



Entomofauna

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Contribution to the knowledge of the Neuroptera of Ethiopia

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Abstract

All hitherto known records of 34 species of Neuroptera in Ethiopia are listed and discussed. *Chrysoperla volcanicola* sp. nov. is described as a species new to science. Also the larva of that species is figured and described. Two new synonyms are established: *Nothochrysa aethiopiae* LACROIX, 1925 syn. nov. = *Italo-chrysa impar* (NAVÁS, 1912), *Chrysopa incerta* NAVÁS, 1936 syn. nov. = *Chrysopa handschini* NAVÁS, 1929. A rough biogeographical analysis reveals that the distributions of eleven of the recorded species extend over large parts of Subsaharan-Africa and, to some extent, parts of the Oriental region. Eight species occur from East- to South Africa, five from East-Africa to Southern-Arabia, and two species have, so far, only been found in Ethiopia.

Zusammenfassung

Alle bisher bekannten Nachweise von 34 Arten der Neuroptera in Äthiopien werden besprochen. Eine für die Wissenschaft neue Spezies, *Chrysoperla volcanicola* sp. nov., wird samt Larve beschrieben und abgebildet. Zwei neue Synonyma werden festgestellt: *Nothochrysa aethiopiae* LACROIX, 1925 syn. nov. = *Italo-chrysa impar* (NAVÁS, 1912), *Chrysopa incerta* NAVÁS, 1936 syn. nov. = *Chrysopa handschini* NAVÁS, 1929. In einer kurzen biogeographischen Analyse wird gezeigt, daß 11 der gemeldeten Arten über weite Teile von Subsahara-Afrika und einige davon auch noch über Teile der Orientalischen Region verbreitet sind. Acht Spezies sind von Ost- bis Südafrika, fünf von Ostafrika bis Südarabien verbreitet; zwei Arten wurden bisher nur in Äthiopien nachgewiesen.

Introduction

Up to now, the neuropteran fauna of Ethiopia was almost exclusively known from a few sporadic recordings of single species in various families. The only exception is a contribution of ESBEN-PETERSEN (1928), who reported on Ethiopian Neuroptera of six

families, partly collected by the expedition of SCOTT/OMER COOPER, and partly from the collection of the BMNH.

In the course of a two weeks trip to Central and Southern Ethiopia in October 1996, the authors were able to collect Neuroptera in several regions of the upper Rift Valley and the Bale Mountains. Together with specimens generously provided by colleagues, material from museum collections and from the private collections of the two first authors, and adding some reliable published records, a total of 34 species of Neuroptera are now known for sure to occur in Ethiopia. Six more species of the presently available material from Ethiopia cannot be identified with certainty to the species level.

Considering the extraordinary ecological variability of the different Ethiopian regions - we were able in the short time to collect from alpine steppe, *Juniperus* and other mountain forests, different types and intensities of cultivation, down to dry savannah and riverine forests - we certainly were able only to collect a mere fragment of the total fauna of the families Coniopterygidae, Hemerobiidae and Chrysopidae. The fauna of the Myrmeleontidae, Asclaphidae and Mantispidae is still virtually unknown.

In addition to the collected material we tried, after critical evaluation, to include all records from the literature. To a large extent this was quite reliably achieved for the families Coniopterygidae, Sisyridae, Rachiberothidae, Berothidae, Hemerobiidae and Chrysopidae, but certainly not in the Mantispidae, Myrmeleontidae and Ascalaphidae. In the latter three families, a large number of species known from tropical Africa are only described in an unsatisfactory manner and mostly are in urgent need of a modern taxonomic revision.

In some cases it was possible in collected females to induce oviposition and to rear all the larval instars. For two species the larvae are presented here for the first time.

Localities and habitats of Neuroptera in Ethiopia (Fig. 1)

- 1 Prov. Welo, Alamate (Alamat'a), 12°25' N - 39°35' E.
- 2 Prov. Gonder, Simien Mts., 13°14' N - 38°02' E, 3160 - 3250 m. Prov. Gonder, Simien Mts., W Derasghié, higher than 9800 ft, about 13°00' N - 38°10' E.
- 3 Prov. Gojam, shore of Lake Tana, Bahir Dar, 11°36' N - 37°23' E, 5860 ft. (Bahar Dar, 11°33' N - 37°25' E).
- 4 Prov. Wellega, Bodji near Nejo, about 09°28' N - 35°30' E.
- 5 Prov. Harerge, Harar (Harrar, Harer), about 09°20' N - 42°07' E.
- 6 Prov. Shewa, Hawash Railway Station (Awash), about 09°00' N - 40°19' E, about 3500 ft. Prov. Shewa, gallery forest on the banks of Awash River, 08°55' N - 40°13' E, 1000 m (05.10.96) and 08°51' N - 40°00' E (06.10.96), 1000 m. Steppe at Awash River, 08°55' N - 40°13' E, about 1100 m.
- 7 Adis Abeba, about 09°00' N - 38°45' E.
- 8 Prov. Shewa, Debre Zeyit, 08°46' N - 39°00' E, 1850m: shore of Lake Hora, bushes (mostly *Lantana*). Garden of Hotel, at light.
- 9 Prov. Shewa, Nazret, 08°33' N - 39°17' E, garden of hotel.
- 10 Prov. Shewa, Mount Zik'wala (Zukwála, Zuguala), 08°32' N - 38°52' E, 2100-2200 m, bush forest.
- 11 Prov. Shewa, about 08°10' N - 38°40', between Lake Zwai (Ziway) and Makki (Meki) River; Makki River NW of Lake Zwai, 5500 - 6000 ft.
- 12 Prov. Shewa, Wenji 8 km S Nazret, 08°29' N - 39°20' E, single tree at the banks of river. Prov. Arsi, 30 km S Nazret, 08°20' N - 39°17' E, *Schinus molle* at the roadside. Prov. Arsi, near Gondé, 08°02' N - 39°12' E, 2000 m, wheat field, bushes
- 13 Prov. Shewa, next Senkele-Reserve W Shashemene, 07°16' N - 38°16' E, grass, maize.
- 14 Prov. Sidamo, 07°04' N-38°29' E: Hill near Awasa, 1800m, high grass and bushes.

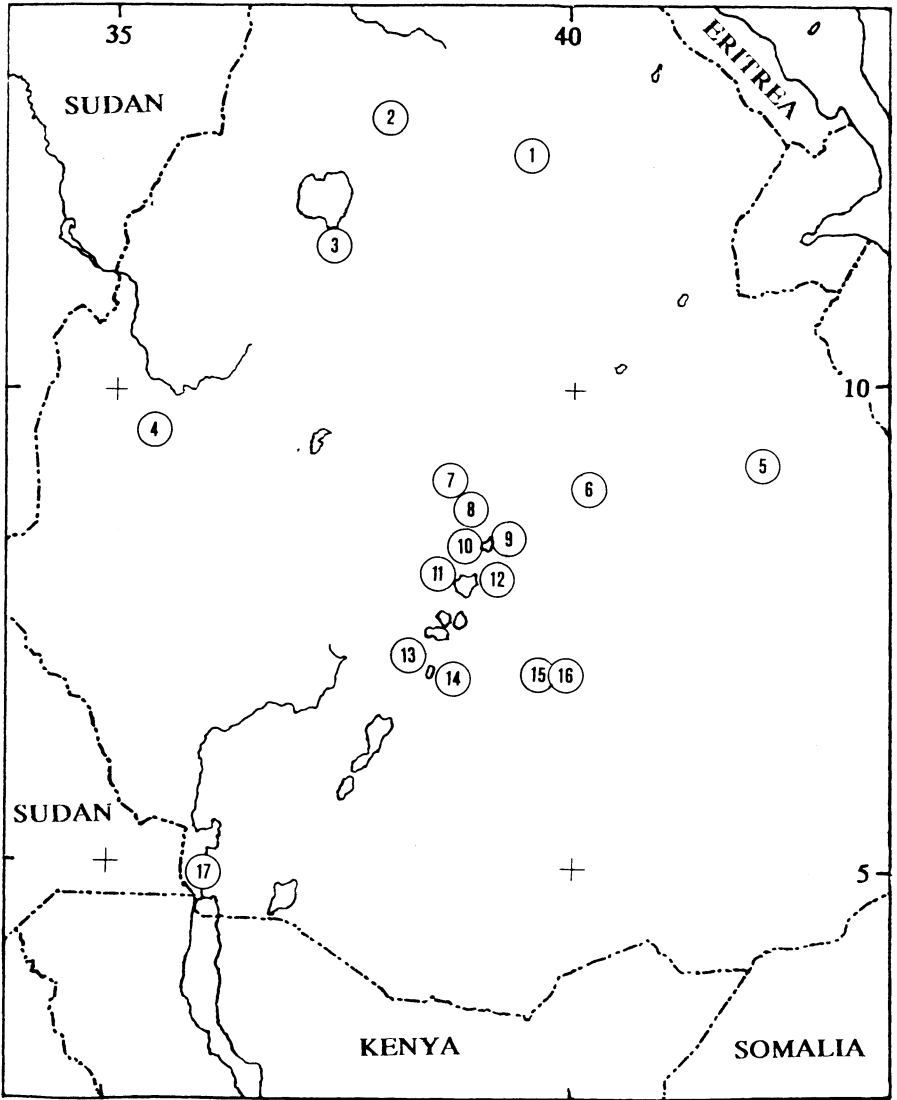


Fig. 1: Localities and habitats of Neuroptera in Ethiopia.

- Outskirts of Awasa, 1700 m, moist forest. Prov. Sidamo, 5 km N Wendo Genet, 07°03' N - 38°36' E, 1700 m, bushes in forest of Proteaceae. Prov. Sidamo, Wendo Genet, 07°01' N - 38°35' E, 1800 m, gardens of hotel, at light and on bushes. - Near Wendo Genet, 1900 m, moist bush forest.
- 15 Prov. Bale, Guré, about 07°08' N - 39°50' E, 2500 m, *Juniperus procera*. Prov. Bale, Robé, 07°08' N - 40°00' E, 2500 m, *Erythrina* in a garden. Prov. Bale, 10 km W Adaba, 07°01' N - 39°22' E, 2500 m, gallery forest.
- 16 Prov. Bale, Goba, 07°01' N - 39°58' E: 2700 m, hotel, at light. 3200 m, bushes on the outskirts.
- 17 Prov. Gamagofa / Prov. Kefa ?, Borié, bord de la Riv. Omo, about 04°40'-05° 40' N - 36°00'-36°55' E, 600 m. Prov. Gamogofa, Nanorpus, bords du lac Rodolphe (Lake Turkana), about 04°40' N - 36°00' E, 565 m.

It was not possible to expose the position of the following localities found in literature: Mt. Chilláo, 9000 ft.; Jem-Jem Forest (Dejem-Dejem), 8000-9000 ft.; Central Ethiopia, Marako (Maraquo, Maraco); Urso.

Fam. Coniopterygidae
Subfam. Aleuropteryginae

***Aleuropteryx* spec.**

Bahir Dar, garden of hotel, 03.1995, 1 ♀, M.v.TSCHIRNHAUS leg.

Subfam. Coniopteryginae

***Coniopteryx (Xeroconiopteryx) crassicornis* ESSEN-PETERSEN, 1928**

Coniopteryx crassicornis ESSEN-PETERSEN, 1928: 449 (descr.); TJEDER 1957 (list).

Coniopteryx (Xeroconiopteryx) crassicornis ESSEN-PETERSEN; MEINANDER 1972 (descr.), 1981 (list), 1990 (list); MONSERRAT 1989 (?distr.).

Jem-Jem Forest, 8000 - 9000 ft, 21.-29.09.1926, 1 ♂ (ESSEN-PETERSEN 1928).

Known from Ethiopia and ?Equatorial Guinea.

ESSEN-PETERSEN reports "with some hesitation" two females of *Coniopteryx aegyptiaca* WITHYCOMBE from the Jem-Jem Forest.

In addition several unidentified females of *Coniopteryx* were collected in 1996.

***Nimboa* sp.**

A species with spotted wings. The taxonomy of the genus has recently become somewhat uncertain (see MEINANDER 1996), therefore we are not able to identify the species until more material from different parts of Africa is available.

Material: Awash River, gallery forest, 05.-06.10.96, 1 ♂ 2 ♀.

***Semidalis scotti* ESSEN-PETERSEN, 1928**

Semidalis scotti ESSEN-PETERSEN, 1928: 448 (descr.); TJEDER 1957 (list); MEINANDER 1972 (descr.), 1976 (descr., distr.), 1990 (list); MONSERRAT 1996 (distr.); HÖLZEL 1998 (distr.).

Mt. Chilláo, ca 9000 ft, 12.11.1926, 1 ♀ (ESSEN-PETERSEN erroneously writes 1 ♂, see MEINANDER 1972). - Simien Mts., W Derasghié, higher than 9800 ft, on *Juniperus procera*, 1 ♂ 1 ♀ (MEINANDER 1976).

New material: Simien Mts., 3160-3250 m, flowering *Senecio* and *Erica*, 15.03.1995, 1 ♂, M.v.TSCHIRNHAUS leg. - Gallery forest W Adaba, 07.10.96, 1 ♂. - Mt. Zik'wala, bushes, 15.10.96, 1 ♂ 2 ♀.

Up to now, only known from higher sites in Ethiopia and Yemen. The two last men-

tioned records were from broad-leaved trees at lower altitudes (2500 m and 2200 m).

Fam. Sisyridae

Sisyra nilotica TJEDER, 1957

Sisyra terminalis nec. CURTIS, 1854: ESBEN-PETERSEN 1915: 83 (descr.).

Sisyra nilotica TJEDER, 1957 (nom. nov.); HÖLZEL 1988 (descr., distr.), 1998 (distr.).

Material: Bushes on the shore of Lake Hora, 15.10.96, 1♂.

Numerous specimens from southern Sudan (Bahr el Abiad, Bahr el Zeraf, Bahr el Ghazal) and a female from Karthoum were examined by ESBEN-PETERSEN. HÖLZEL (1988) reports a male from Saudi Arabia (Wadi Turabah), and R. REMANE collected a male in Sudan on the banks of the river Nile in Hudeiba (10.07.62, at light). - Map of total distribution see fig. 10.

Fam. Rachiberothidae

Mucroberotha aethiopica U.ASPÖCK & MANSELL, 1994

Mucroberotha aethiopica U.ASPÖCK & MANSELL, 1994: 191 (descr.); U. ASPÖCK & H. ASPÖCK 1997 (distr.).

Bahar Dar, 06.-07.1969, 1♂ (U.ASPÖCK & M. MANSELL).

Up to now, only known from Ethiopia.

Fam. Berothidae

Podallea vasseana (NAVÁS, 1910)

Berotha vasseana NAVÁS, 1910a: 81 (descr.).

Berotha squamulata NAVÁS, 1936: 120 (descr.); ROUSSET 1968 (descr.); U.ASPÖCK & H. ASPÖCK 1981 (descr., distr.), 1996 (syn.).

Podallea vasseana (NAVÁS): U.ASPÖCK & H.ASPÖCK 1996 (descr., biol., distr., thorough synonymy, here not repeated).

Ethiopie merid., Bourié, bord de la Riv. Omo, 600 m, 1932-1933, 2♂♂. - Bodji, 31.12.74, at light, H.HÖSE leg., 1♀ (U.ASPÖCK & H.ASPÖCK 1996).

Distribution: RSA (Kwa Zulu, Transvaal), Namibia, Botswana, Angola, Mozambique, Zimbabwe, Kenya, Tanzania, Ethiopia, Uganda, Nigeria, - Comoro Islands, Madagascar. (Map of total distribution see ASPÖCK & ASPÖCK 1996, fig. 6.)

Podallea leroiana (ESBEN-PETERSEN, 1915)

Berotha leroiana ESBEN-PETERSEN, 1915: 81 (descr.), 1930 (distr.); NAVÁS 1929a (descr.), 1931 (list), 1936 (list); ROUSSET 1968 (list); U.ASPÖCK 1990 (list).

Podallea seriata NAVÁS, 1936 (descr.); ROUSSET 1968 (descr.); U.ASPÖCK & H.ASPÖCK 1981 (list); U.ASPÖCK 1987 (distr.), 1990 (syn., distr.).

Podallea leroiana (ESBEN-PETERSEN): U.ASPÖCK & H.ASPÖCK 1981 (syn., comb., descr., distr.); U.ASPÖCK 1987 (distr.), 1990 (distr.), U.ASPÖCK & H.ASPÖCK 1996 (syn., descr., distr.).

Ethiopie merid., Bourié, bord de la Riv. Omo, 600 m, 1932-1933, 1♂ (U.ASPÖCK & H. ASPÖCK 1996).

Distribution: Sudan, Ethiopia, Nigeria, Senegal. (Map of total distribution see ASPÖCK & ASPÖCK 1996, fig.2.)

Nodalla lineata (NAVÁS, 1936)

Nodalla lineata NAVÁS, 1936: 121 (descr.); ROUSSET 1968 (descr.); H.ASPÖCK & U. ASPÖCK 1990 (comb., distr.).

Sphaeroberotha lineata (NAVÁS): U.ASPÖCK & H.ASPÖCK 1984 (descr., comb., syn.).
Ethiopie merid., Bourié, bord de la Riv. Omo, 600 m, 1♀ (U.ASPÖCK & H.ASPÖCK 1984).
Distribution: Kenya and Ethiopia.

Fam. Hemerobiidae

Micromus africanus VAN DER WEELE, 1910

Micromus africanus VAN DER WEELE, 1910: 17 (descr.); ESBEN-PETERSEN 1928 (distr.); TJEDER 1961 (descr., syn., distr.); MONSERRAT 1990a (list), 1990b (syn.), 1992b (distr.); OHM & HÖLZEL 1997 (distr.), 1998 (distr.).

Micromus ludicrus NAVÁS, 1933: 213 (descr.); TJEDER 1961 (syn.).

Micromus lanceolatus NAVÁS, 1910a: 73 (descr.); TJEDER 1961 (list); MONSERRAT 1990b (syn.).

Eumicromus africanus (VAN DER WEELE): KIMMINS 1939 (comb., fig.).

Eumicromus maculipes FRASER, 1957: 23 (descr.).

Micromus maculipes (FRASER): MONSERRAT 1992b (syn., distr.).

Jem-Jem Forest, 8000-9000 ft., 21.09. and 10.10.1926, 10 specimens (ESBEN-PETERSEN 1928, vide TJEDER 1961). - 2♂♂ 6♀♀, from foliage of *Podocarpus* (MONSERRAT 1992b).

New material: Gallery forest W Adaba, 10.10.96, 1♂.

Distribution: Ethiopia, Uganda, Kenya, Tanzania, Zimbabwe, RSA (Cape, Natal, Transvaal [unpubl.]). - Comoro Islands, Madagascar, Mascarene Islands.

Micromus sjoestedti VAN DER WEELE, 1910

Micromus sjoestedti VAN DER WEELE, 1910: 17 (descr.); TJEDER 1961 (descr., syn., distr.); OHM & HÖLZEL 1982 (distr.), 1984 (distr.); HÖLZEL 1988 (distr.), 1995 (distr.); MONSERRAT 1990a (list), 1992a (distr.), 1992b (distr.).

Micromus capensis ESBEN-PETERSEN, 1920: 508 (descr.); TJEDER 1961 (syn.).

Micromus braunsi NAVÁS, 1929b: 31 (descr.); TJEDER 1961 (syn.).

Eumicromus capensis (ESBEN-PETERSEN): KIMMINS, 1959 (comb., distr.); TJEDER 1961 (comb.).

Afromicromus capensis (ESBEN-PETERSEN): NAKAHARA 1960 (descr., comb.); TJEDER 1961 (syn.).

Material: Garden of hotel in Nazret, at light, 04.10.96, 1♂ 1♀. - 30 km S Nazret, *Schinus molle* at the roadside, 06.10.96, 1♂. - Bushes in open country near Gondé, 06.10.96, 2♂♂. - Bushes on the shore of Lake Hora, 14.10.96, 3♂♂. - Wendo Genet, garden of hotel, 12.10.96, 1♂ 1♀.

Distribution: RSA (Cape, Natal, Orange Free State, Transvaal), Namibia, Zimbabwe, Tanzania, Kenya, Malawi, Zaire (Katanga, Elisabethville), Uganda, Ethiopia, Nigeria, Cape Verde Islands, Yemen, Saudi Arabia (fig. 11).

Micromus timidus HAGEN, 1853

Micromus timidus HAGEN, 1853: 481 (descr.); TJEDER 1961 (descr., thorough synonymy up to 1960, here not repeated).

Micromus insulanus NAVÁS, 1925: 76 (descr.); MONSERRAT 1990b (syn., distr.).

Eumicromus parallelus FRASER, 1957: 23 (descr.); OHM & HÖLZEL 1997 (syn.).

Micromus parallelus (FRASER): MONSERRAT 1990a (comb., list).

Eumicromus delamarei AUBER, 1956: 498 (descr.); MONSERRAT 1992b (syn.).

Micromus timidus (HAGEN): OHM & HÖLZEL 1995 (distr.), 1997 (syn., distr.), 1998 (distr.).

Material: Garden of hotel in Nazret, at light, 04.10.96, 4♂♂. - Gallery forest at Awash

River, 05.10.96, 1♂.

Distribution: From Senegal eastwards to Pacific islands. Occurrence in the Indian and Pacific Archipelagos: see TJEDER 1961, fig. 513. In Africa: RSA (Cape, Natal), Mozambique, Zimbabwe, Kenya, Tanzania, Zaire, Uganda, Ethiopia, Nigeria, Togo, Ghana, Ivory Coast, Sierra Leone, Equatorial Guinea (Annoba Isl), Senegal, Principe Islands, - Comoro Islands, Madagascar, all Mascarene Islands, Seychelles.

Symphorobius fallax (NAVÁS, 1908)

Symphorobius fallax NAVÁS, 1908: 498 (descr.); ASPÖCK & al. 1980 (descr., syn., distr.); HÖLZEL 1988 (distr.); MONSERRAT 1990a (syn.).

Symphorobius amicus NAVÁS, 1915a: 332 (descr.); ASPÖCK et al. 1980 (syn., distr.); MONSERRAT 1990a (syn.).

Nefasitus amicus (NAVÁS), 1915b: 408 (descr.); ASPÖCK et al. 1980 (syn., distr.); MONSERRAT 1990a (syn.).

"Äthiopien" (ASPÖCK et al. 1980, HÖLZEL 1988) does not concern Ethiopia, but the former Italian colony Eritrea, in 1936 united with Ethiopia, since 1993 independent. (*S. amicus* NAVÁS, 1915b: "Eritrea: Nefasit").

Hemerobius aper TJEDER, 1961

Hemerobius aper TJEDER, 1961: 381 (descr.); MONSERRAT 1990a (list).

Material: Wendo Genet, garden of hotel, at light, 10.-13.10.96, 1♀.

Up to now, only known from RSA (Natal, Transvaal [unpubl.]).

Hemerobius nairobicus NAVÁS, 1910

Hemerobius nairobicus NAVÁS, 1910a: 78 (descr.); KIMMINS 1939 (descr., distr.); NAKAHARA 1960 (distr.); TJEDER 1961 (descr., distr.); MONSERRAT 1990a (list), 1991 (syn., distr.), 1992a (distr.); OHM & HÖLZEL 1998 (distr.).

Hemerobius sp. VANDER WEELE 1909 (distr.); MONSERRAT 1991 (syn.).

Hemerobius comoriensis KRÜGER, 1922 (nom. nud.); MONSERRAT 1990a (list), 1991 (syn.).

Material: Wendo Genet, garden of hotel, at light, 10.-13.10.96, 2♂♂ 4♀♀. - W. Adaba, gallery forest, 10.10.96, 3♀♀. - Bodji, 31.12.1974, B. HÖSE leg., 1♀.

H. nairobicus was described by NAVÁS (1910) from Kenya, but in an unsatisfactory manner. KIMMINS (1939) added a short description of the male genitalia (material from Ruwenzori, Uganda), and NAKAHARA (1960) gave some more details, based on material from Salisbury, Zimbabwe. Both authors mention the up- and inwardly oriented tooth approximately in the middle of the ectoproct. TJEDER (1961) gives a detailed description of the species and its genitalia, based on material from Kwa Zulu. The males from Ethiopia show a much smaller tooth at the ectoproct than those from Transvaal.

Distribution: RSA (Cape, Orange Free State, Natal, Transvaal), Lesotho, Zimbabwe, Ruanda, Tanzania, Zaire, Uganda, Kenya, Ethiopia, Comoro Islands.

Hemerobius reconditus NAVÁS, 1914

Hemerobius reconditus NAVÁS, 1914a: 29 (descr.); TJEDER 1961 (descr., syn., distr.); MONSERRAT 1990a (list), 1991 (syn., distr.), 1992a (distr.); HÖLZEL 1995 (distr.), 1998 (distr.).

Hemerobius errans NAVÁS, 1914a: 31 (descr.); ESBEN-PETERSEN 1920 (distr.); KIMMINS 1939 (descr., distr.); TJEDER 1961 (syn.); MONSERRAT 1990a (list).

Hemerobius ellenbergeri NAVÁS, 1933: 212 (descr.); TJEDER 1961 (syn.); MONSERRAT 1985 (typus), 1990a (list).

Hemerobius abyssinicus ESBEN-PETERSEN, 1928: 447 (descr.); TJEDER 1961 (list); MONSERRAT 1990a (list), 1991 (syn.).

Peak of Mt. Zik'wala, 9600 ft, 22.10.1926, 2♀ (ESBEN-PETERSEN 1928). - Maraquo, 08.1914, leg. Kovacs (MONSERRAT 1991).

New Material: Gallery forest W Adaba, 10.10.96, 1♂. - Wendo Genet, garden of hotel, at light, 10.10.96. 1♂. - Adis Abeba, at light, 05.01.1975, B. HÖSE leg., 1♂, 18.10.1973; DE ROUGEMONT leg., 1♂. - Bodji, 31.12.1974, B. HÖSE leg., 1♀.

TJEDER remarks: "There are 3 or 4 Rs-branches." In the specimens from Ethiopia predominate wings with 4, material from Natal repeatedly shows 5 Rs-branches.

Widespread in the Afrotropics: RSA (Cape, Natal, Orange Free State, Transvaal), Lesotho, Zimbabwe, Zaire, Tanzania, Kenya, Uganda, Ethiopia, Sudan, Cameroon, Yemen and Saudi Arabia.

Hemerobius sp.

Outskirts of Goba, 09.10.96, bushes, 1♀.

Eidonomically similar *H. rudebecki* TJEDER. But since the females of many African species of *Hemerobius* are still unknown, an identification at the species level would be premature.

Wesmaelius nubilus (KIMMINS, 1929)

Boriomyia nubila KIMMINS, 1929: 127 (descr.); TJEDER 1961 (descr., distr.).

Kimminsia nubila (KIMMINS): KIMMINS 1959 (comb.).

Wesmaelius (Kimminsia) nubilus (KIMMINS): HÖLZEL 1988 (comb., tax., distr.), 1995 (distr.).

Wesmaelius nubilus (KIMMINS): MONSERRAT 1990a (comb.); HÖLZEL 1998 (distr.).

Material: Hotel in Goba, at light, 8.10.96, 1♀. - Outskirts of Goba, bushes, 9.10.96, 1♀.

Distribution: RSA (Cape, Natal, Transvaal), Lesotho, Zimbabwe (unpubl.), Angola, Ethiopia, Yemen.

Fam. Chrysopidae Tribe Ankylopterygini

Ankylopteryx pallidula TJEDER, 1966

Ankylopteryx (Ankylopteryx) pallidula TJEDER, 1966: 501 (descr.); HÖLZEL 1992 (syn.); OHM & HÖLZEL 1998 (distr.).

Material: Gallery forest at Awash River, old *Tamarindus*-tree, 05.10.96, 1♂, 1♀.

Distribution. Up to now, only known from Eastern Afrotropis: RSA (Transvaal, Natal), Mozambique, Tanzania (unpubl.), Ethiopia, Comoro Islds.

Parankylopteryx polysticta (NAVÁS, 1910)

Ancylopteryx polysticta NAVÁS, 1910b: 48 (descr.).

Ancylopteryx neavei NAVÁS, 1913a: 93 (descr.); HÖLZEL & OHM 1991a (syn.).

Ancylopteryx verdcourti KIMMINS, 1951: 137 (descr.); TJEDER 1966 (syn.).

Ankylopteryx (Parankylopteryx) neavei NAVÁS: TJEDER 1966: 509 (redescr., distr.).

Parankylopteryx polysticta (NAVÁS): HÖLZEL & OHM 1991a (comb., syn., distr.); HÖLZEL 1992 (syn.).

Material: Bush forest near Wendo Genet, 11.10.96, 3♂♂ 2♀♀.

Distribution. So far, only known from Eastern Afrotropis (the record from Equatorial Guinea in HÖLZEL & MONSERRAT 1992 has to be cancelled, it regards an other, closely allied species): RSA (Cape, Transvaal), Zimbabwe, Zambia, Uganda, Kenya, Somalia, Ethiopia.

Tribe Belonopterygini

Italochrysa impar (NAVÁS, 1912)

Nothochrysa impar NAVÁS, 1912: 99 (descr.).

Nothochrysa aethiopiae LACROIX, 1925: 266 (descr.) - **syn. nov.**

Italochrysa impar (NAVÁS): TJEDER 1966 (descr., distr.).

The syntypes of *N. aethiopiae* (2♂♂, 1 ex. without abdomen) deposited in the collections of the Muséum National d'Histoire naturelle, Paris, have been examined and proved to be identical with *I. impar*. As LACROIX did not select a holotype, one well preserved male, Maraco, 04.05.1914 is hereby designated as lectotype. Maraco, 04.05.1914, 2♂♂, 1 ex. without abdomen (LACROIX 1925).

New material: Hill near Awasa, in high grass, 12.10.96, 9♂♂ 11♀♀.

Distribution: RSA (Transvaal), Zimbabwe, Zambia, Congo (unpubl.), Ethiopia.

Italochrysa variegata (BURMEISTER, 1839)

Chrysopa variegata BURMEISTER, 1839: 981 (descr.).

Nothochrysa zonata NAVÁS, 1913: 324 (descr.); BROOKS & BARNARD 1990 (syn.).

Italochrysa variegata (BURMEISTER): TJEDER 1966 (descr., distr.); HÖLZEL & OHM 1992 (distr.); OHM & HÖLZEL 1998 (distr.).

„Abyssinie“ (NAVÁS, 1913) not seen.

Distribution: RSA (Transvaal, Natal), Zimbabwe, Mozambique, Tansania, Ethiopia, Madagascar, Comoro Islds.

Tribe Chrysopini

Apertochrysa umbrosa (NAVÁS, 1914)

Chrysopa umbrosa NAVÁS, 1914a: 34 (descr.); 1924 (distr.); 1936 (distr.); ESBEN-PETERSEN 1928 (distr.).

Chrysopa (Apertochrysa) umbrosa NAVÁS: TJEDER 1966 (descr., comb., distr.).

Apertochrysa umbrosa (NAVÁS): BROOKS & BARNARD 1990 (comb.).

Ethiopia meridionale, Nanorpus, bords du lac Rodolphe, 565 m (NAVÁS 1936); Central Ethiopia, Marako, 08.-09 1914, 3 spec. (ESBEN-PETERSEN 1928).

New material: Gallery forest W Adaba, 07.10. and 10.10.96, 3♂♂ 1♀; Wendo Genet, hotel at light, 10.10.-13.10.96, 6♂♂ 10♀♀; hotel garden, 13.10.96, 3♂♂; bush forest near Wendo Genet, 11.10.96, 8♂♂ 9♀♀.

Collected in luxuriant forests and parcs. - Known from Mozambique, Eastern Congo (Lake Kivu), Kenya, Ethiopia and Ivory Coast (unpubl.).

Borniochrysa squamosa (TJEDER, 1966)

Chrysopa (Suarius) squamosa TJEDER, 1966: 377 (descr.).

Suarius squamosa (TJEDER): SÉMÉRIA & QUILICI 1986 (comb., distr.).

Borniochrysa squamosa (TJEDER): BROOKS & BARNARD 1990 (comb.); HÖLZEL & OHM 1991b (distr.), 1992 (distr.); HÖLZEL, OHM & STELZL 1994 (distr.); OHM & HÖLZEL 1997 (distr.), 1998 (distr.).

Material: Outskirts of Awasa, moist forest, 12.10.96, 1♀; Wendo Genet, garden of hotel, 13.10.96, 1♂; shore of lake Hora, bushes, 14.-15.10.96, 13♂♂ ♀♀; hotel at lake Hora, garden at light, 14.10.96, 1♀; Goba, hotel at light, 08.10.96. 1♂; Mt. Zik'wala, bushes, 15.10.96, 1♀.

Distribution: RSA (Cape, Transvaal, Natal), Zimbabwe, Mozambique, East-Congo (Kivu), Ruanda (unpubl.), Tansania, Ethiopia, Senegal, Comoro Islds., Madagascar, Mascarene Islds.

***Brinckochrysa tjederi* HÖLZEL, 1987**

Brinckochrysa tjederi HÖLZEL, 1987: 261 (descr.); HÖLZEL, OHM & STELZL 1997 (distr.).

Material: Wenji, 04.10.96, 1♂.

Distribution: RSA (Transvaal, Natal), Namibia, Botswana, Ethiopia.

***Chrysemosa mosconica* (NAVÁS, 1930)**

Chrysopa mosconica NAVÁS, 1930: 136 (descr.).

Chrysopa (Suarius) simillima TJEDER, 1966: 389 (descr.).

Suarius simillimus (TJEDER): HÖLZEL 1980 (distr.); 1990 (distr.).

Suarius mosconicus (NAVÁS): HÖLZEL & OHM 1991 (syn., comb., distr.).

Chrysemosa mosconica (NAVÁS): BROOKS & BARNARD 1990 (comb.); OHM & HÖLZEL 1992 (distr.); HÖLZEL 1995 (distr.), 1998 (distr.).

Material: Alamata, 05/06.1957, 1♀.

Mainly on *Acacia* sp. and related trees and bushes. Distributed in the regions bordering the Red Sea: Sudan, Ethiopia, Djibouti, Somalia, Yemen, Saudi Arabia.

***Chrysoperla comans* (TJEDER, 1966)**

Chrysopa (Chrysoperla) comans TJEDER, 1966: 408 (descr.).

Chrysoperla comans (TJEDER): HÖLZEL 1989 (comb.); BROOKS 1994 (descr., distr.).

Chrysoperla manselli HÖLZEL, 1989: 176 (descr.); BROOKS 1994 (syn.).

Material: Gallery forest W Adaba, 07.10.96, 1♂ 1♀; bushes on the shore of lake Hora, 14.10.96, 1♀; Wendo Genet, at light, 11.10.96, 1♀; moist bush forest, 11.10.96, 1♂.

Larva see fig. 9.

Distribution: RSA (Transvaal), Mocambique, Ethiopia.

***Chrysoperla congrua* (WALKER, 1853)**

Chrysopa congrua WALKER, 1853: 238 (descr.); ESBEN-PETERSEN 1928 (distr.).

Chrysopa (Chrysoperla) congrua (WALKER): TJEDER 1966 (comb., distr.).

Chrysoperla congrua (WALKER): SÉMÉRIA & QUILICI 1986 (comb., distr.); HÖLZEL 1989 (descr., distr.); HÖLZEL & OHM 1991a (distr.); OHM & HÖLZEL 1992 (distr.); BROOKS 1994 (descr., thorough synonymy, distr.); HÖLZEL 1995 (distr.); OHM & HÖLZEL 1997 (distr.); HÖLZEL, OHM & STELZL 1997 (distr.); HÖLZEL 1998 (distr.); OHM & HÖLZEL 1998 (distr.).

Central Ethiopia, Marako, 08/09.1914, 20 spec. (ESBEN-PETERSEN 1928).

New material: Wheat fields near Gondé, 06.10.96, 6 ♀♀ (green specimens); bushes and high grass at the shore of lake Hora, 15.10.96, 1♀ (brown specimen); near Senkele reserve, maize fields and high grass, 13.10.96, 4♂♂ 2♀♀; Wendo Genet, hotel garden at light, 10.-13.10.96, 2♂♂ 3♀♀.

In high perennial grass, frequently in maize and wheat fields in abundance. Widespread in Subsaharan Africa, in the Madagascan region and the Arabian peninsula, eastwards to Australia and Pacific islands.

***Chrysoperla pudica* (NAVÁS, 1914)**

Chrysopa pudica NAVÁS, 1914b: 82 (descr.).

Chrysopa (Chrysoperla) pudica NAVÁS: TJEDER 1966 (descr., comb., distr.).

Chrysoperla pudica (NAVÁS): OHM & HÖLZEL 1982 (comb., distr.); HÖLZEL & OHM 1990 (distr.), 1991a (distr.); OHM & HÖLZEL 1992 (distr.); BROOKS 1994 (descr., thorough synonymy, distr.); HÖLZEL, OHM & STELZL 1997 (distr.); HÖLZEL 1998 (distr.).

Material: Wenji, 04.10.96, 1♀.

The species prefers *Acacia* sp. and similar trees and bushes. Distribution: In the whole of Subsaharan Africa from the Cape northwards to the Senegal river and the northern border of Sudan; Cape Verde Islds., St. Helena and in Southern Arabia (Oman, Yemen).

Chrysoperla volcanicola sp. nov.

Material: 1♂ (holotype), Prov. Shewa, Lake Hora near Debre Zeyit, bushes (*Lantana camara*) near lake shore, 1850 m, 08.46 N, 39.00 E, 15.10.1996. Paratypes, same place, 14. and 15.10., 6♂♂ 6♀♀; from eggs: 9♂♂ 5♀♀. 1♂, Nazret, hotel garden at light, 08.33 N, 39.17 E, 4.10.1996. 2♂♂, Mt. Zik'wala, bush forest, 2150 m, 08,32 N, 38.52 E, 15.10.1996; from eggs: 3♂♂ 1♀.

Description: Fore wing (♂) 12-14 mm, (♀) 13-15 mm (fig. 2). Head yellowish, usually unmarked, infrequently marked with red stripe across gena, lateral frons and lateral clypeus. Maxillary palps unmarked. Antennae almost as long as fore wing. Notum green, marked with yellow/white median longitudinal band; prothoracic setae long, pale. Legs green with dense brownish setation; claw with large basal dilation, about half as long as claw hook. Fore wing relatively broad, pointed apically; costal setae long, erect; venation green, tympanal organ marked with brownish spot. Intramedian cell short, not meeting first radial crossvein, or apex of this cell meets crossvein; 5-8 inner gradates, 6-9 outer gradates. Abdomen green, densely covered with brownish setae, tergites with yellow median longitudinal band.

♂ genitalia (figs 3-6): Sternite 8+9 elongate, lip narrow, rounded apically. Apodeme of tergite 9 short, not extending beyond the cercal callus, not branched. Spinellae absent. Gonosetae long, numerous, evenly dispersed across gonosaccus. Arcessus narrow, slightly curved, not striated dorsally. Entoprocessus small, crescentic.

♀ genitalia: Subgenitale with short basal projection. Spermatheca with deep ventral impression, vela short.

Chr. volcanicola shows considerable resemblance with *Chr. gallagheri* from Oman but can be easily distinguished by the unmarked head and the entirely green wing venation. The same characteristics distinguish the species from all other *Chrysoperla*-species found in Ethiopia.

Description of larva (figs 7, 8). L 3: Total length 13 mm; head length 0,6 mm, width 0.8 mm; length of mandibles 0.9 mm, of antennae 1,2 mm. Abdomen fusiform, narrow. Thoracic and abdominal tubercles small with few short setae. General colouration pale brown with dark brown markings; markings on head, see fig. 7.

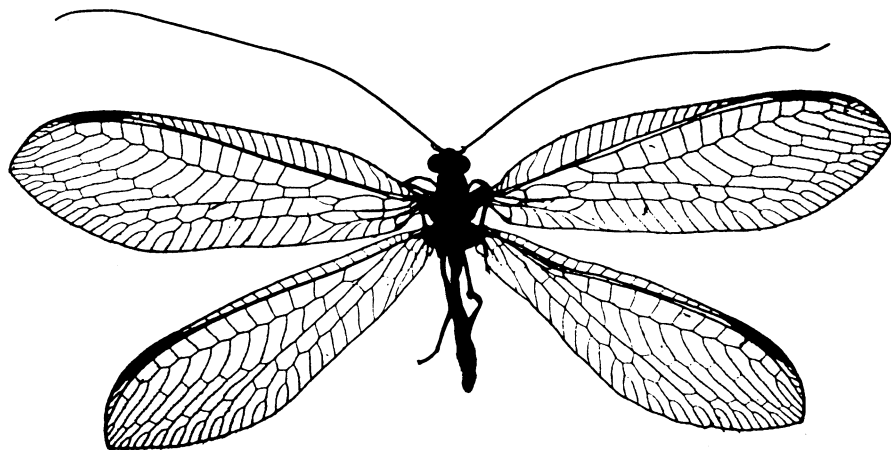
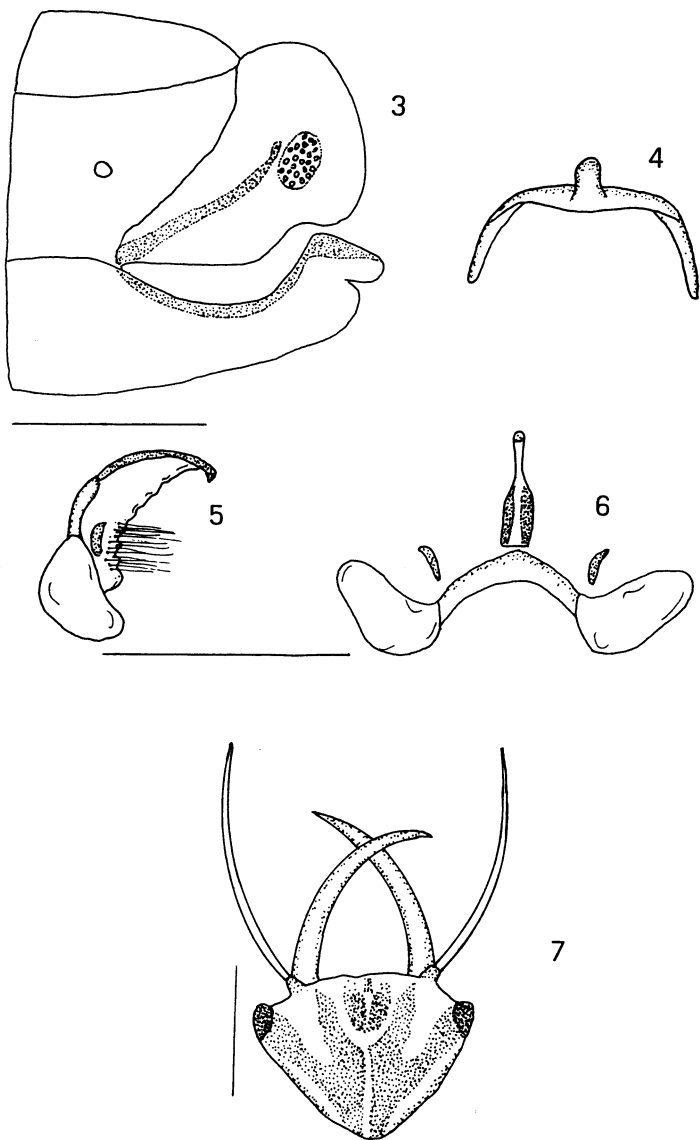


Fig. 2: *Chrysoperla volcanicola* sp. nov., paratype female from Debre Zeyit



Figs 3-7: *Chrysoperla volcanicola* sp. nov., 3-6 holotype male: 3) apex of abdomen, lateral; 4) tignum, dorsal; 5) gonarcus with arcessus and entoprocessus, lateral; 6) same, dorsal; 7) head of L 3 (Mount Zik'wala). (Scale = 0.5 mm)

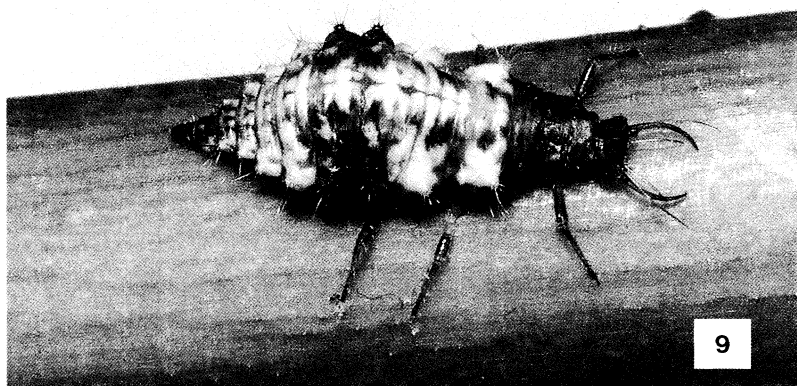
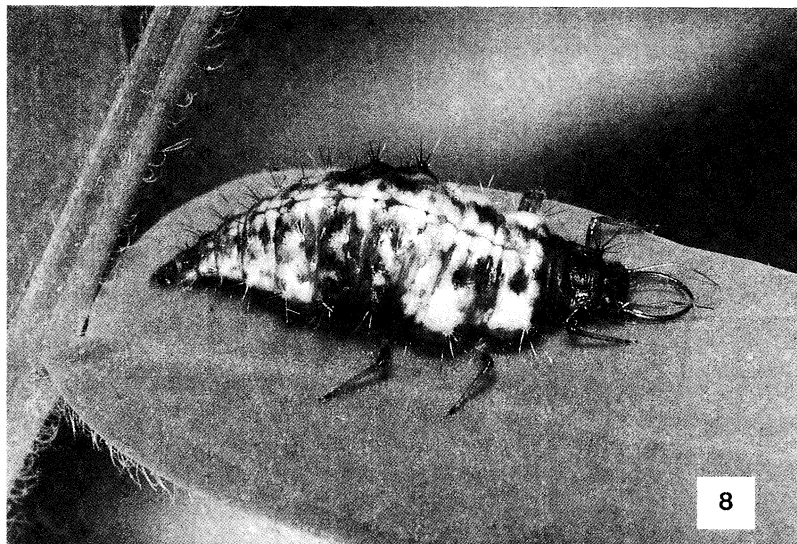


Fig. 8 (oben): L 3 of *Chrysoperla volcanicola* sp. nov. (Mount Zik'wala).
Fig. 9 (unten): L 3 of *Chrysoperla comans* (TJEDER, 1966) (Wendo Genet).

***Chrysoperla* sp.**

Chrysoperla carnea (nec STEPHENS): OHM & HÖLZEL 1982 (distr., phenol.); HÖLZEL & OHM 1990 (distr.); OHM & HÖLZEL 1992 (distr.); HÖLZEL, OHM & STELZL 1994 (distr.).

Chrysoperla zastrowi (nec ESBEN-PETERSEN): BROOKS 1994 (partim).

Material: Nazret, hotel garden at light, 04.10.96, 1♂.

The species will be described in a forthcoming paper.

***Dichochrysa amseli* (HÖLZEL, 1980)**

Anisochrysa amseli HÖLZEL, 1980: 167 (descr.).

Dichochrysa amseli (HÖLZEL): HÖLZEL 1995 (comb., distr.), 1998 (distr.).

Material: Alamata, 06/1957, 1♀.

Up to now, only known from Southern Arabia (Oman, Yemen) and Ethiopia.

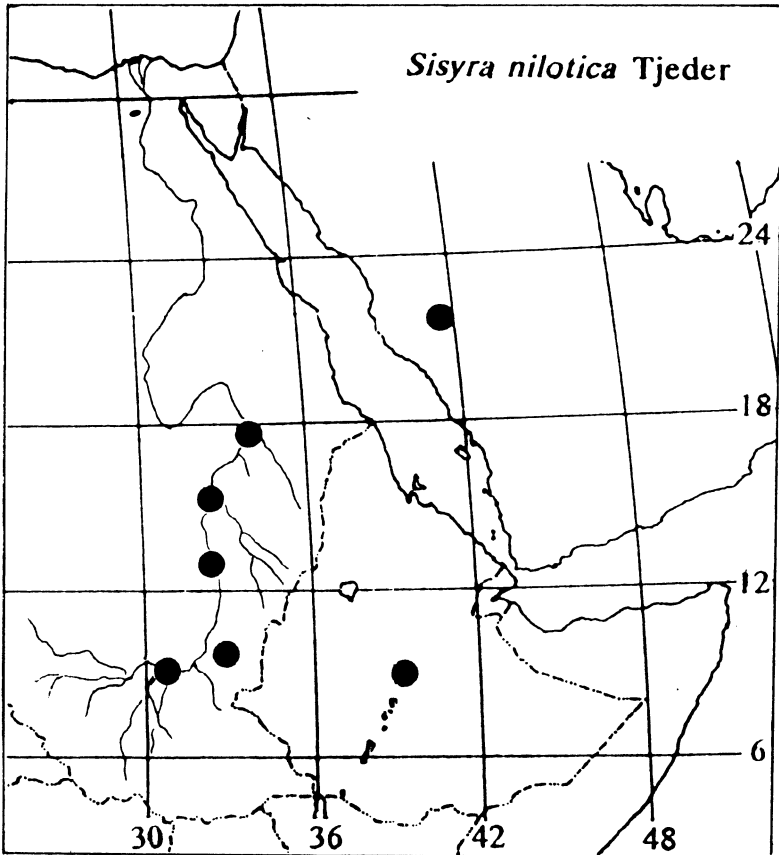


Fig. 10: *Sisyra nilotica* TJEDER, 1957, distribution.

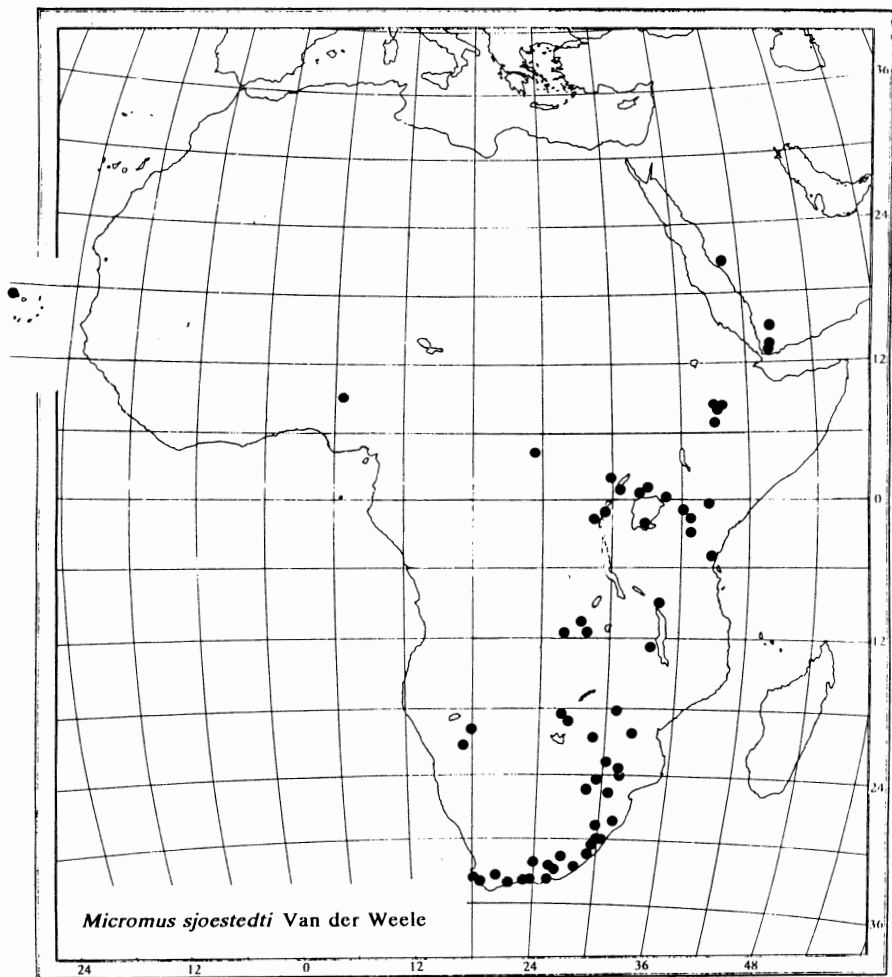


Fig. 11: *Micromus sjoestedti* VAN DER WEELE, 1910, distribution.

Dichochrysa handschini (NAVÁS, 1929)

Chrysopa handschini NAVÁS, 1929c: 444 (descr.).

Chrysopa incerta NAVÁS, 1936: 115 (descr.) - **syn. nov.**

Chrysopa (Anisochrysa) handschini (NAVÁS): TJEDER 1966 (descr., comb., distr.).

Dichochrysa handschini (NAVÁS): OHM & HÖLZEL 1997 (comb., ?distr.).

The syntypes (2♂♂) of *Chrysopa incerta*, deposited in the collections of the Muséum National d'Histoire naturelle, Paris, have been examined and proved to be identical with *D. handschini*. One well preserved ♂ from Kenya, Marakwet, Elgeyo Escarpment, 2500 m, is hereby designated as lectotype.

Material: Debre Zeyit, hotel, at light, 15.10.96, 1♀; bushes on the shore of lake Hora, 12.10.96, 7♂♂ 1♀; Mt. Zik'wala, bushes, 15.10.96, 1♂; hill near Awasa, 12.10.96, 2♀♀; gallery forest W Adaba, 10.10.96, 1♂.

Distribution: RSA (Cape, Transvaal), Mocambique, Zambia (unpubl.), Congo, Kenya, Ethiopia, ? Mauritius (see fig. 12).

Dichochrysa nicolaina (NAVÁS, 1929)

Chrysopa nicolaina NAVÁS, 1929b: 361 (descr.).

Chrysopa burgeonina NAVÁS, 1936: 351 (descr.); HÖLZEL & OHM 1991a (syn.).

Chrysopa (Anisochrysa) burgeonina NAVÁS: TJEDER 1966 (descr., distr.).

Anisochrysa nicolaina (NAVÁS): OHM & HÖLZEL 1982 (comb., distr.).

Mallada nicolainus (NAVÁS): HÖLZEL 1990 (distr.); HÖLZEL & OHM 1990 (ecol., distr.); HÖLZEL & DUELLI 1990 (distr.); HÖLZEL & OHM 1991a (comb., distr.), 1992 (distr.); HÖLZEL, OHM & STELZL 1994 (distr.).

Dichochrysa nicolaina (NAVÁS): HÖLZEL 1995 (comb., distr.); HÖLZEL, OHM & STELZL 1997 (distr.); HÖLZEL 1998 (distr.); OHM & HÖLZEL 1998 (distr.).

Material: Gallery forest at Awash river, old *Tamarindus*-tree, 05.10.96, 1♂ 2♀♀; Alamata 6/1957, 4♂♂ 4♀♀.

The species prefers deciduous bushes and trees, frequently fruit-trees (e.g. *Mangifera indica*). Distribution: In whole Subsaharan Africa, from the Cape to Senegal and the Cape Verde Islands, in Eastern Africa northwards to the Sudan; Comoro Islnds., Madagascar; Southern Arabia (Yemen and Oman).

Dichochrysa sjoestedti (VAN DER WEELE, 1909)

Chrysopa sjoestedti VAN DER WEELE, 1909 (descr.).

Chrysopa (Anisochrysa) sjoestedti VAN DER WEELE: TJEDER 1966 (descr., syn., distr.).

Mallada sjoestedti (VAN DER WEELE): HÖLZEL & OHM 1991a (comb., syn., distr.); HÖLZEL & MONSERRAT 1992 (distr.); HÖLZEL, OHM & STELZL 1994 (distr.).

Dichochrysa sjoestedti (VAN DER WEELE): OHM & HÖLZEL 1998 (comb., distr.).

Material: Wendo Genet, bush forest, 11.10.96, 11♂♂ 9♀♀; outskirts of Awasa, moist forest, 12.10.96, 1♂ 2♀♀.

Found in moist forests. Distribution: In Subsaharan Africa from the Cape to Senegal and Ethiopia. Comoro Islnds.

Mallada desjardinsi (NAVÁS, 1911)

Chrysopa desjardinsi NAVÁS, 1911: 267 (descr.).

Chrysopa boninensis OKAMOTO, 1914: 62 (descr.).

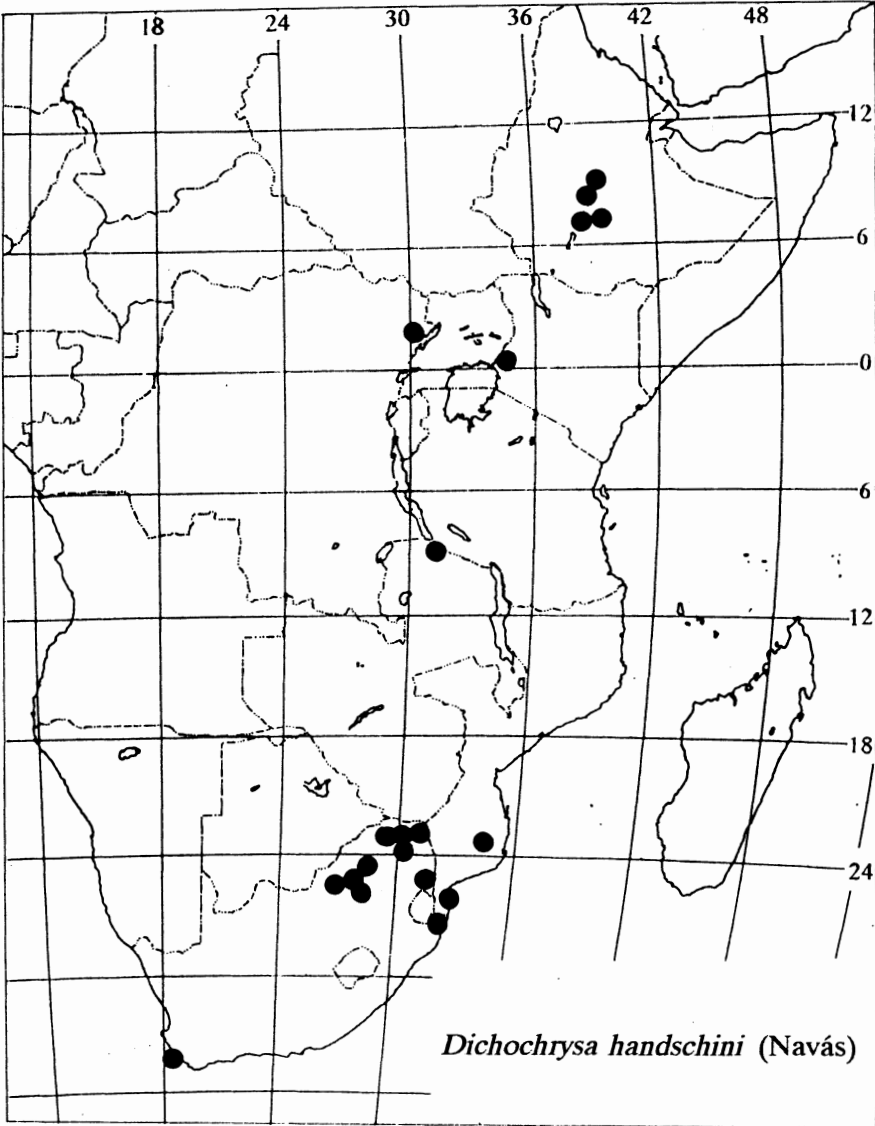
Chrysopa (Anisochrysa) boninensis OKAMOTO: TJEDER 1966 (descr., syn., distr.).

Mallada boninensis (NAVÁS): HÖLZEL & OHM 1990 (distr.), 1991a (distr.).

Mallada desjardinsi (NAVÁS): HÖLZEL & OHM 1992 (syn., distr.); HÖLZEL, OHM & STELZL 1994 (distr.); OHM & HÖLZEL 1997 (distr.), 1998 (distr.).

Material: Wenji, 04.10.96, 1♂ 1♀.

The species is found usually in shrubs in moderately moist or dry regions, frequently



Dichochrysa handschini (Navás)

Fig. 12: *Dichochrysa handschini* (NAVÁS, 1929), distribution.

also in maize or cotton fields.

Distributed all over Subsaharan Africa, on the Cape Verde Islands, on all islands of the Madagascan subregion and eastwards to Pacific islands. (Map of Distribution worldwide see TJEDER 1966, fig. 1746; in Africa: HÖLZEL, STELZL & OHM 1994, fig. 14).

***Mallada* sp.**

Gallery forest W Adaba, 10.10.96, 1♀.

As far as can be judged from wing venation and female genitalia the species belongs to the genus *Mallada* and seems to be undescribed.

Fam. Myrmeleontidae

ESBEN-PETERSEN (1928) lists 10 species of Myrmeleontidae from Ethiopia, two of them are described from this country. All informations of ESBEN-PETERSEN need confirmation. - In 1996, we found 4 species:

***Palpares papilionoides* (KLUG, 1834)**

Myrmeleon papilionoides KLUG, 1834: tab. 35, fig. 2 (descr.).

Palpares interioris KOLBE, 1897: 9 (descr.); ESBEN-PETERSEN 1915 (distr.), 1928 (syn.); NAVÁS 1936 (distr.).

Palpares tristis ugandanus STITZ, 1912: 106 (descr.); ESBEN-PETERSEN 1928 (syn.).

Palpares papilionoides (KLUG): ESBEN-PETERSEN 1928 (distr.); HÖLZEL 1982 (distr.), 1998 (distr.).

Hawash Railway Station, about 3500 ft, at light, 02.09.1926, 1♂ (ESBEN-PETERSEN 1928).

New Material: Steppe at Awash River, 05.10.1996, 1♀.

Distribution: N-Senegal (unpubl.), S-Sudan (Bahr el Abiad), Uganda, Ethiopia, S-Somalia (unpubl.), Tanzania (Zanzibar), Kenya (Turkana), „Arabia felix“, Saudi Arabia. (fig. 13).

***Creoleon nubifer* (KOLBE, 1897)**

Creagris nubifer KOLBE, 1897: 25 (descr.).

Creoleon nubifer (KOLBE): ESBEN-PETERSEN 1928 (distr.).

Makki River, NW of Lake Zwai, about 6000 ft, 01.11.1926, 1♂ 1♀. - Between Lake Zwai and Makki River, ca 5500 and 6000 ft, 23/24. 11.1926, 1m (ESBEN-PETERSEN 1928).

New Material: Hill near Awasa, in grass,, 12.10.96, 2♂♂, 4♀♀. - Bodji, at light, 30.12.1974, B. HÖSE leg., 1♀.

In Subsaharan Africa widely distributed.

***Myrmeleon caliginosus* HÖLZEL & OHM, 1983**

Myrmeleon caliginosus HÖLZEL & OHM, 1983 (descr.); 1990 (distr.).

Ethiopia: Urso, März 1911, leg. KOVACS, 1♀.

Wide spread over Subsaharan Africa.

***Nemoleon* sp.**

Gallery forest at Awash River, 05.10.96, 2♂♂.

Beyond these, several species have been described from Ethiopia by Klapálek, Banks and Navás: *Creoleon parallelus* Klapálek, 1911 (= *Creoleon*); *Myrmeleon abyssinicus* Klapálek, 1911 (= *Cueta*); *Nocaldria signata* Navás, 1917; *Nesoleon tumidus* Banks, 1913 (= *Cueta*); *Omoleon jeanneli* Navás, 1936.

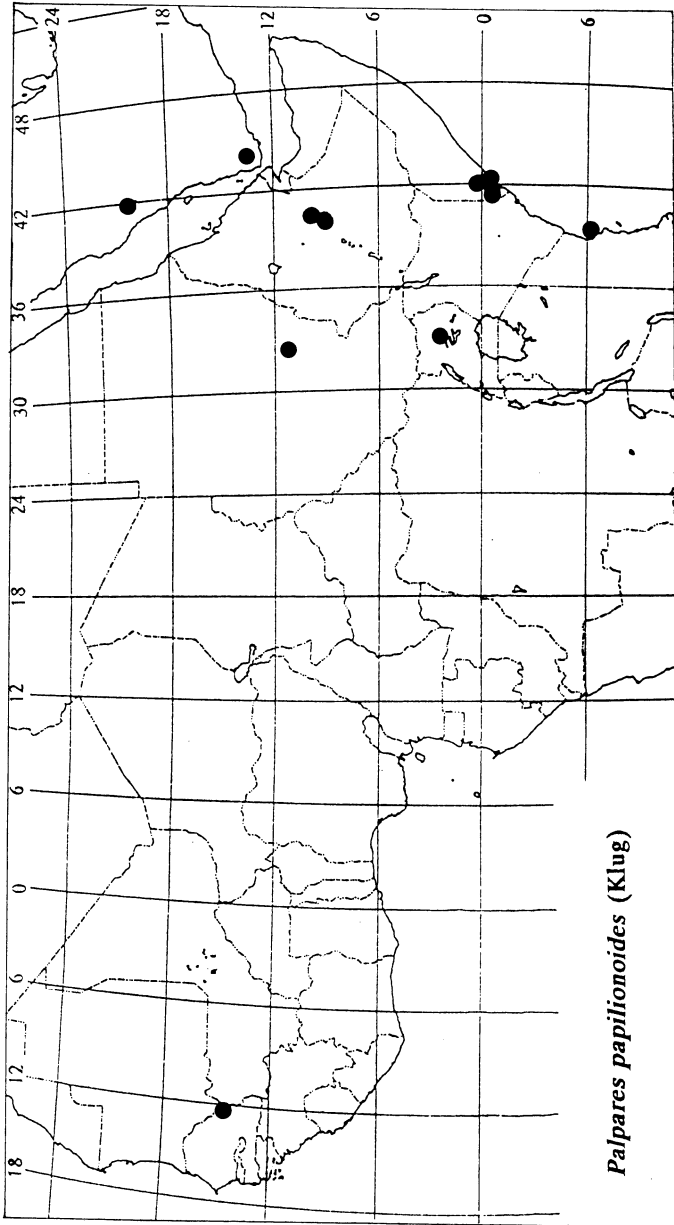


Fig. 13: *Palpares papilionoides* (KLUG, 1834), distribution.

Fam. Ascalaphidae

ESBEN-PETERSEN (1928) mentions larvae of Ascalaphidae from low bushes in the riverbed of the Muger River.

Fam. Mantispidae

Mantispa (Mantisilla) lineatifrons ENDERLEIN, 1910

6 specimens, Jem-Jem Forest, 9000 ft, *Juniperus procera*, 04.10.1926 (ESBEN-PETERSEN 1928).

Some specimens of this family were collected by the authors; presently the identification is not possible.

Material: Hill near Awasa, shrubs, 12.10.96, 1♂ 2♀♀; shore of Lake Hora, shrubs, 14.10.96, 1♂.

Discussion

Considering the limited period of only two weeks of collecting, moreover most likely not in the best season for all the neuropterous families, and taking into account the spare information available from literature, any attempt of a biogeographical interpretation of the neuropterous fauna of Ethiopia must be regarded as highly preliminary. In the following first try, several species have to be omitted from a preliminary analysis because of present uncertainties in their taxonomy or because of insufficient knowledge about their distribution. The Myrmeleontidae thus had to be omitted almost completely.

Described from Ethiopia, and so far only found there, are two species: *Mucroberotha aethiopica* and *Chrysoperla volcanicola* nov. sp. We assume that they also occur in neighbouring regions.

Five species show Somalian distribution, occurring in north-eastern Africa and southern Arabia: *Semidalis scotti*, *Sisyra nilotica*, *Nodalla lineata*, *Chrysemosa mosconica* and *Dichochrysa amseli*, (fig. 10). They are not all typical inhabitants of arid regions. *S. nilotica* was found in large numbers in the swampy areas of the southern Sudan, *S. scotti* was collected in mountainous areas of Ethiopia.

Eighth species are recorded from large parts of Eastern Africa, some even extending south to the Cape (fig. 12). Eleven species are present all over the continent south of the Sahara, including West- and South-Africa (fig. 11). Of these, *Mallada desjardinsi*, *Chrysoperla congrua* and *Micromus timidus* are also present in the Oriental region. „Panafrican“ species have so far mainly been found in the families Berothidae, Chrysopidae and Hemerobiidae. Since they usually are lacking in the vast rain forest areas in West- and Central-Africa, their distribution maps tend to show large „white areas“. In some cases the latter might also just indicate the extent of the strongly undercollected areas of tropical Africa (see map of *M. sjoestedti*, fig. 11).

The neuropteran species in Africa with the highest economical relevance certainly is *Chrysoperla congrua*, which in Ethiopia was collected in large numbers in wheat and maize. On the other hand, we found *Chrysoperla* sp. in Ethiopia only once, but the same species is well known from maize on the Cape Verde Islands, was collected in large numbers on wheat and *Rhizinus* in the Sudanese Nile Valley, and has been observed on cotton in Senegal.

Another species of economic importance in Africa is *Mallada desjardinsi*, which in Ethiopia also has only been collected by the authors in one place. The species can live in a variety of habitats and was found on field crops such as maize on the Cape Verde

Islands and in Southern Somalia, as well as on cotton in several African countries.

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