

**UMMA MESUMBEI SPEC. NOV., WITH RECORDS
OF SOME OTHER DRAGONFLY SPECIES
FROM THE SOUTH-WEST PROVINCE OF CAMEROON
(ZYGOPTERA: CALOPTERYGIDAE)**

G.S. VICK

Crossfields, Little London, Basingstoke, Hants, RG26 5ET,
United Kingdom

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U. mesumbei sp.n. is described (holotype ♂: Cameroon, Mount Kupe, seepage on R. Esenzeh, alt. 980 m, 1-IV-1995; in Author's coll.). Odon. records from Mount Kupe, and Mount Cameroon, are presented. The conservation value of Mount Kupe for Odon. is discussed.

INTRODUCTION

The South-West Province of Cameroon forms part of what was formerly the British Cameroons. There are some lowland areas in the South and West, but the province is predominantly hilly, perhaps about 60% of the terrain being above 600 m in altitude. These uplands (the Western Highlands) are made of Pre-Cambrian rocks overlain by volcanic material. There are also several peaks which rise from their surroundings to altitudes of 2000-3000 m. The southernmost one of these is Mount Kupe (4°48'N, 9°42'E), which reaches 2050 m. In the South, the volcanic Mount Cameroon (4°13'N, 9°11'E) rises to 4095 m and is separated from the rest of the upland regions by heavily-cultivated lowlands. The nearest peak to Mount Cameroon is Mount Kupe, a distance of about 86 km. The records presented in this paper refer to the vicinities of Mount Kupe and Cameroon only, with the greater emphasis being placed on the former mountain at which Birdlife International have recently established a reserve.

The climate in this part of Cameroon is monsoon-equatorial, with a relatively constant temperature and only two seasons: a seven- or eight-month wet season from April to October and a dry season from November to March. The dry season is, however, relatively wet and there is usually at least 50 mm of rain in all months,

especially near the coast. The coastal region on the western side of Mount Cameroon is exceptionally wet with annual figures approaching 10000 mm being recorded at Debundscha (at sea-level). On Mount Kupe, the pattern is similar except that the true wet season is usually considered to run from May to October and the annual rainfall is about 7000 mm per annum. There are perennial streams on both mountains.

COLLAR & STUART (1988) give a useful account of the conservation value of Mount Kupe. The mountain consists of a horst of granite and syenite, formed by block faulting, overlain by layers of volcanic laval flows. The vegetation is primary closed-canopy rainforest, covering about 21 km². The forest cover begins just outside the village of Nyasoso (850 m). The mountain is noted for the richness of its avifauna and the bush-shrike, *Malaconotus kupeensis* is endemic (BOWDEN & ANDREWS, 1994).

The only previous Odonata records from Mount Kupe were made by the Eisentraut expedition to the West Cameroons when W. Hartwig recorded nine species collected in November 1966 and January 1967 (PINHEY, 1974).

Owing to the excellent quality of the forest on the mountain and the apparent threats to it from agricultural encroachment and timber removal, Birdlife International (based in Cambridge, UK) started a conservation and development project in 1991, the Mount Kupe Forest Project (MKFP), with headquarters in Nyasoso. The Project is professionally staffed and aims to bring about a sustainable use of the forest which will secure its future, while improving the livelihood of the local population in the various villages around the mountain. Visiting scientists are encouraged to visit the MKFP and increase knowledge of the fauna and flora of Mount Kupe and its surroundings. Accommodation is arranged with local villagers who benefit from the influx of 'eco-tourists' and biologists. Three trails have been made for visitors and these provide excellent access to the streams: they are Max's, the Shrike, and the Nature Trail.

The water supply of the main village, Nyasoso, is provided by the waters of one of the perennial streams, the R. Nyesosoh. This fills up water-catchment tanks, placed near the lower limit of forest, from which is piped the supplies to the houses in the village below. The villagers benefit from the purity of the water and the maintenance of the forest is an essential requirement of the potable supplies which are provided throughout the year. The water is drinkable without treatment. In fact this stream, above the water catchment tanks, holds most of the odonate rarities of the mountain.

The two main permanent streams which down flow Mount Kupe, the Esenzeh and the Nyesosoh, rise at 1630 m and 1320 m respectively, although there are several tributaries, and leave the forest cover at about 900 m. I was provided with an excellent map of the streams of the forest prepared by Ebong Harrison who works for MKFP. I found no zonation in the odonate fauna on the mountain. The temperature of one of the sources, near the summit was 19°C in the afternoon of 7-IV-1995, while at the best dragonfly sites lower down the mountain at 920 m (but still within forest cover) it was about 21-23°C. All of the streams are very similar and they have a gravelly bed, with only local accumulation of finer debris, very little emergent vegetation and a fast flow (e.g. about 21 cm/s in April at one site). The tree cover is usually dense but there are frequent breaks in this.

Some of the lowland streams at or near the base of Mount Kupe were surveyed and altitudes visited varied from 200 m to 450 m. These all lie outside the jurisdiction of the MKFP. There were particularly good remnants of lowland forest at Ebonji (300 m) and Ngusi (300 m). The streams here were slower and the substrates more sandy, but the waters were clear. The water temperature at Ngusi was 26°C at midday on 4-IV-1995.

In general, the odonate fauna was totally different at these lowland sites from that on Mount Kupe.

Mount Cameroon reaches 4005 m and is the highest mountain in West Africa; it is an active vol-

cano. Forest occurs from sea-level (but there has been considerable clearance near the coast) to about 2100 m (COLLAR & STUART, 1988). The area of forest extends to about 800 km². Good forests are accessible from the coast road, especially around Batoke where a secondary peak is known as Little Mount Cameroon. There are extensive oil-palm plantations on the lower slopes. There are very few permanent streams on the mountain, but a particularly good one, which resembles those on Kupe in general character, occurs about 2 km to the west of Batoke. There are also lowland marshes at Seme beach. Owing to time constraints, the surveying in this area was less thorough than that around Mount Kupe.

SITES VISITED

All records were made in 1995. Recorders were G.S. Vick, M.C. Vick and Otto Mesumbe (of MKFP).

MEME DISTRICT, MOUNT KUPE AND ADJACENT SITES (NEAR TOMBEL):

- (A) MKFP, Shrike Trail 920 m, R. Nyesosoh; – 31-III, 2-IV, 5-IV, 8-IV, 11-IV, 1-V, 12-V
- (B) MKFP, Nature Trail 980 m, R. Soso; – 30-III, 8-IV
- (C) MKFP, Max's Trail 980 m, R. Esenzeh and seepages; – 1-IV
- (D) MKFP, Nyasoso (below) 800 m, R. Swene; – 3-IV
- (E) MKFP, Ndom 850 m, Ebul Kack stream; – 10-IV, 9-V
- (F) MKFP, Nsuke 500 m, R. Muawune and R. Kengele; – 2/3-V
- (G) Tombel 400 m, R. Peng and R. Ngab; – 25/29-IV
- (H) Ngusi 300 m, R. Tubere; – 4-IV, 24-IV
- (I) Ebonji 300 m, Blackbush Water and Ekom R., incl. Sandwater Falls; – 6-IV, 12/14-IV
- (J) MKFP, Lala, Lala and Ndibe streams, 400 m; – 18/22-IV
- (K) MKFP, Tombel, Ngombo-Mbeng, R. Mbombe, 850 m; – 10/11-IV
- (L) MKFP, Tombel, Ngombo-Aku, R. Nkincho, 950 m; – 13-IV

FAKO DISTRICT, MOUNT CAMEROON – (All sites are in the lowlands on the western side of the mountain):

- (M) Little Mount Cameroon, 2 km W of Batoke, oil palm-lowland forest; – 28-III, 11/12-IV
- (N) Bakingili, Seme Beach, pools and marsh; – 28-III, 11-IV
- (O) Mutengene, grounds of Catholic Mission; – 25-III
- (P) Limbe, Botanical Gardens; – 27-III

SPECIES LIST

PROTONEURIDAE

Chlorocnemis contraria Schmidt, 1951 ACEFI
C. nigripes Selys, 1886 ABCDFHIJ
Elatoneura balli Kimmins, 1938 HI
E. pruinosa (Selys, 1886) ABCDEFGIJM

COENAGRIONIDAE

Agriocnemis maclachlani Selys, 1877 P
Ceriagrion g. glabrum (Burmeister, 1839) E
Ischnura senegalensis (Rambur, 1842) MN
Pseudagrion angelicum Fraser, 1947 MN
P. epiphonematicum Karsch, 1891 DEFGHIJKL
P. kersteni Gerstaecker, 1869 HIJ
P. melanicterum Selys, 1876 GHIJKLM
P. s. sjoestedti Foerster, 1906 I

PLATYCNEMIDIDAE

Mesocnemis singularis Karsch, 1891 J
Stenocnemis pachystigma (Selys, 1886) ACEFG

PERILESTIDAE

Nubiolestes diotima (Schmidt, 1943) AE

MEGAPODAGRIONIDAE

Neurolestes trinervis Selys, 1885 A

AMPHIPTERYGIDAE

Pentaplebia stahli Foerster, 1909 ACDEFI

CHLOROCYPHIDAE

Africocypha lacuselephantum
 (Karsch, 1899) AFL

Chlorocypha c. cancellata (Selys, 1879) GHIJKM

C. centripunctata Gambles, 1975 A

C. curta (Hagen, 1853) IJ

<i>C. g. glauca</i> (Selys, 1879)	I	<i>Acisoma panorpoides</i> Rambur, 1842	N
<i>C. grandis</i> (Sjöstedt, 1899)	EKL	<i>Allorhizucha klingi</i> Karsch, 1890	FGIJK
<i>C. s. selysi</i> (Karsch, 1899)	GHIJKL	<i>Allorhizucha</i> sp. aff. <i>campioni</i> Ris, 1915	I
<i>Platycypha lacustris</i> (Foerster, 1914)	L	<i>Atoconeura biordinata pseudedeutoxia</i>	
CALOPTERYGIDAE		Longfield, 1953	J
<i>Phaon camerunensis</i> Sjöstedt, 1899	IJ	<i>Crocothemis erythraea</i> (Brullé, 1832)	J
<i>P. i. iridipennis</i> (Burmeister, 1839)	IJM	<i>Eleuthemis buettikoferi</i> Ris, 1910	J
<i>Sapho orichalcea</i> McLachlan, 1869	ACDHN	<i>Micromacromia camerunica</i> Karsch, 1890	HIJ
<i>Umma longistigma</i> (Selys, 1869)	IJ	<i>Olpogastra lugubris</i> (Karsch, 1895)	J
<i>U. mesostigma</i> (Selys, 1879)	CEFGHI	<i>Orthetrum africanum</i> (Selys, 1887)	J
<i>U. mesumbei</i> sp.n.	C	<i>O. guineense</i> Ris, 1909	FGIJ
GOMPHIDAE		<i>O. julia</i> Kirby, 1900	HIM
<i>Microgomphus camerunensis</i>		<i>O. kalai</i> Longfield, 1936	HIM
Longfield, 1951	I	<i>O. machadoi</i> Longfield, 1955	AHI
<i>Notogomphus</i> sp.	J	<i>O. microstigma</i> Ris, 1911	H
<i>Paragomphus moka</i> Longfield, 1936	AHKL	<i>Palpopleura deceptor</i> Calvert, 1899	I
<i>Phyllogomphus montanus</i> Fraser 1957	HJ	<i>P. lucia</i> (Drury, 1773)	GMO
AESHNIDAE		<i>Pantala flavescens</i> (Fabricius, 1798)	EHIJMNO
<i>Aeshna scotias</i> Pinhey, 1952	A	<i>Porpax bipunctus</i> Pinhey, 1966	I
<i>Anax congoliath</i> Fraser, 1953	H	<i>Sympetrum fonscolombi</i> (Selys, 1840)	EJ
<i>A. imperator</i> Leach, 1815	MN	<i>Tholymis tillarga</i> (Fabricius, 1798)	M
<i>A. tristis</i> Hagen, 1867	GIO	<i>Tramea b. basilaris</i> (P. de Beauvois, 1805)	H
<i>Acanthagyna bullata</i> (Karsch, 1891)	E	<i>Trithemis aconita</i> Lieftinck, 1969	GHI
<i>A. nigeriensis</i> Gambles, 1956	M	<i>T. a. arteriosa</i> (Burmeister, 1839)	I
CORDULIIDAE		<i>T. dichroa</i> Karsch, 1893	HJ
<i>Macromia aeneothorax</i> Nunney, 1895	AB	<i>T. nuptialis</i> Karsch, 1894	H
<i>M. caneri</i> Gauthier, 1987	GH	<i>Urothemis assignata</i> (Selys, 1872)	MN
<i>M. funicularia</i> Martin, 1906	H	<i>Zygonyx f. flavicosta</i> (Sjöstedt, 1899)	GHJKL
LIBELLULIDAE		<i>Z. s. speciosa</i> (Karsch, 1891)	HIJKL

UMMA MESUMBEI SP. NOV.

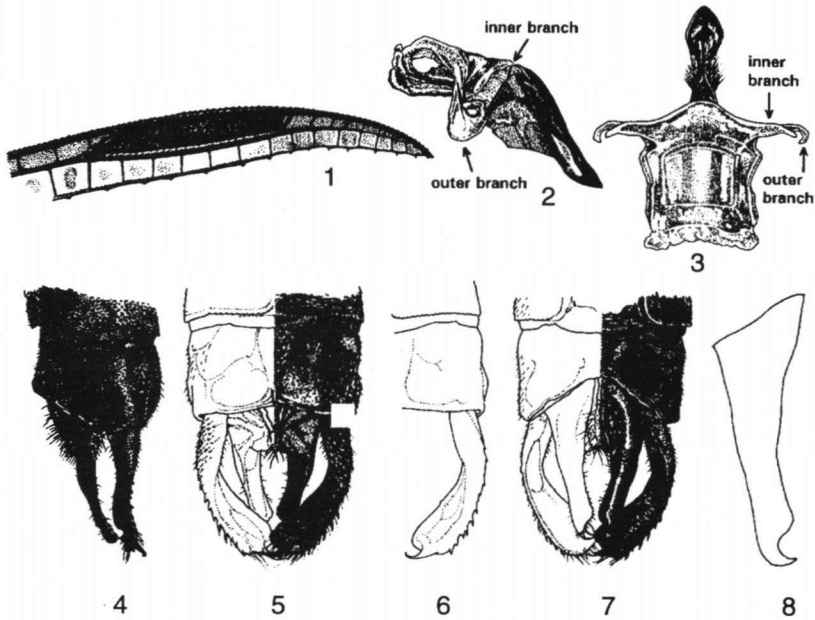
Figures 1-8

Material. – **Holotype** ♂: CAMEROON, SW Province, Meme distr., Nyasoso, Mount Kupe, R. Esenzeh (seepages), alt. 980 m, 1-IV-1995, G.S. Vick leg. – **Paratypes** ♂♂: same data as holotype, G.S. Vick and O. Mesumbe leg. – All in G.S. Vick collection and eventually to NHM, London.

MALE (holotype). – **H e a d.** – Labium black; mandibles black marked with yellow at base; labrum, postclypeus, and anteclypeus bright metallic green with blue reflections; antenna black, marked with yellow spot on outer surface of pedicel; entire dorsum, including frons, dull green metallic, shading to matt black near eyes, antennal bases and behind vertex; rear of head black.

T h o r a x. – Prothorax and Pterothorax. – Dull metallic green; mid-dorsal carina, humeral and antero-lateral sutures narrowly lined in black (broadening dorsally), postero-lateral sutures thickly (about 0.8 mm) lined in black; ventral surfaces black, with sparse white pruinosity; metasternum weakly raised posteriorly and sparsely hairy (less conspicuous in both characters than *mesostigma*).

Legs. – Entirely black with sparse white pruinescence.



Figs 1-8. *Umma mesumbei* sp.n., paratype male (Mount Kupe, Cameroon, 1-IV-1995, G.S. Vick leg.): (1) pterostigma, right forewing, dorsal; – (2) terminal lobe of ligula, left lateral; – (3) terminal lobe of ligula, ventral; – (4) appendages, lateral; – (5) appendages, dorsal; – (6) superior appendage (detail), dorsal; – (7) appendages, ventral; – (8) inferior appendage, ventral outline.

Wings. – Hyaline with black venation; Pt black, basal angle acute (about 30°), length 2.8 mm, subtending 7-9 cells in forewing (Fig. 1) and 6-7 cells in hindwing; marginal cells filled in with brown to a depth of 1 cell in apical region between Pt and point where R4 meets margin (variable, and in some of paratypes, colouring of marginal cells more extensive, 2-3 cells from border and several internal cells filled in with brown in apical third of wing), in all examples examined marked less definitely than in mesostigma; Dc 7 or 8-celled; nodal index fw 43-30-28-42, hw 34-23-22-35.

Abdomen. – Metallic green, shading to matt black ventrally; distal segments with bluish reflections.

Ligula (Figs 2-3). – Inner branch of terminal segment moderately long and this clearly places the species in Species Group 3 of PINHEY (1969); complete structure close to that of *U. sapphirina* Foerster, 1916 in shape.

Superior appendage (Figs 4-7). – Forcipate, widening distally, apically truncate and bearing short stout spines on outer surface of apical half; a hair-pencil of matted setae on the apical surface, about the same length as the apical width of the appendage; a weakly-developed flange on inner surface, clearly visible in lateral

aspect.

Inferior appendage (Figs 7-8). – Almost as long as superior appendage, almost straight; apex excavated on inner surface to create beak-like termination to the appendage, a feature which is unique in the genus.

Measurements (in mm). – Holotype: abdomen (incl. app.) 58.5; – hindwing 41; – range (n=8): Abdomen 48-50, hindwing 39-41.

FEMALE unknown.

REMARKS. – The taxon is characterised by the following features: (1) inferior appendage quite unique in *Umma*; – (2) metasternal pad only weakly developed and moderately hairy; – (3) inner branch of the last segment of the ligula well developed; – (4) Pt large (2.8 mm), basal angle acute; – (5) size large, as large as the largest of the genus, *puella* Sjoestedt, 1917; – (6) venation black.

DISTRIBUTION. – Only known from Mount Kupe at the present.

POSITION IN KEY. – PINHEY (1969) gives a key to the genus. At couplet 6 Species Groups 3 and 4 are separated on the extent to which the metasternum is raised. However, *mesumbei* may be difficult to place here as it is intermediate in this character. If, however, the couplet is augmented by a dichotomy based upon the length of the inner branches of the terminal segment of the ligula (= 'prophallus'), as Pinhey lists in his tabulation anyway, then *mesumbei* will easily fall in Species Group 3 with moderately long branches. The curious shape of the inferior appendage will then easily isolate *mesumbei*.

NOTES ON SOME OTHER SPECIES

PENTAPHLEBIA STAHLI

This interesting amphipterygid was found at several sites in the vicinity of Mount Kupe. The site which possessed the largest population was the stream near Max's Trail, the R. Esenzeh, at about 980 m. This is a well-shaded rocky stream with a bed of coarse gravel and stones, with sandy and silted stretches, flowing through near-pristine forest. The maximum flow rate on 1-IV-1995 was about 21cm/s and the water temperature at midday was 21°C when the air temperature was 26°C. Larvae were found clinging to the underside of large stones. Many stones were examined, but the ones which seemed to be occupied by the larvae were usually about 10-15 cm long. Most of these rocks could be classified as crystalline (pale-coloured) or volcanic (almost black); the larvae were always found under the volcanic rocks (n=20), but it must be pointed out that the texture was different as well as the colour. Males perched in the overhanging vegetation. At one point, a seepage feeds into the stream and this was especially favoured by the males which perched about 30 cm above the water on stems. Several tandems and ovipositing females were seen.

I have found the related South American amphipterygid, *Rimanella arcana* in

the Guyana Highlands of Venezuela. The resemblance of habitat was striking and the larva was found on a similar stream clinging to the underside of rocks.

As more sites in the vicinity of Kupe were explored, *stahli* was found to be quite widespread, even occurring at the bottom of a large waterfall at Ebonji (alt. 300 m), but the waters were similarly cool as they had risen at much higher altitude. The species was also seen on one stream below Nyasoso, on the lower slopes of Mount Kupe but in disturbed habitat: the R. Swene here was bordered by an abundance of *Datura* and adults were settling in the branches of this large shrub. However, the bed of the river was as described above and larvae were similarly collected from dark, volcanic rocks.

NUBIOLESTES DIOTIMA

This curious long slender damselfly is the only member of the Perilestidae present in Africa: the family is otherwise neotropical. The species is only known from Cameroon and eastern Nigeria (GAMBLES, 1980). During sunny periods, males were occasionally found perched about 1 m above the water on bushes near the stream on the Shrike Trail on Mount Kupe. They were never seen to arrive and they had presumably descended from the treetops with the onset of sunshine. One specimen was found in the process of emergence on the vertical surface of a partly-submerged rock and its exuviae were preserved with the teneral adult.

Occurring with *diotima*, and behaving in a very similarly elusive manner were two other interesting damselflies: the megapodagrionid, *Neurolestes trinervis* and the platynemid, *Stenocnemis pachystigma*. *Neurolestes* is monotypic and there are only three other megapodagrionids in Africa, apart from Madagascar. Indeed, these three 'primitive' damselflies would appear to make up, with the slightly more tolerant *Pentaplebia stahli*, a characteristic assemblage of endemic species which occur in the cool (say about 19-22°C) streams of the well-forested Western Highlands of Cameroon (extending into eastern Nigeria and Gabon in some cases).

UMMA

Three distinct species of this interesting calopterygid genus were found. The most widespread taxon in the vicinity of Mount Kupe was *mesostigma* which occurred over an altitude range of 300 m to 980 m, preferring shady streams with a sandy or rocky bed. We only found *longistigma* in the lowlands on sandy streams. A third species was found flying over seepages adjacent to the R. Esenzeh on Max's Trail at Mount Kupe. This is a very distinct member of the genus which I described above as *Umma mesumbei* sp.n.

MICROGOMPHUS CAMERUNENSIS

A female of this elusive little gomphid was taken on the margins of a small fast sandy stream flowing through lowland forest at Ebonji on 6-IV-1995. It was seen to descend from the treetops and settle on a bush. The specimen has been compared with the holotype female which was actually taken in the same general area (British Cameroons, Kumba, Police Station stream, 23-V-1950, Dr F. O'Rourke leg.).

PHYLLOGOMPHUS MONTANUS

I received a male of this interesting species from Otto Mesumbe after my return to the UK; it was taken on 24 April at Ngusi. Later while this paper was being prepared I received a female taken on 27 June at nearby Lala. The female is especially distinctive as it possesses a hypertrophied vulvar scale which forms an 'ovipositor' which reaches from the base of segment 9 almost to the end of segment 10. This structure is illustrated by FRASER (1957). The male agrees well with the specimen figured by CORBET (1977) save for the presence of the spine at the extreme base of the superior appendages which is not shown on Corbet's drawing. This spine is shown clearly on the drawing by BUCHHOLZ (1958) of *hartwigi*, considered to be a synonym of *montanus* by PINHEY (1962).

Larval exuviae were also obtained at Ngusi on 4 April and these agree well with the illustration of CORBET (1977). The distal border of the prementum is unusual in this species as it is excavated into a triangular sinus. This and other characters, especially the presence of lateral spines on abdominal segments 8 and 9 are in agreement with the key provided by DI DOMENICO et al. (1994).

PARAGOMPHUS MOKA

Males of this species were seen perching on large rocks in the stream above the water catchment pond at Mount Kupe and one was secured. Seven males have also been collected at lower altitude by O. Mesumbe. There are two extremely closely related taxa which merit discussion. KARSCH (1890) described *abnormis* from Barombi Station in Cameroon and the taxon was redescribed by CAMMAERTS (1969), distinguishing it from *P. moka*, a very similar species that LONGFIELD (1936) described from Moka, Fernando Po. According to Cammaerts, the crucial separation factors for males are

- (1) *moka* lacks a basal subcostal in each wing, which is present in *abnormis*;
- (2) *moka* possesses a much larger median cell in the anal triangle of the posterior wings;
- (3) there are small differences in the apical sculpture of the anal appendages.

I have eight males which have all been taken in the vicinity of Mount Kupe.

None possesses the basal subcostal vein in any wing; in six specimens the anal triangle resembles Cammaerts' drawing of *moka* and in two it resembles *abnormis*; there is variation in the apical sculpture of the superior appendages, but there is perhaps a greater resemblance to Cammaerts' drawings of *abnormis*. In fact, PINHEY (1966) had previously synonymised the two taxa. As all eight of my males lack the basal subcostal vein in all four wings, I have used the name *moka*. The other distinctions break down as this series shows. A comparison with Longfield's holotype male from Fernando Po, which is in the NHM (London) collection, has produced excellent agreement in all respects. There is some variability in the extent of yellow markings on the dorsum of the thorax and two of my males are as extensively marked as the holotype.

ACANTHAGYNA NIGERIENSIS

In overcast but warm conditions, dragonflies were seen flying in the heavy shade of oilpalm on the lower slopes of Little Mount Cameroon on 28-III-1995. Two male specimens were secured: one proved to be the common crepuscular *Tholymis tillarga* but the other was an *Acanthagyna*. On balance, I believe that the specimen is *nigeriensis* but there are a few discrepancies. The specimen keys easily to *nigeriensis* in R.M. Gambles' (unpublished) key to the genus: it has acutely pointed superior appendages which are of uniform width for the greater part of their length instead of reaching their greatest width after the proximal two-thirds as in *bullata* (Karsch), *usumbarica* (Sjöstedt) and *stylata* (Martin). The distribution of spines on the genital fossa is exactly as shown by GAMBLES (1956) for *nigeriensis*. Other points of agreement are: 24/25 antenodals in the forewing; 10 cells in the anal loop; an anal triangle of 3 cells; no dark rays at the base of the wing; the inferior appendage of a uniform colour; and there are no dark spots at the top of the humeral and lateral sutures of the thorax. However, comparison with the holotype male, and four paratypes, all from Vom, Nigeria, in the NHM produced a slight doubt in my mind: in my specimen, the superior appendages are darker and slightly longer and thinner in profile. The accessory genitalia agree well. As the discrepancies are so slight, and the localities are quite different climatically, it seems reasonable to assume that there would be some variability between the two populations. The species has only previously been recorded from Nigeria (Vom and Ibadan), but Gambles in the typescript of his unpublished '*Dragonflies of Nigeria*' cites records from Sierra Leone and the Congo.

AESHNA SCOTIAS

Two females of this taxon were taken by M.C. Vick while flying over a rocky stream with dense overhanging vegetation just above the water catchment pool on the Shrike Trail at Mount Kupe on 11-IV-1995. The holotype male and allotype

female were taken in Uganda (Matune Forest 20 mi W of Kampala 10-V-1952 and 13-V-1952, E. Pinhey leg.) and there is excellent agreement between my Cameroon females and the allotype (in the NHM collection), save for the fact that mine are slightly larger (abdomen 60 mm compared with 57 mm). The species has only been recorded from Uganda until now, most recently by MILLER (1993). However, there exists one intriguing record of GAMBLES (1980) who collected larvae of an *Aeshna* species on the Obudu Plateau (Oguja Province) of Nigeria but, as he failed to rear them, he could only go as far as to describe them as closer to *scotias* than *rileyi*, but not necessarily that species either (unpublished information in his '*Nigerian Dragonflies*'). As the existence of the species has now been established in the region, it seems highly probable that Gambles' specimens were *scotias*.

ANAX CONGOLIATH

This large species, described from Zaire, has also been recorded from Zambia, Cameroon and Gabon, although infrequently (LEGRAND, 1975). On the stream at Ngusi, in the lowlands near Mount Kupe, males were seen flying rapidly about 20 cm above the stream and periodically returning to the canopy. The preference seemed to be for the slow and muddy stretches of the stream and they were only seen in the morning between about 1000 and 1200. Two males were secured. Its congener, *tristis* was seen on many occasions in the lowlands, hawking over roads and clearings in villages, but was not seen at water. The only other *Anax* seen was *imperator*: males were holding territory on a well-vegetated pond near Mount Cameroon.

MACROMIA

Three species of this genus were found in the vicinity of Mount Kupe. *M. aeneothorax* occurred rather commonly on the R. Nyesosoh on Kupe, and males were observed patrolling above the water in heavy shade. Similar behaviour was noted by LEGRAND & GIRARD (1992) in Guinea and it appears to be widespread in suitably forested habitat in West Africa. It was the only member of the genus found on Mount Kupe. *Macromia* larvae, presumed to be of this taxon, were collected in the sandy substrate of small pools in the stream. Specimens should be attributed to f. *lieftincki* Fraser.

In the lowlands surrounding Kupe, between 300 and 400 m another member of the *sophia* group was found by Otto Mesumbe. GAUTHIER (1987) described *caneri* from Edea-Kribi in Cameroon and my material is in agreement with his description. It is an interesting member of the genus in which the females bear a hypertrophied vulvar scale.

Specimens of a smaller species, *funicularia*, were also collected on the same stream as *caneri* at Ngusi.

ALLORHIZUCHA

Material was collected in the vicinity of Mount Kupe from two species in this genus. In the lowlands, on shady streams with a sandy bed, *A. klingi* was recorded commonly at several sites between 300 and 600 m. The material agrees with specimens taken by, and determined by, Gambles at Kuru in Nigeria (22-V-1955) in the NHM collection. However, at Ebonji, near the Sandwater Falls, on 6 April, I took a male of the genus which is more difficult to determine. It is distinct from *klingi* and from *preussi* (compared with NHM material from Nigeria, Bacoco 1-II-1985 Reid leg.), but it is very close to *campioni*. The lectotype of this taxon is in the NHM (Sierra Leone, Ka Yima 24-VII-1912, J.J. Simpson leg.) and there are many points of similarity. All body and head markings are almost identical, but there are small differences in the shape of the superior appendage: they are slightly thicker and shorter in mine. Also the inferior appendage almost reaches the tip of the superior appendage in mine whereas in the type it only reaches the ventral bulge. I feel fairly certain that this is a new species, but I await more material from Cameroon before proceeding.

CONSERVATION

Mount Kupe particularly should be considered a site of high importance for conservation of Odonata in Africa. It holds populations of the four 'primitive' zygopterans (*Pentaplebia stahli*, *Nubiolestes diotima*, *Neurolestes trinervis* and *Stenocnemis pachystigma*). These species appear to be characteristic of sub-montane streams in regions of the Cameroon Highland 'centre of endemism' which have preserved their original forest cover. Probably they were once fairly widespread in this region, but it is convenient that this near-pristine site, which is also considered to be of high conservation value for mammals, birds and butterflies, holds strong populations. The presence of *Umma mesumbei* (in its only known site), *Macromia aeneothorax* and *Aeshna scotias* (first definite site in West and Central Africa) are additional strengths of the site. Provided the forest cover is maintained and local extraction of timber is minimised, the future of these fascinating species should be safe.

Despite some problems with funding in 1995, the latest information is that the Mount Kupe Forest Project will continue to be supported by Birdlife International: one hopes that the forests on the mountain will be safe.

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