; a = 55; b = 5.3; c = 45; V = 51 %; c' = 1.8.

Labial region very high. Cuticle thinner than spear, finely transversally striated. Odontostyle thick, 15 µm long, aperture 7/9 of its length. Tail not subdigitate.

g) Andrássy, 1972, Hungary *(Aporcelaimus conicaudatus):*

Male: L = 3.92 mm; a = 55; b = 5.5; c = 53; c' = 1.7.

Labial region very high, 1/3 as high as wide. Neck with a slight, but distinct constriction posterior to spear. Cuticle somewhat thinner than odontostyle. Odontostyle 16 µm, hardly longer (1.1 times) than labial width, aperture 2/3 of its length. Spicula 70 µm. Supplements 7, spaced, well before the spicula.

h) Altherr, 1974, Germany *(Aporcelaimellus conicaudatus):*

Female: L = 3.25; a = 49; b = 4.7; c = 49; V = 50 %; c' = 1.7.

Odontostyle 15 µm long.

i) Altherr, 1974, Germany *(Aporcelaimus jugeti,* female*):*

Female: L = 4.10 mm; a = 53; b = 5.5; c = 42; V = 55 %; c' = 1.4.

As also supposed by Altherr, the female (but only that!) of this nematode is most probably identical with *conicaudatus (=labiatus)* (see also Andrássy, 2000 a).

Remarks. There is no doubt that Altherr's *conicaudatus* is conspecific with de Man's *labiatus.* The very high lip region, the constriction on the neck, the shape and length of the odontostyle and tail all are of the same kind in both species. Loof (1999) also supposed their identity. Consequently, *Aporcelaimus conicaudatus* is considered a junior synonym of *A. labiatus.*

Loof (1961) gives a good redescription of *A. labiatus* on the basis of the original specimens preserved in the collection of de Man. A little contradiction seems to be found merely in length of the two females measured: one of them appears to be too short for this species. It is therefore not impossible that the smaller animal belonged to an other (similar) species, all the more, de Man collected them in different localities. Luckily, Loof designated the longer female for lectotype.

Metaporcelaimus labiatus can well be characterized by the high head, constricted neck, long (3.2–4.1 mm) and slender body, thin and conspicuously striated cuticle, short odontostyle as compared to body length (14–16 µm, 1.1–1.2 times head diameter), long tail (1.7–1.8 anal diameters) as well as by the number of supplements (7). The value of „K" is very low in this species.

Distribution. Europe: Holland, Germany, Switzerland, Poland, Czech Republic, Hungary, Spain, France, Italy, Belorussia; Asia: Uzbekistan, Russia (Far East).

Metaporcelaimus mombucae Lordello, 1965

a) Lordello, 1965, Brazil *(Metaporcelaimus mombucae):*

Female: L = 1.83 mm; a = 28; b = 4.4; c = 34; V = 56 %; c' = 1.6.

Head 18 µm wide. Cuticle apparently thinner than spear. Odontostyle 17 µm, nearly as long as labial diameter, aperture measuring 2/3 (or longer). Tail

53 µm, slightly concave on ventral side.

b) Baqri and Jairajpuri, 1968, India *(Aporcelaimellus indicus):*

Females: L = 2.40–2.45 mm; a = 49–50; b = 4.7; c = 41–43; V = 57–58 %; c' = 1.8–1.9.

Cuticle thinner than stylet. Odontostyle 16 µm, as long as cephalic diameter, aperture 2/3 of its length. Tail 56–60 µm, conoid, dorsally convex, ventrally slightly concave.

c) Monteiro, 1970, Brazil *(Aporcelaimellus conicaudatus):*

Females: L = 1.99–2.34 mm; a = 32–40; b = 4.2–5.2; c = 30–36; V = 50–55 %.
Males: L = 2.00–2.30 mm; a = 33–42; b = 4.0–4.8; c = 37–45; c' = 1.5.

Head 15–17 µm wide. Odontostyle 14–19 µm, about as long as labial width, aperture 7/10 of its length. Spicula 71–79 µm. Supplements 6–8, spaced, well before the spicula. Tail 50–60 µm, slightly ventrally arcuate.

Remarks. As also Loof (1999) noted, the nematodes of Monteiro are not conspecific with Altherr's *conicaudatus*. They fit however the diagnosis of *mombucae* very well. They were collected in several localities in Brazil; thus, we may suppose, both Lordello and Monteiro have studied one and the same species.

„Aporcelaimus conicaudatus" of Williams (1959) is also very similar to *M. mombucae,* only the longer body (2.6–2.9 mm) distinguishes it from that.

Aporcelaimellus indicus Baqri & Jairajpuri, 1968 is very probably identical with *M. mombucae* (the same shape and length of body, odontostyle and tail). The only difference could be found in the arrangement of the oesophageal nuclei as illustrated in *indicus:* AS_1 and AS_2 nuclei are in pair, very close to each other. Such a situation is however quite unusual in aporcelaimoid nematodes, so that these nuclei were presumably misidentified.

In length of the odontostyle and its aperture as well as in number of the supplements, *Metaporcelaimus mombucae* is similar to *M. labiatus.* The Brazilian species is however shorter (1.8–2.4 vs. 3.2–4.1 mm), its labial region lower and the neck does not show any constriction.

Distribution. India, Brazil.

Metaporcelaimus oceanicus nom. n.

a) Williams, 1959, Mauritius *(Aporcelaimus conicaudatus):*

Females: L = 2.6–2.9 mm; a = 35–43; b = 3.7–4.5; c = 37–43; V = 51–55 %; c = 1.4.

Anterior region strongly tapering. Cuticle with distinctannulation, about as thick as stylet. Odontostyle 16 µm, as long as lip region width, aperture occupying 2/3 of its length. Tail dorsally convex-conoid with rounded tip.

b) Heyns, 1995, Comores Islands *(Aporcelaimellus conicaudatus):*

Females: L = 2.85–3.12 mm; a = 33–34; b = 3.8–4.1; c = 39–51; V = 54–55 %; c' = 1.4–1.8.

Labial region 18–19 µm wide. Cuticle very finely annulated, as thick as stylet. Odontostyle 17–18.5 µm, aperture about 2/3 of its length. Vulva not sclerotized. Tail 61–74 µm long, conoid with rounded terminus.

Remarks. Heyns underlined that his specimens were in complete agreement with those of Williams. The comparatively close localities in the western Indian Ocean also strengthen their identity.

In the position of the oesophageal gland nuclei there is some contradiction. In one of his two specimens, Heyns illustrated a large nucleus quite close to AS_2; he regarded it to be „AS_1", but he could not give the outlet of this „gland". He said however: „In both specimens there is an additional outlet in the lumen about 57–59 µm behind the dorsal gland opening, and in specimen *b* there is an indication of a gland cell associated with this outlet." It is almost certain that this latter opening and „indication" close to D meant the true position of AS_1, and that the „nucleus" thought to be the first anterior sublateral gland was merely a nucleus-like granule.

Among the longer species of the genus, *Metaporcelaimus oceanicus* is characterized in having a rather short odontostyle, a medium long tail and a non-sclerotized vulva.

Distribution. Western Indian Ocean: Mauritius and the Comores.

Metaporcelaimus romanicus (Popovici, 1978) comb. n.
(Fig. 3 A–E)

a) Popovici, 1978, Rumania *(Aporcelaimus romanicus):*

Females: L = 2.93–3.56 mm; a = 38–41; b = 4.0–4.6; c = 56–69; V = 49–53 %; c' = 1.0–1.2.

Males: L =2.75–3.42 mm; a = 36–47; b = 3.9–4.9; c = 54–71; c' = 1.0–1.2.

Head 16 µm wide, as wide as 1/5 body width at neck base, about 1/3 times as high as wide. Cuticle nearly as thick as spear. Odontostyle 17–20 µm, 1.2–1.3 times the head diameter, aperture 2/3 of its length. Spicula 75–92 µm. Supplements 10–12, spaced, posterior one or two lying within the range of spicula. Tail with relatively blunt tip, subdigitate.

b) Present specimens, two paratypes kindly sent by Dr. Popovici, Rumania *(Aporcelaimus romanicus):*

Paratype males: L = 2.85–3.28 mm; a = 30–46; b = 4.3–4.5; c = 62–65; c' = 1.1–1.2.

Labial region 14–16 µm wide, 1/4 or 1/5 of body width at base of neck. Odontostyle 19–21 µm, distinctly longer than labial diameter; aperture 2/3 of stylet length. Spicula 74–79 µm. Supplements 11 in both males, posterior two of them in range of spicula. Male tail 45–46 µm long.

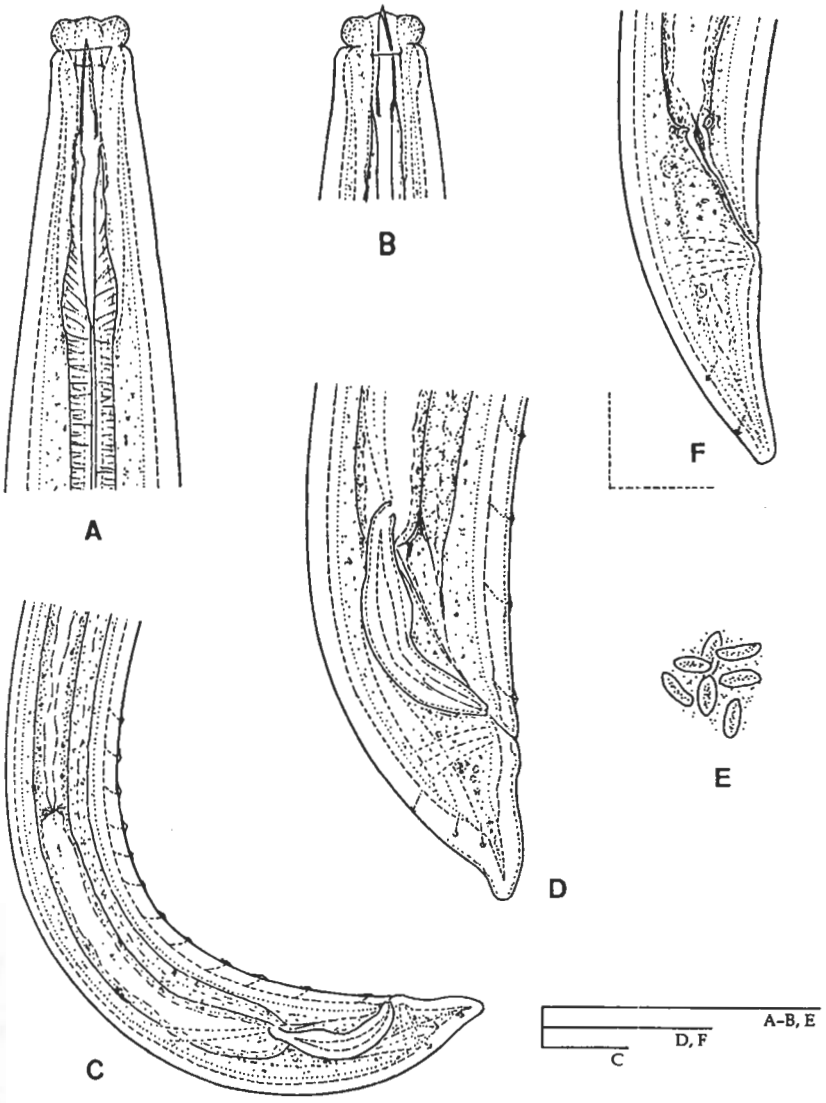

Fig. 3. A–E. *Metaporcelaimus romanicus* (Popovici, 1978) comb. n. – a typical representative of the genus. Paratype specimens from Rumania. A–B: anterior end of two males; C: posterior end of a male; D: posterior end of another male; E: spermatozoa. – Fig. 3 F. *Metaporcelaimus mombucae* Lordello, 1965 from India. Female tail. (Scale bars 50 µm each)

Remarks. The two paratypes I could studied correspond in every respect to the original description.

Metaporcelaimus romanicus is a well recognizable nematode: it differs from every species of the genus in the arrangement of supplements; this is the single species within the group that has 1–2 supplements at latitude of the spicula. It is a large-sized representative of the genus, with a comparatively short tail and high number of supplements (only *M. sublabiatus* has more supplements, 13–16).

Distribution. Rumania.

Metaporcelaimus simplex (Thorne & Swanger, 1936) comb. n.

a) Thorne and Swanger, 1936, Utah, Jamaica *(Dorylaimus simplex):*

Female: L = 1.7 mm; a = 24; b = 3.9; c = 32; V = 54 %, c' = 1.2.
Male: L = 1.7 mm; a = 23; b = 3.7; c = 32.

Cuticle much thinner than spear. Odontostyle thick, hardly longer than labial width, aperture 3/4 of its length. Eggs almost twice as long as body width. Supplements only 4, separate, far before the spicula. Tail short and rather blunt on tip.

b) Tjepkema, Ferris and Ferris, 1971, Utah *(Aporcelaimellus simplex):*

Females from Thorne's collection: L = 1.88–2.40 mm; a = 29–34; b = 4.1–4.7; c = 38–57; V = 48–54 %; c' = 1.0–1.4.

Cuticle faintly annulated, much thinner than stylet. Labial width 20 µm. Odontostyle 17–20 µm, aperture 3/4 of stylet length. Vulval lips sclerotized. At a time, females with one egg being as long as 1.3–1.5 body diameters. Female tail 35–57 µm.

c) Loof and Coomans, 1970, Holland, France, Italy, California *(Aporcelaimellus simplex):*

Cuticle with fine transverse striae. Oesophageal gland nuclei:

D = 54–58 %	AS_1 = 19–21 % AS_2 = 41–47 % PS_1 = 67–70 %
K = 44–48 %	PS_2 = 70–74 %

c) Heyns, 1971, South Africa (*Paraxonchium* sp. from Makatini Flats):

Cuticle thinner than spear. Odontostyle thick, hardly longer than labial width, aperture more than 2/3 of its length. Tail about 1.3 anal diameters long, bluntly rounded.

Remarks. No doubt, the latter nematode is a *Metaporcelaimus* as well. Since Heyns did not give any morphometric data, it is not possible to realise his species. It resembles *M. simplex.*

The short body, thin cuticle, thick odontostyle, long eggs and short tail may characterize *Metaporcelaimus simplex*. In addition, it shows the second lowest number of supplements (4) within the genus.

Distribution. Europe: Holland, France, Italy; America: United States (Utah, California), Jamaica; and, maybe, Africa: South Africa.

Metaporcelaimus sublabiatus (Thorne & Swanger, 1936) comb. n.

a) Thorne and Swanger, 1936, Utah *(Dorylaimus sublabiatus):*

Female: L = 3.2 mm; a = 33; b = 4.5; c = 56; V = 52 %; c' = 1.7–1.8.
Male: L = 3.1 mm; a = 43; b = 4.3; c = 52.

Head moderately high, about 1/4 as high as wide. Cuticle thinner than stylet. Odontostyle massive, about 20 µm, nearly equal in length to the labial diameter, aperture occupying 3/4 (2/3?) of its length. Supplements 13–16, separate, all before the spicula. Tail narrowly rounded on tip, slightly subdigitate.

b) Andrássy, 2000 a, Alaska *(Aporcelaimus conicaudatus):*

Females: L = 3.23–3.70 mm; a = 38–50; b = 4.4–5.2; c = 47–50; V = 48–51 %; c' = 1.6–1.9.

Cuticle about as thick as odontostyle. Labial region 15–16 µm wide, 1/5–1/6 of body width at posterior end of oesophagus. Odontostyle 20–23 µm, 1.3–1.4 head diameters, aperture 2/3 of its length. Tail tip narrowly rounded, mostly slightly subdigitate. Oesophageal gland nuclei:

D = 50–51 %	AS_1 = 21–24 % AS_2 = 45–49 % PS_1 = 74–76 %
K = 47–50 %	PS_2 = 75–78 %

Remarks. The Alaskan specimens seem to belong more to *M. sublabiatus* than to *M. labiatus* (syn. *Aporcelaimus conicaudatus*) as I supposed. The labial region is not so very high and the odontostyle is longer (20–23 µm, 1.3–1.4 labial diameters *vs.* 14–16 µm, 1.1–1.2 labial diameters).

Metaporcelaimus sublabiatus is distinctive because of the combination of its morphological features: long body, comparatively long odontostyle, long tail (1.6–1.9 anal diameters). In addition, it has the highest number of supplements within the genus (13–16).

Distribution. Europe: Spain, Poland; America: United States (Utah, Alaska).

1 Aperture 1/2 of stylet length 2
– Aperture 2/3 to 3/4 of stylet length 3

2 Labial region extremely narrow, 1/8 body width at neck base; odontostyle 14 µm. **angusticollis** nom. n.
– Labial region not so narrow, 1/5 body width at neck base; odontostyle 20–23 µm . **capitatus** (Thorne & Swanger)

3 Body smaller, 1.6 to 2.3 mm 4
– Body bigger, 3.0 to 4.1 mm 9

4 Cuticle as thick as odontostyle (very closely related species) 5
– Cuticle conspicuously thinner than odontostyle 7

5 Odontostyle 20–23 µm long ..... **adoxus** (Tjepkema, Ferris & Ferris)
– Odontostyle 16–18 µm long 6

6 Aperture 2/3 of stylet length ..... **coomansi** (Baqri & Khera)
– Aperture 3/4 of stylet length ..... **efficiens** (Cobb in Thorne & Swanger)

7 Tail longer, 1.5–1.9 anal diameters, slightly concave on ventral side ..... **mombucae** Lordello
– Tail shorter, 1.1–1.2 anal diameters, straight on ventral side 8

8 Odontostyle slender, distinctly longer than labial diameter ..... **invisus** (Tjepkema, Ferris & Ferris)
– Odontostyle robust , as long as or shorter than labial diameter ..... **simplex** (Thorne & Swanger)

9 One or two supplements within range of spicula ..... **romanicus** (Popovici)
– No supplement within range of spicula 10

10 Lips spherical and very high; odontostyle 14–16 µm..... **labiatus** (de Man)
– Lips somewhat depressed, moderately high; odontostyle 20–23 µm 12

12 Tail shorter, 1.2–1.4 anal diameters; supplements 6–9 ..... **digitalis** (Loos)
– Tail longer, 1.6–1.9 anal diameters; supplements 13–16..... **sublabiatus** (Thorne & Swanger)

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