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Authors

Cassola, Fabio
Miskell, John E.

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Somalian tiger beetles: faunistics and biogeography (Coleoptera, Cicindelidae)

FABIO CASSOLA* - JOHN E. MISKELL**

* Via F. Tomassucci 12/20, 00144 Roma, Italy (Studies on Tiger Beetles. LXI).

** CARE Uganda, P.O.Box 7280, Kampala, Uganda.

SUMMARY

The Cicindelid fauna of Somalia is reviewed, based mainly on recent research carried out by the Authors themselves. Thirty-one species in all (with 34 different taxa) proved to exist within the present political boundaries, eight of these taxa having been discovered and described in recent years only, thus emphasizing that Somalian tiger beetles are probably still far from being fully known. Fourteen taxa (41.2%) are strict Somalian endemics, and six more (17.6%) are known from the Africa's Horn only (Ethiopia and Somalia), thus raising up to 58.8% the rate of endemics of this interesting region. Seven East African species, three widely distributed African ones, and four Palaearctic elements which apparently penetrated the Somalian territory via Red Sea coasts, complete the table of Somalian tiger beetles. Distributional and biological data are given and discussed for all species. Moreover, the male of *Cylindera (Cicindina) inopinata* Cassola, 1987, and the female of *Myriochile (Monelica) lomii* (W. Horn, 1938), are herein described for the first time. *Megacephala somalica* Basilewsky, 1966 (with ssp. *cassolai* Basilewsky, 1978, n. comb.) and *Cephalota (Taenidia) cfr. eudeserticola* (Ali, 1978) are tentatively raised to full specific status.

INTRODUCTION

The Cicindelid fauna of the Somalian arid environment is still poorly known. Available data from the existing literature are very scanty, and moreover scarcely utilizable because of inaccuracy in their exact location, or because old geographical localities and names are presently hard to find in modern maps. In any case, collected specimens have always been very few, and mostly due to occasional collectors such as explorers, missionaries, military or administrative Italian residents, or sometimes biologists not specifically interested in Cicindelidae. Apart from oldest specimens, most of which were collected by Georges Révoil during his 1878-79 and 1882-83 trips to Migiurtinia and the Webi Shabeelle (= Uebi Shebelli) region, subsequent decades apparently brought very few additional records, in spite of the long Italian presence in the country. Moreover, the few known data were all related to small areas only, such as the lower courses of Jubba (= Juba) and Shabeelle rivers. Almost nothing was known so far from other areas, especially from the far North.

This study was made possible by the large new materials collected by the authors themselves. In fact, J.E. Miskell lived for a long time in Somalia, and

had some good opportunities in 1979-80 to visit the northern regions. F. Cassola visited the country in April-May 1987, devoting himself to the exploration of the Mogadishu, Merca and Kismayu areas especially. Both authors again visited the country in May 1988, principally travelling together in the north-western region (ex-British Somaliland) between Hargeysa and Berbera, and the Saraar Plain. This recent research resulted in the discovery of six new species and two new subspecies, as well as the addition of many new records and distributional data, thus clearly showing that the Somalian cicindelid fauna is still far from being fully known.

For the purposes of this study, most older materials have been carefully re-examined, as far as this has been possible. Other, more recently collected specimens have also been examined which were caught by other occasional collectors such as A.M. Simonetta, R. Mourglia, L. Bartolozzi, N. Baccetti, G. Shook, and J.S. Ash. Consequently, nearly 2000 cicindelid specimens have been examined in all, most of which are presently in the F. Cassola (FC) or J.E. Miskell (JM) collections. The location of other examined materials is indicated as follows:

- AARI Afgoi Agricultural Research Institute, Afgoi, Somalia (Prof. Abukar Moallim Mohamed)
- BMNH British Museum (Natural History), London, U.K. (Mr. M.J.D. Brendell, Dr. Nigel Stork)
- DEI Institut für Pflanzenschutzforschung (eh. Deutsches Entomologisches Institut), Eberswalde, DDR (the late Dr. L. Dieckmann).
- MHNP Muséum National d'Histoire Naturelle, Paris, France (Mlle H. Perin)
- MRAC Musée Royal de l'Afrique Centrale, Tervuren, Belgium (Prof. P. Basilewsky)
- MSNG Museo Civico di Storia Naturale «Giacomo Doria», Genova, Italy (Dr. R. Poggi)
- MSNM Museo Civico di Storia Naturale, Milano, Italy (Dr. C. Leonardi)
- MSNT Museo Civico di Storia Naturale, Trieste, Italy (Prof. R. Mezzena)
- MZSF Museo Zoologico «La Specola», Firenze, Italy (Prof. B. Lanza, Dr. Sarah Mascherini)
- MZUR Museo di Zoologia dell'Università «La Sapienza», Roma, Italy
- NMK National Museum of Kenya, Nairobi, Kenya (Dr. J.M. Ritchie)
- TMSA Transvaal Museum, Pretoria, South Africa (Dr. S. Endrödy-Younga)
- USNM National Museum of Natural History, Smithsonian Institution, Washington D.C., USA (Dr. T. L. Erwin)
- ZMB Zoologische Museum der Humboldt-Universität, Berlin, DDR (Dr. F. Hieke)
- AB Prof. Arnaldo Bordoni, Firenze, Italy
- GA Mr. Gianni Alberghini, Bologna, Italy
- GS Mr. Gary Shook, Boise, Idaho, USA

- GZ Mr. Gario Zappi, Casalecchio di Reno, Italy
 JP Mr. Johann Probst, Wien, Austria
 JS Dr. Jacopo Simonetta, Firenze, Italy
 JW Mr. Jürgen Wiesner, Wolfsburg, GFR
 MC M. Cerruti collection, Museo Zoologico dell'Università di Roma, Italy
 RH Mr. Ronald L. Huber, Prairie Village, Kansas, USA
 RM Mr. Riccardo Mourglia, Grugliasco, Italy
 RN Mr. Roger Naviaux, Domérat, France
 WS Mr. William D. Sumlin III, San Antonio, Texas, USA

To all the above listed people, who have provided specimens and data from their public or private collections, we are deeply indebted. We also wish to thank very much our friends Dr. Marco A. Bologna, Dr. Sandro Bruschi, Dr. Giuseppe M. Carpaneto, and Prof. Augusto Vigna Taglianti, who all have been our good companions during our 1988 expedition to northern Somalia, and Dr. J.S. Ash, with whom J.E. Miskell travelled in 1978-80. Thanks are also to be given to Dr. Mohamed Abdulle Khawaja, Dr. Mohamud Mohamed Dirie, Prof. Abukar Moallim Mohamed, as well as to Mr. Yusuf Mohamed Ahmed and Dr. Julian Bauer of the Wildlife Department, National Range Agency, for their invaluable assistance when in Mogadishu.

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THE COUNTRY

Somalia is a huge dry country, estimated to be 637,661 square kilometers in size (Funaioli & Simonetta, 1966). It stretches over the largest part of an immense plateau, which gradually lowers from the Ethiopian border to the Indian Ocean. In the North this plateau is replaced by a mountainous area, with the highest peaks over 2,000 metres high, extending from Hargeysa to Cape Guardafui, inland of the coast of the Gulf of Aden. The oceanic coast, on the contrary, is bordered by a long belt of sandy «fossil» dunes, dating from the Pliocene, which are about 100 metres high on average, and up to 100 kilometers wide in some places. The dominant vegetational association, all over the country, is an open subdesert or xerophilous bush of low trees and shrubs (Pichi Sermolli, 1957).

Only two permanent rivers cross the country, both originating outside Somalia: the Jubba River in the South and the Webi Shabeelle in the centre, the latter turning abruptly southwestwards in the vicinity of Mogadishu, because of the barrier of consolidated coastal dunes, thus ending in a swamp area which stretches from inland of Baraawe (= Brava) almost to the Jubba. All other water courses are more or less temporary streams which may flood important areas during the rainy season, but which dry up completely during

the dry seasons, or leave some small scattered pools at best. Rains range from minima of 50-75 mm a year on the northern coastal plain to maxima of 600-700 mm in the best favoured districts of the mesopotamic region, and in the mountains of the northwest. The rains are bimodal with two rainy seasons («Gu» rains from April to June, and «Der» rains from October to December), but locally, and increasingly in recent years, they can be shorter and more irregular, particularly the «Der» ones, which may fail completely.

As a consequence of the severe dry climate, phenology of Somalian tiger beetles is usually very short, and moreover highly unpredictable. Apart from a few coastal or riverine species, which may be found nearly all the year around, most inland species show clearly adaptive biological features which make their encounter a rare opportunity. Active life is restricted to few days only, related with the first rainfalls, and moreover many species adopt nocturnal habits. In such rare opportunities, they can be found, even in good numbers, at light, otherwise being almost impossible to meet with. This explains why so many Somalian species have been poorly collected so far, or remained undiscovered until recent times. As always, the problem depends on the «right» person being in the «right» place during the «right» time. It is quite possible that future research will add further species, new to the Somalian fauna or even to science, to the provisional ones listed below.

LIST OF SPECIES

Subfam. Cicindelinae Csiki, 1906

Tribe Megacephalini Csiki, 1906

1. *Megacephala regalis* Boheman, 1848 ssp. *revoili* Lucas, 1881

Megacephala Revoili Lucas 1881, Ann. Soc. ent. Fr. (6) 1, Bull., p. 101 [«Montagnes des Somenlis-Ouarsanguelès, vallée du Darror et Karkar»];
Megacephala regalis Revoili; W. Horn 1926, Col. Cat. 86, p. 63;
Megacephala regalis revoili; Basilewsky 1966, Ann. Mus. roy. Afr. centr., in-8°, Sci. zool., No. 152, p. 84.

M. regalis is a polytypic species, widely distributed in the whole afro-tropical region with a great number of different subspecies and local races (Basilewsky, 1966). The ssp. *revoili* was originally described from northern Somalia, from which it extends its range to southern Ethiopia as well (Fig. 1). In central-southern Somalia it is replaced by the following race.

Material examined: 3 specimens.

Ouarsanguéli, entre la vallée du Darror et les monts Karkar, c. 10°20'N-49°E 1881, G. Révoil (MHNP, DEI, MRAC: Basilewsky, 1966). Garoe (= Garoowe), IV. 1939, A. Falzoni, 1 ♂ FC. 4 km SW Garoe (=Garoowe), 08°23'N-48°29'E, 23.V.1979, at light, J.E. Miskell, 1 ♀ JM. Gacan Libaax-Burco (Gahan Libah-Burao), 16 km SE of Go'oo, c. 09°40'N-45°E, 18.V.1988, M.A. Bologna, fragments of elytra, FC.

2. *Megacephala regalis* Boheman, 1848 ssp. *citernii* W. Horn, 1912

Megacephala regalis Citernii W. Horn 1912, Ann. Mus. civ. St. nat. Genova (3) 5, p. 461 [«Dolo (Somalia)»];

Megacephala regalis citernii; Basilewsky 1966, Ann. Mus. roy. Afr. centr., in-8°, Sci. zool., No. 152, p. 84.

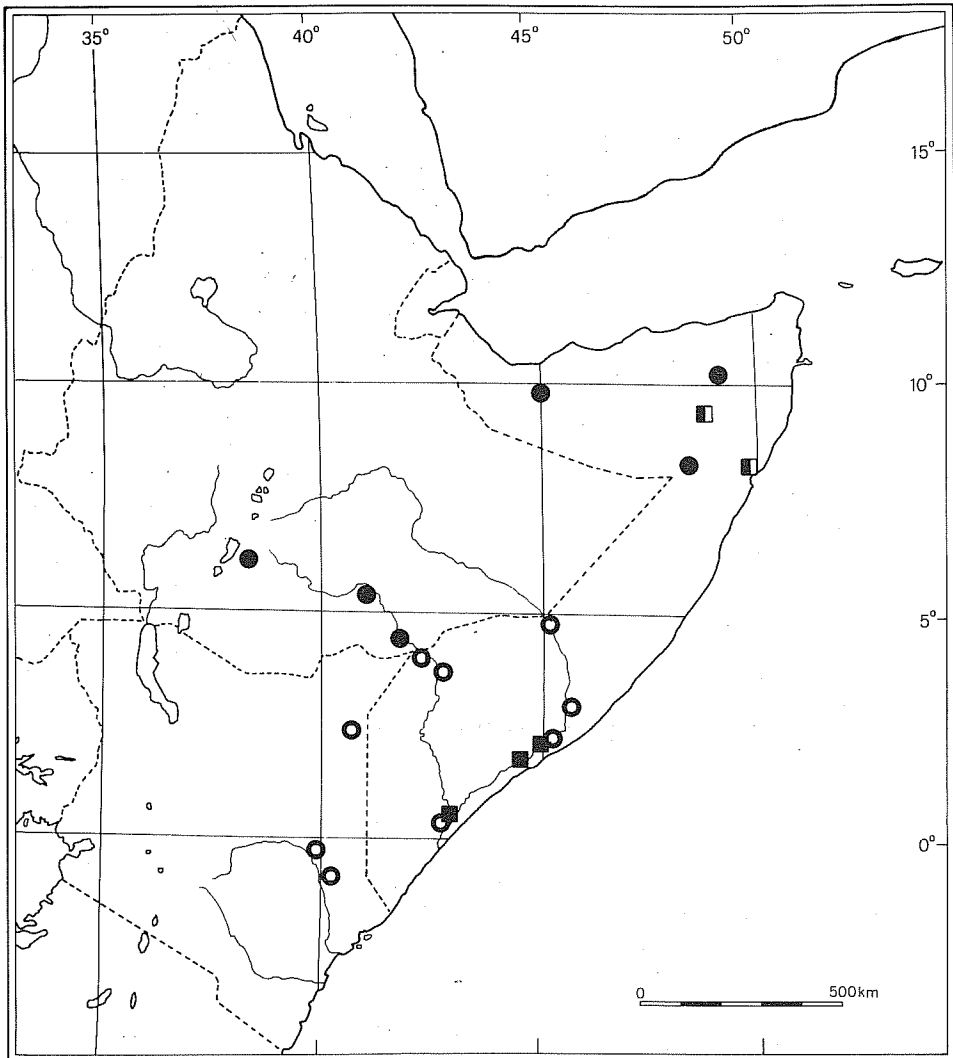


FIG. 1. - Map showing the geographical distribution of the species *Megacephala regalis* Boheman (solid circles: ssp. *revoili* Lucas; open circle: ssp. *citernii* W. Horn) and *Megacephala somalica* Basilewsky (half-solid squares: ssp. *somalica* Basilewsky; solid squares: ssp. *cassolai* Basilewsky).

This subspecies occurs in the southern half of Somalia and in northeastern Kenya (Basilewsky, 1966). Narrow cylindrical elytra (especially with the male), metallic green reflections on head and pronotum, and elytral sculpture and pubescence, easily separate it from the following species. The few available data show that it occurs along the valleys of both the Jubba and Webi Shabeelle rivers (fig. 1).

Material examined: 4 specimens.

Belet Uen (= Beled Weyne), IV.1936, C. Lomi, MSNT (Basilewsky, 1966). Dolo, III-IV.1911, C. Citerni, MSNG, DEI (Horn 1912, Basilewsky 1966); III-IV.1937, S. Venzo, 2 ♂♂ FC. Dolo-Lugh, VI.1917, G. Cecconi, MSNG (Basilewsky, 1966). Lugh (= Luuq), 1897, U. Ferrandi, MSNG (Basilewsky, 1966). Villaggio Duca degli Abruzzi (= Jowhar); IV-V.1926, G. Paoli, MSNG (Basilewsky, 1966). Afgoi, 1961, Sanmicheli, 1 ex. MZSF (Basilewsky, 1966); V. 1986, R. Mourglia, 1 ♂ RM. Margherita (= Jamaame), IV.1920, S. Patrizi, MSNG (Basilewsky, 1966). Somalia, 1 ♂ FC.

3. *Megacephala s. somalica* Basilewsky 1966, bona species

Megacephala regalis somalica Basilewsky 1966, Ann. Mus. roy. Afr. centr., in-8°, Sci. zool., No. 152, p. 112 [«Eil»].

Originally described as a subspecies of *M. regalis* Boheman, *M. somalica* in reality appears to be a different species. Elliptical shape of elytra, lack of elytral pubescence, effaced elytral sculpture (merely reduced to irregular punctures in the anterior part only), apex of aedeagus slightly curved downwards, are all characters which clearly separate it from *regalis*. *M. somalica* is therefore considered here to be a full species, and apparently is a Somalian endemic (fig. 1). The very few available data show that its range overlaps, both in northern and southern Somalia, that of *regalis*, thus strengthening our opinion about their specific separation.

Material examined: 4 specimens.

Eil, A. Falzoni, 1 ♂ holotype MSNM. Eil-Nogal, III-IV.1938, S. Venzo, 1 ♀ paratype FC, 1 ♂ paratype MRAC. Gardo, 810 m, 21.X.1957, G. Scortecci, 1 ♀ paratype MRAC.

4. *Megacephala somalica* Basilewsky, 1966 ssp. *cassolai* Basilewsky, 1978, comb. nova

Megacephala regalis cassolai Basilewsky 1978, Rev. Zool. afr. 92, p. 771 [«Afgoi, 6 km sur la route de Mogadiscio, Campus de la Faculté d'Agriculture»].

Originally described as a subspecies of *M. regalis* Boheman, *cassolai* represents a very characteristic black form which apparently inhabits the lower course of Webi Shabeelle between Afgoi and the Jubba valley (fig. 1). Lack of pubescence, elliptical shape of elytra, elytral sculpture weak and nearly effaced in the posterior half, as well as other characters such as the slightly

dilated anterior tarsi of the male, lead one to link *cassolai* to *somalica* rather than to *regalis*. They both represent a specific complex which apparently occurs in Somalia only. This statement appears to be strengthened by the consideration that while *s. somalica* overlaps the range of *regalis revoili*, *s. cassolai* inhabits the same region as *regalis citernii*.

Material examined: 18 specimens.

Afgoi, Lafoole, Faculty of Agriculture, IV.1974, U. Funaioli, 1 ♂ paratype FC; IV.1977, A.M. Simonetta, 1 ♂ paratype FC, 1 ♂ paratype MRAC; IV.1978, A.M. Simonetta, 2 ♂♂ 2 ♀♀ holoparatypes MRAC, 1 ♂ 1 ♀ paratypes MZSF; V.1978, A.M. Simonetta, 1 ♀ paratype FC; V.1986, R. Mourglia, 1 ♂ FC, 1 ♂ RM; 7.V.1987, F. Cassola, 3 ♂♂ 1 ♀ FC. Vittorio d'Africa (=Shalanbod), VI.1936, S. Patrizi, 1 ♂ MSNG. Belet Amin (= Beled Amiin), VII.1935, S. Patrizi, 1 ♂ MSNG.

Tribe Cicindelini Sloane, 1906

Subtribe Prothymina W. Horn, 1908 (sensu Rivalier, 1971)

5. *Dromica erlangeri* W. Horn, 1904

Dromica (Myrmecoptera) Erlangeri W. Horn 1904, Deutsche ent. Zeitschr., p. 426 [«zwischen Gurgura und Gololoda»].

This species was originally described on the basis of a single ♀ collected on June 7, 1900, during the Erlanger-Neumann Expedition from the Red Sea to the Nile. The type locality is difficult to locate on modern maps, but it lies in the upper Webi Shabeelle region, within present day Ethiopian territory («Oberer Wabi»: Horn, 1926) (Cassola, 1978). In fact, Erlanger's locality on 7 June 1900 was «Arussi-Gallaland, Webi-Schebeli», and other localities before and after 7 June show that he reached the Webi Shabeelle south of Harar at c. 8° (Erlanger, 1904). In Neumann's map (1904) the locality «Gurgura» is shown to be at 07°52'N-41°30'E.

D. erlangeri was later recorded from Southern Somalia as well («Süd-Somali»: Horn, 1910; «Süd-Somaliland»: Horn, 1926), without any further indications. However, it cannot be excluded that this record may have to be referred eventually to the following species (Cassola, 1989).

6. *Dromica abukari* Cassola, 1989

Dromica abukari Cassola 1989, Redia 72, p. 118 [«Afgoi, 25 km W of Mogadishu»].

This recently discovered species obviously belongs to the *erlangeri-nobilitata* group. A few specimens were found by one of us (F.C.) in a sandy, bushy area near the Faculty of Agriculture at Lafoole, Afgoi, on fine pale sands (fig. 2).

Material examined: 8 specimens.

Afgoi, 25 km W of Mogadishu, 22.IV-5.V.1984, R. Mourglia, 1 ♂ GA; V.1986, R. Mourglia, 1 ♂ holotype FC, 1 ♀ allotype GZ. Afgoi, Faculty of Agriculture at Lafoole, 29.IV-8.V.1987, F. Cassola, 3 ♂♂ paratypes FC, 1 ♂ paratype MRAC. Mogadishu, Nicotra, 1 ♀ paratype FC.

7. *Dromica somalica* Cassola, 1989

Dromica somalica Cassola 1989, Redia 72, p. 121 [«Afgoi, Agricultural Research Institute»].

This additional new species was discovered by one of us (F.C.) on 10 May 1987, near Afgoi, a few kilometers from the preceding species, but on wet clay soil, running through a rather thick grass vegetation in a cultivated area (fig. 2). One year later, on 8 May 1988, we both spent many hours searching for additional specimens at the same spot, but the area appeared to be much drier, and only a dead specimen was found on a path nearby. The species is conspicuous and very distinct, because of its black colour and the two roundish yellow patches on each elytron.

Material examined: 21 specimens.

Afgoi, Agricultural Research Institute, 10.V.1987, F. Cassola, 12 ♂♂ 7 ♀♀ (holo-, allo-, paratypes) FC, JM, RN, WS, JW, MRAC, TMSA; 8.V.1988, S. Bruschi, 1 ♂ paratype FC. Basso Uebi (= Lower Webi), IV.1922, 1 ♀ FC.

8. *Euryarthron revoili* (Fairmaire, 1882)

Dromica Revoili Fairmaire 1882, in Fairmaire *et al.*, Mission G. Révoil aux Pays Çomalis. Faune et Flore, p. 6 [«dans le pays des Çomalis»]; *Myrmecoptera laeta* Tatum 1851, Ann. Mag. nat. Hist. 8, p. 51 [«Abyssinia»]; *Cicindela Revoili*; W. Horn 1926, Col. Cat. 86, p. 155; *Cicindela laeta*; W. Horn 1938, Atti Mus. civ. St. nat. Trieste 14, p. 135; *Euryarthron Revoili*; Rivalier 1957, Rev. fr. d'Ent. 24, p. 317.

This is a poorly known species (fig. 2), whose dromicoid body shape has caused several changes in its taxonomic placement. Chaudoir himself (1865), with regard to *laeta* Tatum, showed that it does not belong to *Dromica*. If the synonymy proposed by Horn (1926) proves to be correct, the name of the species would have to be *laeta*, because of its priority. The elytral pattern and the internal sac of the aedeagus have been respectively figured by Horn (1938b, pl. 44, figs. 23-24) and by Rivalier (1957, fig. 1c). We add here the drawing of the aedeagus, to show the difference in shape from that of the following species (fig. 3).

We are not certain of Patrizi's locality of Haji-Ali plain, but Erlanger's map shows Planz Hadj-Ali on the west side of the Jubba, across the river and a bit north of the village of Hadj-Ali. The village of Xaaji Cali (= Hadj-Ali) still exists, and its co-ordinates are 00°09' 50''S, 42°36'10''E. The area

which Erlanger showed as Planz Hadj-Ali would appear to now be occupied by the village of Haatko, at 00°09'S, 42°35'E.

Material examined: 6 specimens.

101 km SW of Garoe (= Garoowe), 07°45'N-47°58'E, 15.V.1980, on ground, J.S. Ash, 1 ♂ JM. Belet Uen (= Beled Weyne), IV.1936, C. Lomi, 3 ♂♂ 1 ♀ MSNT. Jubaland, Hadj-Ali plain, 7.IV.1920, S. Patrizi, 1 ♀ MSNG.

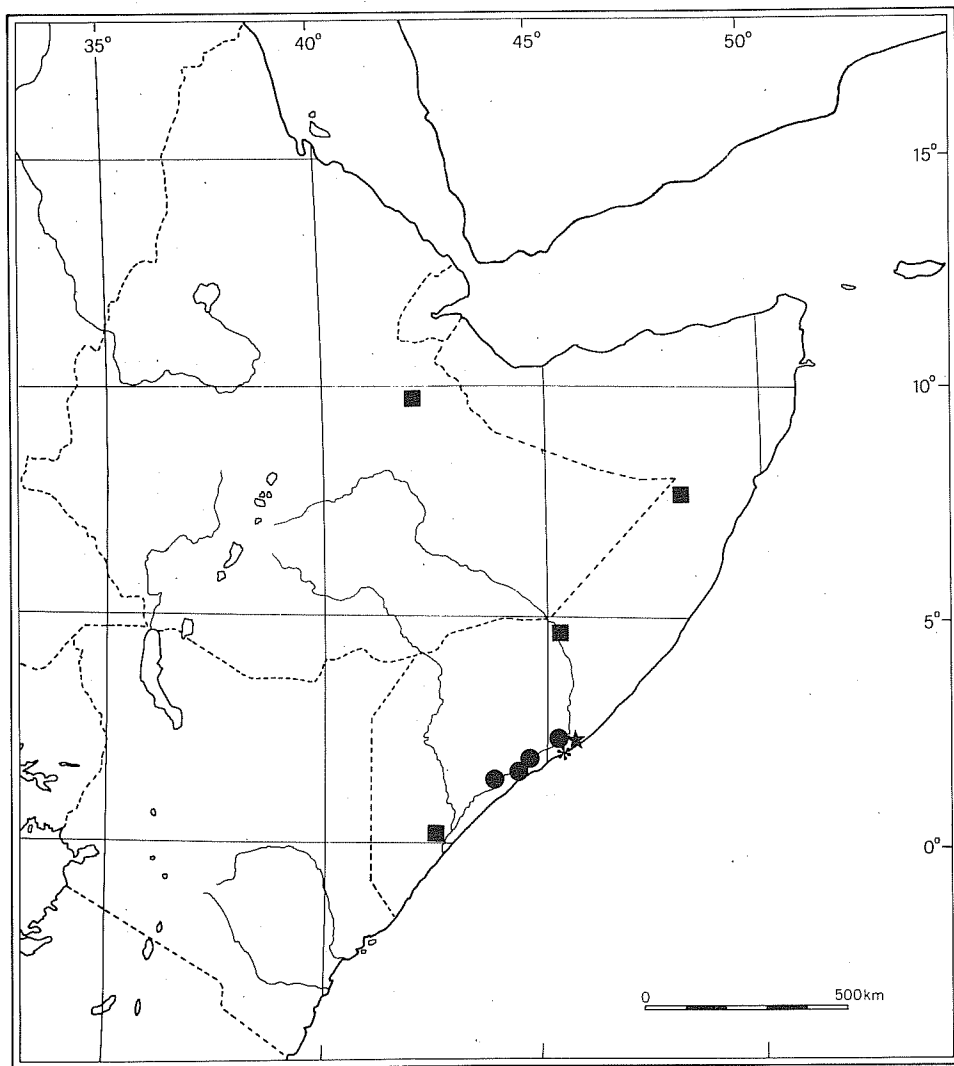


FIG. 2. - Map showing the geographical distribution of the species *Dromica abukari* Cassola (star), *Dromica somalica* Cassola (asterisk), *Euryarthron revoili* (Fairmaire) (solid squares) and *Euryarthron brevisexstriatum* (W. Horn) (solid circles).

9. **Euryarthron brevisexstriatum** W. Horn, 1922

Cicindela brevi-sexstriata W. Horn 1922, Zool. Meded. 7, p. 105 [«Ganale inferior, Africa bor.or»];

Euryarthron brevisexstriatum; Cassola 1978, Acc. Naz. Lincei, Quad. No. 243, 1, p. 94.

This species was originally described based on a single ♀ of uncertain origin, but probably coming from the present Somali territory. Therefore, as far as we know, the species appears to be a Somalian endemic. It differs from the preceding one by the more squared pronotum and a different elytral pattern, as well as by a slightly different shape of aedeagus (fig. 3). Several specimens were found by one of us (F.C.) in the environs of Afgoi, running very rapidly through the grasses in the very same spot as *Dromica somalica*.

Material examined: 29 specimens.

Afgoi, 16-18.IV.1968, Nur leg., 4 ♂♂ 1 ♀ AARI, 2 ♂♂ FC; 16.IV.1973, 1 ♂ AARI, 2 ♀♀ FC; 14.IV.1976, Anos leg., 5 ♀♀ AARI. Afgoi, Agricultural Research Institute, 10.V.1987, F. Cassola, 7 ♂♂ 3 ♀♀ FC. Genale, V.1935, F. Bigi, 1 ♀ FC. Lower Shabeelle, Abarey, Lake Joware, 10.V.1988, J.E. Miskell, 1 ♂ JM. Merka (= Merca), 2 ♂♂ MSNT.

10. **Prothyma bottegoi** (W. Horn, 1897)

Euryoda Bottegi W. Horn 1897, Ann. Mus. civ. St. nat. Genova 37, p. 268 [«entre Cumia et les Monts Egherta»];

Prothyma versicolor Bottegoi; W. Horn 1926, Col. Cat. 86, p. 97;

Prothyma Bottegoi; Rivalier 1964, Rev. fr. Ent. 31, p. 137.

The holotype of this species, a male, was collected by V. Bottego in October 1895, during his second (and last) expedition to the Omo River. The type locality lies somewhere between the Webi Shabeelle (Comia, where Bottego camped on 15 October) and the «Monte Egherta», an isolated hill c. 63 km E of Bardera, reached on 29 October (Vannutelli & Citerni, 1899). *P. bottegoi*, however, is known to us from Ethiopia as well (Cassola, 1978) and from several other Somalian localities, in both the northern and southern regions (fig. 4). At Afgoi and in the Shabeelle Swamps it was apparently quite common and abundant, coming readily to light in the evening, together with the following species.

Material examined: 284 specimens.

Hargeysa, 18.V.1988, at light, J.E. Miskell, 1 ♀ JM. Saraar Plain, 19 km E of Waridaad, 09°17'N-46°27'E, 15.V.1979, J.E. Miskell, 1 ♂ JM (fig. 15). Belet Uen (= Beled Weyne), IV. 1936, C.Lomi, 1 ♀ MRAC. Villaggio Duca degli Abruzzi (= Jowhar), X.1929, U. Flechter, 1 ♂ FC; X.1930, G. Russo (Müller 1942). Giohar (= Jowhar), 18-28.IV.1968, B. Lanza & A.M. Simonetta, 30 ex MRAC, 1 ♂ FC. Dolo, Amino, 13.X.1937, Sped. Brunelli, Vatova leg., 5

♂♂ 4 ♀♀ MSNT, 2 ♂♂ MRAC. Afgoi, 20.IV.1974, U. Funaioli, 1 ♂ 1 ♀ FC; IV.1977, A.M. Simonetta, 1 ♀ AB; III-IV.1978, A.M. Simonetta, 2 ♀♀ AB; V.1986, R. Mourglia, 3 ♂♂ 1 ♀ RM, 1 ♂ 1 ♀ FC. Afgoi, Lafoole, Faculty of Agriculture, 7-10.V.1987, at light, F. Cassola, 13 ♂♂ 14 ♀♀ FC; 7-8 & 21.V.1988, at light, F. Cassola, 10 ♂♂ 8 ♀♀ FC, A. Vigna & coll., 6 ♂♂ 7 ♀♀ FC. Bardera, Ghergeb, 8.XI.1986, SBS, 1 ♀ MZSF. Genale, V.1935, F. Bigi, 5 ♂♂ 4 ♀♀ MSNG, 4 ♂♂ FC, 2 ♂♂ 1 ♀ MRAC; Esposito leg., 1 ♀ MRAC. Vittorio d'Africa (= Shalanbod), V. 1931, R. Urbinati, 3 ex MSNM, 1 ♀ FC. Abarey, Shabeelle Swamps, Lake Joware,

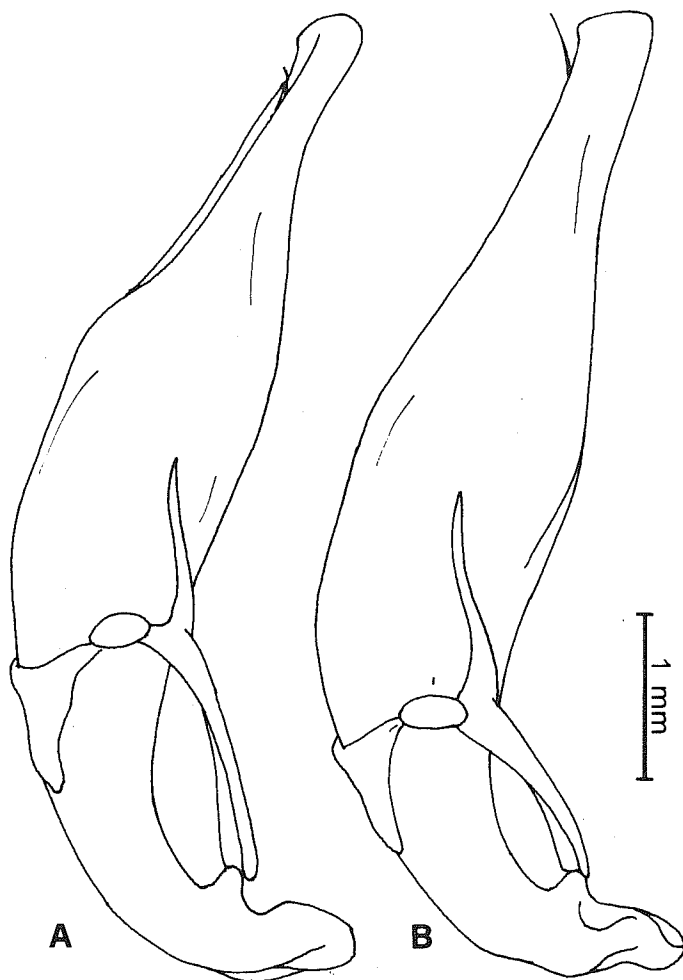


FIG. 3. - Male aedeagi of *Euryarthron brevisexstriatum* (W. Horn) (a) and *Euryarthron revoili* (Farimaire) (b).

13.V.1988, at light, F. Cassola, 25 ♂♂ 27 ♀♀ FC, A. Vigna & coll., 18 ♂♂ 27 ♀♀ FC. «da Cumia ai Monti Egherta», X.1895, V. Bottego, 1 ♂ holotype MSNG. Belet Amin (= Beled Amiin), VII.1934, S. Patrizi, 1 ♂ 2 ♀♀ MSNG. Lower Juba, Plain of Fungalango, III-IV.1923, S. Patrizi, 2 ♂♂ 4 ♀♀ MSNG, 1♂ FC, 2 ♂♂ 4 ♀♀ MRAC. Lower Juba, Bidi Scionde, S of Dugiuma, 1923, S. Patrizi, 4 ♂♂ 5 ♀♀ MSNG, 1 ♂ FC, 2 ♀♀ MRAC. Juba, 1923, S. Patrizi, 4 ♂♂ 6 ♀♀ MSNG. Manas, I. 1977, A.M. Simonetta 1 ♀ AB. Somalia merid., sped. Brunelli, Vatova leg., 1 ♂ MRAC. Somalia, E. Garavaglia, 1 ♂ FC, 5 ex MZUR. Somalia, 1937, 3 ex MZUR.

11. *Prothyma methneri* W. Horn, 1921 ssp. *somalica* G. Müller, 1939

Prothyma 4-punctata (sic!) *Methneri* W. Horn 1921, Ent. Blätter 17, p. 174 [«Deutsch-Ostafrika; Britisch Ostafrika»];

Prothyma quadripustulata somalica G. Müller 1939, Miss. biol. Paese Borana 2, 1, p. 178 [«Somalia Italiana:... oasi staccata presso Uarandab»];

Prothyma Methneri; Rivalier 1964, Rev. fr. Ent. 31, p. 139;

Prothyma methneri somalica; Cassola 1978, Acc. naz. Lincei, Quad. No. 243, 1, p. 86.

G. Müller (1939) described *somalica* from the present day Ethiopian Oga-den (Uarandab, 40 km N of Kebri Dehar), as a subspecies of *P. quadripustulata* Boheman, 1948, but rather it must be linked (Cassola, 1978) to *methneri* W. Horn, an East African species distributed from Tanzania to Kenya and Uganda (fig. 4). The differences between *somalica* and typical *methneri*, however, are very weak, lying just in the size of elytral dots and in elytral colouration, and in fact our Somalian specimens are nearly indistinguishable from the Tanzanian ones. The validity of Müller's subspecies appears therefore to be questionable, all the more so that W. Horn himself (1938a), with regard to the specimens collected by C. Lomi at Uarandab, has clearly stated: «Die Oberseite des Körpers ist heller bronze-farbig als bei meinem Original-Exemplaren aus Deutsch-Ostafrika!».

Material examined: 109 specimens.

Gacan Libaax, 1700 m, 09°52'N-44°50'E, 17-18.V.1988, A. Vigna, 1 ♀ FC. Vill. Duca degli Abruzzi (= Giohar), IX.1930, G. Russo (Müller 1942). Giohar, 24.IV.1968, B. Lanza & A.M. Simonetta, 1 ♀ MRAC. Balad, V. 1986, R. Mourglia, 1 ♀ GZ. Afgoi, 1910, V. Casale, 2 ♀♀ MSNG; 1 ♂ 1 ♀ AARI; IV.1977, A.M. Simonetta, 1 ♂ 1 ♀ AB; II-IV.1978, A.M. Simonetta, 4 ♂♂ 2 ♀♀ AB; V.1986, R. Mourglia, 1 ♀ RM. Afgoi, Lafoole, Faculty of Agriculture, 8-10.V.1987, at light, F. Cassola, 5 ♂♂ 7 ♀♀ FC; 7-8 & 21.V.1988, at light, F. Cassola, 13 ♂♂ 9 ♀♀ FC, A. Vigna & coll., 8 ♂♂ 13 ♀♀ FC. Afgoi, Agricultural Research Institute, 10.V.1987, F. Cassola, 4 ♂♂ 3 ♀♀ FC; 8.V.1988, F. Cassola, 1 ♂ FC. Mogadishu, km 15, 14.V.1988, S. Bruschi,

1 ♂ FC. Abarey, Shabeelle Swamps, Lake Joware, 13.V.1988, at light, F. Cassola, 2 ♂♂ 2 ♀♀ FC, A. Vigna & coll., 7 ♂♂ FC. Road Cudayo-Ali Mahaddei, 28.XI.1980, A.M. Simonetta, 1 ♀ AB. Lower Jubba, Bidi Shonde, S of Dugiuma, 1923, S. Patrizi, 5 ♀♀ MSNG. Somalia, 1937, 4 ♀♀ FC, 4 ex MZUR. Somalia, E. Garavaglia, 4 ex MZUR.

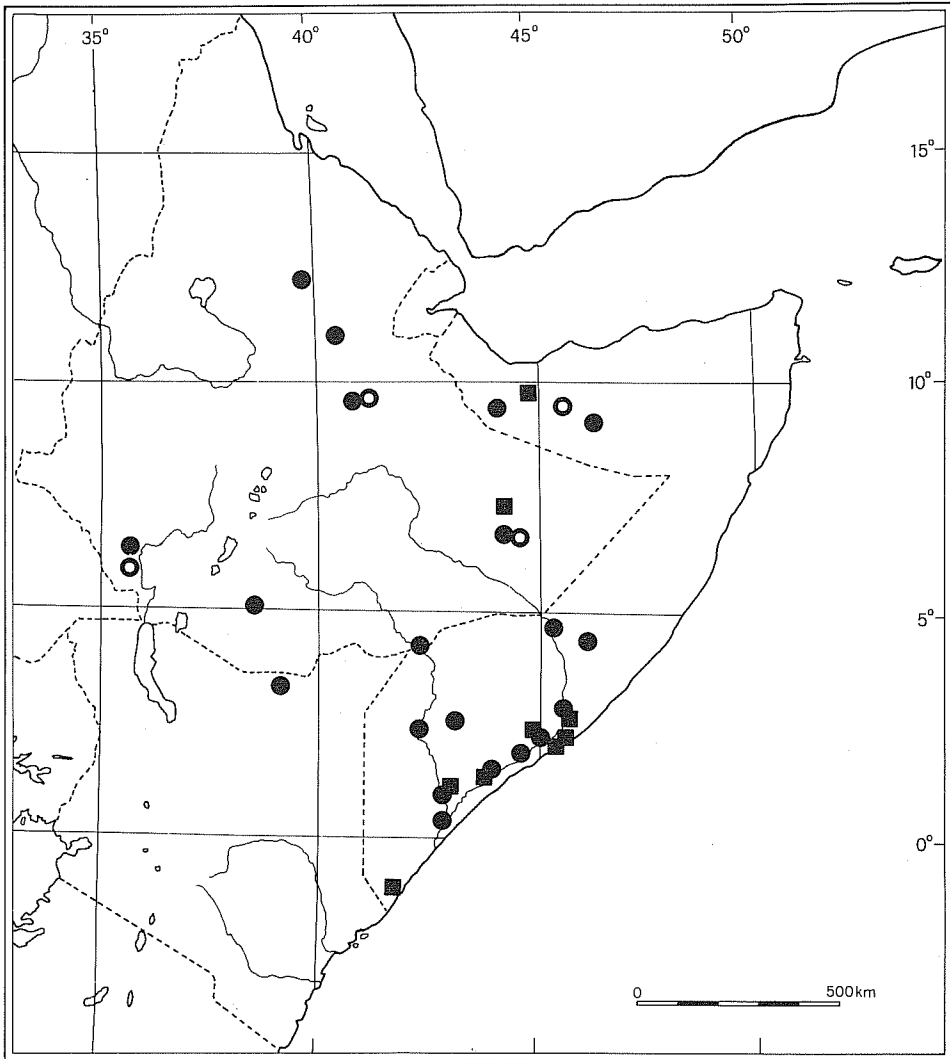


FIG. 4. - Map showing the geographical distribution of the species *Prothyma bottegoi* (W. Horn) (solid circles), *Prothyma confusa* Müller (open circles), and *Prothyma methneri* (W. Horn) ssp. *somalica* Müller (solid squares).

12. *Prothyma confusa* G. Müller, 1939

Prothyma confusa G. Müller 1939, Miss. biol. Paese Borana 2, 1, p. 176 [«Gabredarre, Somalia Italiana»];

Prothyma confusa; Rivalier 1964, Rev. fr. Ent. 15, p. 136;

Prothyma confusa; Cassola 1978, Acc. naz. Lincei, Quad. No. 243, 1, p. 85.

This species was described from five specimens (1 ♂ 4 ♀♀) collected at Gabredarre (= Kebri Dehar, Ogaden), within present day Ethiopian territory. Müller himself (1939) ascribed to it two additional specimens found at Tessenei, Eritrea, not far from the Sudanese border (fig. 4).

The validity of the species, questioned by Rivalier (1964), was later confirmed, after deeper re-examination of the type specimens, by Cassola (1978), who added two more Ethiopian localities (Awash marshes near Gewani, 3 ♂♂; Mui Game Reserve, Kaffa, 1 ♂) and excluded the Tessenei specimens, which proved to be *P. leprieuri* (Dejean, 1831) (fig. 4). *P. confusa*, in fact, resembles very much *leprieuri*, both species having just one very small dot in the middle of each elytron; however, *confusa* is a larger species, with proportionally longer elytra, a fully yellow male labrum, and a completely different aedeagus (Cassola 1978). The two species result to be sympatrically living at Gewani at least.

P. confusa is now known to occur also in North-western Somalia, thanks to a single male specimen borrowed from the Nairobi Museum's collection.

Material examined: 1 specimen.

Borao (= Burco), Somali Brit., IV.1942, D.G. MacInnes, 1 ♂ NMK.

Subtribe Cicindelina W. Horn, 1908

13. *Elliptica flavovestita* (Fairmaire, 1884)

Cicindela (Elliptica) flavovestita Fairmaire 1884, Compt. rend. Soc. ent. Belg., p. 71 [«Makdischu»];

Elliptica flavovestita; Fairmaire 1887, Ann. Soc. ent. Fr. (6) 7, p. 71, pl. 1, fig. 1;

Cicindela flavovestita; W. Horn 1926, Col. Cat. 86, p. 159;

Elliptica flavovestita; Rivalier 1957, Rev. fr. Ent. 24, p. 336.

A flightless species, with very distinctive, elliptic, fully yellowish elytra. Because of its unusual body shape, Fairmaire (1884, 1887) made it the type species of a special new generic stem, *Elliptica*. This was later re-considered by Rivalier (1957) to be a separate larger genus, based on several additional anatomic characters, and which presently also includes many normally-shaped and normally-winged African species. A good colour figure of *E. flavovestita* is given by Horn (1915, tab. 16, fig. 12).

Described from Mogadishu, the species appears to be, as far as we know from the few available data, an endemic inhabitant of the consolidated fossil dunes of Benadir, between Brava (= Baraawe) and Afgoi (fig. 5). Usually

poorly collected and hard to find, it has been found quite numerous in a sandy, sparsely vegetated area in the immediate environs of Mogadishu (km 7), within the new University compound, during the few days immediately subsequent to the first seasonal rains (fig. 11). A very rapid diurnal runner, it was observed to live syntopically with two *Graphipterus* species (*G. discicollis* Fairmaire and *G. vitticollis* Müller) (Carabidae) almost identical in colour

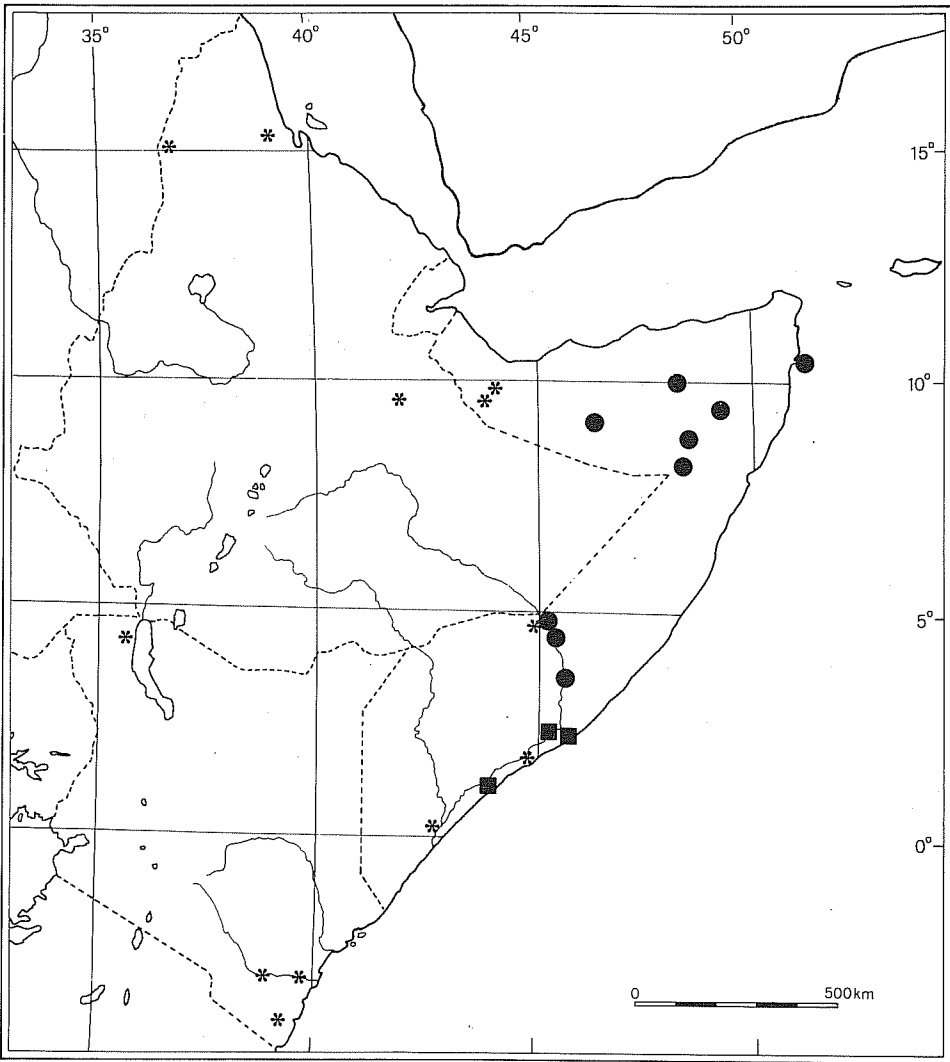


FIG. 5. - Map showing the geographical distribution of the species *Elliptica flavovestita* (Fairmaire) (solid squares), *Chaetodera regalis* (Dejean) (asterisks) and *Chaetodera blanchardi* (Fairmaire) (solid circles).

and behaviour, and thus together probably forming an interesting mimicry chain (Cassola & Vigna Taglianti, in this volume).

Material examined: 84 specimens

Mogadishu, I. Nicotra, 1 ♂ MSNT. Mogadishu, U.S. Embassy compound, 22.IV.1987, G. Shook, 1 ♂ 1 ♀ GS. Mogadishu, km 7, 30.IV-8.V.1987, F. Cassola, 30 ♀♀ 28 ♀♀ FC; 7-10.V.1988, F. Cassola, 5 ♂♂ 2 ♀♀ FC, A. Vigna & coll., 2 ♂♂ 3 ♀♀ FC; V. 1986, R. Mourglia, 1 ♂ FC. Afgoi, 22.IV-5.V.1984, R. Mourglia, 1 ♀ RM, 1 ♂ JP; 7.V.1987, F. Cassola, 2 ♂♂ 1 ♀ FC; V. 1989, G. Venturini, 1 ♀ FC. Brava, X.1895, V. Bottego, 1 ♂ 2 ♀♀ MSNG; IV.1913, S. Folchini, 1 ♀ MSNG. Balcad Nature Reserve, 11-15.IV.1990, JM.

14. *Lophyridia aulica* (Dejean, 1831)

Cicindela aulica Dejean, 1831, Spec. Col. 5, p. 250 [«Sénégal»];

Lophyridia aulica; Rivalier 1950, Rev. fr. Ent. 17, p. 238.

A mainly Palaearctic species, widely but discontinuously distributed from Western and Mediterranean Africa to the Middle East (up to Pakistan), to the Red Sea, and south to Yemen, Aden, and Somalia (fig. 6). An interesting relic population, the only one known so far from an European country, has recently been recorded from southern Greece (Cassola, 1985). Typically halophilous, the species inhabits saline environments such as seashores and lagoons, salt pans and saltworks, and is sometimes found well inland in suitable habitats (e.g. Borkou in Tchad, or Siwa Oasis in Lybia). A small sized, black coloured population (ssp. *tschitscherini* W. Horn) is known to occur in the Awash region, Ethiopia (Horn, 1905).

As far as Somalia is concerned, *L. aulica* is known to occur on the coast of the Gulf of Aden, where Mandl (1959) described a ssp. *cupraria* from La Houada (between Obock and Berbera) and a ssp. *cyanicolor* from Berbera. The validity of both these «subspecies» is questionable; nevertheless the few specimens we collected in northern Somalia, in a freshwater habitat on Tog Biyocaddo, some 45 km SW of Berbera, together with many specimens of *Lophyridia alboguttata* (Klug), appear to be all very small in size, and have a green-blue to blue-black colouration, somewhat recalling ssp. *tschitscherini*. One thousand kilometres south from there, at Gesira near Mogadishu, a very isolated normally coloured population was also discovered, which is apparently the southernmost one known so far.

Material examined: 107 specimens.

Berbera-Hargeysa road, mile 20, 18.XI.1947, Z. Waloff, 1 ♀ BMNH. Tog Biyocaddo, 550 m, 45 km SW of Berbera, 10°02'N-44°47'E, 20.V.1988, F. Cassola, 1 ♂ 1 ♀ FC; A. Vigna & coll., 1 ♂ 1 ♀ FC (fig. 7). Bender Cassim (= Bosaso), 24.IV.1938, Mordini leg., 1 ex MZSF (Basilewsky, 1968). Carin (50 km W of Bender Beila), IX.1959, C. Koch (Mandl, 1963). 4 km W of Ceelayo, 11°14'40N-48°51'30E, 9.V.1980, J.E. Miskell, 6 ♂♂ JM. Gesira (=

Jezirah), 20 km SW of Mogadishu, saltworks, III.1980, J.E. Miskell, 1 ♂ 1 ♀ FC; 10.V.1986, R. Mourglia, 1 ♂ 1 ♀ RM, 1 ♂ FC; X.1986, L. Bartolozzi, SBS, 3 ♂♂ 1 ♀ MZSF, 1 ♂ FC, 2 ♂♂ AB; saltworks, 9.V.1987, F. Cassola, 13 ♂♂ 7 ♀♀ FC; mangroves, 11-22.V.1988, F. Cassola, 35 ♂♂ 19 ♀♀ FC, A. Vigna & coll., 7 ♂♂ 4 ♀♀ FC.

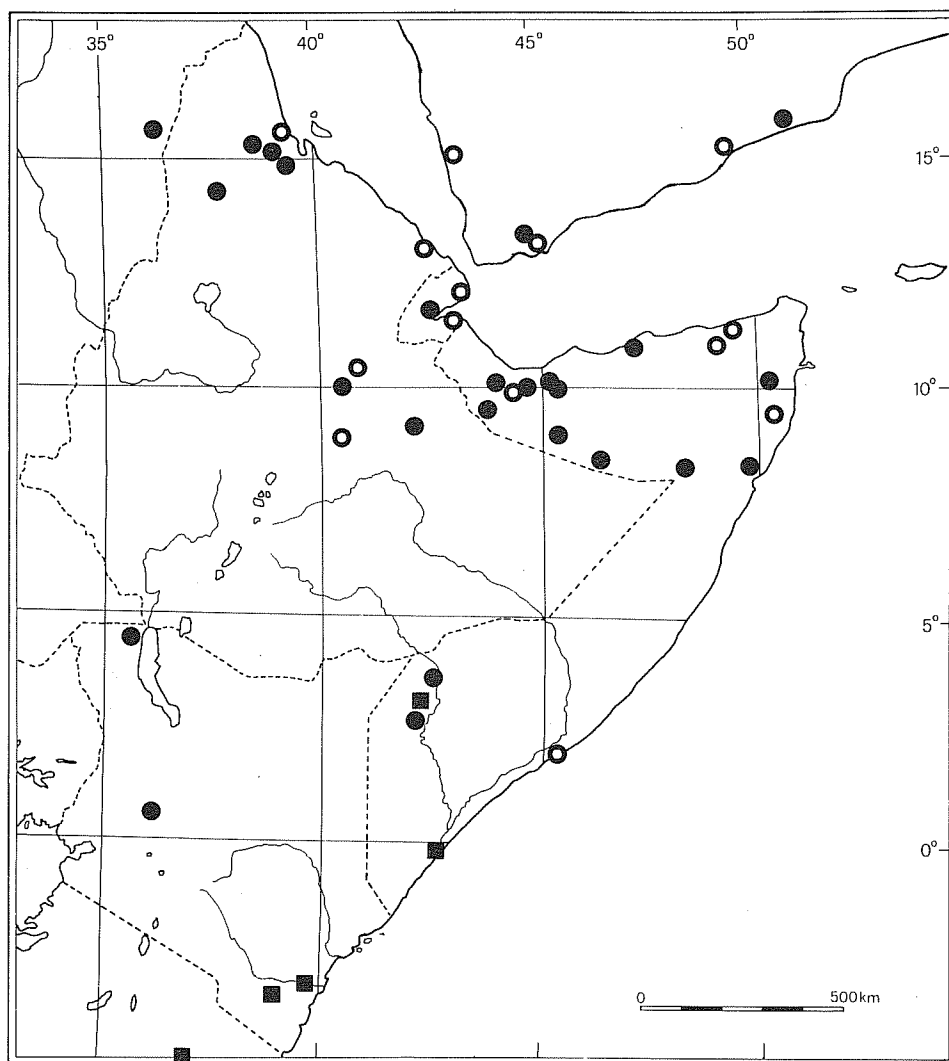


FIG. 6. - Map showing the geographical distribution of the species *Lophyridia aulica* (Dejean) (open circles), *Lophyridia alboguttata* (Klug) (solid circles) and *Lophyridia dongalensis* (Klug) ssp. *imperatrix* (Srnka) (solid squares).

15. **Lophyridia alboguttata** (Klug, 1832)

Cicindela alboguttata Klug 1832, Symb. Phys. Dec. 3, p. 2 [«Arabia deserta in littore Maris rubri»];

Lophyridia alboguttata; Rivalier 1950, Rev. fr. Ent. 17, p. 238.

An East African species (Sudan, Kenya, Ethiopia, Erythrea, Somalia), known from south-western Arabian peninsula as well (Aden, Yemen, Hejaz) (Cassola, 1978) (fig. 6). From Djibouti and Berbera, Mandl (1959) described a ssp. *viridinitida*, whose probable validity seems to be confirmed by our own data. In fact, it does appear that southern populations are very blue, with some specimens being even nearly black, while northern ones are mostly green, with even the bluish specimens having some green colouration. Ecologically, the species inhabits sandy banks of inland rivers, sometimes in association with the more halophilous congeneric species *L. aulica* (fig. 7).

Material examined: 153 specimens.

Arabsiyo, 35 km W of Hargeysa, 09°41'N-43°45'E, 1350 m, 17.V.1988, F. Cassola, 1 ♂ FC; M. Bologna & G. Carpaneto, 1 ♀ FC (fig. 8). Berbera-Hargeysa road, mile 20, 18.XI.1947, Z. Waloff, 2 ♀♀ BMNH. Tog Biyocaddo, 45 km SW of Berbera, 550 m, 10°02'N-44°47'20E, 20.V.1988, F. Cassola, 15 ♂♂ 14 ♀♀ FC; A. Vigna & coll., 10 ♂♂ 5 ♀♀ FC. Sheikh-Berbera road, 4 km N of Huddisa, Tog Marmarod, 800 m, 10°02'N-45°09'30E, 20.V.1988, F. Cassola, 8 ♂♂ 7 ♀♀ FC; A. Vigna & coll., 9 ♂♂ 8 ♀♀ FC. Bixin Dila (= Bihendula), 10°10'N-45°08'E, 14.V.1979, on sandy patches along a very rocky stream bed, J.E. Miskell, 27 ex JM. Bixin, 22.VI.1987, G. Shook, 2 ♀♀ GS. Bohotle, 1903, A.F. Appleton, 1 ♂ BMNH. Warran Weis, 15.XII.1937, E.F. Peck, 1 ♀ BMNH. Mait, 10°50'N-47°15'E, 21.IX.1981, A.M. Simonetta, 1 ♂ 2 ♀♀ AB. Scusciuban, XII.1932, A. Liberati, 1 ♀ MSNM, 1 ♀ FC. Garoe, VIII.1931, G. Scortecci, 1 ♂ FC. Tog Nugal, 3 km W Eil (Eyl), 07°59'N-49°48'E, 24.IV.1980, J.E. Miskell, 16 ex JM. 15 km SW Lugh, Garbaharre road, III.1977, A.M. Simonetta, 2 ♂♂ 2 ♀♀ AB. Daar Weyn, 38 km N of Bardera, 02°35'30N-42°11'40E, 4.X.1979, J.E. Miskell, 10 ex JM. Sidimo, campsite, 30.XI.1985, SBS, 2 ♀♀ MZSF. Togga Gheregeb, 7-8.XI.1986, SBS, 1 ♂ 1 ♀ MZSF, 1 ♂ 1 ♀ FC. Somâlis-Iza (Fairmaire, 1887).

16. **Lophyridia dongalensis** (Klug, 1832) ssp. **imperatrix** (Srnka, 1891)

Cicindela imperatrix Srnka 1891, Deutsche ent. Zeitschr., p. 13 [«am Flusse Tana (Suaheli-Küste) in Ostafrika»];

Cicindela dongalensis imperatrix; W. Horn 1926, Col. Cat. 86, p. 142;

Lophyridia dongalensis; Jeannel 1946, Col. Carab. reg. Malgache, Faune Empire franç. 6, p. 151.

L. dongalensis is widely distributed throughout most of Africa, from Cameroon and Benin to the Zaire, Sudan and East Africa. In the Ethiopian mas-



FIG. 7. - Tog Biyocaddo, 45 km SW of Berbera (Northern Somalia): habitat of *Lophyridia aulica* (Dejean), *Lophyridia alboguttata* (Klug) and *Myriochile (Monelica) bauseri* (W. Horn). (Photo by F. Cassola)

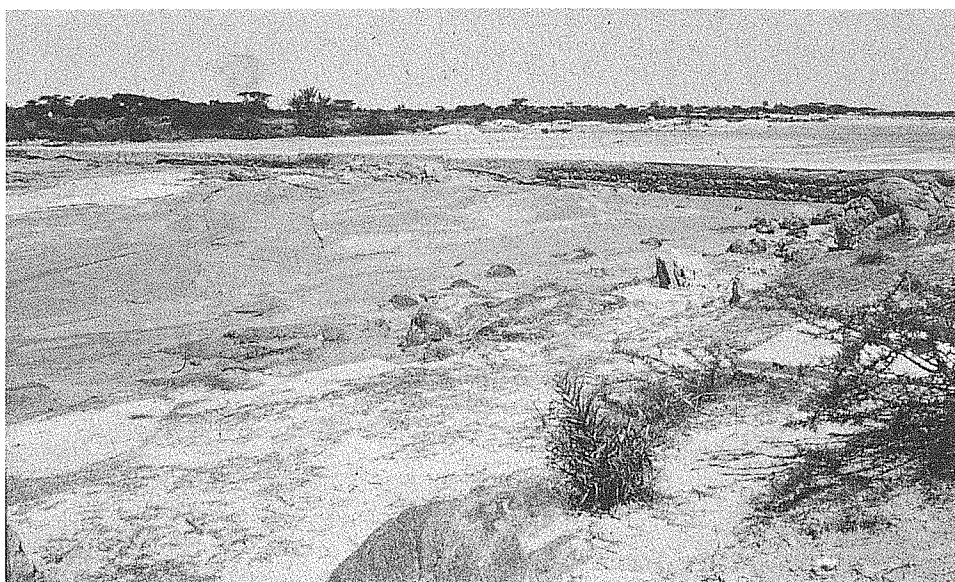


FIG. 8. - Half-dry river-bed near Arabsiu, 35 km W of Hargeysa (Northern Somalia): habitat of *Lophyridia alboguttata* (Klug), *Chaetodera regalis* (Dejean), *Myriochile* (s. str.) *melanbolica* (Fabricius), *Myriochile (Monelica) cornusafricae* Cassola was also probably seen at this site. The area is the type-locality of the species *Lophyra (Stenolophyra) flavipennis* Cassola. (Photo by F. Cassola)

sif it is represented by ssp. *abyssinica* W. Horn, 1897, while from Kenya to Mozambique it is replaced by ssp. *imperatrix*. The few available data from Somalia seem to limit its range to the southern part only of the country (fig. 6).

Material examined: 9 specimens.

Juba valley, Garbahare, 5.XI.1986, SBS, 1 ♂ MZSF. Plain of Fungalango, III-IV.1923, S. Patrizi, 7 ex MSNG. Gumbo, Juba estuary, 24-26.IX.1937, Sped. Brunelli, Vatova leg., 1 ♀ MSNT.

17. **Lophyra (s. str.) neglecta** (Dejean, 1825) ssp. **intermedia** (Klug, 1853)

Cicindela intermedia Klug 1853, Ber. Verh. Akad. Wiss. Berl., p. 245 [«Mozambik... Von Tette»];

Lophyra neglecta intermedia; Rivalier 1948, Rev. fr. Ent. 15, p. 73.

A widely distributed African species, occurring from West Africa to Ethiopia, and southwards up to South Africa. The eastern and southern parts of this enormous range are inhabited by ssp. *intermedia*, which differs from the nominate form only by slight, but remarkably stable, details of its elytral pattern.

The species had never been recorded so far from Somalia, but a few specimens collected by S. Patrizi, presently in the Genova Museum, show that it occurs along the lower course of the Jubba River as well.

Material examined: 7 specimens.

Belet Amin (= Beled Amiin), IV.1923, S. Patrizi, 1 ♂ MSNG; VII.1934, S. Patrizi, 1 ♂ 1 ♀ MSNG. Piana di Fungalango, III-IV.1923, S. Patrizi, 1 ♀ MSNG. Somalia, 1937, 3 ex MZUR.

[**Lophyra (s. str.) differens** (W. Horn, 1892)]

Cicindela differens W. Horn 1892, Deutsche ent. Zeitschr., p. 82 [«Zansibar»];

Lophyra differens; Rivalier 1948, Rev. fr. Ent. 15, p. 62.

This species is said by Horn (1926) to inhabit «das Gebiet zwischen Somaliland, Britisch Ostafrika, Nyassa-See, Buluwayo, Transvaal, Natal und Namaqua-Land». We have no data at all from Somalia, neither from the examined collections nor from the literature.

18. **Lophyra (Eriolophyra) somalia** (Fairmaire, 1882)

Cicindela somalia Fairmaire 1882, in Fairmaire *et al.*, Mission G. Révoil aux Pays Çomalis. Faune et Flore, p. 5 [«dans le pays des Çomalis»];

Lophyra (Eriolophyra) somalia; Rivalier 1957, Rev. fr. Ent. 24, p. 329.

This was one of the very first Somalian tiger beetles to be discovered (by G. Révoil, during his first trip to Somalia) and described. An halophilous

species, it is a typical dweller of sandy oceanic beaches, where it can be found, sometimes by hundreds, running a few meters from the water's edge (figs. 9 and 10).

L. somalia, however, has an apparently limited range, being known so far from only the southern Somalian coasts, and a few Kenyan localities (Lamu I., Malindi) (fig. 18). Further research is needed to definitely ascertain both the northern and southern limits of its actual distribution. It must be recalled that another congeneric species, *L.(E.) alba* (W. Horn, 1894) occurs from South Tanzania to Mozambique (Quelimane), while a third one, *L.(E.) barbifrons* (Boheman, 1848), inhabits the coasts between Delagoa Bay to Natal. The three species, therefore, appear to be mutually vicariant.

Material examined: 212 specimens.

Gesira (= Jezirah), 20 km SW of Mogadishu, 22.XII.1980, A.M. Simonetta, 1 ♂ 1 ♀ AB, 1 ♂ 1 ♀ FC, 8 ex JS; 10.V.1986, R. Mourglia, 1 ♀ GZ, 4 ♂♂ FC, 2 ♂♂ 1 ♀ RM; 28.IV.1987, F. Cassola, ♂♂ ♀♀ FC; 11 & 22.V.1988, F. Cassola, ♂♂ ♀♀ FC. Smitlin Bay near Gesira, 21.VI.1984, L. Bartolozzi, 2 ♂♂ MZSF, 1 ♂ 1 ♀ FC. Crab Bay, 25 km SW of Mogadishu, 2.V.1987, G. Shook, 1 ♂ 1 ♀ GS. Danane, II-III.1977, A.M. Simonetta, 2 ♂♂ 5 ♀♀ AB. Gardersha, 10.X.1986, L. Bartolozzi, SBS, 1 ♂ FC. Merca, 6.V.1987, F. Cassola, 5 ♂♂ 13 ♀♀ FC. Brava, 23-25.III.1984, SBS, 3 ♂♂ MZSF. Kisimayo, 1.V.1920, S. Patrizi, 1 ♂ MSNG, 1 ♂ FC; 15.IX.1979, J.E. Miskell, 4 ♂♂ 3 ♀♀ FC; 4.V.1987, F. Cassola, 3 ♂♂ 1 ♀ FC.

19. *Lophyra (Lophyrina) latelimbata* (G. Müller, 1941)

Cicindela latelimbata G. Müller 1941, Atti Mus. civ. St. nat. Trieste, 14, p. 320 [«Belet-Uen»];

Lophyra (Lophyrina) latelimbata; Cassola 1977, Atti Soc. it. Sci. nat. Mus. civ. St. nat. Milano 118, p. 404.

Described on the basis of a single ♀ discovered by C. Lomi in 1936, this species had never been found again until 1957, when G. Scortecci collected two males in a locality E of Galcaio. Its true taxonomic status has been consequently cleared up just recently, after the re-examination of the female holotype and of one of Scortecci's males. Luckily enough, additional specimens have been more recently collected by one of us (J.M.) in northern Somalia, thus widening considerably the previously known range of the species (fig. 13). The scarcity of records is probably due to an unusually short period of activity and to non-water dependence in its arid environment.

Material examined: 26 specimens.

Saraar Plain, 19 km E of Waridaad, 09°17'N-46°27'E, 15.V.1979, at light, J.E. Miskell, JM (fig. 15). Saraar Plain, Waridaad, 09°17'N-46°15'E, 19.V.1988, running on ground in daylight, J.E. Miskell, 1 ♂ JM. 25 km S El Buh (= El Haga), 10°00'N-48°13'E, 12.V.1980, at light, J.E. Miskell, 4 ♂♂ 4 ♀♀ MRAC, 4 ♂♂ 4 ♀♀ FC. 4 km S of Garoe (= Garoowe), 08°23'N-48°29'E, 23.V.1979, at light, J.E. Miskell, JM. 45 km SE of Taleh (= Talex),



FIG. 9. - Gesira beach, 20 km SW of Mogadishu: habitat of *Lophyra (Eriolophyra) somalia* (Fairmaire). (Photo by F. Cassola)

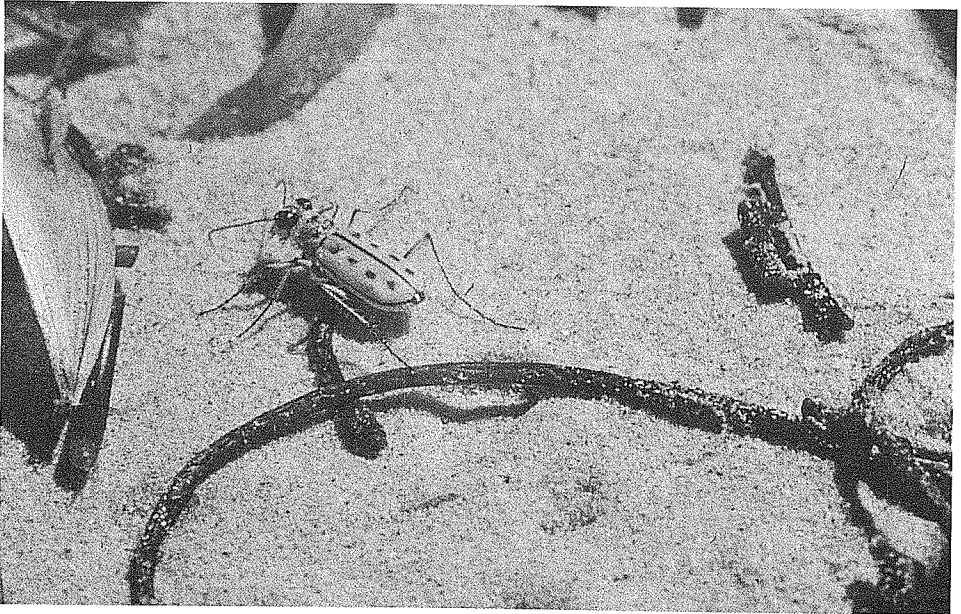


FIG. 10. - *Lophyra (Eriolophyra) somalia* (Fairmaire). Photographed at the Gesira beach, 20 km SW of Mogadishu, on 28 April 1987. (Photo by F. Cassola)

08°46'N-48°33'E, 13.V.1980, at light, J.E. Miskell, JM. Rocca Littorio (= Galcaio), X-XI.1943, T.H.E. Jackson, 3 ♀♀ NMK. 100 km E Galcaio, 31.X.1957, G. Scortecci, 1 ♂ MSNM, 1 ♂ MRAC. Belet Uen (= Beled Weyne), IV.1936, C. Lomi, 1 ♀ holotype MSNT. Balcad Nature Reserve, 11-15.IV.1990, JM.

20. *Lophyra (Stenolophyra) miskelliana* Cassola, 1986

Lophyra (Stenolophyra) miskelliana Cassola 1986, *Monitore zool. it.* (N.S.) Suppl. 21, p. 25 [«Mogadishu, km 7 (Key Seven), American School compound»].

This small interesting tiger beetle was quite recently described based on a few specimens collected by one of us (J.M.) in the immediate environs of Mogadishu itself, in a sparsely vegetated area with red sands. More recently the species was found a few hundred meters away in the new University compound, where it appeared to be one of the commonest and most characteristic elements of the entomological community of this particular environment (fig. 11). Additional recent research, however, has shown that *L. miskelliana* occurs in similar habitats in other localities as well, between Mogadishu and Afgoi (km 14, and near the Faculty of Agriculture at Lafoole), and even one hundred kilometers to the south, on the consolidated coastal sand dunes of Merca, where it was also found to be very abundant (fig. 13).

A single additional specimen (in RH collection) appears to have been collected in a different northernmore locality, i.e. in the Jalalaqsi Sand Dunes, c. 30 km S of Bulla Burti, along the Webi Shabeelle valley, some 200 km upstream from Afgoi. This specimen is unusual in many respects, by having a slightly longer labrum, testaceous legs and appendages, and fully glabrous underside parts, the cheeks only being densely pilose as in typical *miskelliana*. It looks very much as being a separate subspecies at least, possibly even a different species, also because there are no setigerous punctures in the place of the missing pubescence. However, dwelling in sand dunes is known to expose tiger beetles to frequent saltation of minute to comparatively large grains of sand, the size depending on wind velocity, with the consequent erosion of the underside heavy pile that adorns the young adult (Rumpp, 1967). If adults emerge in April, as Mogadishu specimens apparently do, the Jalalaqsi specimen, which was collected in October, could be an old female with well worn underside pubescence. Testaceous colouration of legs and appendages, on the contrary, is not an old age feature, thus giving one the impression of confronting a different separate population; but apparently there is no discontinuity in the long barrier of consolidated sand dunes which stretches from Afgoi to Jalalaqsi (where it approaches again the Webi Shabeelle riverbed), and consequently separate speciation cannot be postulated from long physical isolation.

Anyway, *L. miskelliana* is likely to inhabit the whole narrow belt of «fossil» dunes of Benadir, which run in a NE-SW direction between the sea coast and the lower course of Webi Shabeelle. It is in fact a typical sand-



FIG. 11. - Mogadishu, km 7, new University compound: habitat of *Elliptica flavovestita* (Fairmaire) and *Lophyra (Stenolophyra) miskelliana* Cassola. (Photo by F. Cassola)

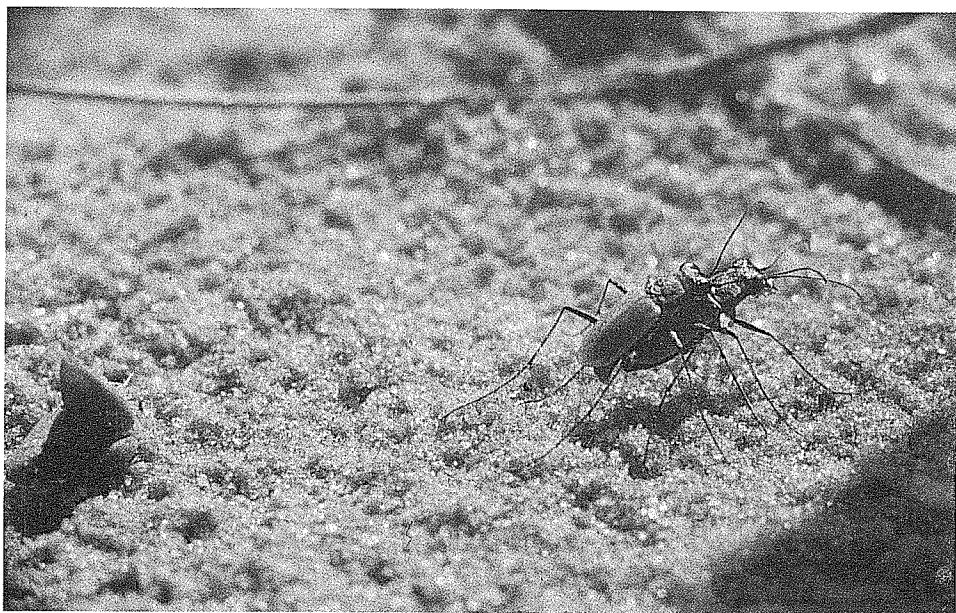


FIG. 12. - A mating pair of *Lophyra (Stenolophyra) miskelliana* Cassola. Photographed at Mogadishu, km 7, new University compound, on 8 May 1987. (Photo by F. Cassola)

dune dweller, having long legs, cryptic colouration, and non-water dependence. Its closest relative is *L. (S.) wajirensis* Miskell, 1978, a species known so far from a few specimens collected at Wajir, North-eastern Kenya, not far from the Somali border (Miskell, 1978).

Both *L. miskelliana* and *L. wajirensis* — and moreover, as far as the Somalian fauna is concerned, *L. latelimbata* and *Chaetodera regalis* (Dejean, 1831) — have a «penicillum», i.e. a curious non-genitalic male mating structure constituted by a clump or fascicle of bristles under the fourth joint of antennae. In the whole world's cicindelid fauna, only 36 species (of which 25 are African ones and 13 belong to the genus *Lophyra*) bear this unusual secondary sexual character (Cassola 1983, and subsequent non-published data).

Ecologically, *L. miskelliana* probably has a very restricted phenology, narrowly linked with the seasonal rains. At the end of April 1987, in fact, when the first spring rains had not yet arrived, the species was not present nor active in the biotope, and only three specimens were seen at night under lamps. When the first rainfall occurred few days later, hundreds of individuals became evident, showing an exclusively diurnal activity in the hottest hours of the day (09-17 hours). Many coupling pairs were observed during the first days of May, both in 1987 and 1988 (fig. 12).

Material examined: 298 specimens.

Mogadishu, km 7, American School compound, on red sand, 14-15.V.1985, J.E. Miskell, 10 ♂♂ 5 ♀♀ holo-, allo-, paratypes MRAC, BMNH, USNM, DEI, FC, JM. Mogadishu, km 7, University compound, 22.IV-5.V.1984, R. Mourglia, 1 ♀ JW, 1 ♀ JP; 2-19.IV.1986, R. Mourglia, 3 ♂♂ 4 ♀♀ FC, 2 ♂♂ 2 ♀♀ RM; 28-30.IV.1987, at light, F. Cassola, 1 ♂ 2 ♀♀ FC; 30.IV-8.V.1987, F. Cassola, ♂♂ ♀♀FC; 7-10.V.1988, F. Cassola & coll., ♂♂ ♀♀FC. Mogadishu, U.S. Embassy compound, 22.IV.1987, G. Shook, 3 ♂♂ 1 ♀ GS. Afgoi, Lafoole, Faculty of Agriculture, 7.V.1987, Abukar Moallim Mohamed, 3 ♂♂ 2 ♀♀ FC. Merca, sand dunes, 6.V.1987, F. Cassola, ♂♂ ♀♀ FC. Jalalaqsi Sand Dunes, 10.X.1986, G. Shook, 1 ♀ RH. Balcad Nature Reserve, 11-14.IV.1990, JM.

21. *Lophyra (Stenolophyra) flavipennis* Cassola, 1983

Lophyra (Stenolophyra) flavipennis Cassola 1983, *Monitore zool. it. (N.S.) Suppl.* 18, p. 167 [«Arabsiu, 35 km W of Hargeysa»].

This recently discovered distinctive species was described based on a single ♀ specimen collected at light by I. Blessing and H.J. Bremer in August 1980, in North-western Somalia, in a dried river-bed near Arabsiu, 1300 m above sea level (Cassola, 1983b) (fig. 13). Its generic and subgeneric taxonomic status, though very probably right, are still to be considered provisory only, because of the lack of a male.

On 17 May 1988, during the day, and later again on 20 May at night (at MV-lamp light), we both tried unsuccessfully to collect some further specimens in the type locality of Arabsiu (fig. 8). Other cicindelid species ap-

peared to occur, but no additional *L. flavipennis* came to add themselves to the single female holotype, which therefore remains the only extant specimen. One of us (J.M.) also searched this locality in December 1982, without success. The present well-known political and military troubles of the Somali region will probably make further research impossible for many years to come.

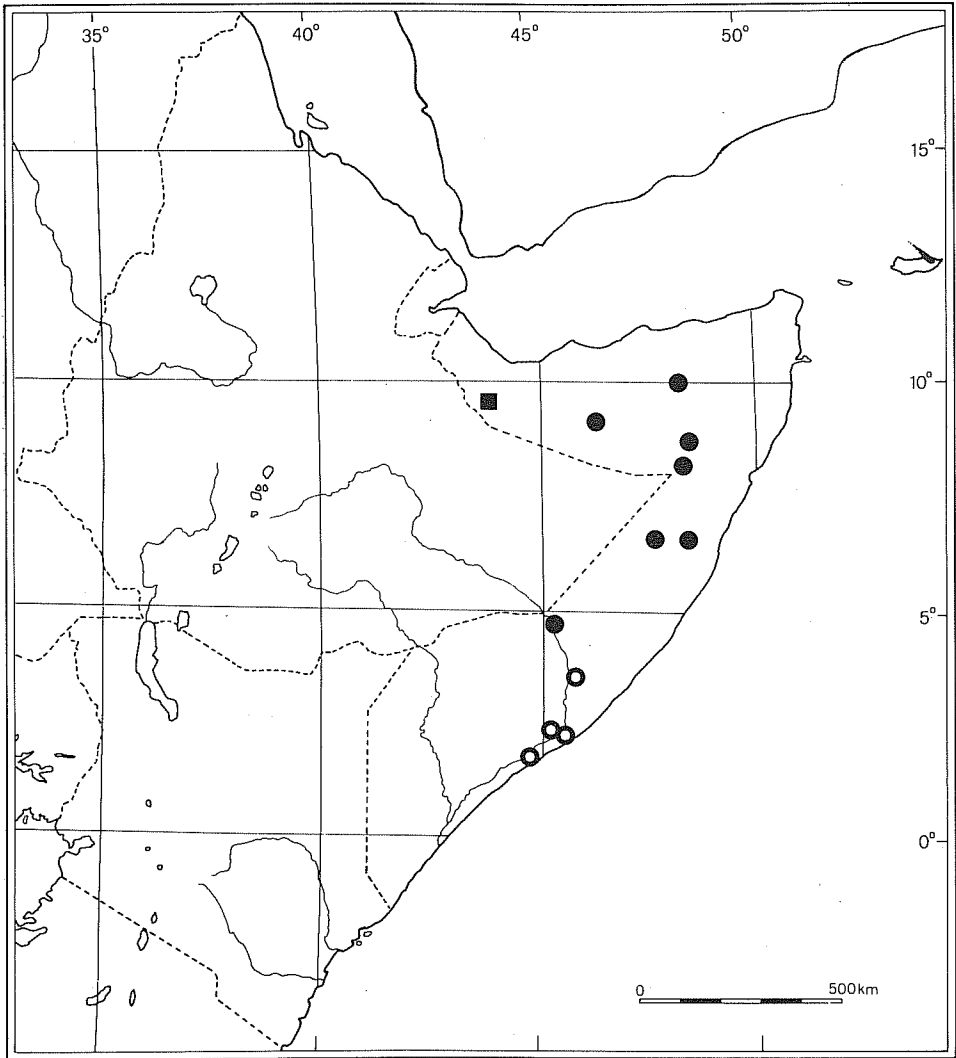


FIG. 13. - Map showing the geographical distribution of the species *Lophyra (Lophyrina) latelimbata* (Müller) (solid circles), *Lophyra (Stenolophyra) miskelliana* Cassola (open circles), and *Lophyra (Stenolophyra) flavipennis* Cassola (solid square).

Material examined: 1 specimen.
Arabsiu, 35 km W of Hargeysa, 1300 m, 4-18.VIII.1980, I. Blessing & H.J. Bremer, 1 ♀ holotype ZMB.

[**Habrodera nilotica** (Dejean, 1825)]

Cicindela nilotica Dejean 1825, Spec. Col. 1, p. 119 [«Egypte»];
Habrodera nilotica; Rivalier 1950, Rev. fr. Ent. 17, p. 240.

A ♀ specimen, in the AB collection, appears to be labelled «Gesira, X.1986». On principle, the occurrence of this common, widely distributed African species in Somalia would not be surprising; nevertheless a labelling error cannot be excluded, and moreover the locality has been thoroughly investigated by us both, without finding the species. We therefore feel it preferable, for the present, to not consider this record.

22. **Chaetodera regalis** (Dejean, 1831)

Chaetodera regalis Dejean 1831, Spec. Col. 5, p. 251 [«parties supérieures du Sénégal»];
Cicindela (Chaetodera) regalis; Jeannel 1946, Col. Carab. Rég. Malgache, Faune Empire Franç. 6, p. 151;
Chaetodera regalis; Rivalier 1957, Rev. fr. Ent. 24, p. 331.

This large beautiful species, widely distributed throughout most of Africa, was found very numerous in a nearly dry river-bed near Arabsiu, north-western Somalia (fig. 8). Many coupling pairs were observed (fig. 14). An additional specimen has been collected on the sand dunes near Merca, South of Mogadishu. Even if its occurrence is not surprising, the species had never been recorded so far from Somalia (fig. 5).

Material examined: 19 specimens.

Arabsiu, 35 km W of Hargeysa, 1300 m, 09°41'N-43°45'E, 17.V.1988, F. Cassola & coll., 5 ♂♂ 8 ♀♀ FC. Tog Canjeel, 12 km W of Agabar refugee camp, 09°57'N-43°49'E, 10.XII.1982, J.E. Miskell, 1 specimen captured and released. Arabsiu, 35 km W Hargeysa, 28.VI.1987, G. Shook, 2 ♂♂ GS. Belet Uen (= Beled Weyne), IV.1936, C. Lomi, 1 ♀ MSNT. Merca, sand dunes, 6.V.1987, F. Cassola, 1 ♀ FC. Gelib, 20.VII.1937, Sped. Brunelli, Vatova leg., 1 ♂ MSNT.

23. **Chaetodera blanchardi** (Fairmaire, 1882)

Cicindela Blanchardi Fairmaire 1882, in Fairmaire *et al.*, Mission G. Révoil aux Pays Çomalis. Faune et Flore, p. 4 [«dans le pays de Çomalis»];
Chaetodera Blanchardi; Rivalier 1957, Rev. fr. Ent. 24, p. 331.

A beautiful, distinctive species, and a Somalian endemic (fig. 5). Very rare in Museums and collections, and seldom seen in the wild, it probably

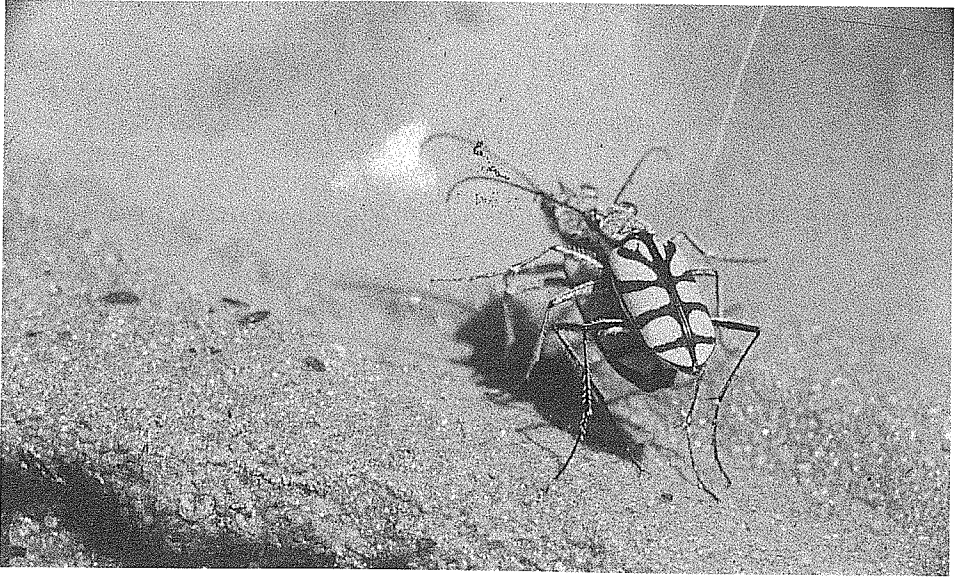


FIG. 14. - A mating pair of *Chaetodera regalis* (Dejean). Photographed at Arabsiu, 35 km W of Hargeysa (Northern Somalia), on 17 May 1988. (Photo by F. Cassola)

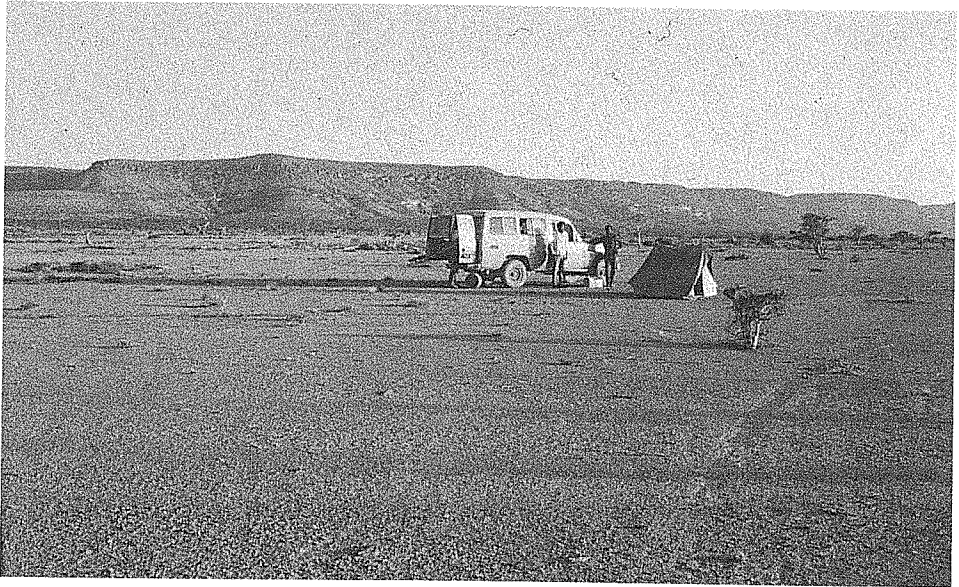


FIG. 15. - Saraar Plain, 19 km E of Waridaad (Northern Somalia). In this area the following species were collected by John Miskell: *Prothyma bottegoi* (W. Horn), *Lophyra* (*Lophyrina*) *latelimbata* (Müller), *Chaetodera blanchardi* (Fairmaire), *Cylindera* (*Eugrapha*) *inopinata* Cassola, *Myriochile* (s. str.) *melancholica* (Fabricius), *Myriochile* (*Monelica*) *bauseri* (W. Horn), and *Myriochile* (*Monelica*) *respicens septentrionalis* Cassola. (Photo by F. Cassola)

has a peculiar biology with restricted periods of activity, especially adapted to its arid environment. One of us (J.M.) had the rare opportunity of meeting the species at several localities, collecting specimens at light. A single specimen was caught during the morning, when running on the ground; as the soil had the same yellowish colour as the beetle, it was nearly invisible until it moved, and in fact it allowed the collector to come very near, probably relying mostly on its colouration for protection.

Material examined: 38 specimens.

Saraar Plain, 19 km E of Waridaad, 09°17'N-46°27'E, 15-16.V.1979, J.E. Miskell, 2 ex JM (fig. 15). 25 km S of El Buh (= El Haga), 10°00'N-48°13'E, 12.V.1980, at light, J.E. Miskell, 4 ♂♂ 4 ♀♀ FC. 45 km SE of Taleh (= Talex), 08°46'N-48°33'E, 13.V.1980, at light, J.E. Miskell, JM. 4 km SW of Garoe (= Garoowe), 08°23'N-48°29'E, 23.V.1979, at light, J.E. Miskell, 20 ex JM. Gardo, 10-12.VI.1953, G. Scortecchi, 1 ♂ MSNG. Hafun, 1913, Varriale leg., 1 ♂ MSNG. Belet Uen (= Beled Weyne), IV.1936, C. Lomi, 1 ♂ MSNT. 24 km SE of Belet Uen (= Beled Weyne), 04°36'N-45°19'E, 24.V.1979, at light, J.E. Miskell, 3 ex JM. Bulu Burti, XI.1979, Moschin leg., 1 ♀ AB.

24. **Cephalota (Taenidia) litorea** (Forskål, 1775) ssp. **alboreducta** (W. Horn, 1934) (fig. 16)

Cicindela litorea alboreducta W. Horn 1934, Bull. mens. Soc. Natur. Luxemb. (N.S.) 28, p. 73 [«Obock; Djibouti»];

Cephalota (Taenidia) litorea; Rivalier 1950, Rev. Fr. Ent. 17, p. 229.

C. litorea is a Palaearctic species which would be worthy of an accurate revision, with regard especially to its East Mediterranean, Red Sea and Gulf of Aden populations. The old paper by Mandl (1935) is practically useless, because it considers all forms as belonging to a single species only, thus overlapping them each other in an incomprehensible way. As Rivalier (1950) later demonstrated, two species at least, *litorea* and *tibialis* Dejean, 1822, coexist in this area, with several described forms which all have to be carefully studied, and united with the correct species. The difference in shape of the aedeagus (basal collus or neck shorter in the former, longer in the latter) is by itself instrumental for separating the two species, and for reconnecting *lyoni* Vigors, 1825, with *tibialis*. The co-occurrence is therefore explained of *l. litorea* and *t. tibialis* in Egypt, and of *litorea goudoti* Dejean, 1829, and *tibialis lyoni* in Tunisia.

With regard to the Red Sea area the problem has been considerably complicated by Ali (1978), who described several more forms (*pseudolitorea*, *ab-basi*, *litorea jiddaica* and *litorea eudeserticola*) which all have been synonymized by Mandl (1981) with *litorea*. However, one of them at least (*pseudolitorea*), judging from the very bad figures of the penis and the elytral pattern given by Ali, should in reality belong to *tibialis*, possibly being merely a

synonym of it. This would widen this species' range to the southern Saudi Arabian Red Sea coast as well (Sabiya, Asir).

Moreover, from Obock and Djibouti, Horn (1934) described a ssp. *alboreducta*, characterized by a smaller size, a greenish-bronze colouration, narrow elytral markings, and margins of elytra conspicuously dilated with the female (Horn 1938, tab. 69, fig. 5). It is probable that both *abbasi* Ali (described from Jizan and Wadi Ama, Saudi Arabia) and the supposed ssp. *arabiana* Van Nidek, described from the very same area (Tihama, Aizan, Saudi Arabia: Brouerius van Nidek, 1984), have to be regarded as being synonyms of *alboreducta*. This subspecies, in fact, is now known to occur in the environs of Aden as well (Sheikh Othman and Little Aden, V.1985, B. Materlik, FC), and also in the extreme north-eastern corner of Somalia (Alula), thank to the single unusually small specimen collected by one of us (J.M.) (fig. 18).

To making this confused situation more complete, it must be said here that the surprising record of another Palaearctic species, *Cephalota (Taenidia) zarudniana* (Tschitschérine, 1903), from Aden, La Houada and Assab, given by Mandl (1959), should, with almost complete certainty, be referred to *alboreducta* as well.

Material examined: 1 specimen.

2 km E of Alula (= Caluula), 11°58'N-50°45'30E, 4.V.1980, at light, J.E. Miskell, 1 ♂ JM.

25. *Cephalota (Taenidia)* cfr. *eudeserticola* (Ali, 1978) bona species?

Cicindela eudeserticola Ali 1978, Coleopt. Bull. 32, p. 12 [«Arabia (Jidda)»]; *Cicindela litorea normandi* Bedel; Mandl 1981, Entom. Basiliensia 6, p. 174; *Cicindela (Cephalota) litorea dilatana* Brouerius van Nidek 1984, Cicindela 16, p. 3 [«Jedda, Bureiman, Saudi Arabia»] (new synonymy).

We provisorily resuscitate from synonymy this form, raising it tentatively to species status, for naming three *litorea*-like specimens from Mait (northern Somalia) which cannot be fit into the frame of *litorea alboreducta*. These specimens, in fact, look very different, having a bronze-cupric metallic colouration (with golden green reflections), a slightly but distinctly different aedeagus (fig. 17b), and a very enlarged elytral pattern (fig. 17a, c), covering the major part of elytra, with the humeral lunule largely coalescent with the middle band. Striations of frons and eyes appear to be stronger, and both the pronotum and the elytra are less finely sculpted.

Since Mait lies at mid-way between Djibouti and Alula (fig. 18), where *alboreducta* is known to occur, it can be supposed to be not merely a subspecific differentiation; and a link could be rather assumed with *eudeserticola* Ali, described from Jedda, Saudi Arabia, which judging from its description should present similar features in sculpture and striation, dilated elytral maculation, and distinctive dilatation of female elytral margins (Ali, 1978). Mait specimens appear also to fit quite well the characters described by Brouerius

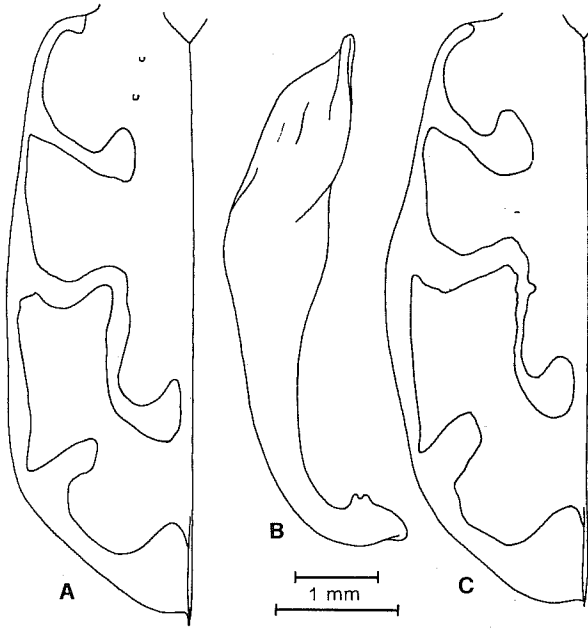


FIG. 16. - *Cephalota (Taenidia) litorea* (Forsk.) ssp. *alboreducta* (W. Horn): left elytron of male (a) and female (c), and aedeagus (b). Specimens from Sheikh Othman, Southern Yemen.

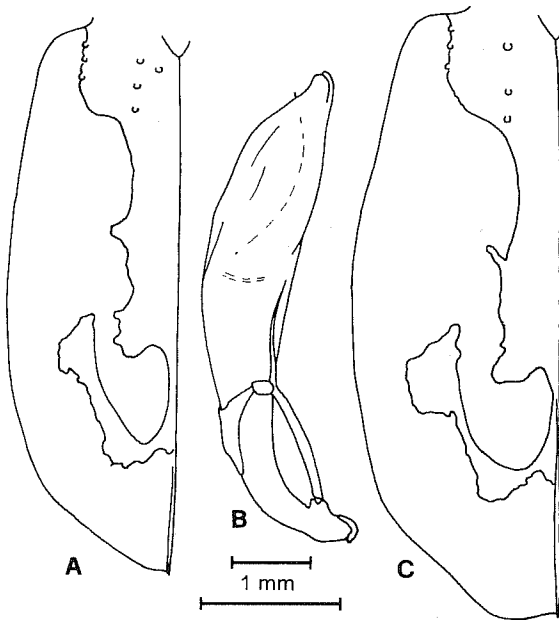


FIG. 17. - *Cephalota (Taenidia)* cf. *eudeserticola* (Ali), bona sp.?: left elytra of male (a) and female (c), and aedeagus (b). Specimens from Mait-Erigavo, Northern Somalia.

van Nidek (1984) for his ssp. *dilatana*, coming from the very same locality (Jedda, Saudi Arabia), and thus being certainly merely synonymous with *eudeserticola*.

A few additional data seem to confirm the supposed existence of a separate *litorea*-like species inhabiting the same region where *litorea*-forms also are known to occur. For instance, a single male, similar to those from Mait,

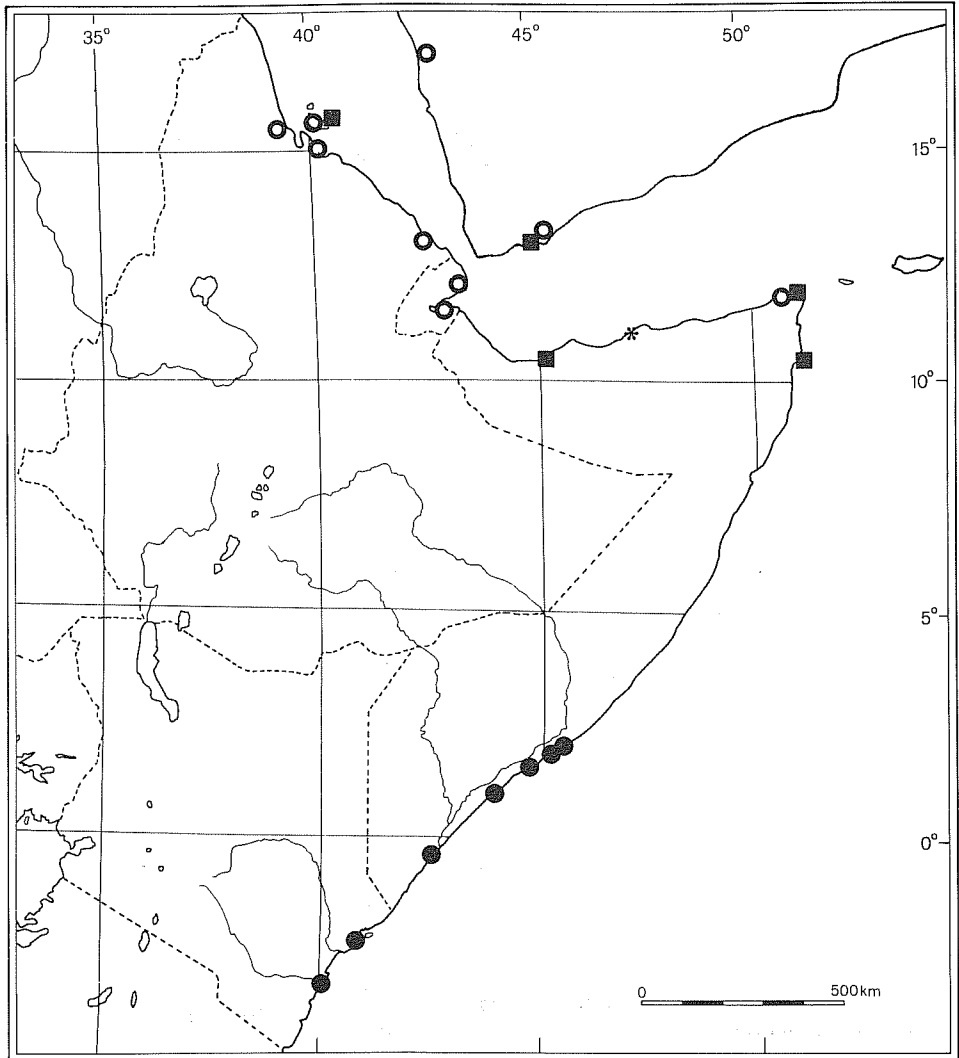


FIG. 18. - Map showing the geographical distribution of *Lophyra (Eriolophyra) somalia* (Fairmaire) (solid circles), *Cephalota (Taenidia) litorea alboreducta* (W. Horn) (open circles), *Cephalota (Taenidia) cfr. eudeserticola* (Ali) bona sp.? (asterisk), and *Hypaetha singularis* (Chaudoir) (solid squares).

appears to have been collected in the Dahlak Islands (Entedebir, 29.III.1962, J.H. Stock, in coll. Brouerius van Nidek, F. Cassola det. 1985), and Mandl himself (1935) had indicated *l. litorea* from the Dahlak Is., British Somaliland and Aden, both in his text and in his map, separately from *l. alboreducta*, which was recorded from Obock and Djibouti only.

The above stated taxonomic situation, of course, is only a tentative one. Future larger materials, from both sides of Red Sea and Gulf of Aden, are needed to ascertain if it can be considered satisfactory enough. It cannot be excluded that we are even facing a different new species.

Material examined: 3 specimens.

40 Km SSE of Mait, 10°52'N-47°17'E, IV.1978, A.M. & J. Simonetta, 1 ♂ 1 ♀ JS, 1 ♂ FC.

26. *Cylindera (Ifasina) rectangularis* (Klug, 1832)

Cicindela rectangularis Klug 1832, Symb. Phys. Dec. 3, p. 3 [«Ambukohl Nubiae»];

Cicindela octoguttata rectangularis; W. Horn 1926, Col. Cat. 86, p. 140;

Cylindera (Ifasina) rectangularis; Rivalier 1950, Rev. Fr. Ent. 17, p. 233.

A small East African species, known to occur at Aden (Britton, 1948) and in Yemen (Basilewsky, 1968b) as well. It is usually found on clay or sandy banks of streams and rivers, or sometimes near temporary rain pools and puddles. Many Somalian records are known to us (fig. 19), but we never met the species when in the field.

Material examined: 108 specimens.

Belet Uen (= Beled Weyne), IV.1936, C. Lomi, MSNT. Villaggio Duca degli Abruzzi (= Giohar), 2-3.IX.1937, Sped. Brunelli, Vatova leg., MSNT. Afgoi IV.1938, I. Nicotra, 1 ♂ 2 ♀♀ MC; 6.IX.1937, Sped. Brunelli, Vatova leg. MSNT; 18.III.1976, I.M. Anos, 1 ♂ 1 ♀ AARI; IV.1977, A.M. Simonetta, 1 ♂ 3 ♀♀ JS, 3 ♂♂ 6 ♀♀ AB; V. 1986, R. Mourglia, 4 ♂♂ 1 ♀ FC, 2 ♂♂ 5 ♀♀ RM. Mogadishu, Balad Ecol. Park, 24.VII.1987, G. Shook, 1 ♂ 1 ♀ GS. Genale, 28.XI.1980, A.M. Simonetta, 1 ♂♂ 2 ♀♀ AB. Coriolei, env. of Genale, banks of Uebi Shebelli, 11.II.1977, A.M. Simonetta, 7 ex JS, 1 ♀ FC. Mohaddei, Uebi Shebelli, 3.IV.1937, Sped. Brunelli, Vatova leg., MSNT. Misciani, 12-26.XII.1984, N. Baccetti, 1 ♂ 1 ♀ MZSF. Dolo, III-IV.1911, C. Citerni, 3 ex MSNG; III-IV.1937, S. Venzo, 1 ♂ 1 ♀ MSNM; 8.X.1937, Sped. Brunelli, Vatova leg., MSNT. Lugh Ferrandi, 3-4.X.1937, Sped. Brunelli, Vatova leg., MSNT. Bardera, 1908, U. Ferrandi, 1 ex MSNG. Bardera-Culmiso, VIII.1893, V. Bottego, 1 ex (Gestro, 1895). Dinti, Uebi, 7.III.1893, E. Ruspoli, 1 ♀ MSNG. Dugiuma, 29-30.IV.1937, Sped. Brunelli, Vatova leg., MSNT. Banks of River Juba, III.1920, S. Patrizi, 18 ex MSNG, 1 ♂ 1 ♀ FC. Basso Ganana (= Lower Juba), VII-VIII.1893, V. Bottego, 1 ex MSNG. Gelib, 20.VII.1937, Sped. Brunelli, Vatova leg., MSNT. Qualiakoko, 15 km N Camsuma, 28.II.1977, A.M. Simonetta, 4 ♂♂ 1 ♀ AB, 1 ♂ FC. Belet Amin (= Beled Amiin), IV. 1923, S. Patrizi, 2 ♀♀ MSNG; V-VII.1934, S.

Patrizi, 5 ♂♂ 4 ♀♀ MSNG; V.1935, S. Patrizi, 1 ♀ MSNG. Margherita (= Giamama), IV.1920, S. Patrizi, 1 ♀ MSNG. Gumbo, 1902, G. Ferrari, 1 ex MSNG. Neghelli, Somalia merid., 22-25.X.1937, Sped. Brunelli, Vatoa leg., MSNT. Kisimayo, VIII.1934, S. Patrizi, 1 ♂ MSNG. Somalia, 1937, 5 ex MZUR.

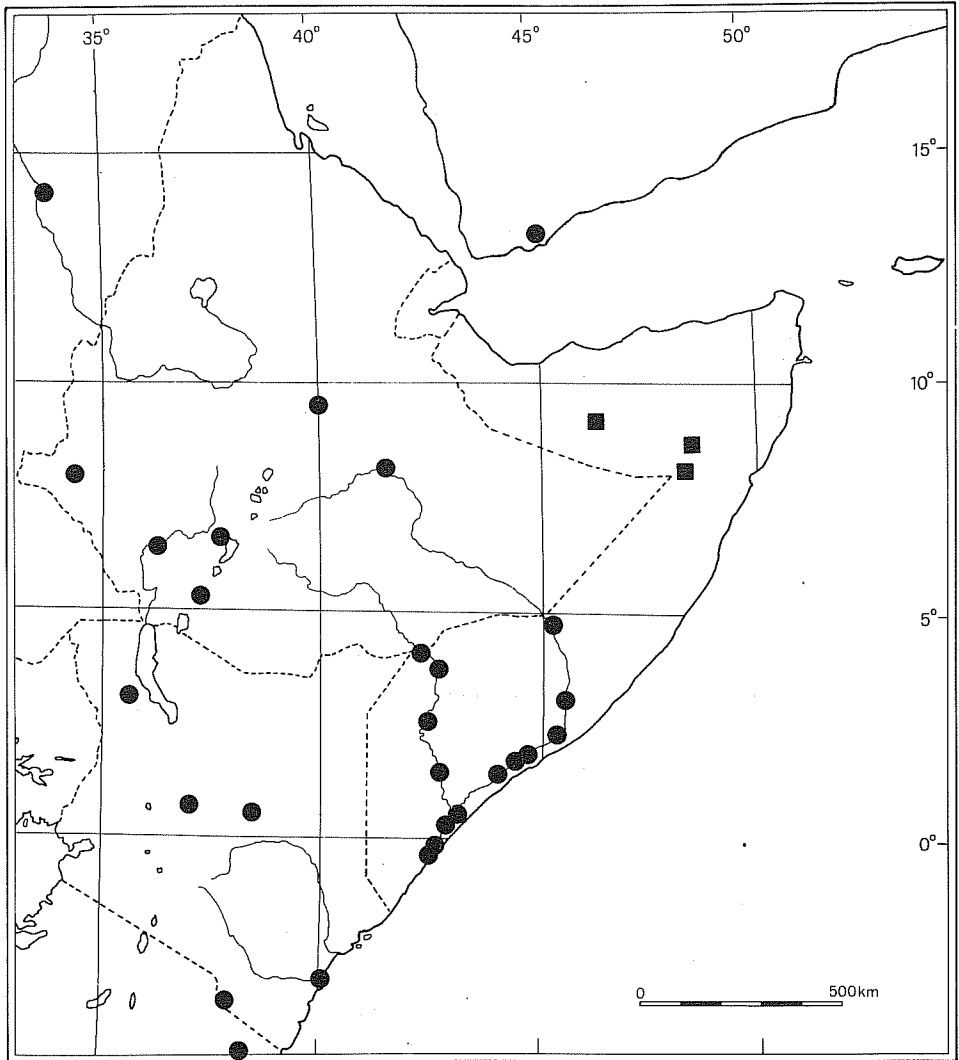


FIG. 19. - Map showing the geographical distribution of the species *Cylindera (Ifasina) rectangularis* (Klug) (solid circles) and *Cylindera (Cicindina) inopinata* Cassola (solid squares).

27. *Cylindera* (*Cicindina*) *inopinata* Cassola, 1987 (fig. 20)

Cylindera (*Eugrapha*)? *inopinata* Cassola 1987, *Monitore zool. it.* (N.S.) Suppl. 22, p. 336 [«Saraar Plain»].

This small distinctive species was described only recently (Cassola, 1987), based on a single ♀ collected by one of us (J.M.) on May 1979 in the Saraar Plain, Northern Somalia. The specimen had come to light together with many individuals of *Myriochile respiciens* (W. Horn) ssp. *septentrionalis* Cassola, 1987, and it was not noticed as distinct when in the field. The generic and subgeneric status of the new species were determined provisorily only, due to the lack of males.

During our joint expedition of May 1988, we tried unsuccessfully to collect more specimens at the type locality (fig. 15), but the unexpectedly dry season and a very strong wind prevented us from doing so. Luckily, among other not previously studied materials collected by J.M. in 1979, at two different easternmore localities (fig. 19), additional specimens were found, inclusive of males, which enable us now to confirm the taxonomic status of the species. However, the name of the subgenus has to be changed into *Cicindina*, in replacement for the preoccupied *Eugrapha* Rivalier 1950 (nec Hübner 1826, Lepidoptera), according to Adam & Merkl (1986).

Description of the ♂. Smaller in size (6-6.5 mm, without labrum); general habitus and characters as the female. Elytra narrow, more parallel-sided; apical edge normally curved, not sinuated inwards, with a small but distinct sutural spine. Elytral markings as the holotype, more or less dilacerated or developed depending on individuals, with the lunules sometimes coalescent laterally to form a continuous large marginal band; most specimens (except one) have the apical lunule broad, largely coalescent, with or without a small metallic dot in the middle. Legs slender, with proportionally longer tarsi. Aedeagus normally shaped, parallel-sided, with a strong apical beak slightly hooked upwardly; internal sac absolutely typical of the genus.

Material examined: 20 specimens.

Saraar Plain, 19 km E of Waridaad, 09°17'N-46°27'E, 15.V.1979, at light, J.E. Miskell, 1 ♀ holotype MRAC. 45 km SE of Taleh (= Talex), 08°46'N- 48°33'E, 13.V.1980, at light, J.E. Miskell, 1 ♂ JM. 4 km SW of Garoe (= Garoowe), 08°23'N-48°29'E, 23.V.1979, at light, J.E. Miskell, 3 ♂♂ 3 ♀♀ JM, 3 ♂♂ 2 ♀♀ FC, 1 ♂ MRAC, 1 ♂ 1 ♀ BMNH, 1 ♂ 1 ♀ USNM, 1 ♀ DEI, 1 ♀ MSNG.

28. *Myriochile* (s. str.) *melancholica* (Fabricius, 1798)

Cicindela melancholica Fabricius 1798, *Ent. Syst. Suppl.*, p. 63 [«Habitat in Guinea»];

Cicindela aegyptiaca Dejean 1825, *Spec. Col.* 1, p. 96 [«Egypte»];

Myriochile aegyptiaca; Motschulsky 1862, *Etud. Ent.* 11, p. 22;

Cicindela melancholica; W. Horn 1926, *Col. Cat.* 86, p. 138;

Cicindela (*Myriochile*) *melancholica*; Jeannel 1946, *Col. Carab. Rég. Malgache, Faune Empire Franç.* 6, p. 155;

Myriochile (s. str.) *melancholica*; Rivalier 1950, *Rev. fr. Ent.* 17, p. 234.

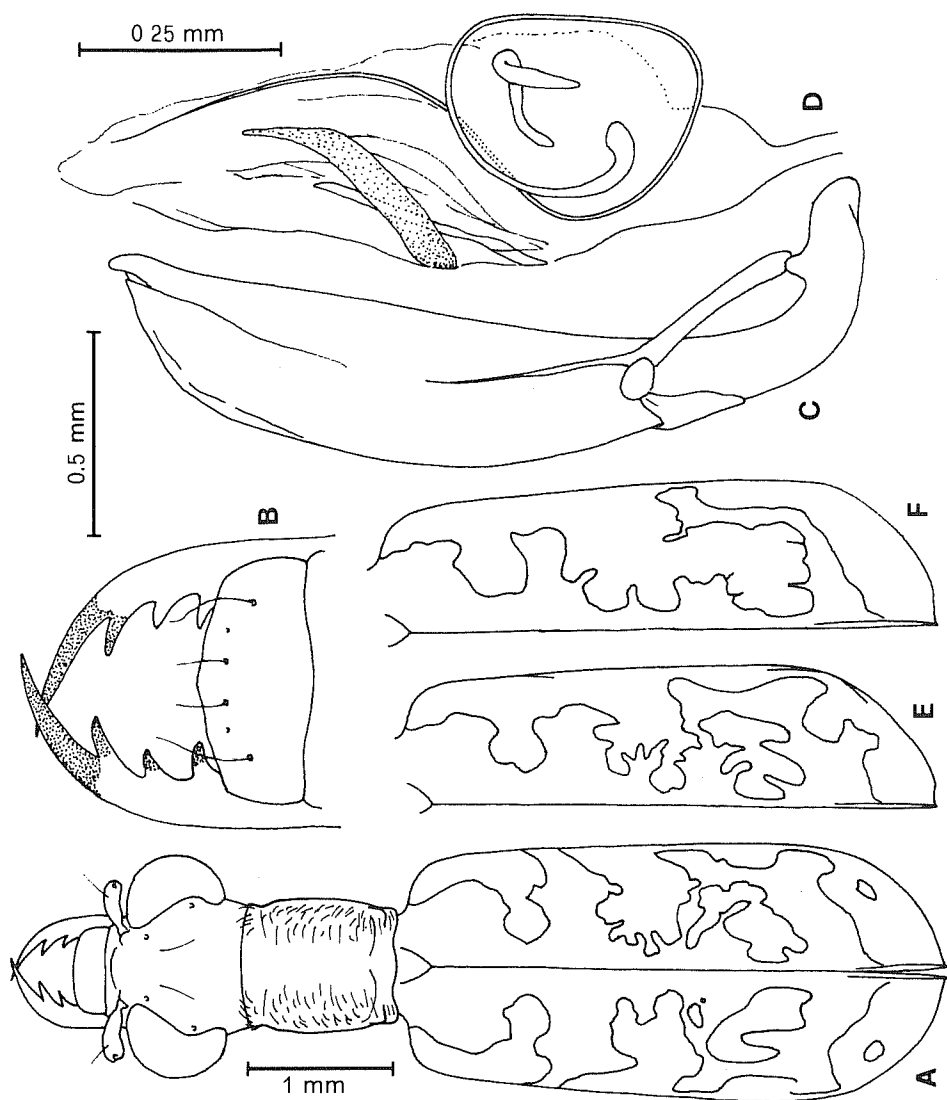


FIG. 20. - *Cylindera (Cicindina) inopinata* Cassola. Male specimen from 4 km SW of Garoowe: habitus (a), labrum and mandibles (b), aedeagus (c), and internal sac of aedeagus (d); male specimens from same locality: right elytron (e, f).

A common, widely distributed species, changing very little over its enormous range. It is known from the whole African continent, including Madagascar, from southern Mediterranean Europe, and from the Near and Middle Orient up to northern India.

Material examined: 113 specimens.

Arabsiu, 35 km W Hargeysa, 09°41'N-43°45'E, 17.V.1988, F. Cassola, 1

♂ 3 ♀♀ FC (fig. 8). Sheikh-Berbera road, 4 km N Huddisa, Tog Marmarood, 800 m, 10°02'N-45°09'30E, 20.V.1988, F. Cassola, 1 ♂ FC. 9 km S Sheikh, 1350 m, 09°52'N-45°14'40E, 19.V.1988, roadside pool, F. Cassola & M.A. Bologna, 5 ♂♂ 8 ♀♀ FC. Saraar Plain, 19 km E of Waridaad, 09°17'N-46°27E, 15.V.1979, at light, J.E. Miskell, JM. (fig. 15). Saraar Plain, Waridaad, 720 m, 09°17'N-46°15'E, 19.V.1988, F. Cassola & coll., 5 ♂♂ 3 ♀♀ FC. Candala, Migiurtinia, laguna salata, 23.VI.1953, G. Scortecci, 1 ♀ MSNG. Mahleggi, 5 km W Carin, 13.X.1973, 2 ♂♂ 2 ♀♀ MZSF. Las Anod-Garoe, 08°40'N-47°24'E, 1-3.XI.1980, A.M. Simonetta, 4 ♂♂ 6 ♀♀ AB. 6 km W of Oog, 08°56'N-46°36'E, on edge of large pond, J.E. Miskell, JM. 10 km NW of Galcaio, 06°51'N-47°22'E, 30.IV.1979, at light, J.E. Miskell, JM. Sina Dhaqa (= Lake Sinadogo), 05°23'N-46°20'E, 29.IV.1979, on lake shore, J.E. Miskell, JM. Belet Uen (= Beled Weyne), IV.1936, C. Lomi, 1 ♂ MSNT. Bugda Cossar, 23.XI.1979, SBS, 3 ♂♂ 1 ♀ MZSF, 1 ♀ AB. Bud Bud, 3.V.1978, A.M. Simonetta, 2 ♀♀ AB. Uarsciek (= Warshek), 9.V.1978, A.M. Simonetta, 10 ♂♂ 7 ♀♀ JS, 2 ♂♂ 2 ♀♀ AB. 4 km SW Garoe (= Garoowe), 08°23'N-48°29'E, 23.V.1979, at light, J.E. Miskell, JM. Afgoi, 9.VII.1977, Olmi leg., 1 ♂ MRAC. Afgoi, Lafoole, Faculty of Agriculture, II-IV.1978, A.M. Simonetta, 3 ♂♂ 3 ♀♀ AB, 8 ♂♂ 5 ♀♀ JS; 7-12.V.1988, A. Vigna, 1 ♂ FC. El Riadle, 03°40'N-44°27'E, 5.X.1980, A.M. Simonetta, 1 ♀ AB. Bur Akaba, 12.X.1986, L. Bartolozzi, SBS, 1 ♂ AB, 3 ♂♂ 2 ♀♀ MZSF. Togga Gheregeb, 8.XI.1986, SBS, 3 ♂♂ 2 ♀♀ MZSF. Bardera, Fanuen, 6.XI.1986, SBS, 1 ♂ MZSF. Misciani, 12-26.XII.1984, N. Baccetti, 1 ♂ MZSF. Belet Amin (= Beled Amiin), IV.1923, S. Patrizi, 1 ♀ MSNG. Jach Sciammo, Juba 1923, S. Patrizi, 1 ♂ MZSF. Tabdi-Gira, 0°32'N-42°02'E, 5.XII.1980, A.M. Simonetta, 1 ♂ AB.

29. *Myriochile (Monelica) hauseri* (W. Horn, 1898)

Cicindela Hauseri W. Horn 1898, Not. Leyden Mus. 20, p. 105 [«Ikutha: British East Africa»];

Cicindela fastidiosa Hauseri; W. Horn 1926, Col. Cat. 86, p. 138;

Myriochile (Monelica) Hauseri; Rivalier 1957, Rev. fr. Ent. 24, p. 323.

An East African species, widely distributed in the whole of Somalia. It is often found in collections mixed up with the very similar congeneric species *M. fastidiosa vicina* (Dejean, 1831), which in reality does not seem to exist in Somalia. Surprisingly polymorphic, *M. hauseri* shows noteworthy variations in size, elytral markings, and body colouration (from reddish-brown to greenish-bronze and light golden green), thus sometimes giving one the impression of confronting different species. Reddish colour is usually associated with small size and narrow elytral markings, while most Afgoi specimens appear to be larger, dark bronze coloured, with large elytral markings and broken humeral lunule. A detailed taxonomic study could be beneficially made, based on more material from the different parts of the species' range.

Material examined: 134 specimens.

Sheikh-Berbera road, 4 km N Hudduso, Tog Marmarood, 10°02'N-45°09'30E, 20.V.1988, J.E. Miskell, JM. 17 km SW of Burao (= Burco), 09°28'N-45°26'E, 3.V.1979, J.E. Miskell, JM. Saraar Plain, Bender Qassim, 16 km E Waridaad, 09°17'N-46°15'E, 18-19.V.1988, F. Cassola & J.E. Miskell, 1 ♂ 3 ♀♀ FC (fig. 15). 9 km S of Sheikh, 1350 m, 09°52'N-45°15'E, 19.V.1988, F. Cassola, 2 ♂♂ 2 ♀♀ FC. 45 km SW of Berbera, Tog Biyocaddo, 550 m, 10°02'N-44°47'20E, 20.V.1988, M. Bologna & G. Carpaneto, 1 ♂ FC (fig. 7). 25 km S of El Buh (= El Haga), 10°00'N-48°13'E, 13.V.1980, J.E. Miskell, 1 ♂ JM. 45 km SE of Taleh (=Talex), 08°46'N-48°33'E, 13.V.1980, at light, J.E. Miskell, 1 ♀ JM. 4 km SW of Garoe (= Garoowe), 08°23'N-48°29'E, 23.V.1979, at light, J.E. Miskell, 4 ♂♂ 4 ♀♀ FC. 101 km SW of Garoe (= Garoowe), 07°45'N-47°58'E, 14.V.1980, J.E. Miskell, 1 ♂ JM. «Tra Gallacaio e Bohotte», 1903, C. Citerni, 1 ♀ MSNG. Belet Uen (= Beled Weyne), IV.1936, C. Lomi, 1 ♂ MSNT. 25 km N of Bulla Burti, 04°04'N-45°35'E, 27.IV.1979, at light, J.E. Miskell, 1 ♀ FC. Giohar, 18-25.IV.1968, 1 ♂ FC, 1 ♂ AB, 1 ♂ MZSF. Afgoi, 20.IV.1974, U. Funaioli, 1 ♀ FC; IV.1978, A.M. Simonetta, 1 ♀ AB; V.1986, R. Mourglia, 2 ♂♂ 2 ♀♀ FC, 1 ♂ 3 ♀♀ RM. Afgoi, Lafoole, Faculty of Agriculture, 29.IV-8.V.1987, at light, F. Cassola, 20 ♂♂ 30 ♀♀ FC; 7-8 & 21.V.1988, at light, F. Cassola & coll., 11 ♂♂ 8 ♀♀ FC. Afgoi, Agricultural Research Institute, 8.V.1988, temporary puddles on road, F. Cassola, 8 ♂♂ 2 ♀♀ FC. Mogadishu, U.S. Embassy compound, 22.IV.1977, G. Shook, 1 ♀ GS. Mogadishu-Afgoi, km 15, 8-14.V.1988, M. Bologna & G. Carpaneto, 1 ♂ FC. Abarey, Lower Shabeelle, Lake Joware, 13.V.1988, at light, F. Cassola, 2 ♂♂ 4 ♀♀ FC. Lugh, IV.1920, Toncker leg., 1 ♂ 1 ♀ MSNG. Dolo, Amino, 13.X.1937, Sped. Brunelli, Vatova leg., 1 ♀ DEI. Bardera, Fanuen, 6.XI.1986, SBS, 1 ♂ 1 ♀ MZSF. Giumbo, 1909, G. Ferrari, 1 ♂ 1 ♀ MSNG, 1 ♂ DEI. Somalia, 1937, 1 ♀ FC.

30. *Myriochile (Monelica) r. respiciens* (W. Horn, 1920)

Cicindela respiciens W. Horn 1920, Ark. Zool. 13, 11, p. 18 [«*Galla meridionalis*»];

Myriochile (Monelica) respiciens; Cassola 1978, Acc. naz. Lincei, Quad. No. 243, p. 115.

This species was described (Horn 1920) from only two specimens which were found by K. Erlanger in southern Galla, Ethiopia, in April 1901. A few later records show that it inhabits southern Somalia as well. Northern Somali populations belong to the following subspecies (fig. 21).

Material examined: 6 specimens.

Belet Uen (= Beled Weyne), IV.1936, C. Lomi, 1 ♂ MSNT. 25 km N of Bulla Burti, 04°04'N-45°35'E, 27.IV.1979, at light, J.E. Miskell, 2 ♂♂ FC. Bardera, 1908, U. Ferrandi, 2 ♀♀ MSNG. Haro Lola, S. Somalia, 4.V.1901, B.V. Erlanger, 1 ex ZMB.

31. **Myriochile (Monelica) respiciens** (W. Horn) ssp. **septentrionalis** Cassola, 1987

Myriochile (Monelica) respiciens septentrionalis Cassola 1987, *Monitore zool. it.* (N.S.) Suppl. 22, p. 334 [«4 km SW of Garoowe»].

The many specimens collected by one of us (J.M.) in northern Somalia show slight but constant differences, both in elytral markings and body colouration, from the nominate form, and they have been consequently separated into a different subspecies (Cassola, 1987). *M. respiciens*, as most other congeneric species usually do, comes readily to light.

Material examined: 104 specimens.

Saraar Plain, 19 km E of Waridaad, 09°17'N-46°27'E, 15.V.1979, at light, J.E. Miskell, 6 ♂♂ 1 ♀ paratypes USNM, JM, FC (fig. 15). Saraar Plain, Waridad, 700 m, 09°17'N-46°15'E, 19.V.1988, F. Cassola, 1 ♀ FC. Ceel Afweyn (= El Afwein), 09°55'N-47°13'E, 22.V.1979, at light, J.E. Miskell, 1 ♂ paratype FC. 25 km S of El Buh (= El Haga), 10°00'N-48°13'E, 12.V.1980, at light, J.E. Miskell, 46 ♂♂ 19 ♀♀ paratypes JM, FC, BMNH, USNM, DEI, MSNG, RN. 5 km NW of Yagoori, 08°47'N-46°57'E, 2.V.1979, at light, J.E. Miskell, 1 ♂ paratype FC. 45 km SE of Taleh (= Talex), 08°46'N-48°33'E, 13.V.1980, at light, J.E. Miskell, 1 ♀ JM. 4 km SW of Garoe (= Garoowe), 08°23'N-48°29'E, 23.V.1979, at light, J.E. Miskell, 18 ♂♂ 9 ♀♀ holo-, allo-, paratypes, MRAC, JM, FC, USNM. Eil (Nogal), III-IV.1938, S. Venzo, 1 paratype FC.

32. **Myriochile (Monelica) cornusafricae** Cassola, 1987

Myriochile (Monelica) cornusafricae Cassola 1987, *Monitore zool. it.* (N.S.) Suppl. 22, p. 332 [«25 km S of El Buh»].

A well characterized species, only recently described from seven individuals collected at light by one of us (J.M.), in May 1979 and 1980, in two Northern Somalian localities. During our joint expedition, on 19 May 1988, in a different westermore locality, we collected some additional specimens which were running in the afternoon on the muddy banks of a temporary pool, just beside the Burco-Sheikh road, together with the congeneric species *M. melancholica* and *M. hauseri*. A single female specimen was also probably sighted near Arabsiyo, 35 km W of Hargeysa, on 17 May 1988, but it escaped the capture (fig. 8). As far as we know, three more specimens, probably belonging to the same species, are in the collections on NMK (Upper Sheikh, IV.1942, D.G. Mac Innes, 2 ♀♀) and BMNH (Erigavo, IV-V.1955, A.R. Tribes, 1 ♂). *M. cornusafricae* therefore would appear to be a North Somalia endemic (fig. 22).

Material examined: 15 specimens.

9 km SE of Sheikh, 1350 m, 09°52'N-45°15'E, 19.V.1988, F. Cassola & coll. 5 ♂♂ 3 ♀♀ FC. Ceel Afweyn (= El Afwein), 09°55'N-47°13'E, 22.V.1979, at

light, J.E. Miskell, 1 ♂ paratype JM. 25 km S of El Buh (= El Haga), 10°00'N-48°13'E, 12.V.1980, at light, J.E. Miskell, 1 ♂ 1 ♀ MRAC (holoallotypes), 1 ♂ 1 ♀ FC (paratypes), 1 ♂ BMNH (paratype), 1 ♀ JM (paratype).

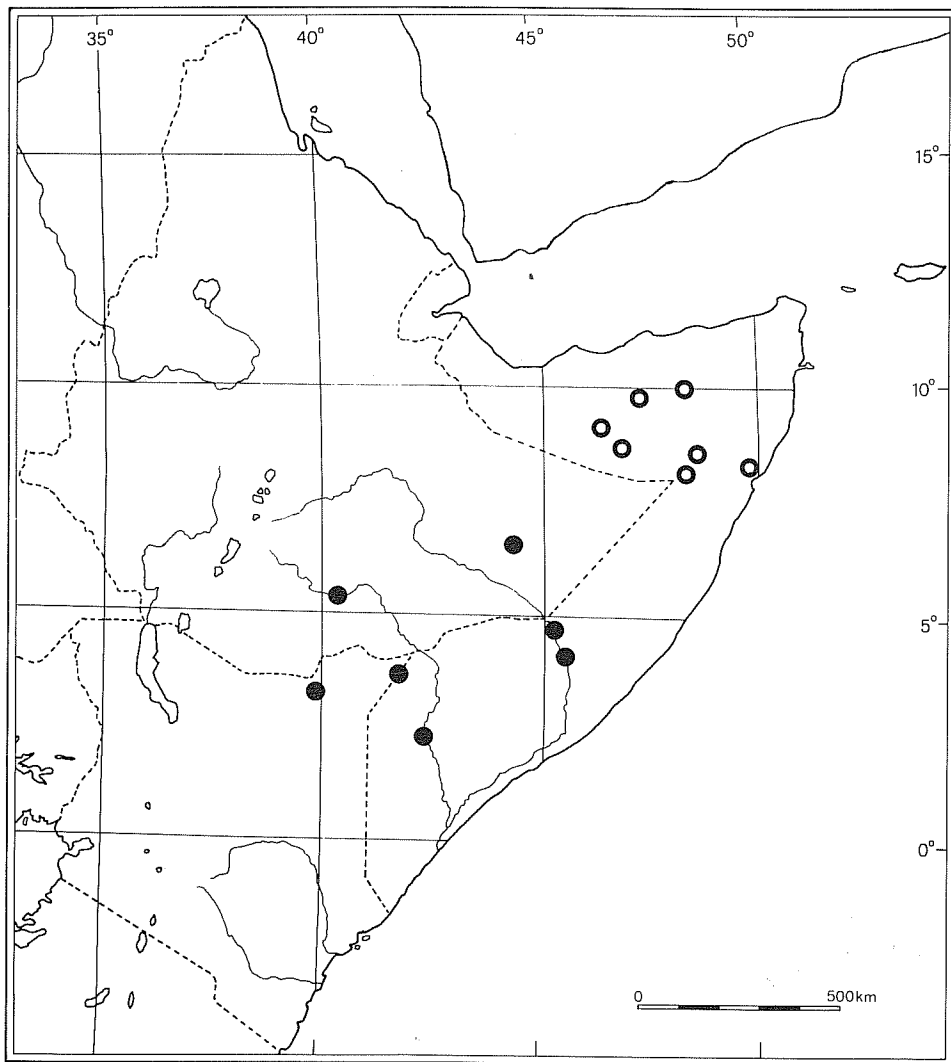


FIG. 21. - Map showing the geographical distribution of *Myriochile (Monelica) respiciens* (W. Horn): solid circles, ssp. *respiciens* W. Horn; open circles, ssp. *septentrionalis* Cassola.

[**Myriochile (Monelica) dorsata** (Brullé, 1834)]

Cicindela dorsalis Dejean 1826, Spec. Col. 2, p. 426 [«Elle se trouve en Egypte»];

Cicindela dorsata Brullé 1834, Rev. Ent. Silberm. 2, p. 98;

Myriochile (Monelica) dorsata; Rivalier 1950, Rev. fr. Ent. 17, p. 235.

This saharo-sahelian species is said by Basilewsky (1964, 1968b) to be distributed from Mauritania «jusqu'en Somalie», probably basing this statement on the record by Fairmaire (1886) from Obock. No true Somalian specimens are known to us, and moreover the specimens recorded by Basilewsky in the above mentioned papers, from Hadhrhamaut and Yemen, are in reality to be referred respectively to *M. melancholica* (J.E. Miskell vidit, 1978) and to *M. nudopectoralis* (W. Horn, 1903) (Cassola, 1978). For the time being at least, this species has therefore to be excluded from the Somalian fauna.

33. **Myriochile (Monelica) lomii** (W. Horn, 1938) (fig. 23)

Cicindela Lomii W. Horn 1938, Atti Mus. civ. St. nat. Trieste 14, p. 135 [«Belet-Uen»];

Myriochile (Monelica) lomii; Cassola 1978, Acc. naz. Lincei, Quad. No. 243, p. 110.

This large distinctive species was described by Horn (1938a) based on only two ♂♂, which had been collected respectively by C. Lomi in April 1936 (not 1926 as stated by Horn!) at Belet Uen, and by Facca in April 1937 at Gabredarre (Kebri Dehar, in Ethiopian Ogaden). Its generic and sub-generic status have been determined a few years ago only (Cassola, 1978), thanks to re-examination of the MSNT syntype. Subsequent occasional collecting has more recently added a few additional specimens to the typical ones, enabling us to give below a short description of the opposite sex. The few records seem to confirm *M. lomii* as an endemic species from central Somalia only (fig. 22). Six specimens only are known so far in all.

Description of the ♀. Length: 16-16.5 mm (without labrum). General characters as those of ♂♂. Brownish bronze coloured with some cupric reflections, tinged with golden green on frons and clypeus; gular area and sides of neck violaceous blue-green. Apical tooth of mandibles less elongated than that of the male. Labrum short, transverse, rectangular-shaped, without the strong roundish excavation in the middle which is so distinctive of the ♂; front edge nearly straight, slightly sinuose, with a small dark tooth in the middle. Pronotum bronze coloured, with dark violaceous reflections on disk, pubescent at sides. «Coupling sulci» lacking. Elytra dark, nearly dull black, very finely and regularly punctured, with a few stronger punctures parallel to the suture. Elytral markings constituted by a continuous marginal band from shoulders to apex, narrowed after middle, with a narrow oblique middle

band in the Wisiil specimens only. Epipleura testaceous. Underside covered with white decumbent hair on all pieces but the front half of mesepisterna. Femora dark green with blue-violet reflections; tibiae and tarsi rufescent with all segments dark metallic apically.

Material examined: 5 specimens.

Belet Uen (= Beled Weyne), IV.1936, C. Lomi, 1 ♂ MSNT (holotype). Wisiil, 05°26'N-48°07'E, 7.X.1983, A.M. Simonetta, 1 ♂ 1 ♀ JS. Mogadishu, km

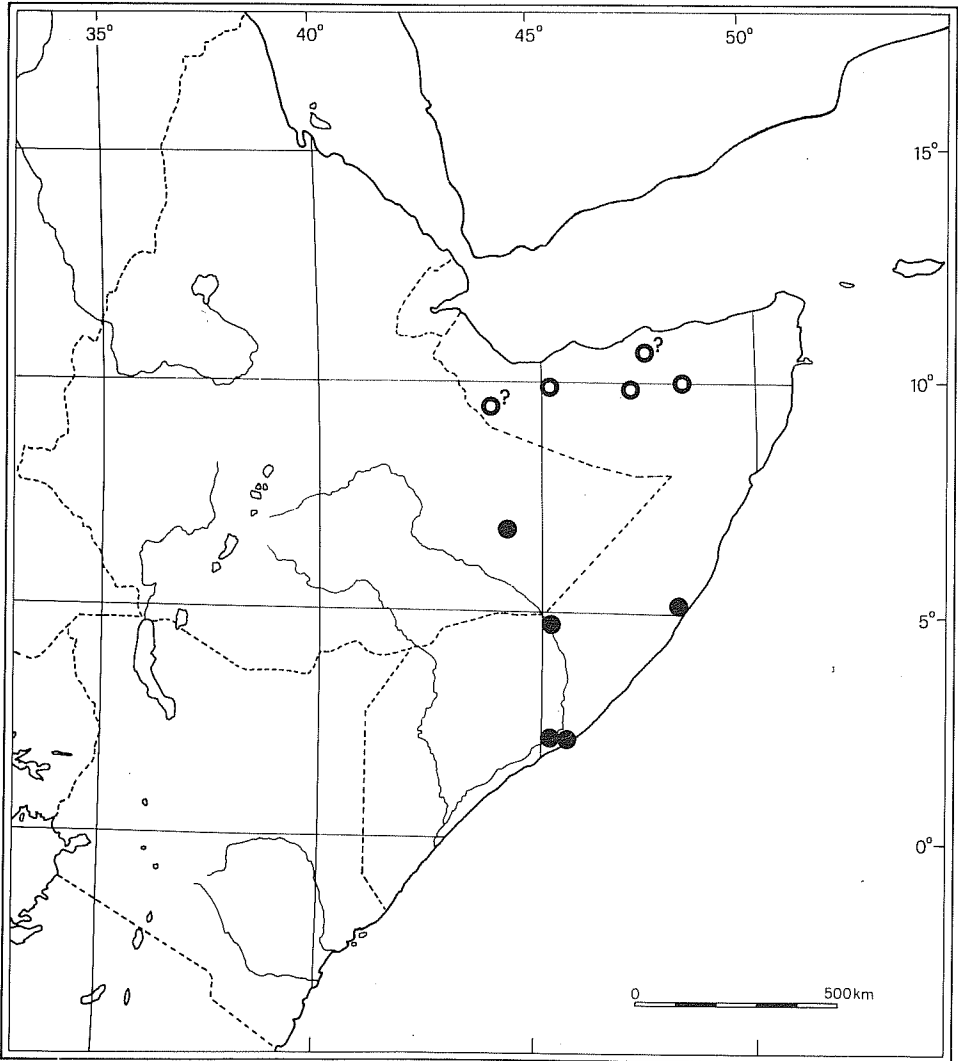


FIG. 22. - Map showing the geographical distribution of the species *Myriochile (Monelica) cornusafricae* Cassola (open circles) and *Myriochile (Monelica) lomii* (W. Horn) (solid circles).

7, 22.IV-5.V.1984, R. Mourglia, 1 ♂ GA. Afgoi, Lafoole, Faculty of Agriculture, 7.V.1987, at light, Abukar Moallim Mohamed & F. Cassola, 1 ♀ FC.

34. *Hypaetha singularis* (Chaudoir, 1876)

Cicindela singularis Chaudoir 1876, Rev. Mag. Zool. 39, p. 330 [«Ile de Dalak dans la Mer Rouge»];

Hypaetha singularis; Rivalier 1950, Rev. fr. Ent. 17, p. 242.

A Palaearctic species, known to occur on both sides of Red Sea from Egypt to Eritrea, Aden and northern Somalia (fig. 18). It inhabits sandy seashores or coastal salt pans. Some populations include many individuals having an enlarged coalescent elytral pattern, making the elytra nearly completely white. Mandl (1959) described such individuals from Berbera as being a separate subspecies (*somalica* Mandl), but a similar elytral maculation can be found in Egyptian specimens as well, and moreover our own Berbera specimens are all normally maculated, while the Hafun population appear to be rather variable in maculation. Therefore Mandl's subspecies cannot apparently be retained, for the time being at least.

A good colour figure of *H. singularis* is given by Horn (1915, tab. 19, fig. 5).

Material examined: 20 specimens.

Berbera, beach, 20.V.1988, F. Cassola, 5 ♂♂ 3 ♀♀ FC. Brit. Somaliland, Senag Plain, 29.V.1949, K.M. Guichard, 1 ♀ BMNH. Brit. Somaliland, Beylul Bay, 27.I.1903, M. Cameron, 1 ♂ BMNH. Alula (=Caluula), 11°58'N-50°46'E, 4.V.1980, at light, J.E. Miskell, 1 ♀ JM. Hafun Bay, 1913, R. Varriale, 1 ♂ MSNG. Hafun (=Dante), 28.IV.1980, J.E. Miskell, 2 ♂♂ 2 ♀♀ JM, 1 ♂ 3 ♀♀ FC.

BIOGEOGRAPHY AND CONCLUSIONS

As it was pointed out here above, the Somalian cicindelid fauna includes 31 different species (with 34 taxa in all), whose occurrence within the present political boundaries has been surely ascertained so far. Two additional species (*Lophyra differens* and *Habrodera nilotica*) may possibly be present as well, but in our opinion their presence in the country still needs to be confirmed on the basis of recent well-labelled material. Further research will probably lead to an increase in this number in the future, due to the likely discovery of further new species (especially in the northern regions), or to the finding within Somalia of some other species which are presently known from surrounding areas beyond its borders, but not far from them. For instance, species such as *Prothyma leprieuri* (Dejean, 1831), *Myriochile (Monelica) nudopectoralis* (W. Horn, 1903), and *Prothymidia angusticollis* (Boheman, 1848), all known to occur in the Ethiopian Ogaden or Harrar regions, are likely to exist in Somalia too. Moreover, a Palaearctic species, *Megacephala euphratica* Dejean, 1826, was recorded by Mandl (1959) from Dij-

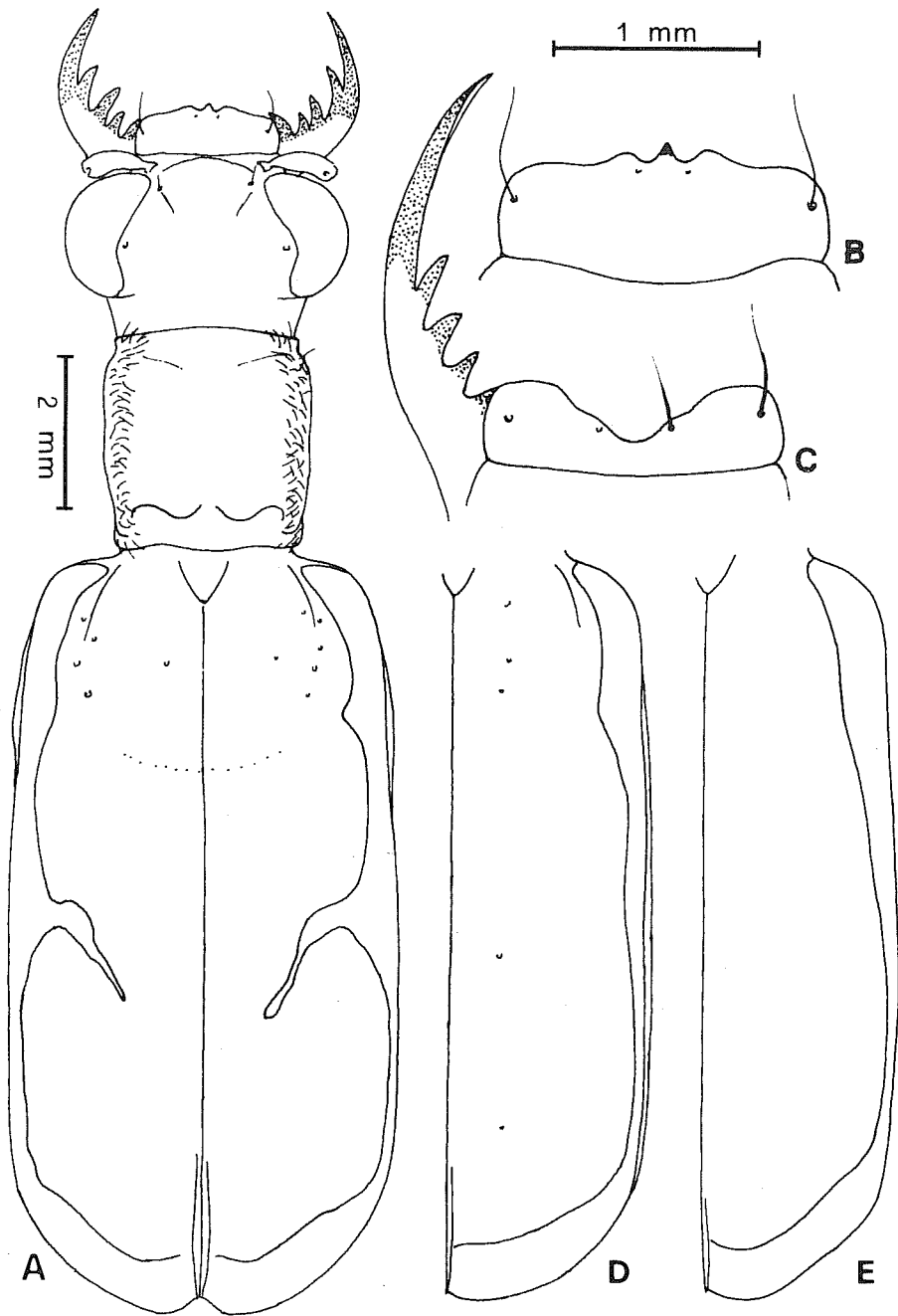


FIG. 23. - *Myriochile (Monelica) lomii* (W. Horn). Female specimen from Wisil: habitus (a) and labrum (b); male specimen from Wisil: left mandible and labrum (c); male specimen from Mogadishu, km 7: right elytron (d); female specimen from Lafaole, Afgoi: right elytron (e).

bouti (ssp. *aida* Mandl), and could well exist in suitable habitats of north-western Somalia. Unfortunately, political troubles, especially in the North, are likely to prevent proper specialized research for many years to come.

Out of the 34 listed taxa, 14 (41.2%) are strict Somalian endemics, and 6 (17.6%) are known from the Africa's Horn only (Ethiopia and Somalia), thus raising up to 58.8% the rate of endemics of this interesting region (Tab. I). Eight of these taxa — nearly a quarter of the whole Somalian fauna! — were only discovered and described in recent years (six new species, one of which still known from the single holotype only, and two new subspecies), thus emphasizing that Somalian Tiger Beetles are probably still far from being fully known.

In addition to the endemic element, the Somalian fauna includes further 7 species (20.6%) having a larger East African distribution, which includes Kenya, or Kenya and Tanzania, and in two cases the southern tip of the Arabian peninsula as well. Endemic, Somalo-Ethiopian and East African elements therefore total altogether no less than 79.4% of the whole Somalian fauna, thus clearly demonstrating its great distinctiveness and originality. The rest of this fauna is constituted by three additional widely-distributed African species, and by four Palaearctic elements which apparently penetrated the northern Somalian territory through the Red Sea coasts. It is interesting to note that these Palaearctic elements, as well as two East African ones, also appear to occur on the opposite side of the Gulf of Aden, i.e. in southern Arabian peninsula (Aden, Yemen).

Within the Somalian fauna itself, the greatest originality has to be recognized for the northern part of the country, where no less than five endemic species appear to occur (*Lophyra latelimbata*, *Lophyra flavipennis*, *Chaetodera blanchardi*, *Cylindera inopinata*, *Myriochile cornusafricae*) which are not known elsewhere. But the great distinctiveness of the coastal sector of central-southern Somalia, along the narrow system of fossil consolidated sand dunes which separates the Webi Shabeelle valley from the Indian Ocean coast, must also be recognized. Here a special fauna apparently evolved which produced several interesting endemics, such as *Elliptica flavovestita*, *Lophyra miskelliana*, *Dromica abukari*, *Dromica somalica*, *Euryarthron brevixstriatum*, *Megacephala somalica cassolai*, and moreover *Lophyra somalia* in sea beach environments.

Adaptations to desert or subdesert biota appear to be very advanced. Not only biological features are narrowly dependent on the arid environment and lack of water, but also morphological characters clearly show a long-term adaptation to open sandy substrates. In particular, several species, belonging to different generic stems, exhibit a rather conspicuous enlargement of the white elytral markings, which fits very well the white or reddish colour of the soil, thus giving the insects a wonderful camouflage in their natural environment (fig. 24). Not surprisingly, all those species which have best developed this kind of camouflage (*Elliptica flavovestita*, *Lophyra somalia*, *Lophyra flavipennis*, *Lophyra miskelliana*, *Chaetodera blanchardi*) belong to genera

Tab. I

Somalian Tiger Beetles (Coleoptera, Cicindelidae)	Endemic	Somalo-Etropic	East-African	African	Palearctic	occurs in the Arabian peninsula
1 <i>Megacephala regalis</i> Boheman ssp. <i>revoili</i> Lucas, 1881	*					
2 <i>Megacephala regalis</i> Boheman ssp. <i>citernii</i> W. Horn, 1912	*		*			
3 <i>Megacephala</i> s. <i>somalica</i> Basilewsky, 1966	*					
4 <i>Megacephala somalica</i> Basilewsky ssp. <i>cassolai</i> Basilewsky, 1978	*					
5 <i>Dromica erlangeri</i> W. Horn, 1904	*	*				
6 <i>Dromica abukari</i> Cassola, 1989	*					
7 <i>Dromica somalica</i> Cassola, 1989	*					
8 <i>Euryarthron revoili</i> (Fairmaire, 1882)	*	*				
9 <i>Euryarthron brevisexstriatum</i> (W. Horn, 1922)	*					
10 <i>Prothyma bottegoi</i> (W. Horn, 1897)	*		*			
11 <i>Prothyma methneri</i> W. Horn ssp. <i>somalica</i> Müller, 1939	*	*				
12 <i>Prothyma confusa</i> G. Müller, 1939	*	*				
13 <i>Elliptica flavovestita</i> (Fairmaire, 1884)	*					
14 <i>Lophyridia aulica</i> (Dejean, 1831)					*	yes
15 <i>Lophyridia alboguttata</i> (Klug, 1832)			*			yes
16 <i>Lophyridia dongalensis</i> (Klug) ssp. <i>imperatrix</i> (Srška, 1891)			*			
17 <i>Lophyra</i> (<i>Lophyra</i>) <i>neglecta</i> (Dejean) ssp. <i>intermedia</i> (Klug, 1853)				*		
18 <i>Lophyra</i> (<i>Eriolophyra</i>) <i>somalia</i> (Fairmaire, 1882)			*			
19 <i>Lophyra</i> (<i>Lophyrina</i>) <i>latelimbata</i> (Müller, 1941)	*					
20 <i>Lophyra</i> (<i>Stenolophyra</i>) <i>miskelliana</i> Cassola, 1986	*					
21 <i>Lophyra</i> (<i>Stenolophyra</i>) <i>flavipennis</i> Cassola, 1983	*					
22 <i>Chaetodera regalis</i> (Dejean, 1831)				*		
23 <i>Chaetodera blanchardi</i> (Fairmaire, 1882)	*					
24 <i>Cephalota</i> (<i>Taenidia</i>) <i>litorea</i> (Forsk.) ssp. <i>alboreducta</i> (W. Horn, 1934)					*	yes
25 <i>Cephalota</i> (<i>Taenidia</i>) cfr. <i>eudeserticola</i> (Ali, 1978) bona sp.?					*	yes
26 <i>Cylindera</i> (<i>Ifasina</i>) <i>rectangularis</i> (Klug, 1832)			*			yes
27 <i>Cylindera</i> (<i>Eugrapha</i>) <i>inopinata</i> Cassola, 1987	*					
28 <i>Myriochile</i> (s. str.) <i>melancholica</i> (Fabricius, 1798)				*		yes
29 <i>Myriochile</i> (<i>Monelica</i>) <i>hauseri</i> (W. Horn, 1898)			*			
30 <i>Myriochile</i> (<i>Monelica</i>) r. <i>respiciens</i> (W. Horn, 1920)		*				
31 <i>Myriochile</i> (<i>Monelica</i>) <i>respiciens</i> W. Horn ssp. <i>septentrionalis</i> Cassola, 1987	*					
32 <i>Myriochile</i> (<i>Monelica</i>) <i>cornusafricae</i> Cassola, 1987	*					
33 <i>Myriochile</i> (<i>Monelica</i>) <i>lomii</i> (W. Horn, 1938)		*				
34 <i>Hypaetha singularis</i> (Chaudoir, 1876)					*	yes

whose elytral markings are of the *Lophyra*-type, i.e. with basal and juxtasutural dots in addition to the ordinary marginal lunules (Rivalier, 1950a,b). However, a similar extension of white markings is sometimes also noticeable in other species as well, having a different elytral pattern, such as *Hypaetha singularis* and *Cylindera inopinata*, which also appear to have been submitted to the same evolutive pressures. It can also be instanced that a significant similar convergent adaptation, probably involving some kind of mimicry as

well, can be found in syntopically living ground beetles of the genus *Graphipterus* (Cassola & Vigna Taglianti, in this volume).

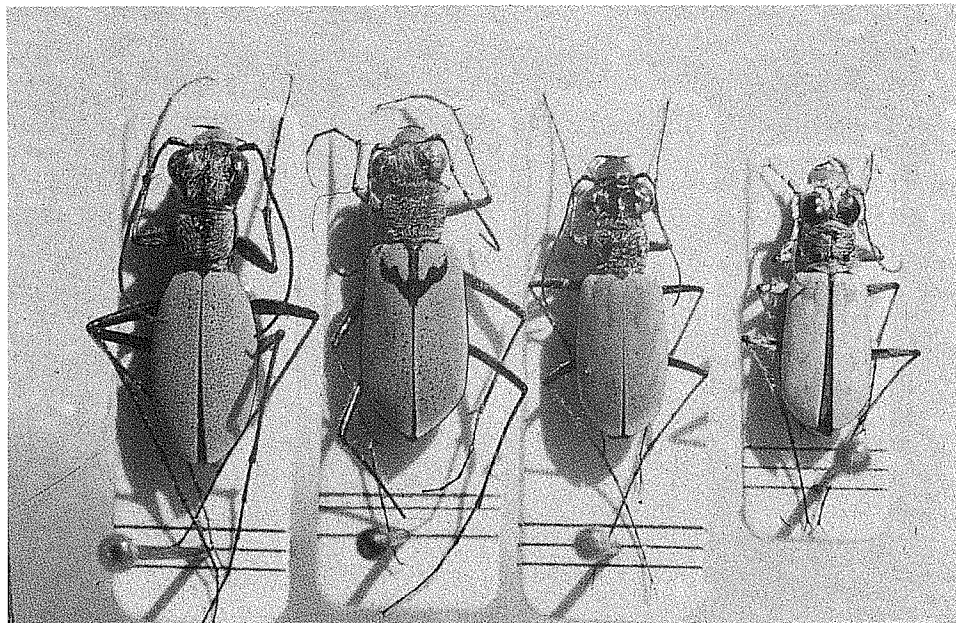


FIG. 24. - Four Somalian species, belonging to different generic stems, exhibiting a conspicuous enlargement of white elytral markings, thus taking a good camouflage on the white sandy soil of their natural habitats. From left to right: A. *Lophyra (Eriolophyra) somalia* (Fairmaire), B. *Lophyra (Stenolophyra) miskelliana* Cassola, C. *Chaetodera blanchardi* (Fairmaire), D. *Elliptica flavovestita* (Fairmaire).

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APPENDIX I: GAZETTEER

We think it to be useful to give the following gazetter of all the old names listed as localities in this paper, together with the modern (Somali) spellings and the geographical co-ordinates. Old Italian and British spellings, in fact, have been replaced by using the spellings on the Russian made 1:100,000 scale maps of the mid-1970s. These are the most up-to-date maps of the country, and they spell all names the way the Somalis spell (and pronounce) them.

For finding some old localities, the «Guida dell'Africa Orientale Italiana», published by the Conso-
 ciazione Turistica Italiana (C.T.I. 1938), anche the «Carta dell'Africa Orientale Italiana» 1:1,000,000 scale
 map, published by the Touring Club Italiano (T.C.I. 1936, 37 sheets), have been usefully consulted.

<i>Locality</i>	<i>Somali</i>	<i>Co-ordinates</i>
Abarey, Lake Joware	Abaarey, Lake Jowaarey	
(Webi Abaarey on the Russian map is an old channel of the Webi Shebeelle. Lake Jowaarey is probably the unnamed lake shown on the map at		01°30'N-43°59'30''E
Afgoi	Afgooye	02°08'30''N-45°07'20''E
Agabar	Agabar	09°55'30''N-43°55'E
Alula	Caluula	11°58'N-50°45'30''E
Arabsiu	Arabsiyo	09°40'30''N-43°46'E
Balad	Balcad	02°21'N-45°23'30''E
Bardera	Baardheere	02°20'20''N-47°17'E
Belet Amin	Beled Amiin	0°11'40''N-42°46'30''E
Belet Uen, Belet Huen	Beled Weyne	04°44'N-45°12'20''E
Bender Beila	Bandar beyla	09°29'N-50°48'E
Bender Cassim (Bosaso)	Boosaaso	11°17'N-49°11'E
Berbera		10°26'N-45°00'30''E
Bidi		00°59'N-42°37'50''E
Bihendula	Bixinduule	10°09'50''N-45°06'20''E
Bixin, Bixin Dila }		
Bohotle, Bohotte	Buuhoodle	08°15'N-46°20'E
Bosaso (Bender Cassim)	Boosaaso	11°17'N-49°11'E
Brava	Baraawe	01°06'40''N-44°02'E
Bud Bud		04°11'30''N-46°28'20''E
Bugda Cossar	Buqkoosaar	04°30'40''N-44°49'E
Bulo Burti, Bulla Burti	Buulobarde	03°51'N-45°34'E
Bur Akaba	Buurhakaba	02°48'N-44°04'45''E
Burao	Burco	09°32'N-45°32'E
Camsuma	Kamsuuma	00°15'N-42°46'50''E
Candala	Qandala	11°28'30''N-49°52'30''E
Carin	Karin	10°59'N-49°13'E
Ceelayo		11°14'30''N-48°53'30''E
Comia («da Cumia ai Monti Egherta», V. Bottego)		01°03'54''N-43°33'E
Coriolei	Qoryooley	01°47'N-44°32'E
Cudayo, Cu Daio (C.T.I.)	Koday	c. 01°02'S-41°59'E
Culmiso (stagno, pond) (V. Bottego)		01°50'N-43°10'E
Daar Wein	Daar Weyn	02°35'30''N-42°11'40''E
Danane	Dhanaane	01°52'20''N-45°01'40''E
Darror, vallée du		from c. 10°30'N-49°21'E to c. 10°15'N-50°12'E
Dolo	Doolow	c. 04°10'N-42°05'E
Dugiuma	Dujuuma (Bu'aale)	01°15'10''N-42°34'20''E
Egherta, Monti («da Cumia ai Monti Egherta», V. Bottego)		c. 02°18'N-42°58'E
Eil	Eyl	07°58'40''N-49°49'E
El Afwein	Ceel Afweyn	09°55'50''N-47°13'E
El Buh	Ceelbuh	10°13'40''N-48°18'30''E
Erigavo	Ceerigaabo	10°37'N-47°22'E
Gahan Libah, Ga'an Libah	Gacan Libaax	09°52'N-44°48'E
Galcaio, Gallacaio	Gaalkacyo	06°46'N-47°26'E
Gandersha	Gandarshe	01°50'N-44°58'E

<i>Locality</i>	<i>Somali</i>	<i>Co-ordinates</i>
Garbahare, Garbaharre	Garbahaarrey	03°19'30''N-42°13'E
Gardo	Qardho	09°30'15''N-49°05'E
Garoe	Garoowe	08°24'30''N-48°29'E
Gelib	Jilib	00°29'30''N-42°46'30''E
Genale	Jannaale	01°48'30''N-44°41'30''E
Gesira, Jezirah	Jasiira	01°57'N-45°11'E
Giamama	Jamaame	00°04'N-42°45'E
Giohar	Jowhar	02°46'40''N-45°30'20''E
Giumbo	Jumba	00°14'50''S-42°37'30''E
Go'oo		09°47'10''N-44°54'30''E
Hafun (Dante)	Xaafuun	10°25'10''N-51°15'40''E
Haji-Ali plain = Planz Hadj-Ali (Erlanger) across the Jubba and a bit north of Hadj-Ali. Planz Hadj-Ali would now appear to be occupied by the village of Haatko at		00°09'S-42°35'E
Hadj-Ali	Xaaji Cali	00°09'50''S-42°36'10''E
Hargeysa, Hargeisa		09°33'N-44°04'E
Haro Lola = Karo Lola on Erlanger's Map = Garo Lola on 1:250,000 Survey of Kenya map (NE Prov., Kenya)		c. 03°51'N-41°42'E
Huddisa		09°59'50''N-45°10'E
Jach Sciammo	Yaaq Shuumo	00°08'N-42°45'E
Jalalaqsi (Gialalassi)		c. 03°23'N-45°33'30''E
Jezirah (Gesira)	Jasiira	01°57'N-45°11'E
Karkar, monts = Buuraha Karkar (hills to the northeast and southeast of Buraan)		10°13'10''N-48°44'E
Kismayo, Kisimayo	Kismaayo	00°21'S-42°33'E
Lafoole, Faculty of Agriculture		02°06'N-45°10'E
La Houada (Loyada)	Lowyacado	c. 11°27'N-43°15'E
Las Anod	Laascaanood	08°28'30''N-47°21'20''E
Lugh, Lugh Ferrandi	Luuq	03°47'30''N-42°32'50''E
Mahas	Maxaas	04°23'30''N-46°05'30''E
Manas	Maanas	02°53'30''N-43°28'E
Mait	Maydh	11°00'20''N-47°06'40''E
Margherita (Giamama)	Jamaame	00°04'N-42°45'E
Merca, Merka	Marka	01°43'N-44°46'E
Misciani	Mishaani	01°46'40''N-44°39'30''E
Mogadishu (Mogadiscio)	Muqdisho	02°02'N-45°20'E
Mohaddei	Mahaddayweyne	02°58'20''N-45°32'E
Oog		08°56'10''N-46°37'10''E
Qualiakolo	Kalikooka	00°22'40''N-42°45'10''E
Rocca Littorio (Galcaio)	Gaalkacyo	06°46'N-47°26'E
Scionde (Sconde)	Shoonto	01°03'30''N-42°35'30''E
Scusciuban	Iskushuban	10°17'N-50°14'E
Shalanbod	Shalaamboot	01°42'30''N-44°41'40''E
Sheikh (Upper Sheikh)	Shiikh	09°55'50''N-45°11'20''E
Sinadogo, Lake	Sina Dhaqa	05°22'20''N-46°20'25''E
Taleh	Taleex	09°09'N-48°25'20''E
Tog Biyocaddo		10°02'N-44°47'E
Uarsciek (Warshek)	Warshiikh	02°17'50''N-45°48'E
Vill. Duca degli Abruzzi	Jowhar	02°46'40''N-45°30'20''E
Vittorio d'Africa	Shalaamboot	01°42'30''N-44°41'40''E
Waridaad, Waridad	War Idaad	09°17'N-46°15'E
Warran Weis	Togga Warawiis	10°10'N-43°56'E
Warshek (Uarsciek)	Warshiikh	02°17'50''N-45°48'E
Wisil	Wisil	05°25'40''N-48°07'20''E
Yagoori		08°35'N-46°58'E

<i>Locality</i>	<i>Somali</i>	<i>Co-ordinates</i>
<i>Unknown or uncertain localities</i>		
Amino-Dolo (Ethiopia!)		c. 04°31'N-41°48'30''E
Ali Mahaddei		
Beylul Bay	Mulaax Beyle?	10°46'30''N-46°43'10''E
Crab Bay, 25 km SW of Mogadishu		
Dinti, Uebi (E. Ruspoli)		
El Riadle (not on Russian map)		03°40'N-44°27'E
Fanuen (Fafuen), 50 km N Bardera	Fawouin	
Fungalango Plain, lower Jubba (S. Patrizi)		
Mahleggi, 5 km W of Carin (see: Carin)		
Neghelli, Somalia merid. (= Neghelle, Ethiopia!)		c. 05°17'N-39°41'E
Senag Plain, British Somaliland		
Sidimo		
Smitlin Bay, near Gesira		
Tabdi-Gira (not on Russian map)		00°32'N-42°02'E
Togga Gheregeb (Ghergheb), 32 km N Bardera		