TROPICAL LEPIDOPTERA, 4(2): 67-76

THE BUTTERFLY FAUNAS OF THE KAKAMEGA RAIN FOREST AND THE MASAI MARA SAVANNA IN KENYA, EAST AFRICA

THOMAS C. EMMEL and ANDREW D. WARREN

Department of Zoology, University of Florida, Gainesville, Florida 32611; and
Department of Entomology, Cornell University, Ithaca, New York 14853, USA

ABSTRACT.– Western Kenya supports a rich butterfly fauna in several areas investigated during an August 1991 expedition, including especially Kakamega Forest Reserve northeast of Lake Victoria, and Sekenani Camp, adjacent to the border of Masai Mara Game Reserve. This paper reports general observations made on Lepidoptera during an August 1991 expedition to these sites, and includes faunal lists of species encountered.

KEY WORDS: Acraeinae, biodiversity, butterflies, collecting, Danainae, Ethiopia, expedition, Hesperiidae, Libytheidae, Lycaenidae, Madagascar, Nymphalidae, Papilionidae, photography, Pieridae, rain forest, Riodinidae, Satyrinae, savanna, Somalia, Sudan, Tanzania, Uganda.

Kenya is a large country of 224,960 square miles (582,646 square km), sitting astride the equator in East Africa. To the east, it is bordered by the Indian Ocean and Somalia, on the south by Tanzania, on the west by Uganda and Lake Victoria, and on the north by Ethiopia and the Sudan. The fame of its beauty and variety of landscape and wildlife, as well as the fascinating diversity of tribal life styles, attract great numbers of tourists annually. Some 870 butterfly species have been recorded there, and with the recent publication of a major color-illustrated book on the butterflies of Kenya (Larsen, 1991), lepidopterists have more reason than ever to visit this fascinating country. We were able to explore several exceptionally rich sites during an expedition to the western parts of Kenya, and the present paper reports our findings on the faunal diversity for butterflies there.

INTRODUCTION

In all of Africa south of the Sahara Desert, over 3,100 species of butterflies have been described. While some 240 are confined to the island of Madagascar, the other 2,800 species inhabit continental areas as diverse as grassland savanna to equatorial rain forests to alpine mountaintops. Kenya itself is divided into five contrastingly different geographic regions: the Lake Victoria Basin, the central Rift Valley and its associated highlands, the eastern plateau, the semi-arid and arid areas of the north and south, and the coastal region. The greatest butterfly diversity probably occurs in the wetter areas north and slightly east of Lake Victoria.

In August 1991, an expedition of 15 lepidopterists, including the authors and two research assistants, James L. Nation, Jr., and Leslie L. Groce, visited several unique habitats in western Kenya.

Frontispiece: Kakamega Forest Reserve, Kenya, with insets showing *Salamis temora* Felder (upper) and *Junonia westermanni suffusa* (Rothschild & Jordan) (lower).

PLATE 1. Kakamega Forest Reserve and indigenous Lepidoptera: 1. On the trail in the Kakamega rain forest (James L. Nation, Jr.); 2-3. *Papilio demodocus demodocus*; 4. Sphingidae (*Macroglossum* sp.?); 5. *Acraea* sp.; 6-7. *Salamis parhassus*; 8. *Acraea* sp.; 9. *Acraea* spp. on rotting egg; 10. *Belenois sudanensis* at urine-soaked mud; 11. Forest species at rotting egg (*Papilio phorcas roscoei* and *Belenois sudanensis*). © 1993 T. C. Emmel.

PLATE 2. Kakamega Forest butterflies: 1. *Papilio phorcas* on mud at river edge; 2. *Euchrysops* sp.; 3. *Athene indefinita* at wet sand; 4. *Belenois sudanensis*; 5. *Acraea* sp. and *Belenois sudanensis* at mud; 6. A gallery of *Acraea* spp. on rotting egg. © 1993 T. C. Emmel.

the Kakamega Forest Reserve and the boundary of Masai Mara Game Reserve in the savanna country of the northern Serengeti Plains. We had selected this rainforest area and a savanna area in western Kenya deliberately for contrasting biodiversity. This region represents part of the Mau Escarpment, stretching northward for more than 200 miles from the Tanzanian border, and some associated plateau areas in the central northwestern part of the country. Previous collecting here by the Rev. J. S. T. Woolmer (1990) had turned up approximately 200 different species in the Kakamega area, while over 400 species are estimated to occur there (T. B. Larsen, pers. comm., 1993).

THE EXPEDITION

Our expedition started from New York on the afternoon of August 10, 1991, where we boarded our Alitalia flight and left John F. Kennedy Airport at a little after 6:00 PM (1800h). We landed in Rome early the next morning and spent the day sightseeing, or in the case of many of our group, collecting the abundant summer butterflies in the field surrounding our hotel on the outskirts of town. That evening, we continued on Alitalia airlines to Saudi Arabia and then flew over Ethiopia, the Blue Nile, abundant lakes, and spectacular cloud formations. We landed in Nairobi, the bustling capital of Kenya at dawn on August 12, and boarded our Nissan vans to travel out of this city of three million people westward toward Lake Nakuru. Along the way as we passed through Naivasha, clouds of *Colotis* and other pierids filled the dry weedy vegetation along the roadside. The vegetation began to get greener beyond Nakuru, as we passed through farms, savanna, and then hills where by sunset, we entered the cloud-covered mountains to the north. At 7:00 PM (1900h), we arrived at the Golf Hotel Kakamega, adjacent to the District Warden's headquarters for the Kakamega Forest Reserve. On the morning of the 13th, we met the District Warden, Alpayo F. Barasa, showed our permits, and received additional help from him in determining the best places to go for our week here.

Kakamega Forest Reserve proved to be absolutely outstanding for butterflies (see list of species in Table 1). We concentrated our efforts in the forest at the end of the road going into the Reserve from Ischeno Primary School, where we collected on trails through the forest and in a small savanna area a kilometer or so into the forest from the headquarters building of the Kakamega Forest Department. Here, we found over a dozen *Charaxes* species, numerous danaids, twenty acraeine species, five or more *Papilio* species, a great many skippers, hairstreaks, blues, *Leptosia* whites, various yellow *Eurema* species, *Appias* pierids, and many other species. White and black *Colobus* monkeys and many birds also were seen in the forest daily. Here, at 5,300' (1625m) elevation, we had rain virtually every afternoon and evening, with the skies clearing overnight so that the weather was reasonably good the next morning.

We also had excellent collecting along a river about 8km south of the Ischeno Forest Station, also located at 5,300' (1625m) elevation. In fact, there was absolutely outstanding collecting and photography at this site, especially on the trail to the northeast side of the bridge here. We put out urine baits at several points, plus animal feces that we had found, and attracted dozens of

species to the trail. Many *Acraea* species were found here that had not been found just a few kilometers away in the forest interior. Many *Precis* and other nymphalid species were encountered here, as well as spectacular violet-colored *Salamis*, *Papilio* species, satyrids, and a great diversity of pierids. An sphingid moth mimicking a large fly was found here and photographed. Our first full day at this river site, on August 14, resulted in catching white long streamer-tailed hairstreaks until 3:30 in the afternoon (1530h), when clouds finally closed in. One disadvantage of working out this far from the town was that the roads became very muddy in the heavy afternoon rains. We noticed a number of logging trucks and other vehicles that had skidded off the muddy roads or even turned over. Hoards of children and cattle were always found along this road towards the forest, with many farms and several small towns occupying virtually all the terrain outside the Forest Reserve.

It was not uncommon to take as many as 300-400 pictures in a single day here at the Kakamega Forest of the butterflies at flowers, mud, urine, and feces. *Papilio*, *Salamis*, *Acraea*, hairstreaks, skippers, and pierids seemed to be found each day in undiminished numbers. Previous unencountered species showed up daily. We also ran into two Kenyan brothers who were collectors that had travelled throughout Africa for butterflies and beetles. The senior author and his assistants were taking material to study the chromosomes of African butterflies, and we were commonly able to fix 80 to 120 testes a day from the fresh males that we collected, in addition to all our photographic work. On August 16, for example, we noted in our field notes that it was a day of outstanding photography for many new butterflies, including the pearly white *Salamis parhassus* (Drury), *Acraea* species of many phenotypes, pierids, hairstreaks, blue and green *Papilio phorcas ruscoei* Kruger, skippers, new *Precis* species, etc. Even a broken three-day-old, hard-boiled egg turned out to be great bait for three unusual *Acraea* species and some pierids. We found that urine that was at least 30 hours old was very attractive to most butterflies. Passion flower fruits attracted a *Precis* species, yet piles of bananas with sugar and alcohol attracted virtually nothing!

On August 17, we regretfully left Kakamega Forest, driving east on a good paved highway to a flat country of farms, overgrazed fields with goats, sheep, and small Zebu cattle. *Eucalyptus* trees, aloes, sisal century plants from Latin America, and low *Acacia* trees bordered the highway to Kericho. There, at a Tea Hotel, we took a break before continuing through rolling mountains of tea plantations, with the occasional eucalyptus groves or *Acacia* stands. It was a very green landscape with few butterflies or birds, of course, because of the sterile monoculture left after the clearing of the forest and replanting of exotics. After lunch at Nakuru, we continued on to Lake Naivasha, where we stayed at Safariland Lodge. This lovely lodge, located along the shores of Lake Naivasha, actually provided rather good collecting that afternoon and the next morning, with several *Colotis* species, many species of whites, blues, and even fresh females (and larvae on thistles) of a renowned migrant, the Painted Lady, *Vanessa cardui* (Linnaeus)! The white papilionid, *Papilio dardanus* Brown, was also here in some numbers. The junior author took over 60 butterflies, including many *Danaus chrysippus* (Linnaeus), *P. dardanus*, *Papilio demodocus* Esper, eight species of blues, several *Colotis* species, three species of *Precis*, and various whites (Table 2).

After lunch, we continued on to the southwest until late into the evening when we reached Masai Mara Game Reserve, where we crossed into the Reserve through Sekenani Gate and turned south towards Sekanani Camp, located just outside the park boundary. This new camp (only a year old at the time of our visit) provided very nice walled tents on wooden platforms. Each tent overlooked one of two streams, which came from springs in the camp area and flowed together into one canyon near the dining hall. A great variety of vegetation, including some tall riverine forest, produced an amazing diversity of animals, including butterflies. In fact, collecting was so good here that few lepidopterists could be enticed to go out on the morning or afternoon game drives. In one day, for example, the junior author took 220 butterfly specimens!

During the course of the week here, we found over 100 butterfly species (Table 3) at this site, located just 6km south of Sekenani Gate, at 5900' (1820m) elevation, in western Kenya. On one day, Andy Warren and Lee Guidry hiked up the mountain behind the dining room tent and at least half the species they found were different from what had been obtained the previous three days in the canyon around the springs. They even found *Colias electo pseudohecate* Brown (with orange males and a white female), *Papilio demodocus* males hilltopping, and wonderful new lycaenids up here. The pictures that accompany this article capture the flavor of the collecting and photography better than our words, of course.

After two wonderful weeks in western Kenya, we left to fly back to the United States with memories of the contrastingly different rain forest at Kakamega and the lush savanna of Masai Mara forever in our memories. We had walked through forests with giant trees over 40m high, towering above us as we carefully proceeded along the sunlit paths, encountering living carpets of butterflies at times around mudpuddles. A host of acraeids, nymphalids, iridescent purple *Salamis temora* Felder, and the greenbanded swallowtail, *Papilio bromius chrapkowskii* Suffert, flashed along the forest paths. We were especially astonished at how abundant some of the species of *Charaxes* could be inside the woods. The local Kenyans that were running bait traps certainly had the best luck with these, but other members of our group that had brought bait traps, and even those baiting on open piles of feces or urine along the trails, had good luck as well. The rustic Sekenani Camp (boasting private baths in the tent) was equally fascinating, though, and the thrill of lions and hyenas prowling among the tents during the night, and native guards with spears outside to protect us, lent an exciting air of adventure to our experience.

We all agreed that the trip had been too short to experience such an incredibly rich diversity of habitats, butterflies, and other wildlife, and we vowed to return to this fascinating country of Kenya at the earliest opportunity to once again experience an outstanding lepidopterists' expedition to the rain forest and savanna areas of western Kenya.

PLATE 3. Kakamega Forest butterflies: 1. *Junonia stygia gregorii* ♀; 2. *Papilio demodocus*; 3. *Acraea* sp.; 4. *Papilio bromius chrapkowskii*; 5. *Acraea* sp.; 6. *Uranothauma falkensteini*; 7-8. *Salamis temora temora*; 9. *Junonia westermanni suffusa*; 10. *Precis* sp.; 11. *Cyrestis camillus camillus*; 12. *Cacyreus lingeus*.


1


2


3


4


5


6


7


8


9


10


11


12

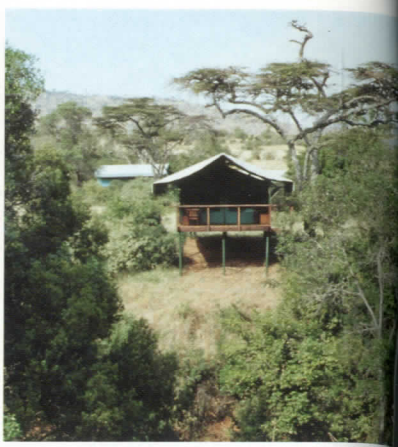

PLATE 4. Sekenani Camp, Masai Mara, butterflies: 1. Masai village in the Masai Mara, near Sekenani Camp; 2. Elephant near Sekenani Camp; 3. Sekenani Camp lodgings, overlooking canyons with small streams; 4. *Belenois rubrosignata*; 5. *Belenois creona severina*; 6. A typical scene at Sekenani Camp, along the small stream valleys in the savanna; 7. *Lepidochrysops desmondi*; 8. *Colotis celimene*; 9. Pierids *Belenois rubrosignata* and *B. subeida*; 10. *Spialia spio*; 11. *Pardalaodes incerta*; 12. *Acraea* sp.; 13. Herds of wildebeest and zebra on the savanna, near Sekenani Camp.

TABLE 1. Butterfly species found at the Kakamega Forest in western Kenya by the 1991 expedition during 13-16 August (219+ species).

HESPERIIDAE (46 species)
Coeliades forestan forestan (Stoll, 1782)
Celaenorrhinus proxima proxima Mabille, 1877
Celaenorrhinus macrostictus Holland, 1894
Celaenorrhinus galenus (Fabricius, 1793)
Celaenorrhinus intermixtus evansi Berger, 1975
Celaenorrhinus bettoni Butler, 1902
Tagiades flesus (Fabricius, 1781)
Eagris sabadius (Gray, 1832)
Eagris lucetia Hewitson, 1867
Eagris decastigma purpura Evans, 1937
Eretis lugens Rogenhofer, 1891
Eretis mitiana Evans, 1937
Eretis vaga Evans, 1937
Eretis melania Mabille, 1891
Sarangesa seineri seineri Strand, 1909
Sarangesa maculata Mabille, 1891
Sarangesa brigida atra Evans, 1937
Netrobalane canopus Trimen, 1864
Spialia spio (Linaneus, 1767)
Metisella midas midas (Butler, 1894)
Metisella medea medea Evans, 1937
Prosopalpus styla Evans, 1937
Ceratrichia flava semlikensis Joicey & Talbot, 1921
Ceratrichia brunnea brunnea Bethune-Baker, 1906
Pardaleodes incerta Snellen, 1872
Pardaleodes sator pusiella Mabille, 1877
Pardaleodes tibullus toroensis Bethune-Baker, 1906
Pardaleodes bule Holland, 1896
Ankola fan (Holland, 1894)
Paracleros biguttulus (Mabille, 1899)
Acleros ploetzi Mabille, 1889
Acleros mackenii (Trimen, 1868)
Semalea pulvina (Plötz, 1879)
Chondrolepis nievicornis (Plötz, 1883)
Caenides lissa lima (Evans, 1937)
Monza punctata (Aurivillius, 1910)
Fresna netopha (Hewitson, 1878)
Pelopidas mathias (Fabricius, 1797)
Borbo lugens (Hopffer, 1855)
Borbo preobscura (Druce, 1912)
Borbo detecta (Trimen, 1893)
Borbo kaka (Evans, 1938)
Borbo fallax (Gaede, 1916)
Borbo sirena (Evans, 1937)
Gegenes hottentota (Latrielle, 1823)
Gegenes niso brevicornis (Plötz, 1884)

PAPILIONIDAE (7 species)
Papilio rex mimeticus Rothschild, 1897
Papilio dardanus dardanus Brown, 1776
Papilio phorcas ruscoei Kruger, 1927
Papilio interjecta van Someren, 1960
Papilio demodocus demodocus Esper, 1798
Papilio zorastres joiceyi Gabriel, 1945
Papilio bromius chrapkowskii Suffert, 1904

PIERIDAE (28 species)
Catopsilia florella (Fabricius, 1775)
Eurema hecabe solifera Butler, 1875
Eurema senegalensis Boisduval, 1836
Eurema hapale Mabille, 1887
Eurema desjardinsi oberthuri Mabille, 1877
Eurema mandarinula Holland, 1892
Eurema regularis regularis Butler, 1876
Eurema brigitta brigitta Stoll, 1870
Nepheronia argia (Fabricius, 1775)
Nepheronia thalassina Boisduval, 1836
Nepheronia pharis silvanus Stoneham, 1957
Colotis elgonensis Sharpe, 1891
Belenois aurota aurota Fabricius, 1793
Belenois creona severina (Stoll, 1781)
Belenois raffrayi extendens Joicey & Talbot, 1927
Belenois sudanensis Talbot, 1929
Belenois victoria victoria Dixey, 1915
Belenois subeida subeida Grose-Smith, 1890
Belenois calypso minor Talbot, 1943
Appias sylvia ugandensis Bernardi
Appias phaola isokani Grose-Smith, 1889
Appias sabina Felder & Felder, 1865
Leptosia nupta nupta Butler, 1873
Leptosia hybrida somereni Bernardi, 1959
Mylothris chloris clarissa Butler, 1888
Mylothris yulei Butler, 1897
Mylothris kiwuensis rhodopoides Talbot, 1944
Mylothris rubricosta Mabille, 1890

LYCAENIDAE (25+ species)
Axiocerses harpax ugandana Clench, 1963
Hypolycaena hatita ugandae Sharpe, 1904
Lachnocnema brimo Karsch, 1893
Lachnocnmea divergens Gaede, 1915
(or *L. reutlingeri* Holland, 1892)
Anthene ligures Hewitson, 1874
Anthene schoutedeni Huelstaert, 1924
Anthene indefinita Betune-Baker, 1910
Anthene liodes Hewitson, 1874
Anthene larydas (Cramer, 1780)
Anthene princeps princeps Butler, 1876
Anthene rubricinctus jeanneli Stempffer, 1961
Cupidopsis iobates iobates Hopffer, 1855
Uranothauma falkensteini (Dewitz, 1879)
Uranothauma heritsia intermedia (Tite, 1958)
Cacyreus audeoudi Stempffer, 1936
Cacyreus virilis Aurivillius, 1924
Cacyreus lingeus (Stoll, 1782)
Leptotes pirithous (Linnaeus, 1767)
[*Leptotes babaulti* (Stempffer, 1935), *Leptotes brevidentatus* Tite, 1958, and *Leptotes jeanneli* (Stempffer, 1935) may also be represented, but no genitalia were dissected to make sure.]
Tuxentius margaritaceus margaritaceus (Sharpe, 1891)
Zizeeria knysna (Trimen, 1862)
Zizula hylax (Fabricius, 1775)
Azanus natalensis Trimen, 1887
Eicochrysops hippocrates (Fabricius, 1793)
Eicochrysops nandianus (Bethune-Baker, 1906)
Euchrysops nandensis Neave, 1904

RIODINIDAE (1 species)
Abisara neavei neavei Riley, 1932

LIBYTHEIDAE (1 species)
Libythea labdaca labdaca Westwood, 1851

NYMPHALIDAE (115 species)
Nymphalinae (59 species)
Charaxes fulvescens Aurivallius, 1891
Charaxes acuminatus stonehamiana Collins & Larsen, 1991
Charaxes candiope candiope Godart, 1824
Charaxes cynthia parvicaudatus Lathy, 1926
Charaxes castor castor (Cramer, 1775)
Charaxes brutus angustus Rothschild, 1900
Charaxes pollux pollux (Cramer, 1775)
Charaxes tiridates tiridatinus Röber, 1936
Charaxes bipunctatus ugandensis van Someren, 1972
Charaxes numenes aequatorialis van Someren, 1872
Charaxes pythodoris Hewitson, 1873
Charaxes eupale latimargo Joicey & Talbot, 1921
Charaxes anticlea suna van Someren, 1975
Charaxes baumanni interposita van Someren, 1971
Charaxes berkeleyi van Someren & Jackson, 1957
Charaxes pleione bebra Rothschild, 1900
Charaxes pythodoris Hewitson, 1873
Euxanthe eurinome elgonae van Someren, 1975
Bebearia sophus audeoudi Riley, 1936
Euphaedra rex Stoneham, 1935
Pseudargynnis hegemone (Godart, 1819)
Catuna crithea conjuncta (Aurivillius, 1922)
Cymothoe lurida butleri Grünberg, 1908
Cymothoe herminia johnstoni Butler, 1902
Cymothoe hobarti hobarti Butler, 1899
Pseudacraea lucretia protracta Butler, 1874
Pseudacraea boisduvali boisduvali Doubleday, 1845
Neptis saclava marpessa Hopffer, 1855
Neptis sp. near *conspicua* Neave, 1904
Neptis strigata Aurivillius, 1894
Neptis melicerta melicerta (Drury, 1773)
Neptis woodwardi Sharpe, 1899
Cyrestis camillus (Fabricius, 1781)
Sallya occidentalium occidentalium (Mabille, 1876)
Sallya boiduvali (Wallengren, 1857)
Sallya garega garega (Karsch, 1892)
Sallya umbrina (Karsch, 1892)
Ariadne enotrea suffusa Joicey & Talbot, 1921
Ariadne pagenstecheri Suffert, 1904
Neptidopsis ophione velleda (Mabille, 1890)
Eurytela hiarbas lita Rothschild & Jordan, 1903
Hypolimnas misippus (Linnaeus, 1764)
Hypolimnas anthedon anthedon Doubleday, 1845
Salamis temora temora Felder, 1867
Salamis parhassus parhassus (Drury, 1782)
Junonia oenone oenone (Linnaeus, 1758)
Junonia westermanni suffusa (Rothschild & Jordan, 1903)
Junonia sophia infracta (Butler, 1888)
Junonia stygia gregorii (Butler, 1895)
Junonia chorimene (Guérin-Méneville, 1844)
Junonia terea terea (Drury, 1773)
Precis octavia sesamus Trimen, 1883
Precis ceryne ceryne Boisduval, 1847
Precis pelarga actia Distant, 1880
Precis tugela Trimen, 1879
Precis rauana rauana Grose-Smith, 1898
Vanessula milca latifasciata Joicey & Talbot, 1928
Lachnoptera ayresii Trimen, 1879
Phalanta eurytis eurytis Doubleday, 1848
Satyrinae (15 species)
Gnophodes betsimena Boisduval, 1833
Gnophodes chelys (Fabricius, 1793)
Bicyclus mandanes (Hewitson, 1873)
Bicyclus jefferyi Fox, 1963
Bicyclus buea Strand, 1912
Bicyclus sophrosyne sophrosyne Plötz, 1880
Bicyclus smithi smithi Aurivillius, 1898
Bicyclus golo Aurivillius, 1893
Bicyclus dentatus Sharpe, 1898
Henotesia peitho Plötz, 1880
Ypthima asterope asterope Klug, 1832
Ypthima antennata antennata van Son, 1955
Ypthima albida albida Butler, 1888
Ypthima recta Overlaet, 1955
Ypthimomorpha itonia (Hewitson, 1865)
Acraeniae (29 species)
Acraea perenna perenna Doubleday, 1847
Acraea cinerea cinerea Neave, 1904
Acraea penelope vitrea Eltringham, 1912
Acraea oreas Sharpe, 1891
Acraea servona subochreata Grünberg, 1910
Acraea peneleos pelasgius Grose-Smith, 1900
Acraea semivitrea Aurivillius, 1895
Acraea pharsalus pharsalus Ward, 1871
Acreae disjuncta disjuncta Grose-Smith, 1893
Acraea aurivillii Staudinger, 1896
Acraea jodutta jodutta (Fabricius, 1793)
Acraea lycoa tirika Eltringham, 1911
Acraea johnstoni johnstoni Godman, 1885
Acraea eponina eponina (Cramer, 1780)
Acraea acerata Hewitson, 1874
Acraea alicia Sharpe, 1890
Acraea sotikensis Sharpe, 1892
Acraea orestia orestia Hewitson, 1874
Acraea cerasa unimaculata Grose-Smith, 1898
Acraea rogersi lankesteri Carpenter, 1941
Acraea egina egina (Cramer, 1775)
Acraea asboloplintha asboloplintha Karsch, 1894
Acraea zetes (Linnaeus, 1758)
Acraea leucographa Ribbe, 1889
Acraea quirina quirina (Fabricius, 1781)
Acraea macarista macarista Sharpe, 1906
Acraea macaria hemileuca Jordan, 1914
Acraea quadricolor latifasciata Sharpe, 1892
Acraea epaea angustifasciata Grünberg, 1910
[one female with white markings]
Danainae (8 species)
Danaus chrysippus chrysippus (Linnaeus, 1758)
Tirumala formosa mercedonia Karsch, 1894
Amauris niavius niavius (Linnaeus, 1758)
Amauris tartarea tartarea Mabille, 1876
Amauris hecate hecate Butler, 1866
Amauris albimaculata interposita Talbot, 1940
Amauris oscarus oscarus Thurau, 1903
Amauris echeria jacksoni Sharpe, 1892

TABLE 2. Butterfly species found at Lake Naivasha, Kenya, on 17-18 August 1991 (36 species).

HESPERIIDAE (4 species)
Eagris sabadius (Gray, 1832)
Pelopidas mathias (Fabricius, 1797)
Borbo detecta (Trimen, 1893)
Gegenes niso brevicornis (Plötz, 1884)

PAPILIONIDAE (2 species)
Papilio dardanus Brown, 1776
Papilio demodocus demodocus Esper, 1798

PIERIDAE (11 species)
Catopsilia florella Fabricius, 1775
Eurema regularis regularis Butler, 1876
Colotis aurigineus Butler, 1883
Colotis hetaera ankolensis Stoneham, 1940
Colotis eunoma flotowi Suffert, 1904
Colotis antevippe zera Lucas, 1891
Colotis euippe complexivus Butler, 1885
Belenois creona severina (Stoll, 1781)
Belenois zochalia agrippinides Holland, 1896
Belenois crawshayi Butler, 1893
Pontia helice johnstoni Crowley, 1887

LYCAENIDAE (11+ species)
Cacyreus lingeus (Stoll, 1782)
Cacyreus palemon palemon (Stoll, 1872)
Cacyreus virilis Aurivillius, 1924
Cacyreus lingeus (Stoll, 1782)
Leptotes pirithous (Linnaeus, 1767)
[*Leptotes babaulti* (Stempffer, 1935), *Leptotes brevidentatus* Tite, 1958, and *Leptotes jeanneli* (Stempffer, 1935) may also be represented, but no genitalia were dissected to make sure.]
Zizeeria knysna (Trimen, 1862)
Zizula hylax (Fabricius, 1775)
Actizera stellata (Trimen, 1883)
Azanus ubaldus (Cramer, 1782)
Azanus jesous (Guérin-Méneville, 1847)
Azanus moriqua (Wallengren, 1857)

NYMPHALIDAE (6 species)
Nymphalinae (6 species)
Hypolimnas misippus (Linnaeus, 1764)
Junonia orithya madagascariensis (Guenée, 1865)
Junonia oenone oenone (Linnaeus, 1758)
Junonia hierta cebrene (Trimen,1 870)
Vanessa cardui (Linnaeus, 1758)
Antanartia abyssinica jacksoni Howarth, 1966
Acraeinae (1 species)
Acraea eponina eponina (Cramer, 1780)
Danainae (1 species)
Danaus chrysippus chrysippus (Linnaeus, 1758)

TABLE 3. Butterfly species found at spring adjacent to forest, and savanna habitat around Sekenani Camp, adjacent to Masai Mara Game Reserve, Kenya, on 19-21 August 1991 (106 species).

HESPERIIDAE (20 species)
Celaenorrhinus galenus (Fabricius, 1793)
Eretis umbra maculifera Mabille & Boullet, 1916
Eretis rotundimacula herewardi Riley, 1921
Spialia diomus diomus (Hopffer, 1855)
Spialia colotes transvaaliae (Trimen, 1889)
Spialia spio (Linnaeus, 1767)
Spialia mafa higginsi Evans, 1937
Kedestes rogersi Druve, 1907
Pardaleodes incerta Snellen, 1872
Acleros mackenii (Trimen, 1868)
Monza punctata (Aurivillius, 1910)
Zenonia zeno (Trimen, 1864)
Pelopidas mathias (Fabricius, 1797)
Borbo detecta (Trimen, 1893)
Borbo borbonica borbonica (Boisduval, 1833)
Borbo gemella (Mabille, 1884)
Borbo fatuellus fatuellus (Hopffer, 1855)
Gegenes pumilio gambica (Mabille, 1878)
Gegenes hottentota (Latrielle, 1823)
Gegenes niso brevicornis (Plötz, 1884)

PAPILIONIDAE (2 species)
Papilio nobilis nobilis Rogenhofer, 1891
Papilio demodocus demodocus Esper, 1798

PIERIDAE (31 species)
Catopsilia florella (Fabricius, 1775)
Colias electo pseudohecate Berger, 1940
Eurema hecabe solifera Butler, 1875
Eurema hapale Mabille, 1887
Eurema desjardinsi oberthuri Mabille, 1877
Eurema brigitta brigitta Stoll, 1870
Pinacopteryx eriphia melanarge Butler, 1886
Nepheronia argia (Fabricius, 1775)
Eronia cleodora Hübner, 1823
Eronia leda Boisduval, 1847
Colotis aurigineus Butler, 1883
Colotis regina Trimen, 1863
Colotis celimene celimene Lucas, 1852
Colotis antevippe zera Lucas, 1891
Colotis euippe complexivus Butler, 1885
Colotis evagore antigone Boisduval, 1836
Colotis eris eris Klug, 1829
Belenois creona severina (Stoll, 1781)
Belenois gidica Godart, 1819
Belenois aurota aurota (Fabricius, 1793)
Belenois zochalia agrippinides Holland, 1896
Belenois crawshayi Butler, 1893
Belenois subeida sylvander Grose-Smith, 1890
Belenois rubrosignata rubrosignata Weymer, 1901
Dixeia orbona vidua (Butler, 1899)
Appias phaola isokani Grose-Smith, 1889
Appias sabina sabina Felder & Felder, 1865
Leptosia alcesta inalcesta Bernardi, 1959
Mylothris agathina (Cramer, 1779)
Mylothris rueppelli tirikensis Neave, 1904

Mylothris rubricosta Mabille, 1890

LYCAENIDAE (28 species)
Lachnocnema durbani Trimen, 1887
Lachnocnema bibulus (Fabricius, 1793)
Axiocerses tjoane Wallengren, 1857
Axiocerses amanga Westwood, 1881
Axiocerses harpax ugandana Clench, 1963
Hypolycaena philippus philippus (Fabricius, 1793)
Leptomyrina gorgias cana Talbot, 1935
Pilodeudorix caerulea caerulea Druce, 1891
Anthene schoutedeni Huelstaert, 1924
Anthene indefinita Bethune-Baker, 1910
Anthene kersteni Gerstacker, 1871
Anthene amarah amarah (Guérin-Méneville, 1847)
Anthene otacilia kikuyu Bethune-Baker, 1910
Lampides boeticus (Linnaeus, 1767)
Zintha hintza hintza Trimen, 1864
Cacyreus virilis Aurivillius, 1924
Cacyreus lingeus (Stoll, 1782)
Leptotes pirithous (Linnaeus, 1767)
Zizeeria knysna (Trimen, 1862)
Zizina antanossa (Mabille, 1877)
Zizula hylax (Fabricius, 1775)
Actizera lucida lucida (Trimen, 1883)
Azanus natalensis Trimen, 1887
Eicochrysops hippocrates (Fabricius, 1793)
Eicochrysops nandianus (Bethune-Baker, 1906)
Euchrysops mauensis Bethune-Baker, 1923
Lepidochrysops desmondi Stempffer, 1952
Freyeria trochylus trochylus (Freyer, 1844)

NYMPHALIDAE (25 species)
Nymphalinae (16 species)
Charaxes candiope candiope Godart, 1824
Hamanumida daedalus (Fabricius, 1775)
Neptis saclava marpessa Hopffer, 1855
Neptidopsis ophione velleda (Mabille, 1890)
Eurytela dryope angulata Aurivillius, 1898
Junonia orithya madagascariensis (Guenée, 1865)
Junonia hierta cebrene (Trimen, 1870)
Junonia terea terea (Drury, 1773)
Precis octavis sesamus Trimen, 1883
Precis archesia (Cramer, 1779)
Precis limnoria taveta Rogenhofer, 1891
Catacroptera cloanthe cloanthe (Stoll, 1782)
Vanessa cardui (Linnaeus, 1758)
Phalanta phalantha aethiopica Rothschild & Jordan, 1903
Phalanta eurytis eurytis Doubleday, 1848
Satyrinae (2 species)
Ypthima asterope asterope Klug, 1832
Neocoenyra gregorii Butler, 1894
Acraeinae (6 species)
Acraea encedon encedon (Linnaeus, 1758)
Acraea encedana Pierre, 1976
Acraea eponina eponina (Cramer, 1780)
Acraea acerata Hewitson, 1874
Acraea cabira Hopffer, 1855
Acraea anacreon anacreontica Grose-Smith, 1898
Danainae (1 species)
Danaus chrysippus chrysippus (Linnaeus, 1758)

ACKNOWLEDGEMENTS

Great appreciation is expressed to the Kenya Wildlife Service for issuing collecting and export permits, and to Mr. Alpayo F. Barasa, District Warden, for providing invaluable assistance, encouragement, and ranger guides at the Kakamega Forest Reserve, Kenya. We thank Mr. Richard J. Worth of San Jose, California, for generously contributing his records from our 1991 expedition for this account. Mr. Peter J. Eliazar of the University of Florida assisted in identifying many of the chromosome reference specimens taken by Thomas C. Emmel and his student assistants. Torben B. Larsen verified identification of some of the specimens taken by Andrew D. Warren. We also greatly appreciate the help of all of the participants on the 1991 expedition in sharing with us their daily records.

LITERATURE CITED

Carcasson, R. H.
1981. *Collins Handguide to the Butterflies of Africa*. London: Collins. 188pp.
D'Abrera, B.
1980. *Butterflies of the Afrotropical Region*. East Melbourne: Lansdowne. 593pp.
Larson, T. B.
1991. *The Butterflies of Kenya and their Natural History*. Oxford: Oxford Univ. Pr. 490pp.
Williams, J. G.
1969. *A Field Guide to the Butterflies of Africa*. London: Collins. 238pp.
Woolmer, J. S. T.
1990. Flights of fancy. *Msafiri* (Nairobi), 1990:14-15.