

A Revision of the Genus *Potamium* (Musci: Sematophyllaceae).

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Abstract: The neotropical genus *Potamium* as described by Mitten (1869) included species that had little more in common than a growth form adapted to a semi-aquatic habitat. Brotherus divided the genus in section *Eu-Potamium* and section *Potamiopsis*, based on peristome characters. This study shows that all species of section *Eu-Potamium* belong to *Sematophyllum*, including *P. lonchophyllum* which was designated as lectotype of *Potamium* by Buck (1990). In section *Potamiopsis* two species are recognized: *P. vulpinum* (Mont.) Mitt. (syn. nov.: *Sematophyllum maguireorum* Buck) and *P. deceptivum* Mitt. (syn. nov.: *P. leucodontaceum* (C.Müll.) Broth., *Meiothecium negrense* Mitt. and *Maguireella vulpina* (Mont.) Buck). The genus *Potamium* is characterized by capsules with an endostome consisting of a low basal membrane and filiform segments, which are often reduced in *P. deceptivum*. *P. vulpinum* is designated as lectotype of *Potamium* and the lectotypification of Buck is rejected.

Descriptions, illustrations and a key are provided to the species of *Potamium* and allied semi-aquatic taxa of *Sematophyllum*.

Potamium is a small genus in the Sematophyllaceae with a distribution confined to the Amazon basin and the Guianas. Since its foundation by Mitten in 1869, it has never been a clear-cut genus. Mitten included 7 species which had the following characters in common: inconspicuous alar cells, an erect or little-inclined capsule on a short seta, and growing in a periodically submerged habitat. Brotherus (1908), transferred 3 of these species to other genera, i.e. *P. pulchellum* (Hook.) Mitt. and *P. casiquariense* Spruce ex Mitt. to *Pterogonidium* and *P. commutatum* (C.Müll.)

Mitt. to *Meiotheciopsis* (= *Donellia* Buck 1988). The remaining species were *P. vulpinum* (Mont.) Mitt. and *P. deceptivum* Mitt. with creeping stems and a peristome with filiform endostome segments, and *P. lonchophyllum* (Mont.) Mitt. and *P. pacimoniense* Spruce ex Mitt. with floating stems and a peristome with broad, keeled endostome segments. Based on these characters Brotherus divided the genus in two sections, section *Eu-Potamium* and section *Potamiopsis*. He added 4 other species (Table 1).

<u>Section Potamiopsis</u>	<u>Section Eu-Potamium</u>
<i>P. vulpinum</i> (Mont.) Mitt.	<i>P.</i>
<i>octodiceroides</i> (C.Müll.) Broth.	
<i>P. deceptivum</i> Mitt.	<i>P.</i>
<i>lonchophyllum</i> (Mont.) Mitt.	
<i>P. leucodontaceum</i> (C. Müll.) Broth.	<i>P.</i>
<i>uleanum</i> Broth.	
<i>P. sanctae-mariae</i> (Besch.) Broth.	<i>P.</i>
<i>pacimoniense</i> Spruce ex Mitt.	

Table 1. The sections of *Potamium* according to Brotherus (1908)

In my checklist of the Musci of the Guianas (1990) I already transferred *P. pacimoniense* and *P. lonchophyllum* to *Sematophyllum*. Buck (1990) reviewed *Potamium* and supported the transfer of *P. pacimoniense* but retained *P. lonchophyllum* in *Potamium*. He furthermore considered *P. uleanum* and *P. octodiceroides* as synonymous with *P. lonchophyllum* and designated the latter as lectotype of *Potamium*.

Concerning the species of section *Potamiopsis*, Buck concluded that *P. sanctae-mariae* probably belongs in *Meiothecium*. *Potamium deceptivum* and *P. leucodontaceum* were considered as synonyms of *P. vulpinum* and for the latter species a new genus, *Maguireella* Buck was created, with a new type. The type specimen of *Potamium vulpinum* (PC) was not mentioned.

During my study of the Sematophyllaceae of the Guianas, I have seen many collections of semi-aquatic species belonging to *Potamium* in the sense of Mitten. These species occur along creeks and rivers on temporarily inundated substrates and show adaptations to these extreme habitat conditions, e.g. a lax growth form with elongated stems and branches and distantly inserted, broad leaves with rounded apex and short apical cells. It was apparently because of their uniform appearance that Mitten combined species that had little more in common than this habit. The effect of

a submerged habitat is shown in *Pterogonidium pulchellum*. This species commonly occurs on tree bases where it has slender, lanceolate leaves with an acute apex. When growing in temporarily inundated places the stems are more elongated and the leaves are more flaccid and broader, with a rounded apex. Mitten (1869) described the latter form as a new species, *Potamium casiquariense*, but already Williams (1909) synonymized this species with *P. pulchellum*. In the type collection young innovations with the slender, acute leaves typical for *P. pulchellum* can be observed.

Because of these analogous adaptations to a submerged habitat, it is often difficult to distinguish the various species on gametophytic characters. Frequently, herbarium collections prove to be misidentified. Therefore, it became necessary to study the species of this group thoroughly, including the sporophytes, in order to be able to distinguish them.

Results and discussion

The sections of the genus *Potamium* as described by Brotherus (1908) are mainly based on characters of the endostome. A more detailed examination of the capsules provides the following additional characteristics:

Section *Eu-Potamium*: capsules inclined to pendent; exothecial cells rounded-quadrate

and collenchymatous; exostome teeth firm, brown and transversely striolate in lower part, in upper part papillose and on inner side with high transverse lamellae; endostome consisting of a high basal membrane with broad, keeled segments and cilia (Fig. 3: e and 4: j).

Section *Potamiopsis* : capsules erect or little inclined; exothecial cells elongated, thickened along the longitudinal walls; exostome teeth pale and slender, papillose, not or hardly transversely striolate in lower part, without high lamellae in upper part; endostome consisting of a low basal membrane with filiform, often fragile segments (Fig. 1: i-k and 2: g, h, j).

The capsules of the section *Eu-Potamium* are identical to those of *Sematophyllum*, which are also characterized by firm exostome teeth, thickened with high transverse lamellae on inner side, and by broad, keeled endostome segments on a high basal membrane. It is obvious that the species of section *Eu-Potamium* belong in *Sematophyllum*. Nevertheless, Buck (1990) retained *P. lonchophyllum* in *Potamium* because of the presence of a strong median furrow on the exostome teeth.

To determine the importance of the latter character, we have to consider the origin of this furrow. As in many other genera of the *Sematophyllaceae*, one of the characteristics of the *Sematophyllum* peristome is the transverse striolation on the lower part of the exostome teeth. This striolation is composed of transverse ridges on the two rows of outer exostome plates (Fig. 3: e). These plates join in the middle along a more or less distinct zig-zag line. The distinctiveness of the zig-zag line is dependent of the length and the height of the transverse ridges. When the ridges do not extend to the median line, a furrow is created and the zig-zag line becomes obscure at the bottom of this furrow. In the latter case the exostome teeth are called "furrowed". Following Brotherus (1908) this character is being used to contrast with exostome teeth "with a zig-zag median line". In the genus *Sematophyllum*, however, this is not

a taxonomically relevant contrast, since it is a variable character. Given that the width of the furrow depends on the length of the transverse ridges, it is not surprising that broad and narrow furrows were found even in a single specimen. Also in the semi-aquatic *Sematophyllum* species, *S. cochleatum* and *S. pacimoniense*, several peristomes with more or less furrowed exostome teeth could be observed. In *S. lonchophyllum* the furrow is distinct, but in the type specimen of *Potamium octodiceroides*, a synonym of *S. lonchophyllum* according to Buck (1990), the furrow is in some peristomes hardly perceptible. In view of this variation it may be concluded that this character is of minor importance in *Sematophyllum* and certainly not of generic significance. With the moving of *P. lonchophyllum* to *Sematophyllum* also *P. uleanum* and *P. octodiceroides* are removed from *Potamium*. Thus, no species of section *Eu-Potamium* remain in *Potamium*.

The type of *Potamium recurvifolium* Thér., an Aubert de la Rue collection from Colombia (PC), also has a *Sematophyllum* capsule and proves to be identical with *Sematophyllum cochleatum*. *Potamium longisetum* Broth., a species from Bolivia, was already placed in *Sematophyllum* by Brotherus (1925).

In the section *Potamiopsis* two species can be recognized: *P. vulpinum* (Mont.) Mitt. and *P. deceptivum* Mitt. Both were described by Mitten as having filiform endostome segments. I have examined the Spruce collections on which Mitten's descriptions of *Potamium* were based (NY, hb. Mitten) and found that the collection of *P. vulpinum* from "Maypures, ad rupes cataractae" agrees with the type collection of French Guiana (PC). The collections of *P. deceptivum* cited by Mitten are all referable to that species except for a collection from Casiquiari which represents *P. vulpinum*.

In *P. deceptivum* the leaves vary from rounded-acute to acuminate; in *P. vulpinum* the leaves are usually blunt or round but occasionally they may be rounded-acute. Thus, by their gametophytes the two species are hardly distinct. Decisive, however, are the differences

in the sporophytes. Both species have erect or slightly inclined, cylindrical capsules with an endostome consisting of a low basal membrane and slender segments. Differences are seen in the exostome teeth. Those of *P. vulpinum* are smooth and trabeculate in the basal part with sometimes a faint transverse striolation. The broad basal part is abruptly narrowed into a slender and papillose upper part, which however is very fragile and often lacking. This makes the exostome teeth usually look short and blunt. The endostome segments are fragile but usually persistent and visible, when dry, as erect spikes between the incurved exostome teeth. In *P. deceptivum* the exostome teeth are papillose throughout, linear-lanceolate and gradually narrowed to apex. The endostome segments are seldom intact, usually short or rudimentary.

As shown by Buck, the type of *Potamium leucodontaceum*, a Quelch collection from Guyana (BM) is identical in every aspect with *P. deceptivum* and this holds also for one of the syntypes of *Meiothecium negrense*, Spruce 970 from Brazil (NY). The other syntype, Spruce 969, is *Sematophyllum subpinnatum*. My study does not support his opinion that *P. deceptivum* and *P. vulpinum* are identical. The type specimen of *Maguireella vulpina*, cited by Buck, clearly belongs to *P. deceptivum* and is very different from *P. vulpinum*, based on the characters given above. This implies that *Maguireella vulpina* is an incorrect name and should be treated as a synonym of *P. deceptivum*.

Potamium vulpinum and *P. deceptivum* appear to be distinct species and are the only ones left in the genus *Potamium*. The oldest of the two is *P. vulpinum*, which was correctly described by Montagne (1835) with a distinct illustration of the peristome. I therefore propose *P. vulpinum* as lectotype of *Potamium*. The lectotypification by Buck (1990), who choose *Potamium lonchophyllum* (= *Sematophyllum lonchophyllum*), should be rejected for this would lead to the undesirable reduction of *Potamium* to synonymy under *Sematophyllum*, as shown above.

Examination of the type of *Sematophyllum maguireorum* Buck shows that this represents *P. vulpinum*. The type collection from Amazonas, Brazil (NY) has capsules with intact exostome teeth and an endostome with a low basal membrane and filiform segments, as typical for *Potamium*. The faint striolation in the basal part of the exostome teeth noted by Buck is not uncommon in this species and seems of little taxonomic importance. It does not originate from transverse ridges on the outer peristome plates as in *Sematophyllum*, but rather looks like a striolation within the exostome plates.

Key

- 1. Plants with capsules..... 2
- 1. Plants without capsules 4
- 2. Capsules cylindrical with elongated exothelial cells that are thickened along the longitudinal walls. Exostome teeth not or hardly striate at base, on inner side without high lamellae. Endostome with a low basal membrane and filiform, fragile segments (*Potamium*) 3
- 2. Capsules ovoid with rounded-quadrate, collenchymatous exothelial cells. Exostome teeth strongly transversely striate in lower part; on inner side with high lamellae. Endostome with a high basal membrane and broad, keeled segments and cilia (*Sematophyllum*) 5
- 3. Leaves with rounded-acute, obtuse or round apex. Exostome teeth with a broad smooth base, rather quickly narrowed to a slender, papillose apex (often broken and then exostome short and blunt) **Potamium vulpinum**
- 3. Leaves with broad-acute to short-acuminate apex. Exostome teeth lanceolate, gradually tapering, papillose throughout..... **Potamium deceptivum**
- 4. Leaves oval-ovate or semi-circular, to 1.4 mm long (*Potamium*) 3
- 4. Leaves oval-ovate and longer than 1.4 mm, or oblong to lanceolate (*Sematophyllum*)... 5
- 5. Leaves oblong-lanceolate or linear, more than 3 times as long as wide

- **Sematophyllum lonchophyllum**
 5. Leaves oval-oblong or semicircular, seldom more than 3 times as long as wide 6
 6. Leaves loosely imbricate, concave; leaf apex rounded and mucronate.....
**Sematophyllum cochleatum**
 6. Leaves distant, flaccid; leaf apex blunt or rounded, not mucronate
 **Sematophyllum pacimoniense**

Potamium Mitt., J. Linn. Soc. Bot. 12: 472. 1869.

Plants with prostrate stems, irregularly branched. Leaves oval-ovate or semi-circular; costa short and double, indistinct; apex acute, obtuse or round; margin subentire. Leaf cells smooth, elongate-rhomboidal, in apex rhombic or oval; alar cells inflated, supra-alar cells quadrate. Capsule erect, cylindrical; operculum conic, rostrate; exothelial cells rectangular, incrassate along the longitudinal walls, not collenchymatous. Peristome double; exostome teeth slender, papillose, more or less remote at base, basal part trabeculate, not or very faintly striolate; endostome with a low basal membrane and filiform or rudimentary segments. Calyptra cucullate.

1. Potamium vulpinum (Mont.) Mitt., J. Linn. Soc. Bot. 12: 473. 1869.

Neckera vulpina Mont., Ann. Sc. Nat. Bot. ser.2: 203 (Pl.4, fig.1). 1835.

Type: Leprieur s.n., French Guiana, Sources du Jary (PC hb. Mont.).

Sematophyllum maguireorum Buck, Mem. New York Bot. Gard. 64: 194. 1990.

Type: Maguire et al. 60142, Brazil, Río Cauaburí (NY).

Dull green or blackish plants with prostrate stems and branches; in dry season branches ascending, julaceous, with light green tips. Leaves loosely appressed when dry, erect-spreading when moist, concave, oval to semi-

circular, 0.4-1.4 mm long and 0.4-0.8 mm wide; apex round, obtuse or rounded-acute; margin crenulate, often narrowly revolute from just below apex nearly to the base. Leaf cells thin-walled or incrassate, elongate-rhomboidal, towards apex shorter and irregularly rhombic. Alar cells inflated but not conspicuous; supra-alar cells hyaline, quadrate, in a usually well-defined group.

Autoicous. Perigonia small, about 0.3 mm high, with broad-ovate, acute leaves. Perichaetia to 1 mm high, with ovate, acute leaves. Seta variable in length, 2-9 mm long. Capsule cylindrical with slenderly rostrate operculum. Peristome with strongly incurved exostome teeth, often broken and then blunt; exostome teeth papillose, to 200 µm long, trabeculate at base and rather quickly narrowed to a fragile, slender upper part; endostome with erect, fragile, papillose segments. (Fig. 1)

Distribution: Amazonia, Guianas.

Specimens examined: COLOMBIA: Spruce-coll. from Maypures (NY). VENEZUELA: Spruce-coll. from Fl. Casiquari (NY, as *P. deceptivum*). BRAZIL: Buck 2035, 3079 (NY); Reese 13577 (NY); Maguire et al. 60142, type of *Sematophyllum maguireorum* (NY). GUYANA: Richards 360 (BM), 847 (NY); Smith 2565, 2644 pp. (U); Gradstein 4964 (U). SURINAME: Florschütz 1222, 1226, 1434, 2096, 2097, 4548, 4783 (U); Geijskes 4A, 12, 20 (U); Florschütz & Maas 2698, 2742 A, 3159 (U); Florschütz & Zielman 5276, 5729, 5734 (U). FRENCH GUIANA: Sagot s.n. (H); Cremers 5173, 5887, 9320, 9998 (U).

Habitat: Rather common in temporarily submerged places, on stones, roots and overhanging branches.

Potamium vulpinum is best recognized by the dark colour and the rather slender, julaceous branches with short, roundish leaves. In the latter respect it may resemble a broad-leaved form of *Sematophyllum subpinnatum* in which the leaves are also oval or semi-circular but then always with short-acuminate or mucronate apex; moreover *Sematophyllum subpinnatum* grows in drier places.

2. *Potamium deceptivum* Mitt., J. Linn. Soc. Bot. 12: 473. 1869.

Syntypes: Spruce s.n., Brazil, Sao Gabriël (NY). Spruce 826, 827, Brazil, Rio Negro (NY, H). *Potamium leucodontaceum* (C.Müll.) Broth., Nat. Pfl. 1(3): 1107. 1908.

Aptychus leucodontaceus C.Müll., Malpighia 10: 517. 1896.

Type: Quelch s.n., Guyana, Mazaruni River (BM).

Meiothecium negrense Spruce ex Mitt., J. Linn. Soc. Bot. 12: 471. 1869.

Lectotype: Spruce 970, Brazil, Uanauaca (NY). (the syntype, Spruce 969, is *Sematophyllum subpinnatum*).

Maguireella vulpina (Mont.) Buck, Mem. New York Bot. Garden 64: 193. 1990.

Type: Boom 7148, Guyana, Upper Demerara/Berbice region (NY).

Slender, light green plants with creeping stems, sparingly branched; branches prostrate or ascending. Leaves erect-spreading, oval-ovate, to 1.4 mm long and 0.7 mm wide; apex rounded-acute to short-acuminate; margin crenulate, flat. Leaf cells thin-walled to slightly incrassate, elongate-rhomboidal, in apex shorter, irregularly rhombic or oval; alar cells inflated, coloured; supra-alar cells quadrate.

Autoicous. Perigonia small, to 0.3 mm high, with ovate, broad-acute leaves. Perichaetia 1-1.5 mm high with lanceolate, acute leaves. Seta 3-6 mm long. Capsule erect, cylindric, with slenderly rostrate operculum; exostome teeth pale, papillose, to 150 µm long, remote at base, little or not trabeculate; endostome with low basal membrane and with very fragile, often rudimentary segments. (Fig. 2)

Distribution: Brazil, Guyana, Suriname, Venezuela, Colombia.

Specimens examined: VENEZUELA: Spruce-coll. from S. Joaquim (NY). BRAZIL: Spruce-coll. from Sao Gabriël (NY), Spruce 826, 827 from Rio Negro (NY, H), 970 (NY, type of *Meiothecium negrense*); Buck 2276 (NY). COLOMBIA: Schultes 11945 (H). GUYANA: Quelch s.n. (BM, type of *P. leucodontaceum*); Maas 2504 (U); Gradstein 4723 A, 4783 (U);

Boom 7148 (NY, type of *Maguireella vulpina*). SURINAME: Florschütz 528, 2066, 2070, 2077, 2099 (U); van Looy 27 (U).

Habitat: on bark of trees or decaying wood, often in temporarily inundated places.

The gametophyte of *Potamium deceptivum* looks very similar to *Sematophyllum subpinnatum* that often grows in the same habitat. The leaf cells in the latter are more regularly incrassate and have a fusiform lumen; but when sterile the two species are hard to distinguish. The only reliable distinction is in the capsules and it is fortunate that both species frequently have sporophytes.

***Sematophyllum* Mitt., J. Linn. Soc. Bot. 8: 5. 1864.**

Plants with prostrate stems, irregularly to subpinnately branched. Leaves ovate, oval, oblong or lanceolate; costa short and double, usually indistinct; apex acuminate, acute, obtuse or round; margin entire, serrulate or denticulate. Leaf cells thin-walled or incrassate, smooth, elongate-rhomboidal, elliptic or linear, in apex sometimes rhombic; alar cells inflated, often coloured; supra-alar cells hyaline, quadrate or oval. Capsule erect, inclined or pendent; operculum conic-rostrate; exothecial cells rounded-quadrate, collenchymatous. Peristome double; exostome teeth firm, brown, transversely striolate in lower part, papillose in upper part, on inner side with high transverse lamellae; endostome with broad, keeled segments and cilia from a high basal membrane. Calyptra cucullate.

1. *Sematophyllum pacimoniense* (Mitt.) J. Florsch., Trop. Bryol. 3: 96. 1990

Potamium pacimoniense Mitt., J. Linn. Soc. Bot. 12: 474. 1869.

Lectotype: Spruce 829, Venezuela, Fl. Pacimoni (NY).

Dull green or brownish plants with long-pro-

strate stems, sparingly branched; branches distantly foliate. Leaves flaccid, oval-oblong, to 2 mm long and 1 mm wide; apex obtuse or round, occasionally rounded-acute; margin entire, crenulate at apex. Leaf cells thin-walled, elongate-hexagonal, in apex rhombic; alar cells thin-walled, hyaline, little inflated; supra-alar cells little differentiated, rectangular.

Autoicous. Perigonia small with broad-ovate, short-acuminate leaves. Perichaetia about 1 mm high, leaves ovate with rounded-acute apex. Seta short and firm, 2-3 mm long. Capsule erect, ovoid with a short neck; operculum obliquely rostrate. Peristome with the characters of the genus; exostome teeth brown, to 350 μm high; endostome segments of the same length, slightly papillose at apex, cilia rudimentary or absent. (Fig. 3: a-f)

Distribution: Brazil, Venezuela, Suriname.

Specimens examined: VENEZUELA: Spruce 828 (NY), 829 (NY, H, type). BRAZIL: Mosén 120 (H). Buck 1881, 3054 (NY). . SURINAME: Florschütz 4784 (U); Moonen s.n.(U).

Habitat: Only known from the upper Amazon River, from Santos and from one locality in Suriname (epiphytic on *Montrichardia* along creek, just above water level); apparently rare.

This species is very similar to *Potamium vulpinum* in gametophytic aspects, including the broad, roundish leaves with irregular-rhombic apical cells. But the leaves are larger, flaccid and more distantly inserted along the elongated branches. A good additional character is the narrow leaf base with hyaline and often fragile alar cells, and the little differentiated supra-alar cells.

2. *S. cochleatum* (Broth.) Broth., Nat. Pfl. ed.2, 11: 433, 737.1925.

Rhaphidostegium cochleatum Broth., Bih. K. Svensk Vet. Ak. Handl. 21. Afd.3(3): 51. 1895.

Type: Mosén 2, Brazil, S. Paulo (H, NY).

Potamium recurvifolium Thér., Rev. Bryol. Lich. 10: 17 (fig.7). 1937.

Type: Aubert de la Rue s.n., Colombia, Río Yurumangui (PC).

Dull-green or brownish plants with elongated, creeping stems; branches prostrate, variable in length. Leaves broadly ovate, obovate, oval or semi-circular, to 2 mm long and 1.2 mm wide; apex rounded and mucronate; margin subentire, crenulate at apex, reflexed when dry. Leaf cells thinwalled or slightly incrassate, at mid-leaf elongate-hexagonal to linear, in apex rhombic or hexagonal; alar cells inflated, supra-alar cells rounded-quadrate or rectangular, hyaline.

Autoicous. Perigonia small, leaves broadly ovate, about 0.4 mm high. Perichaetia to 2 mm high, inner leaves convolute, lanceolate, acute. Seta smooth, 2-9 mm long. Capsule erect or inclined, ovoid-cylindric, with a rather distinct neck; operculum obliquely rostrate. Peristome with the characters of the genus; exostome teeth about 300 μm high; endostome segments of the same length, slightly papillose at apex; cilia rudimentary. (Fig.3: g-k)

Distribution: Brazil, Colombia, Suriname, French Guiana.

Specimens examined.

BRAZIL: Mosén 2, (H, type). COLOMBIA: Aubert de la Rue s.n.(H, type of *Potamium recurvifolium*). SURINAME: Tresling 6 B (U); Florschütz 196, 205, 214, 218, 222, 268, 1535 (U); van Donselaar 3722, 3724 (U). FRENCH GUIANA: Cremers 4743, 4745 (U).

Habitat: On branches and stones along creeks and rivers, temporarily submerged.

This species, when dry, is recognizable by the complanate leaves in older parts of the plant which are cochleariform with reflexed margins. It has a more compact growth form than *S. pacimoniense* and leaves that are firmer and concave, with a short-acuminate or mucronate apex. By this leaf shape it might be confused with the broad-leaved form of *Sematophyllum subpinnatum* but in that species the round leaves are smaller (to 1.4 mm long) and the leaf cells more regularly incrassate with a fusiform lumen.

Thériot (1937) described *Potamium recurvifolium* that proves to be identical to *Sematophyllum cochleatum*; he placed it in section *Eupotamium* considering the structure of the peristome, but stated that the gametophytes showed more affinity to *P. deceptivum*.

3. *S. lonchophyllum* (Mont.) J. Florsch., Trop. Bryol. 3: 96. 1990.

Potamium lonchophyllum (Mont.) Mitt., J. Linn. Soc. Bot. 12: 473. 1869.

Hypnum lonchophyllum Mont., Syll. Gen. Spec. Pl. Crypt.: 10. 1856.

Type: Leprieur 1378, French Guiana, Cayenne (PC).

Potamium octodiceroides (C.Müll.) Broth., Nat. Pfl. 1(3): 1107. 1908.

Ligulina octodiceroides C.Müll., Hedwigia 40: 84. 1901.

Type: Ule 2095, Brazil, Restinga de Mauá (FH). *Potamium uleanum* Broth., Hedwigia 45: 286. 1906.

Type: Ule 255, Brazil, Manáus (FH).

Slender plants with elongated stems, prostrate or floating, sparingly branched; branches long, distantly complanate-foliate. Leaves flaccid, oblong-lanceolate to linear, often slightly falcate, 1-3 mm long and 0.3-0.6 mm wide; apex round or acute, sometimes short-acuminate; margin serrulate, sometimes serrate at apex. Leaf cells thin-walled or incrassate, at midleaf linear, sigmoid, in apex shorter, irregular-rhombic to oblong; alar cells hyaline, oval or rectangular, often fragile; supra-alar cells few, little differentiated.

Autoicous. Perigonial leaves broadly ovate, 0.2-0.4 mm long. Perichaetial leaves ovate-lanceolate with an acute, serrate apex, about 1.5 mm long. Seta reddish, about 1 cm long. Capsule inclined, ovoid with long-rostrate operculum. Peristome with the characters of the genus; exostome teeth to 250 µm long; endostome segments papillose; cilia single. (Fig. 4)

Distribution: Brazil, French Guiana, Suriname, Venezuela, Colombia.

Specimens examined.

BRAZIL: Ule 255 - type of *Potamium uleanum* (FH), 2095 - type of *Potamium octodiceroides* (FH). FRENCH GUIANA: Leprieur 1378 - type (PC). SURINAME: Lanjouw & Lindeman 1218 (U); Lindeman 5696 (U); Geijskes 50 (U); van Donselaar 1565, 1580 (U); Lindeman et al. 840 (U); van Looy 18 (U); Florschütz & Zielman 5199 (U). VENEZUELA: Sastre de Jesús 285 (H). COLOMBIA: Churchill 17636 (NY).

Habitat: on rocks, decaying wood or terrestrial, in flooded marsh forest or along rivers.

This species is easily recognized by the long, flaccid leaves with linear leaf cells and inconspicuous alar cells that are elongated but hardly inflated. There is a broad variation in leaf length; plants with leaves to 2.5 mm long may have branches with leaves that are not over 1 cm long. The leaf shape is rather constant within one collection, but varies in different collections from oblong with round apex (type of *P. octodiceroides*) to linear-lanceolate with acute apex (type of *S. lonchophyllum*, Fig. 4: f). Many intermediate collections, including the type of *P. uleanum*, make it impossible to distinguish here more than one species.

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