



## Diversity of edible caterpillars and their host plants in the Republic of the Congo

Germain Mabossy-Mobouna<sup>1,2</sup>, Justin B. Ombeni<sup>3,4</sup>, Thierry Bouyer<sup>5</sup>, Paul Latham<sup>6</sup>, Frank Bisaux<sup>7</sup>, Evelyne Bocquet<sup>8</sup>, Bertie Brinck<sup>9</sup>, Augustin Konda Ku Mbuta<sup>10</sup>, Françoise Madamo-Malasi<sup>11</sup>, Louisa Nkulu Ngoie<sup>12</sup>, Paule Pamela Tabi Ekebil<sup>13</sup> & François Malaisse<sup>14,15</sup>

<sup>1</sup> Teacher-Researcher, Laboratoire de Nutrition et d'Alimentation Humaines, Faculté des Sciences et Techniques, Université Marien Nguabi, Congo Brazzaville.

<sup>2</sup> Unité de Recherche Nutrition, Santé et Motricité Humaine, Institut Supérieur d'Education Physique et Sportive, Université Marien Nguabi, Congo Brazzaville.

<sup>3</sup> Teacher-Researcher, Département de Nutrition et Diététique, Institut Supérieur de Techniques Médicales de Bukavu, Sud Kivu, R.D. Congo

<sup>4</sup> Laboratoire d'Entomologie, Centre de Recherche en Sciences Naturelles de Lwiro, CRSN, Bukavu, Sud-Kivu, R.D. Congo.

<sup>5</sup> Independent researcher, 57 rue Genot B 4022 Chênée, Belgium.

<sup>6</sup> Retired Officer of the Salvation Army, U.K.

<sup>7</sup> No recent contact and no email address available.

<sup>8</sup> Bioengineer in Management of Forests and Natural Areas, Gembloux Agro-Bio Tech, Université de Liège, Centre d'Enseignement et de Recherche Terra, Forest is Life, Passage des Déportés, 2, B-5030, Gembloux (Belgique).

<sup>9</sup> No recent contact and no email address available.

<sup>10</sup> Biologist, Research Institut in Health Sciences (I.R.S.S.), Kinshasa, D.R. Congo.

<sup>11</sup> Laboratoire d'Entomologie fonctionnelle et évolutive, Gembloux Agro-Bio Tech, Liège University, Belgium.

<sup>12</sup> Manager of a farm at Kafindo village in the vicinity of Lubumbashi, Democratic Republic of Congo.

<sup>13</sup> Research Assistant, CIFOR-ICRAF, Value Chain Finance and Investments (VFI) Team, CIFOR-ICRAF, Yaoundé-Cameroon.

<sup>14</sup> Professor emeritus, Biodiversity and Landscape Unit, Gembloux Agro-Bio Tech, Liège University, Belgium.

<sup>15</sup> Meise Botanical Garden, Belgium.

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\*Corresponding author: Dr. G. Mabossy-Mobouna, E-mail: [bossyls@yahoo.fr](mailto:bossyls@yahoo.fr)

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### ABSTRACT

A systematic study of edible caterpillars and their host plants was carried out in different departments and localities of the Republic of the Congo. Twenty-nine (29) species of edible caterpillars were identified, of which 22 were determined to species level, i.e., namely 75.9 % of the species collected. The dominance of the Saturniidae and Notodontidae taxonomic families was established. The botanical study of the hosting plants revealed 90 plant species, belonging to 26 botanical families. The Fabaceae family was predominant (with a total of 33 species or 36.7% out of 90), followed by the Phyllanthaceae family (11,1%). Climate change could likely cause a light decrease of the host plants population by the year 2050. This information aims to guide conservation efforts and ensure sustainable use of edible caterpillars as food. It is recommended to particularly focus on the promotion of semi-domestication of edible caterpillars and awareness raising on cultivation techniques of host plants.

**Keywords:** campeophagy, edible caterpillar, host plant, feeding, Republic of the Congo.

## Diversité des chenilles comestibles et de leurs plantes hôtes en République du Congo

Une étude systématique des chenilles comestibles et de leurs plantes hôtes a été réalisée dans différents départements et localités de la République du Congo. Vingt-neuf (29) espèces de chenilles comestibles ont été identifiées, dont 22 ont été déterminés jusqu'au niveau de l'espèce, soit 75,9% des espèces récoltées. La dominance de la famille des Saturniidae et de celle des Notodontidae a été établie. L'étude floristique a mis en évidence 90 espèces hôtes des chenilles, appartenant à 26 familles botaniques dont la plupart sont des arbres avec la prédominance de la famille des Fabaceae (36,7%), suivie de la famille des Phyllanthaceae (11,1%). Cependant, le changement climatique pourrait entraîner une légère diminution de leur population d'ici 2050. Ces informations permettront de guider les efforts de conservation et d'assurer une utilisation durable des chenilles comestibles comme nourriture. Les efforts de gestion future pourraient être axés sur la promotion de la semi-domestication des chenilles comestibles et la sensibilisation aux techniques de culture des arbres hôtes.

**Mots-clés :** campeophagie, chenille comestible, plante hôte, alimentation, République du Congo.

## INTRODUCTION

Human and animal consumption of insects has taken a growing importance in recent years. This is shown by, among others, the creation of the journal « *Journal of Insects as Food and Feed* » in 2015, the publication by Jongema (2017) of a list of insects consumed by humans and also the consideration concerning “the evolving terminology of Entomophagy” published by Evans et al. (2015).

Like other immature stages of *Lepidoptera*, caterpillars need plants, often trees, to feed themselves. For example, a recent study from southern Democratic Republic of Congo (DRC) showed that nine edible caterpillars were hosted by 26 plant species (Bomolo et al., 2017), but 35 edible caterpillars were listed in a former publication concerning the same area, namely High Katanga, hosted by 38 plant species (Malaisse, 2010)! In northern Zambia, *Gonimbrasia zambesina* and *Gynanisa maja* were found on 11 host plants (Chidumayo and Mbata, 2002), but earlier Demesmaecker (1997) provides more information!

With 90 host plants, management takes different aspects. Just as an example, in some areas, logging reduces the number of large trees of high value timber species such as *Erythrophleum suaveolens* or *Entandrophragma cylindricum*. Noutcheu et al. (2016) and Muvatsi et al. (2018) have shown that large trees yield larger quantities of edible caterpillars than trees below the minimum legal logging size. Logging could then have a negative impact on the availability of edible caterpillars.

In addition to that, some host tree species could be promoted in agroforestry or forest reforestation programs, so that local communities can benefit from both caterpillars and timber (e.g., Muvundja et al., 2013). However, no in-depth study on edible caterpillars and their host plants including departments of the Republic of the Congo had been conducted until now. It is this gap that this first paper on campeophagy in the Republic of the Congo aims to fill.

Indeed, in the Republic of the Congo, studies concerning campeophagy refer only to two Departments : the Brazzaville Department and the Pool (Merle, 1958 ; Bascoulerges and Bergot, 1959 ; Paulian, 1963 ; Jacquot, 1978 ; Nkouka, 1987 ; Bani, 1995 ; Moussa, 2002 ; Balinga et al., 2004 ; Mabossy-Mobouna et al., 2013). This paper wants to fill these gaps by giving the first comprehensive and updated information regarding caterpillar and their host plants for all the Republic

of the Congo Departments where local people are very fond of caterpillars.

## MATERIAL AND METHODS

A cross-sectional survey was carried out among the Bantu and indigenous peoples of the Cuvette-Ouest, Lékoumou, Likouala, Pool and Sangha departments in order to determine the different edible caterpillar species in these departments and to find out their campeonoms (vernacular names). The caterpillar samples were then collected in the different forest and savannah ecosystems of these departments, photographed and preserved in 70% alcohol. Lastly, the campeonoms of these samples were determined by carrying out a new cross-sectional survey among the same people. For species not collected, Latham's book (2014) was used to allow farmers to indicate edible caterpillars existing in their department.

### Study sites and period of data collection

The study has taken place in the main forest massifs (Mayombe, Chaillu and North-Congo massif) of the Republic of the Congo and in diverse savannah massifs regarding the ecological aspects and the identification of the diverse caterpillar's host plants. The field missions have taken place in the Pool, Likouala, Kouilou, Niari, Lékoumou, West-Cuvette and Sangha Departments from January to October 2015. The study has also taken place in some forest's galleries in the Pool Department (Kinkala, Louingui, Mbanza-Ndouna, Boko and Loumo) (Fig. 1). The goal was to find the eventual existence of caterpillar's host plants. The diverse missions have been scheduled taking into account the likely cadendar of the *Lepidoptera* cycles for the diverse departments of the country. Moreover, the accessibility of the site has also be an important criterion for the choice of the prospect sites.

### Sample Collection and Preparation

#### *Identification of the caterpillars*

Samples of caterpillars have been collected in the diverse forests and savannahs during the periods of their availability.

Binoculars of Omegon blackstar mark have allowed the observation from some distance of the caterpillars on the leaves of their host plants. A photo numeric apparatus of Samsung mark has allowed to take pictures of the collected specimens.

Jars covered with tulle of 2 mm diameter stitches and 70% ethanol have been used for the

conservation of the fresh caterpillars collected. Supplie pliers have allowed the delicate removal of the larvae and their placement in jars.

To determine the samples, the method has been to first consult former publications, notably from Latham (2008), Bouyer (1999) and Mabossy-Mobouna et al. (2016) and then Thierry Bouyer identified the genetic code of the sample's material provided by Germain Mabossy-Mobouna.

### Identification of the host plants

The leaves of the host plants have been collected in view of their identification, and pictures were taken for each sample collected.

The botanical families and scientific names have been determined for each host plant, some documents concerning the management background of the forest unit of Loundoungou-Toukoulaka of the CIB (*La Congolaise Industrielle de Bois*) were used (Plan d'aménagement de l'Unité Forestière d'Aménagement de Loundoungou-Toukoulaka, 2010-2044) and the help of Dr. Edmond Sylvestre Miabangana of the *Herbier National du Congo*. The vernacular names of the edible caterpillars and of their host plants have been established and ethno-zoological and ethno-botanical inquiries were conducted.



**Fig. 1.** Map showing the study sites in the Republic of the Congo: Denominations and locations explored in green colour, in addition, the markets of Brazzaville and Pointe-Noire.

### Treatment and data statistical analysis

Data processing was done using SPSS version 20 and Excel 2013 packages. Data on the number of individuals (counts) that responded to the various questions were recorded and the proportions calculated. Chi-squared test was used to compare the proportion of individuals that responded to the various questions in the different study sites. After the chi-squared analysis, data on comparison of the counts from individuals that responded affirmatively to the various aspects were presented in the form of percentages.

## RESULTS AND DISCUSSION

### Edible caterpillars in the Cuvette-Ouest Department and their hosts' plants

Table 1 indicates the names in Téké of some edible caterpillars and of their food plants.

In the *Cuvette-Ouest* Department, at least 13 caterpillar species were edible, 61.5% were *Saturniidae*, 15.4% were *Notodontidae*, 7.7% were *Erebidae* and 15.4% were not determined. Only six species were fully determined, namely *Achaea catocaloides*, *Epidonta brunneomixta*, *Imbrasia epimethea*, *Imbrasia obscura*, *Imbrasia truncata* and *Pseudantheraea discrepans*. Specific campeononyms were also attributed to those species. For the other species, the same appellation

frequently indicates several caterpillars presenting some common morphological characters.

**Table 1.** Edible caterpillars in the *Cuvette-Ouest* Department

Edible caterpillars		Host plants	
Vernacular names in Téké (Cuvette-Ouest)	Scientific names	Vernacular name in Téké (Cuvette-Ouest)	Scientific names
Ayihi	<i>Achaea catocaloides</i>	Osami or Onkama	Undetermined
Ebagnah	<i>Pseudantheraea discrepans</i>	Osengi	<i>Uapaca guineensis</i>
Ekukuma	<i>Anaphe</i> sp. ( <i>panda</i> ?)	Not obtained	
Emimangé	<i>Imbrasia truncata</i>	Osengi	<i>Uapaca guineensis</i>
Emualah	Undetermined	Omualah	<i>Psydrax</i> cf. <i>subcordata</i>
Engongoh	<i>Imbrasia obscura</i>	Okuelé	<i>Lophira alata</i>
Entsoka mbâh	Undetermined	Not obtained	
Etsirtara	<i>Imbrasia</i> sp.	Not obtained	
Evurah	<i>Epidonta brunneomixta</i>	Otokôh	<i>Milletia laurentii</i>
Inkèlè	<i>Gonimbrasia</i> spp., <i>Imbrasia</i> spp.	Not obtained	
Mbindzi	<i>Imbrasia epimethea</i>	Ombindzi	<i>Petertianthus macrocarpus</i>

For instance, all the caterpillars of the genus *Gonimbrasia* and some *Imbrasia* presenting spines are named « inkèlè ». This observation allows us to suppose that the number of caterpillars species in the *Cuvette-Ouest* Department must be higher than the thirteen suggested in the present study.

#### Edible caterpillars in the Pool and their host plants

Table 2 indicates the names in Lari of diverse edible caterpillars in the Pool and the names of their host plants.

**Table 2.** Edible caterpillars in the Pool Department

Edible caterpillars		Host plants	
Lari's Vernacular names	Scientific names	Lari's Vernacular names	Scientific names
Biléleya	<i>Epidonta</i> sp.	M'buênge	<i>Milletia eetveldeana</i>
Bimbami	<i>Imbrasia truncata</i>	M'minzu	<i>Petertianthus macrocarpus</i>
Binkele	<i>Gonimbrasia</i> spp., <i>Imbrasia</i> spp.	Mpandzu, Tigânzi, Tsihanzi	<i>Pentachletra macrophylla</i>
Kungunu	<i>Lobobumaea phaedusa</i>	Not noted	<i>Dacryodes edulis</i> , <i>Mangifera indica</i>
Mabilu	<i>Achaea catocaloides</i>	Makala (in savannah), Mûtîti (in forest)	Not available
Mbuênge-mbuênge	<i>Epidonta</i> sp.	M'buênge	<i>Milletia eetveldeana</i>
Mihuka	<i>Imbrasia epimethea</i>	M'huka, M'minzu	<i>Petertianthus macrocarpus</i>
Mimpemba	<i>Imbrasia</i> sp.	Kasa-kasa	<i>Albizia ferruginea</i>
Mitoko	<i>Coeliades libeion</i>	N'toko	<i>Milletia laurentii</i>
Mitsina	<i>Haplozana nigrolineata</i>	Not noted	<i>Eriosema glomeratum</i> , <i>E. psoraleoides</i>
Mpuâmpuala	<i>Cirina forda</i>	M'wala Mumpalambaki or Mpuâmpuala	<i>Crosopteryx febrifuga</i>
Ngântsua	Undetermined	Mungântsua	<i>Psydrax arnoldiana</i>
Ntsèlèlè	Undetermined	Not noted	<i>Cyclosorus goggilodus</i> f. <i>paucipilosus</i>
Ntsongo-ntsongo	<i>Epidonta brunneomixta</i>	M'tubungu	Undetermined
Ntubungu	<i>Epidonta</i> sp.	M'tubungu	Undetermined



Table 2 indicates that, at least, 18 species of caterpillars were consumed in the Pool Department. Importance of the different families in decreasing order were *Saturniidae* (50%), *Notodontidae* (33.2%); *Erebidae* and *Hesperidae* represent each only 5.6%, while 5.6% are not determined. These species have a specific campeonyme each, with the exception of the caterpillars bearing spines (as is the case with *Gonimbrasia melanops*, *Imbrasia*

*obscura* and *Pseudantheraea discrepans*), which were all named « binkele ».

### Edible caterpillars in the Sangha and the Likouala and their host plants

Table 3 indicates the edible caterpillars and their host plants in the Sangha and Likouala Departments.

**Table 3.** Host plants of edible caterpillars in the Sangha and Likouala Departments

Edible caterpillars		Host plants	
Mbèndjèlè and Baaka's (Indigenous) Vernacular names	Scientific names	Mbèndjèlè and Baaka's (Indigenous) Vernacular names	Scientific names
Bambanga	<i>Imbrasia truncata</i>	Bobinzo (Bôssô)	<i>Petersianthus macrocarpus</i>
Bambanga	<i>Imbrasia truncata</i>	Molinda (Lati)	<i>Amphimas ferrugineus</i> , <i>A. pterocarpoides</i>
Bambanga	<i>Imbrasia truncata</i>	Mosengi	<i>Uapaca guineensis</i>
Bangondotula	<i>Elaphrodes aff. lactea</i>	Ebongo (Wengé)	<i>Millettia laurentii</i>
Bangondotula	<i>Elaphrodes aff. lactea</i>	Mokungu	<i>Piptadeniatrum africanum</i>
Boyo or Mboyo	<i>Gonimbrasia melanops</i>	Sapelli	<i>Entandrophragma cylindricum</i>
Kanga or Mbonah	<i>Pseudantheraea discrepans</i>	Kosipo	<i>Entandrophragma candollei</i>
Kanga or Mbonah	<i>Pseudantheraea discrepans</i>	Niové (Molangah)	<i>Staudtia kamerunensis</i>
Kènènè or Gènègènè	<i>Imbrasia obscura</i>	Engboyo (Eyong)	<i>Eribroma oblongum</i>
Kènènè or Gènègènè	<i>Imbrasia obscura</i>	Lepumbâh	<i>Macaranga spinosa</i>
Kènènè or Gènègènè	<i>Imbrasia obscura</i>	Mokolè (Azobé)	<i>Lophira alata</i>
Kuluka or Sunga	<i>Imbrasia epimethea</i>	Bôssô (Essia)	<i>Petersianthus macrocarpus</i>
Kuluka or Sunga	<i>Imbrasia epimethea</i>	Essessang	<i>Ricinodendron heudelotii</i>
Kuluka or Sunga	<i>Imbrasia epimethea</i>	Tènguè (Ilomba)	<i>Pycnanthus angolensis</i>
Motikaliké or Nzangala	<i>Nudaurelia petiveri</i>	Essessang	<i>Ricinodendron heudelotii</i>
Motikaliké or Nzangala	<i>Nudaurelia petiveri</i>	Kombokombo	<i>Musanga cecropioides</i>
Ndosi or Gbadôh	<i>Anaphe venata</i>	Ayous	<i>Triplochyton scleroxylon</i>
Ngbanda	<i>Cirina forda</i>	Ngbanda (Tali)	<i>Erythrophleum suaveolens</i>
Susu	<i>Elaphrodes lactea</i>	Mbâmbah	<i>Albizia ferruginea</i>
Susu	<i>Elaphrodes lactea</i>	Mokungu	<i>Piptadeniastrum africanum</i>
Taku	<i>Anaphe panda</i>	Ayous	<i>Triplochyton scleroxylon</i>

Table 3 indicates that at least 11 species of caterpillars were eaten in the Sangha and Likouala Departments. 63.7% belonged to the *Saturniidae* and 36.3% to the *Notodontidae*. Seven of these species were consumed both by the indigenous people and the Bantu, and two others, namely *Elaphrodes lactea* and *Elaphrodes aff. lactea* were eaten more commonly by the indigenous people. The species *Gonimbrasia petiveri* was only eaten by orphans and called “*motikaliké*”. Finally, in those two Departments, each caterpillar had its own campeonyme.

### Edible caterpillars in the Lékoumou Department

In the Lékoumou Department, the population consumes at least 19 species of caterpillars. The predominance was taken by the *Saturniidae* family with 57.8%, followed up by the *Notodontidae* (26.3%). Here, a same campeonyme may correspond to several species having some common characteristics (Table 4).

### Edible caterpillars, in Congo-Brazzaville, and their host plants (data synthesis)

The number of edible caterpillars was different from one Department to another, with the bigger number

in the Lékoumou Department, with species of both forest and savannah. It is then followed by the Pool Department which also presented caterpillars of the

two main vegetation units. Sangha and Likouala Departement come in third position with caterpillars of the forest vegetation type (Table 5).

**Table 4.** Host plants of edible caterpillars in the Lékoumou Department

Edible caterpillars		Host plants	
Vernacular names in Téké	Scientific names	Vernacular names in Téké	Scientific names
Babili	<i>Achaea catocaloides</i>	Not available	Not available
Batôh	<i>Coeliades libeon</i>	Motôh	<i>Millettia laurentii</i>
Batsini	<i>Haplozana nigrolineata</i>	Not available	<i>Eriosema glomerata</i>
Batsini	<i>Haplozana nigrolineata</i>	Not available	<i>Eriosema psorealoides</i>
Benkûbu	<i>Anaphe</i> sp.	Not available	<i>Bridelia micrantha</i>
Butu ya ebalah	<i>Epidonta</i> sp.	Not available	Not available
Butu ya nènèh	<i>Epidonta</i> sp.	Not available	Not available
Butu ya ngèhènèh	<i>Epidonta brunneomixta</i>	Not available	Not available
Embah	<i>Imbrasia truncata</i>	Mosama	<i>Uapaca guineensis</i>
Enkakah	<i>Platysphinx cf stigmatica</i>	Malombo	<i>Landolphia</i> sp.
Etobo étama	<i>Gonimbrasia melanops</i>	Mowé	<i>Entandrophragma cylindricum</i>
Mayulbatsié	<i>Imbrasia obscura</i>	Mosama	Undetermined
Mbaah	<i>Lobobunaea phaedusa</i>	Not available	<i>Dacryodes utilis</i>
Mbaah	<i>Lobobunaea phaedusa</i>	Not available	<i>Mangifera indica</i>
Mobii	<i>Imbrasia epimethea</i>	Mobii	<i>Peterianthus macrocarpus</i>
Montsènè	<i>Pseudantheraea discrepans</i>	Mosama	<i>Uapaca guineensis</i>
Mpampala (in savannah)	<i>Cirina forda</i>	Mowala	<i>Crossopteryx febrifuga</i>
Mpôsô	<i>Bunaea alcinoe</i>	Not available	Not available
Mpôsô	<i>Gonimbrasia alopia</i>	Not available	Not available
Mpôsô	<i>Gonimbrasia anthinoides</i>	Not available	Not available
Ndzandzaka (in forest)	<i>Cirina forda</i>	Monkesa, Moyaba	Undetermined
Nkankah	<i>Gonimbrasia eblis</i>	Not available	Not available

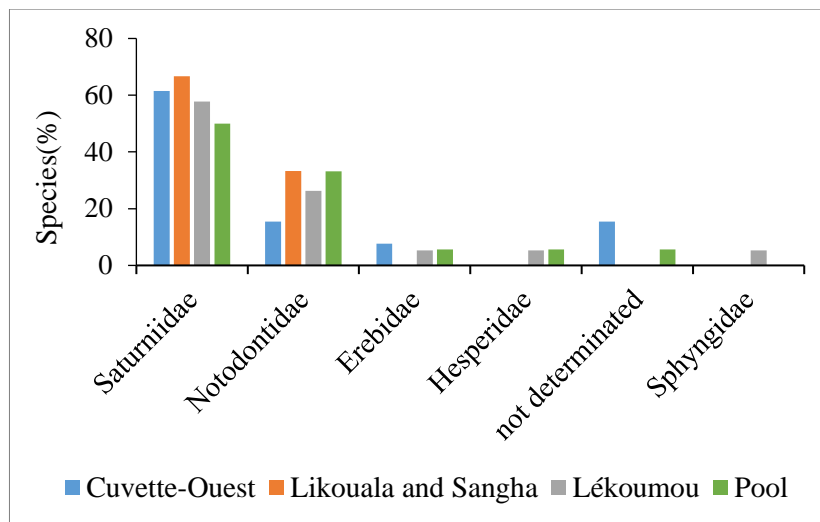
Some species were eaten only in the North of the country. It was the case of *Elaphrodes lactea* and *Gonimbraia petiveri*. Other caterpillars such as *Gonimbrasia alopia*, *Bunaea alcinoe*, *Gonimbrasia anthonoides*, *Gonimbrasia eblis* and *Lobobunaea phaedusa* are only eaten in the Southern part of the country. However, seven species were eaten in the whole country, namely *Anaphe* sp., *Gonimbrasia melanops*, *Imbrasia epimethea*, *Imbrasia forda*, *Imbrasia obscura*, *Imbraia truncata* and *Pseudantheraea discrepans*.

Twenty-nine (29) different taxa were collected, of which 22 have been determined to the species level, which represented 75.9% of the collected species (Table 5). Amongst the 29 taxa, 26 belong to five following families: *Erebidae*, *Hesperidae*, *Notodontidae*, *Saturniidae* and *Sphingidae* (figure 2); only three taxa families were not identified. The *Saturniidae* family was the most represented with 13 species (44.8%). In second position was the *Notodontidae* family with ten species, (34.5%); and the remaining families concerned only 20.7 %. These observations are in line with data compiled by Latham (2008). Indeed,

Latham in a study concerning the edible caterpillars of Bas-Congo indicates 38 taxa belonging to the *Saturniidae*, followed by the *Notodontidae*.

The same observation was done by Okangola et al. (2016) in the Kisangani town and its environments, by Balinga et al. (2004) in the Ngotto forest of Central Africa Republic, by Latham (2015) in the Bas-Congo Province of DRC, by Meutchieye et al. (2016), Noutcheu et al. (2016) and Ngute et al. (2019) for Cameroon. Moreover, the *Saturniidae* predominated in the area of dense forests and the *Notodontidae* in the savannah area.

Regarding the number of species, the results of this study amount nearly the double of the values pointed out by Balinga et al. (2004), Moussa (2002), Bani (1995) and recently by Meutchieye et al. (2016), Noutcheu et al. (2016 and Ngute et al. (2019) in Central Cameroon, but the number of species is very lower compared to those pointed out by Roulon-Doko (1998) for CAR (59 species), by Latham (2004) for Lower-Congo (38 species) and by Malaisse (2004) for the Bemba of Katanga (40 species).



**Fig. 2.** Proportions of edible caterpillar species per family and per Department

**Table 5.** Synthetic table of the edible caterpillars of the Republic of the Congo and their host plants

Num-ber	Edible caterpillars / Scientific name	Edible caterpillars / Family	Host plants Scientific name	Host plants Botanical family (Sub-family)
1	<i>Achaea catocaloides</i>	Erebidae	<i>Racosperma auriculiforme</i> (Benth.) Pedley	Fabaceae (Mimosoioideae)
2	<i>Anaphe panda</i>	Notodontidae	<i>Triplochyton scleroxylon</i> K.Schum.	Malvaceae (Sterculioideae)
3	<i>Anaphe venata</i>	Notodontidae	<i>Sterculia tragacantha</i> Lindl.	Malvaceae (Sterculioideae)
3	<i>Anaphe venata</i>	Notodontidae	<i>Triplochyton scleroxylon</i> Lindl.	Malvaceae (Sterculioideae)
4	<i>Bunaea alcinoe</i>	Saturniidae	<i>Crossopteryx febrifuga</i> (Afzel. ex G.Don.) Benth.	Rubiaceae
5a	<i>Cirina forda</i> (in forestry vegetation)	Saturniidae	<i>Crossopteryx febrifuga</i> (Afzel. ex G.Don.) Benth.	Rubiaceae
5b	<i>Cirina forda</i> (in savannah vegetation)	Saturniidae	<i>Erythrophleum uaveolens</i> (Guill. & Perr.) Brenan	Fabaceae (Caesalpinioideae)
6	<i>Coeliades libeon</i>	Hesperidae	<i>Millettia laurentii</i> De Wild.	Fabaceae (Faboideae)
7	<i>Elaphrodes lactea</i>	Notodontidae	<i>Piptadeniatrum africanum</i> (Hook.f.) Brenan	Fabaceae (Faboideae)
8	<i>Elaphrodes cf. lactea</i>	Notodontidae	<i>Millettia laurentii</i> De Wild.	Fabaceae (Faboideae)
8	<i>Elaphrodes cf. lactea</i>	Notodontidae	<i>Piptadeniatrum africanum</i> (Hook.f.) Brenan	Fabaceae (Faboideae)
8	<i>Elaphrodes cf. lactea</i>	Notodontidae	<i>Piptadeniatrum africanum</i> (Hook.f.) Brenan	Fabaceae (Faboideae)

9	<i>Epidonta brunneomixta</i>	Notodontidae	<i>Millettia laurentii</i> De Wild.	Fabaceae (Faboideae)
10	<i>Epidonta</i> sp. 1	Notodontidae	<i>Millettia laurentii</i> De Wild.	Fabaceae (Faboideae)
11	<i>Epidonta</i> sp. 2	Notodontidae	<i>Millettia laurentii</i> De Wild.	Fabaceae (Faboideae)
12	<i>Epidonta</i> sp. 3	Notodontidae	<i>Millettia laurentii</i> De Wild.	Fabaceae (Faboideae)
13	<i>Gonimbrasia alopia</i>	Saturniidae	<i>Albizia ferruginea alboviolaceum</i> (Ridl.) K.Schum	Fabaceae (Mimosoideae)
13	<i>Gonimbrasia alopia</i>	Saturniidae	<i>Entandrophragma candollei</i> Harms	Meliaceae
14	<i>Gonimbrasia anthinoides</i>	Saturniidae	<i>Aframomum alboviolaceum</i> (Ridl.) K.Schum	Zingiberaceae
15	<i>Gonimbrasia eblis</i>	Saturniidae	<i>Caetocarpus africanus</i> Pax	Phyllanthaceae
15	<i>Gonimbrasia eblis</i>	Saturniidae	<i>Mangifera indica</i> L.	Anacardiaceae
16	<i>Gonimbrasia melanops</i>	Saturniidae	<i>Entandrophragma cylindricum</i> (Sprague) Sprague	Meliaceae
17	<i>Haplozana migrolineata</i>	Notodontidae	<i>Eriosema glomeratum</i> (Guill. & Perr.) Hook.f.	Fabaceae (Faboideae)
17	<i>Haplozana migrolineata</i>	Notodontidae	<i>Eriosema psoraleoides</i> (Lam.) G.Don	Fabaceae (Faboideae)
18	<i>Imbrasia epimethea</i>	Saturniidae	<i>Petersianthus marocarpus</i> (P.Beauv.) Liben	Lecythidaceae
18	<i>Imbrasia epimethea</i>	Saturniidae	<i>Pycnanthus angolensis</i> (Welw.) Warb.	Myristicaceae
18	<i>Imbrasia epimethea</i>	Saturniidae	<i>Ricinodendron heudelotii</i> (Baill.) Pierre ex Peckel subsp. <i>africanum</i> (Müll.Arg.) Léonard	Euphorbiaceae
19	<i>Imbrasia obscura</i>	Saturniidae	<i>Eribroma oblongum</i> (Mat.) Bod.	Malvaceae (Sterculioideae)
20	<i>Imbrasia truncata</i>	Saturniidae	<i>Amphimas ferrugineus</i> Pierre ex Pellegrin	Fabaceae (Caesalpinoideae)
20	<i>Imbrasia truncata</i>	Saturniidae	<i>Amphimas pterocarpoides</i> Harms	Fabaceae (Caesalpinoideae)
20	<i>Imbrasia truncata</i>	Saturniidae	<i>Petertianthus macrocarpus</i> (P.Beauv.) Liben	Lecythidaceae
21	<i>Lobobunaea phaedusa</i>	Saturniidae	<i>Dacryodes edulis</i> (G.Don.) H.J.Lam.	Burseraceae
21	<i>Lobobunaea phaedusa</i>	Saturniidae	<i>Mangifera indica</i> L.	Anacardiaceae
22	<i>Nudaurelia petiveri</i>	Saturniidae	<i>Milicia excelsa</i> (Welw.) C.C.Berg.	Moraceae
22	<i>Nudaurelia petiveri</i>	Saturniidae	<i>Musanga cecropioides</i> R.BR ex Tedlie	Urticaceae
22	<i>Nudaurelia petiveri</i>	Saturniidae	<i>Ricinodendron heudelotii</i> (Baill.) Pierre ex Heckel	Euphorbiaceae



23	<i>Platysphinx</i> cf. <i>stigmatica</i>	Sphyniidae	subsp. <i>africanum</i> (Müll.Arg.) Léonard <i>Landolphia</i> sp.	Apocynaceae
24	<i>Pseudantheraea</i> <i>discrepans</i>	Saturniidae	<i>Entandrophragma</i> <i>candollei</i> Harms	Meliaceae
24	<i>Pseudantheraea</i> <i>discrepans</i>	Saturniidae	<i>Mangifera indica</i> L.	Anacardiaceae
24	<i>Pseudantheraea</i> <i>discrepans</i>	Saturniidae	<i>Spondias dulcis</i> Forst	Anacardiaceae
24	<i>Pseudantheraea</i> <i>discrepans</i>	Saturniidae	<i>Spondias mombin</i> L.	Anacardiaceae
24	<i>Pseudantheraea</i> <i>discrepans</i>	Saturniidae	<i>Staudtia kamerunensis</i> Müll.Arg.	Phyllanthaceae
24	<i>Pseudantheraea</i> <i>discrepans</i>	Saturniidae	<i>Uapaca guineensis</i> Müll.Arg.	Phyllanthaceae
25	Undetermined (« Emuali »)		<i>Psydrax</i> sp.	Rubiaceae
26	Undetermined (« Mimpemba »)	Saturniidae	<i>Albizia ferruginea</i> (Guill. & Perr.) Benth.	Fabaceae (Mimosoideae)
27	Undetermined (« Ngäntswa »)		<i>Psydrax arnoldiana</i> (De Wild. & T. Durand) Bridson	Rubiaceae
28	<i>Phalera</i> sp. (« Ntsèlèlè »)	Notodontidae	<i>Thelypteris totta</i> (Thunb.) Schelpe f. <i>paucipilosus</i> (H. Itô) C.F. Reed	Thelypteraceae
29	Undetermined (« Entsoka mbâh »)		Undetermined	

If Table 6 presents the importance of the diverse botanical families eaten by the edible caterpillars, we have very few photos concerning the diverse species. Moreover, a same edible caterpillar may consume different plant host species according to place taken into account in Africa. According to this fact, no photos of plants were presented.

Concerning the edible caterpillars quoted in the present paper several data were taken into consideration. First the distribution; either with a map of the countries where the caterpillar were observed (see below for 15 species) or with a listing of the countries. Secondly the host plants were taken into consideration; sometimes only one plant was known, most frequently several plants were quoted. On the maps: *Gonimbrasia anthinoides*, *Buanea alcinoe*, *Coeliades libeon*, *Elaphrodes lactea*, *Epanaphe carteri*, *Gonimbrasia alopia*, *Gonimbrasia melanops*, *Gonimbrasia petiveri*, *Imbrasia epimethea*, *Imbrasia forda*, *Imbrasia obscura*, *Imbrasia truncata*, *Lobobunaea phaedusa*, *Pseudantheraea discrepans* and *Spodoptera littoralis*.

We had considered the caterpillar in alphabetic order.

Thus, the first species was *Achaea catocaloides* Guenée. This species belongs to the *Erebidae* family. The presence of this species was quoted from Sierra Leone, Guinea, Liberia, Ivory Coast, Ghana, Nigeria, Gabon, Republic of the Congo, Democratic Republic of Congo, Kenya and Uganda. The life cycle was of about 40 days. A lot of damages has been published, mostly on cacao tree, but also on *Musa paradisiaca* L., *Zea mays* L. and on *Dacryodes edulis* (G.Don) H.J.Lam., *Pentacletra macrophylla* Benth., *Pentacletra eetveldeana* DeWild. & T.Durand, *Acacia auriculiformis* A.Cunn. ex Benth., *Anacardium occidentale* L., *Irvingia gabonensis* var. *excelsa* (Mildbr.) Okafo, *Manihot esculenta* Crantz, *Chrysophyllum albidum* G.Don, *Dialium guineense* Willd. and *Landolphia owariensis* P.Beauv. (Eluwa, 1977).



*Achaea catocaloides* © Augustin Konda Ku Mbuta, Photo taken at Kinkeso, surrounding Kisantu, Democratic Republic of Congo (4°37'S, 15°06'E, altitude 525 m) on 14<sup>th</sup> May 2016.

The second species was *Anaphe panda* (Boisduval, 1847) (*Notodontidae* family). The species was quoted from Gambia, Nigeria, Cameroon, Equatorial Guinea, Ethiopia, Kenya, Uganda, Tanzania, Republic of the Congo, Democratic Republic of Congo, Rwanda, Angola, Zambia, Zimbabwe, Mozambique and South Africa Republic. Vernacular names in local languages are notably « ayos » in Pomo language, « ayus » in Bomwali language, « benkûbû » in Western Téké language, « gbadôh » in Monzombo language and « ndolosi » in Bomitaba language. Three host species have been quoted, namely *Bridelia micrantha* (Hochst.) Baill., *Sterculia tragacantha* Lindl. and *Triplochyton scleroxyton* K.Schum.



*Anaphe panda* © Paul Latham, Photos taken at Kinsambi village, Democratic Republic of Congo on 19<sup>th</sup> November 1996.



*Anaphe panda* © Françoise Madamo-Malasi, Photo taken at Ngudi Mpiamo in the sector of Kidzwene, Bagata. Territory, Democratic Republic of Congo (3°44'S, 17°58'E), on 30<sup>th</sup> December 2008.

The third species was *Anaphe venata* Butler, 1878 (*Notodontidae* family). The species was quoted from Equatorial Guinea, Ivory Coast, Ghana, Togo, Central African Republic and Nigeria. Several vernacular names were listed, namely « ayos » in Pomo language, « ayus » in Bomwali language, « benkûbû » in Western Téké language, « gbadôh » in Monzombo language, « mengès » in Bakwélé language, « mingis » in Bakwélé language, « ndolose » in Bongili language, « ndolosi » in Bomitaba language, « ndosi » in Kaka and Monzombo languages and « ndôsi » in Aka language. Five host species were quoted, namely *Bridelia micrantha* (Hochst.) Baill., *Cola acuminata* (P.Beauv.) Schott & Engl., *Sterculia tragacantha* Lindl., *Syzygium owariense* (P.Beauv.) Benth. and *Triplochyton scleroxyton* K.Schum.

The fourth species was *Bunaea alcinoe* (Stoll, 1780). This species was quoted from Egypt, Eritrea, Ethiopia, Sudan, Chad, Burkina Faso, Benin, Ghana, Equatorial Guinea, Sierra Leone, Nigeria, Cameroon, Central African Republic, Republic of the Congo, Angola, Democratic Republic of Congo, Kenya, Tanzania, Uganda, Zambia, Malawi, Zimbabwe, Mozambique, South African Republic and Madagascar. A map of its distribution is available in Plate 1.



*Anaphe venata* Butler © Mabossyy-Mobouna Germain, Photos taken in an evergreen forest at Pokola, Republic of the Congo (01°31'N, 16°09'E, altitude 340 m), on 6<sup>th</sup> August 2014.

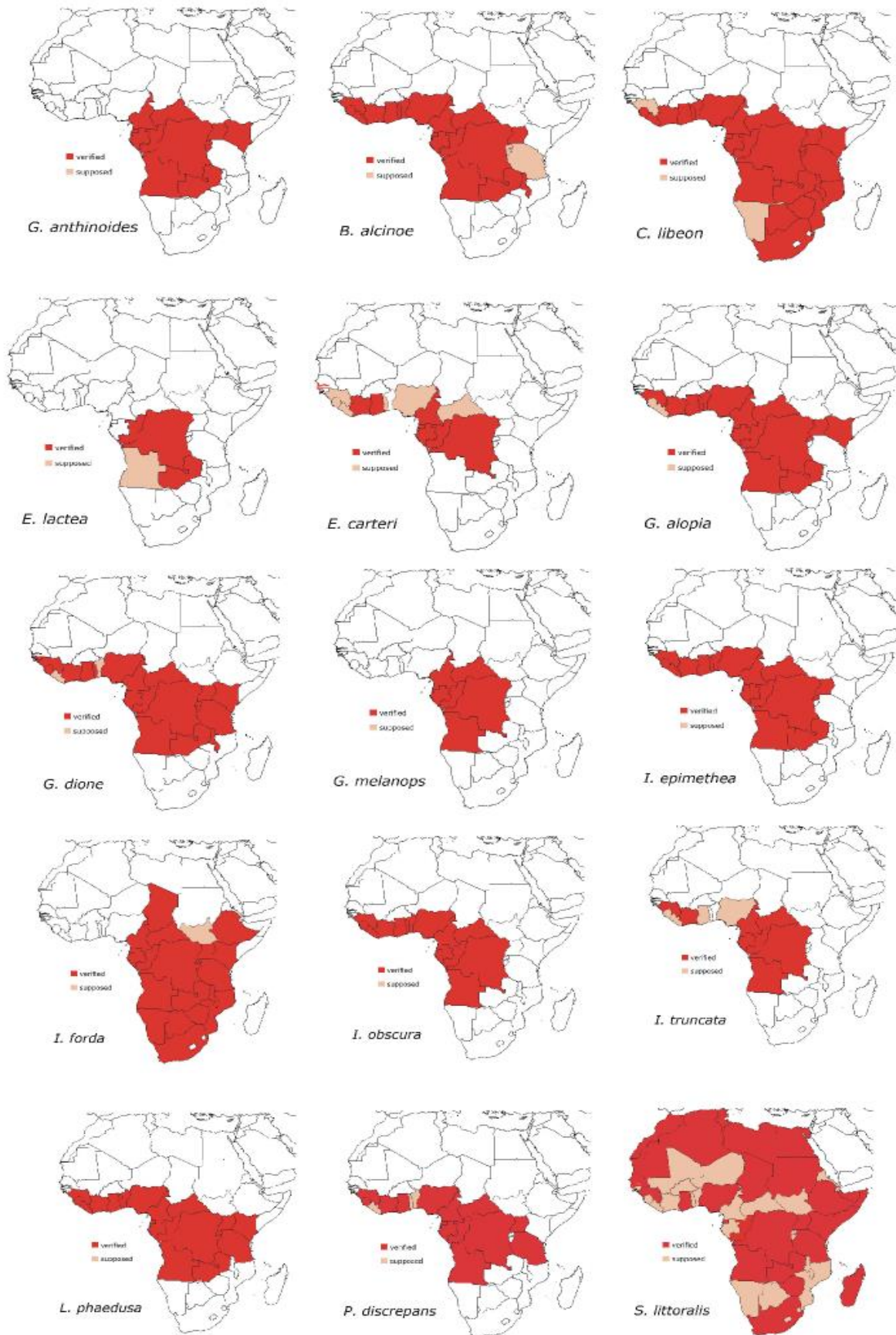


Plate 1 :Distribution maps of 15 Lepidoptera whose caterpillars are eaten in Congo



Vernacular names were « binkélé » in Lari language, « inkèlè » in Mbere, Mbozi, Northern Téké and Téké languages, « mpôsô » in Western Téké language. Ten host plants were quoted, namely *Anthocleista schweinfurthii* Gilg., *Balanites aegyptiaca* Delile, *Cananga odorata* (Lam.) Hook.f & Thomson, *Crossopteryx febrifuga* (Afzel. ex G.Don) Benth., *Dacryodes edulis* H.J.Lam., *Diplorynchus condylocarpon* (Müll.Arg.) Pichon, *Ekebergia benguelensis* Welw. ex C.DC., *Musanga cecropioides* R.Br., *Piliostigma thonningii* (Schum.) Milne-Redh. and *Sarcocephalus latifolius* (Sm.) E.A.Bruce.



*Bunaea alcinoe* © Paul Latham, Photo taken at Kavwaya, Democratic Republic of Congo (altitude 525 m)

The fifth species was *Cirina forda* (Westwood, 1881). This species was quoted from Ghana, Nigeria, Central African Republic, Republic of the Congo, Angola, Democratic Republic of Congo, Zambia, Zimbabwe and Republic of South Africa. A map is available in Plate 1. Local names were « mpwampwala » in Lari language and « ngwanda » in Baaka and Mbendjèlè languages. Five host plants have been quoted, namely *Albizia antunesiana* Harms, *Burkea africana* Hook., *Crossopteryx febrifuga* (Afzel. ex G.Don) Benth., *Erythrophleum africanum* (Welw. ex Benth.) Harms and *Erythrophleum suaveolens* (Guill. & Pers.) Brenan.



*Cirina forda* © Léon Lemaire (†) Luiswishi, (11°29'S, 27°36'E, altitude 1208 m, Katanga, Democratic Republic of Congo, April 1974.

The sixth species was *Coeliades libeon* Druce, 1875 of the *Hesperidae* family. The species was quoted from Sierra Leone, Liberia, Ghana, Togo, Benin, Nigeria, Cameroon, Central African Republic, Equatorial Guinea, Gabon, Republic of the Congo, Kenya, Uganda, Tanzania, Burundi, Rwanda, Democratic Republic of Congo, Angola, Botswana, Zambia, Zimbabwe, Malawi and Republic of South Africa. A map of its distribution is available above on Plate 1. Vernacular names were notably “batôh” in Western Téké language, « minkongo » in Bangi language and “mitoko” in Lari language. Several host plants were noted but frequently only with local vernacular names, notably “kinsuka”, “binza”, “djelo-binza”, « kimuenza » and « kasangulu ». Three scientific names were available, namely *Craibia brevicaudata* (Vatke) Dunn, *Drypetes gerrardii* Hutch. and *Millettia laurentii* De Wild. We had no picture available, but Colin Congdon has produced three photos.

The seventh species was *Elaphrodes lactea* Gaede. More than fifteen books and papers deal with this taxon. This species was quoted from Republic of the Congo, Democratic Republic of Congo, Zambia and Zimbabwe. A map is available here above, on Plate 1, Vernacular names were “bangondotula” in Mbendjèlè language, « shushu » in Mbanza language and « susu » in Monzombo language. Ten host plants were quoted, namely *Albizia antunesiana* Harms, *Albizia ferruginea* (Guill. & Perr.) Benth., *Berlinia giorgii* De Wild., *Brachyteria boehmii* Taub., *Brachystegia microphylla* Harms, *Brachystegia utilis* Hutch. & Burt Davy, *Brachystegia spiciformis* Benth., *Gilbertiodendron giorgii* De Wild., *Julbernardia paniculata* (Benth.) Troupin and *Pterocarpus angolensis* DC.



*Elaphrodes lactea* © Bertie Brink, photo taken in Katanga, Democratic Republic of Congo on 11<sup>th</sup> April 2017.





*Elaphrodes lactea* © Léon Lemaire (†) Photo taken at Luiswishi (11°29'S, 27°36' E, altitude 1208 m), Katanga, Democratic Republic of Congo; pupation in the top 1-3 cm of soil.

The eighth species was « susu » in Baaka language and had other names in other languages. This caterpillar was of the *Notodontidae* family and probably to the *Elaphrodes* genus. The species was observed in Republic of the Congo and Angola. The feed host plants of this species were *Albizia ferruginea* (Guill. & Perr.) Benth., *Millettia laurentii* De Wild., *Piptadeniastrum africanum* (Hook.f.) Brenan and *Pycnanthus angolensis* (Welw.) Warb.



«Susu» © Germain Mabossy-Mobouna, Photo taken at Wongo West (Bétou), Republic of the Congo on 03<sup>th</sup> August 2016.



«Susu» © Germain Mabossy-Mobouna, Photo taken at Pokola, Republic of the Congo on 31<sup>th</sup> July 2014.

The twelfth species was *Epanaphe carteri* (Walsingham, 1885). The dearth of available information on this taxon is surprising. Just one paper, namely Kelemu et al. (2013), presents some poor comments. Six countries were quoted (Sao Tome, Equatorial Guinea, Sierra Leone, Democratic Republic of Congo, Angola and Zambia) and three host plants, namely *Bridelia micrantha* (Hochst.) Baill., *Macaranga laurentii* De

Wild. and finally, *Ficus* sp. are listed. In fact, when working on the field, the peasants have quoted the local names of other caterpillars, but we have not got the chance of to see them. It is likely that the Lari and the Western Téké eat this species.



*Epanaphe carteri* © Augutin Konda Ku Mbuta. Photo taken at Kilueka, Democratic Republic of Congo on 3<sup>rd</sup> February 2021.

The thirteenth species, was *Epidonta brunneomixta* (*Notodontidae* Family). This species was quoted from Cameroon, Central African Republic, Republic of the Congo, Democratic Republic of Congo, Rwanda, Burundi, Tanzania, Zambia, Zimbabwe and South African Republic. Vernacular names were, notably « butu ya ngêhênêh » in Téké language, « ntsongo-ntsongo » in Lari language and « ovulah » in Mbosi language. At least six host species have been quoted, notably *Berlinia grandiflora* (Vahl) Hutch. & Dalziel, *Brachystegia* spp., notably *Brachystegia spiciformis* Benth, *Hymenocardia ulmoides* Oliv., *Lophira alata* Banks ex C.F. Gaertn. and *Mucuna poggei* Taub. var. *occidentalis* Hepper.



*Epidonta brunneomixta* © Louisa Nkulu Ngoie, photo taken at Kafindo village (11°28'S, 27°47'E, altitude 1195 m), surrounding Lubumbashi, Democratic Republic of Congo on 19<sup>th</sup> March 2018.

The fourteenth species was the genus *Epidonta* (*Notodontidae* Family), considered as *Epidonta* sp. 1. Its vernacular names were « butu ya nènèh » in Western Téké language, « malomba loka » in Kongo language and « ntubungu » in Lari language. This taxon occurred in the Republic of the Congo and the Democratic Republic of Congo. One host species was quoted, namely *Millettia eetveldeana* (Michel) Hauman.



*Epidonta* sp. 1. © Paul Latham, Photo taken at Bwansa's farm, near Kavwya, Democratic Republic of Congo (04°37' S, 15°06'E, altitude 525 m) on 21<sup>th</sup> January 2002.

The fifteenth species was the genus *Epidonta* (*Notodontidae* Family), considered as *Epidonta* sp. 2. Its vernacular name was « butu ya ngehenèh » in Western Téké language and « malumbuka » in Kongo language. This taxon occurred in the Republic of the Congo and the Democratic Republic of Congo. One host species was quoted, namely *Millettia eetveldeana* (Michel) Hauman.



*Epidonta* sp. 2. © Paul Latham, Photo taken at Kisantu Botanical Garden, Democratic Republic of Congo (05°08' S, 15°04'E, altitude 525 m) on 21<sup>th</sup> January 2002.

The sixteenth species was the genus *Epidonta* (*Notodontidae* Family), considered as *Epidonta* sp. 3. Its vernacular names were « butu ya ébalah » in Western Téké language, « mbuênge-mbuênge » in Lari language and « mfundi » in Kongo language. This caterpillar feeds on *Leptoderris congolensis* (De Wild.) Dunn.



*Epidonta* sp. 3 © Paul Latham, Photo taken at Nganga-zi's farm, near Kasangulu, Democratic Republic of Congo on January 1998.

The seventeenth species was *Gonimbrasia alopia* (Westwood, 1849) (*Saturniidae* family). The species was commented in two papers. Vernacular names were notably « binkélé » in Lari language and « inkèlè » in Mbozi and Northern Téké languages. Only five countries are quoted, namely,

Senegal, Cameroon, Republic of the Congo, Angola and Democratic Republic of Congo. Three host plants are quoted, *Acacia auriculiformis* A.Cunn ex Benth., *Mangifera indica* L. and *Trema orientalis* (L.) Blume.



*Gonimbrasia alopia* © Paul Latham, Photos taken respectively at Madimba (04°59', 15°08'E, altitude 423 m) on 1<sup>st</sup> January 2000 and at Kavwya, Democratic Republic of Congo (05°13'S, 15°06'E, altitude 525 m) on 17<sup>th</sup> January 1998.

The eighteenth species was *Gonimbrasia anthinoides* (Rougeot, 1978) (*Saturniidae* family). A map of the distribution of this species is given in the first place of Plate1. The species was quoted from Cameroon, Central African Republic, Uganda, Kenya, Guinea, Gabon, Republic of the Congo and Democratic Republic of Congo. Vernacular names were « binkélé » in Kongo and Lari languages, « inkèlè » in Mbere, Mbozi and Téké languages, « mpôso » in Western Téké language and « bosombo » in the Mongo language of Democratic Republic of Congo. No food plant has been quoted.



*Gonimbrasia anthinoides* © Evelyne Bocquet (2020), Photo taken at Likoli, Democratic Republic of Congo (0°30'S, 19°16'E, altitude 325 m), on 11<sup>th</sup> August 2019.

The nineteenth species was *Gonimbrasia eblis* (Strecker, 1876). The campeonymes of this caterpillar was « binkélé » in Kongo and in Lari languages, « nkankah » in Western Téké Language, Republic of the Congo.





*Gonimbrasia eblis* © Paul Latham, Photo taken at Kasangulu (0°35'S, 15°10' E, altitude 336 m), Democratic Republic of Congo on 19<sup>th</sup> January 2000, caterpillar *Gonimbrasia eblis* feeding on a mango leaf.



*Gonimbrasia eblis* © Paul Latham, Photo taken at Kavwaya (05°06' S, 15°12' E, altitude 525 m), Democratic Republic of Congo, aspect just before pupation.

The next species, twentieth species, was *Gonimbrasia melanops* (Bouvier, 1930) (*Saturniidae* family). The presence of this species was quoted from Ivory Coast, Cameroon, Central African Republic, Republic of the Congo, Democratic Republic of Congo and Tanzania. The map of the distribution of this species is available on Plate 1. Several campeonyms were quoted, notably « binkélé » in Lari language, « boyo » in Mbëndjèlè language, « ésié » in Bakwelé language, « mbinzu » Bangi language. One feed host plant was quoted, namely *Entandrophragma cylindricum* (Sprague) Sprague.



*Gonimbrasia melanops* © Germain Mabossy-Mobouna, Photo taken at Ipendja, Republic of the Congo (02°39'N, 17°06' E, altitude 340 m), on 16<sup>th</sup> August 2017.

The twenty first species was *Gonimbrasia petiveri* (Fabricius, 1793) (*Saturniidae* family). A map of its distribution is available here before on Plate 1, in seventh position. The species has been observed in Guinea-Bissau, Guinea, Equatorial Guinea, Sierra Leone, Ghana, Ivory Coast, Nigeria, Cameroon, Central African Republic, Ethiopia,

Gabon, Republic of the Congo, Democratic Republic of Congo, Kenya, Tanzania, Uganda, Angola, Zambia, Malawi and South Africa Republic.

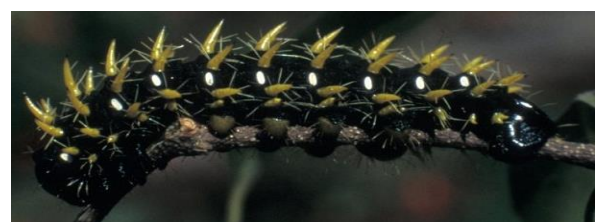


*Gonimbrasia melanops* © Paule Pamela Tabi Eckebil, Photo taken at Mbang, Democratic Republic of Congo (03°35'N, 14°26'E, altitude 639 m) on 3<sup>rd</sup> August 2017.

Vernacular names were notably “baetsuka” in Mbanza language, “motâtiké” in Kaka language “motikaliké” in Baaka and Monzombo languages and “nzangala” also in Baaka and Monzombo languages. About fifteen feed host plants were quoted notably *Antidesma membranaceum* Müll.Arg., *Bauhinia petersiana* Bolle, *Bridelia divigneaudii* J.Léon., *Diplorhynchus condylocarpum* (Müll.Arg.) Pichon, *Ficus* spp., *Khaya anotheca* (Welw.) C.DC., *Milicia excelsa* (Welw.) C.C.Berg, *Ricinodendron heudelotii* (Baill.) Pierre ex Heckel, *Uapaca nitida* Müll.Arg. and *Vitex madiensis* Oliv. among others.



*Gonimbrasia petiveri* © Paul Latham, photo taken at Kavwaya, Democratic Republic of Congo (05°13'S, 15°06'E, altitude 525 m), on 28<sup>th</sup> March 2002.





*Gonimbrasia petiveri* © Lemaire Léon (†) Photo taken in an open forest of miombo type, at Luiswishi, Democratic Republic of Congo (11°29'05''S, 27°36'10''E, altitude 1208 m), in April 1978.



*Gonimbrasia petiveri* © Germain Mabossy-Mobouna, Photo taken at Lissanga (Mbamou island), Republic of the Congo (04°15'S, 15°26'E, altitude 265 m), on 29<sup>th</sup> June 2021.

The twenty second species was *Haplozana nigrolineata* Aurivillius (Notodontidae family). The species was observed in Republic of the Congo, Angola, Democratic Republic of Congo, Uganda, Zambia, Malawi, Zimbabwe and South African Republic. Local names were “atsèrè” in Téké language, « atsin » in Ngangoulou language, « atsîni » in Téké language and « mitsîna » in Kongo and Lari languages. Five feed host plants were quoted, namely *Eriosema glomeratum* (Guil. & Perr.) Hook.f., *Eriosema psoraleoides* (Lam.) G.Don, *Hyparrhenia diplandra* Welw., *Imperata cylindrica* (L.) P.Beauv. and *Stylosanthes guianensis* (Aubl.) Sw. var. *pauciflora* M.B. Ferreira & Sousa Costa.



*Haplozana nigrolineata* Aurivillius © Franck Bisaux, Photo taken on Bateke Plateau at Mampu, Democratic Republic of Congo (03°50'S, 15°45'E, altitude 650 m) on 19<sup>th</sup> November 2005.

The twenty third species were *Imbrasia epimethea* (Drury, 1773), « black appearance » and « clear appearance ». Both were of the *Saturniidae* family. The first caterpillar was observed in the Republic of the Congo and in the Democratic

Republic of Congo. We have obtained numerous local names, notably « mihuka » in Kongo and Lari languages, « bokuka » in Mbèndjèlè language.



*Haplozana nigrolineata* Aurivillius © Germain Mabossy-Mobouna, photo taken on Mbé Plateau, Republic of the Congo, at Mingali (05°52'S, 15°25'E, altitude 746 m), on 10<sup>th</sup> November 2017.

The three feed host plants were quoted, namely *Petertianthus macrocarpus* (P.Beauv.) Liben, *Pycnanthus angolensis* L. and *Ricinodendron heudelotii* (Baill.) Heckel.



*Imbrasia epimethea* © Paul Latham, Photo taken at Ndembo Mission, Democratic Republic of the Congo on 27<sup>th</sup> March 2002.

The second appearance was *Imbrasia epimethea* (Drury, 1773), « clear appearance » of the *Saturniidae* family. This caterpillar has been observed in the Republic of the Congo and in the Democratic Republic of Congo. We have obtained numerous local names, notably « kuluka ya mondèlè » in Bondongo language and « kulupa ya mondele » in Enyellé language. Three feed host plants were quoted, namely *Petertianthus macrocarpus* (P.Beauv.) Liben, *Pycnanthus angolensis* L. and *Ricinodendron heudelotii* (Baill.) Heckel subsp. *africanum* (Müll.Arg.) Léonard.





*Imbrasia epimethea* © Germain Mobouna-Mabossy, Photos taken at Impfondo, Republic of the Congo (01°27'N, 18°13' E, altitude 326 m.), on 24<sup>th</sup> July 2016.

The twenty fourth species was *Imbrasia obscura* (Butler, 1878) of the *Saturniidae* family. This species was quoted from Gambia, Guinea, Sierra Leone, Ghana, Benin, Nigeria, Sudan, Cameroon, Central African Republic, Equatorial Guinea, Gabon, Republic of the Congo, Angola, Democratic Republic of Congo and Uganda. A map is available before on Plate 1. Eight feed host plants were quoted, namely *Albizia ferruginea* (Guill. & Perr.) Benth., *Amphimas ferrugineus* Pierre ex Pellegr., *Eribroma oblonga* (Mast.) Pierre ex A. Chev., *Lophira alata* Banks ex C.F.Gaertn., *Macaranga monandra* Müll.Arg., *Macaranga spinosa* Müll.Arg., *Maesopsis eminii* Engl. and *Pentacletra macrophylla* Benth.



*Imbrasia obscura* © Germain Mabossy-Mobouna, Photos taken at Pokola, Republic of the Congo (01°31'N, 16°07' E, altitude 340 m), on 8<sup>th</sup> August 2014.



*Imbrasia obscura* © Françoise Madamo-Malasi, Photo taken near the village of Makungika, Democratic Republic of Congo located at 21 km of the Sia Catholic Mission (03°44'S, 17°58'E), the 31<sup>th</sup> December 2018.

The twenty-fifth species was *Imbrasia truncata* (Aurivillius, 1908) of the *Saturniidae* family. The species was quoted from Guinea,

Cameroon, Central African Republic, Gabon, Republic of the Congo, the Democratic Republic of Congo.



*Imbrasia truncata* © Germain Mabossy-Mobouna; caterpillar of fourth stage (left); of fifth stage (right);

© Jang Haneul for the first and Germain Mabossy-Mobouna at Wongo-West, Republic of the Congo on 4<sup>th</sup> August 2026 for the two lasts.

Mabossy-Mobouna has provided common names for 39 languages, namely *abebalâgondah* (mbandza language), *akwata* (bombali language), *agnakalkom* (pol language), *bà.bánbángá* (aka language), *bambanga* (enyellé language), *bangondjo* (bangandu and ngando languages), *bimbami* (kongo and lari languages), *bindongolo* (munukutuba language), *dok-zui* (gbaya language), *embah* (western téké language), *gbagonda* (mbanza language), *i-nkonzo* (twa language), *kondzo* (mongo language), *mbabanga* (bomitaba, bongili, mondjo and monzombo languages), *mbábángá* (aka language), *mbâkom* (ndjem language), *mbàlàngà* (aka language), *mbambanga* (baaka and kaka languages), *mbanga* (issongo language), *mbanga* (bofi language), *mbangôh* (bekwel language), *mbihi* (westen téké language), *mbimbange* (mbere language), *mbindzi* (mbosi language), *mbindzu* (akwa, bangi, koyo, likuba, likwala and moi languages), *mbizu* (ndasa language), *miongu* (punu language), *soé* (ngkaka language). The feed host

plants were *Amphimas ferrugineus* Pierre ex Pellegrin, *Amphimas pterocarpoides* Harms, *Petertianthus macrocarpus* (P.Beauv.) Liben and *Uapaca guineensis* Müll.Arg.

The twenty-sixth species was *Lobobunaea phaedusa* (Drury, 1782) of the *Saturniidae* family. The species was quoted from Senegal, Ghana, Togo, Niger, Nigeria, Cameroon, Eritrea, Sudan, Ethiopia, Somalia, Kenya, Tanzania, Republic of the Congo, Democratic Republic of Congo and Zambia. Vernacular names were « kungunu » in Kongo and Lari languages and « mbaah » in Western Téké language. Five feed host plants were quoted, namely *Annona senegalensis* Pers. ssp. *oulotricha* Le Thomas, *Crossopteryx febrifuga* (Afzel. ex G.Don) Benth., *Dacryodes edulis* (G.Don) H.J.Lam, *Mangifera indica* L., *Sarcocephalus latifolius* (Sm.) E.A.Bruce.



*Lobobunaea phaedusa* © Paul Latham, Photo taken in Kisantu Botanical Garden, Democratic Republic of Congo (05°08'S, 15°06' E, altitude 600 m), on 2<sup>d</sup> February 1996.

The twenty-seventh species was *Pseudantheraea discrepans* (Butler, 1878). This species was of the *Saturniidae* family. This species is gregarious and polyphagous. At the last and sixth larval phase the larvae go down from their host trees and spin their cocoons on the trunk of the tree at approximately human eye level (Bouyer et al., 2004). This caterpillar is founded in Africa from Ivory Coast to Uganda in the north and from Angola to the Democratic Republic of Congo in the south. The larvae have been recorded on *Entandrophragma angolense* (Welw.) C.DC. Many confusions exist concerning this species in the literature.



*Pseudantheraea discrepans* © Germain Mabossy-Mobouna, Photo taken at Pokola, Republic of the Congo (0°53'N, 16°32' E, altitude 340 m), on 26<sup>th</sup> August 2014.

The twenty-eighth species was *Spodoptera littoralis* (Boisduval, 1833) of the *Noctuidae* family. Called the « African cotton leaf worm », this species is widely observed in Africa, Mediterranean Europe and middle Eastern countries. It is highly polyphagous, a pest of many cultivated plants and crops. The caterpillar was eaten by the Lari and the Téké.

The twenty-ninth species was « emuali » in Téké Western language or « emualah » in Mbere language. This caterpillar was observed in the evergreen riverine forest of Etoumbi (00°00' N, 14°53'E, altitude 424 m) located on the left bank of the Likouala-Mossaka river, on the road on the Cuvette-Ouest Department during a survey regarding edible caterpillars on the 17<sup>th</sup> October 2015. The morphological characteristics of this caterpillar was described by Mabossy-Mobouna et al. (2016a). We have no data about the complete cycle of this caterpillar, which feed only on one host plant, namely of *Psyrdrax* cf. *subcordata* (DC.) Bridson. The caterpillars were collected in October. The species has never been observed elsewhere.





« Emuali » © Germain Mabossy-Mobouna, Photos taken in dense forest of Etoumbi, Republic of the Congo (0°00'N, 14°53'E) on 14<sup>th</sup> October 2015.



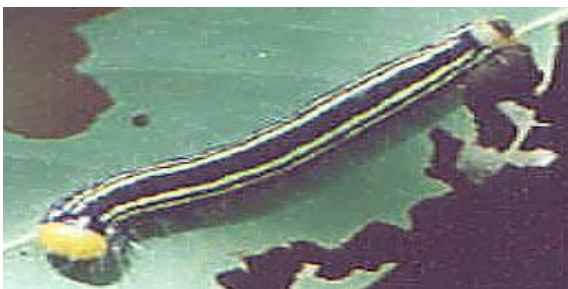
« Emuali » © Germain Mabossy-Mobouna, Etoumbi, Republic of the Congo 17<sup>th</sup> October 2015.

The thirtieth species was « enkakah » in Western Téké language. It was a *Platysphinx* sp. of the *Sphinxidae* family. We consider that it was similar to *Platysphinx stigmatica* described by Mabille, (1878). This last species was known from forests, from Gambia, Sierra Leone, Ivory Coast, Ghana, Nigeria, Cameroon, Central African Republic, Gabon, Republic of the Congo, Angola, Democratic Republic of Congo, Uganda, Tanzania and Zambia. This species ate on at least three species, namely *Alchornea cordifolia* (Schumach. & Thonn.) Müll.Arg., *Macrolobium macrophyllum* (P.Beauv.) J.F. Macbr. and *Millettia versicolor* Welw. ex Bak. (Latham, 2008).



«Enkakah» © Paul Latham, Photo taken at Kavwaya, Democratic Republic of Congo on 12<sup>th</sup> December 1996.

The thirty first species was « miengeti » in Kongo language and « biléléya » in Lari language. This species was of the *Notodontidae* family. These caterpillars ate on *Millettia eetveldeana* (Micheli) Hauman.



« miengeti » © Paul Latham (2008), Democratic Republic of Congo, Photo taken in January.

The thirty second species was « mimpemba ». This caterpillar was of the *Saturniidae* family. The consumption of this species was reported from the Republic of the Congo and the Democratic Republic of Congo. Local names were « mimpemba » in Kongo and Lari languages, « pulupulu » in Mbendjèlè language. The caterpillars ate on *Albizia ferruginea* (Guill. & Perr.) Benth.



« mimpemba » © Germain Mabossy-Mobouna, Photo taken at Loumou, Republic of the Congo (04°08'S, 15°07'E, altitude 365 m), on 29<sup>th</sup> July 2019.

The thirty third species was « ntsèlèlè » in Lari language and « mingombo » in Kongo language. This caterpillar had for feed host plants *Cyclosorus goggilodus* (Schkur) Tardieu and *Cyclosorus interruptus* (Willd.) H. Itô.



« ntsèlèlè » © Paul Latham, photo taken at Kiseki village, Democratic Republic of Congo in February 1996.

The last species was « susu » in Baaka language and had other names in other languages. This caterpillar was of the *Notodontidae* family and probably to the *Elaphrodes* genus. The species was observed in Republic of the Congo and Angola. The feed host plants of this species were *Albizia ferruginea* (Guill. & Perr.) Benth., *Millettia laurentii* De Wild., *Piptadeniastrum africanum* (Hook.f.) Brenan and *Pycnanthus angolensis* (Welw.) Warb.



« susu » © Germain Mabossy-Mobouna, Photo taken at Pokola, Republic of the Congo on 31<sup>th</sup> July 2014.



« susu » © Germain Mabossy-Mobouna, Photo taken at Wongo West (Bétou), Republic of the Congo on 03<sup>th</sup> August 2016.

The floristic study determined 90 host plants eaten by caterpillars. They belong to 26 botanical families. Most of them were trees with the predominance of the family *Fabaceae* (38%) followed up by the *Phyllanthaceae* (11%). Amongst the *Fabaceae*, the *Caesalpinioideae* were the most representative (18%), followed up by the *Faboideae* (12%). A same plant may be eaten by several different caterpillars; several caterpillars were polyphagous. Caterpillars eating only one host plant were scarcer; good examples of monophagous caterpillars were *Gonimbrasia melanops* and « Emualah ». The presence of one host plant in an ecosystem does not involve the presence of the caterpillars that feed on it. This is the case of *Cirina forda* which are involved on *Crossopteryx febrifuga* (Afz. ex G. Don) Benth. Only in areas with clayey soils and not in areas with sandy soils. There were other factors, such as edapho-climatic factors which intervened for explaining the presence of caterpillars in an ecosystem.

The caterpillars of *Gonimbrasia melanops* were not only subservient to *Entandrophragma cylindricum* (Sprague) Sprague and *Epidontia brunneomixta* subservient to *Millettia laurentii* for which the native populations have confessed to know for each one, only the host plant. However, Lisingo et al. (2010) have identified two host plants for *Gonimbrasia melanops*, namely *Entandrophragma cylindricum* (Sprague) Sprague and *Entandrophragma utile* Dawe & Sprague. The case of *Cirina forda* (a.k.a. *Imbrasia forda*) widely consumed in Western, Central and Southern Africa

(Ande, 2002; Badanaro et al., 2014; Dwomo et al., 2010; Mabossy-Mobouna et al., 2016a) is particular, this caterpillar is enfeoffed to *Erythrophleum suaveolens* in the forestry ecosystems while enfeoffed to *Crossopteryx febrifuga* in the savannah zone. We observe for the first time, in a study carried out in Kenya, caterpillars of *Cirina forda* eating *Euclea divinorum*, *Acacia mearnsii* and *Manilkara sulcata* (Kusia et al., 2021) while in Congo Democratic Republic, they feed mostly of *Crossopteryx febrifuga* (Latham, 2015). In South Africa, *Cirina forda* the host plants are *Burkea africana* Hook (Fabaceae) and *Albizia vericolor* Welw. ex Oliv. (Oberprieler, 1995).

The host plants identified in the present study were : (1) either the same that the caterpillars quoted by Lisingo et al. (2010) in the Tshopo in DRC for the caterpillars of *Cirina forda*, *Imbrasia truncata*, *Gonimbrasia melanops*, *Epidontia brunneomixta* and *Imbrasia epimethea*, and by Yabuda et al. (2019) in the city of Gbadolit  for the same caterpillars ; (2) either the same genera but different species identified by Lautenschl ger et al. (2017) in the Northern of Angola for the caterpillars of *Cirina forda*, *Imbrasia truncata* and *Imbrasia obscura* ; (3) either different of those identified by Lisingo et al. (2011) for the caterpillars of *Pseudanthera discrepans*, and by Payne et al. (2016) for the caterpillars of *Imbrasia truncata*, *Imbrasia forda*, *Elaphrodes lactea* and *Imbrasia obscura* in the surroundings of Luikotale in the National Park of Salonga in DRC. In the savannah zones, the majority of the host plant identified are the same for the same caterpillars as those identified by Latham (2008) in Lower-Congo.

## CONCLUSION

The aim of this survey was to establish a census of the edible caterpillars and the species that serve as their nutritional support in the different departments of the Republic of the Congo. The results showed that there was a variety of species of edible caterpillars in the region and that a variety of plants were used in their diet. As both the urban and rural populations in the study area used these species to satisfy several essential needs (energy, construction, food, medicinal practices), it is becoming urgent to envisage a process of conservation of their environment. Most of the feed species were trees and it is urgent to envisage a process for the preservation of the environment and this notably in order to guarantee the sustainability of food for the local communities.



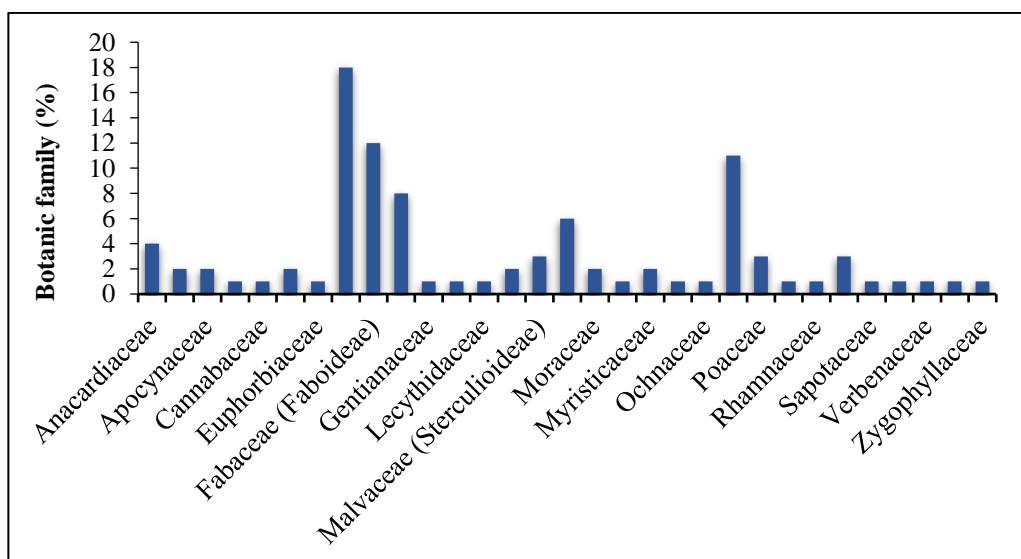
The present paper is indisputably a strong first step needed for possessing information about the diversity of edible caterpillars and their host plants

in the Republic of the Congo. The preservation of the environment would be a next item needed.

**Table 6.** List of host plants for edible caterpillars in the Republic of the Congo

Host plants	
Scientific names	Botanical family (sub-family)
<i>Acacia auricularis</i> A.Cunn. ex Benth.	Fabaceae (Mimosoideae)
<i>Aframomum alviviolaceum</i> (Ridl.) K.Schum.	Zingiberaceae
<i>Albizia antunesiana</i> Harms	Fabaceae (Mimosoideae)
<i>Albizia ferruginea</i> (Guill. & Perr.) Benth.	Fabaceae (Mimosoideae)
<i>Alchornea cordifolia</i> (Schumach. & Thonn.) Müll.Arg.	Phyllanthaceae
<i>Amphimas ferrugineus</i> Pierre ex Pellegrin	Fabaceae (Faboideae)
<i>Amphimas pterocarpoides</i> Harms	Fabaceae (Faboideae)
<i>Anacardium occidentale</i> L.	Anacardiaceae
<i>Annona senegalensis</i> Pers.	Annonaceae
<i>Anthocleista schweinfurthii</i> Gilg	Gentianaceae
<i>Antidesma membranaceum</i> Müll.Arg.	Phyllanthaceae
<i>Balanites aegyptiaca</i> Delile	Zygophyllaceae
<i>Bauhinia petersiana</i> Bolle	Fabaceae (Caesalpinioideae)
<i>Berlinia giorgii</i> De Wild.	Fabaceae (Caesalpinioideae)
<i>Berlinia grandiflora</i> (Vahl) Hutch. & Dalziel	Fabaceae (Caesalpinioideae)
<i>Brachystegia boehmii</i> R. Böhm	Fabaceae (Caesalpinioideae)
<i>Brachystegia filiformis</i> Burt Davy & Hutch.	Fabaceae (Caesalpinioideae)
<i>Brachystegia microphylla</i> Harms	Fabaceae (Caesalpinioideae)
<i>Brachystegia spiciformis</i> Benth.	Fabaceae (Caesalpinioideae)
<i>Brachystegia utilis</i> Burt Davy & Hutch.	Fabaceae (Caesalpinioideae)
<i>Bridelia duvigneaudii</i> J.Léonard	Phyllanthaceae
<i>Bridelia micrantha</i> (Hochst.) Baill.	Phyllanthaceae
<i>Burkea africana</i> Hook.	Fabaceae (Caesalpinioideae)
<i>Cananga odorata</i> (Lam.) Hook.f. & Thomson	Annonaceae
<i>Chrysophyllum albidum</i> G.Don	Sapotaceae
<i>Cola acuminata</i> (P.Beauv.) Schott & Endl.	Malvaceae (Sterculioideae)
<i>Craibia brevicaudata</i> (Vatke) Dunn	Fabaceae (Faboideae)
<i>Crossopteryx febrifuga</i> (Afz. ex G.Don) Benth.	Rubiaceae
<i>Cyclosorus interruptus</i> (Willd.) H.Itô	Thelypteraceae
<i>Dacryodes edulis</i> H.J.Lam	Burseraceae
<i>Dialium angolense</i> Welw. ex Oliv.	Fabaceae (Caesalpinioideae)
<i>Diplorhynchus condylocarpum</i> (Müll.Arg.) Pichon	Apocynaceae
<i>Drypetes gerrardii</i> Hutch.	Putrangivaceae
<i>Eckebergia benguelensis</i> Welw. ex C.DC.	Meliaceae
<i>Entandrophragma angolense</i> (Welw.) C.DC.	Meliaceae
<i>Entandrophragma cylindricum</i> (Sprague) Sprague	Meliaceae
<i>Entandrophragma candollei</i> Harms	Meliaceae
<i>Eribroma oblonga</i> (Mast.) Pierre ex A.Chev.	Malvaceae (Sterculioideae)
<i>Eriosema glomerata</i> (Guill. & Perr.) Hook.f.	Fabaceae (Faboideae)
<i>Eriosema sporaleoides</i> (Lam.) G.Don	Fabaceae (Faboideae)
<i>Erythrophleum africanum</i> (Welw. ex Benth.) Harms	Fabaceae (Caesalpinioideae)
<i>Erythrophleum suaveolens</i> (Guill. & Perr.) Brenan	Fabaceae (Caesalpinioideae)
<i>Ficus</i> spp.	Moraceae
<i>Gilbertiodendron dewevrei</i> (De Wild.) J.Léonard	Fabaceae (Caesalpinioideae)
<i>Hymecocardia ulmoides</i> Oliv.	Phyllanthaceae
<i>Hyparrhenia diplandra</i> (Hack.) Stapf	Poaceae
<i>Imperata cylindrica</i> (L.) P.Beauv.	Poaceae
<i>Irvingia gabonensis</i> (Aubry-Lecomte ex O'Rorke) Baill.	Irvingiaceae
<i>Julbernardia paniculata</i> (Benth.) Troupin	Fabaceae (Caesalpinioideae)
<i>Khaya anthotheca</i> (Welw.)C.DC.	Meliaceae
<i>Landolphia owariensis</i> Stapf	Apocynaceae

<i>Leptoderris congolensis</i> (De Wild.) Dunn	<i>Fabaceae</i> ( <i>Faboideae</i> )
<i>Lophira alata</i> Bank ex C.F.Gaertn.	<i>Ochnaceae</i>
<i>Macaranga laurentii</i> De Wild.	<i>Phyllanthaceae</i>
<i>Macaranga monandra</i> Müll.Arg.	<i>Phyllanthaceae</i>
<i>Macaranga spinosa</i> Müll.Arg.	<i>Phyllanthaceae</i>
<i>Macrolobium macrophyllum</i> J.F.Macbr.	<i>Fabaceae</i> ( <i>Caesalpinioideae</i> )
<i>Maesopsis eminii</i> Engl.	<i>Rhamnaceae</i>
<i>Mangifera indica</i> L.	<i>Anacardiaceae</i>
<i>Manihot esculenta</i> Crantz	<i>Euphorbiaceae</i>
<i>Milicia excelsa</i> (Welw.) C.Berg	<i>Moraceae</i>
<i>Millettia eetveldeana</i> (Micheli) Hauman	<i>Fabaceae</i> ( <i>Faboideae</i> )
<i>Millettia laurentii</i> De Wild.	<i>Fabaceae</i> ( <i>Faboideae</i> )
<i>Millettia versicolor</i> Welw. ex Baker	<i>Fabaceae</i> ( <i>Faboideae</i> )
<i>Mucuna poggei</i> Taub.	<i>Fabaceae</i> ( <i>Faboideae</i> )
<i>Musa x paradisiaca</i> L.	<i>Musaceae</i>
<i>Musanga cecropioides</i> R.Br.	<i>Urticaceae</i>
<i>Pentaclethra eetveldeana</i> De Wild. & T. Durand	<i>Fabaceae</i> ( <i>Mimosoideae</i> )
<i>Pentaclethra macrophylla</i> Benth.	<i>Fabaceae</i> ( <i>Mimosoideae</i> )
<i>Petertianthus macrocarpus</i> (P.Beauv.) Liben	<i>Lecythidaceae</i>
<i>Piliostigma thonningii</i> (Schumach.) Milne-Redh.	<i>Fabaceae</i> ( <i>Caesalpinioideae</i> )
<i>Piptadeniastrum africanum</i> (Hook.f.) Brenan	<i>Fabaceae</i> ( <i>Mimosoideae</i> )
<i>Psyrax cf. subcordata</i> (DC.) Bridson	<i>Rubiaceae</i>
<i>Pterocarpus angolensis</i> DC.	<i>Fabaceae</i> ( <i>Faboideae</i> )
<i>Pycnanthus angolensis</i> (Welw.) Warb.	<i>Myristicaceae</i>
<i>Ricinodendron heudelotii</i> (Baill.) Pierre	<i>Phyllanthaceae</i>
<i>Sarcocephalus latifolius</i> (Sm.) Bruce	<i>Rubiaceae</i>
<i>Spondias dulcis</i> Parkinson	<i>Anacardiaceae</i>
<i>Spondias monbin</i> L.	<i>Anacardiaceae</i>
<i>Staudtia kamerunensis</i> Warb.	<i>Myristicaceae</i>
<i>Sterculia tragacantha</i> Lindl.	<i>Malvaceae</i> ( <i>Sterculioideae</i> )
<i>Stylosanthes quanzensis</i> = <i>Afzelia quanzensis</i> ?	<i>Fabaceae</i> ( <i>Mimosoideae</i> )
<i>Syzygium owariense</i> (P.Beauv.) Benth.	<i>Myrtaceae</i>
<i>Theobroma cacao</i> L.	<i>Malvaceae</i> ( <i>Malvoideae</i> )
<i>Trema orientalis</i> (L.) Blume	<i>Cannabaceae</i>
<i>Triplochiton scleroxylon</i> K.Schum.	<i>Malvaceae</i> ( <i>Malvoideae</i> )
<i>Uapaca nitida</i> Müll.Arg.	<i>Phyllanthaceae</i>
<i>Vitex madiensis</i> Oliv.	<i>Verbenaceae</i>
<i>Zea mays</i> L.	<i>Poaceae</i>



**Fig. 3.** Repartition of the species being host of edible caterpillars according to their botanical families

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## Conflicts of Interest

The authors declare no conflict of interest.

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