Phylogeny and new species of the genus *Lipurometriocnemus* Sæther (Diptera: Chironomidae)

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**Abstract.** *Lipurometriocnemus* Sæther (Diptera: Chironomidae: Orthocladiinae) is composed of five species endemic to the American continent. Three new species from Argentina are described and illustrated as males and *Austrocladius barilochensis* (Edwards) is newly transferred to *Lipurometriocnemus*. A cladistic analysis of Orthocladiinae placed *Lipurometriocnemus* as sister group to *Metriocnemus* van der Wulp. A separate cladistic analysis of *Lipurometriocnemus* species was also conducted and the results are discussed. An identification key to the adult males of *Lipurometriocnemus* is provided.

**Key words.** *Lipurometriocnemus*, Chironomidae, Orthocladiinae, systematics, phylogeny, taxonomy.

1. Introduction

The family Chironomidae is a group of dipteran insects with a worldwide distribution, including Antarctica (Ashe et al. 1987). The Orthocladiinae is the most diverse subfamily and is considered as the most broadly adapted group ecologically, including species living in freshwater habitats as well as many terrestrial forms.

The genus *Lipurometriocnemus* (Orthocladiinae, Chironomidae) is endemic to the New World and was described from the British West Indies by Sæther (1981) based on *Lipurometriocnemus glabalus* from St. Vincent and St. Lucia, adding soon after *Lipurometriocnemus vixlabatus* from North Carolina and Georgia (U.S.A.) (Sæther 1982) and Yukon (Canada) (CrAnston 1988). Later, Andersen et al. (2016) described two new species from Brazil notably expanding *Lipurometriocnemus* distribution southwards in the Neotropics. More recently, Ospina-Torres et al. (2018) described a new species from the Andes of Colombia.

The similarities of *Lipurometriocnemus* with other genera within the Orthocladiinae were discussed by Sæther (1981), who stated that *Lipurometriocnemus* keyed to Bryophaenocladius Thienemann and also comes close to *Metriocnemus* van der Wulp in the key to male Orthocladiinae (Brundin 1956), pointing out the lack of anal point as the defining trait of *Lipurometriocnemus*. Sæther (1981) also stated that female characters place *Lipurometriocnemus* between Chaetocladius Kieffer and *Metriocnemus*. Andersen et al. (2016) in agreement with Sæther (1981) mentioned the similarity among *Lipurometriocnemus* and Bryophaenocladius, also noting the absence of setae on the wing membrane as the main character setting *Lipurometriocnemus* apart from *Metriocnemus*. Notwithstanding earlier attempts to better understand the relationships among the taxa in the Orthocladiinae, a cladistic analysis of the group including the genus *Lipurometriocnemus* has been altogether lacking until present.

The study of recently collected material from several environments such as subantarctic forest, marginal rain forest and pampean mountain ranges, together with the detailed examination of the type material of *Spaniotoma (Orthocladius) barilochensis* Edwards has revealed some unplaced and hitherto undescribed taxa in *Lipurometriocnemus*.

Therefore, the objectives of our paper are as follows: 1) to present for the first time a phylogeny for the Or-
thocladiineae with special emphasis on the position of *Lipurometriocnemus* and an assessment of the relationships among the included species. 2) to describe three new species and propose a new combination and 3) to present a synopsis of *Lipurometriocnemus* and a key to the adult males of the genus.

2. Material and methods

**Material.** The specimens examined were preserved in ethanol. Microscope slides were prepared by clearing the specimens in 10% KOH; neutralize with glacial acetic acid; dehydrate in 80%, 96% and 100% ethanol and mounting in Canada balsam. Morphological terminology and measurement standards follow [1](#). Absolute and relative Bremer support values were calculated saving up to 6 steps longer subtrees per replicate. 1000 random addition sequences plus TBR and saving 10 trees per replicate. The tree search strategy was done mapping character states on most parsimonious trees using WinClada ver. 1.0 (Nixon 2002).

### Table 1. Data matrix for interpretation of cladistic relationships of the species of *Lipurometriocnemus* Saether: 19 characters scored as follows for 11 terminal taxa. Polymorphies: a = 0&1; b = 1&2.

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<tr>
<td>M. eunynotus (Holmgren, 1883)</td>
<td>200200112</td>
<td>0100000110</td>
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<tr>
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<td>0011110011</td>
</tr>
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<tr>
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<td>L. giebaloculus Saether, 1981</td>
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</table>

3. Results and discussion

3.1. List of characters and character states

**Head**

1. Ratio length of 3rd palpomere / length of 2nd palpomere: (0) < 2 ×, (1) 2 × 3 ×, (2) > 3 ×. — The maximum lengths of both palpomeres have been used.

2. Sensory pit with sensilla clavata on palpomere 2: (0) absent, (1) present.

3. Sensory pit with sensilla clavata on palpomere 3: (0) absent, (1) present.

**Thorax**

4. Dorso-central setae: (0) uniserial, (1) biserial, (2) multiserial.

5. Dorso-central setae: (0) starting near antepronotum, (1) starting at some distance from antepronotum (posterior to parapsidal suture).

6. Supra-alar setae: (0) present, (1) absent.

7. Scutellar setae: (0) uniserial, (1) biserial, (2) multiserial.

**Wing**

8. Wing membrane: (0) bare, (1) setose.

9. Anal lobe of wing: (0) distinctly to strongly projecting, (1) at most moderately projecting, (2) not projecting.

10. Costal extension: (0) distinct, > 40 μm long, (1) absent or < 40 μm long.

11. Ratio length of RM / length of the base of M₁⁻² vein: (0) > 2 ×, (1) < 2 ×.

12. R₁ vein: (0) setose, (1) bare.

13. R₁⁻⁵ vein: (0) setose, (1) bare.

14. M vein: (0) setose, (1) bare.

**Male genitalia**

15. Anal point: (0) present, (1) absent.
3.2. Cladistic analyses

The cladistic analysis performed to assess the phylogenetic relationships of Lipurometriocnemus among selected genera of Orthocladiinae using Aagaardia Sæther as outgroup (see Mendes et al. 2004), yielded one tree (Fit = 99.37; L = 739; CI = 0.26; RI = 0.44) (Fig. 1). The script returned a value of k = 6 for the data set. The genus Metriocnemus was found to be the sister group of Lipurometriocnemus, supported by the synapomorphy “seminal capsules pale” (82: 1).

Sæther (1981) mentioned that Lipurometriocnemus keyed to Bryophaeno cladius in the key to male Orthocladiinae (Brundin 1956), differing from that genus by the lack of an anal point. This character was also used by Andersen et al. (2016) to differentiate the two genera. The close relationship of Lipurometriocnemus and Metriocnemus were pointed out both by Sæther (1981) and Andersen et al. (2016), the latter authors also mentioned the absence of setae in the wing membrane in Lipurometriocnemus. Sæther (1981) considered both genera quite similar in the female genitalia too, but could be distinguished by the presence of a more developed dorsomesal lobe, microtrichia in the seminal capsule, and the lack of bulbs before the common opening of the spermathecal ducts in Lipurometriocnemus. The cladistic analysis performed in this study is in agreement with Sæther (1981) concerning characters derived from female genitalia and the character wing membrane bare mentioned by Andersen et al. (2016). Moreover, the results of the cladistic analysis showed additional characters to distinguish both genera. The presence of setae only on veins R, R1 and R4+5 differentiate Lipurometriocnemus from Metriocnemus that also has setae on M. Characters derived from

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16 Inferior volsella: (0) present and well developed, (1) present and low, (2) absent or present only as a projection of inner margin of gonocoxite.

17 Transverse sternapodeme: (0) nearly straight, (1) slightly arched, (2) strongly arched.

18 Crista dorsalis: (0) robust, preapical to apical, triangular to rounded, occasionally elongate; (1) weak, long and low to absent.

19 Virga: (0) present, consisting of cluster of spines or of single spine; (1) nail-shaped; (2) indicated or absent.

Fig. 1. Result of the cladistic analysis performed to assess the phylogenetic relationships of the genus Lipurometriocnemus Sæther within selected genera of Orthocladiinae (Fit = 99.37; L = 739; CI = 0.26; RI = 0.44). Below node, relative Bremer support; above node, absolute Bremer support.
the male genitalia such as the absence of the anal point and the nail shaped virga present in Lipurometriocnemus also differ from Metriocnemus since the anal point is occasionally absent and the virga is of another type.

The analysis performed to assess the phylogenetic relationships between the species of Lipurometriocnemus under implied weights generated one tree (Fit = 1.79; L = 40; CI = 0.65; RI = 0.61) (Fig. 2). The script returned a k = 6. As the genus level analysis gave Metriocnemus van der Wulp as the sister group of Lipurometriocnemus, representatives of the fuscipes and eurynotus species groups, respectively) were selected as outgroup to root the tree. The species L. barilochensis is the sister group of L. mallincolis, this relationship is supported by the true synapomorphies “ratio length palp 3 / length palp 2”, < 2 × (1: 0) and “sensory pit with sensilla clavata on palpomere 2” (2: 1). This clade is the sister group of L. amazonicus by sharing the apparent synapomorphy “dorsocentals uniserial” (although reverted in L. barilochensis to the biserial condition) (4: 0) and the true synapomorphy “dorsocentals starting some distance from antepronotum” (5: 1). The species L. bogotensis is the sister group of the clade L. amazonicus (L. barilochensis - L. mallincolis) supported by the apparent synapomorphy “supra-alaris absent”.

Concerning character analysis, in this cladistic scheme the character “ratio length of third palpomere/length of second palpomere” showed to be taxonomic informative, being a true synapomorphy and is placed at the basal node of the genus with the character state (0) “< 2 ×”. The multistate transformation series for this character is clear, state 0 being plesiomorphic, followed by state 1, and state 2 the most apomorphic.

4. Taxonomy

4.1. Key to species of Lipurometriocnemus Sæther

Modified from Andersen et al. 2016.

1. Acrostichals absent [Colombia]
   L. bogotensis Ospina-Torres, Mey & Jaime-Murcia
   1' Acrostichals present ............................................ 2
   2 R1 and R4,5 without setae ........................................ 3
   2' R1 with setae, R4,5 with or without setae ............... 4
   3 With 25–31 dorsocentals, mostly bi- to triserial;
   AR = 1.60–1.75 [USA] ......... L. vixlobatus Sæther
   3' With 9–19 dorsocentals, mostly uniserial; AR = 1.23–1.45 [Brazil]
   ............ L. amazonicus Andersen, Pinho & Mendes
   4 Without inferior volsella; R1 with 2 setae, R4,5 without setae [British West Indies] ......... L. glabralus Sæther
   4' With distinct inferior volsella .................................. 5
   5 With low inferior volsella ........................................ 6
   5' With distinct, rounded or sub-quadrangular inferior volsella ........................................... 8
   6 R1 with 4–7 setae, R4,5 without setae [Argentina]
   ................. L. rioplatensis sp.n.
   6' R1 with 8–9 setae, R4,5 with setae ..................... 7
   7 R4,5 with 9–10 setae; sensilla clavata on palpomeres 2 and 3 [Argentina]
   ................. L. barilochensis (Edwards) comb.n.
   7' R4,5 with 2–3 setae. Sensilla clavata on palpomere 3 only, second palpomere short [Argentina]
   ................. L. glabripalpus sp.n.
8. Second palpomere without sensilla chaetica. Thorax with dorsocentrais biseriál; R₄ with 11–18 setae, R₅ with 8–27 setae [Brazil].

8′. Second palpomere with sensilla chaetica. Thorax with dorsocentrais biseriál; R₄ with 8 setae, R₅ with 3 setae. [Argentina].

L. multicolcis sp.n.

4.2. Lipurometriocnemus Sæther


4.3. Species of Lipurometriocnemus

4.3.1. Lipurometriocnemus barilochensis (Edwards) comb.n.

Figs. 3A, 4A

Spaniotoma (Orthocladius) barilochensis Edwards, 1931: 290.


Taxonomic history. Edwards (1931) pioneered the study of Patagonian Chironomidae describing 70 species and placing them in Palaearctic genera and into newly described ones (i.e., Rhinocladius, Stictocladius [as subgenus]). Many orthoclads described by Edwards (1931) were placed in the no longer recognized genus Spaniotoma Philippi and in several subgenera. The study of Edwards’ types has led throughout the years to a major shift in the taxonomic position of his orthoclads (see EL Supplement Table S2). The first study of Edwards’ species is that of Freeman (1961), who established the genus Austrocladius and included it in species from Australia, New Zealand and South America. The latter region corresponds to the Edwards’ species Spaniotoma (Orthocladius) hirtinervis, S. (O.) hamulata, S. (O.) heterogenea and S. (O.) obliqua. Another species belonging to the subgenus Orthocladius, namely S. (O.) barilochensis, was considered by Spies & Reiss (1996) as an unplaced valid species in Orthocladiinae. They mentioned that an unpublished list of chironomid type material at The Natural History Museum (London) contains this species under Austrocladius and that it was not among the Edwards species transferred to that genus by Freeman (1961). Ashe & O’Connor (2012) mentioned that the original description of S. (O.) barilochensis is quite brief but states that it is a ‘Black species resembling S. obliqua rather closely, but differing as indicated below’. On these arguments, the authors considered that most of the descriptive features given for S. obliqua apply to both species except for the specific differences given for S. (O.) barilochensis but these differences fit within the range of variation in the generic diagnosis of Freeman (1961: 647–648) and the latter author did not transfer barilochensis to Austrocladius probably by an accidental omission.

The examination of the types of Spaniotoma (Orthocladius) barilochensis and A. obliquus showed that they are very different. The latter species possesses a strong bare anal point with rounded apex, the inferior volsella is well developed and divided in a dorsal and ventral lobe, and the third palpomere has an apical pit with 4–6 sensilla clavata and a subapical pit with 2–3 sensilla clavata. Besides, the combination of characters bare eye, acrostichals conspicuous beginning near antepronotum, wing membrane bare, squama with setae, sensilla chaetica and pulvilli absent, anal point absent, gonocoxite with a small nail-shaped virga and low inferior volsella places the former species in the genus Lipurometriocnemus. Therefore, the new combination Lipurometriocnemus barilochensis is established.


Diagnosis. The male imago can be separated from other members of the genus by having palpomere 2 very long, its length is more than half the length of palpomere 3; the presence of sensorial pit with sensilla clavata on palpomere 2; dorsocentrais biserial, starting some distance from antepronotum; anal lobe of wing strongly project-
ing; and inferior volsella low. See also the identification key.

**Distribution and ecology.** The type locality of this species is Bariloche, a city that is located in Nahuel Huapi National Park. The other specimens examined are also collected in the park and brings some clues about the habitat preferences of *L. barilochensis*. The Nahuel Huapi National Park preserves the Subantarctic forest and the ecotone with the Patagonian steppe. The specimens were collected in mallín Los Patos and its tributary stream. The word “mallín” means in Mapuche language marshy land and this kind of environment is distinctly differentiated from the surrounding areas by their highly organic-rich soil, in basins with high water content and with a characteristic flora. **Cranston** et al. (1989) have suggested that the immatures of this genus are semiaquatic or semiterrestrial and in this kind of environment is plausible to find them since other species belonging to genera with similar habitat preferences such as *Bryophaenocladius* Thiemann, *Pseudosmittia* Goetghebuer and *Metriocnemus* were also collected.

**Material examined. Type material:** Holotype ♂ (NHM), ‘Terr. Río Negro, Bariloche, ARGENTINA’ | 25–28.x.1927, F. & M. Edwards’. – Other material: ARGENTINA: 2 ♂ (ILPLA), Río Negro, P.N. Nahuel Huapi, Challhuaco, mallín Los Patos, 41°15′48.6″S 71°17′50.3″W, 1020 m asl, 20.xii/20.xii.2006, Malaise trap, A. Garre & F. Montes de Oca; 1 ♂ (ILPLA), Río Negro, P.N. Nahuel Huapi, Challhuaco, mallín Los Patos, 41°15′48.6″S 71°17′50.3″W, 1020 m asl, 20.xii.2006–3.i.2007, Malaise trap, A. Garre & F. Montes de Oca; 1 ♂ (ILPLA), Río Negro, P.N. Nahuel Huapi, Arroyo Verde, 41°15′41.9″S 71°17′49.2″W, 1510 m asl, 10.xii.2006, sweep net, A. Garre & F. Montes de Oca.

4.3.2. *Lipurometriocnemus glabripalpus* sp.n.

**Description. Measurements:** Male (n = 2, except when otherwise stated). Total length 2.88–3.16 [2.88] mm. Wing length 1.48–1.50 [1.48] mm. Total length / wing length 1.95–2.11 [1.95]. Wing length / length of profe-
Fig. 4. *Lipurometriocnemus* male genitalia. On the left, dorsal aspect; on the right, hypopysium with anal point and tergite IX removed, dorsal aspect in left half, ventral aspect in right half. A: *L. barilocheensis* (Edwards) comb.n.; B: *L. glabripalpus* sp.n.; C: *L. mallincolis* sp.n.; D: *L. rioplatensis* sp.n. — Abbreviations: Aedeagal lobe – AL; Inferior volsella – IVo; Gonocoxite – Gc; Gonostylus – Gs; Phallapodeme – Pha; Tergite IX – TIX; Transverse sternapodeme – TSa; Virga – Vi. — Scale bars: 50 µm.


**Diagnosis.** The male imago can be separated from other members of the genus by having palpomere 2 short, its length approximately half the length of palpomere 3; absence of sensilla clavata in palpomeres; dorsocentrals multiserial, starting close to antepronotum; anal lobe of hypopygium 94 from apex of gonocoxite. Gonostylus 130 long; megaseta 14 long. HR 2.02. HV 2.71. — Female and immatures. Unknown.

**Derivatio nominis.** From Latin glaber (smooth, hairless) and palpus (palpomere), referring to the absence of sensilla clavata in the palpomeres.

**Distribution and ecology.** The new species occurs in the Ventania orogenic system, a mountain range surrounded by the grassy steppes of Buenos Aires province in Argentina. For more details concerning habitat characteristics, coexisting chironomid fauna and climate of this area see Donato et al. (2012), Siri & Donato (2012) and Maual et al. (2013).

**Material examined.** Type material: Holotype ♂ (MLP), ARGENTINA, Sierra de la Ventana, A° Ventana, Buenos Aires | 38°02'53.1"S 62°07'41.5"W, 342 m asl, 26.xii.2015 | sweep net, M. Donato, A. Siri and F. Spaccesi. Paratype: 1 ♂ (ILPLA), ARGENTINA, Sierra de la Ventana, A° Napost, Buenos Aires | 38°08'43.2"S 62°05'33.5"W, 566 m asl, 23.xi.2012, sweep net, M. Donato, A. Siri and F. Spaccesi.

4.3.3. **Lipurometriocnemus mallincolis** sp.n.

**Figs.** 3C, 4C

**Description.** Measurements: Male (n = 1). Total length 3.52 mm. Wing length 2.14 mm. Total length / wing length 1.64. Wing length / length of profemur 2.33. **Coloration** (preserved in alcohol): Head, thorax and abdomen brown, legs slightly lighter brown. **Head:** Temporal setae 12–15 [15] including 6–8 [6] inner verticals, 2–3 [3] outer verticals and 3–6 [6] postorbitals. Clypeus with 10 setae. Tentorium 180 long; 40 wide. Stipes 160 long, 36 wide. Antenna, AR 1.42, ultimate flagellomere 592 long. Palpomere lengths: 38; 90; 142; 122; 232. Second palpomere with 5 and third palpomere with 8 sensilla clavata, both in apical half. **Thorax:** Antepronotum with 4 lateral setae. Acrostichals 15; dorsocentrals 18, anteriorly uniserial, posteriorly biserial; prealars 13; supra-alar absent. Scutellum with 21 setae, biserial. **Wing:** (Fig. 3C) VR 1.26. Costal extension 36 long. Brachiolum with 2 setae, R with 14, R, with 8 setae, R₄₋₅ with 3 setae. Squama with 15 setae. **Legs:** Spur of fore tibia 80 long, spurs of mid tibia 56 long, spurs of hind tibia 52 and 80 long. Width at apex of fore tibia 52; of mid tibia 52; of hind tibia 64. Comb with 13 setae. Pseudospondors on ta₁–ta₂ absent. Lengths and proportions of legs as in Table 6. **Hypopygium:** (Fig. 4C) Tergite IX with 25 setae. Laterosternite IX with 7 setae. Transverse sternapodeme with weak oral projections, 124 long. Phallapodeme 80 long. VrGa small, nail-shaped, 8 long. Gonocoxite 262 long; length from base of gonocoxite to apex of inferior volsella/length of gonocoxite 0.36; inferior volsella ending 94 from apex of gonocoxite. Gonostylus 130 long; megaseta 14 long. HR 2.02. HV 2.71. — Female and immatures. Unknown.

**Diagnosis.** The male imago can be separated from other members of the genus by having palpomere 2 very long, its length more than half the length of palpomere 3 and sensorial pit with sensilla clavata on palpomere 2; dorsocentrals uniserial, starting some distance from antepronotum; anal lobe of wing moderately projecting; and inferior volsella well developed. See also the identification key.

**Derivatio nominis.** From Mapuche mallin (marshy land) and incola (resident, native), referring to the habitat where it was found.

**Distribution and ecology.** The new species was collected in mallin Los Patos together with L. barilocheensis and comments on the distribution and ecology of this species is also applicable to L. mallincolis sp.n.

**Material examined.** Type material: Holotype ♂ (MLP), ARGENTINA, P.N. Nahuel Huapi, Challhuaco, mallin Los Patos, Río Negro | 41°15’48.6"S 71°17’50.3"W, 1020 m asl, | 10.xii/20.xii.2006 | Malaise trap, A. Garre & F. Montes de Oca.

4.3.4. **Lipurometriocnemus rioplatensis** sp.n.

**Figs.** 3D, 4D


Table 2. Lengths (in μm) and proportions of legs of Lipurometriocnemus barilochensis (Edwards) comb.n. (♂, n = 4). — Abbreviations: Leg (L); Femur (fe); Tibia (ti); Tarsomeres 1–5 (ta 1–5); Leg Ratio (LR), ratio of metatarsus to tibia; «Beinverhältnisse» (BV), combined length of femur, tibia, and basitarsus divided by combined length of tarsomeres 2–5; «Schenkel-Schiene-Verhältnis» (SV), ratio of femur plus tibia to metatarsus.

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Table 3. Lengths (in μm) and proportions of legs of Lipurometriocnemus rioplatensis sp.n. (♂, n = 6). Measurements of holotype in square brackets. — For abbreviations see Table 2.

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Table 4. Lengths (in μm) and proportions of legs of Lipurometriocnemus mallincolis sp.n. (♂, n = 1). — For abbreviations see Table 2.

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<td>940</td>
<td>980</td>
<td>420</td>
<td>260</td>
<td>160</td>
<td>0.43</td>
<td>3.66</td>
<td>4.57</td>
</tr>
<tr>
<td>L</td>
<td>1040</td>
<td>1200</td>
<td>620</td>
<td>340</td>
<td>260</td>
<td>0.52</td>
<td>3.40</td>
<td>3.61</td>
</tr>
</tbody>
</table>

Table 5. Lengths (in μm) and proportions of legs of Lipurometriocnemus glabripalpus sp.n. (♂, n = 2, except when otherwise stated). Measurements of holotype in square brackets. — For abbreviations see Table 2.

<table>
<thead>
<tr>
<th>L</th>
<th>fe</th>
<th>ti</th>
<th>ta 1</th>
<th>ta 2</th>
<th>ta 3</th>
<th>LR</th>
<th>BV</th>
<th>SV</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>680</td>
<td>800</td>
<td>500</td>
<td>320</td>
<td>200</td>
<td>0.63</td>
<td>3.45</td>
<td>3.38</td>
</tr>
</tbody>
</table>

**Diagnosis.** The male imago can be separated from other members of the genus by having palpomere 2 very short, its length less than one third of the length of palpomere 3; dorsocentrals multiserial, starting near antepronotum; anal lobe of wing moderately projecting; and inferior volsella low. See also the identification key.

**Derivatio nominis.** Named after the Rio de la Plata, as the localities where the type specimens were collected are located near the mouth of this river.

**Distribution and ecology.** This species was collected in two protected areas. The type locality is located in the Punta Lara Natural Reserve, which was created to preserve the Marginal Forest. This natural reserve represents the southern distribution of the Paranéan rainforest present in north-eastern Argentina and southern Brazil, together with wetlands and riverine environments. The climate is temperate and wet, between the years 1909 and 2005 the mean annual temperature was 16.2°C with 22.8°C in January and 9.9°C in July (Hurtado et al. 2006). The mean annual precipitations from the same period was 1040 mm (Hurtado op. cit.).

The other locality area is the Costero del Sur Biosphere Reserve belonging to the UNESCO’s Man and the Biosphere Programme, World Network of Biosphere Reserves (http://www.unesco.org/mab/). This natural reserve is located in the southern margin of the Rio de la Plata. It is situated in a humid and swampy region that comprises coastal areas, flooded and unflushed swamps, wetlands, pampean grasslands and dry forests.

**Material examined. Type material:** Holotype ♂ (MLP), ARGENTINA, natural Punta Lara, Buenos Aires, 34°48′00′′S 58°16′52.2′′W 27.v.2007, sweep net, M. Donato. — Paratypes: 3 ♂ (MLP), ARGENTINA, same data as holotype; 2 ♂ (MLP), Reserva de la Biosfera Parque Costero del Sur, Buenos Aires, Argentina, 34°16′31.5′′S 58°16′52.2′′W 27.v.2007, sweep net, M. Donato.

### 4.3.6. Lipurometriocnemus nr. *vixlobatus* Sæther

The species *L. vixlobatus* was described from southeast USA and in the original description Sæther (1982) mentioned that virga is indicated. The geographic distribution was extended to the Yukon Territory in Canada by Andersen & Siri (1998). As the specimens examined from Peru fit the species diagnostic characters except for the presence of a small nail shaped virga, a potentially undescribed species close to *L. vixlobatus* is likely when more material is available.

**Material examined. Other material:** 2 ♂ (IPLA), PERU, Lima, La Molina, 11°38′13″S 73°07′07″W, 395 m asl, 24.ii.2004, J. Williams, at light.

### 5. Acknowledgements

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### 6. References


Electronic Supplement Files
at http://www.senckenberg.de/arthropod-systematics


File 2: donato&siri-lipurometriocnemus-asp2019-electronic-sup- plement-2.doc — Table S2. List of orthocladi species described by Edwards (1931) which were subsequently placed in other genera, their current name and reference of authors for full taxonomic history. — DOI: 10.26049/ASP77-2-2019-09/2

Zoobank Registrations
at http://zoobank.org

Present article: http://www.zoobank.org/References/7388487F- ED6E-448B-9D5D-2DDC5C16E2A


Lipurometriocnemus mallincolis Donato & Siri 2019: http:// www.zoobank.org/NomenclaturalActs/5ef68e-e271-4ca-bb90- bca146b8c6f8

Lipurometriocnemus rioplatensis Donato & Siri 2019: http:// www.zoobank.org/NomenclaturalActs/d08617a8-5d8c-412c-9d7- a249fad4333

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