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Rodrigo VIEIRA, Alexssandro CAMARGO, Marc POLLET & Torsten DIKOW

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Dense *Pitcairnia* L'Héritier, 1789 vegetation on rocky outcrop 'savane roche no. 2' within tropical lowland rainforest at Mitaraka (photo: Marc Pollet). In medaillon, ♀ *Eurhabdus longissimus* Tomasovic, 2002 (photo: Alexssandro Camargo).

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Updated checklist of French Guianan Asilidae (Diptera) with a focus on the Mitaraka expedition

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ABSTRACT
This paper documents the robber fly fauna collected in lowland rainforest in the southwesternmost part of French Guiana (Mitaraka). A total number of 146 asilid specimens were collected during the Mitaraka 2015 survey. These asilids represent six subfamilies, 23 genera, 16 described species, 28 morphospecies, and first records of 12 genera and 29 species for French Guiana. The subfamily Laphriinae Macquart, 1838 is clearly best represented with 14 genera and 28 species (especially Atomosiini Lynch Arribálzaga, 1882 with nine genera and 18 species), followed by Leptogastrinae Schiner, 1862 with three genera and seven species, Asilinae Latreille, 1802 with three genera and four species, Ommatiinae Hardy, 1927 with one genus and three species and Dasypogoninae Macquart, 1838 and Trigonomiminae Enderlein, 1914 with one species each. Eighteen and 11 species were collected as singletons or doubletons respectively, accounting for about ⅔ of all species observed. *Pilica erythrogaster* (Wiedemann, 1828) and *Hybozelodes dispar* (Hermann, 1912) (both Laphriinae) were collected in the largest numbers, but appeared to be restricted to a few sites. A six meter long Malaise trap yielded the largest diversity and highest numbers of asilids, accounting for over ⅔ of all species collected. Also the SLAM traps, the light trap and sweep netting were quite productive. A checklist of the French Guianan Asilidae is provided.

KEY WORDS
Asiloidea,
Asilidae,
Brachycera,
checklist,
French Guiana.
neotropical,
new records.

RÉSUMÉ
Liste actualisée des Asilidae de Guyane (Diptera) axée sur l'expédition du Mitaraka.
Cette publication documente la faune d'asilides collectée dans la forêt pluviale de plaines dans l'extrême sud-ouest de la Guyane (Mitaraka). Au total, 146 spécimens d'asilides ont été capturés durant l'expédition Mitaraka 2015. Ces asilides appartiennent à six sous-familles, 23 genres, 16 espèces décrites, 28 morpho-espèces, avec 12 genres et 29 espèces signalisées pour la première fois de la Guyane. La sous-famille des Laphriinae Macquart, 18382 est clairement la mieux représentée, avec 14 genres et 28 espèces (en particulier les Atomosiini Lynch Arribálzaga, 1882 avec neuf genres et 18 espèces), suivie des Leptogastrinae Schiner, 1862 avec trois genres et sept espèces, des Asilinae Latreille, 1802 avec trois genres et quatre espèces, des Ommatiinae Hardy, 1927 avec un genre et trois espèces, et des Dasypogoninae Macquart, 1838 et des Trigonomiminae Enderlein, 1914 avec une espèce chacune. Dix-huit et 11 espèces ont été collectées comme singletons et doubletons respectivement, représentant environ ⅔ des espèces observées. *Pilica erythrogaster* (Wiedemann, 1828) et *Hybozelodes dispar* (Hermann, 1912) (tous les deux des Laphriinae) sont les deux espèces les plus abondamment collectées, mais apparemment sur quelques sites seulement. Un piège Malaise de six mètres de long a donné la plus grande diversité et le plus grand nombre d'asilides, representant plus de ⅖ de toutes les espèces collectées. De plus, les pièges SLAM, les pièges lumineux et les filets à balayage ont été assez productifs. Une liste des asilides de Guyane est fournie.

MOTS CLÉS
Asiloidea,
Asilidae,
Brachycera,
Guyane,
néotropical,
signalisations nouvelles.

INTRODUCTION

All robber fly species or Asilidae Latreille, 1802 are predators: they feed on other insects, or occasionally other kinds of arthropods, such as arachnids. Predation is well documented in adult robber flies, and a large number of studies have investigated this behavior (see Fisher 2009).

Asilidae, one of the largest families in the order Diptera, consists of 14 subfamilies, 556 genera and more than 7531 described species (Pape *et al.* 2011; Artigas & Vieira 2014; Vieira & Rafael 2014), as well as 32 and 58 fossil genera and species respectively (Evenhuis 2017).

In the Neotropical Region, the Asilidae are distributed into eight subfamilies, encompassing 219 genera and 1576 species (Papavero 2009; Artigas & Vieira 2014; Vieira & Rafael 2016). Only few faunistic inventories of Asilidae were conducted in South America until now, e.g. the Asilidae survey at Tambopata Reserved Zone, Madre de Dios, Peru (Fisher 1985) and other surveys in Argentina, Uruguay, Peru, and Venezuela (Carrera & Andretta 1953; Carrera 1960; Carrera & Machado-Allison 1963; Arribálzaga 1980a, b). In addition, a few isolated studies were recorded from Brazil (Vieira *et al.* 2006; Cezar 2017). In French Guiana, the study of Asilidae species largely falls behind, with records of 29 genera and 48 species (Artigas & Angulo 1980; Tomasovic 2002a; Papavero 2009). Rather recently, some species of *Diplosynapsis* Enderlein, 1914, *Eurhabdus* Aldrich, 1923, *Pseudorus* Walker, 1851, *Tipulogaster* Cockerell, 1913 and *Triorla* Parks, 1968 were described from French Guiana (Tomasovic & Braet 2001; Tomasovic 2002b).

In the present paper, the asilid fauna collected during the Mitaraka 2015 survey (French Guiana) is documented. Twenty-nine (12 genera and 29 species) first records for French Guiana are presented. In addition, a checklist of the French Guiana Asilidae is provided.

MATERIAL AND METHODS

In 2015 the "Our Planet Reviewed" or "La Planète revisitée" Guyane 2014-2015 expedition, also known as the "Mitaraka 2015 survey", was conducted in French Guiana (Pollet *et al.* 2014, 2018; Pascal *et al.* 2015; Touroult *et al.* 2018). This was the 5th edition of a large scale biodiversity survey undertaken by the Muséum national d'Histoire naturelle, Paris and the NGO Pro-Natura international (both in France). Both organizations jointly ran the "Our Planet Reviewed" programme which aims to rehabilitate taxonomical work that focuses on the largely neglected components of global biodiversity, i.e., invertebrates (both marine and terrestrial). Basic arthropod taxonomy and species discovery were at the heart of the survey, although forest ecology and biodiversity distribution modeling were also project topics. The expedition was conducted in the Mitaraka Mountains, a largely unknown and uninhabited area in the southwesternmost corner of French Guiana, directly bordering Surinam and Brazil (Pollet *et al.* 2014; Krolow *et al.* 2017). It is part of the Tumuc Humac mountain chain, extending east in Amapá region (Brazil) and west in southern Surinam. The area consists primarily of tropical lowland rain forest with scattered inselbergs, i.e., isolated hills that stand above the forest plains.

Between 22 February and 27 March 2015, two consecutive equal-sized teams (of about 30 researchers) explored the area, including more than 10 invertebrate experts. A third smaller team returned to the site from 12 to 20 August 2015. MP was coordinator of the collected Diptera, and was also the only Diptera worker actively involved in this survey. Invertebrate sampling was carried out near the base camp, on the drop zone (an area near the base camp that had been clear-cut entirely to allow helicopters to land) and, in particular, along four trails of about 3.5 km that started from the base camp in four different directions (see Krolow *et al.* 2017; Pol-

let *et al.* 2018; Touroult *et al.* 2018). During the first period (22 February-11 March 2015) over 21 different collecting methods were applied, with a total of 401 traps operational within a perimeter of 1 km². This array consisted primarily of pan traps (n=280), Charax butterfly traps (n=50), square Malaise traps (SLAM) (n=32), Flight Intercept Traps (FIT, n=13) and Butterfly banana traps (n=12), but also a light trap. In the subsequent periods, pan traps were no longer operational. A total of 223 invertebrate samples (often pooled yields of different traps of the same type) were examined, including 93 sweepnet samples, and 27 and 62 samples collected by SLAM and coloured pan traps (24 blue, 22 yellow and 16 white traps), respectively. As MP mainly focused on Dolichopodidae Latreille, 1809 during active collecting, sweep net samples only rarely contained asilids. Relevant metadata on the samples (e.g. exact locality and geographic coordinates, date or time period, collection method, and collector[s]) are provided in Appendix.

Non-pan trap samples were sorted to insect orders and families at the office of the Société entomologique Antilles Guyane (SEAG, http://insectafgseag.myspecies.info/fr), while pan trap samples were treated similarly at MP's home lab. The biological sampling benefited from the access and benefit sharing agreement "APA973-1", which is reported in each sample label. Dipteran subsamples (mostly per family) were subsequently disseminated among experts worldwide, in the case of Asilidae to RV and AC (see Pollet *et al.* 2018; Touroult *et al.* 2018). The identification of the asilid species was conducted by RV and AC using taxonomical reviews and identification keys (Papavero 1975; Artigas *et al.* 1988, 1991; Fisher 2009; Papavero *et al.* 2009; Vieira *et al.* 2010), original descriptions (Curran 1928, 1934; Wiedemann 1828; Hermann 1912; Scarbrough 1993; Tomasovic 2002a), and direct comparison to reliably identified species in collections of the following museums: Instituto Nacional de Pesquisas da Amazônia (INPA); Museu de Zoologia de São Paulo (MZUSP); Museum für Naturkunde (ZMHB); The Natural History Museum (BMNH); and American Museum of National History (AMNH). All collected material was stored in 70% alcohol during the expedition, being dry mounted on pins only about 11 months later in the laboratory. The pictures of Asilidae specimens were taken with a Leica M205A stereomicroscope coupled with a Leica DMC4500 and Leica Application Suite V4.10.0 Interactive Measurements Montage.

In order to build an updated checklist, species distribution records were compiled from the following literature: Curran (1928); Macquart (1838, 1850); Papavero & Bernardi (1973); Papavero (1975); Artigas & Angulo (1980); Artigas, Papavero & Pimentel (1988); Scarbrough (1993, 2008); Tomasovic & Braet (2001); Tomasovic (2002a, b) and Papavero (2009). Doubtful country records in our checklist are indicated by "?". The list also includes information on the specimens deposited in museums. Next to previously published records, all records from the Mitaraka 2015 survey are included in the checklist. Each of these records is represented by the sample code and the gender and number of the collected specimens. Detailed information on the samples is given in Appendix I. First records for French Guiana are explicitly indicated.

Abbreviations

Collecting techniques

BPT	blue pan traps;
EM	emergence trap;
FIT	Flight Intercept Trap;
LT	light trap;
MT	6 m long Malaise trap;
PVP	pink polytrap automatic light trap;
SLAM	sea – land – air Malaise trap, or Square Malaise trap;
SW	sweep net (light aerial type, not rugged heavy duty net);
WPT	white pan traps;
YPT	yellow pan traps.

Institutions

AMNH	American Museum of National History, New York;
BMNH	The Natural History Museum, London (NHMUK);
INPA	Instituto Nacional de Pesquisas da Amazônia, Manaus;
MNHN	Muséum national de l'Histoire naturelle, Paris;
MZUSP	Museu de Zoologia de São Paulo, São Paulo;
ZMHB	Museum für Naturkunde, Berlin.

RESULTS

A total number of 146 asilid specimens were collected during the Mitaraka 2015 survey, comprising 79 males, 62 females, and five specimens without abdomen (including two of uncertain gender). These asilids represent six subfamilies, 23 genera, 16 described species and 28 morphospecies, possibly undescribed. It was not possible to identify these 28 morphospecies onto the species level. The original descriptions of species of some asilid genera are succinct and lack illustrations, which makes it difficult to recognize them. As a result, these morphospecies might represent either new species, or yet unrecognized described species in taxonomically challenged lineages. The subfamily Laphriinae Macquart, 1838 is clearly best represented in the survey with 14 genera and 28 species (especially Atomosiini Lynch Arribálzaga, 1882 with nine genera and 18 species), followed by Leptogastrinae Schiner, 1862 with three genera and seven species, Asilinae Latreille, 1802 with three genera and four species, Ommatiinae Hardy, 1927 with one genus and three species, and Dasypogoninae Macquart, 1838 and Trigonomiminae Enderlein, 1914 with one species each. Eighteen and 11 species were collected as singletons or doubletons respectively, accounting for about ⅔ of all observed species.

Most species were collected at sites along trail A (n=15) (Fig. 1), near the base camp and drop zone (n=14) (Fig. 2), on a small rocky outcrop ('savane roche 2') (n=10) (Fig. 3), and along trail C (n=9). These results seem strongly affected by the collecting methods applied in the different sites: both along trail A and in the rocky outcrop a Malaise trap has been in operation, and the light trap (LT) and flight intercept traps (FIT) undoubtedly contributed considerably to the yields from the base camp and drop zone. Indeed, the largest diversity and highest numbers of asilids

TABLE 1. — Overview of sampling methods that yielded Asilidae Latreille, 1802 during the Mitaraka 2015 survey. Number of specimens given. For information on the sampling method codes, see Material and methods.

Collecting methods	EM	FIT	LT	MT(6 m)	SLAM	PVP	SW	BPT	WPT	YPT	Total
Total number of examined samples	1	8	10	5	27	2	93	24	16	22	208
Andrenosoma pyrrhacra (Wiedemann, 1828)	–	6	2	–	–	–	–	–	–	–	8
Andrenosoma sarcophaga (Hermann, 1912)	–	–	2	–	–	–	–	–	–	–	2
Andrenosoma sp.	–	–	1	1	–	–	–	–	–	–	2
Aphractia vivax (Hermann, 1912)	–	–	–	–	1	–	–	–	–	–	1
Atomosia sp. 1	1	1	–	–	6	–	–	–	–	–	8
Atomosia sp. 2	–	–	–	3	–	–	–	–	–	–	3
Bathropsis sp.	–	–	–	–	3	–	–	–	–	–	3
Cerotainia sp.	–	–	1	4	–	–	–	–	–	–	5
Diplosynapsis sp.	–	–	–	–	–	–	1	–	–	–	1
Dissmeryngodes amapa Artigas, Papavero & Serra, 1991	–	–	–	–	–	–	1	–	–	1	2
Dissmeryngodes nigripes (Macquart, 1838)	–	–	–	–	–	–	–	–	–	1	1
Efferia sp. 1	–	–	4	–	–	–	–	–	–	–	4
Efferia sp. 2	–	–	–	–	–	–	1	–	–	–	1
Eraxasilus sp.	–	–	–	2	–	–	–	–	–	–	2
Euhabdus longissimus Tomasovic, 2002	–	–	–	–	1	–	–	–	–	–	1
Eumecosoma sp.	–	–	–	–	–	–	1	–	–	–	1
Holcocephala oculata (Fabricius, 1805)	–	–	1	6	1	–	–	–	–	–	8
Hybozelodes dispar (Hermann, 1912)	–	11	3	1	1	–	–	1	–	–	17
Hybozelodes sp. 1	–	–	–	–	–	–	2	–	–	–	2
Hybozelodes sp. 2	–	–	–	2	1	–	–	–	–	–	3
Hybozelodes sp. 3	–	–	–	–	–	–	2	–	–	–	2
Hybozelodes sp. 4	–	–	–	3	–	–	–	1	–	–	4
Hybozelodes sp. 5	–	–	–	–	–	–	–	–	–	2	2
Hybozelodes sp. 6	–	–	–	–	1	–	–	–	–	–	1
Ichneumolaphria sp.	–	–	–	–	–	1	–	–	–	–	1
Lampria clavipes (Fabricius, 1805)	–	–	–	–	–	–	1	–	–	–	1
Leptogaster sp. 1	–	–	–	1	1	–	–	–	–	–	2
Leptogaster sp. 2	–	–	–	5	–	–	–	–	–	–	5
Leptogaster sp. 3	–	–	–	1	–	–	–	–	–	–	1
Leptogaster sp. 4	–	–	–	–	1	–	–	–	–	–	1
Leptogaster sp. 5	–	–	–	–	1	–	–	–	–	–	1
Leptopteromyia sp.	–	–	–	1	–	–	–	–	–	–	1
Lycosimyia sp.	–	–	–	1	–	–	–	–	–	–	1
Oidardis sp. 1	–	–	–	–	–	–	4	–	–	–	4
Oidardis sp. 2	–	–	–	–	–	–	2	–	–	–	2
Ommatius costatus Rondani, 1850	–	–	–	1	–	–	–	–	–	–	1
Ommatius normus Curran, 1928	–	–	–	7	–	–	–	–	–	–	7
Ommatius spinosus Scarbrough, 1993	–	–	–	2	–	–	–	–	–	–	2
Pilica erythrogaster (Wiedemann, 1828)	1	6	7	6	2	–	–	–	–	–	22
Pilica pyrrhopyga (Wiedemann, 1828)	–	1	–	–	–	–	2	–	2	–	5
Pilica rubidapex (Hermann, 1912)	–	–	–	–	–	–	–	–	–	1	1
Pilica sp.	–	–	–	1	–	–	–	–	–	–	1
Rhopalogaster sp.	–	–	–	1	–	–	–	–	–	–	1
Senobasis mendax Curran, 1934	–	–	2	–	–	–	–	–	–	–	2
No. species	2	5	9	19	12	1	10	2	1	4	44
No. specimens	2	25	23	49	20	1	17	2	2	5	146

were observed in the Malaise trap (6 m) samples, which contained over ⅖ of all collected species (see Table 1). It must be mentioned that this trap had been installed in two very different sites and during two different periods (over a river during March 2015, and on the 'savane roche 2' during August 2015). Also the SLAM traps, the light trap and sweep netting were quite productive and yielded a comparable number of species and specimens (*c.* 10 species and *c.* 20 specimens). Surprisingly, flight intercept traps gathered about the same number of specimens, but only about half of the species as compared to the latter collecting methods. Pan traps, regardless of colour, were not very effective as no less than 280 traps collected merely nine specimens of seven species.

FIG. 1. — River bed forest along trail A in tropical lowland rainforest at Mitaraka (photo: Marc Pollet).

Pilica erythrogaster (Wiedemann, 1828) (Laphriinae) was most numerous with 22 specimens, but was only collected along trail A (in 6 m Malaise trap) and on the drop zone (mainly in LT and FIT) and thus not observed on the rocky outcrops nor collected with pan traps. *Hybozelodes dispar* (Hermann, 1912) (Laphriinae) too, the second most abundant species with 17 specimens, was only collected in the above mentioned sites. Unlike its former congener, *Pilica pyrrhopyga* (Wiedemann, 1828) (Fig. 5L) was collected in 4 of the 15 different sites where Asilidae were observed, and *Cerotainia* sp. (Fig. 4G), *Holcocephala oculata* (Fabricius, 1805) (Fig. 4N) and *Hybozelodes dispar* (Hermann, 1912) (Fig. 4O) in three different sites. Twenty-seven species were collected only in one site, with five only found on one of the rocky outcrops. Of these species, only *Leptogaster* sp. 2 was collected in fair numbers (on 'savane roche 2').

This rather short investigation revealed the presence of 12 genera and 11 known species recorded for the first time in French Guiana (see checklist). In addition, also 28 distinct morphospecies have been recognized that most probably represent undescribed species, also new to French Guiana. As a result, 41 genera and 59 known species are currently known from this part of South America.

UPDATED CHECKLIST OF ASILIDAE OF FRENCH GUIANA

Subfamily ASILINAE Latreille, 1802
Genus *Amblyonychus* Hermann, 1921

Amblyonychus nigripes (Fabricius, 1787)

Asilus nigripes Fabricius, 1787: 360.

RECORDS FOR FRENCH GUIANA. — Cayenne. See Papavero (2009).

DISTRIBUTION. — French Guiana, Brazil (Pará), South America.

Genus *Diplosynapsis* Enderlein, 1914

Diplosynapsis remus Tomasovic, 2002

Diplosynapsis remus Tomasovic, 2002: 60.

RECORDS FOR FRENCH GUIANA. — Pointe Combi. See Tomasovic (2002b).

DISTRIBUTION. — French Guiana.

Remark

One additional morphospecies of *Diplosynapsis* (Fig. 4J) has been collected in Mitaraka. Tomasovic (2002b) described *Diplosynapsis remus* based on the holotype and 4 paratype specimens. Vieira & Rafael (2016) reviewed *Diplosynapsis* including two paratypes of *D. remus* and in both, the R_4 vein ends in the C vein and, consequently, cell r_{2+3} is narrowly open, and not closed as typical for this genus. Thus, although the paratypes do not have the diagnostic characters of *Diplosynapsis*, it would be premature to remove this species from this genus, since it was not possible to study the holotype. Furthermore, the specimen collected is a female and females of *Diplosynapsis* are very difficult to identify due to their similarity (material examined: 1 ♀; Mitaraka/035, MNHN).

Genus *Eccritosia* Schiner, 1866

Eccritosia barbata (Fabricius, 1787)

Asilus barbatus Fabricius, 1787: 358.

Records for French Guiana. — Cayenne. See Papavero (2009).

Distribution. — United States (Texas), Mexico, Honduras, Costa Rica, Panama, Venezuela (Bolívar), Guyana, French Guiana, Peru (Loreto), Brazil, Bolivia, Paraguay, Argentina.

Genus *Efferia* Coquillett, 1893

Remark

The genus is new to French Guiana.

Tomasovic (2002a) mentioned *Efferia demifasciata* (Macquart, 1850) and *Efferia fuscanipennis* (Macquart, 1850) as occurring in French Guiana. However, currently these species are allocated in *Triorla* Parks, 1968 and *Nerax* Hull, 1962, respectively (Papavero 2009). Thus, the two *Efferia* morphospecies collected at Mitaraka represent the first record of the genus from French Guiana (material examined: *Efferia* sp. 1 [Fig. 4K]: 1 ♂, 1 ♀, Mitaraka/008, MNHN; 1 ♂, Mitaraka/100, INPA; 1 ♂, Mitaraka/115, INPA; *Efferia* sp. 2 [Fig. 4L]: 1 ♂, Mitaraka/007, MNHN).

Genus *Eicherax* Bigot, 1857

Eicherax fulvithorax (Macquart, 1838)

Erax fulvithorax Macquart, 1838: 113.

Records for French Guiana. — "De la Guyane". See Macquart (1838) and Tomasovic (2002a).

Distribution. — Colombia, French Guiana, Peru (Cusco, Huánuco, Junín), Brazil (Pará).

Genus *Eraxasilus* Carrera, 1959

Remarks

The genus is new to French Guiana.

One morphospecies of *Eraxasilus* has been collected (material examined: 1 ♂, sample Mitaraka/230, INPA; 1 ♂, Mitaraka/230, MNHN).

Genus *Lecania* Macquart, 1838

Remark

The genus was reported from French Guiana as *Pachychaeta* Bigot, 1857 by Tomasovic (2002a). Currently this genus is considered a synonym of *Lecania* (Papavero, 2009). Furthermore, no information concerning species name or collecting site was provided (specimens not examined).

Genus *Mallophora* Macquart, 1838

Mallophora aeaca Williston, 1901

Mallophora aeaca Williston, 1901: 319.

Records for French Guiana. — Charvein, River de Kourou. See Artigas & Angulo (1980).

Distribution. — Mexico (Guerrero, Veracruz, Yucatán), El Salvador, French Guiana, Brazil (Acre, Pará), Bolivia (Cochabamba, Santa Cruz), Paraguay, Uruguay, Argentina (Catamarca, Córdoba, Entre Ríos, Jujuy, Mendoza, Misiones, Salta, Tucumán).

Mallophora argentipes Macquart, 1838

Mallophora argentipes Macquart, 1838: 38.

Records for French Guiana. — River de Kourou. See Artigas & Angulo (1980).

Distribution. — Panama, Colombia, Venezuela, Trinidad-Tobago, Guyana, Surinam, French Guiana, Brazil (Roraima, Rio Grande do Norte, Mato Grosso, Goiás, Rio de Janeiro, São Paulo, Santa Catarina), Paraguay, Argentina (Buenos Aires, Formosa, Salta, Santa Fe, Santiago del Estero).

Mallophora atra Macquart, 1834

Mallophora atra Macquart, 1834: 302.

Records for French Guiana. — Cayenne, Charvein, Maroni, Kourou, Gourdonville. See Artigas & Angulo (1980).

Distribution. — United States (Minnesota, Florida), Mexico (Guerrero, Morelos), Honduras, Colombia, Venezuela, Guyana, Surinam, French Guiana, Trinidad-Tobago, Ecuador, Peru, Brazil (Roraima, Rondônia, Amazonas, Pará, Amapá, Paraíba, Pernambuco, Bahia, Mato Grosso, Mato Grosso do Sul, Tocantins, Goiás, Distrito Federal, Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catarina, Rio Grande do Sul), Bolivia (Cochabamba, Santa Cruz), Paraguay, Argentina (Buenos Aires, Chaco, Córdoba, Formosa, Jujuy, Misiones, Salta, Santa Fe, Santiago del Estero, Tucumán), Chile (Arica).

FIG. 2. — Drop zone at Mitaraka (photo: Marc Pollet).

Mallophora barbipes (Wiedemann, 1819)

Laphria barbipes Wiedemann, 1819: 48.

RECORDS FOR FRENCH GUIANA. — Maroni. See Artigas & Angulo (1980).

DISTRIBUTION. — French Guiana, Ecuador (Napo, Oriente), Peru (Cuzco, Huánuco, Loreto), Brazil (Pará, Mato Grosso, Goiás, Bahia), Bolivia (Beni, Sara), Paraguay (Guairá), Argentina (Formosa, Salta, Tucumán).

Mallophora calida (Fabricius, 1787)

Asilus calidus Fabricius, 1787: 358.

RECORDS FOR FRENCH GUIANA. — Maroni, Cayenne. See Artigas & Angulo (1980).

DISTRIBUTION. — Mexico (Veracruz), Colombia (Santander), Venezuela, Guyana, French Guiana, Peru (San Marytín), Brazil (Amazonas, Pará, Mato Grosso, Mato Grosso do Sul, Goiás, Ceará, Rio Grande do Norte, Paraíba, Bahia, Minas Gerais, Rio de Janeiro, São Paulo, Paraná, Santa Catarina, Rio Grande do Sul), Bolivia (Beni, Cordillera, Sara), Paraguay (Guairá), Uruguay, Argentina (Chaco, Jujuy, Salta, Santa Fe, Santiago del Estero).

Mallophora clavipes Curran, 1941

Mallophora clavipes Curran, 1941: 270.

RECORDS FOR FRENCH GUIANA. — Maroni, Charvein, Cayenne, La Mana. See Artigas & Angulo (1980).

DISTRIBUTION. — Panama, Venezuela (Bolívar), Guyana, French Guiana, Ecuador, Peru (Huánuco), Brazil (Amazonas, Pará, Amapá, Mato Grosso, Rio de Janeiro).

Mallophora fautrix Osten Sacken, 1887

Mallophora fautrix Osten Sacken, 1887: 191.

RECORDS FOR FRENCH GUIANA. — Kourou. See Artigas & Angulo (1980).

DISTRIBUTION. — United States (Arizona, California, New Mexico, Texas, Utah), Mexico (Chihuahua, Morelos, Nayarit, Puebla, Sinaloa, Veracruz), French Guiana.

Mallophora leschenaultii Macquart, 1838

Mallophora leschenaultii Macquart, 1838: 86.

Records for French Guiana. — La Mana river (as Lamana), Kourou. See Artigas & Angulo (1980) and Papavero (2009).

Distribution. — United States (Fisher *in litt.*), Mexico (Chihuahua, Colima, Guanajuato, Guerrero, Jalisco, Morelos, Nuevo León, Oaxaca, Tamaulipas, Veracruz), Venezuela, Trinidad-Tobago, Guyana, Surinam, French Guiana, Ecuador, Peru, Brazil (Pará, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Espírito Santo, Rio de Janeiro, Rio Grande do Sul), Paraguay, Argentina (Córdoba, Jujuy, Misiones).

Mallophora nigritarsis (Fabricius, 1805)

Dasypogon nigritarsis Fabricius, 1805: 168.

Records for French Guiana. — Saint-Jean-du-Maroni, Charvein, Maroni, Cayenne. See Artigas & Angulo (1980).

Distribution. — Cuba, Panama, Colombia, Venezuela (Bolívar, Carabobo), Guyana, Surinam, French Guiana, Trinidad-Tobago, Peru (Loreto), Ecuador (Los Ríos, Oriente), Brazil (Amazonas, Pará, Mato Grosso, Pernambuco, Minas Gerais, Santa Catarina), Bolivia (Beni, Sara), Paraguay, Argentina (Salta, Tucumán).

Mallophora robusta (Wiedemann, 1828)

Asilus robustus Wiedemann, 1828: 478.

Records for French Guiana. — Saint-Jean-du-Maroni. See Artigas & Angulo (1980).

Distribution. — Mexico (Veracruz), Guadeloupe, Venezuela, Guyana, Surinam, French Guiana, Peru, Ecuador, Brazil (Amazonas, Pará, Mato Grosso, Goiás, Rio de Janeiro, São Paulo), Bolivia (Beni, Santa Cruz, Sara, Yungas), Paraguay, Argentina (Chaco, Jujuy).

Mallophora rufiventris Macquart, 1838

Mallophora rufiventris Macquart, 1838: 91.

Records for French Guiana. — Saint-Laurent-du-Maroni. See Artigas & Angulo (1980).

Distribution. — Colombia, French Guiana, Brazil (Pernambuco, Mato Grosso, Goiás, São Paulo, Paraná, Santa Catarina), Bolivia (Sara), Paraguay, Argentina (Formosa, Misiones, Salta, Tucumán).

Mallophora tibialis Macquart, 1838

Mallophora tibialis Macquart, 1838: 85.

Records for French Guiana. — "dans les grands bois aux bords de l'Oyapock", and Cayenne; River de Kourou, Saint-Jean-du-Maroni and La Mana. See Macquart (1838), Artigas & Angulo (1980) and Papavero (2009).

Distribution. — Colombia, Venezuela, Guyana, Surinam, French Guiana, Peru (Loreto), Brazil (Amazonas, Pará), Bolivia (Sara), Argentina (La Rioja).

Mallophora zita Curran, 1941

Mallophora zita Curran, 1941: 270.

Records for French Guiana. — River de Kourou, Saint-Laurent-du-Maroni. See Artigas & Angulo (1980).

Distribution. — Mexico (Nuevo León), Panama, Venezuela, Peru (Achinamiza), Surinam, French Guiana, Ecuador, Brazil (Roraima, Amazonas, Pará, Minas Gerais, São Paulo), Bolivia (Beni), Paraguay, Uruguay, Argentina (Chaco).

Genus *Nerax* Hull, 1962

Nerax fuscanipennis (Macquart, 1850)

Erax fuscanipennis Macquart, 1850: 390.

Records for French Guiana. — "De la Guyane". See Macquart (1850), Tomasovic (2002a) and Papavero (2009).

Distribution. — French Guiana.

Nerax tibialis (Macquart, 1838)

Erax tibialis Macquart, 1838: 118, 234.

Records for French Guiana. — Cayenne. See Macquart (1838) and Papavero (2009).

Distribution. — United States (Pennsylvania, Philadelphia), Dominican Republic (Santo Domingo), French Guiana. Macquart's specimen from Philadelphia misidentified.

Genus *Porasilus* Curran, 1934

Porasilus cerdai Tomasovic, 2002

Porasilus cerdai Tomasovic, 2002: 61.

Records for French Guiana. — Petit Saut, Pointe Combi. See Tomasovic (2002b).

Distribution. — French Guiana.

Genus *Promachus* Loew, 1848

Remark

The genus was reported from French Guiana by Tomasovic (2002a). The single female *Promachus* specimen has been collected at Montagne de Kaw (= Kaw Mountain), Camp Patawa, in northeast French Guiana. According to Fisher (2009), the genus is widespread mainly in the northern parts of the Western and Eastern Hemispheres. Also, nearly all *Promachus* species recorded from South America have been transferred to *Amblyonychus* and the latter genus is considered to be distributed from Venezuela and Colombia northward into Central and North America. True *Promachus* species are also present in Central America, i.e., Costa Rica and Panama (Fisher *in litt.*). Thus, it is possible that this record may refer to *Amblyonychus*.

FIG. 3. — Dense *Pitcairnia* L'Héritier, 1789 vegetation on rocky outcrop 'savane roche no. 2' within tropical lowland rainforest at Mitaraka (photo: Marc Pollet).

Genus *Triorla* Parks, 1968

Triorla demifasciata (Macquart, 1850)

Erax demifasciatus Macquart, 1850: 390.

RECORDS FOR FRENCH GUIANA. — "De la Guyane". See Macquart (1850), Tomasovic (2002b) and Papavero (2009).

DISTRIBUTION. — French Guiana.

Triorla striola (Fabricius, 1805)

Dasypogon striola Fabricius, 1805: 172.

RECORDS FOR FRENCH GUIANA. — "French Guiana". See Tomasovic (2002a) and Papavero (2009).

DISTRIBUTION. — Panama, Colombia, Venezuela, Guyana, Surinam, French Guiana and south to Paraguay.

Triorla trichina Tomasovic, 2002

Triorla trichina Tomasovic, 2002: 59.

RECORDS FOR FRENCH GUIANA. — Kourou, Yalimapo, Les Hattes. See Tomasovic (2002b).

DISTRIBUTION. — French Guiana.

Subfamily DASYPOGONINAE Macquart, 1838
Tribe LASTAURINI Papavero, 1973
Genus *Blepharepium* Rondani, 1848

Blepharepium cajennense (Fabricius, 1787)

Asilus cajennensis Fabricius, 1787: 360.

RECORDS FOR FRENCH GUIANA. — Cayenne. See Papavero (2009).

DISTRIBUTION. — Colombia, Venezuela, Trinidad, Guyana, French Guiana, Surinam, Peru, Brazil (Acre, Amazonas), Bolivia.

Blepharepium fuscipennis (Macquart, 1834)

Dasypogon fuscipennis Macquart, 1834: 294.

RECORDS FOR FRENCH GUIANA. — Cayenne, Maroni. See Papavero & Bernardi (1973).

DISTRIBUTION. — Surinam, French Guiana, Peru, Brazil (Pará, Amapá, Rio Grande do Norte, Espírito Santo, Rio de Janeiro).

Blepharepium luridum Rondani, 1848

Blepharepium luridum Rondani, 1848: 89.

RECORDS FOR FRENCH GUIANA. — Saint-Jean-du-Maroni. See Papavero & Bernardi (1973).

DISTRIBUTION. — Guyana, Surinam, French Guiana, Peru (Loreto), Brazil (Amazonas, Pará, Mato Grosso).

Genus *Diogmites* Loew, 1866

Diogmites brunneus (Fabricius, 1787)

Asilus brunneus Fabricius, 1787: 359.

RECORDS FOR FRENCH GUIANA. — Cayenne. See Papavero (2009).

DISTRIBUTION. — Venezuela, French Guiana.

Diogmites fasciatus (Macquart, 1834)

Dasypogon fasciatus Macquart, 1834: 295.

RECORDS FOR FRENCH GUIANA. — Cayenne. See Papavero (2009).

DISTRIBUTION. — French Guiana.

Diogmites rufipalpis (Macquart, 1838)

Dasypogon rufipalpis Macquart, 1838: 38.

RECORDS FOR FRENCH GUIANA. — Cayenne (?). See Papavero (2009).

DISTRIBUTION. — French Guiana (?), Peru, Brazil (Amazonas, Pará).

Tribe MEGAPODINI Carrera, 1949
Genus *Pseudorus* Walker, 1851

Pseudorus conspectus Tomasovic, 2001

Pseudorus conspectus Tomasovic *in* Tomasovic & Braet, 2001: 380.

RECORDS FOR FRENCH GUIANA. — Montagne de Kaw, Relais Patawa. See Tomasovic & Braet (2001).

DISTRIBUTION. — French Guiana.

Genus *Senobasis* Macquart, 1838

Senobasis analis Macquart, 1838

Senobasis analis Macquart, 1838: 53.

RECORDS FOR FRENCH GUIANA. — Mana River. See Papavero (2009).

DISTRIBUTION. — Colombia, Guyana, French Guiana, Peru, Brazil (Amazonas, Amapá).

Senobasis mendax Curran, 1934
(Fig. 5O)

Senobasis mendax Curran, 1934: 333.

MATERIAL EXAMINED. — **French Guiana.** 1 ♂, Mitaraka/115, INPA; 1 ♀, Mitaraka/115, MNHN.

RECORDS FOR FRENCH GUIANA. — St. Jean du Maroni, Charvein. See Papavero (1975).

DISTRIBUTION. — Colombia, Venezuela, Ecuador, Peru, Guyana, French Guiana, Brazil (Amazonas).

Subfamily LAPHRIINAE Macquart, 1838
Tribe ANDRENOSOMATINI Hull, 1962
Genus *Andrenosoma* Rondani, 1856

Andrenosoma appendiculatum (Macquart, 1846)

Laphria appendiculata Macquart, 1846: 203.

RECORDS FOR FRENCH GUIANA. — Cayenne. See Papavero (2009).

DISTRIBUTION. — French Guiana.

Andrenosoma pyrrhacra (Wiedemann, 1828)
(Fig. 4A)

Laphria pyrrhacra Wiedemann, 1828: 517.

MATERIAL EXAMINED. — **French Guiana.** 1 ♀, Mitaraka/100 MNHN; 1 ♂, Mitaraka/115, MNHN; 1 ♀, Mitaraka/192, MNHN; 1 ♀, Mitaraka/219 INPA; 2 ♂, 1 ♀ and 1 specimen with terminalia missing, Mitaraka/220, INPA.

DISTRIBUTION. — Brazil, French Guiana.

REMARK

New to French Guiana.

Andrenosoma sarcophaga (Hermann, 1912)
(Fig. 4B)

Nusa sarcophaga Hermann, 1912: 263.

DISTRIBUTION. — Peru (Huánuco), French Guiana.

MATERIAL EXAMINED. — **French Guiana.** 1 ♂, Mitaraka/115, INPA; 1 ♀, Mitaraka/115, MNHN.

REMARKS

New to French Guiana.

One additional morphospecies of *Andrenosoma* (Fig. 4C) has been collected in Mitaraka (material examined: 1 ♀, Mitaraka/100, MNHN; 1 ♂, Mitaraka/230, INPA).

FIG. 4. — Selected Mitaraka Asilidae, part I: **A**, *Andrenosoma pyrrhacra* (Wiedemann, 1828) ♂; **B**, *Andrenosoma sarcophaga* (Hermann, 1912) ♂; **C**, *Andrenosoma* sp. ♂; **D**, *Aphractia vivax* (Hermann, 1912) ♂; **E**, *Atomosia* sp. 1 ♂; **F**, *Atomosia* sp. 2 ♂; **G**, *Cerotainia* sp. ♂; **H**, *Dissmeryngodes amapa* Artigas, Papavero & Serra, 1991 ♂; **I**, *Dissmeryngodes nigripes* (Macquart, 1838) ♂; **J**, *Diplosynapsis* sp. ♀; **K**, *Efferia* sp. 1 ♂; **L**, *Efferia* sp. 2 ♂; **M**, *Eurhabdus longissimus* Tomasovic, 2002 ♀; **N**, *Holcocephala oculata* (Fabricius, 1805) ♂; **O**, *Hybozelodes dispar* (Hermann, 1912) ♂. Scale bars: 5 mm (photos: Alexssandro Camargo).

Genus *Dasyllis* Loew, 1851

Dasyllis fascipennis (Macquart, 1834)

Laphria fascipennis Macquart, 1834: 284.

Records for French Guiana. — Cayenne. See Papavero (2009).

Distribution. — French Guiana, Brazil (Pará, Mato Grosso).

Dasyllis haemorrhoa (Wiedemann, 1830)

Laphria haemorrhoa Wiedemann, 1830: 645.

Records for French Guiana. — Cayenne. See Artigas, Papavero & Pimentel (1988) and, Tomasovic (2002a).

Distribution. — Panama, French Guiana, Peru, Brazil (Amazonas, Bahia, Espírito Santo, Rio de Janeiro), Bolivia.

Genus *Pilica* Curran, 1931

Pilica cyrtophora (Hermann, 1912)

Nusa cyrtophora Hermann, 1912: 255.

Records for French Guiana. — "French Guiana". See Tomasovic (2002a) (specimens not examined).

Distribution. — French Guiana, Brazil (Minas Gerais).

Pilica erythrogaster (Wiedemann, 1828)
(Fig. 5K)

Laphria erythrogaster Wiedemann, 1828: 523.

Material examined. — **French Guiana.** 1 ♂, 1 ♀, Mitaraka/100 MNHN; 2 ♂, Mitaraka/115, INPA; 3 ♀, Mitaraka/115, MNHN; 1 ♂, Mitaraka/188, INPA; 3 ♂, Mitaraka/189, INPA; 2 ♀, Mitaraka/189, MNHN; 1 ♂, Mitaraka/190, MNHN; 1 ♂, Mitaraka/192, INPA; 1 ♀, Mitaraka/198, INPA; 1 ♂, Mitaraka/218, INPA; 4 ♂, Mitaraka/220, MNHN; 1 ♂, Mitaraka/223, MNHN.

Records for French Guiana. — "French Guiana". See Tomasovic (2002a) (specimens not examined).

Distribution. — French Guiana, Peru (Cuzco), Brazil (Rondônia, Amazonas, Pará, Amapá, Maranhão, Pernambuco, Espírito Santo, Rio de Janeiro).

Pilica pyrrhopyga (Wiedemann, 1828)
(Fig. 5L)

Laphria pyrrhopyga Wiedemann, 1828: 515.

Material examined. — **French Guiana.** 1 ♂, Mitaraka/011, MNHN; 1 ♂ Mitaraka/091, INPA; 1 ♂, Mitaraka/161, MNHN; 1 ♂, Mitaraka/167, MNHN; 1 specimen with terminalia missing, Mitaraka/220, INPA.

Distribution. — Venezuela, Guyana, French Guiana, Peru (Huánuco, Lima, Cuzco), Brazil (Rondônia, Amazonas, Pará, Amapá, Maranhão, Mato Grosso, Pernambuco, Espírito Santo, Rio de Janeiro, São Paulo, Paraná).

Remark
New to French Guiana.

Pilica rubidapex (Hermann, 1912)
(Fig. 5M)

Nusa rubidapex Hermann, 1912: 247.

Material examined. — **French Guiana.** 1 ♂, Mitaraka/133, INPA.

Distribution. — Venezuela, Guyana, French Guiana, Brazil (Amapá).

Remarks
New to French Guiana.
One additional morphospecies of *Pilica* has been collected in Mitraka (material examined: 1 ♂, Mitaraka/188, INPA).

Tribe Atomosiini Lynch Arribálzaga, 1882
Genus *Aphractia* Artigas, Papavero & Serra, 1991

Remark
The genus is new to French Guiana.

Aphractia vivax (Hermann, 1912)
(Fig. 4D)

Atractia vivax Hermann, 1912: 177.

Material examined. — **French Guiana.** 1 ♂, Mitaraka/191, INPA.

Distribution. — French Guiana, Peru (Cuzco).

Genus *Atomosia* Macquart, 1838

Remark
The genus is new to French Guiana. The *Atomosia* species mentioned by Tomasovic (2002a) are currently treated as *incertae sedis* (Papavero 2009). Thus, the two *Atomosia* morphospecies collected in Mitaraka are considered the first record of the genus from French Guiana (material examined: *Atomosia* sp. 1 [Fig. 4E]: 1 ♂, Mitaraka/191, INPA; 2 ♂, Mitaraka/195, INPA; 1 ♀, Mitaraka/195, MNHN; 1 ♂, Mitaraka/218, INPA; 1 ♀, Mitaraka/218, MNHN; 1 ♂, Mitaraka/219, MNHN; 1 ♂, Mitaraka/223, INPA. *Atomosia* sp. 2 [Fig. 4F]: 1 ♂, 1 ♀, Mitaraka/186, INPA, 1 ♂, Mitaraka/186, MNHN).

Genus *Atractia* Macquart, 1838

Remark
The genus was reported from French Guiana by Tomasovic (2002a). No additional information concerning the species name or collecting site was provided (specimens not examined).

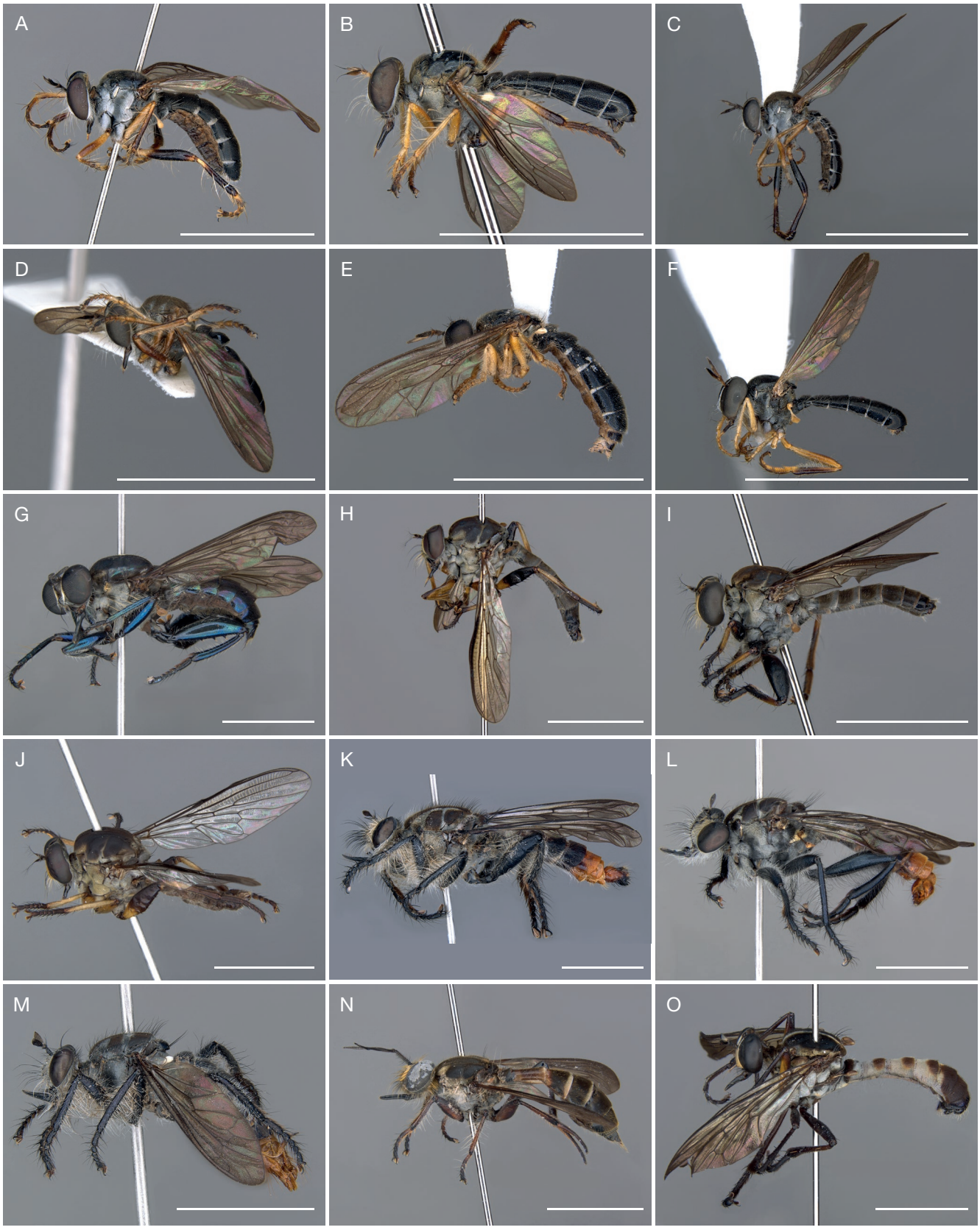

Fig. 5. — Selected Mitaraka Asilidae, part II: **A**, *Hybozelodes* sp. 1 ♀; **B**, *Hybozelodes* sp. 2 ♂; **C**, *Hybozelodes* sp. 3 ♂; **D**, *Hybozelodes* sp. 4 ♂; **E**, *Hybozelodes* sp. 5 ♀; **F**, *Hybozelodes* sp. 6 ♂; **G**, *Lampria clavipes* (Fabricius, 1805) ♀; **H**, *Ommatius costatus* Rondani, 1850 ♂; **I**, *Ommatius normus* Curran, 1928 ♂; **J**, *Ommatius spinosus* Scarbrough, 1993 ♂; **K**, *Pilica erythrogaster* (Wiedemann, 1828) ♂; **L**, *Pilica pyrrhopyga* (Wiedemann, 1828) ♂; **M**, *Pilica rubidapex* (Hermann, 1912) ♂; **N**, *Rhopalogaster* sp. ♀; **O**, *Senobasis mendax* Curran, 1934 ♂. Scale bars: 5 mm (photos: Alexssandro Camargo).

Genus *Bathropsis* Hermann, 1912

REMARKS
The genus is new to French Guiana.

One morphospecies of *Bathropsis* has been collected in Mitaraka (material examined: 1 ♀, Mitaraka/191, INPA; 1 ♀, Mitaraka/191, MNHN; 1 ♂, Mitaraka/218, INPA).

Genus *Cerotainia* Schiner, 1866

REMARKS
Tomasovic (2002a) mentioned the occurrence of *Cerotainia* in French Guiana, without information on species name or collecting site (specimens not examined).

One morphospecies of *Cerotainia* (Fig. 4G) has been found in Mitaraka (material examined: 1 ♂, Mitaraka/115, INPA; 1 ♂, Mitaraka/188, MNHN; 1 ♂, Mitaraka/230, INPA; 2 ♀, Mitaraka/230, MNHN).

Genus *Dissmeryngodes* Hermann, 1912

REMARK
The genus is new to French Guiana.

Dissmeryngodes amapa
Artigas, Papavero & Serra, 1991
(Fig. 4H)

Dissmeryngodes amapa Artigas, Papavero & Serra, 1991: 63.

MATERIAL EXAMINED. — **French Guiana.** 1 ♂, Mitaraka/033, INPA; 1 ♀, Mitaraka/119, MNHN.

DISTRIBUTION. — French Guiana, Brazil (Amapá).

Dissmeryngodes nigripes (Macquart, 1838)
(Fig. 4I)

Atomosia nigripes Macquart, 1838: 74.

MATERIAL EXAMINED. — **French Guiana.** 1 ♂, Mitaraka/127, INPA.

DISTRIBUTION. — Colombia, French Guiana, Peru (Huánuco), Brazil (Pará).

REMARK
New to French Guiana.

Genus *Eumecosoma* Schiner, 1866

REMARKS
The genus is new to French Guiana.

One morphospecies of *Eumecosoma* has been collected in Mitaraka (material examined: 1 ♀, Mitaraka/020, INPA).

Genus *Hybozelodes* Hermann, 1912

Hybozelodes dispar (Hermann, 1912)
(Fig. 4O)

Atractia dispar Hermann, 1912: 186.

DISTRIBUTION. — Peru, French Guiana.

MATERIAL EXAMINED. — **French Guiana.** 1 ♂, Mitaraka/008, INPA; 1 ♀, Mitaraka/100, MNHN; 1 ♀, Mitaraka/115, INPA; 1 ♀, Mitaraka/153, INPA; 1 ♀, Mitaraka/188, MNHN; 1 ♀, Mitaraka/195, MNHN; 1 ♂, Mitaraka/198, INPA; 1 ♀, Mitaraka/216, INPA; 1 ♂, Mitaraka/219, INPA; 1 ♀ MNHN; 2 specimens with terminalia missing MNHN; 5 ♀, Mitaraka/220, MNHN.

REMARKS
The genus is new to French Guiana.

In addition to *Hybozelodes dispar*, six morphospecies of *Hybozelodes* were collected in Mitaraka (material examined: *Hybozelodes* sp. 1 [Fig. 5A]: 1 ♀, Mitaraka/032, INPA; 1 ♀, Mitaraka/074, MNHN. *Hybozelodes* sp. 2 [Fig. 5B]: 1 ♂, Mitaraka/186, INPA; 1 ♀, Mitaraka/188, MNHN; 1 ♂, Mitaraka/195, MNHN. *Hybozelodes* sp. 3 [Fig. 5C]: 1 ♂, Mitaraka/060, INPA; 1 ♂, Mitaraka/076, MNHN. *Hybozelodes* sp. 4 [Fig. 5D]: 1 ♀, Mitaraka/159, INPA; 1 ♂, Mitaraka/188, INPA; 2 ♀, MNHN. *Hybozelodes* sp. 5 [Fig. 5E]: 1 ♀, Mitaraka/127, INPA; 1 ♀, MNHN. *Hybozelodes* sp. 6 [Fig. 5F]: 1 ♂, Mitaraka/191, INPA).

Genus *Lycosimyia* Hull, 1958

REMARKS
The genus is new to French Guiana.

One morphospecies of *Lycosimyia* has been collected in Mitaraka (material examined: 1 ♂, Mitaraka/186, INPA).

Genus *Oidardis* Hermann, 1912

REMARKS
The genus is new to French Guiana.

Two morphospecies of *Oidardis* have been collected in Mitaraka (material examined: *Oidardis* sp. 1: 1 ♂, Mitaraka/064, INPA; 1 ♀, Mitaraka/072, INPA; 1 ♂, 1 ♀, Mitaraka/074, MNHN. *Oidardis* sp. 2: 1 ♂, Mitaraka/025, INPA; 1 ♀, Mitaraka/075, MNHN).

Tribe DASYTRICHINI Lynch Arribálzaga, 1882
Genus *Smeryngolaphria* Hermann, 1912

Smeryngolaphria maculipennis (Macquart, 1846)

Laphria maculipennis Macquart, 1846: 201.

RECORDS FOR FRENCH GUIANA. — "French Guiana". See Martin & Papavero (1970) and Tomasovic (2002a).

DISTRIBUTION. — Guyana, French Guiana, Brazil (Amazonas, Pará, Amapá), Bolivia.

Tribe LAPHRIINI Macquart, 1838

Genus *Ichneumolaphria* Carrera, 1951

REMARK
The genus is new to French Guiana. One morphospecies of *Ichneumolaphria* has been collected at Mitaraka (material examined: 1 ♂, Mitaraka/222, INPA).

Genus *Lampria* Macquart, 1838

Lampria clavipes (Fabricius, 1805)
(Fig. 5G)

Laphria clavipes Fabricius, 1805: 162.

MATERIAL EXAMINED. — **French Guiana.** 1 ♀, Mitaraka/037, MNHN.

DISTRIBUTION. — Mexico (San Luís Potosí), Costa Rica, Panama, Peru (Huánuco, Loreto, Pasco), Guyana, French Guiana, Brazil (Pará, Espírito Santo).

REMARK
Tomasovic (2002a) mentioned the occurrence of the genus in French Guiana, but no information on species name or collecting site was provided (specimens not examined). Thus, the species *Lampria clavipes* is here been recorded for the first time from French Guiana.

Genus *Rhopalogaster* Macquart, 1834

Rhopalogaster micronyx Tomasovic, 2002

Rhopalogaster micronyx Tomasovic, 2002: 86.

RECORDS FOR FRENCH GUIANA. — Route de Kaw, Camp Patawa, 4°31'N, 52°05'W. See Tomasovic (2002a).

DISTRIBUTION. — French Guiana.

REMARK
One additional morphospecies of *Rhopalogaster* (Fig. 5N) has been collected in Mitaraka (material examined: 1♀, Mitaraka/188, INPA).

Uncertain species of LAPHRIINAE

Atomosia appendiculata Macquart, 1846 *incertae sedis*

Atomosia appendiculata Macquart, 1846: 204.

RECORDS FOR FRENCH GUIANA. — Cayenne. See Papavero (2009).

DISTRIBUTION. — French Guiana.

REMARK
This species was originally described in *Atomosia*. However, at the moment this species is considered *Incertae sedis* in Laphriinae. The type of species is lost (Papavero 2009).

Laphria limbata Macquart, 1834 *incertae sedis*

Laphria limbata Macquart, 1834: 287.

RECORDS FOR FRENCH GUIANA. — Cayenne. See Papavero (2009).

DISTRIBUTION. — French Guiana.

REMARK
This species was originally described in *Laphria* Meigen, 1803. However, at the moment this species is considered *Incertae sedis* in Laphriinae. The type of species is lost (Papavero 2009).

Subfamily LEPTOGASTRINAE Schiner, 1862
Genus *Eurhabdus* Aldrich, 1923

Eurhabdus longissimus Tomasovic, 2002
(Fig. 4M)

Eurhabdus longissimus Tomasovic, 2002: 88.

MATERIAL EXAMINED. — **French Guiana.** 1 ♀, Mitaraka/191, INPA.

RECORDS FOR FRENCH GUIANA. — Montagne de Kaw, Relais Patawa. See Tomasovic (2002a).

DISTRIBUTION. — French Guiana.

Genus *Leptogaster* Meigen, 1803

REMARK
The genus was listed from French Guiana by Tomasovic (2002a). However, no information concerning the species name or collecting site was provided (specimens not examined). In the Mitaraka survey, five different morphospecies of *Leptogaster* were collected (material examined: *Leptogaster* sp. 1: 1 ♀, Mitaraka/195, MNHN; 1 ♀, Mitaraka/230, INPA. *Leptogaster* sp. 2: 2 ♂, 1 ♀, Mitaraka/230, INPA; 1 ♂, 1 ♀, MNHN. *Leptogaster* sp. 3: 1 ♀, Mitaraka/230, INPA. *Leptogaster* sp. 4: 1 ♀, Mitaraka/218, INPA. *Leptogaster* sp. 5: 1 ♀, Mitaraka/195, INPA).

Genus *Leptopteromyia* Williston, 1907

REMARKS
The genus is new to French Guiana.
One morphospecies of *Leptopteromyia* has been collected in Mitaraka (material examined: 1 specimen without abdomen, Mitaraka/188, INPA.

Genus *Psilonyx* Aldrich, 1923

REMARK
The genus was reported from French Guiana by Tomasovic (2002a). No information on species name or collecting site was provided (specimens not examined).

Genus *Tipulogaster* Cockerell, 1913

Tipulogaster lancea Tomasovic, 2002

Tipulogaster lancea Tomasovic, 2002: 89.

RECORDS FOR FRENCH GUIANA. — Saül, Mont Belvédère. See Tomasovic (2002a).

DISTRIBUTION. — French Guiana.

Subfamily OMMATIINAE Hardy, 1927
Genus *Ommatius* Wiedemann, 1821

Ommatius costatus Rondani, 1850
(Fig. 5H)

Ommatius costatus Rondani, 1850: 188.

MATERIAL EXAMINED. — **French Guiana.** 1 ♂, Mitaraka/230, INPA.

RECORDS FOR FRENCH GUIANA. — "South America", see Scarbrough (1993).

DISTRIBUTION. — Trinidad, South America except for Chile and Uruguay.

Ommatius dentatus Scarbrough, 1993

Ommatius dentatus Scarbrough, 1993: 732.

RECORDS FOR FRENCH GUIANA. — Cayenne. See Scarbrough (1993).

DISTRIBUTION. — French Guiana, Brazil (Amazonas, Pará, Amapá).

Ommatius normus Curran, 1928
(Fig. 5I)

Ommatius norma Curran, 1928: 1.

MATERIAL EXAMINED. — **French Guiana.** 1 ♀, Mitaraka/186, INPA; 3 ♂, Mitaraka/230, INPA; 3 ♂, MNHN.

RECORDS FOR FRENCH GUIANA. — Cayenne, Mana River. See Scarbrough (2008).

DISTRIBUTION. — Venezuela (Amazonas, Bolívar), Guyana, Suriname, French Guiana, Brazil (Roraima, Amapá, Amazonas, Pará, Maranhão, Acre, Rondônia, Mato Grosso, Goiás, Minas Gerais, Mato Grosso do Sul, São Paulo, Santa Catarina), Paraguay (Cordillera).

Ommatius orenoquenis Bigot, 1876

Ommatius orenoquenis Bigot, 1876: 1xxxv.

RECORDS FOR FRENCH GUIANA. — "French Guiana". See Tomasovic (2002a) and Papavero (2009).

DISTRIBUTION. — Costa Rica and St. Vincent Islands southward, South America except for Uruguay and Chile.

Ommatius spinosus Scarbrough, 1993
(Fig. 5J)

Ommatius spinosus Scarbrough, 1993: 732.

MATERIAL EXAMINED. — **French Guiana.** 1 ♂, Mitaraka/230, INPA; 1 ♂, MNHN.

DISTRIBUTION. — Ecuador, Peru, French Guiana, Brazil (Amazonas, Pará, Maranhão, Rondônia, Mato Grosso, Goiás, Rio de Janeiro), Bolivia.

REMARK
New to French Guiana.

Subfamily STENOPOGONINAE Hull, 1962
Genus *Microstylum* Macquart, 1838

Microstylum catastygnum Papavero, 1971

Microstylum catastygnum Papavero, 1971: 25.

RECORDS FOR FRENCH GUIANA. — Maroni. See Papavero (2009).

DISTRIBUTION. — French Guiana.

Subfamily TRIGONOMIMINAE Enderlein, 1914
Genus *Holcocephala* Jaennicke, 1867

Holcocephala oculata (Fabricius, 1805)
(Fig. 4N)

Dioctria oculata Fabricius, 1805: 151.

MATERIAL EXAMINED. — **French Guiana.** 1 ♀, Mitaraka/029, INPA; 2 ♂, Mitaraka/186, INPA; 1 ♂, Mitaraka/188 INPA; 1 ♀, MNHN); 1 ♀, Mitaraka/229, MNHN; 1 ♀, Mitaraka/230, INPA; 1 ♂, MNHN.

DISTRIBUTION. — Venezuela, Guyana, French Guiana, Peru, Brazil, Bolivia, Argentina.

REMARK
The genus was recorded in French Guiana by Tomasovic (2002a). However, no information on species name or collecting site was provided (specimens not examined). Thus, *Holcocephala oculata* is reported here as the first species of this genus from French Guiana.

DISCUSSION

In this survey, about ⅓ (16 of 44 species) of the asilid species could be confidently identified up to species level. This number is comparable with that found by Fisher (1985) at Tambopata reserve (46%, 45 of 97 species) which confirms that the Neotropical Asilidae fauna is poorly known taxonomically. Many species described in the past two centuries are unidentifiable (e.g. holotypes missing, many species not or only poorly illustrated, original descriptions barely informative, ambiguous and/or insufficiently detailed) and as a result, many species described since then may be synonyms. In addition, misidentifications of species in faunistic studies and also many undescribed species, i.e., probably around 40% to 50% of the entire Asilidae fauna according to Fisher (1985), are the main contributors to the current high number of morphospecies in Neotropical Asilidae surveys.

It is difficult to compare the effectiveness of the collecting methods because the number and size of their samples varies drastically (from five Malaise trap samples to 93 sweep net samples). But it is interesting to point out that even with only five samples the 6 m Malaise trap was one of the most effective methods, followed by the SLAM trap type.

Together these trap types collected ⅗ (26 species) of the robber fly species at Mitaraka (considering only singletons in each method), followed by the sweep net method that alone was responsible for about ⅕ (eight species) of the asilid collected species. Without considering the Malaise trap types, the other methods collected ⅗ (27 species) of the robber fly species. It is interesting that eight of the 10 species collected by the sweep net method were not collected by any other method, not even Malaise traps.

Although no less than 10 different trap types employed during the Mitaraka survey gathered Asilidae, the best way to collect some representatives of this family is collecting by sight, by sweeping or collecting in specific sites (on the ground, leaves, and tips of twigs or branches of trees). This might have increased the current number of Mitaraka species as some taxa already known from French Guiana were not found like *Amblyonychus* Hermann, 1921, *Mallophora* Macquart, 1838, *Blepharepium* Rondani, 1848, *Dasyllis* Loew, 1851 and *Diogmites* Loew, 1866. This assumption concurs with Fisher (1985) who studied the robber flies collected at Tambopata reserve in Peru. The material in that survey was obtained through general surveys, conducted by several people during brief visits to the reserve and included the above mentioned genera seemingly lacking in Mitaraka. If all potential robber fly habitats would have been examined, preferably by an asilid expert (for a sufficient period of time) it would certainly have produced many additional species (and genera) of robber flies.

Although both sites (Mitaraka and Tambopata) have a comparable asilid fauna (depicting the peculiarities in each site) and are located in the Amazonian lowland rain forest biome, the Tambopata reserve is located at the edge of the Amazonian Basin near the Andes with more forest types than in Mitaraka. Other factors like special microclimates and a high soil type diversity might also contribute to the higher diversity found at Tambopata (Erwin 1985). McCravy (2017) conducted a study on the effectiveness of the Malaise trap type in collecting robber fly species and mentioned that combining Malaise traps with other collecting methods like aerial netting would probably provide a more complete inventory of the Asilidae fauna (due to the significant complementary of both methods).

Even though the sampling strategy (incl. a large number of traps, different collecting methods and collecting sites) employed during the Mitaraka project was not aimed specifically to collect Asilidae, it enabled us to increase the regional species list with 25 %. Though hand collecting is the most effective way to collect asilids, in this study Malaise traps proved useful to increase the known diversity of Asilidae in French Guiana.

Many asilid researchers consider robber flies as heliophilous insects that inhabit mainly semi-arid and open habitats and assume that Asilidae are most numerous in the semi-arid regions of the world (Bromley 1946; Hull 1962; Wood 1981). However, the results found by Fisher (1985) at Tambopata argue against this general belief. Robber flies are very abundant in tropical lowland rain forests (especially in the western Amazonian basin). The Tambopata survey yielded 97 robber flies species, being by far the highest robber fly species richness reported from any comparable-sized area in the world (this number exceed surveys made for large states and provinces). Moreover, an unpublished study by Fisher (in prep.) on "Asilidae at La Selva Biological Reserve in Costa Rica" includes 110 species encountered at that lowland rain forest site (Fisher *in litt.*). Therefore, the high diversity observed during the Mitaraka survey is actually not surprising for a lowland rain forest of the Amazonian basin.

The high diversity of Laphriinae species was also expected, representing about ⅗ of all species collected. They are the dominant forest-inhabiting group of robber flies, distributed in wooded areas throughout the world (Fisher 2009). A representative of the Laphriinae, *Pilica erythrogaster* (Fig. 5K), was the most abundant species in Mitaraka. Fisher (1985) mentioned that this species is very common and can be found from Mexico to Southern Brazil. The members of Atomosiini are also very common in tropical areas worldwide, but are especially diverse in the Neotropical region. These are generally the most abundant asilids found in Neotropical lowland rain forests, and often many genera and species coexist in the same forest habitat (Fisher 2009).

The number of Laphriinae species found at Mitaraka (14 genera, 28 species) is comparable with the number found at Tambopata (12 genera, 27 species) (Fisher 1985). However, the number of genera and species in other subfamilies was higher at Tambopata.

Laphriinae was the only subfamily collected in all environments and at all sampling sites, Leptogastrinae and Trigonomiminae were collected in the same environments (trail A, the base camp and a rocky outcrop ("savane roche")), Ommatiinae along trail A and on a rocky outcrop, Asilinae in the base camp, on the drop zone and the rocky outcrop, and Dasypogoninae only in the base camp.

The Neotropical asilids can be divided into two ecological groups: species that forage in sunny places, and those that prefer shady sites, each occupying different microhabitats and perching sites (Shelly 1984, 1985; Fisher & Hespenheide 1992). All microhabitats proposed by Fisher & Hespenheide (1992) can be observed at Mitaraka: "forest understory", "forest streams" and "treefall gaps-forest edge".

During the Mitaraka survey the sites where most robber fly species and specimens where collected were MIT-DZ (drop zone), the MIT-A-RBF-1 (river bed forest), and the MIT-E savane roche 2. Of these sites, the "drop zone" (Fig. 2) was the most diverse (14 species and 52 specimens). In this site the trees were cut to allow the helicopter to land, providing at the same time the microhabitat "treefall gap", which was considered by Fisher & Hespenheide (1992) the most complicated microhabitat, because it attracts the heliophilous species and also species that occur in the understory and forest edges belonging to genera like *Andrenosoma* Rondani, 1856, *Pilica* Curran, 1931, *Hybozelodes* Hermann, 1921, *Atomosia* Macquart, 1838, *Cerotainia*, Schiner, 1868, *Eumecosoma* Schiner, 1866 and *Oidardis* Hermann, 1912. *Andrenosoma* and *Pilica* species have their life histories centered in fallen logs (Fisher & Hespenheide 1992; Fisher 2009) and in the drop zone many of these logs were present.

The second most diverse site was the MIT-A-RBF-1 (river bed forest) (Fig. 1) (12 species and 25 specimens). This palm swamp site featured some small clearings along the Alama river which obviously attracted the heliophilous species but it also held those species commonly found in the understory and in the forest edge like *Ommatius* Wiedemann, 1821 and *Pilica*. *Oidardis* and *Eumecosoma* species are mainly found in the understory and along forest streams (Fisher & Hespenheide 1992), which corroborates with the Mitaraka results where all representatives of these two genera were collected in river bed forests sites.

The third most diverse site was the MIT-E savane roche 2 (10 species and 24 specimens) (Fig. 3). At this site, species from the understory and forests edges would be expected as well as those that perch on the ground (the site has a large area of exposed rock). Both heliophilous and shadow-preferent species would be expected in this site like *Andrenosoma*, *Lampria* Macquart, 1838, *Cerotainia* and *Ommatius* spp. (Fisher & Hespenheide 1992). Bromley (1946) mentioned that forest edges are the most diverse areas for asilids, but this was not confirmed in this rocky outcrop. Nevertheless, the lower asilid species diversity of this site might simply be due to the lower sampling effort.

What called our attention in the savane roche site is the high number of species and specimens of Leptogastrinae and Ommatiinae. This is probably due to the environmental characteristics of this site. It is the only place with a large amount of low grassy and other vegetations, and also small, medium to large size shrubs at the edges, characterizing a small savanna-like habitat (Fig. 3). Leptogastrinae are very commonly found perching in low vegetation and on tips of small shrubs (Fisher 2009). Trigonomiminae representatives like *Holcocephala* Jaennicke, 1867 are also very common in this kind of habitat where they can be found perching on tips of grass stems and leaves. Most of the genera of this subfamily are restricted to the tropical regions, mainly in the Southern Hemisphere (Fisher 2009).

It is also important to mention that Ommatiinae love to perch on branches and tips of branches in shrubs in forest edges, which is the case in savane roche habitats which probably explains the high number of *Ommatius* and *Leptogaster* Meigen, 1803 specimens collected there. It must be noted that all *Leptogaster* and *Ommatius* specimens found at this site were collected only with a Malaise trap. Indeed, Leptogastrinae are, usually collected in large numbers with Malaise traps (Fisher 2009).

Ommatiinae are largely confined to tropical areas worldwide. They are regularly found in forest areas (often near rivers or lakes) on leaves or twigs of shrubs. According to Fisher (2009) the New World species of *Ommatius* are entirely arboreal, using trees and shrubs as perching sites, and most of them can be observed on the tips of bare branches, along the periphery of the vegetation. Some *Ommatius* species prefer open sunny habitats with relatively sparse vegetation like the savanes roches or disturbed secundary forest. Some species are only found in more closed habitats such as the understory of mature forest.

Dasypogoninae are also a very diverse group of asilids in the Neotropics. Adults of this subfamily perch on slender, horizontal stems of trees and shrubs, often in a crosswise position, usually in sunny spots in partly shaded forests (Fisher 2009). Representatives of Dasypogoninae could probably also have been found in savane roche habitats. But the only species collected at Mitaraka was catched in the drop zone instead, probably attracted to the "treefall gap" microhabitat.

More representatives of Asilinae like *Amblyonychus*, *Anarmostus* Loew, 1860, *Eichoichemus* Bigot, 1857, *Efferia* and *Mallophora* (the most speciose genus in French Guiana with 13 species) would also be expected in savane roche habitats because of their open sunny nature. In fact, two genera of this subfamily, *Diplosynapsis* Enderlein, 1914 and *Eraxasilus*, were found only in this habitat type. The mosaic of its vegetation gives a degree of unicity that certainly masks a great asilid diversity and should be more explored in further studies.

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APPENDIX

APPENDIX 1. — List of labels of Asilidae samples from the Mitaraka 2015 survey. See Legend of Table 1 for explanation of abbreviations for collecting methods.

Sample id	Sample cd	Label
13887	MITARAKA/007	(FR-GU) Guyane Française, Mitaraka, MIT-DZ, 02°14'01.8"N, 54°27'01.0"W, 306 m, drop zone, 25.II.2015, SW, leg. several people (FR-GU/Mitaraka/2015) - sample code: MITARAKA/007 (sorted by Marc Pollet, 2015)
13888	MITARAKA/008	(FR-GU) Guyane Française, Mitaraka, MIT-DZ, 02°14'01.8"N, 54°27'01.0"W, 306 m, drop zone, 25.II.2015, LT, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/008 (sorted by Marc Pollet, 2015)
13891	MITARAKA/011	(FR-GU) Guyane Française, Mitaraka, MIT-BC, 02°14'02.0"N, 54°26'59.8"W, 266 m, drop zone (base camp), on veg along trail, 26.II.2015, SW, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/011 (sorted by Marc Pollet, 2015)
13900	MITARAKA/020	(FR-GU) Guyane Française, Mitaraka, MIT-A-RBF2, 02°14'12.5"N, 54°27'08.1"W, 287 m, on bamboo and banana-like leaves, 27.II.2015, SW, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/020 (sorted by Marc Pollet, 2015)
13905	MITARAKA/025	(FR-GU) Guyane Française, Mitaraka, MIT-C-RBF1, 02°14'10.8"N, 54°26'49.5"W, 258 m, on vegetation along and in creek, 28.II.2015, SW, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/025 (sorted by Marc Pollet, 2015)
13909	MITARAKA/029	(FR-GU) Guyane Française, Mitaraka, MIT-DZ, 02°14'01.8"N, 54°27'01.0"W, 306 m, drop zone, 28.II.2015, LT, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/029 (sorted by Marc Pollet, 2015)
13912	MITARAKA/032	(FR-GU) Guyane Française, Mitaraka, MIT-C-RBF1, 02°14'10.8"N, 54°26'49.5"W, 258 m, on vegetation along and in creek, 1.III.2015, SW, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/032 (sorted by Marc Pollet, 2015)
13913	MITARAKA/033	(FR-GU) Guyane Française, Mitaraka, between MIT-C-RBF1 and MIT-C-RBF2, 02°14'08.5"N, 54°26'51.0"W, on vegetation along trail and on log, 1.III.2015, SW, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/033 (sorted by Marc Pollet, 2015)
13915	MITARAKA/035	(FR-GU) Guyane Française, Mitaraka, MIT-C-savane roche, 02°14'19.4"N, 54°26'05.8"W, 389 m, on vegetation and wet rocks, 1.III.2015, SW, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/035 (sorted by Marc Pollet, 2015)
13917	MITARAKA/037	(FR-GU) Guyane Française, Mitaraka, MIT-C-savane roche, 02°14'19.4"N, 54°26'05.8"W, 389 m, on vegetation and wet rocks, 1.III.2015, SW, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/037 (sorted by Marc Pollet, 2015)
13940	MITARAKA/060	(FR-GU) Guyane Française, Mitaraka, between MIT-C-RBF1 and MIT-C-RBF2, 02°14'08.5"N, 54°26'51.0"W, on vegetation along trail and on log, 4.III.2015, SW, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/060 (sorted by Marc Pollet, 2015)
13944	MITARAKA/064	(FR-GU) Guyane Française, Mitaraka, MIT-C-RBF2, 02°14'03.4"N, 54°26'53.0"W, 299 m, on vegetation along muddy trail and in swamp, 4.III.2015, SW, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/064 (sorted by Marc Pollet, 2015)
13952	MITARAKA/072	(FR-GU) Guyane Française, Mitaraka, MIT-C-RBF2, 02°14'03.4"N, 54°26'53.0"W, 299 m, on vegetation along muddy trail and in swamp, 6.III.2015, SW, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/072 (sorted by Marc Pollet, 2015)
13954	MITARAKA/074	(FR-GU) Guyane Française, Mitaraka, MIT-A-RBF1, 02°14'11.4"N, 54°27'07.0"W, 306 m, on vegetation along muddy trail and in swamp, 6.III.2015, SW, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/074 (sorted by Marc Pollet, 2015)
13955	MITARAKA/075	(FR-GU) Guyane Française, Mitaraka, MIT-D-RBF, 02°13'58.8"N, 54°27'07.5"W, 317 m, on vegetation along muddy trail and in swamp, 6.III.2015, SW, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/075 (sorted by Marc Pollet, 2015)
13956	MITARAKA/076	(FR-GU) Guyane Française, Mitaraka, between MIT-C-RBF1 and MIT-C-RBF2, 02°14'08.5"N, 54°26'51.0"W, on vegetation along trail and on log, 6.III.2015, SW, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/076 (sorted by Marc Pollet, 2015)
13971	MITARAKA/091	(FR-GU) Guyane Française, Mitaraka, between MIT-C-RBF1 and MIT-C-RBF2, 02°14'08.5"N, 54°26'51.0"W, nr log crossing trail, 8.III.2015, SW, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/091 (sorted by Marc Pollet, 2015)
13980	MITARAKA/100	(FR-GU) Guyane Française, Mitaraka, MIT-DZ, 02°14'01.8"N, 54°27'01.0"W, 306 m, drop zone, 9.III.2015, LT, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/100 (sorted by Marc Pollet, 2015)
13995	MITARAKA/115	(FR-GU) Guyane Française, Mitaraka, MIT-DZ, 02°14'01.8"N, 54°27'01.0"W, 306 m, drop zone, 24.II.2015-10.III.2015, LT, leg. Julien Touroult (FR-GU/Mitaraka/2015) - sample code: MITARAKA/115 (sorted by Marc Pollet, 2015)
13999	MITARAKA/119	(FR-GU) Guyane Française, Mitaraka, MIT-C-SL (MIT08), 02°14'07.7»N, 54°26'41.5»W, 373 m, tropical moist forest (slope), 24.II.2015-2.III.2015, YPT, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/119 (sorted by Marc Pollet, 2015)
14007	MITARAKA/127	(FR-GU) Guyane Française, Mitaraka, MIT-C-TOP (MIT07), 02°13'59.1"N, 54°26'37.9"W, 433 m, tropical moist forest (plateau), 2.III.2015-8.III.2015, YPT, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/127 (sorted by Marc Pollet, 2015)
14013	MITARAKA/133	(FR-GU) Guyane Française, Mitaraka, MIT-C-RBF1, 02°14'10.8"N, 54°26'49.5"W, 258 m, tropical wet forest (bas fond), 27.II.2015-8.III.2015, YPT, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/133 (sorted by Marc Pollet, 2015)

APPENDIX 1. — Continuation.

Sample id	Sample cd	Label
14033	MITARAKA/153	(FR-GU) Guyane Française, Mitaraka, MIT-A-TOP, 02°14'19.8"N, 54°27'11.3"W, 361 m, tropical moist forest (plateau), 3.III.2015-8.III.2015, BPT, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/153 (sorted by Marc Pollet, 2015)
14039	MITARAKA/159	(FR-GU) Guyane Française, Mitaraka, MIT-A-RBF1, 02°14'11.4"N, 54°27'07.0"W, 306 m, tropical wet forest (bas fond), 4.III.2015-8.III.2015, BPT, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/159 (sorted by Marc Pollet, 2015)
14041	MITARAKA/161	(FR-GU) Guyane Française, Mitaraka, MIT-DZ1, 02°14'01.4"N, 54°27'00.2"W, 304 m, tropical moist forest (plateau-slope), 26.II.2015-2.III.2015, WPT, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/161 (sorted by Marc Pollet, 2015)
14047	MITARAKA/167	(FR-GU) Guyane Française, Mitaraka, MIT-DZ1, 02°14'01.4"N, 54°27'00.2"W, 304 m, tropical moist forest (plateau-slope), 2.III.2015-8.III.2015, WPT, leg. Marc Pollet (FR-GU/Mitaraka/2015) - sample code: MITARAKA/167 (sorted by Marc Pollet, 2015)
14064	MITARAKA/186	(FR-GU) Guyane Française, Mitaraka, nr MIT-A-RBF1, river, 1.III.2015-7.III.2015, MT(6 m), leg. Julien Touroult & Eddy Poirier (FR-GU/Mitaraka/2015) - sample code: MITARAKA/186 (sorted by Marc Pollet, 2015)
14065	MITARAKA/188	(FR-GU) Guyane Française, Mitaraka, nr MIT-A-RBF1, river, 1.III.2015, MT(6 m), leg. Julien Touroult & Eddy Poirier (FR-GU/Mitaraka/2015) - sample code: MITARAKA/188 (sorted by Marc Pollet, 2015)
14066	MITARAKA/189	(FR-GU) Guyane Française, Mitaraka, nr MIT-A-RBF1, river, 25.III.2015, MT(6 m), leg. Julien Touroult & Eddy Poirier (FR-GU/Mitaraka/2015) - sample code: MITARAKA/189 (sorted by Marc Pollet, 2015)
14067	MITARAKA/190	(FR-GU) Guyane Française, Mitaraka, different sites nr base camp and along trails, tropical most forest (different sites), 25.III.2015, SLAM, leg. Julien Touroult & Eddy Poirier (FR-GU/Mitaraka/2015) - sample code: MITARAKA/190 (sorted by Marc Pollet, 2015)
14068	MITARAKA/191	(FR-GU) Guyane Française, Mitaraka, different sites nr base camp and along trails, tropical most forest (different sites), 14.III.2015, SLAM, leg. Julien Touroult & Eddy Poirier (FR-GU/Mitaraka/2015) - sample code: MITARAKA/191 (sorted by Marc Pollet, 2015)
14069	MITARAKA/192	(FR-GU) Guyane Française, Mitaraka, different sites nr base camp and along trails, tropical most forest (different sites), 10.III.2015-14.III.2015, FIT, leg. Julien Touroult & Eddy Poirier (FR-GU/Mitaraka/2015) - sample code: MITARAKA/192 (sorted by Marc Pollet, 2015)
14072	MITARAKA/195	(FR-GU) Guyane Française, Mitaraka, different sites nr base camp and along trails, tropical most forest (different sites), 1.III.2015-6.III.2015, SLAM, leg. Julien Touroult & Eddy Poirier (FR-GU/Mitaraka/2015) - sample code: MITARAKA/195 (sorted by Marc Pollet, 2015)
14075	MITARAKA/198	(FR-GU) Guyane Française, Mitaraka, MIT-DZ, 02°14'01.8"N, 54°27'01.0"W, 306 m, tropical most forest (different sites) nr DZ, 6.III.2015-10.III.2015, FIT, leg. Julien Touroult & Eddy Poirier (FR-GU/Mitaraka/2015) - sample code: MITARAKA/198 (sorted by Marc Pollet, 2015)
14093	MITARAKA/216	(FR-GU) Guyane Française, Mitaraka, MIT-DZ, 02°14'01.8"N, 54°27'01.0"W, 306 m, 6.III.2015, FIT, leg. Julien Touroult & Eddy Poirier (FR-GU/Mitaraka/2015) - sample code: MITARAKA/216 (sorted by Marc Pollet, 2015)
14094	MITARAKA/218	(FR-GU) Guyane Française, Mitaraka, MIT-DZ, 02°14'01.8"N, 54°27'01.0"W, 306 m, tropical moist forest (plateau-slope - cleared), 1.III.2015, SLAM, leg. Julien Touroult & Eddy Poirier (FR-GU/Mitaraka/2015) - sample code: MITARAKA/218 (sorted by Marc Pollet, 2015)
14095	MITARAKA/219	(FR-GU) Guyane Française, Mitaraka, MIT-DZ, 02°14'01.8"N, 54°27'01.0"W, 306 m, tropical moist forest (plateau-slope - cleared), 1.III.2015, FIT, leg. Julien Touroult & Eddy Poirier (FR-GU/Mitaraka/2015) - sample code: MITARAKA/219 (sorted by Marc Pollet, 2015)
14096	MITARAKA/220	(FR-GU) Guyane Française, Mitaraka, MIT-DZ, 02°14'01.8"N, 54°27'01.0"W, 306 m, tropical moist forest (plateau-slope - cleared), 6.III.2015, FIT, leg. Julien Touroult & Eddy Poirier (FR-GU/Mitaraka/2015) - sample code: MITARAKA/220 (sorted by Marc Pollet, 2015)
14098	MITARAKA/222	(FR-GU) Guyane Française, Mitaraka, different sites nr base camp and along trails, tropical most forest (different sites), 10.III.2015, PVP, leg. Julien Touroult & Eddy Poirier (FR-GU/Mitaraka/2015) - sample code: MITARAKA/222 (sorted by Marc Pollet, 2015)
14099	MITARAKA/223	(FR-GU) Guyane Française, Mitaraka, different sites nr base camp and along trails, tropical most forest (different sites), 5.III.2015, EM, leg. Julien Touroult & Eddy Poirier (FR-GU/Mitaraka/2015) - sample code: MITARAKA/223 (sorted by Marc Pollet, 2015)
14095	MITARAKA/229	(FR-GU) Guyane Française, Mitaraka, different sites nr base camp and along trails, open / partially opened areas around base camp and dropzone, and in savane roche 2, 12.VIII.2015-20.VIII.2015, SLAM, leg. Pierre-Henri Dalens (FR-GU/Mitaraka/2015) - sample code: MITARAKA/229 (sorted by Marc Pollet, 2015)
14096	MITARAKA/230	(FR-GU) Guyane Française, Mitaraka, MIT-E-savane roche 2, 02°13'59.8"N, 54°27'46.5"W, 471 m, open / partially opened areas on savane roche 2, 13.VIII.2015-20.VIII.2015, MT(6 m), leg. Pierre-Henri Dalens (FR-GU/Mitaraka/2015) - sample code: MITARAKA/230 (sorted by Marc Pollet, 2015)