Bulletin de la Société entomologique de France, **124** (1), 2019 : 19-26. ISSN 0037-928X
https://doi.org/10.32475/bsef_2054 eISSN 2540-2641

New species and new records of the genus *Oecetis* McLachlan in French Guiana (Trichoptera, Leptoceridae)

François-Marie Gibon

CBGP, IRD, CIRAD, INRA, Montpellier SupAgro, Univ. Montpellier, Campus de Baillarguet, CS 30016, F – 34988 Montferrier-sur-Lez Cedex <Francois-Marie.Gibon@ird.fr>

http://zoobank.org/19CF4F8C-232A-4074-A634-81DF33811312

(Accepté le 14.XII.2018 ; publié le 26.III.2019)

Abstract. – During a brief reconnaissance of small coastal streams in French Guiana, four species of the genus *Oecetis* were captured. They are the first specific records from this territory. Two species are new and herein described: *Oecetis meronai* n. sp., the third neotropical species of the *testacea* species-group and *Oecetis hydrecoi* n. sp., the first neotropical species of the *lais* species-group.

Résumé. – **Nouvelles espèces et nouveaux signalements du genre *Oecetis* McLachlan en Guyane (Trichoptera, Leptoceridae)**. Une brève reconnaissance des petits cours d'eau de la région côtière de Guyane a permis de capturer quatre espèces appartenant au genre *Oecetis*, les premières signalées de ce territoire. Deux d'entre elles sont nouvelles et décrites : *Oecetis meronai* n. sp., la troisième espèce néotropicale appartenant au groupe *testacea* et *Oecetis hydrecoi* n. sp., la première espèce néotropicale appartenant au groupe *lais*.

Keywords. – Caddisflies, Neotropical region, taxonomy, morphology, faunistic, new records.

Oecetis McLachlan, 1877, is a cosmopolitan genus of long-horned caddisflies particularly diversified in tropical areas. There are more than five hundred described species, sixty-nine of them from the Neotropical region (Rueda Martin *et al*., 2011; Blahnik & Holzenthal, 2014; Quinteiro & Holzenthal, 2017). The genus record of *Oecetis* in French Guiana is due to regular campaigns of water quality monitoring implemented by Hydreco since the construction of the Petit-Saut Dam (Hydreco, 2018). However, to date, no species has been identified or reported since the immature stages collected in those campaigns can only be identified to genus level. Some years ago, a study of some small rivers in the coastal region allowed me to capture four species, which constitute the subject of this note. Two are common Neotropical species, the two others are new and belong to widely distributed species groups but whose discovery in the Neotropical region is recent.

Material and methods

Specimens were captured using a portable light trap, which was composed of a black light and a gas lamp, and subsequently preserved in 75% ethanol. The male genitalia of some specimens were cleared in a solution of potassium hydroxide, studied under the microscope in cedar oil, and mounted on slides in Euparal®. The holotypes, paratypes and other specimens are deposited in the Centre de Biologie pour la Gestion des Populations (CBGP), Montpellier, France. The terminology used is that of Rueda Martin *et al*. (2011).

Results

Family **Leptoceridae** Leach, 1815

Subfamily **Leptocerinae** Leach, 1815

Genus ***Oecetis*** McLachlan, 1877

The ***hemerobioides*** species-group

The *hemerobioides* species-group (CHEN, 1993) is distributed in the Neotropical, Australian and Oriental regions.

Oecetis punctipennis (Ulmer, 1905)

Material. – **French Guiana**. Crique Petit, 5°21'59.29"N - 53°06'37.64"W, 48 m asl, 23.IX.2010. – Crique Toussaint, 5°20'13.50"N - 52°59'4.70"O, 34 m asl, 28.IX.2010. – Crique Maman Lézard, 5°4'4.25"N - 52°59'56.29"W, 55 m asl, 24.IX.2010. – Crique Canceller, 5°25'47.90"N - 53°02'18.52"W, 12 m asl, 29.III.2011. – Comté à Cacao, 4°31'47.90"N - 52°30'55.85"W, 28 m asl, 21.IX.2010. – Sinnamary à Saut Dalles 4°24'17.17''N - 52°53'36.10''W, 78 m asl, 3.XI.2009.

Oecetis punctipennis has been redescribed by RUEDA MARTIN *et al*. (2011), it is widely distributed in Central and South America, from Nicaragua to Northern Argentina. It is reported from Venezuela, Guyana, Surinam and Brazil, its presence in French Guiana was probable and is now confirmed.

Oecetis connata Flint, 1974

Material. – **French Guiana**. Crique Toussaint, 5°20'13.50"N - 52°59'4.70"W, 34 m asl, 28.IX.2010. – Comté à Cacao, 4°31'47.90"N - 52°30'55.85"W, 28 m asl, 21.IX.2010. – Sinnamary à Saut Dalles, 4°24'17.17''N - 52°53'36.10''W, 78 m asl, 3.XI.2009.

Oecetis connata was described from Surinam, then reported from Guyana and various Brazilian states: Amazonas and Para (DUMAS *et al.*, 2010), Piaui, Rio de Janeiro and Sao Paulo (HENRIQUES-OLIVEIRA *et al.*, 2014). Its presence in French Guiana was probable and is now confirmed.

The ***testacea*** species group

The *testacea* species-group has been recognized by CHEN (1993) and described by SCHMID (1995b) for the Indian fauna, RANDRIAMASIMANANA & GIBON (1998a) for the Malagasy fauna and MALICKY (2005) for the Oriental fauna. The *testacea* group is especially diversified in the Afrotropical, Oriental and Australasian regions. Its presence in the Nearctic region has long been known [*Oecetis cinerascens* (Hagen, 1861), *O. georgia* Ross, 1941]. The first Neotropical species was described in 2014 from southern Brazil (*Oecetis iara* Henriques-Oliveira, Dumas & Nessimian, 2014) as "a unique species that does not seem to resemble other species in the neotropical region"; it is carefully compared to the *reticulata* group but not included in the group (HENRIQUES-OLIVEIRA *et al.* 2014). The second species was described in 2017 from Costa Rica (*Oecetis plenuspinosa* Quinteiro & Holzenthal, 2017); it was placed "close to those of the *testacea*-group due to the presence of reticulate modifications on abdominal segments V-VIII" (QUINTEIRO & HOLZENTHAL, 2017). *Oecetis meronai* n. sp. is the third neotropical species.

The *testacea* species group is characterized by the presence of a reticulated area on the last abdominal segments, usually referred as the "honeycomb structure". The structure of the reticulated area and its extension on the different abdominal segments are variable and sub-groups can be recognized, such as the *reticulata* species group described by NEBOISS (1989) for species of the South West Pacific area. The *reticulata* group may be a sister-group to the *testacea* group or, most likely, a part of the *testacea* group (CHEN, 1993; WELLS, 2000).

***Oecetis meronai* n. sp.** (fig. 1-7)

http://zoobank.org/E7B0A269-AF7F-4B4A-95F6-1B91EF2D911E

Holotype: ♂, adult, French Guiana, Crique Petit, 5°21'59.29N" - 53°6'37.64"W, 48 m asl, 23.IX.2010 (CBGP).

Description. – Adult very pale, lightly sclerotized, colorless wings without visible pattern. Forewing length: 5.4 mm, hindwing: 3.9 mm. Reticulated area on terga 6 to 8, small on tergum 6, fully developed on terga 7 and 8. Segment IX annular, short; anterior latero-ventral edge rounded, convex; small disto-lateral process under the inferior appendage (lateral view). Preanal appendages setose, short, bulbous, roughly oval in dorsal and lateral view. Tergum X composed of a dorsal lobe and a pair of ventrolateral lobes. Dorsal lobe long (longer than the inferior appendages), strongly sclerotized, rod-shaped as viewed dorsally, widening toward the ax-shaped apex, as viewed laterally. Ventrolateral lobes thin, weakly sclerotized, roughly triangular as viewed laterally. Inferior appendages wide and stout base, elongated in a long finger-shaped branch disto-dorsally, straight as laterally viewed, curved inwards as dorsally viewed; setose dorsal branch inserted basally, slightly curved as laterally viewed, globular as dorsally viewed. Phallic apparatus: stout ovoid basal part with a smaller, ventro-distal, ventrally projected distal part; as dorsally viewed, lateral edges unsymmetrical, distally forming a small point on the left side, a rounded bump and a long, preapical, strongly curved spine on the right side.

Diagnosis. – *Oecetis meronai* n. sp. is mainly characterized by the presence of reticulated areas on the last abdominal tergites, characteristic of the *testacea* species group. The structure of this reticulated area is enough to distinguish the new species from the two other neotropical species of the group. In *O. iara* and *O. plenuspinosa*, this area is present from tergite V to VIII, with honeycomb cells smaller on tergite VIII. In *O. meronai* n. sp., it is present on tergite VII and VIII (with some cells on the edge of tergite VI) without size variation of the cells. But the three species are also easily distinguished using genital structure. *O. iara* has a remarkable and specific deformation of abdominal segment IX: the posterior ventro-lateral margins are strongly produced distad and, correspondingly, the inferior appendages are relatively small and unbranched. This character does not exist in *O. meronai* n. sp., whose inferior appendages are elongated and bear a dorsal branch. Besides, the apex of tergum X (medio-dorsal rod) widening toward the apex (lateral view) and, therefore, ax-shaped is characteristic of this new species. *O. meronai* n. sp. cannot be confused with *O. plenuspinosa*. The best diagnostic character is the unique, long and curved internal spine of the phallic apparatus, whereas, in *O. plenuspinosa*, the phallic apparatus has ten small sickle shaped phallic spines distributed in two groups of five.

Etymology. – This species is dedicated to our colleague Bernard de Mérona.

Distribution. – French Guiana. Only known from the type locality and type specimen.

The ***lais*** species group

The *lais* species group was recognized by Chen (1993), described by Schmid (1995a) under the name "*eburnea* group" for the Indian fauna, by Randriamasimanana & Gibon (1998b) for the Malagasy fauna and by Malicky (2005) under the name "*eburnea* group" for the Oriental fauna. Its distribution is mainly Afrotropical and Oriental with a few species in the Palearctic and Nearctic regions. *Oecetis hydrecoi* n. sp. is the first recognized neotropical species.

The *lais* group is characterized by the presence of prominent, dorsolateral processes on the abdominal segment IX and a tergum X divided into a single rod-shaped dorsal lobe and thin ventrolateral lobe, more or less mesally divided in two lateral plates. The phallic apparatus is simple, curved ventrad and devoided of internal sclerite. Some species, recently described but not yet assigned to a species group, constitute a neighboring lineage which differs from

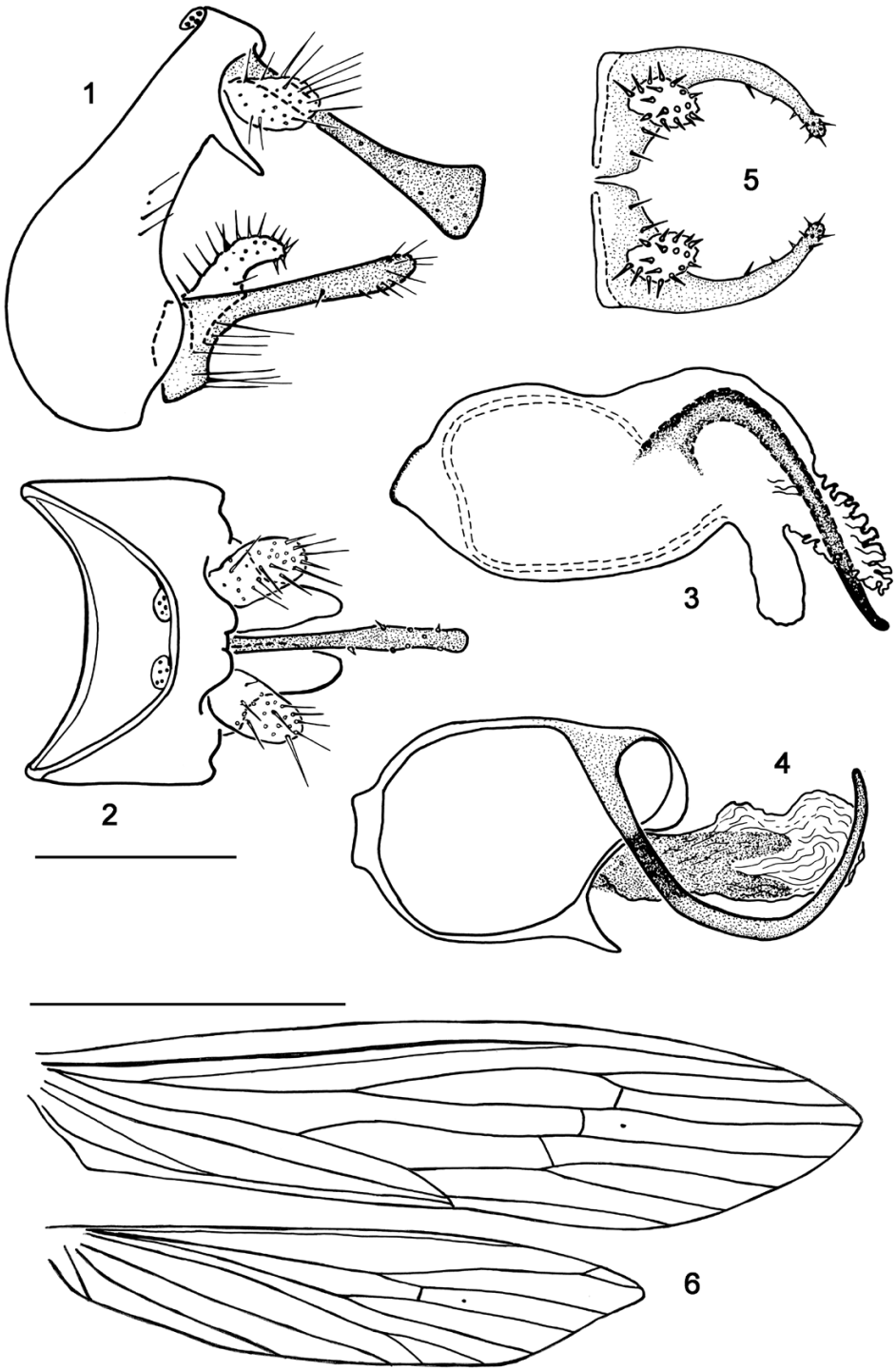

Fig. 1-6. – *Oecetis meronai* n. sp., ♂ holotype. – **1-2**, Abdominal segments IX and X: **1**, lateral view; **2**, dorsal view. – **3-4**, Phallic apparatus: **3**, lateral view; **4**, dorsal view. – **5**, Inferior appendages, dorsal view. – **6**, Wings. Scale bars: genitalia 0.25 mm; wings 2 mm.

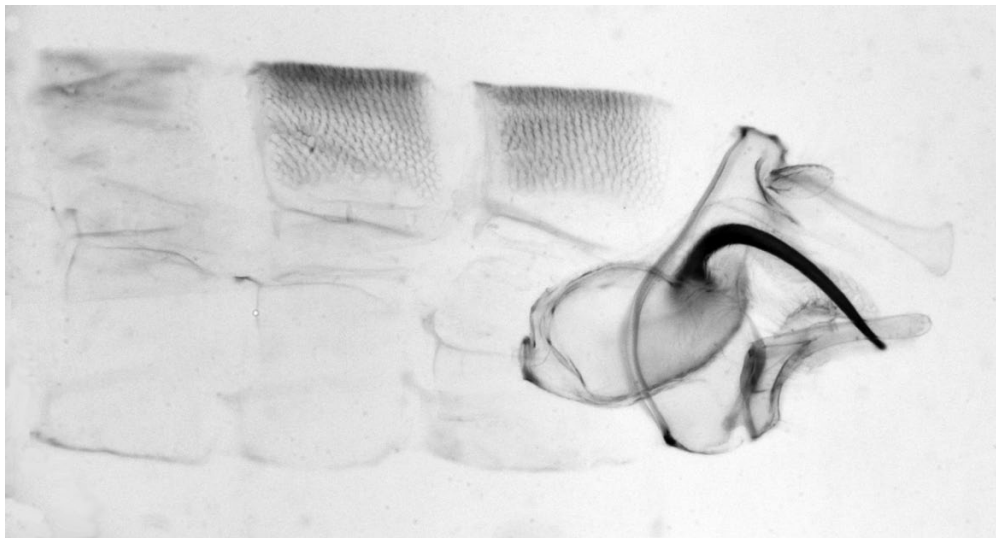

Fig. 7. – *Oecetis meronai* n. sp., ♂ holotype, abdomen, lateral view.

the *lais* group only by the presence of internal spines in the phallic apparatus: *Oecetis danielae* Henriques-Oliveira, Dumas & Nessimian, 2014, *O. blahniki* Quinteiro & Holzenthal, 2017, *O. gibbosa* Quinteiro & Holzenthal, 2017, and *O. pertica* Quinteiro & Holzenthal, 2017.

***Oecetis hydrecoi* n. sp.** (fig. 8-12)

http://zoobank.org/41BB78AD-7D15-45B1-B499-9C253C3BBFCD

Holotype: ♂, adult, French Guiana, Crique Petit, 5°21'59.29"N - 53°6'37.64"W, 48 m asl, 23.IX.2010 (CBGP).

Description. – Adult pale, lightly sclerotized, colorless wings without visible pattern. Forewing length: 4.7 mm, hindwing: 3.4 mm. Segment IX annular, short; anterior latero-ventral edge rounded, convex; dorsal half of disto-dorsal margin deformed and extended into a long, curved ventrad, sclerotized lobe, spear-shaped as viewed dorsally. Preanal appendages setose, finger-shaped, nearly as long as the tergum X. Tergum X composed of two lobes, one dorsal and one ventral. Dorsal lobe small, weakly curved ventrad and a little wider preapically as viewed laterally, thin and almost spine-shaped as viewed dorsally, with a few preapical and apical setae. Ventral lobe positioned above the phallic apparatus, weakly sclerotized, plate-shaped with a small bump on dorsal edge, laterally viewed; strongly divided meso-apically as viewed dorsally. Inferior appendages long, roughly rectangular with a small basal bump (like a branch draft). Phallic apparatus simple, basal part large and wide, tubular; distal part thinner, directed ventro-distad; internal structure indistinct, devoided of paramere or internal spine.

Diagnosis. – The male genitalia of *Oecetis hydrecoi* n. sp. have a characteristic structure with the elongated processes arising from the distal margin of the tergum IX and the division of tergum X in one dorsal rod and two lateral plates. Such a structure is not common among the neotropical *Oecetis*. It has been recently described in *O. danielae*. However, there can be no confusion between the two species; *O. danielae* has paramere spines at the phallic apparatus and a complex structure of the inferior appendages (with large ventral and dorsal lobes), both characters which are not present in *O. hydrecoi* n. sp. Other Neotropical species present one of the characters of the *lais* group but not the whole set of features. Henriques-Oliveira *et al.* (2014) note the resemblance of *O. danielae* with *O. rafaeli* Flint, 1991, *O. peruviana* (Banks,

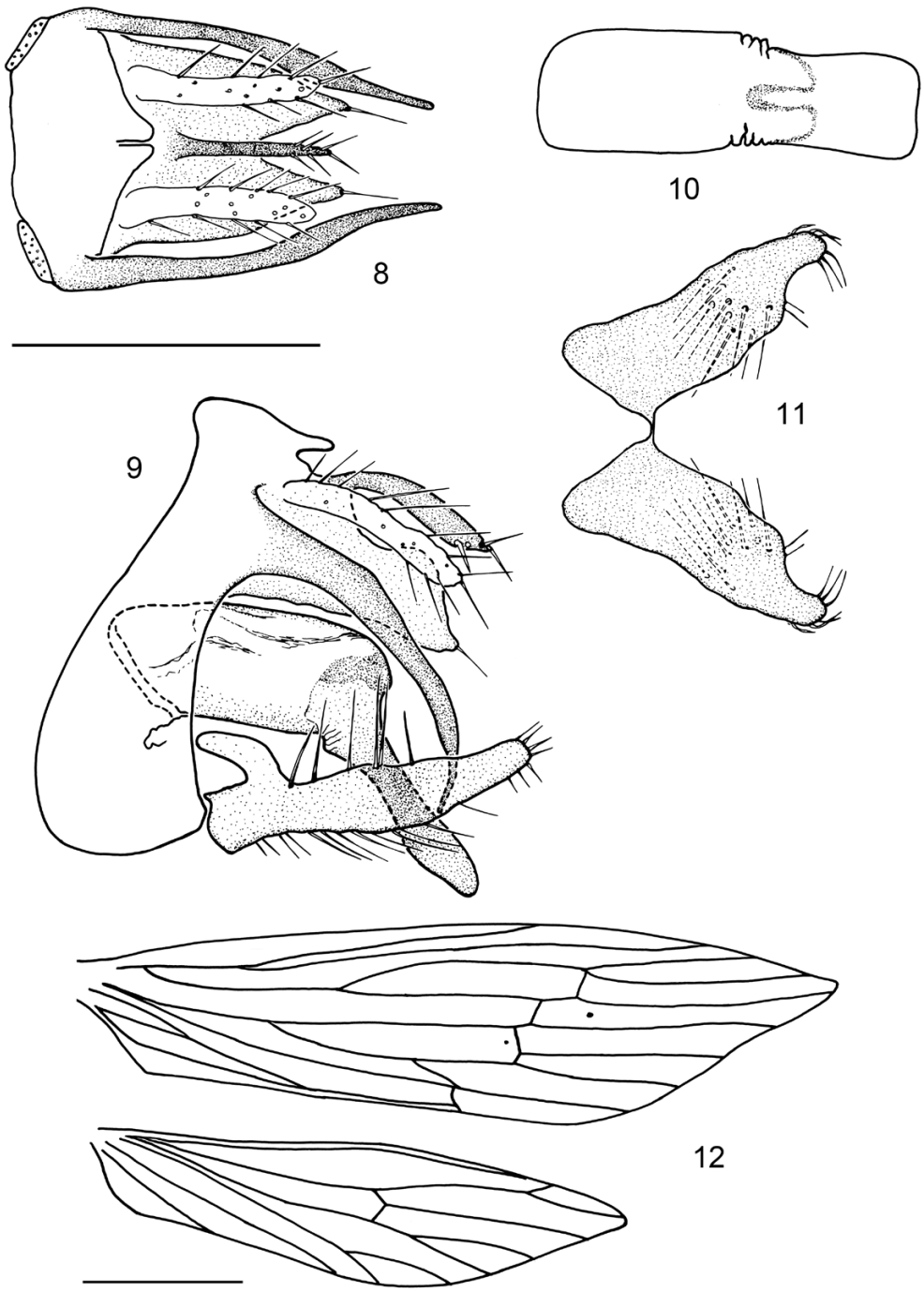

Fig. 8-12. – *Oecetis hydrecoi* n. sp., ♂ holotype. – **8-9**, Genitalia: **8**, dorsal view; **9**, lateral view. – **10**, Phallic apparatus, dorsal view. – **11**, Inferior appendages, ventral view. – **12**, Wings. Scale bars: genitalia 0.25 mm; wings 1 mm.

1924), *O. scoparia* Flint, 1974, and *O. traini* Rueda Martin, Gibon & Molina, 2011. In *O. rafaeli*, the lateral processes of the segment IX are present but the tergite X is membranous, in *O. peruviana*, *O. scoparia* and *O. traini* the structure of the tergite X is identical to that described for *O. danielae* and *O. hydrecoi* n. sp., but the processes of the segment IX are absent or weakly developed.

Etymology. – This species is dedicated to the laboratory Hydreco (Petit Saut), which performs a remarkable work for the conservation of freshwater ecosystems in Guiana.

Distribution. – French Guiana. Only known from the type locality and type specimen.

Discussion

Trichoptera are particularly underrepresented in the faunal list of French Guiana (Brûlé & Touroult, 2014). Of course, this poverty could result from historical or ecological factors. I remember that cyclones, abrupt relief of the eastern coast, aridity of the western coast, or insularity were summoned to explain the poverty of the Malagasy fauna of freshwater insects (Bănărescu, 1991) when it resulted from the lack of research. The case is probably the same in French Guiana. From an ecological point of view, it is interesting to note that the two widely distributed species were captured along large rivers or in open landscape areas whereas the two new species, which we can suppose are of more restricted distribution, were captured along small brooks in the evergreen forest, a situation similar to that observed in other tropical watersheds.

Acknowledgements. – I am grateful to Bernard de Mérona who participated to some sampling and to Odile Fossati for the reading of this note.

References

Bănărescu P., 1991. – *Zoogeography of freshwaters n°3. Distribution and dispersal of freshwater animals in Africa, Pacific areas and South America.* Wiesbaden : Aula Verlag, 518 p.

Blahnik R. J. & Holzenthal R. W., 2014. – Review and redescription of species in the *Oecetis avara* group, with the description of 15 new species (Trichoptera, Leptoceridae). *Zookeys,* **376** : 1-83. https://doi.org/10.3897/zookeys.376.6047

Brûlé S. & Touroult J., 2014. – Insects of French Guiana: a baseline for diversity and taxonomic effort. *Zookeys,* **434** : 111-130. https://doi.org/10.3897/zookeys.434.7852

Chen Y. E., 1993. – *Revision of the Oecetis (Trichoptera: Leptoceridae) of the World.* PhD Dissertation, Clemson University, South Carolina, USA.

Dumas L. L., Moreira dos Santos A. P., Jardim G. A., Ferreira Jr N. & Nessimian J. L., 2010. – Insecta, Trichoptera: new records from Brazil and other distributional notes. *Check List,* **6** : 7-9.

Henriques-Oliveira A. L., Dumas L. L. & Nessimian J. L., 2014. – Three new species and new distributional records of *Oecetis* McLachlan 1877 (Trichoptera: Leptoceridae: Leptocerinae) from Brazil. *Zootaxa,* **3753** (3) : 273-282. https://doi.org/10.11646/zootaxa.3753.3.6

Hydreco, 2018. – http://hydrecolab.com/index.html

Malicky H., 2005. – Beiträge zur Kenntnis asiatischer *Oecetis* (Trichoptera, Leptoceridae). *Linzer Biologische Beiträge,* **37** : 605-669.

Neboiss A., 1989. – The *Oecetis reticulata* species-group from the South-West Pacific area (Trichoptera, Leptoceridae). *Bijdragen tot Dierkunde,* **59** (4) : 191-202.

Quinteiro F. B. & Holzenthal R. W. 2017. – Fourteen new species of *Oecetis* McLachlan, 1877 (Trichoptera: Leptoceridae) from the Neotropical region. *PeerJ,* **5** : e3753. https://doi.org/10.7717/peerj.3753

Randriamasimanana D. & Gibon F.-M., 1998a. – Biodiversité aquatique de Madagascar. 20 : Description et répartition de trois nouveaux *Oecetis* appartenant au groupe de *testacea* (Trichoptera, Leptoceridae). *Revue française d'Entomologie,* (N. S.) **20** (1-2) : 33-40.

RANDRIAMASIMANANA D. & GIBON F.-M., 1998b. – Biodiversité aquatique de Madagascar. 25 : Description et répartition de six nouveaux *Oecetis* appartenant au groupe *lais* (Trichoptera, Leptoceridae). *Revue française d'Entomologie,* (N. S.) **20** (4) : 145-155.

RUEDA MARTIN P. A., GIBON F.-M. & MOLINA C. I., 2011. – The genus *Oecetis* McLachlan in Bolivia and northwestern Argentina (Trichoptera: Leptoceridae), with new species and identification key for males of *Oecetis* species from Mexico, Central and South America. *Zootaxa,* **2821** : 19-38.

SCHMID F., 1995a. – Les *Oecetis* du groupe d'*eburnea* en Inde (Trichoptera: Leptoceridae). *Fabreries,* **20** : 41-56.

SCHMID F., 1995b. – Les *Oecetis* du groupe de *testacea* en Inde (Trichoptera: Leptoceridae). *Fabreries,* **20** : 57-78.

WELLS A., 2000. – New Australian species of *Oecetis* allied to *O. complexa* Kimmins (Trichoptera: Leptoceridae). *Memoirs of Museum Victoria*, **58** (1) : 77-88.