



## ***Hollandus*, a new genus for the African skipper *Pardaleodes xanthoepus*, with the description of a new subspecies (Lepidoptera: Hesperidae: Hesperinae [*incertae sedis*])**

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**Abstract:** A new genus *Hollandus* is described to receive *Pardaleodes xanthoepus*, which differs too much from the other members of that genus in many significant respects. A new subspecies from the Central African Republic is described as ssp. *botambi*. Labels of the holotype in the Carnegie Museum, Philadelphia show that the true type location is “Benito, Equatorial Guinea” and not “Gabon, Valley of the Ogové”. A map of the known distribution of the two subspecies is presented.

**Key words:** African butterflies, Lepidoptera, Hesperidae, Hesperinae (*incertae sedis*), *Hollandus* gen. nov., *Pardaleodes xanthoepus botambi* ssp. nov.

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## INTRODUCTION

### Taxonomic background

The genus *Pardaleodes* was described by Butler (1870) with *Papilio Plebeius Urbicola edipus* [Cramer, 1871] as the type species (now credited to Stoll [1871], who wrote parts of the volumes that bore Cramer's name).

The first real attempt at a complete generic revision of the world Hesperidae was that of Lieutenant E.Y. Watson (1893), carried out in a garrison garret at Fort St George in Madras (now Chennai) in South India and during leaves in London. Watson placed only four species in the genus *Pardaleodes*: *P. edipus*, *P. sator* Westwood, 1852, *P. festus* Mabille, 1890 (= a junior synonym of *P. tibullus* Fabricius, 1793), and *P. coanza* Plötz, 1864 (= a junior synonym of *Zenonia zeno* Plötz, 1883). He appears to have had little contact with W.J. Holland in Philadelphia, who was working on his massive revision of the African Hesperidae that would become a building block for all subsequent work on African skippers.

When Holland (1896) published his revision of the African Hesperidae, he placed 17 species in the genus *Pardaleodes*; two of these were treated as junior

synonyms (indicated by square brackets), but are currently considered valid species (Table 1).

In his revision of the global Hesperidae, Mabille (1903–1904) followed Holland's list of *Pardaleodes*, except for removing three of the species to the genus *Andronymus* Holland, 1896. He also included four Malagasy species in *Pardaleodes*, not repeated by subsequent authors, and currently placed in the endemic Malagasy genus, *Perrotia* Oberthür, 1916 (they are not listed in Table 1).

In the Afrotropical volume of Seitz, which became the cornerstone for work on African butterflies and remains important, Aurivillius (1925) removed a further three species to his new genus *Xanthodisca*; the three placed in *Andronymus* by Mabille were moved to Aurivillius' new genus *Paronymus*.

Finally, Evans (1937) moved *Pardaleodes herilus* Hopffer, 1855 to the genus *Teniorhinus* Holland, 1892, *Pardaleodes ariel* Mabille, 1878 to *Xanthodisca* Aurivillius, 1925, and *P. fan* Holland, 1896 to his new genus *Ankola*. The species removed by Evans to *Teniorhinus* was recently placed in a new genus as *Herila herilus* by Larsen & Collins (2012). The two species placed in *Xanthodisca* viz. *X. astrape* Holland, 1892 and *P. ariel* Mabille, 1878 certainly do not belong there and will be reclassified in a forthcoming paper by Larsen & Lees (in prep.).

The taxonomic history of the genus is summarised in Table 1. A number of other names associated with *Pardaleodes*, not least by German authors between Holland and Aurivillius, encompassing junior

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synonyms or misplaced species belonging to other genera, are listed in Appendix 1.

### History of the genus *Pardaleodes* Butler, 1870

The type species of the genus is *Pardaleodes edipus* Stoll, 1781, which as usual for the time was placed in *Papilio* – the post-Linnéan concepts of the family and the genus were only just beginning to be established. The type locality was given as “Kaap de Goede Hoop”, the southern tip of South Africa, thousands of kilometres from the nearest populations of *P. edipus* or, for that matter, from any other *Pardaleodes*.

**Table 1** – The taxonomic history of the genus *Pardaleodes* (*P.*) with the present generic placement of the species that were originally included in Holland (1896). Species in square brackets have been reduced to junior synonyms or subspecies.

SPECIES	CURRENT STATUS
<i>P. edipus</i>	Remains as <i>P. edipus</i>
<i>P. ariel</i>	Moved to <i>Xanthodisca</i> by Evans (1937)
<i>P. astrape</i>	As above
<i>P. bule</i>	Remains as <i>P. bule</i>
<i>P. fan</i>	Moved to <i>Ankola</i> gen. nov. by Evans (1937)
<i>P. herilus</i>	Moved to <i>Teniorhinus</i> by Evans (1937), then to <i>Herila</i> by Larsen & Collins (2012)
<i>P. incerta</i>	Remains as <i>P. incerta</i>
<i>P. ligora</i>	Moved to <i>Andronymus</i> by Mabilille (1904), then to <i>Paronymus</i> by Evans (1937)
[ <i>P. pusiella</i> ]	Subspecies of <i>P. sator</i>
<i>P. rega</i>	Raised from junior synonym to valid species of <i>Xanthodisca</i> by Aurivillius (1925)
<i>P. reichenowi</i>	Changed to junior synonym of <i>P. tibullus</i> by Evans (1951)
<i>P. sator</i>	Was junior synonym of <i>P. edipus</i> ; raised to species rank by Aurivillius (1904)
[ <i>P. sierra</i> ]	Moved to <i>Xanthodisca</i> by Aurivillius (1925) and reduced to junior synonym of <i>P. rega</i> ♀
<i>P. vibius</i>	Moved to <i>Xanthodisca</i> by Aurivillius (1925)
<i>P. xanthias</i>	As above for <i>P. ligora</i>
<i>P. xanthioides</i>	As above for <i>P. ligora</i>
<i>P. xanthopeplus</i>	Moved to <i>Hollandus</i> Larsen & Collins in this paper

**Note:** *Pamphila coanza* Plötz, 1883 was listed as a subspecies of *P. incerta* by Mabilille, 1904.

### History of the genus *Pardaleodes* Butler, 1870

When Butler (1870) established *Pardaleodes*, he included *Hesperia laronia* Hewitson, 1868 as the only other species in the genus. This very different skipper

was designated as the type species of the genus *Osmodes* Holland, 1892.

*Pardaleodes* became something of a catch-all genus for medium-sized skippers with ochreous spots on the upperside and ochreous or yellow hindwing undersides. Thus, as shown in Table 1, Holland (1896) included 17 species in *Pardaleodes* [two of which only as junior synonyms].

Mabilille’s (1904) review of the world-wide Hesperidae retained all but three of Holland’s species, which were removed to *Andronymus*. However, Mabilille moved four additional species, described by himself, from two other genera, to *Pardaleodes*: *P. gillias* and *P. malchus* from *Cyclopides* Hübner, 1819, and *P. paroechus* and *P. howa* from the Australian genus *Trapezites* Hübner, 1819 [these four species are currently placed in *Perrotia* Oberthür, 1916 (see Lees *et al.* 2003)].

As shown in Table 1, the revision of the African Hesperidae by Evans (1937) winnowed down *Pardaleodes* to a more compact genus with just six species and three subspecies:

*P. edipus* Stoll [not Cramer], 1782

*P. bule* Holland, 1896

*P. incerta* Snellen, 1872 & ssp. *murcia* Plötz, 1883

*P. sator* Westwood, 1852 & ssp. *pusiella* Mabilille, 1877

*P. tibullus* Fabricius, 1793\* & ssp. *torensis* Bethune-Baker, 1906

*P. xanthopeplus* Holland, 1892

\*Evans (1951) changed the name of *tibullus* to a senior synonym of *reichenowi*.

Evans accepted two subspecies of *P. incerta*, but it is uncertain whether ssp. *murcia* is valid, since the species is very variable. Initial barcoding of *P. sator* indicates that it may have submontane vicariants in Cameroun as well as in the Albertine Rift area, though where its ssp. *pusiella* belongs is uncertain. *P. tibullus torensis* was described as a species, but Evans was probably right in considering it best treated as a subspecies since transitional specimens are met with. However, Ackery *et al.* (1995) accepted no subspecies in *P. incerta* or *P. tibullus*.

### MATERIALS AND METHODS

The methods used in the preparation of this manuscript were generally as described in Larsen & Collins (2014). Material examined is listed under each taxon.

**Abbreviations:** The following abbreviations are used for the various collections of the specimens involved: ABRI = African Butterfly Research Institute, Nairobi; CM = Carnegie Museum, Philadelphia; JS = James Stewart private collection; MRAC = Royal Museum for Central Africa, Tervuren; NHM = Natural History Museum (bmnh), London; RD = Robert Ducarme private collection; TBL = Torben B. Larsen private collection.

Terms such as H. 123 refer to genitalia slides in MRAC; scc 111 and tbl ABC refer to slides presently with Larsen, which will later be placed into a collection.

## RESULTS

### GENUS *PARDALEODES* BUTLER, 1870 (Hesperiidae: Hesperinae: [*incertae sedis*])

#### Characteristics of the genus *Pardaleodes*

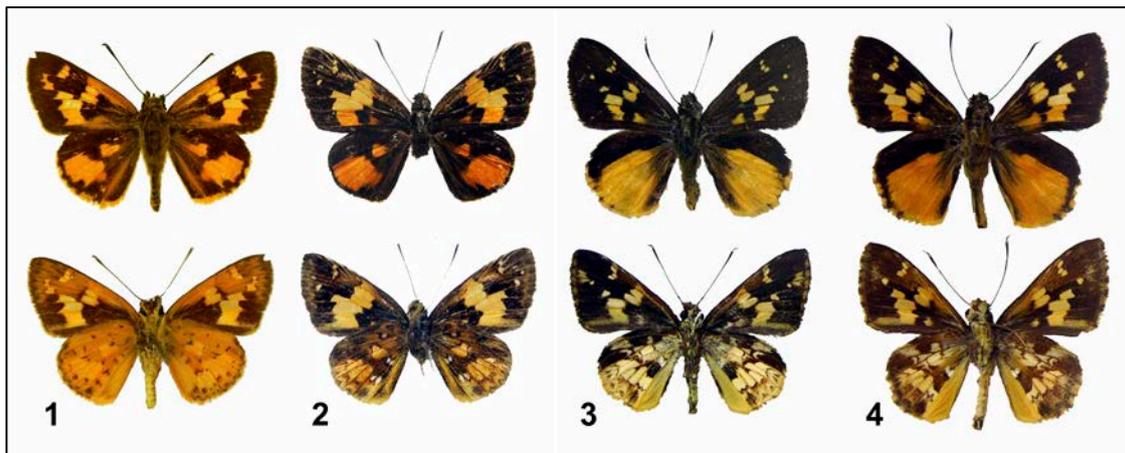
The six *Pardaleodes* listed by Evans, with the exception of *P. xanthopeplus*, share a number of characters in wing patterns and especially in genitalia, that join them together as a relatively homogeneous genus now placed in the subfamily Hesperinae (*incertae sedis*) (Warren *et al.* 2009). The males of four of these species are illustrated in Fig. 1.

The upperside ground-colour is dark brown (more blackish in *P. bule*) and they have many ochreous-orange spots on the forewings (spots more yellow in *P. bule*). The forewing spots consist of two cell-spots, three subapical spots, and single spots in spaces 4, 3, 2, and a double-spot in 1b; some even have a spot in 5. The spots in 3 to 1b form a fused postdiscal band; a line through this band reaches the costa well inside the apex. There is an additional spot in 1b, between the postdiscal band and the base of the wing. In the three small species

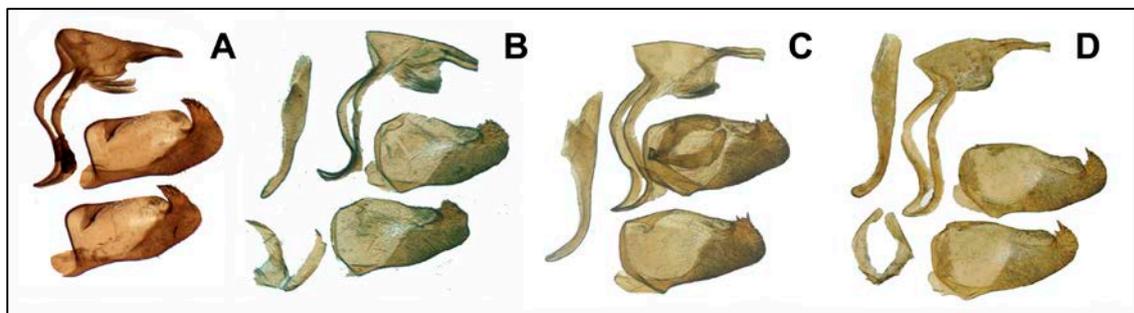
(*edipus*, *sator*, and *incerta*) the hindwing has prominent orange markings, composed of a large orange patch in the cell that is separated from a larger patch in the postdiscal area. In the two larger species (*bule* and *tibullus*) these are fused to form a single large patch that reaches the margin and takes up all but the costal area. The hindwing underside is ochreous, more deeply so in the three small species. In all the species, the cell-spot is visible as such, even when the upperside is fused to one large patch.

Despite the basic similarity in spotting and underside patterns members of the genus look rather varied because of the size of spots, differences in colour tone, degree of ochreous colouring on the hindwings, and size. However, all are united by the structurally similar male genitalia, so similar that they sometimes hardly show specific differences. The genitalia of four of the species are illustrated in Fig. 2.

The tegumen has no special features and merges seamlessly with the uncus, which splits into two narrow, parallel lamellae that hardly diverge from each other, and found in no other African genus of the Hesperinae (*incertae sedis*) (Fig. 2; see also Fig. 5 for the split uncus). The split part of the uncus is longer in some species than in others (shortest in *P. murcia*). The gnathos is composed of a fragile membrane that is strengthened by two chitinized ventral edges that are



**Figure 1** – Males of four species of *Pardaleodes*: (top row recto, bottom row verso)  
The columns show: 1. *P. edipus*, Côte d'Ivoire, no data (NHM); 2. *P. sator montane*, Cameroun, Mt Tabenken (ABRI); 3. *P. bule*, Kenya, Kakamega (ABRI); 4. *P. t. tibullus*, Ghana, Tano Ofin (ABRI).



**Figure 2** – Male genitalia of four *Pardaleodes* species:  
A. *P. edipus*, DRC, Paulis (H.150) (MRAC); B. *P. sator*, Sierra Leone, Bumbuna (tbl BWJ) (TBL);  
C. *P. bule*, DRC, Kivu (tbl BSL) (ex RD); D. *P. tibullus torensis*, Kenya, Kakamega (scc 294) (ABRI)

not fused to the tegumen, but parts of the membranes are often lost during slide preparation. The valves are more or less quadrate with a cucullus that turns up sharply to end just above the dorsal edge of the valve proper. There are fairly small differences from species to species with its upper tip very narrow (as in *edipus*) or broader (as in *sator* and *bule*). The vinculum is narrow and of even width from saccus to tegumen. The saccus is just a continuation of the vinculum with no strong additional chitinization in its basal triangle. There is a large fulcrum with two quite wide branches, about as long as the width of the valve (best seen in Fig. 2C). The genitalia are very different from those of *P. xanthoepus* (Fig. 4).

Given the differences in the colour pattern and especially the structural differences of the genitalia in

relation to the genus *Pardaleodes*, a new genus is described below specifically for *P. xanthoepus*, since there is no other described genus in which it fits.

**Hollandus Larsen & Collins, gen. nov.**

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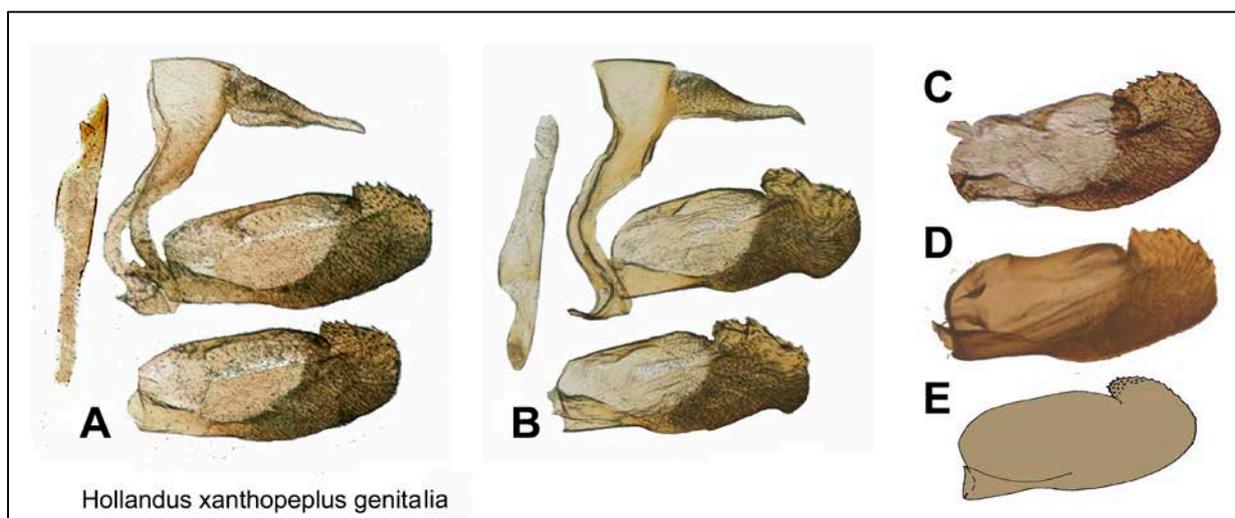
**Type species:** *Pardaleodes xanthoepus* Holland, 1892. *Annals and Magazine of Natural History* (6) **10**: 289 (284-294). **Type locality:** Equatorial Guinea, Benito area [originally published as being from "Gabon: "Valley of the Ogové"" see Note below]. Type depository: ♂ holotype, ♀ allotype, Carnegie Museum, Pittsburgh Types illustrated in colour by Holland (1894).

**Note:** Both types are actually labelled "Benito", as are three additional males (*teste* J. Rawlins). This refers to



**Figure 3** – The two subspecies of *Hollandus xanthoepus*; top row recto; bottom row verso.

1. *Hollandus x. xanthoepus* ♂ Cameroun, Ebogo (ABRI); 2. *Hollandus x. xanthoepus* ♀ Cameroun, Ebogo (ABRI).
  3. *Hollandus x. botambi* ssp. nov. ♂ Yakoli, Central African Republic, locality of the figured specimen
  4. *Hollandus x. botambi* ssp. nov. ♀ [Holotype] Bombabia, Bangui, Central African Republic ix.1997.
- The red spots designate the female holotype. All four specimens in the ABRI collection.



**Figure 4** – Male genitalia of *H. xanthoepus*.

- A. ssp. *botambi*, CAR, Botambi (tbl BZA) (ABRI); B. ssp. *xanthoepus*, Cameroun, no data (tbl BTJ/1466) (MRAC);
- C. ssp. *xanthoepus*, Cameroun, Ebogo (tbl CAC) (ABRI); D. ssp. *xanthoepus*, DRC, Mayoumbé (Luali) no data (H.155) (MRAC); E. ssp. *xanthoepus*, Liberia, Harbel [Miller M.46 in CM] (in Fox *et al.* 1965).

the River Benito in present day Equatorial Guinea [then Rio Muni] some 200 km north or northwest of the Ogove River and is not in the Ogove Valley as such. German collections contain a large number of species labelled "Benitogebiet" from 1890 until the First World War. There seems no doubt that this is the correct locality, and there was an American Presbyterian Mission called "Benito". However, Vande Weghe (2010) did collect *P. xanthoepplus* in Gabon (Waka National Park) in what can be called "Valley of the Ogove". The two areas are wholly contiguous and ecologically similar. Holland must have initiated his work before the "scramble for Africa" and before the Berlin Congress (1884-85) decisions had been fully implemented.

**Iconography:** The ♀ figured by Vande Weghe (2010) is one of the ABRI specimens from the Central African Republic described as a new subspecies later in this paper.

**Description:** Based on male *Hollandus x. xanthoepplus*: Length of forewing 17-19 mm. Antennae more than half costa, club long, gradual, obtuse beyond middle, ending in fine tip. Palpi semi-erect, third segment short, slightly bent forward. Upperside: ground-colour brown with ochreous-orange spots. Males without visible androconial features.

Forewing: two separated spots in cell, two subapical spots (sometimes with a minute third spot, especially on underside). No spots in spaces 4 and 5. Small spot in space 3, larger spots in 2, and 1b. No extra basal spot in 1b. Spots all well separated, never fusing. A line drawn through these spots will reach the forewing margin below the tip and not inside the costa.

Hindwing: large orange area covering most of wing, reaching margin. Costa and base brown, sometimes with narrow brown margin from space 3 to the costa.

Underside: forewing spots much larger than upperside, almost fused. Usually tiny upper subapical spot. Hindwing costa and cell dark brown without ochreous spot. Postdiscal band of almost quadrate, light ochreous, contiguous spots. Marginal ochreous band bordered by narrow inner brown margin.

Female differs from male by a wide brown hindwing margin, leaving only a large oval postdiscal patch.

**Genitalia** (see Fig. 4): Tegumen taller than long, vinculum broadening strongly before merging with tegumen. Uncus with small fenestrula at junction with tegumen; uncus twice as long as tegumen, broad at base, tapering to a point.

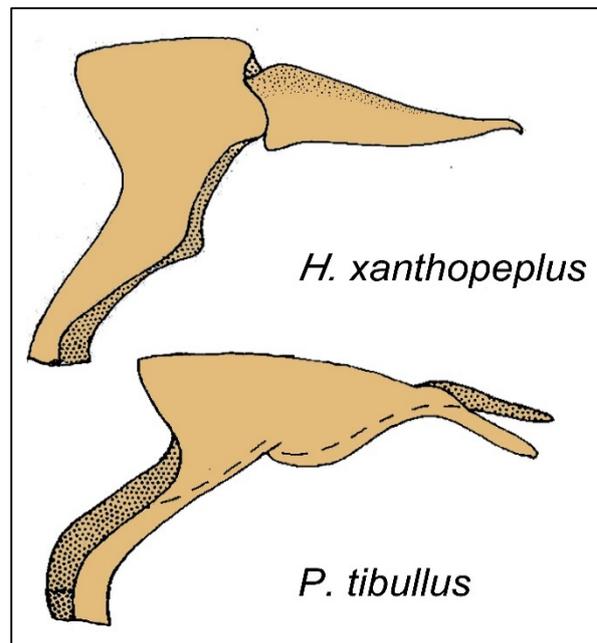
The basal part of the dorsal half of the uncus noticeably rugose. Basal half of uncus underside strongly grooved. Fenestrula area with a dense, erect hair-tuft at junction of tegumen and uncus. Valves roughly quadrangular with tip of cucullus rounded with small teeth on the short dorsal edge. Shape of cucullus variable. Vinculum widening considerably for half its length when approaching the tegumen, merging gradually and seamlessly. Saccus very short. Fultura an insignificant V. Penis somewhat longer than valve with no special features.

Michel Libert kindly compared the female genitalia of *H. x. xanthoepplus* with those of several *Pardaleodes*

and found them very different: "it is the only species with anterior apophysis and with a small but distinct genital "funnel" between the ductus bursae and the sinus vaginalis, and the ductus bursae is much narrower than in other species" (e-mail 26.xii.2014).

**Diagnosis:** *Hollandus xanthoepplus* is not easily confused with any other African Hesperinae (*incertae sedis*), except for *Pardaleodes tibullus* which has much larger spotting in which the postdiscal forewing spots from space 3 to 1b are fully fused to form a band, and which has a prominent additional inner spot in space 1b as well as spots also in spaces 4 and 5.

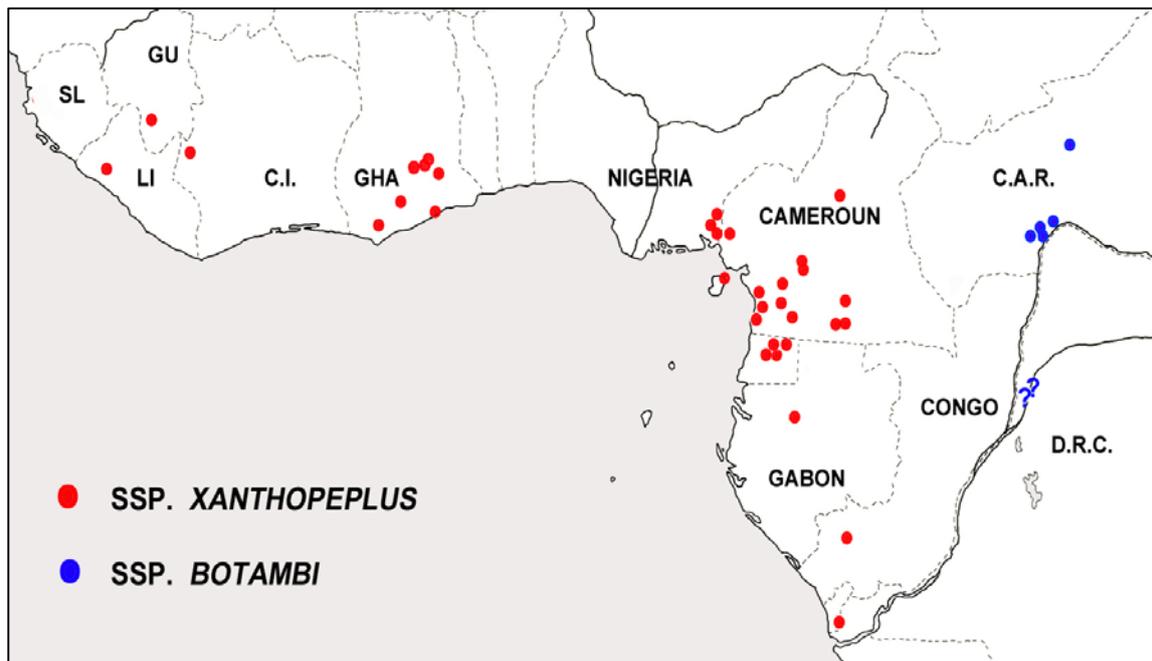
A few smaller species with ochreous spots (e.g. *Gyrogra subnotata* Holland, 1894, *Acada annulifer* Holland, 1892) do have the forewing spots fully separated, but their males have only a small, narrow hindwing discal band, where *H. xanthoepplus* has most of the hindwing ochreous to the margin (compare Figs 1 and 3).



**Figure 5** – Tegumen and uncus of *Hollandus xanthoepplus*, and of *Pardaleodes tibullus*, with its bifid uncus (both from Liberia, Ganta). Note also the strong differences in width of the vinculum (from Miller 1965).

The genitalia of *Hollandus* are quite different from any other species in the Hesperinae (*incertae sedis*) – not least from those in its former genus *Pardaleodes* (compare Figs 2 and 4, as well as Fig. 5).

The uncus is twice as long as the dorsal edge of the tegumen, which is proportionately longer than in any even vaguely similar species. In most small or medium-sized Hesperinae (*incertae sedis*) the uncus is about the length of the tegumen, rarely slightly longer, and sometimes a bit shorter, while the larger species mostly have a broad uncus (the uncus is rather similar to some *Caenides*, but longer; *Caenides* are otherwise very different in colour and by the presence of special hindwing discal androconial brushes). The valve is more or less quadrate with a rounded cucullus that



**Figure 6** – Distribution map of the two subspecies of *Pardaleodes xanthoepelus* as currently known, with red dots marking the nominate subspecies and blue spots ssp. *botambi*. The blue ?? indicate two males from the DRC (Lukolela) that seem to be ssp. *botambi*, but without matching females it is not certain.

varies in shape from specimen to specimen (see Fig. 4); the dorsal edge of the cucullus is serrated. Specimen **B** from Cameroun has a rather more irregular cucullus that gives the impression of being teratological.

#### Summary of material available of *P. x. xanthoepelus*

There are 15 ♂♂ and 7 ♀♀ from Equatorial Guinea and Cameroun in the Carnegie Museum (J. Rawlins, pers. comm.); ABRI has 19 ♂♂ and 12 ♀♀ from many localities in Cameroun; Evans (1937) had only 7 ♂♂ and 2 ♀♀ available from the NHM; there are just 4 ♂♂ in Berlin, and during his extensive collecting in Gabon Vande Weghe (2010) found just a single male. There are additional scattered specimens in various public and private collections, including Larsen's few papered specimens from eastern Nigeria. All told, we have examined just under 80 specimens of the nominate subspecies, of which 25 are females.

**Range, habitat, and habits:** The nominate subspecies is so far known sparingly from Guinea, Liberia, Côte d'Ivoire, Ghana, and Nigeria, more frequently in Cameroun, with rather few from Equatorial Guinea, Congo, Gabon, and the extreme west of the DRC. Up to now the species has not been collected in Togo, Bénin, or western Nigeria, and – although a rare species – it may well genuinely be absent from the entire Dahomey Gap. The West African population might therefore be genetically different. The new ssp. *botambi* is isolated in the Central African Republic (two males from Lukolela, DRC are probably this subspecies, but in the absence of females not included in the type series). The material of ssp. *botambi* from the Central African Republic is listed as paratypes in the description of this new subspecies (see Fig. 6).

The habitat is rainforest in good condition where the species is usually found in ones and twos, sitting on leaves a metre above the ground, though it will come to flowers along paths and forest clearing. Aurivillius (1925) knew only the type. The food plants are not known, but the habitat, relative rarity, patchy distribution, and habits suggest that they may be dicotyledons; all *Pardaleodes* feed exclusively on grasses (Cock & Congdon, 2014), are more eclectic in habitat choice, and are numerous wherever encountered.

**Etymology:** The genus is named in honour of Dr. William James Holland (1848-1932), who authored the first major revision of the Afrotropical Hesperiiidae in 1896 and also classified the butterflies and moths from the material of the ambitious Congo expedition of the American Museum of Natural History in New York, describing a number of new species (Holland, 1920). He was educated as a Presbyterian minister and in 1874 moved to Pittsburgh, where he became pastor at the Belleville Presbyterian Church in Oakland as well as teaching at local colleges. He had a great interest in butterflies and wrote one of the most popular books ever on American butterflies. During this period he persuaded numerous missionaries in Africa to collect butterflies, with special emphasis on the Hesperiiidae, with material mainly from Cameroun and Gabon. In 1891 he was elected Chancellor of the Western University of Pennsylvania and in 1898 Director of the Carnegie Museum. During his career he also made important Palaeontological discoveries, including a new dinosaur. He participated in expeditions to Japan and South America, but never visited Africa.

***Hollandus xanthoepus botambi* Larsen & Collins, ssp. nov.**

**Holotype** (Fig. 3.4): ♀ Bombabia, Bangui area, Central African Republic [04.06N 18.26E]; ix.1997; ABRI leg.; Deposited in ABRI collection.

**Paratypes:** 14♂♂ Botambi, Yakoli, Bombabia, Yombo, Boukoko, Bimon (ABRI); ♂ Bangui (JS); 9♀♀ Botambi, Yakoli, Bombabia, Doulabo (ABRI).

The population of *H. xanthoepus* in the Central African Republic differs so much from those in the rest of its range that it needs a subspecies of its own, which is described below:

**Description:** As in the description of the genus *Hollandus* above; the differences from ssp. *xanthoepus* are given in the diagnosis section below.

**Diagnosis:** The female upperside of ssp. *botambi* differs from the nominate subspecies in having a large orange area on the hindwing upperside, almost as in the male, and reaching the entire margin between the tornus and vein 5. The nominate female has a well-defined orange oval postdiscal patch with a broad brown margin, with just some small yellow dots in the tornal area. The female hindwing underside of ssp. *botambi* has a slightly more extensive ochreous area, which has the same tone on the margin, where the nominate female has the margin finely dusted with brown scales. ABRI has 9 females from four separate localities in the Central African Republic over several years since 1995 that consistently differ from the 25 females seen from Gabon and Cameroun to Liberia.

The male upperside of ssp. *botambi* is almost identical to the nominate ssp., the only difference being that the ochreous area of the hindwing is slightly larger and has no, or hardly any, narrow dark margin between space 3 and the costal area (rarely missing also in the nominate ssp.). On the hindwing underside the margin is not finely dusted with brown scales as in the nominate (compare in Fig. 3).

The male genitalia do not differ materially from those of the nominate subspecies (compare in Fig. 4).

**Range, habitat, and habits:** Ssp. *botambi* is known from six localities in the Central African Republic. Most are from within a 40 km radius of the Capital, Bangui; one of the female paratypes is from Yombo, 350 km northeast of Bangui. Two males from Lukolela in Equateur Province, DRC seem closest to this subspecies, but in the absence of females it is not possible to be sure (marked with blue question marks in Fig. 5).

**Etymology:** The species is given the name of Botambi in the Central African Republic, 40 km west of Bangui, where the first specimens were encountered, but the holotype is a female from Bombabia near Bangui which is in better condition than one from Botambi.

**Concluding remarks:** Larsen (2005) was not sure whether a record from Liberia was correct since Lindsey & Miller (1965) thought that Good's specimen might have been mislabelled, though a single specimen from Côte d'Ivoire was available. During recent intensive collecting in the country, Sz. Sáfián did not meet with it, but C. Belcastro has a specimen from Ziana on the Guinea/Liberia border, so the Liberia record is probably correct. Ssp. *botambi* must have evolved in isolation during one of the cooler, drier times of the Quaternary Period, when pockets of forest in the Central African Republic were cut off from those in Cameroun by a band of dry savannah.

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**Appendix 1.** Additional species and synonyms that have occasionally been placed in *Pardaleodes* and are not mentioned in the main text.

Species name	Present status (syn. = junior synonym)
<i>alenica</i> Strand, 1912	syn. of <i>Andronymus fenestrella</i> Bethune-Baker, 1908
<i>atratus</i> Mabille, 1891	correct genus is <i>Apallaga</i> Strand, 1911*
<i>diluta</i> Reuss, 1912	syn. of <i>Pardaleodes incerta</i> Snellen, 1872
<i>fulgens</i> Mabille, 1891	correct genus is <i>Apallaga</i> Strand, 1911*
<i>illustris</i> Mabille, 1891	correct genus is <i>Apallaga</i> Strand, 1911*
<i>interniplaga</i> Mabille, 1891	correct genus is <i>Apallaga</i> Strand, 1911*
<i>kamagamba</i> Beth.-Baker, 1908	syn. of <i>Ankola fan</i> Holland, 1894
<i>kelembaensis</i> Strand, 1918	correct genus is <i>Flandria</i> Larsen, 2011
<i>makala</i> Bethune-Baker, 1908	syn. of <i>Pardaleodes bule</i> Holland, 1896
<i>parcus</i> Karsch, 1893	syn. of <i>Xanthodisca astrape</i> [new genus needed]
<i>scalaris</i> Grünberg, 1910	syn. of <i>Ankola fan</i> Holland, 1894

\* Most of the orange species presently placed in *Celaenorrhinus* were removed to the genus *Apallaga* by Libert (2014), others to his new genus *Scopulifera*. Only the black and white species remain in *Celaenorrhinus*.