Entomofauna

ZEITSCHRIFT FÜR ENTOMOLOGIE

Band 37, Heft 31: 481-492 ISSN 0250-4413 Ansfelden, 4. Januar 2016

Some of grass flies (Diptera: Chloropidae) fauna of Kandovan valley in East Azarbaijan province with new records for Iran

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Abstract

According to the specimens collected from Kandovan valley (East Azarbayjan province, Iran), during 2011-2013, eight genera and twelve species of the family Choloropidae (Diptera) are identified. Two species (*Trachysiphonella dawahi* DEEMING & AL-DHAFER, 2012 and *Scoliophthalmus micans* LAMB, 1918) and one genus (*Scoliophthalmus* BECKER, 1903) are reported from Iran for the first time. An identification key to the studied genera along with the photos of studied species are provided.

Key words: Chloropidae, Fauna, New record, Kandovan, Iran.

Zusammenfassung

Basierend auf Aufsammlungen in den Jahren 2011-2013 im Kandovan-Tal (Provinz Ost-Azarbayjan, Iran), konnten 8 Gattungen und 12 Arten der Familie Choloropidae (Diptera) nachgewiesen werden. Die beiden Arten *Trachysiphonella dawahi* DEEMING & AL-DHAFER, 2012 und *Scoliophthalmus micans* LAMB, 1918 sowie die Gattung *Scoliophthalmus* BECKER, 1903 sind Neunachweise für den Iran. Ergänzt wird die Arbeit durch einen Bestimmungsschlüssel und Fotomaterial bezogen auf das Untersuchungsgebiet.

Introduction

The Chloropidae, commonly known as the "Grass Flies", with approximately 3,000 species in the World fauna are one of the largest and best defined families of acalyptrate Diptera, usually 1.5-5.0 mm long, sometimes reaching 8 mm, body is smooth and setae reduced. The color of the body is black, grey, yellow or greenish and there are black or red stripes on it. The anal veins are extremely reduced or absent, the frontal triangle is usually such prominent that sometimes it covers the entire frons. This family is commonly reported from all the World zoogeographical regions except Antarctic and are more likely to happen in all vegetation zones including grasslands, wetlands, meadows, swamps, forests and agricultural cereal fields (DEEMING & AL-DHAFER 2011; NARTSHUK 2011; NARTSHUK & ANDERSSON 2013).

The Chloropidae has a very diverse biology, many of which are herbivorous such as *Chlorops* MEIGEN, *Elachiptera* MACQUART, *Oscinella* BECKER and *Dicraeus* LOEW whose larvae develop in shoots and seeds of Poaceae and Cyperaceae while *lasiosina* BECKER use rotting tissues of plants and some are Gall-forming such as *Lipara* MEIGEN, and some feed from fungi such as *Gampsocera* SCHINER, *Tricimba* LIOY, *Aspistyla* DUDA, some feed from excrements such as *Siphunculina aenea*, and those of which feed from frass and eggs of spiders and insects can be mentioned are *Pseudogaurax venustus*, *Lasiambia palposa*, *L. coxalis*, *Speccafrons halophila*, some use root aphids such as *Thaumatomyia* (DEEMING & AL-DHAFER 2011; NARTSHUK & ANDERSSON 2013).

In recent years, DEEMING & AL-DHAFER (2011), conducted a research on this issue and as a result the reported 119 named species, belonging to 48 genera are recorded from the Arabian Peninsula. NARTSHUK (2011-2012), described three new species from Turkey and later on in 2013, recorded 116 species of Chloropidae from several Mediterranean islands. NARTSHUK & ANDERSSON (2013), surveyed the Chloropidae of Fennoscandia and Denmark.

Before this study, KUBIK & BARTÁK (2008), described *Platycephala isinensis* as a new species from Iran. KHAGHANINIA & GHARAJEDAGHI (2013), studied on grassland pests of grass flies from East Azerbaijan province and reported 6 new records. KHAGHANINIA et al. (2014a), as a result of study that they conducted on the chloropid flies of wheat fields from East Azerbaijan province, three new records added to the list of Iran. Furthermore, on a recent study on grass flies of the family Chloropidae that conducted by KHAGHANINIA et al. (2014b), eleven genera and fifteen species recorded for the first time in Iran. This study added to the chloropids' knowledge in Kandovan valley as one of the favor areas to these insects in northern west of Iran.

Material & Methods

Materials were collected by sweeping net from the head of plants of family Poaceae of the Kandovan valley with about 12 km which is considered as one of the longest Sahand chain mountain valleys located in south- east of East Azerbaijan province, Iran, during 2011-2013. This valley approximately 36 km far apart from Tabriz city, with X from

46˚14.345′ to 46˚20.131′ E, Y from 37˚44.119′ to 37˚47.715′ N, and varying in altitude from 1860 m to 3110 m a.s.l. These Collected specimens were stored in both the Insect Collection of Professor Hasan Maleki Milani, Tabriz, Iran (ICHMM) and Czech University of Life Sciences collections (CULS). The identification and the distribution of the species provided according to the DEEMING (2006); DEEMING & AL-DHAFER (2012) and NARTSHUK & ANDERSSON (2013).

Results

In this study, twelve species of 8 genera from Kandovan Valley were identified of which two species *Trachysiphonella dawahi* DEEMING & AL-DHAFER 2012 and *Scoliophthalmus micans* LAMB 1918 and the genus *Scoliophthalmus* BECKER 1903 are newly reported from Iran. Species are listed in alphabetic order.

Key to the studied genera

(Adapted from DEEMING (2006); DEEMING & AL-DHAFER (2012); NARTSHUK & ANDERSSON (2013) and NARTSHUK et al. (1988))

1 Vein C along margin of wing reaching to wing vein R_{4+5} or slightly beyond it. Hypopygium mainly with reduced and fused cerci and edits (Chloropinae)..... 2

- Vein C along margin of wing completely or slightly reaching to wing vein M_{1+2}. Hypopygium mainly with developed and separated cerci and edits (Oscinellinae) 8

2. Hind femur distinctly flattened, hind tibia curved, veins R curved toward anterior alar margin of wing (Fig. 1 A,E)..... *Meromyza* MEIGEN

- Hind femur not distinctly flattened, hind tibia simple, veins R straight..... 3

3 Head with relatively developed orbital setae (Fig. 1D)..... *Lasiosina* BECKER

- Head without developed orbital setae 4

4 Distance between *ta* and *tp* not greater than length of *tp* (Fig. 1C)..... *Diplotoxa* LOEW

- Distance between *ta* and *tp* greater than length of *tp* 5

5 Surface of scutellum flattened, with convergent apical setae. Hind tibia with developed sensory area ..... *Thaumatomyia* ZENKER

- Surface of scutellum rounded, with parallel apical setae. Hind tibia without sensory area..... *Chlorops* MEIGEN

8 Proboscis long and protruding beyond oral margin (Fig. 3D)..... ..... *Trachysiphonella* ENDERLEIN

- Proboscis short and not protruding beyond oral margin..... 9

9 Second section of vein C not less than three times as long as third section (Fig. 1B)..... ..... *Dicraeus* LOEW

- Second section of vein C only 2 times as long as third section (Fig. 4A) .... *Scoliophthalmus* BECKER

Subfamily: C h l o r o p i n a e

Genus *Chlorops* MEIGEN, 1803

***Chlorops calceatus* MEIGEN, 1830 (Fig. 2E)**

M a t e r i a l e x a m i n e d : Kandovan valley: 37°46' N, 46°16' E, 2500 m, (4♂♂, 2♀♀), 5 Jul. 2011; Kandovan valley: 37°45' N, 46°18' E, 2844 m, (5♂♂, 4♀♀), 28 Jun. 2013; leg. S. Khaghaninia.

D i s t r i b u t i o n : Eurasian species; Iran (KHAGHANINIA & GHARAJEDAGHI 2013; NARTSHUK & ANDERSSON 2013).

***Chlorops figuratus* (ZETTERSTEDT, 1848) (Fig. 2D)**

M a t e r i a l e x a m i n e d : Kandovan valley: 37°46' N, 46°15' E, 2341 m, (3♂♂, 2♀♀), 28 Jun. 2013; leg. S. Khaghaninia.

D i s t r i b u t i o n : Eurasian species; Iran (KHAGHANINIA & GHARAJEDAGHI 2013; NARTSHUK & ANDERSSON 2013).

Genus *Diplotoxa* LOEW, 1863

***Diplotoxa messoria* (FALLÉN, 1820) (Fig. 1C)**

M a t e r i a l e x a m i n e d : Kandovan valley: 37°44' N, 46°19' E, 2900 m, (3♂♂, 2♀♀), 6 Aug. 2011; leg. S. Khaghaninia.

D i s t r i b u t i o n : Holarctic species; Iran (NARTSHUK & ANDERSSON 2013; KHAGHANINIA et al. 2014b).

Genus *Lasiosina* BECKER, 1910

***Lasiosina subnigripes* DELY-DRASKOVITS, 1977 (Fig. 1D)**

M a t e r i a l e x a m i n e d : Kandovan valley: 37°45' N, 46°17' E, 2696 m, (2♂♂, 1♀), 28 Jun. 2013; leg. S. Khaghaninia.

D i s t r i b u t i o n : European species; Iran (NARTSHUK & ANDERSSON 2013; KHAGHANINIA et al. 2014b).

Genus *Meromyza* MEIGEN, 1830

***Meromyza nigriventris* MACQURT, 1835 (Fig. 1E)**

M a t e r i a l e x a m i n e d : Kandovan valley: 37°47' N, 46°14' E, 2214 m, (12♂♂, 8♀♀), 6 Aug. 2011; Kandovan valley: 37°47' N, 46°14' E, 2190 m, (7♂♂, 11♀♀), 28 Jun. 2013; leg. S. Khaghaninia.

D i s t r i b u t i o n : This species has Holarctic distribution which in the Nearctic Region, along the western coast from Alaska to California; in the Palaearctic Region, from Western Europe to China and Japan, also in Iran (NARTSHUK & ANDERSSON 2013; KHAGHANINIA et al. 2014a).

***Meromyza saltatrix* (LINNAEUS, 1761) (Fig. 1)**

M a t e r i a l e x a m i n e d : Kandovan valley: 37°47' N, 46°14' E, 2190 m, (4♂♂, 8♀♀), 28 Jun. 2013; leg. S. Khaghaninia.

D i s t r i b u t i o n : This species has Holarctic distribution which in the Palaearctic Region from Europe to China, and in the Nearctic Region, only in Alaska. Also in Iran (BEHDAD 1982; NARTSHUK & ANDERSSON 2013; KHAGHANINIA et al. 2014a).

Genus *Thaumatomyia* ZENKER, 1833

***Thaumatomyia glabra* (MEIGEN, 1830) (Fig. 2C)**

M a t e r i a l e x a m i n e d : Kandovan valley: 37°46' N, 46°16' E, 2500 m, (3♂♂, 5♀♀), 13 Aug. 2012; leg. S. Khaghaninia.

D i s t r i b u t i o n : A widely distributed Holarctic species; Iran (NARTSHUK & ANDERSSON 2013; KHAGHANINIA et al. 2014b).

***Thaumatomyia notata* (MEIGEN, 1830) (Fig. 2B)**

M a t e r i a l e x a m i n e d : Kandovan valley: 37°46' N, 46°16' E, 2500 m, (12♂♂, 7♀♀), 13 Aug. 2012; Kandovan valley: 37°45' N, 46°17' E, 2696 m, (5♂♂, 9♀♀), 28 Jun. 2013; leg. S. Khaghaninia.

D i s t r i b u t i o n : Widespread species; Iran (MODARRES-AWAL 2012; NARTSHUK & ANDERSSON 2013).

***Thaumatomyia sulcifrons* (BECKER, 1907) (Fig. 2A)**

M a t e r i a l e x a m i n e d : Kandovan valley: 37°46' N, 46°16' E, 2500 m, (11♂♂, 8♀♀), 13 Aug. 2012; leg. S. Khaghaninia.

D i s t r i b u t i o n : South, Kazakhstan; Central Asia. South of Western Europe, Mediterranean; Iran (NARTSHUK et al. 1988; MODARRES-AWAL 2012).

Subfamily: O s c i n e l l i n a e

Genus *Dicraeus* LOEW, 1873

***Dicraeus raptus* (HALIDAY, 1838) (Fig. 1B)**

M a t e r i a l e x a m i n e d : Kandovan valley: 37°47' N, 46°14' E, 2190 m, (3♂♂, 4♀♀), 28 Jun. 2013; leg. S. Khaghaninia.

D i s t r i b u t i o n : South. Western Europe; Iran (NARTSHUK et al. 1988; KHAGHANINIA et al. 2014a).

Genus *Scoliophthalmus* BECKER, 1903

***Scoliophthalmus micans* LAMB, 1918 (Fig. 3A-D)**

M a t e r i a l e x a m i n e d : Kandovan valley: 37°46' N, 46°16' E, 2500 m, (1♂), 13 Aug. 2012; leg. S. Khaghaninia.

D i s t r i b u t i o n : Oriental Region, extending westwards to Oman, Reunion and Rodriques (DEEMING 2006). **New record genus and species for Iran.**

D i a g n o s t i c c h a r a c t e r s : Black species, costa extending to vein M_{1+2}, third antennal segment with sharp dorsoapical angle, haltere black, male hind femur not so developed, , mesonotal setulae long, longest of these about 0.4 times length of prescutellar dorsocentral and much longer than interval between posterior ocelli.

Genus *Trachysiphonella* ENDERLEIN, 1936

***Trachysiphonella dawahi* DEEMING & AL-DHAFER, 2011 (Fig. 4A-D)**

M a t e r i a l e x a m i n e d : Kandovan valley: 37°45' N, 46°17' E, 2696 m, (1♂), 28 Jun. 2013; leg. S. Khaghaninia.

D i s t r i b u t i o n : Yemen; Oman; Saudi Arabia (DEEMING & AL-DHAFER 2012). **New record species for Iran.**

D i a g n o s t i c c h a r a c t e r s : yellow species, arista and hairs black, with black strips in the mesonotum, one vague black spot on the shoulders of tergite 2, proboscis long, vibrissal angle noticeable, gena narrow, scutellum short with a pair of long apical bristles that are more widely separated from one another than from the lateral bristle, which is only half as long.

Discussion

Based on the results, the species *Meromyza nigriventris* MACQURT has the most frequency among the other species, followed by *Thaumatomyia notata* (MEIGEN) and *Thaumatomyia sulcifrons* (BECKER). Almost all of the identified species are phytophagous feeding on wild Poaceae and saprophagous except the species of *Meromyza* MEIGEN and *Thaumatomyia* ZENKER genera. Since the studied area has various species of wild poaceous plants as well as having frequent spring and rivers follows in it and presence of expanded wet lands with decaying vegetations, these species are common in this area. The species *Meromyza nigriventris* MACQURT, *Meromyza saltatrix* (LINNAEUS) and *Dicraeus raptus* (HALIDAY) which are pests of cereals were collected in low area near to Kandovan village that has some scattered fields of the cereals. As mentioned this valley with various water sources, has a humid climate which suitable to aphids' growth thus it predictable that three species of *Thaumatomyia* ZENKER were collected from this area which consume of root aphids.

Acknowledgement

The authors sincerely thank Dr. Stepan Kubik, Department of Zoology and Fisheries, Faculty of Agrobiology, Food and Natural Resources, Czech University of Life Sciences, who kindly assistance in identifying the materials.

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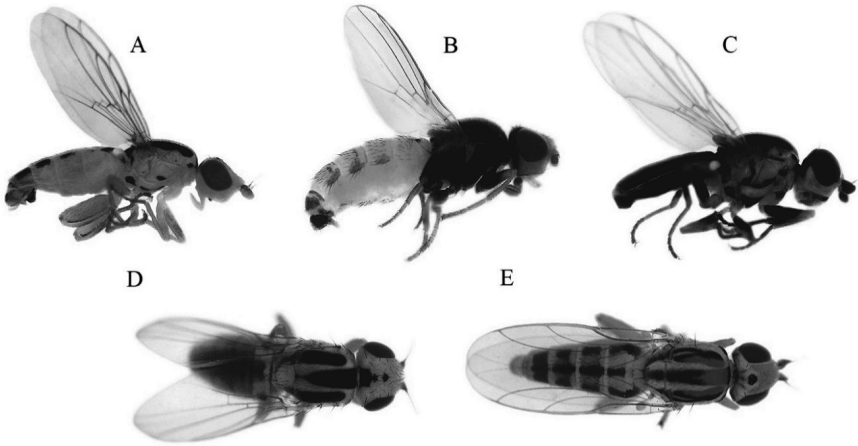

Fig. 1: (**A**) *Meromyza saltatrix* (Lateral view); (**B**) *Dicraeus raptus* (Lateral view); (**C**) *Diplotoxa messoria* (Lateral view); (**D**) *Lasiosina subnigripes* (Dorsal view); (**E**) *Meromyza nigriventris* (Dorsal view).

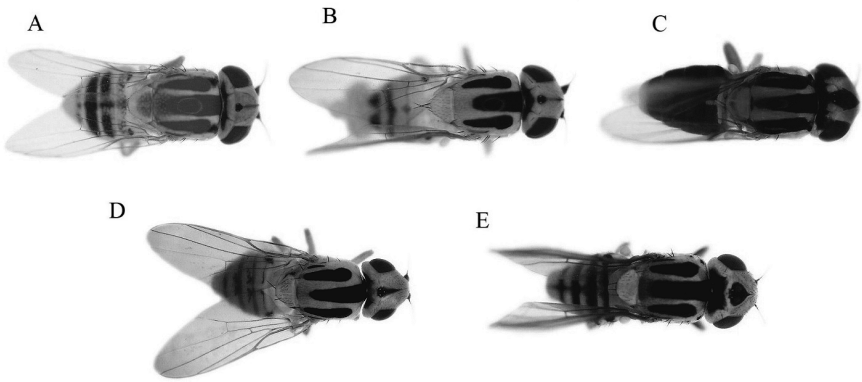

Fig. 2: (**A**) *Thaumatomyia sulsifrons* (Dorsal view); (**B**) *Thaumatomyia notata* (Dorsal view); (**C**) *Thaumatomyia glabra* (Dorsal view); (**D**) *Chlorops figuratus* (Dorsal view); (**E**) *Chlorops calceatus* (Dorsal view).

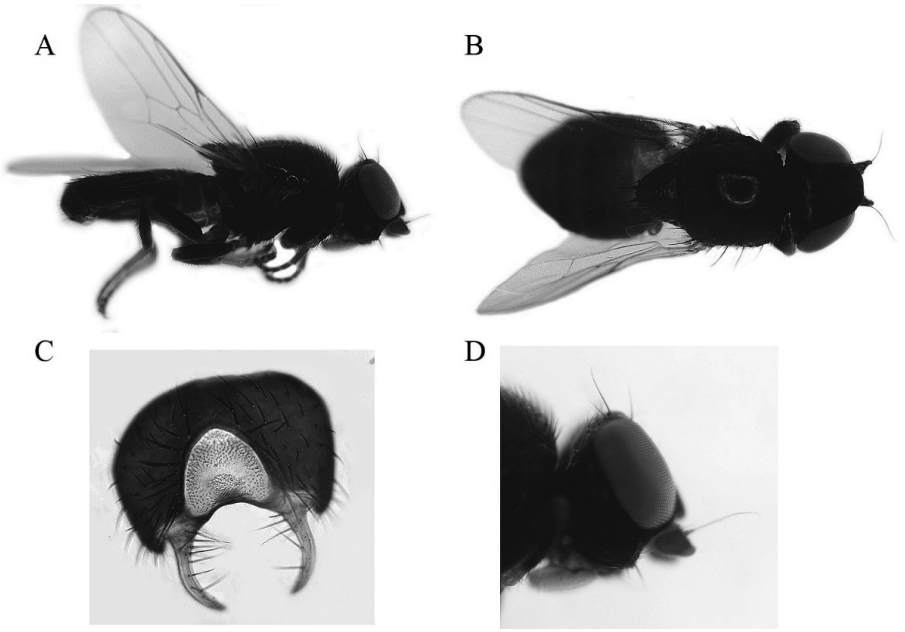

Fig. 3: *Scoliophthalmus micans:* ♂ (**A**) Lateral view; (**B**) Dorsal view; (**C**) Hypopygium, Dorsal view; (**D**) Lateral view of head.

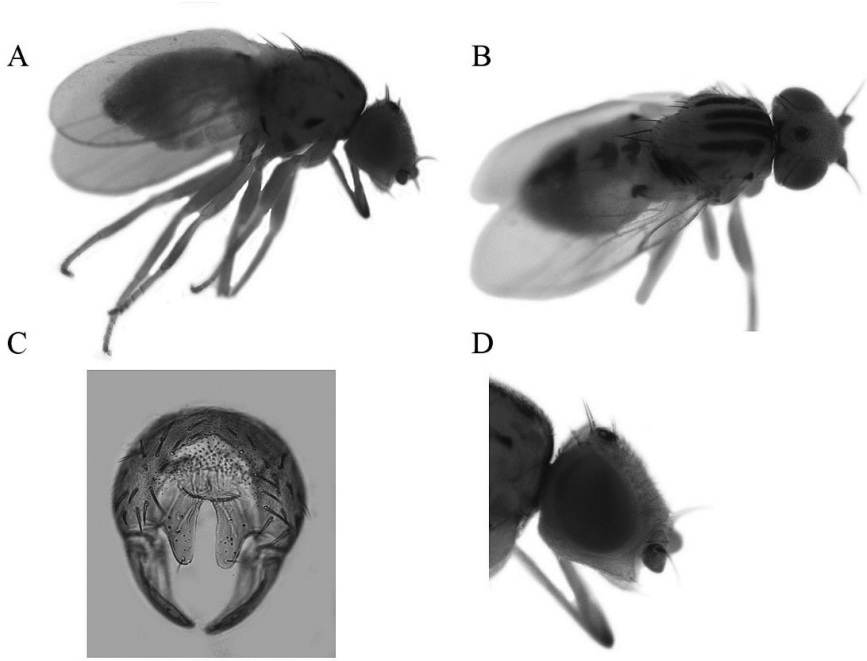

Fig. 4: *Trachysiphonella dawahi:* ♂ (**A**) Lateral view; (**B**) Dorsal view; (**C**) Hypopygium, Dorsal view; (**D**) Lateral view of head.

Buchbesprechung

ADLBAUER K. & R. BECK, 2015: **Katalog und Fotoatlas der Bockkäfer Äthiopiens (Coleoptera, Cerambycidae)**. Taita Publishers Hradec Králové Tschechische Republik, 312 Seiten, Format 220 x 280 mm, Fester Einband, Text Deutsch. ISBN: 978-80-902734-2-9.

Bockkäfer sind wohl die Käferfamilie, die unzählige Käferforscher, egal ob Profis oder Amateure, mindestens einmal in ihrem Leben in ihren Bann gezogen haben. Mit über 26.000 bisher beschriebenen Arten gehören die Cerambycidae zu den artenreichsten Familien unter den Käfern. Und ständig werden neue Arten entdeckt. Von vielen Regionen der Erde, insbesondere der an Bockkäfern artenreichen Tropen und Subtropen existieren bis heute keine zusammenfassenden monografischen und vor allem gut bebilderten Arbeiten, was den Einstieg in die Erforschung dieser faszinierenden Tiergruppe stark erschwert.

Eine dieser Lücken schließt nun dieses großzügig gestaltete Werk, was alle bisher aus dem Land gemeldeten 561 Arten auf 870 Fotos präsentiert. Karl Adlbauer aus Graz ist ein seit Jahren ausgewiesener Spezialist der afrikanischen Bockkäferfauna und Robert Beck, der einen Großteil der abgebildeten Arten in den letzten 20 Jahren in Äthiopien selbst gesammelt hat, ein seit Jahren engagierter Amateurentomologe aus München.

Das Buch gliedert sich in einen kurzen einführenden Teil, mit dem Verzeichnis der Subtriben, einer Einleitung und dem Sammlungsverzeichnis, und geht dann in den umfangreichen Katalogteil über. Alle Arten werden mit ihrem aktuellen Namen aufgeführt, darunter sind die Angaben zur Synonymie aufgelistet. Von sehr vielen Taxa werden, vor einem leicht grauen Hintergrund, auf gut ausgeleuchteten und tiefenscharfen Fotos, beide Geschlechter vorgestellt. Hier muss man dem Verlag, der auf dem Gebiet der coleopterologischen Bildbände bereits über eine langjährige Erfahrung verfügt, wirklich ein Kompliment machen, da eine solche Reproduktion nicht selbstverständlich ist. Alle Tiere im Katalogteil sind sehr gut präpariert und kommen daher in ihrer Form und Farbe ästhetisch sehr gut zur Geltung. 130 dieser Arten bzw. Unterarten sind für die äthiopische Fauna endemisch und nicht wenige sind bisher nur einmal an einem Fundort gesammelt worden. Es folgen 42 eindrucksvolle Fotos von typischen Lebensräumen, die dem Betrachter die landschaftliche Schönheit und Vielfalt Äthiopiens vor Augen führen. Anschließend findet man eine Fotogalerie aller Arten, von denen die Autoren nur das historische Typenmaterial vorzuliegen hatten, sowie einige Tafeln mit acht Arten, die die Autoren bisher nur den Gattungen zuordnen konnten. Mit weiteren Neubeschreibungen ist also zu rechnen. Das Werk schließt mit zwei Tafeln lebend abgelichteter Arten, einer Liste der nur aus Äthiopien (und Eritrea bzw. Djibouti) bekannten Taxa, dem Literaturverzeichnis und den bebilderten Kurzbiografien der beiden Autoren.

Da Ackerbau, Viehzucht und Rodung gerade in diesem Teil Afrikas auch die Lebensräume holzbewohnender Käfer immer weiter einschränken, bleibt leider zu befürchten, dass man viele dieser Arten in nicht allzu ferner Zukunft nur noch in diesem Buch bewundern kann. Ein sehr schönes Werk, das nicht nur echten Bockkäferspezialisten sondern allen Käferfreunden oder auch allgemein an der Insektenfauna Afrikas interessierten Entomologen zu empfehlen ist.

Dr. Lars Hendrich, Zoologische Staatssammlung München

Druck, Eigentümer, Herausgeber, Verleger und für den Inhalt verantwortlich:
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