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LARGE-SCALE BIOTIC SURVEY IN MITARAKA, FRENCH GUIANA

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Plateau forest at Mitaraka (French Guiana) (photograph: Maurice Leponce). In medaillon, *Gigantiops destructor* (Fabricius, 1804) (Formicinae) (photograph: Maurice Leponce).

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Tree-dwelling ant survey (Hymenoptera, Formicidae) in Mitaraka, French Guiana

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ABSTRACT
Ants constitute a substantial part of the arthropod biomass in rainforests. Most studies have focused on ground-dwelling ants, which constitute almost half of the diversity of the ant assemblage. We report here the results of the first survey of tree-dwelling ants in French Guiana on a plateau and in a swamp palm forest (*Euterpe oleracea* Mart.) in the Mitaraka Mountains. We were interested in seeing the effect of topography and geographic distance on species richness and composition and to gather information

on the species distribution on tree trunks. The fauna of Mitaraka was compared with one from a site 350 km distant (Petit Saut). In total 105 trees were sampled (30, 30, 45 in the plateau and the swamp forests of Mitaraka, and in Petit Saut plateau forest, respectively). Arboreal ants were attracted using tuna and honey baits spread along a rope reaching an upper branch, except for the palm swamp forest where the baits were only placed at 2 m high. A total of 34, 13 and 22 species were observed in these three respective sites. Six of these species are new records for French Guiana. In Mitaraka *Camponotus femoratus* (Fabricius, 1804) and *Crematogaster levior* Longino, 2003 co-occurred on trees (parabiotic association) and were among the most common species, along with *Crematogaster tenuicula* Forel, 1904 which was found on other trees (species exclusion). The Mitaraka Mountains appeared more species rich and had a species composition distinct from Petit Saut. Topography also influenced ant species composition. Almost half of the species collected by the baitline method were exclusively foraging in the canopy.

KEY WORDS
Biodiversity,
tropical lowland rainforests,
Amazonia,
arboreal baitline method,
Our Planet Reviewed,
new records.

RÉSUMÉ
Inventaire des fourmis arboricoles (Hymenoptera, Formicidae) du Mitaraka, Guyane.
Les fourmis constituent une part substantielle de la biomasse d'arthropodes dans les forêts tropicales humides. La plupart des études se sont concentrées sur les fourmis terricoles qui constituent presque la moitié de la diversité de la communauté de fourmis. Nous présentons ici les résultats du premier inventaire de fourmis arboricoles dans une forêt de plateau et une pinotière (*Euterpe oleracea* Mart.) dans le massif du Mitaraka. Nous nous sommes intéressés à l'effet de la topographie et de l'éloignement géographique sur la richesse et la composition des espèces, ainsi qu'à la distribution verticale des espèces le long des troncs. La faune du Mitaraka a été comparée à celle d'un site éloigné de 350 km (Petit Saut). Au total 105 arbres ont été échantillonnées (30, 30, 45 dans les forêts du Mitaraka – plateau et pinotière – et de Petit Saut). Les fourmis arboricoles ont été attirées au moyen d'appâts au thon et au miel, répartis le long d'une corde atteignant une branche sommitale, sauf dans la pinotière où les appâts n'ont été installés qu'à 2 m du sol. Un total de respectivement 34, 13 et 22 espèces ont été observées dans les trois sites. Six de ces espèces sont de nouvelles signalisations pour la Guyane. Sur le Mitaraka *Camponotus femoratus* (Fabricius, 1804) et *Crematogaster levior* Longino, 2003 coexistent sur les arbres (association parabiotique) et sont parmi les espèces les plus communes avec les *Crematogaster tenuicula* Forel, 1904 trouvées sur d'autres troncs (exclusion spécifique). Le massif du Mitaraka apparaît plus riche et avec une composition spécifique distincte de Petit Saut. La topographie influence également la composition spécifique. Presque la moitié des espèces récoltées fourragent exclusivement dans la canopée.

MOTS CLÉS
Biodiversité,
forêts tropicales de plaines,
Amazonie,
méthode des lignes d'appâts arboricoles,
La Planète revisitée,
signalisations nouvelles.

INTRODUCTION

Ants are arthropods of major ecological importance in tropical and temperate ecosystems. Comprising a single family and with around 15 000 described species, their diversity is in the same order of magnitude as birds (Barrowclough *et al.* 2016; Janicki *et al.* 2016); as social organisms, they are ubiquitous in tropical terrestrial environments and can be sampled with standardized protocols (Agosti & Alonso 2000). These are the main reasons why they are a manageable arthropod group for biomonitoring (Underwood & Fisher 2006). This contrasts with other arthropod groups such as Coleoptera which are much richer in tropical forests (Basset *et al.* 2012). Many more ant species remain to be discovered in unexplored geographical areas or habitats difficult to sample, such as the soil or the canopy (Ryder Wilkie *et al.* 2007, 2010; Ward 2010).

The Amazonian Basin remains one of these little explored regions. Most surveys of local richness have focused on ground-dwelling ant communities. For example, in five localities across Guiana, Lapolla *et al.* (2007) found 230 species in the leaf-litter with 38-84 species per site. At the Nouragues Research Station, French Guiana, from the base to the summit of inselbergs, Groc *et al.* (2009) found 196 species in the leaf litter and put in evidence that ant diversity was influenced by habitat type. In the Brazilian state of Acre, Miranda *et al.* (2012) sampled 222 ant species on the ground with pitfall traps and 115 ant species by beating the vegetation. Near Manaus, Brazil, Vasconcelos *et al.* (2003) also demonstrated the influence of topography, observing more species in river valleys than on forested plateaus. In the same area, at a larger scale (along a 2 000-km-long gradient), Vasconcelos *et al.* (2010) demonstrated the effect of rainfall and flooding regimes on species turnover. In another survey, using baits on the ground and on the vegetation, Vasconcelos & Vilhena (2006) showed a stratification in the ant assemblage. This stratification was even more thoroughly documented in a study by Ryder Wilkie *et al.* (2010) in Amazonian Ecuador. These authors observed distinct ant assemblages in the soil, on the ground surface, and in the understorey and canopy. Of the 489 species collected, 282 were found only on trees. These ants were obtained by fogging sampling by Terry Erwin who also worked in other parts of Amazonia. In Amazonian Brazil, his fogging campaigns revealed that ants were the most abundant arthropods in trees, representing over one third of

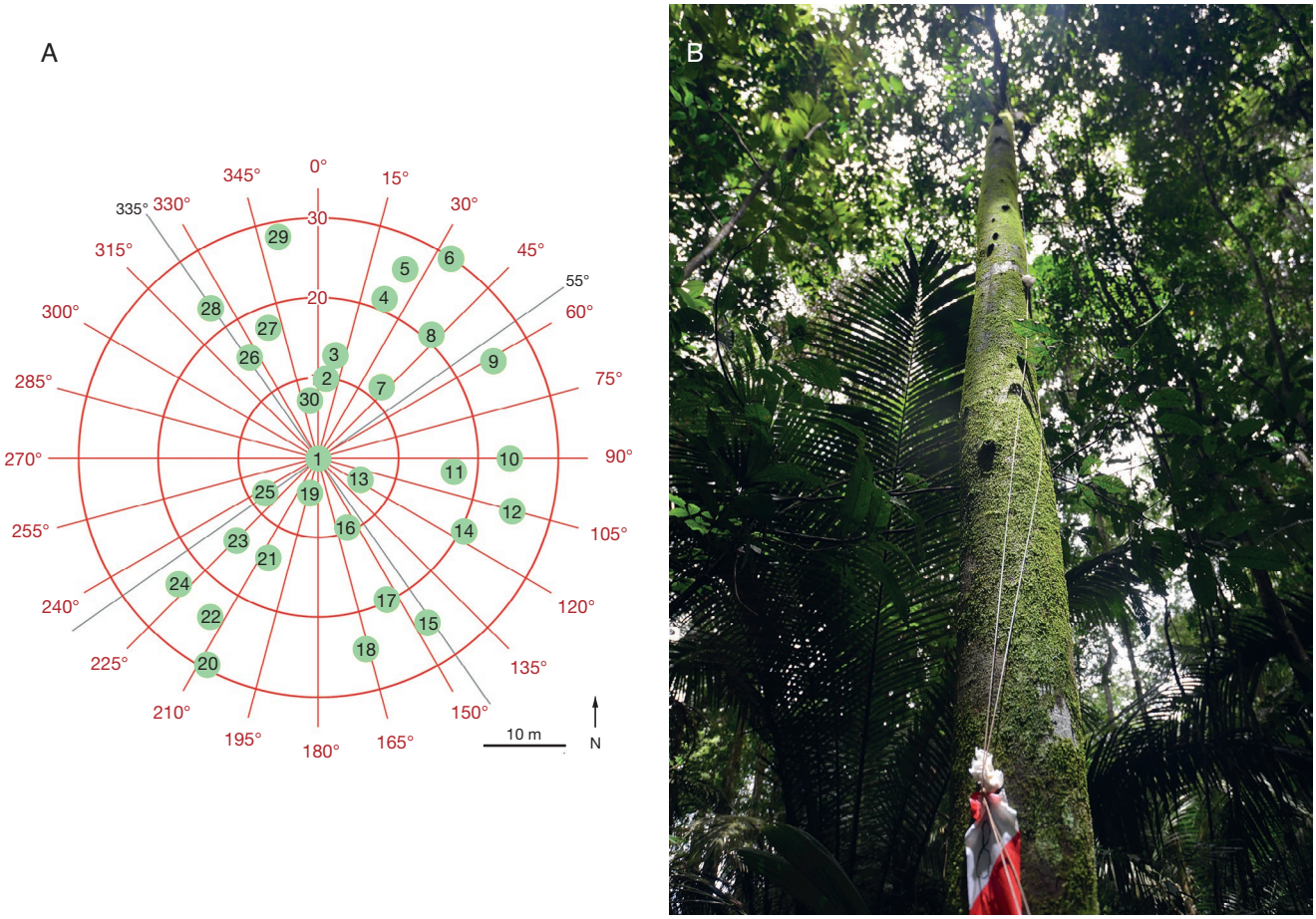

FIG. 1. — Plateau forest at Mitaraka: **A**, location of trees (numbers 1-30) sampled within a circular plot of 30 m radius. The plot was centred on a Diadema plot (axes shown with grey lines); **B**, baitline around a tree with baits spread at 5 m-intervals along tree trunks. Photo: Maurice Leponce.

the collected individuals and biomass (Erwin 1983; Adis *et al.* 1984). Wilson (1987) found in Erwin's samples in Peru up to 43 ant species from 26 genera from a single tree, and Tobin (1997) found 85 species from 29 genera from two trees and 11 associated vines for another site in Peru.

The aim of the current study was to complement these studies by: 1) surveying tree-dwelling ants in one of the most remote parts of the Amazon, the Mitaraka Mountains in French Guiana; 2) studying the effect of topography on arboreal ant assemblages; 3) studying the species turnover of tree-dwelling ant assemblages separated by large geographical distances; and 4) gathering information on vertical species distribution along trees.

MATERIAL AND METHODS

STUDY SITES

Mitaraka

This species inventory is part of the "Our Planet Reviewed" ("La Planète revisitée") French Guiana 2014-2015 international biotic survey (Pascal *et al.* 2015; Touroult *et al.* 2018). It took place in the Mitaraka mountain range bordering Suriname and Brazil. Two contrasting forest sites were sampled: a plateau ("forêt de plateau"); and a swamp forest with with the palm tree *Euterpe oleracea* Mart. at the bottom of the valley ("pinotière"). Both were centred on a plot from the Diadema ("DIssecting Amazonian Diversity by Enhancing a Multiple taxa Approach") project (http://www.labex-ceba.fr/en/6337-2/). Their latitude and longitude were (2.233°N, –54.444°W) and (2.234°N, –54.448°W), respectively. The Diadema project also includes ant samplings on the ground and in the understorey, relying on Winkler extraction, pitfall trapping and vegetation beating. These results have been reported elsewhere (Fichaux 2018). In the plateau forest, 30 tree canopies inside a circular plot 30 m in radius were sampled (area 0.28 ha, Fig. 1). In the swamp forest, they were collected from 30 trees within a 30 × 40 m plot (0.12 ha, Fig. 2). Ants were sampled between the 23rd of February and 8th of March 2017.

Petit Saut

To compare the faunal composition and diversity of Mitaraka, we used the data from an earlier survey in a plateau forest near the Petit Saut dam (Zone de relâcher, 5.068°N, –52.980°W) between the 13th and 25th of October 2010. A plot of 40 × 70 m (0.28 ha) was delineated there and 45 canopy trees

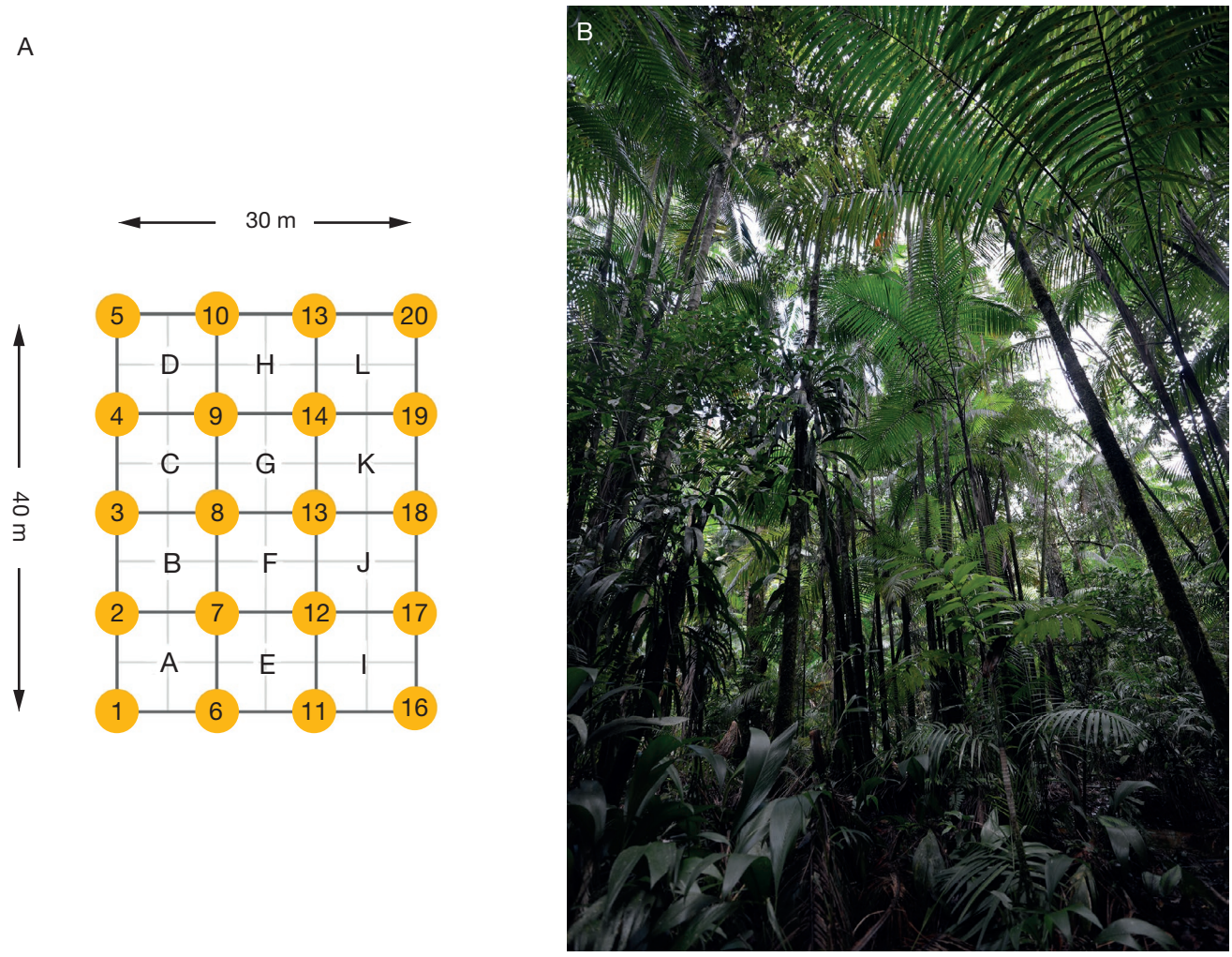

Fig. 2. — Palm swamp forest: **A**, area sampled based on a Diadema plot. Numbers 1-20 indicate the sampling points (not trees) for the Diadema Winkler program, baits were placed 2 m above ground on 30 trees within this area; **B**, general view of the habitat. Photo: Maurice Leponce.

were sampled. This plot was centred around a large *Azteca* cf. *chartifex* colony to map the spatial extension of its territory. This site was *c*. 350 km away from Mitaraka but part of the same Amazonian forest block.

Ant sampling

We used the arboreal baitline protocol to collect tree-dwelling ants (Leponce & Dejean 2011). The baitline protocol consists in putting a rope over the uppermost branch in the canopy using a sling shot (Sherrilltree® Big Shot). Baits are spread every 5 m along the rope, from 2 m above ground up to the uppermost branch, to detect species vertical stratification. Because the rope forms a loop, baits can be easily collected. Baits consist of a mixture of tuna (in vegetable oil) and honey. These baits represent a source of proteins, lipids and carbohydrates. The mixture is wrapped inside a paper towel and tied to the rope (see Fig. 3D, F). Ants dig inside the bait and remain on it even when it is brought back down for inspection. Baits were set in the morning and collected approximately four hours later, in the afternoon. In the event of heavy rain, baits were removed and replaced the next day. In the swamp forest, the Big Shot could not be used (no firm soil to anchor the pole of the sling shot) and baits were only put 2 m above the ground. A total of 99, 30 and 146 baits were set on the plateau, the swamp and Petit saut forests respectively. This method was designed to collect numerically dominant ants but it also collects part of the other species nesting on trees or at ground level. This method also has the advantage of allowing the vertical distribution of ant species along tree trunks to be assessed.

Ant identification

Ants were identified on the basis of CEPLAC (Commisão Executiva do Plano da Lavoura cacaueira, Itabuna, Brasil) and RBINS (Royal Belgian Institute of Natural Sciences) (http://cb.naturalsciences.be/ants/collections/French%20Guiana%20Ants/) reference collections as well as online resources (AntWeb, AntWiki). Their distribution was checked on AntMaps (AntMaps.org). Specimens collected in Mitaraka and Petit Saut were deposited in the MNHN (Muséum national d'Histoire naturelle, Paris) and CEPLAC collections, respectively.

Fig. 3. — Representative ants belonging to the six subfamilies found at Mitaraka and Petit Saut: **A**, *Azteca* cf. *chartifex* Forel, 1878 (Dolichoderinae); **B**, *Ectatomma tuberculatum* (Olivier, 1792) (Ectatomminae); **C**, *Gigantiops destructor* (Fabricius, 1804) (Formicinae); **D**, *Cephalotes atratus* (Linnaeus, 1758) (Myrmicinae); **E**, *Neoponera commutata* (Roger, 1860) (Ponerinae); **F**, *Pseudomyrmex faber* (Smith, F., 1858) (Pseudomyrmecinae). Photos: Maurice Leponce. Average head width: A, 1.0 mm; B, 2.3 mm; C, 2.5 mm; D, 2.1-4.5 mm; E, 3.2 mm; F, 2.0 mm.

Statistical analyses

Species rarefaction curves were plotted on the species occurrences data matrices using EstimateS 9.1.0 software (Colwell 2016) with 100 randomizations of the sampling order without replacement. Trees were considered as sampling units. The number of individuals collected on baits was not taken into account. The rationale is that ants are colonial insects and that it is only the number of colonies that is ecologically meaningful (Longino 2000; Leponce *et al.* 2004). If an ant species was found on a single or on multiple baits on the same tree its occurrence was counted as 1. To standardize the measurements of species richness between sites, an interpolation to a common number of occurrences (40) was carried out as well as the calculation of the Chao2 estimator of species richness. The non-overlapping of 95% confidence intervals constructed from unconditional variance estimators was used as a conservative criterion of statistical difference (Colwell 2016).

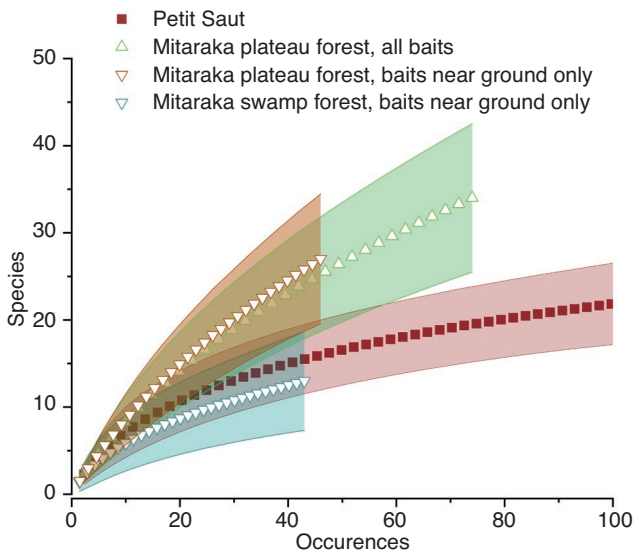

Fig. 4. — Rarefaction curves representing the species accumulation in the Mitaraka plateau forest (taking into account all baits spread along the trunk or only those near the ground), swamp forest and, by comparison, in the distant site, the plateau forest of "Petit Saut" (baits from the ground to the canopy).

For the analyses of species co-occurrences designed to reveal positive (i.e., parabiotic association) negative (i.e., exclusion) associations between species, the sampling unit considered was each bait. The independence of the presence of two species was measured with Fisher's exact-tests. These tests were only conducted on the most frequent species (i.e., present each on at least 10% of the baits).

The compositional similarity between two sites was measured with the Chao-Jaccard index, which is an appropriate measure in the case of incompletely sampled fauna (Chao *et al.* 2005).

Results

Species richness

A total of 40 tree-dwelling species comprising 15 genera were found at Mitaraka (703 specimens collected). Five species belonging to the genus *Pheidole* Westwood, 1839 were new records for French Guiana (Table 1). The plateau forest was richer than the swamp forest: 34 vs 13 observed species (for 74 and 44 species occurrences, respectively). This difference was significant when considering a standardized species richness: 23.2 ± 6.2 vs 12.5 ± 5.5 species (rarefied richness for 40 occurrences ± 95% confidence interval) (Table 1; Fig. 4). This is valid even when considering only baits collected near the ground at both sites because the accumulation of species in the plateau forest was similar for ground- and canopy-dwelling species (Fig. 4). The Mitaraka plateau forest was also richer than the distant forest used as comparison (Petit Saut). This might be due in part to the fact that the Petit Saut plot was largely occupied (19⁄45 trees) by a single colony of a numerically and aggressively dominant ant (*Azteca* cf. *chartifex* Forel, 1896). These *Azteca* Forel, 1878 were present in massive numbers on baits and excluded most other ant species from their territory. The Chao2 estimator indicated that we possibly collected only half of the species present at Mitaraka with a total of 76.6 ± 29.2 and 36.7 ± 20.2 species expected in the plateau and swamp forest, respectively.

Taxonomic composition

Six ant subfamilies were observed at Mitaraka, namely: Myrmicinae Lepeletier de Saint-Fargeau, 1835 (25 species, 3 tribes), Formicinae Latreille, 1809 (7 species, 3 tribes), Ectatomminae Emery, 1895 (4 species, 1 tribe), Ponerinae Lepeletier de Saint-Fargeau, 1835 (3 species, 1 tribe), and Dolichoderinae Forel, 1878 (1 species) (Table 1). Some representative species are shown in Figure 3. Pseudomyrmecinae Smith, F. 1852 were observed foraging on tree trunks but were not caught at baits. The most species rich genera were *Pheidole* (10 species), *Camponotus* Mayr, 1861 (5), *Crematogaster* Lund, 1831 (5) and *Solenopsis* Westwood, 1840 (4). Five Pheidole were new records for French Guiana (*Pheidole flavens* Roger, 1863; *Pheidole kukrana* Wilson, 2003; *Pheidole obscurior* Forel, 1886; *Pheidole pepo* Wilson, 2003; *Pheidole tristops* Wilson, 2003)(Table 1). Among additional species found in Petit Saut, *Camponotus trapezoideus* Mayr, 1870, was a new record for French Guiana. The only exotic species observed was *Monomorium floricola* (Jerdon, 1851). The relative proportion of the different subfamilies, in terms of species numbers, was not different between Mitaraka and Petit Saut (Chi-square test, P = 0.8).

The faunal similarity between the two Mitaraka sites (Chao-Jaccard: 0.372) was higher than with the Petit Saut site (0.136 or 0.047 for plateau and swamp comparisons, respectively) (Table 1). Among the common species from Mitaraka, only *Crematogaster tenuicula* Forel, 1904 was found in abundance at Petit Saut as well.

Species co-occurrences

Seven species were found in both habitat types at Mitaraka, namely (by order of decreasing occurrences on trees): *Camponotus femoratus* (Fabricius, 1804) (21), *Crematogaster tenuicula* Forel, 1904 (17), *Crematogaster levior* Longino, 2003 (14), *Nylanderia* cf. *fulva* (Mayr, 1862) (5), *Pheidole* group *flavens* sp. 02 Roger, 1863 (4), *Pheidole transversostriata* Mayr, 1887 (3), and *Pheidole* group *flavens* sp. 01 Roger, 1863 (2). A significant negative association was found between the first two species (Fisher's exact-test; P < 0.05) and marginally between the two *Crematogaster* (P = 0.07). By contrast a very significant positive association was found between *Camponotus femoratus* and *Crematogaster levior*. These two species were particularly abundant in the swamp forest. All other species were found in a single habitat and on less than 15% of the trees.

Species vertical distribution

These data were only available for the plateau forest at Mitaraka. There, 15 out of 34 species were found up to the canopy (height ≥ 12 m) and most of them from the ground to the canopy (between 2 and 22 m, n = 10) (Table 1). The other 19 species were found only above ground (between 2 and 7 m) but were species for which only one or two occurrences were noted. Species from *Pheidole* and *Solenopsis* were

TABLE 1. — List of species found at Mitaraka, in the plateau and swamp forests, and in the comparison site Petit Saut. Values represent the number of trees on which each species was observed (with the number of specimens examined under brackets). The minimum and maximum heights at which each species was collected along trees are also provided (in meters above ground). All the species are native to French Guiana, except the exotic *Monomorium floricola* (Jerdon, 1851), signalled with a *. Full details of examined specimens is provided in Appendix 1.

						Height		
Subfamily	**Tribe**	**Species**	**Plateau**	**Swamp**	**Petit Saut**	**Max**	**Min**	**New records**
Dolichoderinae	–	*Azteca* cf. *chartifex* Forel, 1878			19(53)	27	2	–
	–	*Azteca* cf. *paraensis* Forel, 1904	3(11)			17	2	–
Ectatomminae	Ectatommini	*Ectatomma edentatum* Roger, 1863	1(1)			17	17	–
		Ectatomma tuberculatum (Olivier, 1792)			14(20)	17	2	–
		Gnamptogenys pleurodon (Emery, 1896)	4(38)			17	2	–
		Gnamptogenys porcata (Emery, 1896)		1(1)		2	2	–
		Gnamptogenys relicta (Mann, 1916)	1(1)			2	2	–
Formicinae	Camponotini	*Camponotus* (Myrmaphaenus) sp. 01	1(1)			2	2	–
		Camponotus (Myrmosphincta) sp. 02	2(8)			2	2	–
		Camponotus femoratus (Fabricius, 1804)	6(11)	15(36)		17	2	–
		Camponotus novogranadensis Mayr, 1870	1(1)			7	7	×
		Camponotus punctulatus andigenus Emery, 1903	1(1)			2	2	–
		Camponotus trapezoideus Mayr, 1870			1(1)	2	2	–
	Gigantiopini	*Gigantiops destructor* (Fabricius, 1804)	1(1)			2	2	–
	Lasiini	*Nylanderia* cf. *fulva* (Mayr, 1862)	1(3)	4(12)		2	2	–
	Lasiini	*Nylanderia* sp. 02			1(1)	2	2	–
Myrmicinae	Attini	*Cephalotes atratus* (Linnaeus, 1758)	2(9)		4(5)	22	2	–
		Cephalotes marginatus (Fabricius, 1804)	1(1)		4(5)	22	2	–
		Cephalotes minutus (Fabricius, 1804)			2(2)	7	2	–
		Ochetomyrmex neopolitus Fernández, 2003			1(4)	7	2	–
		Pheidole fallax Mayr, 1870	1(9)			12	12	–
		Pheidole flavens Roger, 1863	4(32)			22	2	×
		Pheidole group *fallax* sp. 01		1(8)		2	2	–
		Pheidole group *flavens* sp. 01	1(4)	1(5)		2	2	–
		Pheidole group *flavens* sp. 02	1(3)	3(11)		12	2	–
		Pheidole kukrana Wilson, 2003	1(5)			2	2	×
		Pheidole cf. *tobini* Wilson, 2003			1(1)	2	2	–
		Pheidole obscurior Forel, 1886	1(3)			2	2	×
		Pheidole pepo Wilson, 2003	1(1)			2	2	×
		Pheidole transversostriata Mayr, 1887	2(23)	1(12)		7	2	–
		Pheidole group *tristis* sp. 01			1(1)	2	2	–
		Pheidole group *tristis* sp. 02			2(2)	2	2	–
		Pheidole tristops Wilson, 2003	1(3)			2	2	×
		Strumigenys sp. 01			1(1)	2	2	–
		Wasmannia auropunctata (Roger, 1863)	1(7)			2	2	–
		Wasmannia rochai Forel, 1912	1(3)		2(4)	12	2	–
	Crematogastrini	*Crematogaster brasiliensis* Mayr, 1878			16(22)	22	2	–
		Crematogaster curvispinosa Mayr, 1862		3(37)		2	2	–
		Crematogaster erecta Mayr, 1866			8(21)	22	2	–
		Crematogaster levior Longino, 2003	6(50)	8(27)		17	2	–
		Crematogaster limata Smith F., 1858	1(4)		5(7)	12	2	–
		Crematogaster longispina Emery, 1890	1(10)			2	2	–
		Crematogaster tenuicula Forel, 1904	13(141)	4(22)	9(10)	22	2	–
	Solenopsidini	*Megalomyrmex leoninus* Forel, 1885	1(6)			2	2	–
		Monomorium floricola (Jerdon, 1851)*			1(1)	7	7	–
		Rogeria subarmata (Kempf, 1961)	1(3)			2	2	–
		Solenopsis sp. 01	4(77)			17	2	–
		Solenopsis sp. 02		1(6)		2	2	–
		Solenopsis sp. 03	2(7)			17	17	–
		Solenopsis sp. 04	3(41)			17	2	–
		Solenopsis sp. 05			3(3)	7	2	–
		Solenopsis sp. 06			4(5)	2	2	–
Ponerinae	Ponerini	*Neoponera apicalis* (Latreille, 1802)		1(1)		2	2	–
		Neoponera commutata (Roger, 1860)	2(4)			2	2	–
		Neoponera villosa (Fabricius, 1804)			1(1)	2	2	–
		Odontomachus haematodus (Linnaeus, 1758)		1(2)		2	2	–
Pseudomyrmecinae		*Pseudomyrmex faber* (Smith F., 1858)			2(2)	2	2	–
Species			34	13	22			
Occurrences (abundance) on trees			74 (523)	44 (180)	102 (172)			
Trees sampled			30	30	45			
Rarefied richness (40 occurrences) (±95% CI)			23.2±6.2	12.5±5.5	15.3±4.1			
Chao2 (±95%CI)			76.6±29.2	36.7±20.2	29.8±6.2			

very common 2 m above ground, even though some of their species were found not only on the ground but also in the canopy, examples being *Pheidole flavens* Roger, 1863, *Ph*. group *flavens* sp. 02, *Ph*. *fallax* Mayr, 1870 and three undescribed *Solenopsis*: sp. 01, 03, 04.

DISCUSSION

The plateau forest at Mitaraka appeared rich in tree-dwelling species compared to the swamp forest and Petit Saut. The species richness and composition was also different between Mitaraka and Petit Saut. These differences might be amplified in part due to the presence of a large colony of *Azteca* cf. *chartifex* in the Petit Saut plot, which decreased the diversity of ants found at baits due to exclusive competition known for territorially dominant arboreal ants (Dejean *et al.* 2015).

Altogether, 40 species were collected at Mitaraka but according to the Chao2 estimator, the tree-dwelling ant fauna attracted to baits might actually be twice as rich. This seems plausible since in the Ecuadorian Amazon, different types of baits at ground level collected 83 of the 269 ground-dwelling species (31%) and 17% of the local ant fauna (489 species) (Ryder Wilkie *et al.* 2010). During the same study 282 species were collected from the canopy by a very intense fogging programme spanning over height years. One might expect that at Mitaraka the use of various canopy sampling methods would increase the estimate of total number of tree-dwelling species. Insecticide fogging might be an option but it is time consuming in the field (i.e., it requires heavier equipment, and the weather conditions must be dry, warm and calm; Adis *et al.* (1998)) and in the laboratory (i.e., a huge number of individuals must be processed; e.g. 113 000 ants in Ryder Wilkie *et al.* (2010)). Furthermore fogging does not provide information on vertical stratification as ants from different levels fall in the nets. Other canopy sampling techniques (e.g. branch clipping, canopy pitfalls, traps, vegetation beating) usually require climbing which is difficult and risky (Yusah *et al.* 2012; Yusah *et al.* 2018). The newly developed arboreal baitline technique has the advantage of allowing researchers to collect from numerous trees quite rapidly, to detect the dominant ants in the canopy and to assess the distribution of species along the tree trunk.

The baiting method mainly attracted species with a high recruitment rate (i.e., *Crematogaster*, *Pheidole*, *Solenopsis*, *Wasmannia*). *Wasmannia auropunctata* (Roger, 1863), a notoriously invasive species, is native to this zone (Orivel *et al.* 2009). By contrast to other species of the genus *Neoponera*, almost all generalist predators, *Neoponera commutata* (Roger, 1860) belongs to a group of species (with *N. marginata* (Roger, 1861) and *N. laevigata* (Smith F., 1858)) which is specialized in raiding termite nests in the ground (Wheeler 1936; MacKay & MacKay 2010). Other specialized ants were found, such as *Cephalotes atratus* (Linnaeus, 1758) and other species of the same genus which are known to eat anemophilous pollen that sticks the leaf surfaces (Baroni Urbani & de Andrade 1997). Almost half of the species collected by the baitline method were foraging in the canopy. The other half were found 2 m above ground and may correspond to ground-nesting ant species occasionally foraging at the base of trees. Interestingly, some *Pheidole* and *Solenopsis*, two hyperdiverse genera very common at ground level, were found foraging high in the trees and may correspond to species nesting in suspended soil or epiphytes (Klimes 2017).

The new records for French Guiana were found in the genera *Camponotus* and *Pheidole*, which are among the main hyperdiverse genera of ants (Wilson 1976, 2003). Historically French Guiana has been very irregularly inventoried for its diversity of ants. Although there are many specimens of this fauna in the collections of Europe and North America, it remained poorly studied until the 1980s when a much larger research effort was applied to its rich biodiversity. The identification of species belonging to hyperdiverse genera remains a problem in tropical ant taxonomy. Many taxa (alpha taxonomy) were reliably described in the 19th and early 20th centuries (e.g. many medium to large species of the genus *Camponotus*), but the capability to identify many smaller species needs to be based on necessary extensive generic revisions in order to eliminate many suspected synonyms. This is in particular the case of *Pheidole* which was reviewed by Wilson (2003) although very little biological material from French Guiana was available in the collections he studied. This is the main reason why several *Pheidole* species found at Mitaraka are new records for French Guiana.

At Mitaraka, *Camponotus femoratus* and *Crematogaster levior* were common and numerically dominant. These species are known to share the same nests (parabiosis), which are in ant-gardens, and this association seems to be favourable to both species (Vantaux *et al.* 2007; Menzel *et al.* 2014). Moreover, they also excluded the other most common species, *Crematogaster tenuicula*.

To conclude, our results suggest that the arboreal-dwelling ant fauna at Mitaraka is rich and with a composition possibly different from other parts of Amazonia. It was dominated by two parabiotic species: *Camponotus femoratus* and *Crematogaster levior*. Of particular interest will be the comparison of this arboreal-dwelling assemblage with the ground-dwelling ant assemblage (sampled with the Diadema protocol) to investigate if similar patterns of species turnover between sites are found.

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APPENDIX

APPENDIX 1. — Material examined and deposit of specimens. All specimens collected in Mitaraka are deposited at MNHN, Paris and all specimens collected in Petit Saut are deposited at CEPLAC., Ilhéus. All collected specimens are workers. Abbreviations syntax: codes for specimens follow the structure "VIAL-TREE-DATE (number of specimens collected)". Example: "50953-C12-27/2/2015 (5)" means vial # 50953, specimens collected on tree C12 (prefix for tree codes: **C**, Mitaraka plateau forest; **D**, Mitaraka swamp forest; **PS**, Petit Saut) on 27 February 2015, five specimens examined. All the specimens collected at Mitaraka benefited from the Access and benefit sharing (ABS - APA in French) agreement of the "Our Planet Reviewed" program (APA 973-1). Only part of the collected specimens are listed here per species, as some species were extremely numerous; all specimens were however checked for their species identity. Distributions are based on the AntWiki website.

Subfamily DOLICHODERINAE Forel, 1878
Genus *Azteca* Forel, 1878

Azteca cf. ***chartifex*** Forel, 1896

Azteca chartifex Forel *in* Emery, 1896: 4.

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 13-24.X.2010.
42874-PS01-13/10/2010 (1); 42878-PS05-13/10/2010 (1); 42880-PS07-13/10/2010 (1); 42881-PS08-13/10/2010 (1); 42882-PS09-13/10/2010 (1); 42885-PS12-13/10/2010 (1); 42888-PS15-13/10/2010 (1); 42893-PS20-13/10/2010 (1); 42905-PS04-14/10/2010 (1); 42906-PS05-14/10/2010 (1); 42908-PS07-14/10/2010 (1); 42909-PS08-14/10/2010 (1); 42910-PS09-14/10/2010 (1); 42913-PS12-14/10/2010 (1); 42916-PS15-14/10/2010 (1); 42921-PS20-14/10/2010 (1); 42932-PS01-15/10/2010 (1); 42933-PS01-15/10/2010 (1); 42934-PS02-15/10/2010 (1); 42938-PS04-15/10/2010 (1); 42941-PS05-15/10/2010 (1); 42943-PS05-15/10/2010 (1); 42946-PS06-15/10/2010 (1); 42996-PS41-16/10/2010 (1); 43007-PS10-19/10/2010 (1); 43008-PS15-19/10/2010 (1); 43012-PS17-19/10/2010 (1); 43013-PS18-19/10/2010 (1); 43014-PS19-19/10/2010 (1); 43015-PS20-19/10/2010 (1); 43017-PS22-19/10/2010 (1); 43019-PS23-19/10/2010 (1); 43027-PS28-19/10/2010 (1); 43034-PS41-20/10/2010 (1); 43035-PS10-19/10/2010 (1); 43036-PS10-19/10/2010 (1); 43037-PS15-19/10/2010 (1); 43038-PS15-19/10/2010 (1); 43043-PS18-19/10/2010 (1); 43044-PS18-19/10/2010 (1); 43045-PS19-19/10/2010 (1); 43046-PS19-19/10/2010 (1); 43047-PS19-19/10/2010 (1); 43048-PS20-19/10/2010 (1); 43049-PS20-19/10/2010 (1); 43050-PS20-19/10/2010 (1); 43053-PS22-20/10/2010 (1); 43054-PS22-21/10/2010 (1); 43055-PS22-22/10/2010 (1); 43056-PS22-23/10/2010 (1); 43057-PS22-24/10/2010 (1); 43086-PS41-20/10/2010 (1); 43097-PS41-20/10/2010 (1).

DISTRIBUTION. — French Guiana.

Azteca cf. ***paraensis*** Forel, 1904

Azteca velox r. *paraensis* Forel, 1904: 45.

Azteca paraensis – Forel 1906: 240.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 27.II-3.III.2015.

50953-C12-27/2/2015 (5); 50961-C01-1/3/2015 (1); 50974-C12-27/2/2015 (3); 53210-C21-3/3/2015 (1); 59961-C21-3/3/2015 (1).

DISTRIBUTION. — French Guiana.

Subfamily ECTATOMMINAE Emery, 1895
Tribe ECTATOMMINI Emery, 1895
Genus *Ectatomma* Smith F., 1858

Ectatomma edentatum Roger, 1863

Ectatomma edentatum Roger, 1863: 173.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 3.III.2015.
53127-C18-3/3/2015 (1)

DISTRIBUTION. — Neotropical Region: Argentina (type locality), Bolivia, Brazil, Colombia, Costa Rica, Ecuador, French Guiana, Guyana, Panama, Paraguay, Peru, Suriname, Uruguay, Venezuela.

Ectatomma tuberculatum (Olivier, 1792)

Formica tuberculata Olivier, 1792: 498.

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N –52.980°W, 13-20.X.2010.
42887-PS14-13/10/2010 (1); 42895-PS22-13/10/2010 (1); 42900-PS27-13/10/2010 (1); 42926-PS25-14/10/2010 (1); 42929-PS28-14/10/2010 (1); 42985-PS30-16/10/2010 (1); 42987-PS32-16/10/2010 (1); 43018-PS23-19/10/2010 (1); 43022-PS25-19/10/2010 (1); 43025-PS26-19/10/2010 (1); 43028-PS45-19/10/2010 (1); 43030-PS47-19/10/2010 (1); 43031-PS44-20/10/2010 (1); 43060-PS25-19/10/2010 (1); 43061-PS25-19/10/2010 (1); 43062-PS25-19/10/2010 (1); 43080-PS29-20/10/2010 (1); 43087-PS31-20/10/2010 (1); 43090-PS30-20/10/2010 (1); 93107-PS29-20/10/2010 (1).

DISTRIBUTION. — Neotropical Region: Argentina, Brazil, Colombia, Costa Rica, Ecuador, French Guiana, Guatemala, Guyana, Honduras, Mexico, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago (type locality), Venezuela.

Genus *Gnamptogenys* Roger, 1863

Gnamptogenys pleurodon (Emery, 1896)

Ectatomma (*Holcoponera*) *pleurodon* Emery, 1896: 47.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 27.II-3.III.2015.
50946-C13-27/2/2015 (2); 50947-C16-27/2/2015 (5); 50956-C10-27/2/2015 (3); 50967-C06-2/3/2015 (10); 50971-C10-27/2/2015 (1); 5979-C16-3/3/2015 (11); 53138-C06-2/3/2015 (5); 53213-C13-27/2/2015 (1).

DISTRIBUTION. — Neotropical Region: Bolivia, Brazil (type locality), Colombia, Ecuador, Peru, Trinidad and Tobago, Venezuela.

Gnamptogenys porcata (Emery, 1896)

Ectatomma (*Holcoponera*) *porcatum* Emery, 1896: 48.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", swamp forest, 2.234°N, –54.448°W, 5.III.2015.

53140-D01-5/3/2015 (1)

DISTRIBUTION. — Neotropical Region: Brazil, Colombia, Costa Rica (type locality), Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Venezuela.

Gnamptogenys relicta (Mann, 1916)

Rhopalopone relicta Mann, 1916: 403.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 2.III.2015.

50962-C08-2/3/2015 (1)

DISTRIBUTION. — Neotropical Region: Brazil (type locality), Colombia, French Guiana, Peru, Suriname, Trinidad and Tobago, Venezuela.

Subfamily FORMICINAE Latreille, 1809
Tribe CAMPONOTINI Forel, 1805
Genus *Camponotus* Mayr, 1861

Camponotus (***Myrmaphaenus***) sp. 01

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 2.III.2015.
53178-C18-2/3/2015 (1).

DISTRIBUTION. — French Guiana.

Camponotus (*Myrmosphincta*) sp. 02

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 27.II-3.III.2015.
50945-C13-27/2/2015 (7); 50976-C15-3/3/2015 (1)

DISTRIBUTION. — French Guiana.

Camponotus femoratus (Fabricius, 1804)

Formica femorata Fabricius, 1804: 397.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, swamp forest, 2.234°N, –54.448°W, 27.II-7.III.2015.
50970-C09-3/3/2015 (1); 50971-C10-27/2/2015 (3); 50978-C15-3/3/2015 (1); 53139-C09-7/3/2015 (1); 53141-D01-5/3/2015 (3); 53142-D02-5/3/2015 (2); 53144-D03-5/3/2015 (2); 53145-D07-5/3/2015 (3); 53146-D08-5/3/2015 (3); 53147-D09-5/3/2015 (3); 53151-D14-5/3/2015 (1); 53153-D16-5/3/2015 (5); 53154-D17-5/3/2015 (5); 53155-D18-5/3/2015 (2); 53156-D19-5/3/2015 (1); 53159-D29-5/3/2015 (2); 53162-D22-5/3/2015 (2); 53191-D27-5/3/2015 (1); 53192-D25-5/3/2015 (1); 53207-C23-7/3/2015 (1); 53209-C21-3/3/2015 (1); 53210-C21-3/3/2015 (1); 53214-C22-7/3/2015 (2).

DISTRIBUTION. — Neotropical Region: Brazil (type locality), Ecuador, French Guiana, Guyana, Peru, Suriname, Trinidad and Tobago, Venezuela.

Camponotus novogranadensis Mayr, 1870

Camponotus novogranadensis Mayr, 1870: 380.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 2.III.2015.
53173-C28-2/3/2015 (1).

DISTRIBUTION. — Nearctic Region: United States. Neotropical Region: Brazil, Colombia (type locality), Costa Rica, Ecuador, French Guiana, Guatemala, Guyana, Honduras, Mexico, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago.

Camponotus punctulatus andigenus Emery, 1903

Camponotus punctulatus andigenus Emery, 1903: 71.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 7.III.2015.
53212-C11-7/3/2015 (1).

DISTRIBUTION. — Neotropical Region: French Guiana, Peru (type locality).

Camponotus trapezoideus Mayr, 1870

Camponotus trapezoideus Mayr, 1870: 385.

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 19.X.2010.
43012-PS17-19/10/2010 (1).

DISTRIBUTION. — Neotropical Region: Brazil, Colombia (type locality), French Guiana (**new record**).

Genus *Gigantiops* Roger, 1863

Gigantiops destructor (Fabricius, 1804)

Formica destructor Fabricius, 1804: 402.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 2.III.2015.
53179-C01-2/3/2015 (1).

DISTRIBUTION. — Neotropical Region: Brazil, Colombia, Ecuador, French Guiana, Guyana, Peru, Suriname, Venezuela.

Subfamily FORMICINAE Latreille, 1809
Tribe LASIINI Ashmead, 1905
Genus *Nylanderia* Emery, 1906

Nylanderia cf. ***fulva*** (Mayr, 1862)

Prenolepis fulva Mayr, 1862: 698.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, swamp forest, 2.234°N, –54.448°W, 2-5.III.2015.
53148-D10-5/3/2015 (4); 53150-D13-5/3/2015 (4); 53151-D14-5/3/2015 (2); 53158-D21-5/3/2015 (2); 53168-C26-2/3/2015 (3).

DISTRIBUTION. — Nearctic Region: Canada, United States. Neotropical Region: Argentina, Bolivia, Brazil (type locality), Chile, Colombia, Cuba, Dominican Republic, Ecuador, French Guiana, Grenada, Guyana, Haiti, Mexico, Paraguay, Suriname, Uruguay.

Nylanderia sp. 02

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 14.X.2010.
42925-PS24-14/10/2010 (1).

DISTRIBUTION. — Neotropical Region: Argentina, Belize, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, French Guiana, Guyana, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago, Uruguay, Venezuela.

Subfamily MYRMICINAE Lepeletier de Saint-Fargeau, 1835
Tribe ATTINI Smith F., 1858
Genus *Cephalotes* Latreille, 1802

Cephalotes atratus (Linnaeus, 1758)

Formica atrata Linnaeus, 1758: 581.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 1-7.III.2015, Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 13-14.X.2010.
50966-C03-1/3/2015 (2); 53215-C22-7/3/2015 (7).
42874-PS01-13/10/2010 (1); 42877-PS04-13/10/2010 (1); 42881-PS08-13/10/2010 (1); 42926-PS25-14/10/2010 (1).

DISTRIBUTION. — Neotropical Region: Argentina, Belize, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, French Guiana, Guyana, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago, Uruguay, Venezuela.

Cephalotes marginatus (Fabricius, 1804)

Cryptocerus marginatus Fabricius, 1804: 419.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 3.III.2015, Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 19-20.X.2010.
53210-C21-3/3/2015 (1).
43009-PS13-19/10/2010 (1); 43011-PS16-19/10/2010 (1); 43026-PS28-19/10/2010 (1); 43027-PS28-19/10/2010 (1); 43079-PS35-20/10/2010 (1).

DISTRIBUTION. — Neotropical Region: Brazil, Colombia, Ecuador, French Guiana, Guyana (type locality), Suriname.

Cephalotes minutus (Fabricius, 1804)

Cryptocerus minutus Fabricius, 1804: 420.

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 13-15.X.2010.
42901-PS28-13/10/2010 (1); 42942-PS05-15/10/2010 (1).

DISTRIBUTION. — Neotropical Region: Argentina, Belize, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Lesser Antilles, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Venezuela.

Genus *Ochetomyrmex* Mayr, 1878

Ochetomyrmex neopolitus Fernández, 2003

Ochetomyrmex neopolitus Fernández, 2003: 643.

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 13-19.X.2010.
42889-PS16-13/10/2010 (1); 42917-PS16-14/10/2010 (1); 43010-PS16-19/10/2010 (1); 43039-PS16-19/10/2010 (1).

DISTRIBUTION. — Neotropical Region: Bolivia, Brazil, Colombia (type locality), Ecuador, French Guiana, Guyana, Peru, Suriname, Venezuela.

Genus *Pheidole* Westwood, 1839
Pheidole group *fallax* Mayr, 1870

Pheidole fallax Mayr, 1870

Pheidole fallax Mayr, 1870: 984.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 3.III.2015.
53126-C17-3/3/2015 (9).

DISTRIBUTION. — Neotropical Region: Colombia, Costa Rica, Cuba (type locality), French Guiana, Grenada, Guadeloupe, Guatemala, Guyana, Honduras, Jamaica, Nicaragua, Puerto Rico, Trinidad and Tobago, Venezuela.

Pheidole group ***fallax*** sp. 01

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", swamp forest, 2.234°N, –54.448°W, 5.III.2015.
53157-D20-5/3/2015 (8).

DISTRIBUTION. — French Guiana.

Pheidole group *flavens* Roger, 1863

Pheidole flavens Roger, 1863

Pheidole flavens Roger, 1863: 198.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 27.II- 2.III.2015.
50959-C27-2/3/2015 (10); 50972-C12-27/2/2015 (7); 50977-C15-27/2/2015 (8); 53177-C07-2/3/2015 (7).

DISTRIBUTION. — Malagasy Region: Madagascar. Nearctic Region: United States. Neotropical Region: Argentina, Bahamas, Barbados, Belize, Brazil, Colombia, Costa Rica, Cuba (type locality), Dominican Republic, Ecuador, French Guiana (**new record**), Galapagos Islands, Greater Antilles, Grenada, Guadeloupe, Guatemala, Haiti, Honduras, Lesser Antilles, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago.

Pheidole group *flavens* sp. 01

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, swamp forest, 2.234°N, –54.448°W, 5-7.III.2015.
53194-D26-5/3/2015 (5); 53214-C22-7/3/2015 (4).

DISTRIBUTION. — French Guiana.

Pheidole group *flavens* sp. 02

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, swamp forest, 2.234°N, –54.448°W, 2-5.III.2015.
50943-C30-2/3/2015 (3); 53151-D14-5/3/2015 (2); 53165-D30-5/3/2015 (3); 53165-D40-5/3/2015 (6).

DISTRIBUTION. — French Guiana.

Pheidole kukrana Wilson, 2003

Pheidole kukrana Wilson, 2003: 310.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 2.III.2015.
50942-C30-2/3/2015 (5).

DISTRIBUTION. — Neotropical Region: Costa Rica, French Guiana (**new record**), Guadeloupe, Guatemala, Nicaragua (type locality), Venezuela.

Pheidole cf. *tobini* Wilson, 2003

Pheidole tobini Wilson, 2003: 356.

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 13.X.2010.
42894-PS21-13/10/2010 (1).

DISTRIBUTION. — Native in French Guiana.

Pheidole group *tristis* (Smith, F. 1858)

Pheidole group *tristis* sp. 01

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 20.X.2010.
43082-PS34-20/10/2010 (1).

DISTRIBUTION. — French Guiana.

Pheidole group *tristis* sp. 02

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 14-16.X.2010.
42914-PS13-14/10/2010 (1); 42993-PS38-16/10/2010 (1).

DISTRIBUTION. — Native in French Guiana.

Pheidole obscurior Forel, 1886

Pheidole obscurior Forel, 1886: 7.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 7.III.2015.
53212-C11-7/3/2015 (3).

DISTRIBUTION. — Neotropical Region: Argentina, Barbados, Brazil, Colombia, Costa Rica, Dominican Republic, El Salvador, French Guiana (**new record**), Guatemala (type locality), Honduras, Mexico, Nicaragua, Paraguay, Puerto Rico, Trinidad and Tobago, Venezuela.

Pheidole pepo Wilson, 2003

Pheidole pepo Wilson, 2003: 730.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 2.III.2015.
53168-C26-2/3/2015 (1).

DISTRIBUTION. — Neotropical Region: Colombia (type locality), French Guiana (**new record**).

Pheidole transversostriata Mayr, 1887

Pheidole transversostriata Mayr, 1887: 584.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, swamp forest, 2.234°N, –54.448°W, 27.II- 5.III.2015.
50952-C12-27/2/2015 (20); 50953-C12-27/2/2015 (2); 50970-C09-3/3/2015 (1); 53152-D15-5/3/2015 (12).

DISTRIBUTION. — Neotropical Region: Barbados, Brazil, Colombia, French Guiana, Guyana (type locality), Suriname, Trinidad and Tobago, Venezuela.

Pheidole tristops Wilson, 2003

Pheidole tristops Wilson, 2003: 770.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 3.III.2015.
53135-C04-3/3/2015 (3).

DISTRIBUTION. — Neotropical Region: Colombia (type locality), French Guiana (**new record**).

Genus *Strumigenys* Smith F., 1860

Strumigenys sp. 01

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 13.X.2010.
42877-PS04-13/10/2010 (1).

DISTRIBUTION. — French Guiana.

Wasmannia auropunctata (Roger, 1863)

Tetramorium auropunctatum Roger, 1863: 182.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 3.III.2015. 53131-C21-3/3/2015 (7).

DISTRIBUTION. — Afrotropical Region: Cameroun, Gabon, Sierra Leone. Australasian Region: Australia, New Caledonia. Indo-Australian Region: Hawaii, Solomon Islands, Vanuatu. Nearctic Region: Canada, United States. Neotropical Region: Antigua and Barbuda, Argentina, Aruba, Barbados, Belize, Bermuda, Bolivia, Brazil, Colombia, Costa Rica, Cuba (type locality), Dominican Republic, Ecuador, French Guiana, Galapagos Islands, Grenada, Guadeloupe, Guatemala, Haiti, Honduras, Lesser Antilles, Mexico, Netherlands Antilles, Panama, Paraguay, Peru, Puerto Rico, Saint Lucia, Uruguay, Venezuela. Palaearctic Region: Israel, Spain.

Wasmannia rochai Forel, 1912

Wasmannia rochai Forel, 1912: 1. 50958-C27-2/3/2015 (3)

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 13-19.X.2010. 42897-PS23-13/10/2010 (1); 42925-PS24-14/10/2010 (1); 43020-PS24-19/10/2010 (1); 43021-PS24-19/10/2010 (1).

DISTRIBUTION. — Neotropical Region: Argentina, Brazil (type locality), Costa Rica, Ecuador, French Guiana, Guatemala, Guyana, Mexico, Panama, Suriname, Trinidad and Tobago, Venezuela.

Tribe CREMATOGASTRINI Lund, 1831
Genus *Crematogaster* Lund, 1831

Crematogaster brasiliensis Mayr, 1878

Crematogaster brasiliensis Mayr, 1878: 875.

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 13-20.X.2010. 42875-PS02-13/10/2010 (1); 42876-PS03-13/10/2010 (1); 42879-PS06-13/10/2010 (1); 42884-PS11-13/10/2010 (1); 42886-PS13-13/10/2010 (1); 42899-PS26-13/10/2010 (1); 42904-PS03-14/10/2010 (1); 42905-PS04-14/10/2010 (1); 42907-PS06-14/10/2010 (1); 42944-PS06-15/10/2010 (1); 42951-PS09-15/10/2010 (1); 42988-PS33-16/10/2010 (1); 42990-PS35-16/10/2010 (1); 42992-PS37-16/10/2010 (1); 42995-PS40-16/10/2010 (1); 43024-PS26-19/10/2010 (1); 43032-PS43-20/10/2010 (1); 43033-PS42-20/10/2010 (1); 43075-PS38-20/10/2010 (1); 43076-PS38-20/10/2010 (1); 43082-PS34-20/10/2010 (1); 43093-PS43-20/10/2010 (1).

DISTRIBUTION. — Neotropical Region: Bolivia, Brazil (type locality), Colombia, Costa Rica, Ecuador, Frecnh Guiana, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, Trinidad and Tobago.

Crematogaster curvispinosa Mayr, 1862

Crematogaster curvispinosa Mayr, 1862: 768.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", swamp forest, 2.234°N, –54.448°W, 5.III.2015. 53146-D08-5/3/2015 (2); 53155-D18-5/3/2015 (28); 53156-D19-5/3/2015 (7)

DISTRIBUTION. — Neotropical Region: Argentina, Barbados, Bolivia, Brazil (type locality), Colombia, Costa Rica, Ecuador, French Guiana, Galapagos Islands, Grenada, Guadeloupe, Guatemala, Guyana, Honduras, Lesser Antilles, Martinique, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Uruguay, Venezuela.

Crematogaster erecta Mayr, 1866

Crematogaster erecta Mayr, 1866: 902.

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 13-21.X.2010. 42877-PS04-13/10/2010 (1); 42903-PS02-14/10/2010 (1); 42905-PS04-14/10/2010 (1); 42935-PS02-15/10/2010 (1); 42936-PS02-15/10/2010 (1); 42937-PS02-15/10/2010 (1); 42939-PS04-15/10/2010 (1); 42940-PS04-15/10/2010 (1); 42947-PS07-15/10/2010 (1); 42948-PS09-15/10/2010 (1); 42949-PS09-15/10/2010 (1); 42950-PS09-15/10/2010 (1); 43016-PS21-19/10/2010 (1); 43051-PS21-20/10/2010 (1); 43052-PS21-21/10/2010 (1); 43072-PS40-20/10/2010 (1); 43074-PS39-20/10/2010 (1); 43093-PS43-20/10/2010 (1); 43099-PS40-20/10/2010 (1); 43100-PS40-20/10/2010 (1); 93101-PS39-20/10/2010 (1).

DISTRIBUTION. — Neotropical Region: Brazil, Colombia, Costa Rica (type locality), Ecuador, French Guiana, Guyana, Mexico, Panama, Peru, Suriname.

Crematogaster levior Longino, 2003

Crematogaster levior Longino, 2003: 132.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, swamp forest, 2.234°N, –54.448°W, 27.II-7.III.2015. 50950-C14-27/2/2015 (13); 50957-C08-2/3/2015 (3); 53129-C19-3/3/2015 (10); 53130-C22-7/3/2015 (7); 53134-C25-7/3/2015 (16); 53141-D01-5/3/2015 (6); 53143-D04-5/3/2015 (4); 53147-D09-5/3/2015 (2); 53154-D17-5/3/2015 (5); 53161-D23-5/3/2015 (2); 53162-D22-5/3/2015 (4); 53171-C28-2/3/2015 (1); 53191-D27-5/3/2015 (3); 53192-D25-5/3/2015 (1).

DISTRIBUTION. — Neotropical Region: Bolivia, Brazil (type locality), Colombia, Ecuador, French Guiana, Guyana, Peru, Suriname, Venezuela.

Crematogaster limata Smith F., 1858

Crematogaster limatus Smith F., 1858: 139.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 2.III.2015, Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 16-20.X.2010. 53137-C05-2/3/2015 (4). 42987-PS32-16/10/2010 (1); 42999-PS44-16/10/2010 (1); 43000-PS45-16/10/2010 (1); 43002-PS47-16/10/2010 (1); 43023-PS27-19/10/2010 (1); 43031-PS44-20/10/2010 (1); 43063-PS27-19/10/2010 (1).

DISTRIBUTION. — Neotropical Region: Bolivia, Brazil (type locality), Colombia, Costa Rica, Ecuador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Peru, Trinidad and Tobago, Venezuela.

Crematogaster longispina Emery, 1890

Crematogaster longispina Emery, 1890: 53.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 7.III.2015.
53139-C09-7/3/2015 (10).

DISTRIBUTION. — Neotropical Region: Colombia, Costa Rica (type locality), Ecuador, French Guiana, Guyana, Nicaragua, Peru, Suriname.

Crematogaster tenuicula Forel, 1904

Crematogaster tenuicula Forel, 1904: 36.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, swamp forest, 2.234°N, –54.448°W, 27.II-7.III.2015, Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 16-20.X.2010.
50944-C01-27/2/2015 (28); 50963-C01-1/3/2015 (7); 50964-C02-1/3/2015 (5); 50965-C02-1/3/2015 (28); 50969-C08-2/3/2015 (4); 50973-C03-1/3/2015 (1); 53128-C18-3/3/2015 (1); 53136-C04-2/3/2015 (1); 53138-C06-2/3/2015 (1); 53142-D02-5/3/2015 (4); 53145-D07-5/3/2015 (3); 53153-D16-5/3/2015 (10); 53159-D29-5/3/2015 (5); 53169-C26-2/3/2015 (8); 53170-C27-2/3/2015 (8); 53172-C28-2/3/2015 (2); 53175-C29-2/3/2015 (1); 53208-C24-7/3/2015 (32); 53211-C25-7/3/2015 (14).
42881-PS08-13/10/2010 (1); 42898-PS24-13/10/2010 (1); 42901-PS28-13/10/2010 (1); 42927-PS26-14/10/2010 (1); 42985-PS30-16/10/2010 (1); 42989-PS34-16/10/2010 (1); 42993-PS38-16/10/2010 (1); 42997-PS42-16/10/2010 (1); 43078-PS35-20/10/2010 (1); 43091-PS30-20/10/2010 (1).

DISTRIBUTION. — Neotropical region: Costa Rica to Amazonian Brazil (including French Guiana), Bolivia.

Tribe SOLENOPSIDINI Forel, 1893
Genus *Megalomyrmex* Forel, 1885

Megalomyrmex leoninus Forel, 1885

Megalomyrmex leoninus Forel, 1885: 372.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 27.II.2015.
50949-C15-27/2/2015 (6).

DISTRIBUTION. — Neotropical Region: Brazil, Colombia (type locality), Ecuador, French Guiana, Guyana, Suriname, Trinidad and Tobago, Venezuela.

Genus *Monomorium* Mayr, 1855

Monomorium floricola (Jerdon, 1851)

Atta floricola Jerdon, 1851: 107.

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 15.X.2010.
42931-PS01-15/10/2010 (1).

DISTRIBUTION. — Afrotropical Region: Cameroun, Comoros, Ghana, Nigeria, Togo, United Republic of Tanzania. Australasian Region: Australia, New Caledonia, Norfolk Island. Indo-Australian Region: Borneo, Cook Islands, Fiji, French Polynesia, Guam, Hawaii, Indonesia, Kiribati, Krakatau Islands, Malaysia, Marshall Islands, Micronesia (Federated States of), New Guinea, Niue, Northern Mariana Islands, Palau, Philippines, Samoa, Solomon Islands, Tokelau, Tonga, Vanuatu, Wallis and Futuna Islands. Malagasy Region: Mauritius, Mayotte, Réunion, Seychelles. Nearctic Region: United States. Neotropical Region: Anguilla, Bahamas, Barbados, Brazil, Cayman Islands, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, French Guiana, Galapagos Islands, Greater Antilles, Grenada, Guadeloupe, Guatemala, Guyana, Haiti, Lesser Antilles, Mexico, Paraguay, Puerto Rico, Suriname, Trinidad and Tobago. Oriental Region: India (type locality), Laos, Nicobar Island, Sri Lanka, Thailand, Vietnam. Palaearctic Region: China, Japan, Republic of Korea, United Kingdom of Great Britain and Northern Ireland. Exotic to French Guiana.

Genus *Rogeria* Emery, 1894

Rogeria subarmata (Kempf, 1961)

Irogera subarmata Kempf, 1961: 438.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 2.III.2015.
53171-C28-2/3/2015 (3).

DISTRIBUTION. — Neotropical Region: Brazil (type locality), Ecuador, French Guiana, Venezuela.

Genus *Solenopsis* Westwood, 1840

Solenopsis sp. 01

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 27.II- 2.III.2015.
53171-C28-2/3/2015 (3); 50951-C14-27/2/2015 (15); 50954-C12-27/2/2015 (46); 50955-C12-27/2/2015 (10); 50962-C08-2/3/2015 (1); 50968-C06-2/3/2015 (5).

DISTRIBUTION. — French Guiana.

Solenopsis sp. 02

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", swamp forest, 2.234°N, –54.448°W, 5.III.2015.
53151-D14-5/3/2015 (6).

DISTRIBUTION. — French Guiana.

Solenopsis sp. 03

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 3.III.2015.
50980-C16-3/3/2015 (1); 53132-C21-3/3/2015 (6).

DISTRIBUTION. — French Guiana.

Solenopsis sp. 04

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 2-7.III.2015.

50960-C21-3/3/2015 (8); 53175-C29-2/3/2015 (30); 53206-C11-7/3/2015 (2); 53210-C21-3/3/2015 (1).

DISTRIBUTION. — French Guiana.

Solenopsis sp. 05

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 16-20.X.2010.
42986-PS31-16/10/2010 (1); 43028-PS45-19/10/2010 (1); 43081-PS29-20/10/2010 (1).

DISTRIBUTION. — French Guiana.

Solenopsis sp. 06

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 13-20.X.2010.
42898-PS25-13/10/2010 (1); 42912-PS11-14/10/2010 (1); 42926-PS25-14/10/2010 (1); 42984-PS29-16/10/2010 (1); 43087-PS31-20/10/2010 (1).

DISTRIBUTION. — French Guiana.

Subfamily PONERINAE, Lepeletier de Saint-Fargeau, 1835
Tribe PONERINI, Lepeletier de Saint-Fargeau, 1835
Genus *Neoponera* Emery, 1901

Neoponera apicalis (Latreille, 1802)

Formica apicalis Latreille, 1802: 204.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", swamp forest, 2.234°N, –54.448°W, 5.III.2015.
53160-D24-5/3/2015 (1).

DISTRIBUTION. — Neotropical Region: Belize, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, French Guiana, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Peru, Suriname, Trinidad and Tobago, Venezuela.

Neoponera villosa (Fabricius, 1804)

Formica villosa Fabricius, 1804: 409.

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 13.X.2010.
42897-PS23-13/10/2010 (1).

DISTRIBUTION. — Nearctic Region: United States. Neotropical Region: Argentina, Belize, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, El Salvador, French Guiana, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Suriname, Trinidad and Tobago, Venezuela.

Neoponera commutata (Roger, 1860)

Ponera commutata Roger, 1860: 311.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", plateau forest, 2.233°N, –54.444°W, 2.III.2015.
53167-C01-2/3/2015 (2); 53167-C26-2/3/2015 (2).

DISTRIBUTION. — Neotropical Region: Brazil, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Suriname.

Genus *Odontomachus* Latreille, 1804

Odontomachus haematodus (Linnaeus, 1758)

Formica haematoda Linnaeus, 1758: 582.

MATERIAL EXAMINED. — **French Guiana.** Mitaraka, "Our Planet Reviewed", swamp forest, 2.234°N, –54.448°W, 5.III.2015.
53149-D11-5/3/2015 (2).

DISTRIBUTION. — Nearctic Region: United States. Neotropical Region: Argentina, Bahamas, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, French Guiana, Greater Antilles, Grenada, Guadeloupe, Guatemala, Guyana, Honduras, Lesser Antilles, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago, Venezuela. Palaearctic Region: China.

Subfamily PSEUDOMYRMECINAE Smith F., 1852
Genus *Pseudomyrmex* Lund, 1831

Pseudomyrmex faber (Smith F., 1858)

Pseudomyrma faber Smith F., 1858: 157.

MATERIAL EXAMINED. — **French Guiana.** Petit Saut dam, Zone de relâcher, 5.068°N, –52.980°W, 13-15.X.2010.
42875-PS02-13/10/2010 (1); 42930-PS01-15/10/2010 (1).

DISTRIBUTION. — Neotropical Region: Brazil (type locality), Colombia, Costa Rica, Ecuador, French Guiana, Guyana, Panama, Suriname.