



**Human consumption of Lepidoptera in Africa :
an updated chronological list of references (370 quoted!)
with their ethnozoological analysis**

**La consommation humaine de Lépidoptères en Afrique :
une liste chronologique actualisée des références (370 citées !)
avec leur analyse ethnozoologique**

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Résumé : La consommation humaine d'insectes ou "lépidoptérophagie" connaît un intérêt croissant. Dans le présent article 370 références abordant ce thème pour l'Afrique sont citées. Des accès à cette information par ordre chronologique ainsi que par ordre alphabétique des noms d'auteurs sont fournies. Une liste systématique des noms scientifiques des espèces consommées en Afrique est encore établie. L'importance de l'information disponible pour divers groupes ethnolinguistiques est signalée. L'évolution des thèmes abordés est analysée et commentée.

Mots clés: Consommation, Lépidoptères, Afrique, Campéophagie.

Abstract : Human consumption of insects or « lepidopterophagy » is becoming increasingly important. In the present paper 370 references dealing with this subject in Africa are quoted. Access to this information is provided both, by chronological and alphabetic order of authors. A systematic list of scientific names of edible Lepidoptera in Africa is also provided. The importance of the information available for various ethnolinguistic groups is presented. The evolution of issues covered is analyzed and discussed.

Keywords : Consumption, Lepidoptera, Africa, Campeophagy.

INTRODUCTION

The utilization of insects as a sustainable and secure source of animal-based food for the human diet has continued to increase in popularity in recent years (SHOCKLEY & DOSSEY, 2014). In particular, human consumption of Lepidoptera receives an increasing interest (MALAISSE *et al.*, 2015). Several terms have been suggested to describe this consumption, notably regarding caterpillars, "campeophagy" (MALAISSE, 2002, 2004; MALAISSE *et al.* 2015), "anthropolarviphagy of Lepidoptera" (RAMOS-ELORDUY *et al.*, 2011) and of "erucivory". However this last term is normally applied to animals, rather than humans (RAMADE, 2008).

Lepidoptera appeared some 220 million years ago. They are an Order with adults being named "butterflies" and "moths" and larvae named "caterpillars". Today about 180,000 Lepidoptera species are recognized; they belong to 128 families, of which 36 include species eaten by man, mostly as caterpillars, more rarely as chrysalises and exceptionally the abdomen of some moths and butterflies is eaten.

Regarding the Lepidoptera, the value of 228 edible species has been published by RAMOS ELORDUY Y CONCONI in 1997, out of a total of 1391 insects, that is to say 16.39%.

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In 2013, the number of insect species eaten by man is given a value over 1900, of which 18 % were caterpillars (VAN HUIS *et al.*, 2013). In their recent paper, SHORKLEY & DOSSEY (2014) indicate that Lepidoptera take the second position, with 396 species having been identified. They represent 18.3 % of the total of insect species eaten by man and belong to 36 families. The family of Saturniidae takes the first place with 109 different species, that is to say 27.5 % of the Lepidoptera.

MALAISSÉ *et al.* (2015) have calculated that the total number of Lepidoptera eaten by man probably exceeds 500 species, a large number of caterpillars being only known by their vernacular name or “campeonyme”. For some of them, photographs are available but these differ from species already named.

Information on the human consumption of Lepidoptera has been carried out at various time and in various forms.

Until the 1960s, the literature on insects in the diet of man was scattered through numerous books and journals devoted to travel, ethnology, geography, medicine and biology (OWEN, 1973). From time to time, the gregarious larvae of moths, particularly members of the Saturniidae, received some attention. It is evident that many people rely on a wide variety of insect species for nourishment.

More recently the consumption of insects has become a subject for study on its own.

For instance, MALAISSÉ (2010) describes the diversity of ethnospecies - that is to say their campeonyms – recognized locally, as well as the corresponding Linnean species, when possible. According to the 146 references that are quoted, at least people of 114 ethnolinguistic units of Africa eat Lepidoptera.

Several banks of data concern the human consumption of insects, including Lepidoptera. For instance this is the case of Wageningen University (JONGEMA, 2015). Nevertheless information regarding non English literature in this data bank could be amplified. As far as Africa is concerned, we have listed 370 references, about 260 of which are in English, the majority of the rest being in French with a few in Portuguese, Spanish, German and Africaans.

The increasing interest devoted to this subject bears out the need to publish this information more widely. This is the aim of the present paper, which is a response to the consideration that ethnobotanists, ethnozoologists, anthropologists, and linguists have to struggle to record folk knowledge in remote part of the world.

LIST OF PAPERS AND BOOKS TAKING UP THE THEME OF HUMAN CONSUMPTION OF LEPIDOPTERA IN AFRICA

1656

- de Flacourt Etienne, 1658. *Histoire de la Grande Isle Madagascar*. [The text of this manuscript of 616 pages, dated of 15 March 1656 and property of Monsieur de Vogüé has been edited in two versions, in 1958 and in 1661. We have consulted the edition presented and annotated by Claude Alibert in 1995, see below].

1661

- De Flacourt Etienne, MDCLXI. *Histoire de la Grande Isle Madagascar, composée par le Sieur DE FLACOURT, Directeur general de la Compagnie française de l’Orient, & Commandant pour sa Majesté dans ladit Isle & és Isles adjacentes. Avec vne relation de ce qui s’est passé és années 1655. 1656. & 1657. Non encor veuë par la premiere Impression*. Troyes, Nicolas Oudot.

1686

- Simon van der Stel’s journal of its expedition to Namaqualand 1685-1686. [The text of this manuscript has been edited by Waterhouse in 1932, see below].

1840

- Grout Charlotte 1857. Letter to her parents [letter quoted by J. Mark Scriber in 2011].

1857

- Livingstone David 1857. *Missionary travels and researches in South Africa; including a sketch of sixteen years' residence in the interior of Africa, and a journey from Cape of Good Hope to Loanda on the West Coast, thence across the Continent, down the river Zambezi, to the Eastern ocean*. London, John Murray, 687 p.

1881

- Serpa Pinto Alexandre Alberto da Rocha (de) 1881. *Comment j'ai traversé l'Afrique depuis l'Atlantique jusqu'à l'Océan Indien, à travers des régions inconnues*. Paris, Hachette, 2 volumes, 456 + 468 p. [ouvrage traduit de l'édition anglaise, collationnée sur le texte portugais par J. Belin de Launey].

1885

- Simmonds P.L. 1885. *The animal resources of different nations, with mentions of some of the special dainties of various derived from the Animal Kingdom*. London, E. & F. Spon, 461 p. [voir p. 208-209, 347-375].

1898

- Junod Henri Alexandre 1898. Les BaRonga. *Bull. Société Neuchâteloise de Géographie*, **10**, 411 p.

1902

- Cole H. 1902. Notes on the Wagogo of German East Africa. *J. royal Anthropological Inst.*, **32**: 305-339.

1903

- Baum Hugo 1903. Kunene-Sambezi Expedition. Berlin, Deutsche Kolonialgesellschaft, 593 p.

1910

- Gillet Justin, Pâque Egide 1910. Plantes principales de la région de Kisantu, leur nom indigène, leur nom scientifique, leurs usages. Bruxelles, Ministère des Colonies, 120 p.

1911

- Kassner Theo 1911. My journey from Rhodesia to Egypt, including an ascent of Ruwenzori and a short account of the route from Cape Town to Broken Hill and Lado to Alexandria. London, Hutchinson & Co, xiv + 309 p.

1912

- Godwey C.C. 1912. On the utilisation of an indigenous silkworm (*Anaphe infracta* Wism.) in Uganda. *Ann. Ent. Res.* **3**: 269-274.
- Schmitz Robert 1912. Les Baholoholo (Congo belge). *Collection Monographies ethnographiques* (Bruxelles) **IX**: xxxii + 605 p. + ix planches + 1 carte.

1913

- Tessmann Gunter 1913. *Die Pangwe. Völkerkundliche Monographie eines west-afrikanischen Negerstammes*. Berlin, E. Wasmuth, Band I: xxi + 275 p., Band II: 422 p.

1914

- Swynnerton C.F.M. 1914. Note on the larvae of *Anaphe panda*, Boisd. *Transactions of the Entomological Society of London*, xxx-xxxii.

1921

- Bequaert Joseph 1921. Insects as food. How they have augmented the food supply of mankind in early and recent times. *Nat. Hist. Journ., Amer. Mus. Nat. Hist.* **21**: 191-200.

1924

- Osborn Chase Salmon 1924. *Madagascar: Land of the Man-eating tree*. New York, Republic Publishing Co, 443 p. [voir p. 322-325].

1927

- Junod Henri Alexandre 1927. *The life of a South African Tribe*. London, 2nd ed. [Première édition: 2 volumes en 1912, 1913].

1931

- Doke Clement Martyn 1931. *The Lambas of Northern Rhodesia: A study of their customs and beliefs*. London, Georges G. Harrap & Co, 408 p.
- Stayt Hugh A. 1931. *The Bavenda*. London, International Institute of African Languages & Cultures, 392 p.
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1932

- Waterhouse Gilbert (Ed.) 1932. *Simon van der Stel's Journal of its expedition to Namaqualand 1685-6*. Dublin, Hodges, Figgis and Co, xxviii + 85 p.

1933

- Duncan J.R. 1933. Native foods and culinary methods. *Native Affairs Department Annual*, **11**: 101-106.

1935

- Trolli Grégoire 1935. *Les problèmes de l'alimentation du Noir au Congo Belge : viande et poisson*. Bruxelles, Foréami, 42 p.

1936

- Bryden HenryAnderson 1936. *Wild life in South Africa*. London, George G. Harrap & Co, 282 p.

1937

- Decary Raymond 1937. L'entomophagie chez les indigènes de Madagascar. *Bull. Soc. Entomologique France* **42**: 168-171.

1938

- Masseguin (médecin-capitaine), Antonini (pharmacien-colonel) 1938. Les chenilles comestibles dans la Haute-Sangha. *Bull. Soc. Recherches congolaises* **25**: 133-145.

1939

- Baião Domingos Vieira 1939. *Dicionário ganguela-português: lingua falada nas regioes do Cubango, Nhemba e Luchaze, provincia de Angola*. Lisboa, Centro de estudos filológicos.
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1940

- Harris W.Victor 1940. Some Notes on Insects as Food. *Tanganyika Notes and Records*, Dar es Salaam, **9**: 45-48.

1941

- Bergier Emile 1941. *Peuples entomophages et Insectes comestibles. Etude sur les mœurs de l'Homme et de l'Insecte*. Avignon (France), Rullières Frères, 231 p.
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1942

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1945

- Chinn M. 1945. Notes pour l'étude de l'alimentation des indigènes de la Province de Coquilhatville. *Ann. Soc. Belg. Méd. Trop.* **25**: 57-149.

1946

- de Almeida António 1946. Crónica de etnografia colonial. Carne de invertebrados – Tabu alimentar dos nativos das colónias portuguesas. *Bol. Geral das Colónias* **22**, n° 249: 107-115.
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DISCUSSION

The present paper is relevant to ethnozoology. The subject of human consumption of insects in general, and of Lepidoptera in particular, may be approached from several angles. First it is possible to develop a global approach checking all material published, in our case regarding Africa. The citation of items may be organized either by chronological order (see above and Figure 1), or from an alphabetic order of author's names (Appendix 1). The examination of the literature quoted above raises several points.

First most of the literature is in English, French taking easily the second position.

The second appendix presents names of all the species quoted as edible in Africa. They belong to 13 families. Ninety-two species, duly determined, are quoted, eleven others are known at genus level and three are campeonims. Concerning these campeonims the photos of caterpillars available differ from those of the other species consumed of the same family. These include one other species for the Lymantriidae, and 3 other species for the Limacodidae. The case of "lusambwa" is very interesting. Four different researchers (MALAISSE, 1997; DEMESMAECKER, 1997; LATHAM, 1999; KISIMBA, 2014) have taken photographs of the same caterpillar. Its consumption by 13 different ethnolinguistic groups has been quoted; the same caterpillar bears thirteen different campeonims (MALAISSE *et al.*, 2015). "Lusambwa" differed from all the other Notodontidae recently known to be eaten in Africa. At present its name is known, *Ipanaphe carteri* Walsingham (Fig. 2).

Regarding the various species, the mopane worm, *Imbrasia belina*, takes easily the first and dominant place, in the literature mentioned, with at least 59 references. Other important species are *Cirina forda* (13 times), different species belonging to the genus *Anaphe* (10 times), *Elaphrodes lactea* and *Imbrasia oyemensis* (3 times). Only one paper is devoted to the following species : *Bunaea alcinoe*, *Bunaeopsis aurantiaca*, *Coeliades libeon*, *Gymnanisa maia*, *Hadraphe aethiopica* and *Imbrasia truncata*.

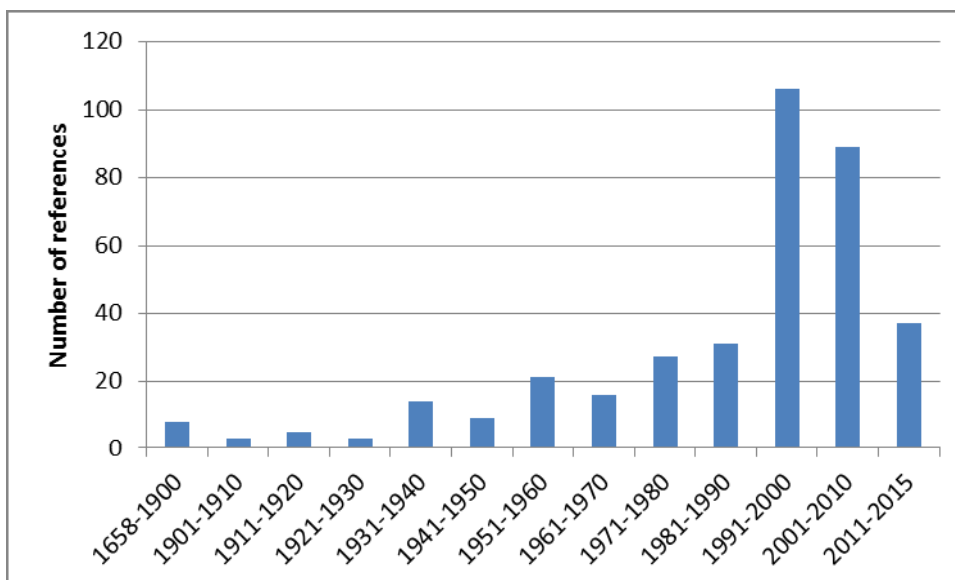


Figure 1.- Number of references quoted for the 1658-1900 period, and after per decades.

A second approach consists of examining in detail local knowledge regarding species diversity (Appendix 3). SILOW (1976), TANGO (1981), MALAISSE (1997, 2010), ROULON-DOKO (1998) and LATHAM (1999) are five fine examples of such issue. Such approach provides an answer to “Will tribal knowledge survive the millennium?” of COX (2000).

A third issue concerns ecological knowledge of life cycle, hosts plants and seasonality of the diverse species consumed locally. *Imbrasia belina*, the mopane worm, is a classic example.

A fourth considers the present stage of the distribution network. The supplying and marketing of edible insects in large towns, mainly caterpillars, is being increasingly studied. As an example we may cite the experience in Brazzaville (MABOSSY-MOBOUNA *et al.*, 2014).

Finally, biodiversity management, domesticating and farming of edible Lepidoptera are being assessed as a new mini livestock enterprise. Assessing options for promoting management of natural ecosystems in order to secure diverse resources are now frequent. As examples we quote the papers of CLARKE *et al.* (1996) concerning miombo woodlands and AKPALU *et al.* (2009) for mopane woodlands.

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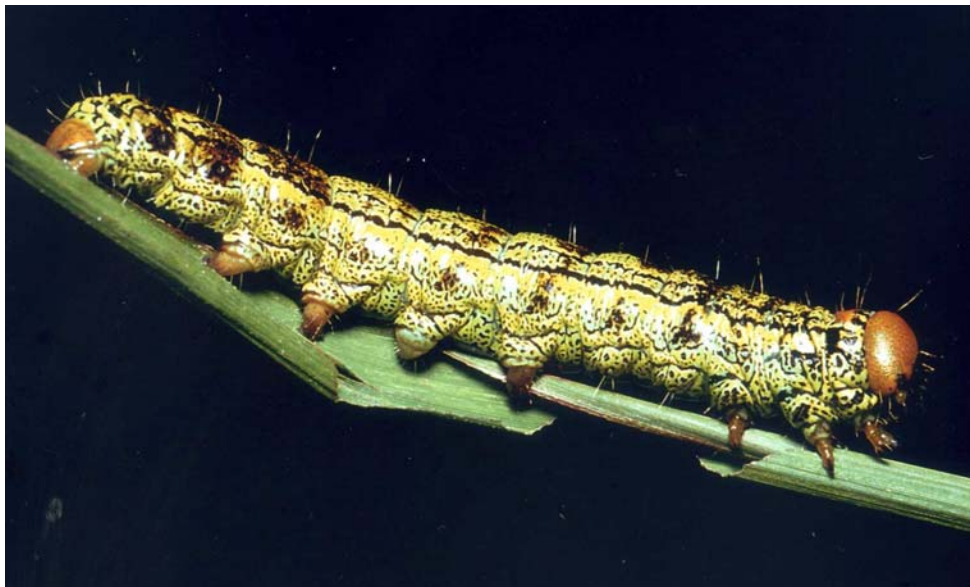


Figure 2.- My name is “lusambwa” in chibemba. I have twelve other campeonyms. I am known by about 20 million people. I received recently my scientific name. I am the final stage caterpillar of *Ipanaphe carteri* Walsingham. (Photo Léon LEMAIRE).

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Appendix 2.- Lepidoptera species consumed by man in Africa.

Family	Species	References
Brahmaeidae	<i>Dactylocerus lucina</i> Drury	Malaisse, Lognay, 2003
Cossidae	<i>Xyleutes capensis</i> Walker	Schabel, 2010
Eupterotidae	<i>Hemijana variegata</i> Rothschild	Bronwyn, 2013
Hesperiidae	<i>Coeliades libeon</i> Druce	Dartevelle, 1951
Lasiocampidae	<i>Bombycomorpha pallida</i> Distant	Ramos-Elorduy, 1993
	<i>Borocera cajani</i> (Vinson)	Jennings-Rentenaar, 2010; Barsics et al., 2013
	<i>Borocera madagascariensis</i> Boisduval	Decary, 1937
	<i>Borocera</i> sp. 3 “fangostoana”	Gade, 1985
	<i>Gonometa postica</i> Walker	Quin, 1959
	<i>Pachymeta robusta</i> Aurivillius	Roulon-Doko (pers. comm.)
Limacodidae	<i>Deborrea malgassa</i> Heylaerts	DeCary, 1937
	<i>Hadrrophe ethiopica</i> Bethune-Baker	Malaisse et al., 2003
	<i>Latoia albifrons</i> Guérin-Méneville	Razafimanantsoa (pers. comm.); Barsics (pers. comm.)
	<i>Parasa ebenau</i> Saalmüller	Razafimanantsoa (pers. comm.); Barsics (pers. comm.)
	“mafina” (merina)	Barsics et al., 2013
Lymantriidae	“nziozu” (kintandu)	Latham, 1999a
	<i>Rhyopteryx poecilanthes</i> Colenette	Malaisse, Lognay, 2003
Noctuidae	<i>Helicoverpa armigera</i> (Hübner)	Mignot, 2003
	<i>Nyodes prasinodes</i> Prout	Mapunzu, 2002
	<i>Prodenia</i> sp.1	Adriaens, 1953
	<i>Sphingomorpha chlorea</i> Cramer	Silow, 1976
	<i>Spodoptera exempta</i> (Walker)	Mbata, 1995
	<i>Spodoptera exigua</i> Hübner	Mbata, 1995
Notodontidae	<i>Anaphe infracta</i> Walsingham	Bahuchet, 1985; Takeda, 1990
	<i>Anaphe panda</i> (Boisduval)	Harris, 1940; Le Clerc et al., 1976
	<i>Anaphe reticulata</i> Walker	Alamu et al., 2013
	<i>Anaphe venata</i> Butler	Bahuchet, 1985; Ashiru, 1988
	<i>Antheua insignata</i> Gaede	Malaisse, Parent, 1980
	<i>Antheua</i> sp. 2	Latham, 2008
	<i>Antheua</i> sp. 3	Latham, 2008
	<i>Cerurina</i> cf. <i>marshalli</i> (Hampson)	Roulon-Doko (pers. comm.)
	<i>Desmeocraera</i> sp. 1	Silow, 1976
	<i>Drapedites uniformis</i> Swinhoe	Malaisse, Parent, 1980
	<i>Elaphrodes lactea</i> (Gaede)	Seydel, 1939
	<i>Ipanaphe carteri</i> Walsingham	Latham in Malaisse, Lognay, 2003
Nymphalidae	<i>Cymothoe caenis</i> Drury	Latham, 2008; Lisingo et al. (2011)
Papilionidae	cf. <i>Princeps</i> sp.1	Roulon-Doko, (pers. comm.)
Psychidae	<i>Deborrea malgassa</i> Heylaerts	Decary, 1937
	<i>Eumeta cervina</i> Druce	Scalercio, Malaisse, 2010

	<i>Eumeta rougeoti</i> Bourgeois	Scalercio, Malaisse, 2010
	<i>Eumeta strandi</i> Bourgeois	Scalercio, Malaisse, 2010
	<i>Eumeta</i> sp. 4	Pagezy, 1975
Saturniidae	<i>Antherina suraka</i> (Boisduval)	Gade, 1985
	<i>Argema mimosae</i> (Boisduval)	Kropf, 1899
	<i>Athletes gigas</i> Sonthonnax	Malaisse, Parent, 1980
	<i>Athletes semialba</i> Sonthonnax	Malaisse, Parent, 1980
	<i>Bunaea alcinoe</i> (Stoll)	Silow, 1976
	<i>Bunaea aslauga</i> (Kirby)	Barsics et al., 2013
	<i>Bunaeopsis aurantiaca</i> (Rothschild)	Malaisse, Parent, 1980; Muvundja et al. 2013
	<i>Ceranchia apollina</i> Butler	Razafimanansto (pers. comm.)
	<i>Cinabra hyperbius</i> (Westwood)	Silow, 1976; Malaisse, Parent, 1980
	<i>Cirina butyrospermi</i> Vuillet	Bergier in Merle, 1958
	<i>Cirina forda</i> (Westwood)	Adriaens, 1953; Oberprieler, 1993
	<i>Epiphora bauhiniae</i> (Guérin-Méneville)	Pagezy, 1975
	<i>Gonimbrasia hecate</i> (Rougeot)	Malaisse, Parent, 1980
	<i>Gonimbrasia rectilineata</i> (Sonthonnax)	Morris, 2004
	<i>Gonimbrasia zambesina</i> (Walker)	Malaisse, Parent, 1980
	<i>Gonimbrasia</i> sp. 4	Latham, 1999a
	<i>Goodia kuntzei</i> (Dewitz)	Malaisse, Parent, 1980
	<i>Gynanisa ata</i> Strand	Malaisse, Parent, 1980
	<i>Gymnanisa maja</i> (Klug)	Oberprieler, 1993
	<i>Heniocha dyops</i> (Maassen)	Oberprieler, 1993
	<i>Imbrasia alopia</i> Westwood	Latham, 1999a
	<i>Imbrasia anthina</i> Karsch	Latham, 2008
	<i>Imbrasia belina</i> (Westwood)	Velcich, 1963; Oberprieler, 1993
	<i>Imbrasia cytherea</i> (Fabricius)	Smit, 1964
	<i>Imbrasia eblis</i> Strecker	Latham, 2008
	<i>Imbrasia epimethea</i> Drury	Adriaens, 1953
	<i>Imbrasia ertli</i> Rebel	Oberprieler, 1993
	<i>Imbrasia macrothyris</i> (Rothschild)	Malaisse, Parent, 1980
	<i>Imbrasia obscura</i> (Butler)	Bahuchet, 1985; Roulon-Doko (pers. comm.)
	<i>Imbrasia oyemensis</i> Rougeot	Akpossan et al., 2009; Lisingo et al., 2010
	<i>Imbrasia petiveri</i> (Guérin-Méneville)	Silow, 1976
	<i>Imbrasia rhodina</i> Rothschild	Latham, 1999a; Roulon-Doko (pers. comm.)
	<i>Imbrasia rubra</i> (Bouvier)	Malaisse, Parent, 1980
	<i>Imbrasia truncata</i> Aurivillius	Bahuchet, 1985; Roulon-Doko (pers. comm.)
	<i>Imbrasia tyrrhea</i> (Cramer)	Oberprieler, 1993
	<i>Imbrasia wahlbergi</i> (Boisduval)	Latham, 2008

	<i>Lobobunaea angasana</i> (Westwood)	Malaisse, Parent, 1980
	<i>Lobobunaea christyi</i> (Sharp)	Seignobos et al., 1996
	<i>Lobobunaea goodii</i> Holland	Takeda, 1990
	<i>Lobobunaea phaedusa</i> (Drury)	Latham, 1999a
	<i>Lobobunaea saturnus</i> (Fabricus)	Malaisse, Parent, 1980
	<i>Maltagorea fusicolor</i> (Mabille)	Farsics et al., 2013
	<i>Melanocera nereis</i> (Rothschild)	Latham, 1999a
	<i>Melanocera parva</i> Rothschild	Malaisse, Parent, 1980
	<i>Micragone ansorgei</i> (Rothschild)	Malaisse (comm. pers.)
	<i>Micragone cana</i> (Aurivillius)	Malaisse, Parent, 1980
	<i>Micragona herilla</i> (Westwood)	Ramos Elorduy, 1991
	<i>Nudaurelia anthina</i> (Karsh)	Latham, 1999a; Roulon-Doko (pers. comm.)
	<i>Nudaurelia richelmanni</i> Weymer	Malaisse, Parent, 1980
	<i>Pseudantherea discrepans</i> Butler	Malaisse, Lognay, 2003
	<i>Pseudaphelia appolinaris</i> (Boisduval)	Gardiner, Gardiner, 2003
	<i>Tagoropsis flavinata</i> (Walker)	Malaisse, Parent, 1980
	<i>Tagoropsis</i> sp. 2 “bokana”	Gade, 1985
	<i>Urota sinope</i> (Westwood)	Malaisse, Parent, 1980
	<i>Usta terpsichore</i> (Maassen & Weyding)	Malaisse, Parent, 1980
	<i>Usta wallengrenii</i> (Felder & Felder)	Gaerdes, 1959; Oberprieler, 1993
Sphingidae	<i>Acherontia atropos</i> (Linn.)	Latham, 1999; Roulon-Doko (pers. comm.)
	<i>Coelonia fulvinotata</i> (Butler)	Roulon-Doko (pers. comm.)
	<i>Herse convolvuli</i> (Linn.)	McGregor, 1995
	<i>Hippotion eson</i> (Cramer)	Malaisse, Lognay, 2003
	<i>Hippotion</i> sp. 2	Roulon-Doko (pers. comm.)
	<i>Lophostethus dumolinii</i> (Angas)	Roulon-Doko (pers. comm.)
	<i>Nephele comma</i> Hopffer	Silow, 1976; Morris, 2004
	<i>Platysphinx stigmatica</i> (Mabille)	Malaisse, Lognay, 2003
	<i>Platysphinx</i> sp. 2	Latham, 1999
	<i>Platysphinx</i> sp. 3	Roulon-Doko (pers. comm.)

(pers. comm.) : personal communication.

The consumption of *Lepidoptara litoralia* has been quoted by Salomon & Prisca (2012), but neither family, nor authority was given.

Appendix 3.- Number of Lepidoptera species consumed by diverse ethnolinguistic units in Africa. E: number of ethnospecies recognized, L: number of Linnean species (caterpillar supported by scientific determination). For a distribution map of campeophagy in Africa see Malaisse (2005).

ETHNOLINGUISTIC UNITS (COUNTRY)	REFERENCES	NUMBER OF CATERPILLARS	
		E	L
Kono (Guinea-Conakry)	Villiers, 1957	+	
Sénoufo (Burkina Faso)	Ouédraogo (pers. comm.)	1	1
Dioula=Dyula (Burkina Faso)	Ouédraogo (pers. comm.)	1	1
Bambara (Mali)	Bergier, 1941	+	
Bambara (Mali)	Salle et al., 2003	+	1
Lobi (Burkina Faso)	Ouédraogo (pers. comm.)	1	1
Karaboro (Burkina Faso)	Ouédraogo (pers. comm.)	1	1
Birifor (Burkina Faso)	Ouédraogo (pers. comm.)	1	1
Bobo Madaré (Burkina Faso)	Ouédraogo (pers. comm.)	1	1
Dagara (Burkina Faso)	Ouédraogo (pers. comm.)	1	1
Dafing (Burkina Faso)	Ouédraogo (pers. comm.)	1	1
Tiéfo (Burkina Faso)	Ouédraogo (pers. comm.)	1	1
Moba (Nigeria)	Badanaro et al., 2014	+	1
Bariba (Nigeria)	Fasoranti, Ajiboye, 1993	+	1
Hausa (Nigeria)	Paiko et al., 2014	+	1
Nupe (Nigeria)	Fasoranti, Ajiboye, 1993	+	1
Yoruba (Nigeria)	Golding, 1942	+	
Yoruba (Nigeria)	Ene, 1963	+	
Yoruba (Nigeria)	Ashiru, 1988	+	1
Yoruba (Nigeria)	Fasoranti, Ajiboye, 1993	+	1
Yoruba (Nigeria)	Adeduntan, Bata, 2004	+	1
Holoholo (D.R. Congo)	Schmitz, 1912	+	
Pangwe (Equat. Guinea)	Tessmann, 1913	21	
Fang (Gabon)	Sarraco-Lanata (pers. comm.)	5	
Nzebi (Gabon)	Rougeot, 1955	+	1
Nzebi (Gabon)	Sarraco-Lanata (pers. comm.)	12	
Kota (Gabon)	Sarraco-Lanata (pers. comm.)	4	
Teke (Gabon)	Sarraco-Lanata (pers. comm.)	17	
Kongo (Laadi) (R. Congo)	Jacquot, 1978	19	
Kongo (Ntandu) (D.R.Congo)	Latham, 1999a-b; 2000	22	12
Kongo (Ndibu) (D.R.Congo)	Kimba Kasalwe (pers. comm.)	27	
Yaka (D.R.Congo)	Lechien in Leleup, Daems, 1969	+	
Mongo (D.R.Congo)	Chinn, 1945	31	2
Mongo (Ngandu) (D.R.Congo)	Takeda, 1990	12	
Mongo (Twa) (D.R.Congo)	Pagezy, 1988	31	7
Sakata (D.R.Congo)	Marcot, 2005	+	1
Yansi (D.R.Congo)	Tango Muyay, 1981	33	
Mbala (D.R.Congo)	Adriaens, 1953	9	4

Mbala (D.R.Congo)	Mbemba, Remacle, 1992	24	
Songo (D.R.Congo)	de Beaucorps, 1941	+	
Sondi=Sonde (D.R.Congo)	Leleup, Daems, 1969	4	2
Pende (D.R.Congo)	Leleup, Daems, 1969	7	3
Pende (D.R.Congo)	Daems in Leleup, Daems, 1969	18	
Luba-Kasai (D.R.Congo)	Colle, 1913; Katya Kitsa, 1989	9	
Lunda (Zambia)	Mbata, 1995	6	
Lunda-Ruund (Zambia)	Demessmaecker, 1997	15	12
Tshokwe (D.R.Congo)	Roeges in Leleup, Daems, 1969	+	
Tshokwe (Angola)	Silow, 1976	+	
Holo (D.R.Congo)	Denis, 1964	> 6	
(U)Mbundu South (Angola)	Bossard, 1996	+	
Ganguella (Angola)	Pinto Serpa, 1881; Baiao, 1939	+	
Luimbi (Angola)	Baum, 1903	+	
Luc(h)asi (Zambia)	Silow, 1976	+	
Luc(h)asi (Zambia)	Mbata, 1995	1	
Lwena=Luvale (Zambia)	White, 1959	18	
Lwena=Luvale (Zambia)	Mbata, 1995	4	
Ndembo (Zambia)	Silow, 1976	+	
Kaonde (Zambia)	Mbata, 1995	5	
Mbunda (Zambia)	Silow, 1976	31	
Mbunda (Zambia)	Mbata, 1995	1	
Yauma=Iauma (Angola)	Silow, 1976	+	
Nkoya (Zambia)	Silow, 1976	12	
Mashasha (Zambia)	Silow, 1976	+	
Nkangala (Zambia)	Silow, 1976	+	1
Tswana (Kwena) (Botswana)	Livingstone, 1857	1	1
Tswana (Tlokwa) (Botswana)	Grivetti, 1979	5	2
(Si)Ndebele (Zimbabwe)	Chavanduka, 1975	1	
Gwembe Tonga (Zambia)	Scudder, 1962	+	
Tonga (Zambia)	Mbata, 1995	2	
Lenje (Zambia)	Torrend, 1931	+	
Lala (Zambia)	Thomson, 1954	+	
Lala (Zambia)	Mbata, 1995	1	
Nsenga (Zambia)	Mbata, 1995	10	
Kunda (Zambia)	Mbata, 1995	1	
Nyanja-Ngosi (Zambia)	Mbata, 1995	3	
Nyanja (Malawi)	Mkanda, Munthali, 1994	13	
Bisa (Zambia)	Mbata, Chidumayo, 1999	8	6
Bisa (Zambia)	Mbata, Chidumayo, 2003	8	5
Aushi (Zambia)	Kisimba, Muzinga (pers. comm.)	+	1
Lamba (Zambia)	Doke, 1931	+	
Lamba (Zambia)	Demessmaecker, 1997	21	18
Sanga (D.R.Congo)	Lambrecht, Bernier, 1961	1	1
Aushi (D.R.Congo)	Malaisse et al., 2003	1	1
Tabwa (D.R.Congo)	Bergier, 1941	+	

Tabwa (D.R.Congo)	Kimba Kasalwe (pers. comm.)	+	
Bemba (D.R.Congo)	Malaisse, Parent, 1981	35	26
Bemba (D.R.Congo)	Malaisse, 1997a	38	24
Bemba (D.R.Congo)	Malaisse, 2004	40	27
Bemba (Zambia)	Richards, 1939	6	
Bemba (Zambia)	Mbata, 1995	26	
Malila (Tanzania)	Latham (pers. comm.)	1	
Lega-Shabunda (D.R.Congo)	Bergier, 1941	+	
Lega-Rhwa (D.R.Congo)	Seitz, 1993	+	
Shi (D.R.Congo)	Seitz, 1993	2	
Gogo (Tangania)	Cole, 1902	+	
Sandawe (Tanzania)	Newman, 1975	+	
Ngindo (Tanzania)	Crosse-Upcott, 1958	+	
Yao (Mozambique)	Harris, 1940	+	1
Tumbuka (Zambia)	Mbata, 1995	+	
Venda (Zimbabwe)	Wessmann, 1908	+	
Venda (Zimbabwe)	Stayt, 1931	+	
Venda (Zimbabwe)	Jackson, 1954	9	1
Thonga (Rep. South Africa)	present study	+	
Thonga (Rep. South Africa)	Junod, 1927	+	
Ronga (Rep. South Africa)	Silow, 1976	+	
Swazi (Swaziland)	Beemer, 1939	1	
Pedi (Sotho North) (Rep. South Africa)	Bronwyn, 2013	+	1
Pedi (Sotho Central) (Rep. South Africa)	Quin, 1959	5	5
Shona-Ndau (Zimbabwe)	Benhura, Chitsiku, 1990; 1992	1	1
Shona-Karanga (Zimbabwe)	McGregor, 1995	+	
Shona (Zimbabwe)	Duncan, 1933	6	
Shona (Zimbabwe)	Gelfand, 1971	7	1
Shona (Zimbabwe)	Chavanduka, 1975	5	3
Shona (Zezuru) (Zimbabwe)	Hannan, 1959	+	1
Nandi (Kenya)	Yagi, 1997	+	
Zande(D.R.Congo)	Emin-Pasha, 1888	+	
Zande(D.R.Congo)	de Schlippé, 1956	+	
Zande(D.R.Congo)	De Smet, 1972	+	
Medje(D.R.Congo)	Bequaert, 1921	+	
Gbaya (Cameroun)	Mapongmetsem, 2007	+	
Gbaya-Bodoe (Central Afr. Rep.)	Roulon-Doko, 1998	59	13
Bwaka (Central Afr. Rep.)	Bergier, 1941	+	
Bwaka = (Y)Aka (Central Afr. Rep.)	Bahuchet, 1985; Hladik, 1995	11	8
Issongo (Central Afr. Rep.)	Hladik, 1995	12	7
Bofi (Central Afr. Rep.)	Malaisse, 2004	17	9
Yangere (Central Afr. Rep.)	Masseguin, Antonini, 1938	21	
Dama(n) (Namibia)	Oberprieler, 1993	4	4
Mofu (Cameroun)	Seignobos et al., 1996	3	
Tiv (Nigeria)	Agbidye, Tyokever, 1999	2	2
Idoma (Nigeria)	Agbidye et al., 2009	+	1

Igede (Nigeria)	Agbidye et al., 2009	+	1
Ebira (Nigeria)	Fasoranti, Ajiboye, 1993	+	1
Bassa (Cameroun)	Merle, 1958	3	
Kalanga (Botswana)	Zitzmann, 1999	+	1
San (Namibia)	Oberprieler, 1993	3	3
San (Namibia)	Imamura-Hayaki, 1996	+	
San (!Gui) (Botswana)	Nonaka, 1996	7	1
San (Bushman) (Namibia)	Marais, 1996	1	1
Nama(n) (Namibia)	Oberprieler, 1993	4	4
Nama(n) (Namibia)	Marais, 1996	+	3
Damara (Namibia)	Oberprieler, 1993	4	4
Damara (Namibia)	Marais, 1996	+	5
Antankarana (Madagascar)	Decary, 1937	+	
Bara (Madagascar)	Gade, 1985	5	2
Betsileo (Madagascar)	Ellis, 1838	+	
Betsileo (Madagascar)	Gade, 1985	5	2
Merina (Madagascar)	Decary, 1937	+	1
Merina (Madagascar)	Gade, 1985	5	2
Sakalava (Madagascar)	Decary, 1937	+	1

+ : at least one species, no precise values given.