

Ionuț Ștefan Iorgu Elena Iulia Iorgu

Bush-crickets, Crickets and Grasshoppers from Moldavia (Romania)

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Book cover 2: David's Valley

Preface

The Orthoptera represent one of the well known insect orders, their vernacular names sometimes reflecting fear or humor.

Due to their huge impact in the nature and their economic importance, the Grasshoppers - as the fiercest pest of all times, from all over the world - have left their mark upon the reputation of this group of insects. And yet, other particularities are favorable to restore their dignity. For example, besides the delight brought by the Crickets calling songs, in the hot days and calm summer nights, the Orthoptera have an important ecological role in the economy of nature. So, surprisingly, many readers will find out from Mr. Ionuţ Ştefan Iorgu and Ms. Elena Iulia Iorgu's book the fact that more than 20% of the Orthoptera are not feeding with plants, but with insects and that the majority of Orthoptera are omnivorous.

Considering the primordial importance of knowledge, protection and rational exploration of the biodiversity, this book offered by the young passionate and talented Mr. Ionuţ Ştefan Iorgu and Ms. Elena Iulia Iorgu is to be appreciated. The authors started the whole-hearted study of the Orthoptera since they were students, then preparing their Ph. D. thesis.

So, the authors offer to all entomologists a guide for recognizing the Orthoptera from Moldavia. The clear and concise characterization of the species is accompanied, for the first time in the Romanian literature on this subject, by a suggestive and adequate photographic illustration, which definitely answers, scientifically and esthetically, to the complement of the informations transmitted by this guide.

Finally, the authors compile a useful and attractive instrument, ready at hand for students and all the interested entomologists.

Prof. Dr. Ionel Andriescu

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INTRODUCTION

Latest studies reveal that the insects go beyond 35 million species, being the most numerous group in the animal world. They inhabit all environments: terrestrial, aquatic, aerial, from the North Pole to the Equator, from the sea shore to the mountain cliffs. Animals with a large number of species, the insects represent an important factor in the economy of nature and in the human being's life. The remarkable variety of the insects and their importance to the biosphere, and generally also for the humans, has especially awaken the interest to study them and the entomology made a tremendous breakthrough.

Because of generally being medium to large size insects, the Orthoptera have drawn in the human's attention for many years ago. The migration of some species brought upon them the admonishment of the farmers. In some ancient Egyptian paintings the Migratory Grasshopper are very well represented.

The Katydids, Bush-crickets, Crickets, Grasshoppers and Locusts belong to the order Orthoptera, the Katydids, the Bush-crickets, the Crickets and the Mole-Crickets belonging to the suborder Ensifera and the Grasshoppers and Locusts to the suborder Caelifera. This classification of these insects offers various possibilities of research. The elaborated study of their stridulations represents one of the most compelling aspects of ethology and also the study of their geographical dispersion lead to many theories in zoogeography. In the same time, the Orthoptera are some of the most important bioindicators for the natural habitats integrity state, associations of Orthoptera from different sites providing us exact dates about the conditions and the situation of those habitats.

The Orthoptera, due to some species apterism as well as to their sensitivity to the variations of the environment's conditions, present a large number of endemites liken to the total number of species.

The Orthoptera fauna from Romania is well known due to the various researches made in this domain. Carl Fuss is the first one to publish data considering the Orthoptera from our country. He mentions 34 species from the surroundings of Sibiu in 1853, 1855 and 1869. In the monography "Prodromus der Europaische Orthopteren", Brunner von Wattenwyl describes some species from Dobrogea (1882). Maurice Jacquet makes important collections and the material is published in 4 papers written by M. Frey-Gessner (1897, 1899, 1900, and 1903). In 1899, De Saussure describes a new species, *Isophya hospodar*, from the material collected near Mangalia Lake by M. Jacquet. Malcolm Burr, aided by

Montadon's materials, publishes 2 faunistic lists in 1898 and 1899 with 77 species of Orthoptera. Montadon analyses the *Locusta migratoria* density from the Danube Delta in 1990.

S. G. Zottu determines the material collected from the Romanian Naturalist Society's members, publishing the results in 4 systematic lists in the years 1903, 1904, 1905 and 1909.

One of the most important contributions to the acquaintance of Romania's Orthoptera and especially from Transylvania belongs to A. Muller. Between the years 1922-1932 he publishes many articles, 7 of them being about Orthoptera.

O. Marcu publishes an article about the Orthoptera from Bucovina, in which he describes the faunistic aspects of the region with 61 species quoted (1936). W. Ramme came 3 times to our country in the years 1941, 1942 and 1943 to collect species from Dobrogea, the Meridional Carpathians, Banat etc. In 1951, Ramme presents in a paper about the Orthoptera from the South-East of Europe and Asia, 139 species of Orthoptera from Romania gathered by him in the years 1942 and 1943.

In 1947, M. Ionescu collects a new species for Romanian fauna from Agigea, the small Cricket *Arachnocephalus vestitus*. C. Mîndru and F. Cârdei, in 1954, publish a faunistic list after studying the Orthoptera from Moldavia - the species *Bryodemella tuberculatum* and *Paracinema tricolor* being new findings for Romania. C. Mîndru studies the Orthoptera from Ceahlau Mountain and the Bicaz Gorges (1956) and publishes a study about the Orthoptera from Moldavia in 1958. In 1959 he studies the Bushcrickets from Moldavia and he makes a list with 23 species. The Izvorul Muntelui Lake's surroundings are investigated in 1961 and 47 species of Orthoptera have been found. In 1967, together with Bela Kis, he studies the Bush-crickets from different areas in Moldavia. In "Faunistic Aspects from the Oriental Carpathians" (1979) one can find a list with the Orthoptera from the Oriental Carpathians. One of Constantin Mîndru's last papers enumerates 52 species from the interesting Reservation David's Valley (1980).

Maria Vasiliu analyses the genera *Acrida* (1960) and *Bradyporus* (1967) and in 1968 she discovers a new species: *Modicogryllus geticus*.

The volume about Orthoptera was edited in 1959 in the "R. P. R. Fauna", written by K. W. Knechtel and A. Popovici-Bîznoşanu.

Starting with 1952 and until 1994, Bela Kis brings the most important contributions to the study of Orthoptera from Romania.

First of all, B. Kis focuses on the study of less known Orthoptera and on the ones whose determination is more difficult like: *Isophya* (1959, 1964, 1966, 1994), *Poecilimon* (1957, 1962, 1964), *Platycleis* (1957, 1958, 1966), *Pholidoptera* (1959), *Callimenus* (1962), *Odontopodisma* (1961,

1962), Zubovskia (1965), Chorthippus (1962). In 1970 he realizes a zoogeographical zonation of the country according to the Orthoptera spreading. He has published various works about Orthoptera from different Romania's regions: Cluj (1958, 1959), Craiova (1960), Dobrogea (1963, 1967), the Reservation Valea Mare (1971), Tg. Mures (1967), Ardeal (1972), Cozia Mountains (1961), the Danube Delta (1968, 1971, 1972, 1993), the Iron Gateways area (1970), the Reservation Turda Gorges (1993) etc. Bela Kis and Maria Vasiliu study the Orthoptera and Mantid's distribution on biotopes from the Danube Delta and afterwards they make some notes about their zoogeographical spreading (1968). In 1970 he publishes a synthesis together with Maria Vasiliu about all the Orthoptera from Romania, especially regarding dates about their biology, ecology and their zoogeography. In 1981, Bela Kis and Andy Lehrer accomplish a mapping of 39 species of Ensifera from 24 collecting points from the North of Dobrogea. In 1983, he publishes along with B. Nagy and L. Nagy a study about Saga pedo.

Bela Kis has described 28 new species for our country's fauna, from which 8 are new for science: *Isophya harzi* in 1960, *Modicogryllus chopardi* in 1967, *Uvarovitettix transsylvanica* in 1960, *Odontopodisma acuminata* in 1962, *Odontopodisma montana* in 1962, *Odontopodisma carpathica* in 1961, *Zubovskia banatica* in 1965 and *Isophya dobrogensis* in 1994.

In 1976 and 1978, B. Kis publishes, in the Brukental's Museum magazine from Sibiu, the determination key of Romanian Orthoptera. This is a very well conceived work, with very good drawings and with many morphological details for every species.

In 1973, K. Harz describes a new species from Moldova Noua: *Miramella (Kisella) carinthiaca kisi,* dedicated to the great Romanian entomologist.

Ioana C. Mihuţ describes the Orthoptera from the Calimani Mountains in 1997. Florentina Togănel publishes informations about the Orthoptera fauna from different areas in 1997, 1999, 2000, 2005, processing the existing material from Piatra Neamt, Bacau, Tg. Mures and Craiova's museum collections.

In the article published in 1998, Kathrin Worschech describes some Orthoptera species collected from Romania. In the year 2003, C. Iuşan and C. Oltean publish a work about the Orthoptera from the Vrancea Mountains, in which they describe 38 species for the Oriental Carpathians.

The most recent publications belong to Ionuţ Iorgu, Elena Pisică, Laura Păiş (2006, 2007, 2008), Ionela Carp (2008), Gabriel Lupu (2007, 2008), Claudiu Iuşan (2008) etc.

MOLDAVIA: GEOGRAPHICAL CHARACTERIZATION

The historical region Moldavia is placed in the North-Eastern part of Romania and counts 8 counties: Suceava, Botosani, Neamt, Iasi, Bacau, Vaslui, Vrancea and Galati (Fig. 1).

The Moldavian Plateau has a platform structure - formed from many hills - and it is situated in the East side of the Oriental Carpathians, reaching the Prut River towards the East and the Baragan Plain towards the South. The highest altitudes can be found in the Suceava Plateau with heights reaching $600~\rm m$.

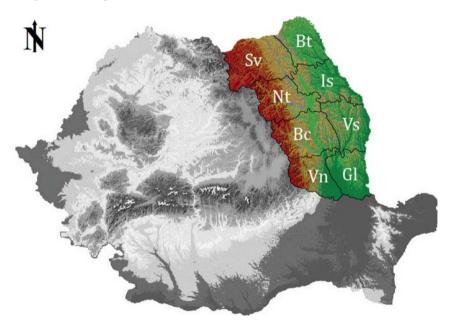


Fig. 1. Map of Romania and the investigated area: Moldavia Counties: Sy-Suceava, Bt- Botosani, Nt-Neamt, Is-lasi, Bc-Bacau, Vs-Vaslui, Vn-Vrancea, Gl-Galati

In the Moldavian Plateau the relief varies much within the known regional subdivisions as: the hilly piedmonts or structural massive (Tudora, Bour, Preutesti etc.), plateaus (Repedea, Dealu Mare, Stroiesti etc.), limb crests, dale couloirs, knob depressions (in the Suceava Plateau

and Central Moldavian Plateau), hilly crests, derived plateaus, dale crests and stepwise flanks (in the Moldavian Plain), long crests, frequently parallel and plateaus fragments, crests fronts, very fragmented flanks (in the Tutova's Hills), plateaus and secondary hilly crests (in the Falciu and Covurlui Hills).

The climate is temperate-continental with weak Mediterranean influences in the South. The Sub-Carpathians and the Moldavian Plateau constitutes the most representative extra-Carpathian climate unit from the Eastern part of Romania. From a total of 365 days, only a media of 205 are sunny, the majority in August (22-23 days), and the fewer of them in January (10-12 days). The average temperature in the air is $8,5^{\circ}$ C. The average amount of rainfall varies between 600-700 mm annually. The largest amount of rainfall drops in June with the amount of 780 mm. The dominant blasts blow from N-NV, NV and NE with a rate of 28,7% and the average speed of 3,1 m/s.

The hydrographical system consists of two main rivers: Siret, the largest river as average flow among all the rivers in the country (222m³/s), and Prut, which although is longer, but having a slower flow. The river Siret gathers all the water alongside Eastern flank of the Oriental Carpathians (Suceava, Moldavia, Bistrita, Trotus and Buzau). The river Prut has small inflows and a variable discharge, hence the necessity of creating the barrier lake in Stanca, near Stefanesti.

From a geological point of view, the Moldavian Platform offers lithological soil predominantly argillaceous sand with sandstone and chalkstone.

In the Eastern region and North-East of the country one can find deciduous and resinous forests, glades, xerophilous meadows, mesophilous, meso-hygrophilous and hygrophilous grasslands - in mountain areas as well as in hilly area and plains area. In the Oriental Carpathians the mesophilous and meso-hygrophilous grasslands are predominant, in the hilly area the mesophilous and the meso-xerophilous ones and in South and South-East of Moldavia the meso-xerophilous and xerophilous grasslands are predominant.

ORTHOPTERA MORPHOLOGY

Bush-crickets and Grasshoppers have usually the body color appropriate to their environment. Some species have an almost homogenous body color, but most of Orthoptera species usually have spots and stripes of different color on the body. This protective coloration can be seen mostly in arbusticolous/arboricolous and geophilous species.

The tegumentary cuticle's thickness is variable: the head and thorax are strongly sclerotised, meanwhile the abdomen is less sclerotised. Usually the cuticle is smooth, but it can have sculptures, spurs, granulations etc. The body color is exclusively pigmentary; the pigments are localized in the cuticle and the hypodermis.

The Orthoptera body consists of 3 parts: head, thorax and abdomen (Fig. 2).

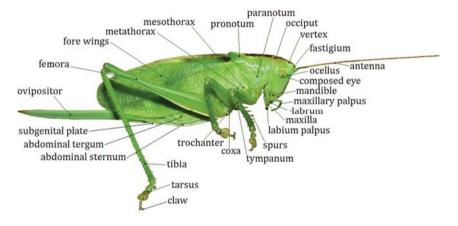


Fig. 2. Lateral view of the Upland Green Bush-cricket (*Tettigonia cantans*, ♀)

The head is big, orthognathous, rarely hypognathous or prognathous. The antennae are usually longer than the body in Ensifera and much shorter in Caelifera; they are inserted between the eyes. The vertex projects into the fastigium. In Caelifera, below the fastigium there are two depressions called foveolae. The two compound eyes can have a circular, a convex, a globular or an oval shape etc. The three ocelli are located between the compound eyes and the vertex and on the middle of the frons, but often they can be absent. Orthoptera have chewing mouthparts consisting of: the labrum, one pair of mandibles, one pair of

maxillae, one pair of maxillary palps, the labium and one pair of labial palps.

The thorax consists of three segments: the prothorax, the mesothorax and the metathorax. The last two have one pair of wings each: the fore wings (or tegminas) on the mesonotum and the hind wings on the metanotum. The fore wings are strongly sclerotised, the hind wings are less sclerotised and folded like a fan. A wing is made of a system of areas limited by the veins (Fig. 3).

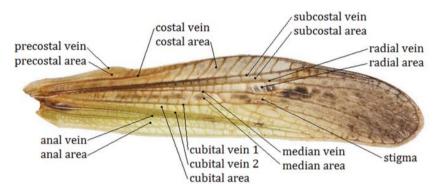
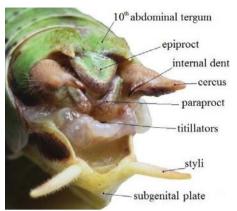


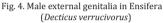
Fig. 3. The fore wing of a Grasshopper (Chorthippus brunneus 3)

Each of the thorax segments has one pair of legs. One leg consists of: coxa, trochanter, femora, tibia and tarsus. The Orthoptera's legs are heteronomous: the hind legs are usually adapted for jumping. In some species, the fore legs are adapted for digging (*Gryllotalpa* sp., *Xya* sp. etc.). The Ensifera have the tympanum located on the fore tibia. On the prosternum there are usually three longitudinal keels: a median one and two lateral.

The abdomen has ten segments. The dorsal part of a segment is the tergum and the ventral part is the sternum, connected between them by a membrane (pleura). The tympanum in Caelifera is located on the first abdominal segment, laterally. The last abdominal segment bears the external genital apparatus.

In Ensifera, the male's external genital apparatus (Fig. 4) consists of: epiproct, one pair of cerci - usually each cercus with an internal dent, paraproct, aedeagus, pseudoaedeagus, titillators (Fig. 5), styli and the subgenital plate.





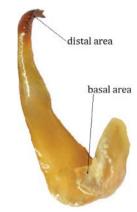
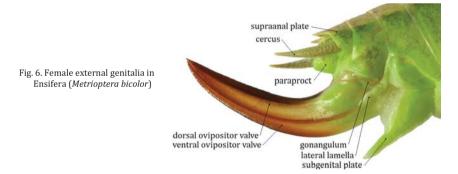


Fig. 5. Titillator of Metrioptera fedtschenkoi

The female's external genitalia consists of: the supraanal plate, the cerci, the subanal plate and an ovipositor, composed of three pairs of valves: dorsal, ventral and internal. At the ovipositor's base there is located the gonangulum (Fig. 6). Usually the tip of the dorsal and the ventral valves is denticulated.



In Caelifera, the male's external genitalia apparatus consists of an aedeagus, its apical part forming the copulatory stylets. The abdominal tergum 11 is transformed into the epiproct. The pallium and the paraproct are located under the epiproct. The cerci are formed by two segments. Sometimes the furculae are present. The last abdominal sternum forms the subgenital plate (Fig. 7).

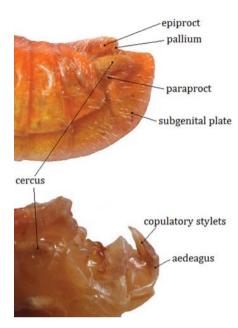


Fig. 7. Male external genitalia in Caelifera (Chorthippus brunneus)

The female's external genital apparatus consists of: epiproct, cerci, paraproct, ovipositor and subgenital plate. The ovipositor is composed of three pairs of valves. The valves end with a dent (Fig. 8).

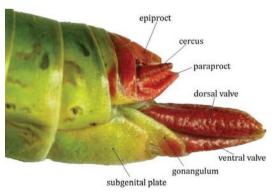


Fig. 8. Female external genitalia in Caelifera (*Odontopodisma decipiens*)

REPRODUCTION AND DEVELOPMENT

The Orthoptera are sexed breeding. Rare cases of parthenogenesis can be encountered, as in *Saga pedo*. The gynandromorphism is also rare, but it can occur in many genera (*Isophya*, *Ephippiger*, *Tettigonia* etc.).

Both the stridulation and the pheromones play an important role in the male - female encounter. When encountering a female, the male starts a special stridulation, called the courtship song (Fig. 9). The mating can last from a few minutes up to one hour or more (Fig. 10).





Fig. 9. Chorthippus apricarius: courtship song

Fig. 10. Stethophyma grossum: mating

A few days after the copulation, the female starts to lay its eggs. In most of the species, the female introduces the ovipositor (in Ensifera - Fig. 11) in the soil or the most part of the abdomen (in Caelifera).







Fig. 12. Conocephalus fuscus laying its eggs in a Carex leaf

Bush-crickets and Crickets lay their eggs usually in small groups or singly; Grasshoppers lay their eggs in a pod-like secretion. After laying the eggs, the female pounds the soil with the ovipositor and the hind legs. Not all the Orthoptera lay their eggs in the ground: *Phaneroptera falcata* lays the eggs in a leaf's mesophyll, *Oecanthus pellucens* lays the eggs underneath the tree's bark, *Conocephalus fuscus* lays the eggs in some hygrophilous plant's shank (Fig. 12), *Chrysochraon dispar* lays the eggs in a empty ligneous shank, *Euthystira brachyptera* between some folded leaves etc.

The egg hatching takes place usually in the spring, but in some species even in the summer or in the autumn. The number of nymphal instars varies: 5-7 in Ensifera (more than 10 in Crickets), 4-6 in Caelifera. During the exuviation, usually the nymph is positioned with the ventral part upwards, hanging from leaves or braches with its legs, head towards the ground (Fig. 13). *Gryllus campestris* and other Crickets exuviate on the ground, close to the entrance of their gallery (Fig. 14).



Fig. 13. Ephippiger ephippiger exuviating

Fig. 14. *Gryllus campestris* after the last exuviation

STRIDULATION

The Orthoptera have the most sophisticated acoustic emissions in the insect world. The sounds are produced by several organs: wings, legs, mandibles etc. Those organs are usually rubbed against other organs or against some resonator parts of the body. Some Crickets use as acoustic amplifiers the leaves (*Oecanthus pellucens* - Fig. 15) or the gallery entrance (*Gryllus campestris*).



Fig. 15. Oecanthus pellucens stridulating

The Ensifera stridulate by rubbing the fore wings one against the other; the Caelifera stridulate by rubbing the fore legs up and down

against the flexed fore wings. Some Grasshoppers produce a crepitation during the flight: *Psophus stridulus. Stauroderus scalaris* etc. In Ensiferan males, the cubito-anal part of each tegmen bears the stridulatory file, scraper and mirror.

The stridulation is produced by rubbing the stridulatory file against the scraper, the mirror serving as resonator (Figs. 16, 17). In Caeliferan males, the fore wings have a stridulatory file on the inner part of the hind femora, which is rubbed against the radial (or intercalary vein, if present) of the fore wing (Fig. 18).

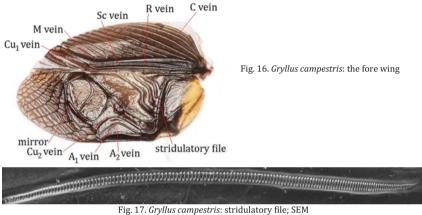




Fig. 18. Chorthippus albomarginatus × oschei: a-fore wing, b-hind femora, c-stridulatory file; SEM

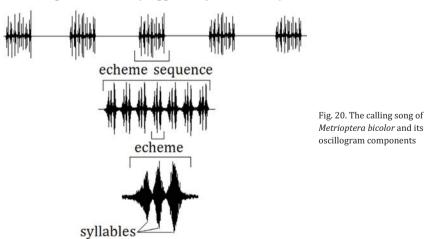
Even if usually the males stridulate, sometimes even the females stridulate - especially when accepting a male for mating. There are some different types of stridulation, like the calling song (fig. 15), courtship song (fig. 9), rivalry song (fig. 19) etc.

An easy mean to identify the Orthoptera species and subspecies is by listening to their specific stridulation, which is very different from one to another.



Fig. 19. Isophya camptoxypha, rivalry song

For a better understanding of the stridulation description for each species in this book, a Bush-cricket calling song is described in fig. 20. The calling song of *Metrioptera bicolor* consists of sequences of echemes, each echeme made of 3 syllables. A *syllable* is the sound produced by one to-and-fro movement of the stridulatory organ, an *echeme* is the first-order assemblage of syllables and the *echeme-sequence* is the first-order assemblage of echemes (Ragge & Reynolds, 1998).



ECOLOGY

The Orthoptera can be encountered in almost all the terrestrial ecosystems. Many of the Orthoptera are eurybiont species and they adapt to the conditions from different ecosystems. One can find far and wide the common-Cricket, *Gryllus campestris*, until almost 1000m altitude; the same is for *Tettigonia viridissima* which is very spread in the hilly and plain areas and rare in the mountain area. The Grasshoppers *Chorthippus biguttulus*, *Chorthippus parallelus* and *Stenobothrus lineatus* are also eurybiont species; one can find them at altitudes starting with 1m until 1800m. Other species can be found only in one type of biotope: *Conocephalus dorsalis* inhabits hygrophilous meadows; *Acrotylus longipes* inhabits the sandy dunes or xerophilous environments; the house-Cricket *Acheta domesticus* is a synantrop species which lives only in human constructions. The species *Myrmecophilus acervorum* lives in ant-nests, meanwhile *Dolichopoda* sp. is cavernicolous.

The subalpine grasslands are populated by a small number of Orthoptera species, like *Miramella ebneri, Podisma pedestris, Isophya camptoxypha* etc. (Fig. 21). In the mesophilous and meso-hygrophilous mountain grasslands, on heights over 500-1000m, one can find a variety of species: *Arcyptera fusca, Stauroderus scalaris, Omocestus viridulus, Pholidoptera transsylvanica, Chorthippus biguttulus, Stenobothrus stigmaticus, Tettigonia cantans* etc. (Fig. 22). In different rocky areas, poor in vegetation, from the mountain region, like the river meadows and the cliffs, we can find a few adapted Orthoptera, like: *Chorthippus pullus, Tetrix tuerki* or, seldom, *Bryodemella tuberculatum* (Fig. 23).

In the hill and plain forest's glades the following species are predominant: *Euthystira brachyptera, Phaneroptera falcata* and *Leptophyes albovittata* (Fig. 24).

The lawns from the hilly Moldavia area abound in Orthoptera species. Hereby in the hygrophilous meadows the following species are predominant: *Conocephalus fuscus, Metrioptera fedtschenkoi vasilii, Stethophyma grossum* or *Tetrix subulata*. In the mesophilous and meso-xerophilous grasslands species like: *Decticus verrucivorus, Chorthippus biguttulus, Metrioptera bicolor, Omocestus rufipes, Stenobothrus lineatus* etc. are predominant (Figs. 25, 26).



Fig. 21. Mountain subalpine sward: Giumalau, Sv.



Fig. 22. Mountain depression lawn: Gainesti, Sv.



Fig. 23. Mountain river meadow: Putna, Sv.



Fig. 24. Forest glade: Pascani, Is.



Fig. 25. Mesophilous meadow: Pascani, Is.



Fig. 26. Meso-xerophilous lawn: David's Valley, Is.



Fig. 27. Xerophilous grassland: Craiesti, Gl.



Fig. 28. Sandy dunes: Hanu Conachi, Gl.

The xerophilous grasslands (Fig. 27) and arenareous dunes (Hanu Conachi - Fig. 28) from the South and South-East of Moldavia are populated by thermophile species like: *Omocestus petraeus, Sphingonotus caerulans, Oedipoda caerulescens, Acrotylus insubricus, Chorthippus loratus, Calliptamus barbarus* or the interesting Grasshopper *Myrmeleotettix antennatus*. Also the arenaceous bank of rivers is populated by interesting species: *Xya variegata, Modicogryllus frontalis* or *Tetrix undulata*.

The protective color is well developed in Orthoptera: *Oedipoda* and *Sphingonotus* have the same color as the stony or sandy areas they inhabit; *Phaneroptera* and *Tettigonia* have a green color like the bushes; *Platycleis* and *Calliptamus* have spots or stripes as the xerophilous lawns or the ground where they live.

In the studied region, Moldavia, 127 Orthoptera have been encountered so far, meaning 69% of the 182 present in Romania. Those species are 24% Eurosiberian, 11% Holopalaearctic, 8% South-East European, 8% Circummediterranean, 7% Central European, 6% Central Asian-Mediterranean, 6% Central Asian-Pontic, 5% Central Asian-South European, 4% Carpathian etc. Four species are endemic for the Carpathian Basin: *Isophya camptoxypha, Isophya stysi, Pholidoptera transsylvanica* and *Miramella ebneri.*

Only few species are protected in Moldavia: *Onconotus servillei* and *Saga pedo* are on the Red List of the International Union for Conservation of Nature and Natural Resources. The species *Isophya stysi, Saga pedo, Pholidoptera transsylvanica* and *Paracaloptenus caloptenoides* are included in Annex IV "Animal and Plant Species of Community Interest in Need of Strict Protection" of the European Council Directive 92/43/EEC (21st May 1992).

Some species are very rare in Moldavia or have disappeared: Callimenus longicollis, Bradyporus dasypus and Onconotus servillei - only few individuals were found near Iasi (C. Mîndru & B. Kis, 1967). Arcyptera microptera was found only near Bacau (Bc) and Focsani (Vn), Leptophyes boscii, Leptophyes punctatissima, Nemobius sylvestris and Chorthippus vagans were encountered near Suceava (Sv) and Dorohoi (Bt), Bryodemella tuberculatum near Campulung Moldovenesc (Sv) (B. Kis, 1968). Platycleis montana is mentioned from Adancata (Sv) by O. Marcu in 1936. Depressotetrix depressus and Dociostaurus maroccanus are mentioned by C. Mîndru in a list with Moldavian Orthoptera, in 1958. The species Myrmecophilus acervorum can be encountered in Moldavia, but hasn't been found yet due to its way of life: it inhabits the ant-nests.

THE COLLECTING, CAPTIVITY BREADING, PHOTOGRAPHY AND ACOUSTIC REGISTRATION

The Orthoptera species are widely and various spread. Their study must start in nature in March - April until November because some species survive to first hoarfrost. Even if in the majority of cases the observation of the morphology and stridulation of individuals is enough for their determination, sometimes is necessary to capture a species in order to proper identify it, with a magnifying glass. One can catch the Orthoptera that jump and fly rapidly with the help of an entomological net. Also one can take out Crickets from their galleries by pouring water into it. The very small species (*Myrmecophilus*) can be caught with the exhauster. The capturing of arboreal species is made by shaking down branches or scrubs above an entomological umbrella.

The species collected from the field were transported alive in plastic containers. We have introduced grass leaves and changed them every day. It must be done that in order to prevent the Orthoptera from attacking one another and the phytophagous ones to have food until their arrival in laboratory. We must keep account of the fact that some phytophagous Orthoptera will eat with pleasure flower leaves (*Isophya*, *Phaneroptera*). Also we haven't put together the phytophagous ones with the carnivorous ones. The carnivorous Orthoptera were put in a smaller number in the recipients for their transportation. Eventually we can introduce some small Grasshoppers in the containers to feed them. The best method to keep the Orthoptera's natural colors is killing them by introducing them into the freezer, because the deviation from green to pink or brown is well known in the case of the organism contact with the toxic substances used to kill them.

The growth of species into captivity permitted us to make different observations especially on their stridulations, on the nuptial parade and their copulation. The growth of small species and nymphs was made into special recipients with a 30-40 liters volume (vivariums). They were fed according to every species biological needs: rice flakes, different plant leaves (dandelion, Poaceae etc.). Many of the Bush-crickets eat aphids introduced in different branches or little Grasshoppers. Also one can make young Poaceae cultures in little hotchpotches and afterwards introduce it into vivariums.

The best method to obtain the stridulations is introducing more males from the same species in a vivarium in which we are going to make an artificial micro-climate with a 60W light bulb, put on a distance of

about 30cm. In these conditions, the majority of Orthoptera stridulate the ordinary song and also the rivalry song during the day as well as during the night (method by Bellman & Luquet, 1995). The registration of stridulations in the best conditions needs some special vivarium with sponge walls to prevent the echo from hearing during the stridulation. The vivariums may be illuminated with daylight tubes.

In order to make the observations on the nuptial parade and the copulation, the separation of males from females was necessary for a couple of days. When they are put together again the pair will start the nuptial parade and afterwards the mating. For the majority of species the copulation takes place during the day, but there are species which mate during the night. For some species we have isolated the male so that we could obtain the ordinary stridulation. The courtship song was obtained by placing a male near a female. We must take into consideration that some species stridulate only on twilight and in the night, so in this case we had to put the vivarium in a dark and warm place and also we had to cover it.

The vivarium was well taking care of to avoid the spreading of some lethal epidemics to Orthoptera. The hygiene of the vivariums is vital, that's why we had to clean it daily with water and antibiotics. Never the less we have to keep in mind that it's easier to upkeep xerophilous species in a vivarium, rather than hygrophilous species - the last ones need more humidity in order to develop, this makes an environment favorable to the fungi and bacteria growth.

Photos of Orthoptera were taken with a DSLR photo camera and a 100 mm macro objective within a scale of 1:1. For the very small Orthoptera and as well for the morphological details, we used an objective that has enhance of maximum 5:1, in order to achieve a bigger enhancing report. We have photographed the Orthoptera in their life environment especially on the day light and also on sunny days to set off their exact colors. Therewith, in many cases, the background is dark because of the midriff small opening.

The registration of stridulations was made with a digital voice recorder and an exterior microphone. I accomplished the registration from a 2 to 25 cm distance from the species according to the intensity of sounds. The processing of sounds was made on the computer.

SYSTEMATIC LIST OF THE ORTHOPTERA FROM MOLDAVIA

In Romania, there are 182 species known from the order Orthoptera (4 species with 2 subspecies each: *Isophya modesta modesta, Isophya modesta longicaudata, Platycleis albopunctata albopunctata, Platycleis albopunctata grisea, Tetrix bipunctata bipunctata, Tetrix bipunctata kraussi, Miramella ebneri ebneri and Miramella ebneri carpathica*). Among those, 127 species have been encountered in Moldavia. A particular case is represented by the hybrid between two species: *Chorthippus albomarginatus × oschei*. The species marked with (*) are treated at the end of the book, as "other possible species" - they were found in Moldavia a long time ago and it is possible to be extinct.

The Orthoptera systematization was made after K.-G. Heller et al. (1998) and D. C. Eades & D. Otte's "Orthoptera Species File Online" (2008).

Suborder Ensifera

Superfamily Tettigonioidea
Family Tettigoniidae
Subfamily Phaneropterinae

Phaneroptera falcata
Phaneroptera nana
Leptophyes albovittata
Leptophyes boscii*
Leptophyes punctatissima*
Isophya zubowskii
Isophya camptoxypha
Isophya kraussii
Isophya stysi
Barbitistes constrictus
Poecilimon schmidtii
Poecilimon fussii
Poecilimon brunneri
Polysarcus denticauda

Subfamily Saginae Saga pedo

Subfamily Conocephalinae

Conocephalus fuscus

Conocephalus dorsalis Conocephalus hastatus Ruspolia nitidula

Subfamily Meconematinae

Meconema thalassinum

Subfamily Tettigoniinae

Tettigonia cantans Tettigonia viridissima Tettigonia caudata Gampsocleis glabra Decticus verrucivorus Decticus albifrons Platycleis affinis Platycleis intermedia Platycleis albopunctata grisea Platycleis montana* Platycleis striata Platycleis veyseli Metrioptera brachyptera Metrioptera bicolor Metrioptera roeselii Metrioptera fedtschenkoi vasilii Pholidoptera frivaldskyi Pholidoptera griseoaptera Pholidoptera littoralis similis Pholidoptera fallax Pholidoptera transsylvanica Pholidoptera aptera Rhacocleis germanica

Subfamily Bradyporinae

Pachytrachis gracilis Onconotus servillei*

Bradyporus dasypus* Callimenus macrogaster longicollis* Ephippiger ephippiger

Superfamily Grylloidea Family Gryllidae

Subfamily Gryllinae

Gryllus campestris Acheta domesticus Melanogryllus desertus Modicogryllus frontalis Modicogryllus truncatus

Subfamily Nemobiinae

Nemobius sylvestris* Pteronemobius heydenii

Subfamily Oecanthinae

Oecanthus pellucens

Family Myrmecophilidae

Subfamily Myrmecophilinae

Myrmecophilus acervorum*

Family Gryllotalpidae Subfamily Gryllotalpinae

Gryllotalpa gryllotalpa

Suborder Caelifera
Infraorder Tridactylidea
Superfamily Tridactyloidea
Family Tridactylidae
Subfamily Tridactylinae

Xya variegata Xya pfaendleri

Infraorder Acrididea Suprafamily Tetrigoidea Family Tetrigidae Subfamily Tetriginae

Depressotetrix depressus*
Tetrix ceperoi
Tetrix subulata
Tetrix bolivari
Tetrix tuerki
Tetrix tenuicornis
Tetrix undulata
Tetrix bipunctata bipunctata
Tetrix bipunctata kraussi

Suprafamily Acridoidea
Family Acrididae
Subfamily Catantopinae
Pezotettix giornae

Subfamily Calliptaminae

Paracaloptenus caloptenoides Calliptamus italicus Calliptamus barbarus

Subfamily Melanopliinae

Podisma pedestris Miramella ebneri Pseudopodisma fieberi Pseudopodisma transilvanica* Odontopodisma decipiens Odontopodisma rubripes*

Subfamily Acridinae

Acrida ungarica

Subfamily Oedipodinae

Locusta migratoria
Oedaleus decorus
Psophus stridulus
Celes variabilis
Oedipoda caerulescens
Bryodemella tuberculatum*
Sphingonotus caerulans
Acrotylus insubricus
Acrotylus longipes
Aiolopus thalassinus
Epacromius coerulipes
Paracinema tricolor bisignata
Mecostethus alliaceus
Stethophyma grossum

Subfamily Gomphocerinae

Euthystira brachyptera
Chrysocharon dispar
Arcyptera microptera*
Arcyptera fusca
Dociostaurus brevicollis
Dociostaurus maroccanus*
Stenobothrus stigmaticus
Stenobothrus nigromaculatus
Omocestus viridulus
Omocestus rufipes
Omocestus haemorrhoidalis
Omocestus petraeus

Omocestus minutus Mvrmeleotettix antennatus Myrmeleotettix maculatus Gomphocerippus rufus Stauroderus scalaris Chorthippus apricarius Chorthippus biguttulus hedickei Chorthippus brunneus Chorthippus vagans* Chorthippus mollis Chorthippus macrocerus purpuratus Chorthippus pullus Chorthippus albomarginatus Chorthippus oschei Chorthippus albomarginatus × oschei Chorthippus loratus Chorthippus dichrous Chorthippus dorsatus Chorthippus montanus Chorthippus parallelus Euchorthippus pulvinatus Euchorthippus declivus

KEY TO THE MOLDAVIAN ORTHOPTERA

In order to identify the Orthoptera species from Moldavia, we used the keys of K. Harz (1969, 1975), B. Kis (1976, 1978), P. Kočárek et al. (2005) and B. Baur et al. (2006). Some colors and minor morphological traits from the following photos may differ in other individuals from the same species.

Order Orthoptera - key to suborders 1 (2) Antennae longer than half the body length, with more than 30 antenommeres; tympanum located on the fore tibia (Fig. 29); stridulatory organs located at the base of the fore wings (Fig. 30); ovipositor long (excepting <i>Gryllotalpa</i>)
the external part of the fore wings (Fig. 18); ovipositor shortCaelifera
Suborder Ensifera - key to superfamilies
1 (2) Tarsus with 4 tarsomeres (Fig. 32); postcubital part of the fore wings not widened (Fig. 30)
A. Superfamily Tettigonioidea - Family Tettigoniidae - key to
subfamilies
1 (2) Male's subgenital plate without styli (Fig. 53)Phaneropterinae 2 (1) Male's subgenital plate with styli (Fig. 34)
3 (6) Apex of the fore tibia with a laterodorsal spur (Fig. 32)4
4 (5) Antennae with the insertion point at the same level as the
compound eyes (Fig. 35) Tettigoniinae
5 (4) Antennae with the insertion point below the level of the compound
5 (4) Antennae with the insertion point below the level of the compound eyes (Fig. 36)Bradyporinae
5 (4) Antennae with the insertion point below the level of the compound eyes (Fig. 36)
5 (4) Antennae with the insertion point below the level of the compound eyes (Fig. 36)
5 (4) Antennae with the insertion point below the level of the compound eyes (Fig. 36)

10 (9) Antennae with bases contiguous (Fig. 39) Saginae
1. Subfamily Phaneropterinae - key to genera and species
1 (2) Fastigium 2-3× thicker than first antennomere (Fig. 41); fore
femora shorter than pronotum length <i>Polysarcus denticauda</i>
2 (1) Fastigium thinner than first antennomere (Fig. 42); fore femora
longer than pronotum length3
3 (4) Wings surpass the abdomen tip; pronotal disc with posterior
extension (Fig. 49)
4 (3) Wings don't surpass the abdomen tip; pronotal disc without posterior extension (Fig. 43)5
5 (6) Fore tibia 2,5-3× longer than pronotum
6 (5) Fore tibia almost 2× longer than pronotum
7 (8) Pronotal groove located in the anterior half of the pronotum; visible
part of the fore wings (3) shorter than pronotum length (Fig. 44)
Poecilimon sp.
8 (7) Pronotal groove located in the posterior half of the pronotum;
visible part of the fore wings (3) almost as long as pronotum (Fig. 73)9
9 (10) Subgenital plate (3) with a median longitudinal groove (Fig. 45);
cerci (🖒) are "S" shaped (Fig. 46); ovipositor with ventral border straight
(Fig. 47)
10 (9) Subgenital plate (3) without median longitudinal groove (Fig. 48);
cerci (\circlearrowleft) are "J" shaped (Fig. 67); ovipositor with ventral border evenly
curved (Fig. 76)
Genus Phaneroptera - key to species
1 (2) Pronotum longer than wider (Fig. 49); subgenital plate (δ) enlarged
in distal part (Fig. 53); cerci (3) thickened before apex (Fig. 51);
ovipositor more curved proximally than distally, with the lateral lamella's
base sinuous (Fig. 55)
2 (1) Pronotum wider than longer (Fig. 50); subgenital plate (\circlearrowleft) narrow
in the distal part (Fig. 54); cerci (\circlearrowleft) not thickened before apex (Fig. 52);
ovipositor evenly curved proximally and distally, with the lateral lamella's
base almost straight (Fig. 56)
Genus Leptophyes - key to species
1 (2) Fore wings longer than pronotum; cerci (♂) curved in distal part
Leptophyes punctatissima
2 (1) Fore wings shorter than pronotum; cerci (3) straight
3 (4) Fore wings shorter than half the pronotal length; cerci (3) oblate in
apical part

4 (3) Fore wings longer than half the pronotal length (Fig. 43); cerci (♂)
straight in apical part (Fig. 57); ovipositor as in fig. 58
Leptophyes albovittata
Genus Poecilimon - key to species
1 (2) Posterior femora with 10-20 ventral spurs (Fig. 59); cerci (\Diamond) as in
fig. 61; ovipositor as in fig. 64 <i>Poecilimon schmidtii</i>
2 (1) Posterior femora without spurs (Fig. 60)3
3 (4) Cerci (\circlearrowleft) end with a small sharp dent (Fig. 63); ovipositor as in fig.
65
4 (3) Cerci (♂) end with a long, thin and flat extension (fig. 63);
ovipositor as in fig. 66 <i>Poecilimon brunneri</i>
Genus Isophya - key to species
1 (2) Cerci (3) strongly curved only in distal part, the apical dent located
toward dorsal part of the tip (Fig. 67); fore wings (3) as in fig. 71;
ovipositor as in fig. 75
2 (1) Cerci (3) more slightly curved, the apical dent located in the central
part of the tip (fig. 68)
3 (4) At the end of stridulatory vein, the border of fore wing forms an
acute angle (\circlearrowleft) (fig. 72); cerci (\circlearrowleft) as in fig. 69; ovipositor as in fig. 76
4 (3) At the end of stridulatory vein, the border of fore wing forms an
obtuse angle (3) (fig. 73)
5 (6) Stridulatory vein almost as long as the posterior border of
pronotum (\lozenge); fore wings shorter than pronotum length (\lozenge) (fig. 73);
cerci (\circlearrowleft) as in fig. 69; ovipositor as in fig. 77
6 (5) Stridulatory vein smaller than the posterior border of pronotum
(δ); fore wings have almost the same length as the pronotum (δ) (fig. 74);
cerci (\circlearrowleft) as in fig. 70; ovipositor as in fig. 78
2. Subfamily Tettigoniinae - key to genera and species
1 (2) Posterior border of pronotum denticulated
2 (1) Posterior border of pronotum without dents3
3 (8) Styli (♂) as long as ½× cerci length or longer than ½× cerci length
(fig. 34)4
4 (5) First tarsomere of the hind leg without ventral lobed appendages
(fig. 32); fore wings without dark spots (fig. 30)
5 (4) First tarsomere of the hind leg with ventral lobed appendages (fig.
79); fore wings usually with dark spots (fig. 80)6
6 (7) Prosternum with 2 spurs (fig. 832); cerci (\Im) as in fig. 86; ovipositor
as in fig. 85
5

7 (6) Prosternum without spurs (fig. 83)	.Decticus sp.
8 (3) Styli (3) smaller than ½× cerci length (fig. 87)	
9 (10) Prosternum with 2 spurs (fig. 84); cerci (3) as in fig. 8	38; ovipositor
as in fig. 89Rhacocle	is germanica
10 (9) Prosternum without spurs	11
11 (14) Fore wings oblong, usually surpassing the middle or	the end of
abdomen; pronotum with a median groove (fig. 91)	12
12 (13) Radial area on the fore wing with alternate dark and	pale spots
(fig. 80)	Platycleis sp.
13 (12) Radial area on the fore wing without dark spots (fig. 8	
Me	
14 (11) Fore wings rounded, rarely surpassing the middle of	abdomen;
pronotum without median groove (fig. 91)	15
15 (16) Cerci (♂) without internal dent (fig. 92); ovipositor as	s in fig. 93
Pachytro	
16 (15) Cerci (♂) with internal dent (fig. 132)	lidoptera sp.
Genus Tettigonia - key to species	
1 (2) Fore wings don't surpass the hind knees; cerci (3) as in	
ovipositor as in fig. 97	
2 (1) Fore wings surpass the hind knees	
3 (4) Cerci (♂) curved towards interior (fig. 95); ovipositor (
doesn't surpass the fore wings tip; dorsal part of pronotum u	
brown longitudinal stripe	
4 (3) Cerci ($\stackrel{\wedge}{\circlearrowleft}$) curved towards exterior (fig. 96); ovipositor	
surpasses the fore wings tip; dorsal part of pronotum withou	
stripe	onia caudata
Genus Decticus - key to species	
1 (2) Fore wings don't surpass the hind knees; internal dent	
middle of cerci (3) (fig. 100); titillators as in fig. 102; subgeni	
without lateral sclerites (fig. 104); ovipositor as in fig. 106	
Decticus	
2 (1) Fore wings surpass the hind knees; internal dent locate	
of cerci (4) (fig. 101); titillators as in fig. 103; subgenital plate	
evident lateral sclerites (fig. 105); ovipositor as in fig. 107	
Decti	cus albifrons
Comma Platandaia Insusta and	
Genus Platycleis - key to subgenera	Al 1-1 1
1 (2) Pronotum more than 5mm in length; fore wings surpas	
knees	<i>tycieis</i> s. str.

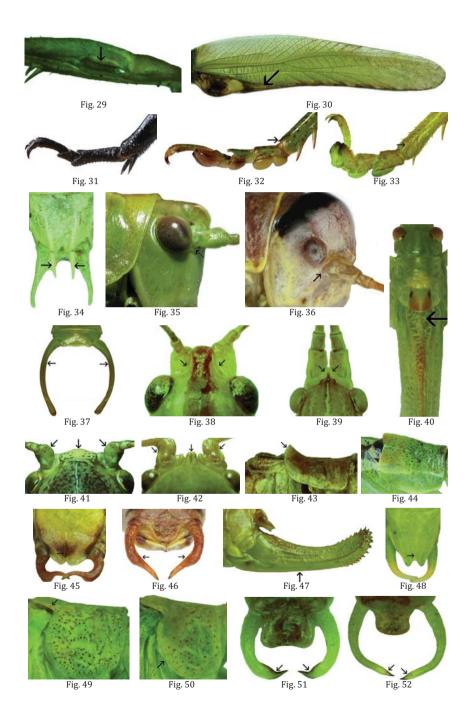
hind knees
3 (4) Internal dent located at base of cerci () (fig. 108); ovipositor
slightly curved (fig. 110)
4 (3) Internal dent located at middle of cerci (3) (fig. 109); ovipositor
strongly curved at the base (fig. 111)
<u>Subgenus Platycleis - key to species</u>
1 (2) Internal dent located at the middle of the cerci (3) (fig. 112);
titillator as in fig. 114; 7^{th} abdominal sternum (\mathcal{P}) with a big eminence in
the posterior third (fig. 117)
2 (1) Internal dent located at the second distal third of the cerci (3) (fig.
113); 7th abdominal sternum (\bigcirc) with/without a smaller eminence in the
posterior third (figs. 118, 119)
3 (4) Base of titillator not enlarged in the proximal part (fig. 115); 7 th
abdominal sternum ($\stackrel{\bigcirc}{+}$) with a small eminence and a tubercle (fig. 118)
Platycleis intermedia
4 (3) Base of titillator enlarged in the proximal part (fig. 115); 7 th
abdominal sternum ($\stackrel{\bigcirc}{\hookrightarrow}$) without eminence or tubercle (fig. 119)
Platycleis albopunctata
Subgenus Montana - key to species
1 (2) Fore wings surpass the abdomen
2 (1) Fore wings reach almost half of the abdomen
2 (1) Fore wings reach almost half of the abdomen
2 (1) Fore wings reach almost half of the abdomenPlatycleis striata Subgenus Tessellana - Platycleis (Tessellana) veyseli
 2 (1) Fore wings reach almost half of the abdomenPlatycleis striata Subgenus Tessellana - Platycleis (Tessellana) veyseli Genus Metrioptera - key to subgenera and species
2 (1) Fore wings reach almost half of the abdomenPlatycleis striata Subgenus Tessellana - Platycleis (Tessellana) veyseli Genus Metrioptera - key to subgenera and species 1 (2) Internal dent located at middle of cerci (3) (fig. 120); ovipositor
2 (1) Fore wings reach almost half of the abdomen
2 (1) Fore wings reach almost half of the abdomen
2 (1) Fore wings reach almost half of the abdomen
2 (1) Fore wings reach almost half of the abdomen
2 (1) Fore wings reach almost half of the abdomen
2 (1) Fore wings reach almost half of the abdomen
2 (1) Fore wings reach almost half of the abdomen
2 (1) Fore wings reach almost half of the abdomen
Subgenus Tessellana - Platycleis (Tessellana) veyseli Genus Metrioptera - key to subgenera and species 1 (2) Internal dent located at middle of cerci (3) (fig. 120); ovipositor slightly curved (fig. 128)
2 (1) Fore wings reach almost half of the abdomen

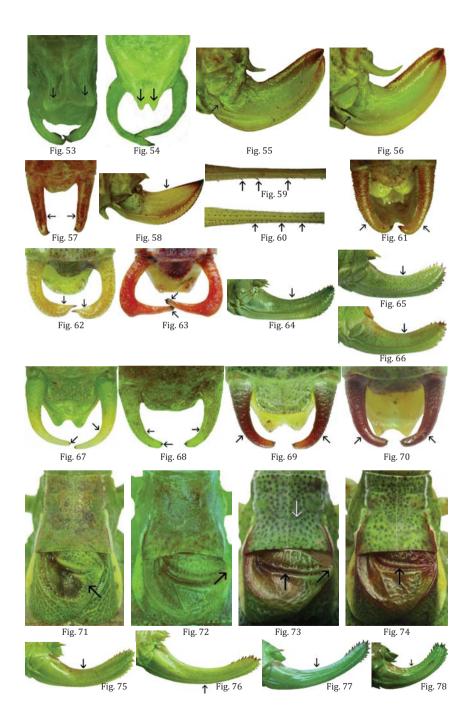
6 (5) Distal part of titillator is thin, curved, with many dents on the apical third (fig. 127); cerci (3) as in fig. 125; ovipositor as in fig. 131
Metrioptera fedtschenkoi
Genus Pholidoptera - key to species
1 (2) Body color light green, usually with 2 black lateral stripes; cerci (\circlearrowleft) as in fig. 132; titillators as in fig. 138; ovipositor as in fig. 144
Pholidoptera frivaldskyi
2 (1) Body color brown, greyish or black3
3 (4) Paranotum without white borders; titillators end with a curved and acuminate tip (fig. 139); cerci (3) as in fig. 133; ovipositor as in fig. 145
Pholidoptera griseoaptera
4 (3) Paranotum with at least the posterior border white; tip of titillator with many dents (fig. 138)5
5 (8) Paranotum with a white stripe on ventral and posterior borders6
6 (7) Titillators with many small dents on tip (fig. 140); cerci (3) with the
internal dent located close to their base (fig. 134); ovipositor as in fig. 146.
Pholidoptera littoralis
7 (6) Titillators with only 3-4 dents on tip (fig. 141); cerci (3) with the
internal dent located in the middle (fig. 135); ovipositor as in fig. 147
8 (5) Paranotum with a white stripe on posterior border
9 (10) Frons with a white or grey transversal stripe; titillators with many
equal dents on tip (fig. 142); cerci (3) as in fig. 136; ovipositor as in fig.
10 (0) From with some white contact titillators with a his terminal dont
10 (9) Frons with some white spots; titillators with a big terminal dent and a few others, smaller (fig. 143); cerci (\circlearrowleft) as in fig. 137; ovipositor as
in fig. 149
III ng. 149r nondopter a apter a
3. Subfamily Bradyporinae - key to species
1 (2) Second tarsomere shorter than the third one
2 (1) Second tarsomere longer than the third one
3 (4) Lateral keels of pronotum faded in metazone; body color dark
brown or black, with slight metallic luster; internal dent located at the
middle of cerci
4 (5) Lateral keels of pronotum well developed along their entire length;
body color usually brown-yellow or brown-green, with slight metallic
luster; internal dent located in the apical part of cerci
3

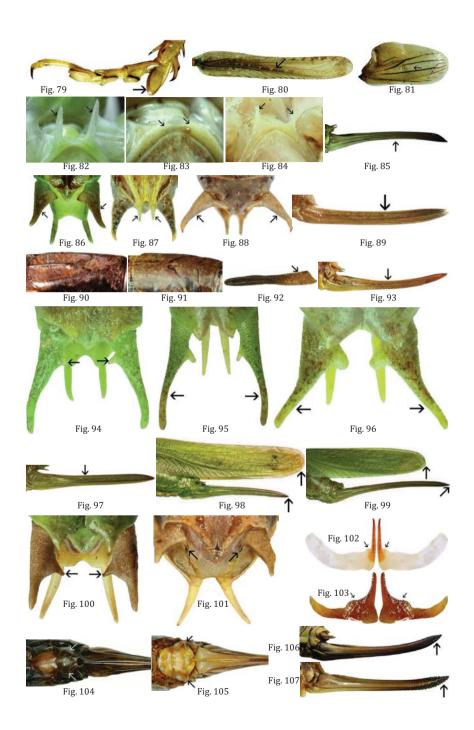
4. Subfamily Meconematinae - Meconema thalassinum

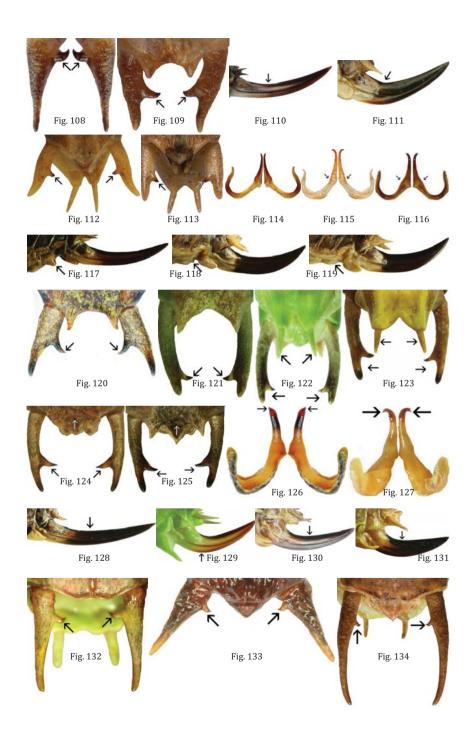
5. Subfamily Conocephalinae - key to genera and species 1 (2) Fastigium narrower than first antennomere (fig. 38)
Conocephalus sp. 2 (1) Fastigium thicker than first antennomere (fig. 150); cerci (♂) as in fig. 151; ovipositor as in fig. 152
Genus Conocephalus - key to species 1 (2) Fore wings shorter than pronotum length; internal dent located in the distal part of cerci (♂) (Fig. 153); ovipositor as in fig. 156
3 (4) Fore wings don't surpass the end of abdomen; 10 th abdominal tergum (3) with a bifurcated median eminence; cerci (3) as in fig. 154; ovipositor as in fig. 157
6. Subfamily Saginae - Saga pedo
B. Superfamily Grylloidea - key to families 1 (2) Body length under 5mm
I. Family Myrmecophilidae - Myrmecophilus acervorum
II. Family Gryllotalpidae - Subfamily Gryllotalpinae - <i>Gryllotalpa gryllotalpa</i>
III. Family Gryllidae - key to subfamilies 1 (2) Dorsal surface of the hind tibia with small and numerous spurs (fig. 160); head semiprognathous

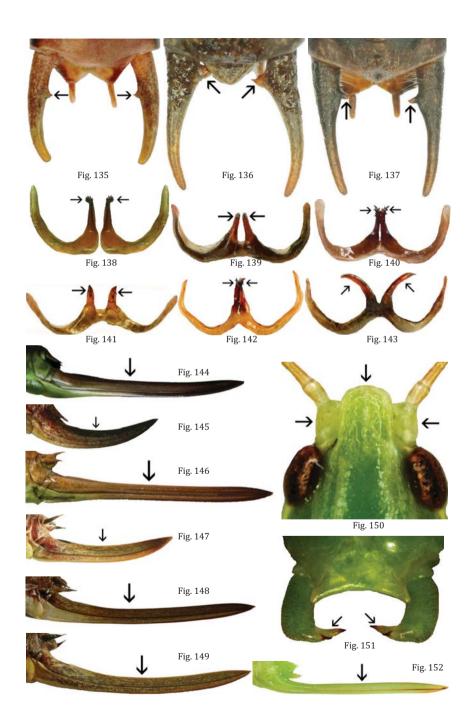
4 (3) Spurs on the dorsal surface of tibia have almost the same length as the diameter of tibia (fig. 161)
1. Subfamily Oecanthinae - Oecanthus pellucens
2. Subfamily Gryllinae - key to the genera and species
1 (6) Head without any yellow or white drawings; if head variegated with
yellow, than body color is yellow-greyish2
2 (3) Body smooth; hind femora ventrally red; apical part of copulatory
apparatus (3) as in fig. 163; ovipositor as in fig. 168 <i>Gryllus campestris</i>
3 (2) Body finely pubescent; hind femora ventrally not red4
4 (5) Body color black or dark brown; apical part of copulatory apparatus
(\circlearrowleft) as in fig. 164; ovipositor as in fig. 169
5 (4) Body color greyish-yellow, with head variegated with yellowish-
brown; apical part of copulatory apparatus (\circlearrowleft) as in fig. 165; ovipositor as
in fig. 170
6 (1) Head with a yellow or white drawing; body color usually black or
dark grey7
7 (8) Pronotum (sometimes the whole body) with yellow or white spots;
apical part of the copulatory apparatus (\Im) as in fig. 166; ovipositor as in
fig. 171Modicogryllus truncatus
8 (7) Body color black or dark grey, without spots; apical part of the
copulatory apparatus (3) as in fig. 167; ovipositor as in fig. 172
Modicogryllus frontalis
3. Subfamily Nemobiinae - key to the species
1 (2) Hind tibia with 3 pairs of dorsal spurs <i>Nemobius sylvestris</i>
2 (1) Hind tibia with 4 pairs of dorsal spurs <i>Pteronemobius heydenii</i>

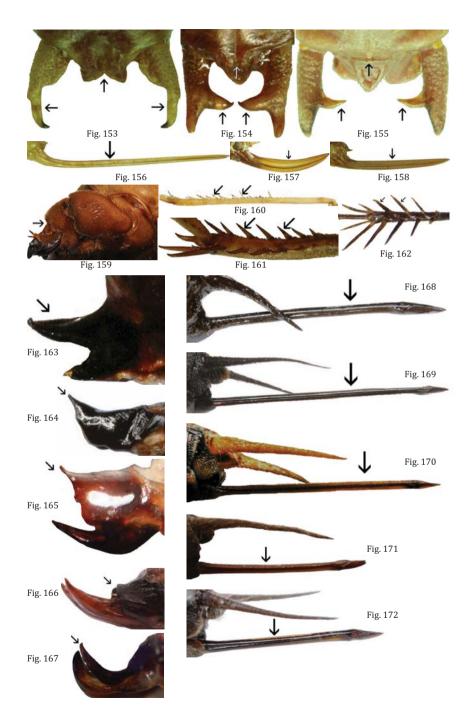












Suborder Caelifera - key to infraorders 1 (2) Pronotum without keels (fig. 173); fore leg modified for digging (fig. 175); hind tarsus with 1-2 tarsomeres (fig. 179)
• Infraorder Tridactylidea - Superfamily Tridactyloidea - Family Tridactylidae - genus Xya - key to species 1 (2) Paranotum with a white stripe on ventral border; body with white drawing; posterior border of subgenital plate (♀) with a small median groove (fig. 176)
2 (1) Paranotum with a small white spot in the posterior corner of ventral border; body without white drawing; posterior border of subgenital plate (\cite{Q}) without a median groove (fig. 177) <i>Xya pfaendleri</i>
• Infraorder Acrididea - key to superfamilies 1 (2) Pronotum with a triangular posterior process (fig. 180); pretarsus without arolium (fig. 178)
A. Superfamily Tetrigoidea - Family Tetrigidae - Subfamily Tetriginae - key to genera and species
1 (2) Median keel of pronotum higher in the prozone than in the metazone
Genus Tetrix - key to the species
1 (6) Median keel of pronotum highly raised
3 (2) Median antennomeres more than 2× longer than wider (fig. 183)4 4 (5) Median antennomeres about 3× longer than wider (fig. 182)
5 (4) Median antennomeres about 4× longer than wider (fig. 183)
6 (1) Median keel of pronotum low raised

8 (7) Dorsal and ventral borders of median femora are slightly sinuous (fig. 185)9
9 (10) In dorsal view, vertex as broad as a compound eye (fig. 186)
Tetrix ceperoi
10 (9) In dorsal view, vertex broader than a compound eye (fig. 187)11
11 (12) In dorsal view, vertex prominent, forming an obtuse angle (fig.
187)Tetrix subulata
12 (11) In dorsal view, vertex not prominent, with a straight border (fig.
188)
<u>Tetrix bipunctata - key to subspecies</u>
1 (2) Visible part of hind wings is 2× longer than visible part of the fore
wings
2 (1) Visible part of hind wings has almost same length as visible part of
fore wings
B. Superfamily Acridoidea - Family Acrididae - key to subfamilies
1 (6) Prosternum with a big tubercle (fig. 189)2
2 (3) Dorsal keel of hind femora with small dents (fig. 191)
3 (2) Dorsal keel of hind femora without dents (fig. 192)
4 (5) Pronotal keels well developed (fig. 174); prosternal tubercle
square (fig. 189)Catantopinae
5 (4) Pronotal keels under-developed (fig. 204); prosternal tubercle
conical (fig. 190)
6 (1) Prosternum without a tubercle or sometimes with a small one (fig.
217)
7 (8) Antennae flattened along their entire length (fig. 193)Acridinae
8 (7) Antennae filiform; sometimes apical part flattened (Fig. 194)9
9 (10) Intercalary vein present in median area of fore wing (fig. 195).
Usually hind wing colored (fig. 197) Oedipodinae
10 (9) Intercalary vein absent (fig. 196). Usually hind wing not colored
(fig. 198)Gomphocerinae
1. Subfamily Calliptaminae - key to genera and species
1 (2) Brachypterous species (fig. 199)Paracaloptenus caloptenoides
2 (1) Macropterous species, wings usually surpass end of abdomen
Comus Callintannus Ivoy to anasias
Genus Calliptamus - key to species 1 (2) Inner surface of hind femore with 2 2 small dark eners (fig. 200).
1 (2) Inner surface of hind femora with 2-3 small dark spots (fig. 200);
hind tibia red

2 (1) Inner surface of hind femora with 1-3 big dark spots, which sometimes fuse (fig. 201); hind tibia yellow or pink
2. Subfamily Catantopinae - Pezotettix giornae
3. Subfamily Melanopliinae - key to genera and species
1 (4) Fore wings brown or yellow2
2 (3) Prozone of pronotum almost as long as metazone (fig. 204); fore
wings with an apical lobe (fig. 202) <i>Podisma pedestris</i>
3 (2) Prozone of pronotum's is 1,5-2× longer than metazone (fig. 205);
fore wings without apical lobe (fig. 203)
4 (1) Fore wings red or pink
5 (6) Cerci (3) dilated apically (fig. 206); furculae absent; ovipositor
valves short, ending with a dent (fig. 208)
6 (5) Cerci (3) tapering (fig. 207); furculae well developed; ovipositor
valves long, ending with 2 dents (fig. 209)
Genus Odontopodisma - key to subspecies
1 (2) Aedeagus with 2 lateral apical lobes; subgenital plate $(?)$ ends with
a median lobe
2 (1) Aedeagus without lateral lobes; subgenital plate $(\ \)$ ends with a
median lobe and 2 lateral lobes
1. Subfamily Acridinae - Acrida ungarica
2. Subfamily Oedipodinae - key to genera and species
1 (2) Body length over 30mm ($\stackrel{?}{\circlearrowleft}$) and over 45mm ($\stackrel{?}{\hookrightarrow}$); dorsal carina of
hind femora with small dents (fig. 210)
2 (1) Body length under 28mm (\lozenge) and under 42mm (\updownarrow); dorsal carina
of hind femora without dents (fig. 211)3
3 (12) Angle between frons and vertex is acute (fig. 215); hind wings
almost transparent, without dark stripe (fig. 220)4
4 (5) Lateral pronotal keels well developed (fig. 217); prosternum with a
small tubercle (fig. 219)
5 (4) Lateral pronotal keels under developed (fig. 218); prosternum
without tubercle6
6 (9) Body color usually green or brown, with many small dark spots;
inner surface of hind femora with 3 dark spots (fig. 211)7
7 (8) Intercalary vein inclined, dividing the median area on the fore wing
in two unequal parts (fig. 213)

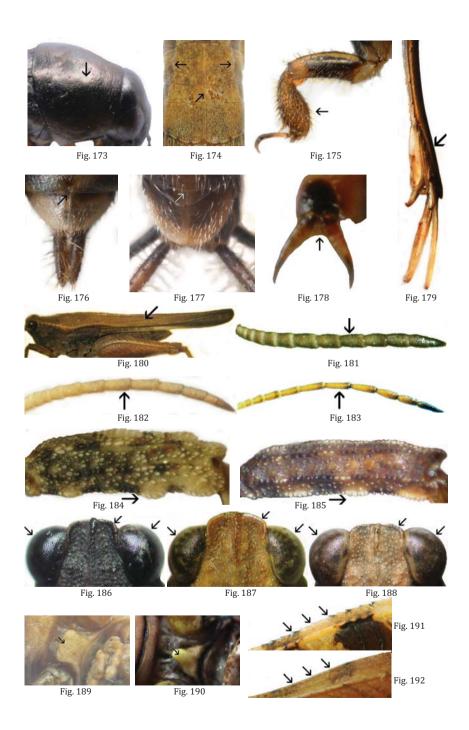
equal parts (fig. 214)
Paracinema tricolor 11 (10) Vertex tip short and rounded (fig. 222); hind tibia green or yellow #### Mecostethus alliaceus 12 (3) Angle between frons and vertex is right or obtuse (fig. 216); hind wings colored, with or without a dark stripe (fig. 197)
13 (14) In lateral view, dorsal keel of hind femora abruptly lowered behind middle-length (fig. 223); hind wing as in fig. 230
15 (18) Median pronotal keel high, without transversal grooves (fig. 226)
hind wings red with dark apex (fig. 197)
18 (15) Median pronotal keel lower, with 1-3 transversal grooves (figs. 227, 229)
tibia brown-black; hind wing as in fig. 232
21 (22) Pronotum is shorter, the posterior border is rounded or obtusely angulated (fig. 228)
23 (24) Median pronotal keel with 3 transversal grooves (fig. 229); hind wing bluish at the base (fig. 233), with apex pale
24 (23) Median pronotal keel with 2 transversal grooves; hind wing red or pink in basal part, with apex dark
Genus Acrotylus - key to species 1 (2) Hind wing usually pink or red, with a dark transversal stripe in middle (fig. 234)

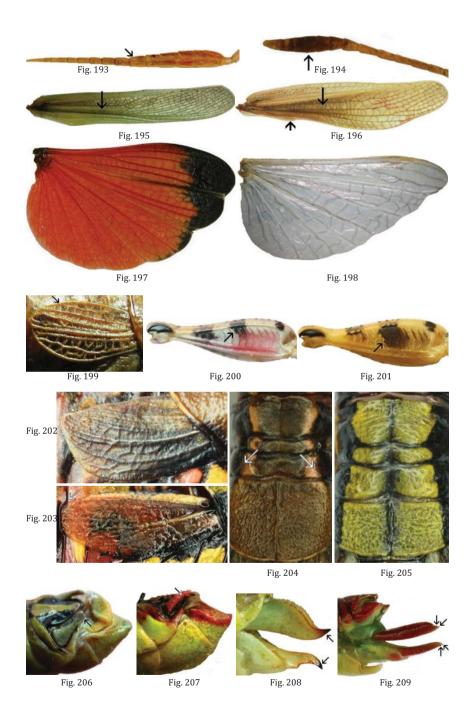
(fig. 235)
3. Subfamily Gomphocerinae - key to genera and species 1 (4) Foveolae absent (fig. 237)2
2 (3) Fore wings (3) almost as wide as hind femora and their apex
emarginated; hind knees (3) not dark (fig. 236); subgenital plate (3)
shorter, less than 2× as long as broad in lateral view (fig. 240); fore wings
(\$\times) apex produced into a short, blunt dent (fig. 244); ovipositor valves
long and thin (fig. 242)
2 (3) Fore wings (3) $2 \times$ wider than hind femora and their apex rounded;
hind knees (\circlearrowleft) are dark (fig. 239); subgenital plate (\circlearrowleft) 2× as long as
broad in lateral view (fig. 241); fore wings (\mathcal{P}) apex produced into a long
subtriangular lobe (fig. 245); ovipositor valves short and thick (fig. 243)
4 (1) Foveolae present (fig. 238)
5 (8) Pronotum with 2-3 transversal grooves (fig. 246)6
6 (7) Cubital area on fore wing wider than median area; Cu ₁ vein closer
to M vein than to Cu ₂ vein (fig. 249)
7 (6) Cubital area on fore wing narrower than median area; Cu ₁ vein
closer to Cu ₂ vein than to M vein (fig. 250)
8 (5) Pronotum with 1 transversal groove (fig. 247)9
9 (18) Anterior border of fore wing with a basal rounded eminence (fig.
196); if eminence absent, tip of antenna clubbed (fig. 194)10
10 (13) Tip of antenna clubbed (figs. 194, 261, 262)11
11 (12) Anterior margin of fore wing with basal eminence (fig. 199); last
antennomeres pointed and white (fig. 194)
12 (11) Anterior margin of fore wing without basal eminence (fig. 251);
last antennomeres rounded and dark (fig. 261)
13 (10) Antenna filiform
14 (15) Claws asymmetrical (fig. 252); subgenital plate (3) oblong (fig.
254)
15 (14) Claws symmetrical (fig. 253); subgenital plate (\circlearrowleft) not oblong (fig. 253).
255)
16 (17) Hind wings dark and radial vein thickened at midlenght (fig. 256)
17 (16) Hind wings pale and radial vein not thickened (fig. 198)
18 (9) Anterior border of fore wing without basal eminence (fig. 257)19
19 (20) Lateral pronotal keels slightly curved (fig. 247); median area on
fore wings with parallel transversal veins (fig. 257); ovipositor valves with
a lateral dent (fig. 259)

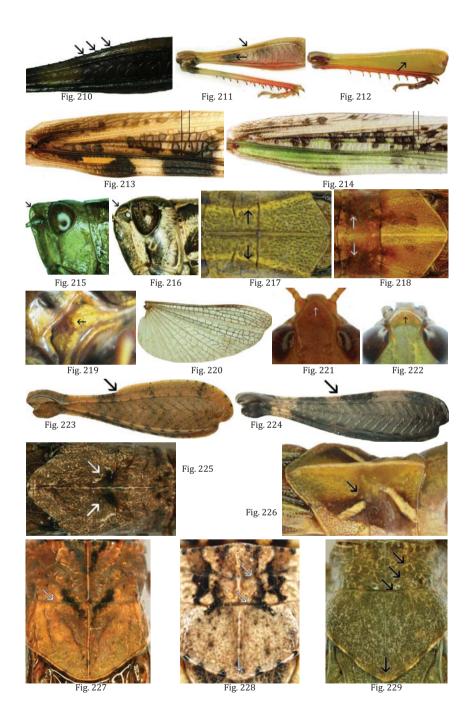
20 (19) Lateral pronotal keels strongly curved (fig. 248); median area on fore wings with irregular transversal veins (fig. 258); ovipositor valves without lateral dent (fig. 260)
Genus Arcyptera - key to species 1 (2) Foveolae underdeveloped; lateral pronotal keels almost straight; hind wing dark
Genus Dociostaurus - key to species 1 (2) Antennae surpass paranotum by almost twice their length (♂); fore femora 4,5-5× longer than wider
Genus Myrmeleotettix - key to species 1 (2) Club of antenna well developed (fig. 261)
Myrmeleotettix maculatus
Genus Euchorthippus - key to species 1 (2) Fore wings surpass the end of abdomen (fig. 263); hind wings as long as the fore wings (fig. 265)
Genus Chorthippus - key to subgenera 1 (2) Lateral pronotal keels strongly curved (fig. 267)
<u>Subgenus Glyptobothrus - key to species</u>
1 (8) Tympanum wide, oval, $2-3 \times longer$ than wide (fig. 269)
4 (5) Fore wings reach/surpass hind knees (♂) or reach end of abdomen (♀)

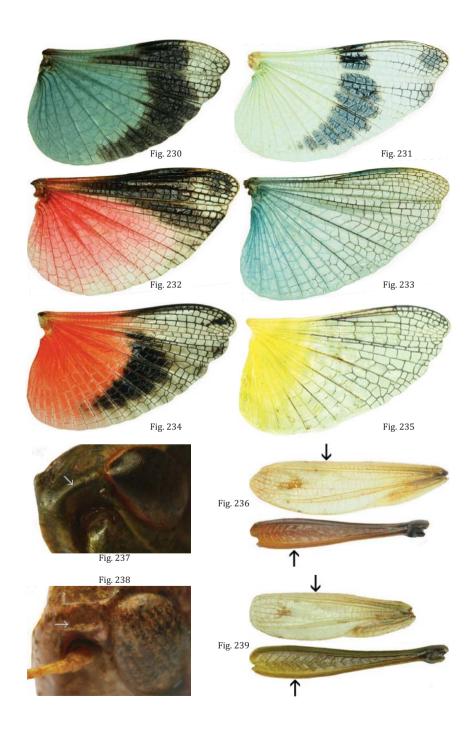
5 (4) Fore wings reach/surpass end of abdomen (3) or are shorter than
abdomen (\$\bar{Q}\$)6
6 (7) Hind tibia usually yellow or grey; costal area on fore wing is wider
at its middle length; fore wings l/w (length/width) ratio: 4,3-4,7 (\circlearrowleft) (fig.
272); 4-4,3 (♀) (fig. 273)
7 (6) Hind tibia usually orange or red; costal area on fore wing is wider in
the distal zone; fore wings l/w ratio: 3,4-3,7 ($\stackrel{\wedge}{\circ}$) (fig. 274); 3,9-4,3 ($\stackrel{\hookrightarrow}{\circ}$) (fig.
275)
8 (1) Tympanum narrow, oblong, 4-6× longer than wide (fig. 271)9
9 (10) Fore wings narrow; subcostal and costal areas on fore wing are
narrow; fore wings l/w ratio: 4,7-5,1 (\circlearrowleft) (fig. 276); 6,1-6,5 (\hookrightarrow) (fig. 277)
10 (9) Fore wings wide; subcostal area on fore wing is wide11
11 (12) Costal area on fore wing is very wide (δ); fore wings l/w ratio:
4,2-4,6 (♂) (fig. 278); 5,6-6 (\bigcirc) (fig. 279) <i>Chorthippus biguttulus</i>
12 (11) Costal area on fore wing is lesser wide (3); fore wings l/w ratio:
4,8-5,1 (♂) (fig. 280); $6-6,4$ (♀) (fig. 281) <i>Chorthippus mollis</i>
<u>Subgenus Chorthippus - key to species</u>
1 (12) Fore wings surpass hind knees (\lozenge) or end of abdomen (\lozenge); fore
wings as long as hind wings2
2 (7) Lateral pronotal keels almost straight (fig. 268); Radial area on fore
wing is wide; R vein is "S" shaped; fore wings l/w ratio: 4,3-4,6 (\circlearrowleft) (fig.
282); 4,9-5,2 () (fig. 283)
3(4) At end of courtship song, the male doesn't separate hind tibia from
hind femora (fig. 284)
4 (3) At end of courtship song, the male separates hind tibia from hind
femora5
5 (6) At end of courtship song, the male raises its hind tarsus way over
the tip of fore wings, almost straitening the hind legs and having a
"headstand" position (fig. 285)
6 (5) At the end of courtship song, the male raises its hind tarsus little
over the tip of fore wings (fig. 286), making conspicuous up and down
movements with the hind tibiae
7 (2) Lateral pronotal keels curved (fig. 287); radial area on fore wing is
narrow; R vein almost straight (fig. 289)8
8 (9) Lateral pronotal keels more strongly curved, usually limited with
black stripes (fig. 287); fore wings l/w ratio: 6-6,4 (3) (fig. 289); 6,4-6,8
(\$\text{\parabole}\$) (fig. 290)
9 (8) Lateral pronotal keels slightly curved, rarely limited with black
stripes (fig. 288)10

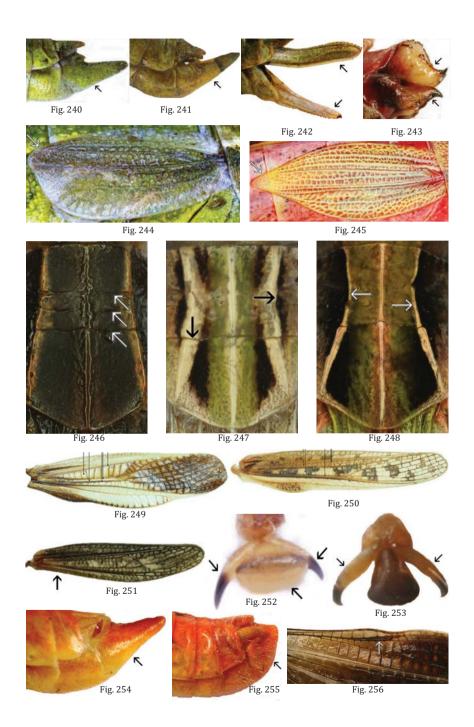
10 (11) R vein slightly curved; fore wings l/w ratio: 4,8-5,3 (\circlearrowleft) (fig. 291);
5,8-6,2 (♀) (fig. 292) <i>Chorthippus dichrous</i>
11 (10) R vein straight; fore wings l/w ratio: 4,4-4,8 (♂) (fig. 293); 4,6-4,9
(\cap{O}) (fig. 294)
12 (1) Fore wings don't reach the hind knees (3) or are shorter than
abdomen ($$); hind wings shorter than fore wings13
13 (14) Hind wings almost reach stigma on the fore wings () (fig. 295);
fore wings surpass middle of abdomen (\mathcal{P})
14 (13) Hind wings reach middle of the fore wings (\Diamond) (fig. 296); fore
wings don't surpass middle of abdomen ($\stackrel{\frown}{}$) <i>Chorthippus parallelus</i>
<u>Genus Stenobothrus - key to species</u>
1 (4) Cu ₁ and Cu ₂ veins on fore wings are intergrown or with basal parts
free (fig. 257)2
2 (3) Fore wing wide; median area reaches ½ of fore wings length; R vein
sinuous (fig. 257) <i>Stenobothrus lineatus</i>
3 (2) Fore wing narrow, median area reaches ² / ₃ of fore wings length; R
vein straight (fig. 297) <i>Stenobothrus nigromaculatus</i>
4 (1) Cu ₁ and Cu ₂ veins on fore wings are totally free or with small
anastomoses (fig. 298)
Genus Omocestus - key to species
1 (4) Keels of pronotum slightly curved (fig. 248); fore wing wider than
hind femora; hind wing dark (fig. 300)2
2 (3) Stigma with white or pink veins (fig. 302); ovipositor valves short
(fig. 260) Omocestus rufipes
3 (2) Stigma with red veins (fig. 303); ovipositor valves long (fig.
304) Omocestus viridulus
4 (1) Keels of pronotum strongly curved (fig. 299); fore wing not wider
than hind femora; hind wing pale (fig. 301)5
5 (6) Hind femora over 8,5mm (\circlearrowleft) and 11mm (\updownarrow) in length; posterior
apophysis of aedeagus almost straight (fig. 305)
Omocestus haemorrhoidalis
6 (5) Hind femora less than 8mm (\circlearrowleft) and 10mm (\updownarrow) in length; posterior
apophysis of aedeagus curved (fig. 306)7
7 (8) Fore wings don't surpass hind knees; apophysis of aedeagus short
and taper (fig. 307) Omocestus petraeus
8 (7) Fore wings surpass hind knees; apophysis of aedeagus long and
curved (fig. 306) Omocestus minutus
cui veu (fig. 500)

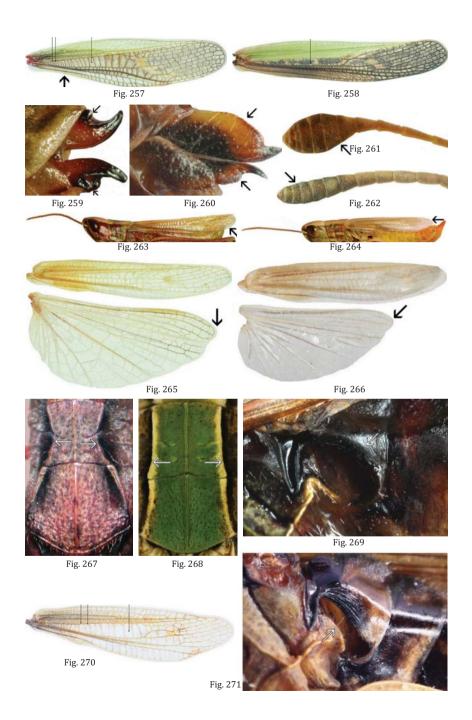


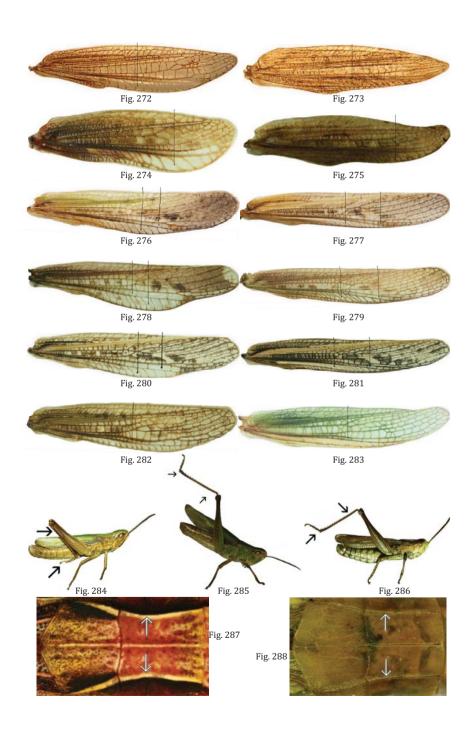


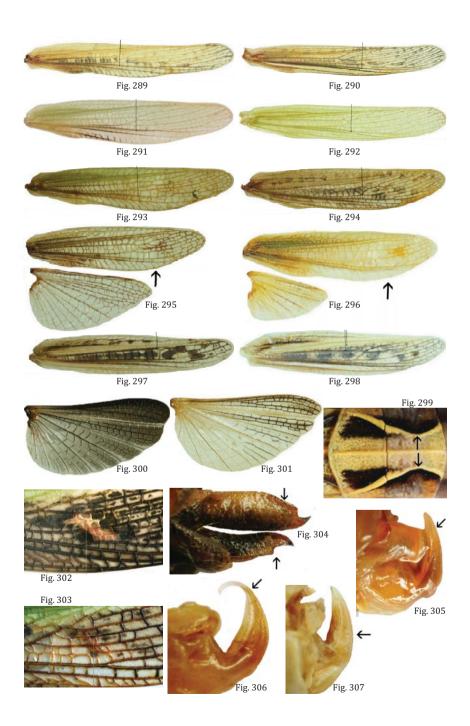












THE ORTHOPTERA SPECIES FROM MOLDAVIA

Among the class Insecta, the richest in species in the whole Animal kingdom (almost 80% of the described animals), the order Orthoptera belongs to the Hemimetabola group, insects characterized by incomplete metamorphosis, Orthoptera have common ancestors with the Dictyoptera and Dermaptera orders. In some classifications these three orders form the superorder Orthopteroidea. The Orthoptera are divided in two infraorders: Ensifera, comprising Bush-crickets, true Crickets, mole-Crickets etc. and Caelifera which comprises Grasshoppers, Groundhoppers and Locusts.

INFRAORDER ENSIFERA

The Ensifera have the antennae longer than half of the body length and made of more than 30 articles. The tympanal organ, if present, is situated on the fore tibia. The stridulating apparatus is situated at the base of the fore wings. The ovipositor is long and slender (except Fam. Gryllotalpidae), made of six valves.

Suprafamily Tettigonioidea

Tettigonids are medium and large sized insects, with the body laterally compressed and usually green or brown colored. The tarsus has 4 articles. During stridulation, the left fore wing is situated over the right one. The postcubital part of the fore wing is not widened. Hibernation is made during egg stage.

Family Tettigoniidae

One of the most common Ensifera, the Bush-Crickets are characterized by a narrow tympanal orifice. The species of this family have a large body size, are robust, colored in green or brown, sometimes with dark spots on the fore wings. The antennae are long and slender. In some species, the body length reaches over 70 cm (without the ovipositor).

Subfamily Phaneropterinae

These are small and medium sized Bush Crickets, having tarsus without longitudinal impressions. The middle and posterior tibiae have a longitudinal groove. The male subgenital plate is without styles and the female has a curved ovipositor.

Phaneroptera falcata (Poda, 1761)

Description: the Sickle-bearing Bush-cricket has the body color light green, with fine red-brown and irregular speckles all over the body. Sometimes the eye color is red or the superior half is red and the inferior half is green. The lateral lobe of the pronotum is much longer than tall. The fore wings are green, shorter than the hind wings, they don't reach the posterior knees and they have a brown-reddish stridulatory apparatus. The male subgenital plate is widened in the distal area. The cerci are slightly widened at the apex. The female ovipositor is short and strongly curved, the inferior keel forming a curved angle, with the lateral lamella sinuous.

Body length: $\sqrt[3]{14-16}$ mm; $\stackrel{\frown}{\hookrightarrow}$ 16-18 mm, ovipositor 5-6 mm.

Stridulation: series of short syllables, of low intensity. It stridulates in the evening and rarely during daytime.

Distribution: a Eurosiberian species. In our country, it is spread in the Center and in the North of the country, in the South and in the South-East being rare. In Moldavia, it is widely spread.

Habitat and way of life: phytophagous species, arboricolous and arbusticolous, rarely praticolous; it can be found in clearings, forest fringes, in tall lawns and agricultural terrains. This clearing Bush-cricket is very shy and can fly over distances of more than 50m.

Phenology: adults appear at the end of July and the beginning of August. It hibernates during egg stage. Eggs are flattened dorso-ventraly and are layed by females in the leaves mesophyll.



Fig. 308. Phaneroptera falcata (3), Pascani (Is), 27.08.2008

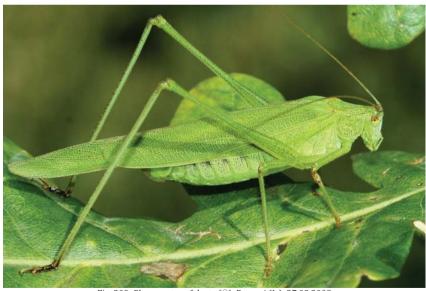


Fig. 309. Phaneroptera falcata (\updownarrow), Pascani (Is), 27.08.2008

Phaneroptera nana Fieber, 1853

(syn. Phaneroptera quadripunctata Brunner von Wattenwyl, 1878)

Description: the Southern Sickle-bearing Bush-cricket has the body color light green, or blue-green with fine red-brown speckles found all over the body. The antennae have the same color as the body. The lateral lobe of the pronotum is much taller than longer. The fore wings are green, they are a bit longer than the posterior knees and they have a brown-reddish and green stridulatory apparatus. The male subgenital plate is tightened in the distal area. The cerci are not widened at the apex. The female ovipositor is short and strongly curved; the inferior keel is more curved than in *P. falcata*, with the lateral lamella straight.

Body length: $\sqrt[3]{13-15}$ mm; $\stackrel{\bigcirc}{\hookrightarrow}$ 16-18 mm, ovipositor 5-6 mm.

Stridulation: a series of short syllables, of low intensity, but repeated very often during the rivalry song. It stridulates in the evening and during the night; the songs can't be heard from more than 20-30m.

Distribution: Circummediterranean species. In our country it is found especially in the Southern part. In Moldavia it is rare and can be found in the forests from South and South-East. On the Prut valley it reaches Barnova forest pear lasi.

Habitat and way of life: phytophagous species, with the same ecological preferences as *P. falcata*, but more thermophilous. Rarely the two species can be found together in the forest areas from the East and the South-East of Moldavia.

Phenology: adults appear in July-August and can be seen even in late October. It hibernates during egg stage.



Fig. 310. Phaneroptera nana (ै), Garboavele (Gl), 23.08.2006



Fig. 311. Phaneroptera nana (\updownarrow), Garboavele (Gl), 23.08.2006

Leptophyes albovittata (Kollar, 1833)

Description: the Striped Bush-cricket has the body color green, dorsally being green, yellow, testaceous or reddish, with small red or brown spots. Laterally it has a white stripe starting from the anterior border of the pronotum to the tip of the abdomen. We can often find individuals with reddish or brown-orange tibias, antennae and cerci. The male fore wings are longer than half of the pronotum and the female fore wings are hardly visible. The cerci are almost straight until the subapical region. The female ovipositor is short, without spikes and slightly curved.

Body length: $\sqrt[3]{11-13}$ mm; $\stackrel{\frown}{}$ 13-16 mm, ovipositor 5-6 mm.

Stridulation: a series of short syllables, of very low intensity. The song can't be heard from more than 10-20 cm. It stridulates in the afternoon until evening.

Distribution: Central Asian-South European species. It is one of the most common species of this group in our country, but it is rarer in the mountain area. It is frequent in Moldavia.

Habitat and way of life: phytophagous species, mesophylous, and mesoxerophilous, praticolous and arbusticolous. It is found in tall lawns and in forest clearings. Often, it can be seen on flowers eating petals and staminas.

Phenology: adults appear in June-July. It hibernates during egg stage. Nymphs are hatching in March-April depending on the altitude and the temperature gradient.



Fig. 312. Leptophyes albovittata (3), David's Valley (Is), 27.07.2008



Fig. 313. Leptophyes albovittata (\updownarrow), Adancata (Sv), 14.07.2007

Isophya zubowskii Bey-Bienko, 1954

Description: it has a green body color, with fine reddish speckles and brown or red antennae. The cerci and fore wings have a brown-reddish color. The stridulatory vein is almost as long as the posterior border of the pronotum. The length of the fore wings is smaller than the pronotum. The ovipositor is long and curved.

Body length: $\sqrt[3]{21-22}$ mm, $\sqrt{2}$ 22-24mm, ovipositor 11,5-13mm.

Stridulation: the calling song is a series of short syllables, of very low intensity. It rarely stridulates during the day and mostly in the evening and at night.

Distribution: Pontic species, known from Ukraine, Republic of Moldavia, Southern Russia and Romania. In Moldavia it is frequent, but localized especially in the East - between Siret and Prut rivers.

Habitat and way of life: it lives in forest clearings and fringes, in mesophylous and xero-mesophylous lawns. Often, it can be seen sunbathing on wider leaves.

Phenology: adults appear in May and are found until July. It hibernates during egg stage. Nymphs are hatching in March-April.



Fig. 314. *Isophya zubowskii* (🐧), Iasi (Is), 17.06.2008



Isophya camptoxypha (Fieber, 1853)

(syn. Isophya brevipennis Brunner von Wattenwyl, 1878)

Description: it has a green body color with two white, yellow, violet or red longitudinal stripes, on the pronto and on the abdomen. We can find also individuals with green uniform body color. The stridulating vein is shorter than the posterior border of the pronotum. The fore wing is as long as the pronotum. The ovipositor is curved.

Body length: \lozenge 19-22mm, \bigcirc 20-23mm, ovipositor 8-10mm.

Stridulation: a long series of syllables, of very low intensity. It stridulates during the day and in the evening, even at night. Sometimes there can be seen many males stridulating close one to each other.

Distribution: it is a species endemic to the Carpathians, found in West of Ukraine, Slovakia, Bulgaria, Northern Hungary and Southern Poland. In Moldavia it can be found in the high mountain area: Ceahlau, Rarau, Giumalau, Calimani Mountains etc.

Habitat and way of life: it is a typical mesophilous mountain species. It can be found mainly in tall lawns and raspberry or blackberry bushes. Morphologically, it looks very similar to *Isophya zubowskii* but the two species cannot be found together in Moldavia.

Phenology: adults appear in July and can be seen until early September. It hibernates during egg stage. Nymphs are hatching in April-May.



Fig. 316. Isophya camptoxypha (♂), Ceahlau Mountain (Nt), 06.08.2008



Fig. 317. Isophya camptoxypha (♀), Rarau Mountain (Sv), 31.07.2008

Isophya kraussii Brunner von Wattenwyl, 1878

Description: it has a green body color; the antennae are green or orange-reddish with the first article green. The eyes often have two colors: red in the upper part and green in the lower part. The pronotum has white side keels with the upper part doubled by a reddish band. The male fore wing is shorter than the pronotum; it has a green color with a white stripe on each side. At the end of the stridulating vein, the border of the fore wing has an acute or a right angle. The knees are often red and the cerci are green at the base and red-brown distally. The ovipositor is long and curved.

Body length: $3 \cdot 18-21$ mm, $9 \cdot 19-23$ mm, ovipositor 10-14mm

Stridulation: a long series of long syllables. It stridulates especially in the evening and at night.

Distribution: it is a Central European species. In Romania so far it has been found only in the North and North-West of Moldavia.

Habitat and way of life: it is a mesophilous species. It prefers sunny meadows, with tall grass and raspberry bushes. In the forest glades and fringes, this species is accompanied by *Pholidoptera griseoaptera*, *Euthystira brachyptera*, *Phaneroptera falcata* and *Chorthippus apricarius*.

Phenology: adults appear in June and can be seen until late August. It hibernates during egg stage. Nymphs are hatching in April.



Fig. 318. Isophya kraussii (♂), Adancata (Sv), 24.07.2008



Fig. 319. *Isophya kraussii* (♀), Adancata (Sv), 13.07.2007

Isophya stysi Cejchan, 1957

Description: this is one of the biggest *Isophya* species from Moldavia. It has a green body color and green-yellow antennae. It has a white thin stripe, which stretches from the eyes to the posterior border of the fore wing. Usually the male has a dark spot on the fore wing. The male fore wing are as long as the pronotum and the cerci are strongly curved in their second third. The ovipositor is slightly curved.

Body length: $\stackrel{\wedge}{\bigcirc}$ 20-23mm, $\stackrel{\bigcirc}{\bigcirc}$ 20-24mm, ovipositor 9-11mm

Stridulation: the syllables are very short and they have a higher intensity than other *Isophya* species. It stridulates during the day and in the evening. The males often give a short and loud warning sound when they feel threatened.

Distribution: the species is endemic to the Carpathian area; it was also found in Czech Republic, Hungary and Ukraine. In our country it is common in the Apuseni Mountains, in Transylvania and rare in the Oriental Carpathians and in some forests of Moldavian Plateau. We have found this species near Izvorul Muntelui Lake (Nt) and in a forest near Pascani (Is).

Habitat and way of life: it is a phytophagous, arbusticolous and praticolous species. It lives in forest glades and mesophilous meadows; sometimes it can be seen taking sun-bath on bushes.

Phenology: adults appear in June-July and can be encountered even in September. It hibernates during egg stage. Nymphs are hatching in March-April.



Fig. 320. *Isophya stysi* (), Pascani (Is), 12.07.2008



Fig. 321. *Isophya stysi* (♀), Potoci (Is), 02.09.2008

Barbitistes constrictus Brunner von Wattenwyl, 1878

Description: the body color varies from green, dark green to black with yellow stripes. The legs, antennae, cerci and fore wings are colored orange-red, especially in males. The male cerci have an "S" shape and the subgenital plate has a median keel. The female has a uniform body color, usually green - sometimes with orange or red legs, cerci and antennae. The ovipositor is slightly curved, with the ventral border straight. Black individuals are found mainly in the mountains.

Body length: 3 17-19mm, 9 18-20mm, ovipositor 10-11,5mm

Stridulation: the song consists of short syllables grouped in echemes of 6-8 syllables. It stridulates during the day, but more often during the evening and the night.

Distribution: it is a Central European species. In Romania it is found mainly in the Center and in the West of the country. In Moldavia it can be found in forests from the hilly and mountain areas, but it is quiet rare.

Habitat and way of life: it is a phytophagous, mesophilous, arbusticolous species. It prefers sunny forest glades. We can often see individuals taking sunbaths on leaves and because of the bright body colors we can spot them from large distances.

Phenology: adults appear in July and rarely can we still encounter them in late September. It hibernates during egg stage. Nymphs are hatching in April.



Fig. 322. Barbitistes constrictus (3), Pascani (Is), 12.07.2008



Fig. 323. Barbitistes constrictus (♀), Ceahlau Moutain (Nt), 09.09.2006

Poecilimon schmidtii (Fieber, 1853)

Description: the male has a light green body color, brown-red fore wings, the legs and cerci being yellow, light orange or even red. The female is uniformly colored in green. The color of the eyes varies from brown, red to green. The posterior femora have 10-12 spines on the ventral side. The ovipositor is long and curved.

Body length: $\sqrt[3]{19-22}$ mm, $\sqrt{20-23}$ mm, ovipositor 10mm.

Stridulation: the song consists of very short syllables that can be heard especially in the afternoon.

Distribution: it is a South-East European species. In Romania it is quite common, found especially in the hilly forests. In Moldavia it can be seen in forests from the hilly and mountain areas.

Habitat and way of life: it is a phytophagous, mesophilous, arbusticolous species. It lives in the woods, in the forest fringe and in the clearings. It prefers the wider leaves, on which it often can be seen. Very shy, they often jump to the ground when one tries to catch them.

Phenology: adults appear in July and can be found until early September. It hibernates during egg stage. Nymphs are hatching in April.



Fig. 324. Poecilimon schmidtii (3), Pascani (Is), 27.08.2006



Fig. 325. Poecilimon schmidtii (♀), Harboanca (Vs), 04.10.2006

Poecilimon fussii Brunner von Wattenwyl, 1878

(syn. Poecilimon matisi Mařan, 1953)

Description: the body is green or yellow, dorsally with a dark stripe on the abdomen and many small dark or rubiginous spots. It has brown fore wings with white borders. Rarely can we encounter beautiful individuals, orange or brown colored, with red and white stripes. The fore wings are very small, usually green, yellow or brown. The male cerci are brown or red and distally they end with a small sharp tooth. The ovipositor is slightly curved.

Body length: \bigcirc 14-16mm, \bigcirc 15-17mm, ovipositor 6-7mm.

Stridulation: the song consists of short syllables of low intensity. It stridulates during the day.

Distribution: it is a Holobalkanic species, common in Bulgaria, Albania and Romania. The species is widely distributed in Moldavia, especially in the Eastern and South-Eastern parts.

Habitat and way of life: it is found in steppic regions, in mesophilous and xero-mesophilous meadows, at the forest fringe and clearings. It can be encounter even in mountain areas, but more rarely.

Phenology: adults appear in July and can be encountered until late September. It hibernates during egg stage. Nymphs are hatching in March-April.



Fig. 326. Poecilimon fussii (3), Barlad (Vs), 01.07.2006



Fig. 327. Poecilimon fussii (♀), David's Valley (Is), 18.07.2008

Poecilimon brunneri (Frivaldsky, 1867)

(syn. Poecilimon lemnoticus Werner, 1932)

Description: it has the same body color as *Poecilimon fussii*. Often we can find individuals brightly-colored in green-yellow or red with fine black spots. The male cerci end with a long, flat and thin prolongation. The ovipositor is slightly curved. Often it can be mistaken by *Poecilimon fussii*, especially the females.

Body length: \lozenge 13-14mm, \lozenge 13-15mm, ovipositor 5-6mm.

Stridulation: the song has short syllables. It stridulates during the day, especially in the afternoon.

Distribution: it is a Holobalkanic species, found in our country in Southern Banat, South-Western Oltenia, Muntenia, Dobrogea, South-Eastern and Eastern Moldavia.

Habitat and way of life: it is a phytophagous, thermophilous species living in mesophilous and xero-mesophilous tall meadows. It can be encountered along with *Poecilimon fussii* in some high grasslands, like in David's Valley near Iasi.

Phenology: adults appear in July and can be seen until early autumn. It hibernates during egg stage. Nymphs are hatching in March-April.



Fig. 328. Poecilimon brunneri (3), David's Valley (Is), 18.07.2008



Fig. 329. Poecilimon brunneri (\updownarrow), Barnova (Is), 28.06.2008

Polysarcus denticauda (Charpentier, 1825)

Description: the Large Saw-tailed Bush-cricket is the biggest member of Phaneropterinae subfamily in our country; it has the body color green, rarely brown, with the fore wings yellow. Some individuals have two longitudinal white, yellow, orange or violet stripes. The cerci are usually green. The female has a long ovipositor.

Body length: $\sqrt[3]{24-40}$ mm, $\sqrt{2}$ 30-42mm, ovipositor 20-25mm.

Stridulation: the calling song consists of many syllables repeated for a few minutes at high intensity. It stridulates during the day, especially in sunny days.

Distribution: a Central European species. In our country it can be found especially in the Meridional Carpathians, in the Center and in the West of the country. It is very rare in the Oriental Carpathians. So far it has been found only near Izvorul Muntelui Lake and on Ceahlau Mountain (Nt).

Habitat and way of life: it is a phytophagous, hygro-mesophilous and mesophilous species, found in mountain areas, in tall lawns. Sometimes it can be found in the subalpine grasslands, on *Pinus mugo* or *Juniperus communis*.

Phenology: adults appear in May and June; rarely can they be encountered in autumn. It hibernates during egg stage. Nymphs hatch in March-April.



Fig. 330. Polysarcus denticauda (3), Ceahlau Mountain (Nt), 08.08.2008



Fig. 331. *Polysarcus denticauda* (♀), Ceahlau Mountain (Nt), 08.08.2008

Subfamily Saginae

It comprises the biggest Orthoptera species, usually with cylindrical body of green or yellow-brown color. The antennae have the bases near one another. Males are very rare, in some species there are parthenogenetic populations. This group has more than 40 predatory species, widely distributed from the Mediterranean area to Africa and Australia. In Romania there are two species, the other one, *Saga campbelli*, being found so far only on the Black Sea shore. In this species, the males are present.

Saga pedo (Pallas, 1771)

(syn. Saga serrata Charpentier, 1825)

Description: the body is oblong, with a green color, rarely yellow-brown. The lateral borders of the pronotum have white stripes, which continue on the abdomen, dorsally it has brown spots. The ovipositor is long and straight. Males are very rare.

Body length: ♀ 59-70mm, ovipositor 35-40mm.

Stridulation: stridulation is not known yet.

Distribution: it is a Central Asian-South European species, in our country being very rare and localized. It was found in all regions. In Moldavia is rare, we found it at: Pascani, David's Valley, Horlesti, Marzesti, Barnova (Is), Oancea, Hanu Conachi (Gl).

Habitat and way of life: it is a predatory species living in xerophilous and meso-xerophilous lawns, with tall herbaceous vegetation; sometimes it can be seen on bushes. It catches Bush-crickets, Grasshoppers and even Mantids, holding them with the spiny fore and middle pairs of legs.

Phenology: Adults appear in July and we can find them even in late October. It hibernates during egg stage. Nymphs hatch in May.



Fig. 332. Saga pedo ($\stackrel{\frown}{\circ}$), Hanu Conachi (Gl), 15.08.2008



Fig. 333. *Saga pedo* (♀), David's Valley (Is), 04.09.2008

Subfamily Conocephalinae

This subfamily includes small species, spread in the neotropics and Indomalaesia. In Europe there are a few species known.

Conocephalus hastatus (Charpentier, 1825)

Description: this species has the body color green, with a longitudinal brown dorsal stripe, usually limited with white-yellowish stripes on each side. The antennae are very long, about $4\text{-}5\times$ longer than the body. The fore wings are usually brown or yellow-brown and are smaller than the pronotum's length. The ovipositor is longer than the body and nearly straight.

Body length: $3 \cdot 13 \cdot 15 \text{mm}$, $15 \cdot 17 \text{mm}$, ovipositor 22-32mm.

Stridulation: a short sequence of echemes. It can be heard from about 5m away from the insect. It stridulates during day time and in the afternoon.

Distribution: an East Mediterranean species. In Romania is rare in the Southern part of the country. In Moldavia it is a very rare species, it has been found in the South-Eastern forests, near Galati.

Habitat and way of life: it is a predominantly insectivorous species; meso-xerophilous and xerophilous, it usually can be found in forest glades and fringes. It is a very shy Bush-cricket and quickly it jumps in the high grasses or bushes.

Phenology: adults can be seen from July until October. It hibernates in the egg stage. Nymphs hatch in April.



Fig. 334. Conocephalus hastatus (\circlearrowleft), Garboavele (Gl), 26.06.2005



Fig. 335. Conocephalus hastatus (\updownarrow), Garboavele (Gl), 26.06.2005

Conocephalus fuscus (Fabricius, 1793)

(syn. Conocephalus discolor Thunberg, 1815)

Description: the Long-winged Cone-head has the body color green, with a brown longitudinal dorsal stripe. The antennae are about 4 times longer than the body. Fore wings are usually brown and surpass the end of the abdomen. The male's $10^{\rm th}$ abdominal tergum has 2 small median eminences. Ovipositor is long and nearly straight.

Body length: 3 14-17mm, 9 14-20mm, ovipositor 10-16mm.

Stridulation: a long sequence of echemes. Each echeme is made of 3 syllables. It can be heard from about 10 m.

Distribution: Holopalaearctic species widely spread in Europe, Northern Africa and Asia. In Romania is one of the most encountered species. In Moldavia it is very spread especially in hygrophilous meadows and mesophilous tall grasslands.

Habitat and way of life: it is an omnivorous species, predominantly insectivorous; hygrophilous (reeds, lawns), hygro-mesophilous and mesophilous species - it can also be found in forest glades and fringes.

Phenology: adults can be encountered from July. It hibernates as egg stage, usually the female deposing her eggs in *Carex* leaves. Nymphs hatch in May.



Fig. 336. Conocephalus fuscus (&), Topile (Is), 23.07.2008



Fig. 337. Conocephalus fuscus ($\stackrel{\frown}{}$), Botosani (Bt), 05.07.2008

Conocephalus dorsalis (Latreille, 1804)

Description: the Short-winged Cone-head has the typical body color for the *Conocephalus* genera, green with the dorsal brown stripe and brown wings. Fore wings do not reach the end of the abdomen. The male's $10^{\rm th}$ abdominal tergum has one median eminence, forked. Antennae are very long, about 3-4 times longer than the body. Ovipositor is shorter and sword-like bent.

Body length: \bigcirc 13-15mm, \bigcirc 16-17mm, ovipositor 8-10mm.

Stridulation: long echeme sequences, each echeme composed of 4 syllables. It stridulates at daytime.

Distribution: a Eurosiberian species, in Romania it is rare, but it has been signaled all across the country. In Moldavia is spread in hygrophilous lawns.

Habitat and way of life: it is one of the typical species for the hygrophilous lawns and often it can be encountered along with the species *Conocephalus fuscus, Metrioptera fedtschenkoi* and *Stethophyma grossum*. It is an omnivorous species, its food consisting in small insects and rarely in plants.

Phenology: adults appear in July-August. It hibernates in the egg-stage. Nymphs hatch in May.



Fig. 338. Conocephalus dorsalis (Å), Topile (Is), 27.08.2008



Fig. 339. Conocephalus dorsalis ($\stackrel{\frown}{\hookrightarrow}$), Valea Seaca (Is), 28.08.2008

Ruspolia nitidula (Scopoli, 1786)

Description: the Large Cone-head has a green color, but brown or yellowish individuals can also be found. The eyes, antennae and tibiae can also be yellow or brown. Even the mandibles are usually yellow. Body length: 3 21-26mm, 23-29mm, ovipositor 17-25mm.

Stridulation: a very long sequence of syllables (sometimes more than 5 minutes). It stridulates especially in the evening and at night. The song can be heard from more than 20m.

Distribution: a Circummediterranean species, widely spread across our country, but localized. In Moldavia is rare - the main populations are in the Eastern part of Moldavia.

Habitat and way of life: it is an omnivorous species, which can be encountered especially in the hygrophilous tall grasslands; rare in mesophilous and even in xerophilous grasslands. Because of its color, it is quiet difficult to be seen in the grass. We can try to catch this insect in the night, guided by its long calling song, but because it is very shy, it stops from stridulating when we get too close.

Phenology: adults can be encountered in July-August. It hibernates in the egg-stage. Nymphs hatch in June.



Fig. 340. Ruspolia nitidula (♂), Barnova (Is), 26.08.2008



Fig. 341. *Ruspolia nitidula* ($\stackrel{\frown}{}$), David's Valley (Is), 25.08.2008

Subfamily Meconematinae

These are small sized Orthoptera, with fore wings and hind wings well developed or rudimentary. The male does not have the stridulating organ and the cerci do not have inner dent. This subfamily has more than 50 species, most of them arboricolous, nocturnal and insectivorous.

Meconema thalassinum (De Geer, 1773)

(syn. *Meconema varium* Fabricius, 1775)

Description: the Oak Bush-cricket has a green body color, rarely yellow, with a dorsal yellow stripe on the head, pronotum and base of the fore wings. The wings usually surpass the end of abdomen. The fore wings in males are not modified for producing the stridulation, as in other Bush-crickets.

Body length: \lozenge 11-15mm, \supseteq 12-16mm, ovipositor 8-9mm.

Stridulation: males do not produce the song by rubbing the fore wings but by a rapid "drumming" of the hind legs on leaf. This sound can be heard from a few meters during the morning or in the afternoon.

Description: it is a Holoeuropean species, widely spread in Romania - in the deciduous forests. In Moldavia is frequent.

Habitat and way of life: the species is insectivorous, arboricolous, mesophilous. It can be encountered especially in the oak-tree forests. During the day, the Oak Bush-cricket stays on the inferior part of the leaves, in the night being more active.

Phenology: adults appear in July-August. It hibernates in egg-stage. Nymphs hatch in May.



Fig. 342. Meconema thalassinum (3), Botosani (Bt), 05.07.2008

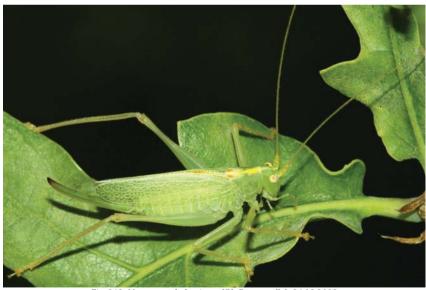


Fig. 343. Meconema thalassinum (♀), Barnova (Is), 26.08.2008

Subfamily Tettigoniinae

The Bush-crickets are medium and large size Orthoptera. The male usually has cerci with an inner dent and styli; the female has a straight or curved ovipositor.

Tettigonia cantans (Fuessli, 1775)

Description: the Upland Green Bush-cricket has a green body color, with a longitudinal dorsal brown stripe, the stridulatory apparatus is also brown. Rarely there can be encountered yellow-orange individuals. Fore wings and hind wings are short and do not surpass the hind knees. Body length: \circlearrowleft 22-28mm, \circlearrowleft 24-31mm, ovipositor 21-30mm.

Stridulation: usually during the daytime stridulation the echemes are shorter (about 5-10s). In the afternoon and at night, the echemes are longer, even for several minutes. The stridulation usually can be heard from more than 50m.

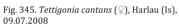
Distribution: a Eurosiberian species, common in Northern and Central Europe, Siberia. In Romania is frequent in the mountains, but especially in the Oriental Carpathians. In Moldavia it can be encountered in the mountains, but its presence in some forests from the Suceava Plateau (Adancata - Sv) and Moldavian Plateau (Humosu and Barnova - Is) is very interesting.

Habitat and way of life: a praticolous, arbusticolous and arboricolous species, characteristic for mesophilous and hygro-mesophilous lawns from the mountains. Usually it eats smaller insects.

Phenology: adults can be encountered from July-August. It hibernates in the egg-stage. Nymphs hatch in May.



Fig. 344. Tettigonia cantans (\circlearrowleft), Gainesti (Sv), 02.08.2008





Tettigonia viridissima (Linnaeus, 1758)

Description: the Great Green Bush-cricket has the body color light or dark green, almost always with a dorsal longitudinal stripe. Sometimes there can be found individuals with orange or yellow legs or even with the whole body orange-yellowish. The spines from the hind femora are black only at the tip. Male's cerci are curved to the interior and are 2 times longer than the styli. The ovipositor doesn't surpass the end of the fore wings.

Body length: \lozenge 28-35mm, \supseteq 33-42mm, ovipositor 27-31mm.

Stridulation: very long echeme sequences. Each echeme is formed by 2 syllables. The song can be heard from a distance sometimes over 100m. It stridulates especially in the afternoon and at night, sometimes in daytime.

Distribution: a Holopalaearctic species, known from Europe, Northern Africa, Western and Central Asia. It is one of the most spread species in Moldavia, missing only from the high mountains.

Habitat and way of life: an arboricolous species, rarely praticolous, eurybiont, spread in the plains and the hills. The nymphs are praticolous but the adults are arboricolous. Still, we can find adults in the cereal crops, especially in wheat and corn, shrubs, forest glades etc. Sometimes it can be found together with *Tettigonia cantans* in some mountains.

Phenology: adults appear in June-July and can be seen even in autumn. It hibernates in the egg-stage. Nymphs hatch in April.



Fig. 346. Tettigonia viridissima (3), Bacau (Bc), 01.09.2007



Fig. 347. Tettigonia viridissima (♀), Pascani (Is), 07.07.2008

Tettigonia caudata (Charpentier, 1845)

Description: the Eastern Green Bush-cricket has a green body, sometimes orange-yellowish, without the dorsal brown stripe. The spines from the hind femora are black, with a black spot at their base. Male's cerci are curved to exterior and have almost the same length as the styli. The ovipositor surpasses the length of the wings.

Body length: 323-36mm, 29-37mm, ovipositor 35-40mm.

Stridulation: the echemes are in crescendo, lasting about 2-4s. It stridulates during both day and night.

Distribution: a Central Asian, Pontic and East Alpine species. In Romania it is spread especially in the Southern part and in Transylvania. In Moldavia it is localized especially in the Central and Southern parts.

Habitat and way of life: it is a praticolous and arbusticolous species, mesophilous and xerophilous. Sometimes it can be found in the cereal crops or alongside the streets, in the shrubs.

Phenology: adults can be seen from June-July until October. It hibernates in egg stage. Nymphs hatch in April.



Fig. 348. Tettigonia caudata (3), Blagesti (Is), 11.08.2007



Fig. 349. *Tettigonia caudata* (\updownarrow), Pascani (Is), 11.08.2007

Gampsocleis glabra (Herbst, 1786)

(syn. Locusta maculata Charpentier, 1825)

Description: the body color is green or brown-yellowish, with many dark spots. The prosternum has 2 spines. Usually the paranotum has 2 inferior stripes: a white stripe in the inferior part and a black one above the white one. The fore wings are green or brown with dark spots. The ovipositor is brown, pale at base and black at top.

Body length: 3 20-25mm, 22-27mm, ovipositor 15-22mm.

Stridulation: a long sequence of very short echemes. It stridulates only in the sunny days.

Distribution: Central Asian-South European species, it is rare in Romania. Very rare in Moldavia it is rare and spread especially between the rivers Siret and Prut.

Habitat and way of life: an insectivorous species, praticolous, xerophilous and thermophilous. It prefers the tall grasslands and it is easily recognizable by its long calling song.

Phenology: adults appear in June-July. The species hibernates in egg-stage. Nymphs hatch in April.



Fig. 350. Gampsocleis glabra (3), David's Valley (Is), 11.07.2008



Fig. 351. Gampsocleis glabra (♀), David's Valley (Is), 29.06.2007

Decticus verrucivorus (Linnaeus, 1758)

Description: the Wart-biter has a very variable body color, but usually it is green with dark spots; also brown, garnet, greyish individuals can be encountered. The fore wings do not surpass the hind knees. The inner dent is located at the middle of cerci's length (males). Ovipositor is long and straight.

Body length: 31-35mm, 30-38mm, ovipositor 20-26mm.

Stridulation: in sunny days, the echeme sequence is long, lasting usually more than 1 minute. In the cloudy days or in the morning, the stridulation consists only in isolated echemes. An echeme is made of 4 syllables.

Distribution: it is a Eurosiberian species, widely spread in Romania. In Moldavia it is a common species.

Habitat and way of life: an insectivorous species, mesophilous and mesoxerophilous, praticolous and geophilous, can be encountered from the seaside up to 1700m altitude. It is very shy and stops stridulating when we get close to it. If needed, it flies well and jumps down into the thick vegetation or bushes, being very difficult to be caught.

Phenology: adults appear in June-July. It hibernates in egg-stage. Nymphs hatch in April.



Fig. 352. Decticus verrucivorus (3), David's Valley (Is), 11.07.2008



Decticus albifrons (Fabricius, 1775)

Description: the White-faced Bush-cricket has a yellowish-garnet-greyish body color, with dark spots on the fore wings. The fore wings surpass the hind knees. Male's cerci have the inner dent close to their base. The ovipositor is straight. The female's subgenital plate has lateral sclerites. Body length: 35-38mm, 35-38mm, 35-38mm, ovipositor 21-25mm.

Stridulation: a series of syllables, similar to the song of *Decticus verrucivorus*, but a little more intense. It stridulates especially in sunny days and it can be heard from more than 100m away from the insect.

Distribution: a Circummediterranean species, known from Southern Europe, Minor Asia and Northern Africa. In Romania can be found only at the seaside (in Dobrogea) and very rarely in Moldavia (David's Valley near Iasi).

Habitat and way of life: it is a thermophilous species, xerophilous, praticolous and geophilous, predominant insectivorous. It usually lives in tall grasslands and sometimes bushes. Its presence at David's Valley (Is) is very interesting, especially because this species hasn't been found here until the summer of 2005.

Phenology: adults appear in June-July. It hibernates in egg-stage. Nymphs hatch in April.



Fig. 354. Decticus albifrons (3), 20.07.2008



Fig. 355. Decticus albifrons (\updownarrow), 20.07.2008

Platycleis affinis Fieber, 1853

Description: the Tuberous Bush-cricket has the body color browngreyish, with small dark spots. Sometimes we can find garnet individuals. The dorsal part of head and pronotum is usually lighter colored. In males, the inner dent is located at the middle of cerci. The female has a big eminence in the posterior part of the 7th abdominal sternum. The ovipositor is black, with light colored base.

Body length: 3 22-24mm, 9 22-26mm, ovipositor 12-16mm.

Stridulation: a long echeme sequence made of small echeme of 5-7 syllables and bigger echemes of 10-50 syllables. The ending echemes are different, discordant. It stridulates during daytime and at night.

Distribution: a Circummediterranean species, encountered in Southern Europe, Northern Africa, Asia Minor. In Romania is frequent especially in Dobrogea and Southern Muntenia. In Moldavia is very rare, it can be found only in the Southern and South-Eastern parts.

Habitat and way of life: insectivorous species, praticolous and geophilous, thermophilous, xerophilous, characteristic for the plains. It lives in tall laws, usually close to the ground.

Phenology: adults appear in July. It hibernates in egg-stage. Nymphs hatch in April.



Fig. 356. Platycleis affinis (3), Oancea (Gl), 24.06.2005



Fig. 357. Platycleis affinis (\updownarrow), Oancea (Gl), 24.06.2005

Platycleis intermedia (Serville, 1839)

Description: the body is brown or greyish, with dark spots. The spots on the fore wings are blurry. The inner dent is positioned in the distal third of cerci (males). Titillator's base is not wide in proximal area. The female has a small eminence in the anterior part of the 7th abdominal sternum and a small tubercle in the posterior part of the same abdominal sternum. The ovipositor is black.

Body length: \bigcirc 23-25mm, \bigcirc 22-26mm, ovipositor 9-11mm.

Stridulation: long echeme sequence, each echeme made of 2 syllables. It stridulates during the evening and at night.

Distribution: a Central Asian-Mediterranean species, spread in Romania, but localized; in Moldavia it has been found only in the South-Eastern part.

Habitat and way of life: insectivorous species, xero-thermophilous, praticolous and geophilous. It prefers the tall grasslands, but it can be found even in glades and forest fringes.

Phenology: adults can be found from July to October. It hibernates in egg-stage. Nymphs hatch in April.



Fig. 358. Platycleis intermedia (3), Craiesti (Gl), 13.07.2008



Platycleis albopunctata grisea (Fabricius, 1781)

Description: the color is the same as for the precedent species. Sometimes we can find individuals with the pronotum and the head garnet or yellowish. The female has no eminence on the 7^{th} abdominal sternum. Males have the titillator's base wide in proximal area. In many individuals, the hind wings are bluish in the proximal part. Body length: $3 \cdot 15-22 \, \text{mm}$, $3 \cdot 18-24 \, \text{mm}$, ovipositor 9-11mm.

Stridulation: short echemes (250-500ms, each having 3-4 syllables) in a few seconds sequence. It stridulates in daytime and at night.

Distribution: the subspecies is Central European, in Romania being widely spread all over the country. In Moldavia it is frequent in Center, East and South.

Habitat and way of life: insectivorous subspecies, mesophilous and meso-xerophilous, praticolous and geophilous, can be found usually in tall lawns, where it lives close to the ground.

Phenology: adults appear in July. It hibernates in egg-stage. Nymphs hatch in April.



Fig. 360. *Platycleis albopunctata grisea* (\circlearrowleft), Cristesti (Is), 25.08.2008



Fig. 361. Platycleis albopunctata grisea (♀), Harboanca (Vs), 04.10.2006

Platycleis striata (Thunberg, 1815)

(syn. Platycleis moldavica Uvarov, 1923)

Description: the body color is dark brown or dark grey. The paranotum has a light colored stripe on the posterior part. The fore wings are short and do not surpass the abdomen's end. The inner dent is placed at the cerci's base (in males). The ovipositor is black at the tip and pale colored at the base.

Body length: $\stackrel{\wedge}{\circlearrowleft}$ 14-16mm, $\stackrel{\bigcirc}{\hookrightarrow}$ 16-18mm, ovipositor 9-10mm.

Stridulation: short echemes of 2-3 syllables, in a long echeme sequence. It stridulates in day time and in the afternoon. The calling song cannot be heard from more than 2-3m.

Distribution: a Central Asian-Pontic species, known from Kazakhstan, Southern Siberia, Ukraine and Romania. In Romania it is known so far only from the grasslands around Iasi.

Habitat and way of life: an insectivorous species, meso-xerophilous, praticolous and geophilous, can be encountered only in tall grasslands, sometimes in great numbers - as in David's Valley near Iasi.

Phenology: adults appear in June-July and can be seen even in September. It hibernates in egg-stage. Nymphs hatch in April-May.



Fig. 362. Platycleis striata (ै), David's Valley (Is), 17.06.2008



Fig. 363. *Platycleis striata* (♀), David's Valley (Is), 17.06.2008

Platycleis veyseli Koçak, 1984

(syn. Platycleis vittata Frivaldsky, 1867)

Description: the body color is light greyish or brownish. The paranotum has a white-yellowish stripe on the inferior and the posterior part. The fore wings surpass half of the abdomen and have an acuminate tip. The inner dent is placed at the middle of cercus (in males). The ovipositor is black or dark grey, with a lighter colored base. Macropterous individuals are very rare.

Body length: \bigcirc 14-17mm, \bigcirc 16-19mm, ovipositor 5-6mm.

Stridulation: the calling song consists of short syllables. The stridulation can be heard from about 3-5m away. Usually the species stridulates in the morning and in the afternoon.

Distribution: a Central Asian-Pontic species, spread in the Center and Western part of Asia, Eastern Europe. In Romania it is characteristic for the Southern and the Eastern part, missing from Transylvania. Frequent in Moldavia - especially in the Eastern part.

Habitat and way of life: it is an insectivorous species, thermophilous, meso-xerophilous, praticolous and geophilous. It prefers the tall grasslands or the shrubs alongside the roads.

Phenology: adults appear in July and can be encountered until October. It hibernates in egg-stage. Nymphs hatch in April-May.



Fig. 364. Platycleis veyseli (3), Blagesti (Is), 17.06.2008



Fig. 365. Platycleis veyseli (♀), Salcioara (Vs), 17.08.2007

Metrioptera brachyptera (Linnaeus, 1761)

Description: the Bog Bush-cricket has the body color brown; sometimes the dorsal part of head, pronotum and fore wings is green or light brown. Rarely, we can encounter macropterous individuals. The paranotum has a white-greyish stripe on the posterior side. The inner dent is at the middle of cerci (males). The ovipositor is curved.

Body length: \lozenge 14-16mm, \supseteq 15-18mm, ovipositor 9-11mm.

Stridulation: a long echeme sequence; each echeme having 4 syllables. It stridulates during daytime and sometimes even at night.

Distribution: a Eurosiberian species, common in the Carpathian Mountains. In Moldavia it can be found especially in the mountain areas.

Habitat and way of life: it is an omnivorous species, praticolous, characteristic for the hygro-mesophilous mountain grasslands. Often we can encounter this species along *Psophus stridulus, Tettigonia cantans* or *Chorthippus dorsatus*.

Phenology: adults appear in July. It hibernates in egg-stage. Nymphs hatch in May.



Fig. 366. Metrioptera brachyptera (3), Gainesti (Sv), 02.08.2008



Metrioptera bicolor (Philippi, 1830)

Description: the Two-colored Bush-cricket has a light green body color, usually with a dorsal longitudinal brown stripe. Males have the styli longer than the apical part of cerci (between the inner dent and the tip of the cerci). Female's subgenital plate has 2 small lobes. The ovipositor is brown-yellowish, with a black tip. The species is brachypterous, but sometimes, especially on high altitudes, macropterous individuals can be found.

Body length: \bigcirc 14-18mm, \bigcirc 15-20mm, ovipositor 5-6mm.

Stridulation: repeated short echeme sequence, composed of trisyllabic echemes. It stridulates in daytime.

Distribution: the species is Eurosiberian and it is known from Europe, Siberia and Mongolia. In Romania is very frequent in the Central and Northern part of the country. In Moldavia is very common.

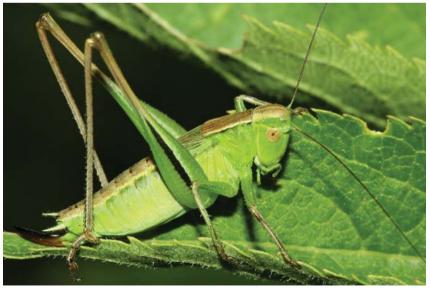
Habitat and way of life: eurybiont species, praticolous, lives in hygromesophilous and mesophilous grasslands. It is very common in many grasslands and even alongside the country roads.

Phenology: adults appear in June-July. It hibernates in egg-stage. Nymphs hatch in April.



Fig. 368. Metrioptera bicolor ($\fill \circlearrowleft$), Agapia (Nt), 31.07.2008

Fig. 369. Metrioptera bicolor (\updownarrow), Pascani (Is), 31.07.2008



Metrioptera roeselii (Hagenbach, 1822)

(syn. Locusta brevipennis Charpentier, 1825)

Description: the body color is brown-yellowish, sometimes green. The dorsal part of the head and pronotum has a black stripe. The paranotum is green or black, with the anterior, inferior and posterior borders having a white or light green stripe. The fore wings are brown. The distal part of the titillators is straight, with few small dents. The ovipositor is brown or black, sometimes with a green or yellowish base. Rarely there can be seen macropterous individuals.

Body length: \bigcirc 16-20mm, \bigcirc 17-22mm, ovipositor 6-7mm.

Stridulation: a very long series of syllables, similar to the calling song of *Ruspolia nitidula*. It stridulates in daytime.

Distribution: a Eurosiberian species. In Romania is quite frequent. In Moldavia it is localized, being spread especially in the Oriental Carpathians and in some meadows in the Moldavian Plateau.

Habitat and way of life: insectivorous species, praticolous, characteristic for hygrophilous and mesophilous grasslands.

Phenology: adults appear in June-July and can be seen until early autumn. It hibernates in egg-stage. Nymphs hatch in April-May.



Fig. 370. Metrioptera roeselii (♂), Bicaz Gorges (Nt), 02.09.2008

Fig. 371. Metrioptera roeselii (\updownarrow), Lepsa (Vn), 14.08.2007



Metrioptera fedtschenkoi vasilii (Götz, 1969)

Description: the body color is similar to the precedent species. It differs from *Metrioptera roeselii* by the more massive body, the titillators shape and female's genital plate's shape. The titillators distal part is thinner, curved and with many small dents in the apical part.

Body length: 3 16-20mm, 9 17-22mm, ovipositor 7-8mm.

Stridulation: very similar to the calling song of *Metrioptera roeselii*, very hard to be distinguished. It also stridulates during the day.

Distribution: this subspecies can be encountered in Romania only in the Eastern part of the country; very common in Moldavia.

Habitat and way of life: a predominant insectivorous subspecies, praticolous, prefers the hygrophilous and hygro-mesophilous grasslands. It can be found also in cereal fields and alongside the country roads.

Phenology: adults appear in July and can be encountered even in September. It hibernates in egg-stage. Nymphs hatch in April-May.



Fig. 372. Metrioptera fedtschenkoi vasilii (3), Barlad (Vs), 21.07.2007



Fig. 373. Metrioptera fedtschenkoi vasilii (\updownarrow), Fetesti (Sv), 13.07.2007

Pholidoptera frivaldskyi (Herman, 1871)

Description: the body color is light green, the fore wings yellowish-brown. Sometimes there can be seen individuals with black spots on the head ant thorax. The female's wings are covered by the pronotum. Male's cerci are green or brown, with the inner dent close to their base. The ovipositor is straight, brown-garnet, light green at the base.

The body length: \lozenge 20-23mm, \supseteq 22-25mm, ovipositor 18-21mm.

Stridulation: the echemes are long (about 5-10s), loud and composed of many syllables. It usually stridulates during daytime.

Distribution: South-East European species, in Romania it can be found especially in the mountains and hilly areas. It is a rare and localized species in Moldavia, being spread especially in the Western part.

Habitat and way of life: omnivorous species, praticolous, characteristic for the hygrophilous and hygro-mesophilous lawns in the mountains and some hills close to the mountains.

Phenology: adults appear in late June and July. It hibernates in egg-stage. Nymphs hatch in May.



Fig. 374. Pholidoptera frivaldskyi (ै), Vanatori-Neamt (Nt), 02.07.2008



Fig. 375. *Pholidoptera frivaldskyi* (♀), Vanatori-Neamt (Nt), 02.07.2008

Pholidoptera griseoaptera (De Geer, 1773)

(syn. Pholidoptera cinerea Linnaeus, 1951)

Description: the Dark Bush-cricket has the paranotum without the white stripe typical to other *Pholidoptera* species. The wings are short and usually lighter colored. The titillators end with a curved and sharp tip. The ovipositor is curved. Usually male's color is darker, meanwhile the females are lighter colored.

Body length: $\stackrel{\wedge}{\bigcirc}$ 14-18mm, $\stackrel{\bigcirc}{\bigcirc}$ 16-18mm, ovipositor 9-10mm.

Stridulation: the short echemes are formed of 3 syllables. It stridulates during both day and night.

Distribution: a Holoeuropean species, widely spread in Romania. It is very frequent in Moldavia.

Habitat and way of life: it is a geophilous and praticolous species, living in the forest fringe and glades, sometimes in the city parks. When there are many males, they sing their short rivalry songs, one at the time, without overlapping each other.

Phenology: adults can be encountered from July and until November. It hibernates in egg-stage. Nymphs hatch in April-May.



Fig. 376. Pholidoptera griseoaptera (ਨ), Balatau-Prut (Is), 08.07.2008



Fig. 377. Pholidoptera griseoaptera (♀), Bursuci (Vs), 21.07.2007

Pholidoptera littoralis similis (Brunner von Wattenwyl, 1861)

Description: the body color is brown dorsally and green ventrally, with a green stripe in the inferior and posterior part of the paranotum. The wings are brown. The titillators have many dents on their tip. The ovipositor is straight, long, brown.

Body length: $3 \cdot 18-23$ mm, $2 \cdot 22-25$ mm, ovipositor 22-26mm.

Stridulation: more than 20 syllables form echemes of about 2-3s. It stridulates at daytime and in the evening.

Distribution: a South-East European subspecies. In Romania is common in the forests of the Southern part. It is very rare, found only in Southern and South-Western Moldavia.

Habitat and way of life: it is an omnivorous subspecies, praticolous; usually it can be encountered in tall grasslands close to the forests, forest fringe and glades.

Phenology: adults appear in June-July and rarely can we encounter them in autumn. It hibernates in egg-stage. Nymphs hatch in May.



Fig. 378. Pholidoptera littoralis similis (♂), Lepsa (Vn), 14.08.2007





Pholidoptera fallax (Fischer, 1853)

(syn. *Thamnotrizon austriacus* Türk, 1860)

Description: the body color is usually brown, lighter or darker; rarely there can be seen grey individuals. The paranotum has a white stripe on the inferior and posterior border. The titillators have 3-4 dents on the tip. The ovipositor is curved, brown or garnet.

Body length: $3 \cdot 15-19$ mm, $9 \cdot 17-21$ mm, ovipositor 12-17mm.

Stridulation: 2 to 3 syllables form short echemes, repeated in echeme sequences. The song is very similar to that of *Pholidoptera griseoaptera*. It stridulates during the day-especially in the morning or in the afternoon and at night.

Distribution: a Central Asian-South European species. In Romania it can be found especially in the Southern part. In Moldavia is rare and localized in the Oriental Carpathians. It can also be found in Southern and Eastern Moldavia.

Habitat and way of life: it is an omnivorous species, praticolous and arbusticolous; it prefers the mesophilous grasslands and bushes from forest fringes and glades.

Phenology: adults appear in July. It hibernates in egg-stage. Nymphs hatch in May.



Fig. 380. Pholidoptera fallax (3), Ceahlau Mountain (Nt), 08.08.2008



Pholidoptera transsylvanica (Fischer, 1853)

Description: the Transylvanian Dark Bush-cricket has a dark brown or grey body color, with a lighter, transversal stripe on the frontlet. The paranotum have a white stripe on the posterior border. The wings are brown or garnet colored. The titillators are wide and with many dents on the tip. Female's subgenital plate is chopped until its middle. The ovipositor is straight, its color being brown or dark grey.

Body length: \circlearrowleft 19-24mm, \subsetneq 21-29mm, ovipositor 20-30mm.

Stridulation: the small echemes are formed of 3 syllables. It stridulates in daytime, in the evening and sometimes at night.

Distribution: it is an endemic species for the Carpathian Mountains. In Moldavia it can be encountered only in the mountains, localized.

Habitat and way of life: omnivorous species, praticolous and geophilous, mesophilous and hygro-mesophilous, characteristic for the mountain grasslands, mountain forest fringes and glades. It is very shy and it quickly jumps and hides in the tall grasses.

Phenology: adults appear in July-August. It hibernates in egg-stage. Nymphs hatch in May.



Fig. 382. *Pholidoptera transsylvanica* (♂), Rarau Mountain (Sv), 31.07.2008



Pholidoptera aptera (Fabricius, 1793)

Description: in the Alpine Dark Bush-cricket, males usually have a dark brown or black body color and the females are often light brown or greyish. The paranotum has a posterior white stripe. The back part of the dorsal pronotum is light colored. The wings are yellowish-brown. The titillators have a few smaller dents and a terminal bigger one. Female's subgenital plate is chopped in the distal quarter. The ovipositor is straight, brown or greyish colored.

Body length: $\sqrt[3]{18-22}$ mm, $\sqrt{2}$ 20-23mm, ovipositor 19-23mm.

Stridulation: many short echemes repeated several times. Each echeme is formed of 4 syllables. The stridulation can be heard from more than 30m. It stridulates especially during daytime.

Distribution: a Central European species, known from the Alps, Carpathians and Balkans. In Romania it can be found only in the Oriental and Meridional Carpathians, but rare. In Moldavia is spread in the Oriental Carpathians.

Habitat and way of life: a mesophilous, praticolous and geophilous species, it usually inhabits the mountain forest fringes and glades - where it prefers the thick bushes. As the species *Pholidoptera transsylvanica*, this species is very shy and when we get too close, it stops the stridulation and jumps. It usually inhabits the mountain slopes and, when in danger, it jumps towards downhill, being very difficult to be caught.

Phenology: adults appear in July-August. It hibernates in egg-stage. Nymphs hatch in May.



Fig. 384. Pholidoptera aptera (3), Zugreni Gorges (Sv), 29.07.2008



Fig. 385. *Pholidoptera aptera* (♀), Zugreni Gorges (Sv), 29.07.2008

Rhacocleis germanica (Herrich-Schäffer, 1840)

Description: the body color is light brown-yellowish or dark brown, with small spots. The paranotum has usually a white stripe in the inferior border. The prosternum has 2 spines. The fore wings are very small and a yellowish or brown color. The ovipositor is straight and garnet. Body length: 3 17-19mm, 2 16-20mm, ovipositor 13-16mm.

Stridulation: the calling song is usually produced at night or in the evening. The echeme sequence consists of short echemes, each lasting 0,2-0,7s; the interval between the echemes is about 1-3s.

Distribution: it is known from Southern Europe and South-Eastern Asia. In Romania is common in the Southern part of the country. It is very rare in Southern and South-Eastern Moldavia.

Habitat and way of life: geophilous and praticolous species, meso-xerophilous and xerophilous, it prefers the forest fringe and the glades, where it stays hidden in the bushes or the tall grasses.

Phenology: adults can be found from July until October. It hibernates in egg-stage. Nymphs hatch in April.



Fig. 386. Rhacocleis germanica (3), Garboavele (Gl), 26.06.2005



Fig. 387. Rhacocleis germanica (♀), Garboavele (Gl), 23.09.2005

Pachytrachis gracilis (Brunner von Wattenwyl, 1861)

Description: the body color is brown-yellowish, sometimes dark brown. The paranotum has a white stripe on the inferior and posterior border. The ventral side of the body is green. The dorsal part of the body is usually light brown colored. Male's cerci do not have an inner dent. The ovipositor is straight.

Body length: $\sqrt[3]{15-19}$ mm, $\sqrt[9]{16-19}$ mm, ovipositor 14-18mm.

Stridulation: the calling song consists of short, very melodious echemes. It stridulates during daytime, in the afternoon and in the evening.

Distribution: South-East European species. In Romania is localized in all the country, but more common in the South. It is rare in the Eastern part of Moldavia.

Habitat and way of life: insectivorous species, mesophilous and mesoxerophilous, lives in the forest fringe and glades. It prefers hilly areas and very rare the mountains. It stays hidden in the bushes or grasses and is very shy, rarely letting us to get closer for less than a few meters.

Phenology: adults can be found from July until October. It hibernates in egg-stage. Nymphs hatch in April.



Fig. 388. Pachytrachis gracilis (3), Barnova (Is), 26.08.2008



Fig. 389. Pachytrachis gracilis (♀), Barnova (Is), 26.08.2008

Subfamily Bradyporinae

Massive Orthoptera, with the antenna articulated below the eye level. The fore wings are covered by pronotum in some species. The hind wings are absent.

Ephippiger ephippiger (Fiebig, 1784)

Description: the Saddle-backed Bush-cricket has the body color light green or yellowish. Often we can find individuals with brown body color. The pronotum has the shape of a saddle. The fore wings are short, brown-yellowish. The occiput is black. The ovipositor is straight, brown-garnet. Body length: ♂ 21-26mm, ♀ 23-26mm, ovipositor 18-20mm.

Stridulation: the echemes are composed of 1 or 2 syllables. The calling song is strident, and can be heard from more than 30m. It stridulates usually in the morning and in the afternoon.

Distribution: a South European species, common in Romania. In Moldavia it is common in the Eastern and the Southern part and rare in the Carpathians.

Habitat and way of life: a thermophilous species, arbusticolous and arboricolous, it can be encountered in the forest fringe, glades, vineyards etc. Especially in late summer and in early autumn, the males stridulate and move across the vegetation to find the females or male competitors.

Phenology: adults appear in July. It hibernates in egg-stage. Nymphs hatch in April-May and can be easily identified because of their black occiput.



Fig. 390. Ephippiger ephippiger (♂), Barnova (Is), 26.08.2008



Fig. 391. Ephippiger ephippiger (♀), Barnova (Is), 26.08.2008

Superfamily Grylloidea

Crickets are large and medium sized Orthoptera. The stridulating organ covers almost the whole fore wing; the postcubital part of the fore wing is widened.

Family Gryllidae

The body color is brown-black or yellowish, but never green. During stridulation the right fore wing is laid on top of the left fore wing.

Subfamily Gryllinae

Gryllus campestris Linnaeus, 1758

Description: the body is all black without hair. The interior borders of the fore wings are yellow. The ventral side of the posterior femora is red. The hind wings don't reach the tip of the abdomen. The epiphalus is large and trilobed at the tip. The ovipositor is straight, long and black. Body length: $3 \cdot 19-28$ mm, $4 \cdot 18-29$ mm, ovipositor $4 \cdot 19-28$ mm.

Stridulation: the short and strident echemes can be heard from over 100 m. Each echeme is composed from 3-4 syllables. It stridulates in late April, May and June, in the evening and at night, and rarely during the day. In the mountains, adults can be heard singing even in August.

Distribution: it is a Holopalaearctic species, known from Europe, Northern Africa and Asia. It is very common in Eastern Romania.

Habitat and way of life: the Field-cricket is a geophilous, thermophilous and omnivorous species which prefers mesophilous and meso-xerophilous habitats with short grass. It lives in galleries dug in the earth, 40-50 cm long and 2 cm wide. We have remarked that on a hollow near Pascani (Is), the Field-crickets were living only on the Northern versant, the sunny one - thus being appropriate for their development.

Phenology: Adults appear at the end of April, the beginning of May. The nymphs are hatching in August and they are hibernating.



Fig. 392. *Gryllus campestris* ($\stackrel{?}{\circlearrowleft}$), Soci (Is), 29.05.2007



Fig. 393. *Gryllus campestris* (\updownarrow), Bacau (Bc), 12.05.2008

Acheta domesticus (Linnaeus, 1758)

Description: the House-cricket has a yellow-brown body color with dark spots; the head is brown with yellow stripes and spots. The posterior wings are often longer than the fore wings and abdomen. The epiphalus is longer than wider, almost quadrangular. The ovipositor is long, straight, yellow or grey.

Body length: $3 \cdot 16-19$ mm, $9 \cdot 17-20$ mm, ovipositor 12-15mm.

Stridulation: a long sequence of very short echemes, strident and repeated. Each echeme has 2-3 syllables. It stridulates mostly in the evening and during the night.

Distribution: it is a Holopalaearctic species, in Romania is rare, but distributed in all areas. It is very rare in Moldavia.

Habitat and way of life: it is a synantropic, thermophilous and omnivorous species. It can be found in the old houses, made of clay, in kitchens, cellars, living hidden in cracks in the walls. It can easily be identified by its stridulation, especially during the night.

Phenology: Adults and nymphs are found all over the year.



Fig. 394. Acheta domesticus (3), Pascani (Is), 20.09.2007



Fig. 395. Acheta domesticus (\updownarrow), Pascani (Is), 20.09.2007

Melanogryllus desertus (Pallas, 1771)

Description: the body is black, highly pubescent and without yellow spots on the head. The fore wings are sometimes yellowish. The posterior wings are usually short, but often we can find macropterous individuals. The triangular epiphalus is ending with a small median apophysis. The ovipositor is straight and long.

Body length: $\sqrt[3]{21-26}$ mm, $\sqrt[9]{23-26}$ mm, ovipositor 10-15mm.

Stridulation: the echemes are longer than in *Gryllus*, with more syllables, more melodious and lower in intensity. It stridulates especially in the evening and sometimes in the morning.

Distribution: it is a Central Asian-Mediterranean species. In Moldavia is quite common.

Habitat and way of life: it is a mesophilous and xero-mesophilous, geophilous species that prefers habitats with scarce vegetation. It doesn't build galleries, living in cracks in the soil and underneath rocks.

Phenology: adults appear in May-June. Nymphs hatch in August. It hibernates as a nymph.



Fig. 396. Melanogryllus desertus (3), Targu Frumos (Is), 20.05.2006



Modicogryllus frontalis (Fieber, 1844)

Description: the body is black or brown-black. Between the compound eyes there is a transversal white or yellowish stripe. Rarely the occiput has short longitudinal white stripes. The posterior wings are usually short. The fore wings are brown-black. Rarely, we can find greyish individuals. Ectoparamers are as long as the distal prolongations of the epiphalus. The ovipositor is long and straight.

Body length: 31-12mm, 12-14mm, ovipositor 6-8mm

Stridulation: echemes are short (about 0,2-0,3s), repeated often. The song resembles a low buzzing. It stridulates in the evening and at night.

Distribution: it is a Central Asian-Pontic species, distributed in the East of the country in plain and plateau regions. It is much rare in the mountains. It is very common in Moldavia.

Habitat and way of life: it is a xero-mesophilous, xerophilous and geophilous species, found in the steppic areas, sometimes it can be found in forest fringes and glades. It doesn't build galleries, living in cracks in the soil and underneath rocks.

Phenology: adults appear in May-June. Nymphs hatch in August. It hibernates as a nymph.



Fig. 398. Modicogryllus frontalis (3), Topile (Is), 26.06.2006



Fig. 399. Modicogryllus frontalis (2), David's Valley (Is), 29.05.2006

Modicogryllus truncatus (Tarbinsky, 1940)

(syn. Modicogryllus chopardi Kis, 1967)

Description: the body is brown and marmorated with yellow or orange. On the forehead, between the eyes there is a white or yellow-orange stripe. The ectoparameres are long and slender, longer than the distal prolongations of the epiphalus. The ovipositor is thin and straight. Body length: 3 11-13mm, 2 12-14mm, ovipositor 7-8mm.

Stridulation: the song is more strident than *Modicogryllus frontalis*, with shorter echemes (about 0,1s). It stridulates in the evening and at night.

Distribution: it is a Central Asian-Pontic species. In Romania it has been found only in the South of the country, where it is a common species. It is very rare in Southern Moldavia.

Habitat and way of life: it is a thermophilous, xerophilous and geophilous species. Like *Melanogryllus desertus* and *Modicogryllus frontalis*, it lives in cracks in the soil and underneath rocks. It is often found on the railway bed.

Phenology: adults appear in late May and June. It hibernates as a nymph.



Fig. 400. Modicogryllus truncatus (3), Focsani (Vn), 23.06.2007



Fig. 401. Modicogryllus truncatus ($\stackrel{\circ}{\downarrow}$), Marasesti (Vn), 30.06.2007

Subfamily Nemobiinae

They are small size Crickets, with brown-black, pubescent body and the head has a yellow pattern. The cerci are longer than the ovipositor. Sometimes the posterior wings are longer than the fore wings and the tip of the abdomen.

Pteronemobius heydenii (Fischer, 1853)

(syn. Nemobius saussurei Burr, 1898)

Description: the Marsh-cricket has the body color black-brown. Sometimes the fore wings have a tint of light brown or, rarely, rubiginous. Males have the subgenital plate is short and wide. The female has the cerci longer than the ovipositor, which has a lanceolate tip with teeth. Body length: \bigcirc 5-7mm, \bigcirc 6-8mm, ovipositor 2,5-3mm

Stridulation: the song has long echemes, lasting several seconds. It stridulates during the day and at night. Although they have a strong stridulation it is almost impossible to locate the individuals by listening to the song.

Distribution: it is a Circummediterranean species. In Romania it is found mainly in the South of Muntenia, in Dobrogea; in Transylvania being rare. In Moldavia it is quiet a frequent species, localized in many hygrophilous areas.

Habitat and way of life: it is a typically hygrophilous and geophilous species, found near marshes with *Carex*, where it can be easily identified by stridulation. Due to its small dimensions, it is obviously why this species was not found in Moldavia until the year 2005.

Phenology: adults can be encountered from May to September. It hibernates as a nymph.



Fig. 402. Pteronemobius heydenii (3), Iasi (Is), 10.06.2007



Fig. 403. Pteronemobius heydenii (♀), Codaesti (Vs), 27.06.2006

Subfamily Oecanthinae

The body color is white-yellow or brown. The head is prognathous, the male fore wings are strongly widened, and the female ones are narrow. The dorsal keel of the posterior tibia has very fine teeth and several spines. 40 genera are known from this family with 120 species found on all the continents.

Oecanthus pellucens (Scopoli, 1763)

(syn. Acheta italicus Fabricius, 1781)

Description: the Tree-cricket has a body color white-yellow or brown. It has a brown transversal stripe on the head and pronotum. The head is prognathous. The male fore wings are strongly widened, and in female are narrow. The ovipositor is straight.

Body length: $\sqrt[3]{10\text{-}14}$ mm, $\sqrt[9]{10\text{-}16}$ mm, ovipositor 6-8mm.

Stridulation: the song has short echemes, about 1s in length and high intensity. Each echeme has 20-30 syllables. It can be heard from over 100 m, especially in the silent summer nights. In late summer and in autumn, the Tree-cricket sings even during daytime.

Distribution: Central Asian-Mediterranean species, widely distributed in our country, especially in the Southern plane areas. In Moldavia it is a common species, but rare in the western part.

Habitat and way of life: it is a typically thermophilous species, preferring xero-mesophilous and xerophilous lawns. It is a praticolous and arbusticolous species, being frequent in forest glades, fringes, tall lawns, bushes, vineyards, city parks etc.

Phenology: adults are found in July-October. It hibernates as an egg stage. Nymphs hatch in May.



Fig. 404. *Oecanthus pellucens* (\circlearrowleft), Crasna (Vs), 25.08.2006



Fig. 405. Oecanthus pellucens (\updownarrow), Pascani (Is), 28.08.2008

Family Gryllotalpidae

Mole-crickets are easily recognizable by their anterior legs transformed into shovels with teeth. They can't jump. They live a hidden life in galleries dug underground.

Subfamily Gryllotalpinae

Gryllotalpa gryllotalpa (Linnaeus, 1758)

(syn. Gryllotalpa vulgaris Latreille, 1807)

Description: the Mole-cricket has a brown-reddish body color, ventrally yellow. The head is prognathous. The anterior legs are red and strongly modified. The posterior wings are longer than the fore wings and often longer than the tip of the abdomen. The body has a fine thick pilosity. Body length: $\Im \Im$ 35-50mm.

Stridulation: the song has a long sequence of syllables. It stridulates in the evening and at night, seldom during the day. The song can be heard especially in late spring and early summer.

Distribution: a Palaearctic species. It is very frequent in Eastern Romania.

Habitat and way of life: it is a typically terricolous species, living in galleries dug in the soil especially in hygro-mesophilous and mesophilous areas. Although it feeds on roots of cultivated plants, it is not such a harming species because it also eats insect nymphs. Copulation takes place in spring; the strong stridulation can be heard from cracks underground. The Mole-cricket is attracted to light and in the spring nights it flies towards the public light installations; so it can be easily caught.

Phenology: the lifecycle lasts for two years. It hibernates in the first year as a nymph and in the second year as an adult.



Fig. 406. *Gryllotalpa gryllotalpa* (ਨ), Hanu Conachi (Gl), 17.06.2006



INFRAORDER CAELIFERA

The Caelifera have cylindrical body, more or less elongated. The antennae are shorter than half of the body length and with less than 30 articles. The tympanal organ is situated on the first abdominal segment. The stridulatory apparatus is situated on the internal side of the posterior femurs and on the external side of the fore wing. The ovipositor is short.

Infraorder Tridactylidea

Caelifera with smooth pronotum, without keels. The fore legs are modified for digging. The posterior tarsus is uni- or biarticulated.

Superfamily Tridactyloidea

The superfamily comprises small sized Caelifera grouped in two families (*Tridactylidae* and *Cylindrachetidae*) with over 100 species. In Romania is found only one family with 3 species; 2 of them are found in Moldavia

Family Tridactylidae

These are insects with the body length less than 12 mm. The fore tibia is broad and spined on the borders. The cerci are mono and bi articulated. The species are living on the water shores in galleries dug in the damp sand. There are 80 known species, found on all the continents.

Subfamily Tridactylinae

Xya variegata Latreille, 1809

Description: the body color is black or dark brown, with white-yellowish spots. The ventral side of the body is white-yellowish. The lobes of the pronotum have a white stripe on their inferior border. The hind wings are longer than the forewings. The female subgenital plate has a median groove on its inferior border.

Body length: $\sqrt[3]{4,8-5,3}$ mm, $\sqrt{2}$ 5-5,5mm.

Stridulation: the species doesn't stridulate.

Distribution: it is a Central Asian-Pontic species. It is the smallest Caelifera of our country, found especially in the South of the country, alongside rivers and lakes together with the *Xya pfaendleri*. In Moldavia is more common in the Southern part.

Habitat and way of life: it is a geophilous, hygrophilous species living in galleries dug in the sand on the shores of rivers and lakes. It feeds upon algae and vegetation particles. It is very shy and makes considerably long jumps with the help of its strong posterior legs.

Phenology: it hibernates as a nymph, adults appear in April-August, more frequent in the spring.



Fig. 408. *Xya variegata* (♂), Pascani (Is), 01.05.2006



Fig. 409. *Xya variegata* (♀), Pascani (Is), 08.05.2008

Xya pfaendleri (Harz, 1970)

Description: the body color is black with a white spot in the inferior corner of the lateral lobe of the pronotum. The ventral part of the body is grey. Sometimes, individuals with orange stripes on the abdomen may appear. The female subgenital plate doesn't have a groove on the inferior border.

Body length: 34,8-5,3mm, 95-5,5mm.

Stridulation: the species doesn't stridulate.

Distribution: Central Asian-Pontic species, found especially in the Southern part of our country. It is rare in Moldavia, found in South and South-East on Siret and Prut rivers.

Habitat and way of life: the species has the same preferences as *Xya variegata*, often found together.

Phenology: it hibernates as a nymph; adults appear in April-September, very frequent in spring.



Fig. 410. *Xya pfaendleri* (3), Galati (Gl), 20.05.2007



Fig. 411. *Xya pfaendleri* (♀), Galati (Gl), 20.05.2007

Infraorder Acrididea

Caelifera with visible keels on the pronotum. The foreleg is not modified for digging. The posterior tarsus is triarticulated.

Superfamily Tetrigoidea

These are small sized Groundhoppers, geophilous and phytophagous. In Europe there are 3 genera and 13 species, 10 of them can be found in Romania

Family Tetrigidae

Subfamily Tetriginae

Tetrix ceperoi Bolivar, 1887

Description: the body color is grey, brown, and rarely green. The pronotal spine is longer than the abdomen. The fastigium is as broad as the compound eye.

Body length: $\sqrt[3]{7-7}$,5mm, $\sqrt{9-10}$ mm.

Stridulation: the species doesn't stridulate.

Distribution: it is a West Palaearctic species, known from Europe and Northern Africa, found in the Southern part of the country. In Moldavia is rare, found in the Southern part.

Habitat and way of life: it is a phytophagous, geophilous, thermophilous and hygrophilous species. It lives in marshes and on the water shores, with tall vegetation. Sometimes found also in sandy areas.

Phenology: adults are found in general during April-September months. It hibernates in egg-stage, nymph or adult.

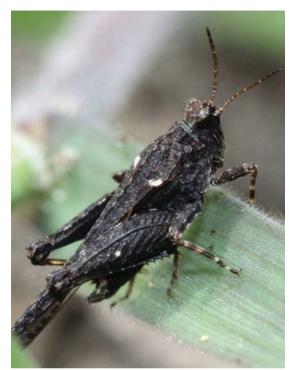


Fig. 412. $Tetrix\ ceperoi\ (\ \circlearrowleft\)$, Galati (Gl), 20.05.2007



Tetrix subulata (Linnaeus, 1758)

Description: the species has a variable body color, from grey to brown, garnet, yellow or black. The pronotal spine is usually longer than the tip of the abdomen. We can often find brachypronotal forms. The vertex is preeminent before the eyes and is broader than the compound eye. Body length: 3 7,5-9mm, 9 9-11mm.

Stridulation: the species doesn't stridulate.

Distribution: it is a Holopalaearctic species; it is widely spread in Romania, especially in marshes and river valleys. It is very common in Moldavia.

Habitat and way of life: it is a phytophagous, geophilous species, common in hygrophilous meadows from the planes to the mountains. It can be also found in forest fringe and in sandy areas.

Phenology: adults appear in April-May, and in autumn. It hibernates in egg-stage, nymph or adult.



Fig. 414. *Tetrix subulata* (), Pascani (Is), 10.04.2007



Fig. 415. *Tetrix subulata* (\updownarrow), Valea Seaca (Is), 11.04.2007

Tetrix bolivari Saulcy, 1901

Description: the species has a variable body color, from grey to brown, yellow or black and with dark and light spots. The vertex does not preeminate before the eyes and is broader than the compound eye. Body length: 3 8-9mm, 9 9-10mm.

Stridulation: the species doesn't stridulate.

Distribution: it is a Central Asian-Mediterranean species, rare in our country, found in the Southern part. In Moldavia also rare, found in South-Eastern part.

Habitat and way of life: it is a hygrophilous, thermophilous and geophilous species. Has the same preferences as *Tetrix subulata*, but is more thermophilous.

Phenology: adults are found from April. It hibernates in egg-stage, nymph or adult.



Fig. 416. Tetrix bolivari (♂), Hanu Conachi (Gl), 16.06.2007



Tetrix tuerki (Krauss, 1876)

Description: the body color is brown or grey, sometimes with dark blue tints. The median femora has the inferior border strongly undulated. There can be found long pronotum forms as well as brachypronotal forms. Body length: 3 7-9mm, 10-11mm.

Stridulation: the species doesn't stridulate.

Distribution: it is a Central European species. In our country is rare and localized. In Moldavia is rare.

Habitat and way of life: it is a geophilous species, found on gravely shores of rivers, especially in the mountain regions.

Phenology: adults appear in April-June. As all the other *Tetrix* species, they can be encountered even in late summer and in autumn. It hibernates in egg-stage, nymph or adult.



Fig. 418. Tetrix tuerki (♂), Agapia (Nt), 03.09.2008



Fig. 419. *Tetrix tuerki* (♀), Putna (Sv), 31.08.2006

Tetrix tenuicornis (Sahlberg, 1893) (syn. *Tetrix nutans* Hagenbach, 1822)

Description: the body color in this species has different tints of grey and brown. The posterior spine of the pronotum is not longer than the tip of the abdomen. The median articles of the antennae are approximately 4 times as long as broad.

Body length: 3 - 9mm, 10 - 12mm.

Stridulation: the species doesn't stridulate.

Distribution: it is a Holopalaearctic species, widely spread in Romania, except high mountains. It is very common in Moldavia.

Habitat and way of life: geophilous species living in various habitats, common in forests and mesophilous meadows.

Phenology: adults are found in May-June and in autumn. It hibernates in egg-stage, nymph or adult.



Fig. 420. Tetrix tenuicornis (3), David's Valley (Is), 01.07.2007



Fig. 421. Tetrix tenuicornis (\updownarrow), Iasi (Is), 01.07.2007

Tetrix undulata (Sowerby, 1806)

(syn. Acridium scriptum Zetterstedt, 1821)

Description: the body color in this species has different tints of grey and brown. The median articles of the antennae are approximately 3 times as long as broad.

Body length: 37,5-8,5mm, 910-11mm.

Stridulation: the species doesn't stridulate.

Distribution: it is a Central-North European species, quite rare in our country. In Moldavia is found localized.

Habitat and way of life: it is a mesophilous, geophilous species, living in lowland scarce vegetation meadows.

Phenology: adults are found in May-July and in autumn. It hibernates in egg-stage, nymph or adult.





Fig. 423. *Tetrix undulata* (♀), Pascani (Is), 05.05.2007

Tetrix bipunctata bipunctata (Linnaeus, 1758)

Description: the body color is variable: brown, grey, red, yellow etc. The pronotum is often with two black spots. The median articles of the antennae are twice as long as broad. The visible part of the hind wing is twice as big as the fore wing.

Body length: 3 8,5-10mm, 9 10-11mm.

Stridulation: the subspecies doesn't stridulate.

Distribution: it is a Eurosiberian species, known from Central and Northern Europe, Northern Asia, Mongolia, North-East China. In Romania is very common in the mountains. In Moldavia it can be found in the forest areas from the hills and mountains.

Habitat and way of life: it is a geophilous, mesophilous subspecies, found in the mountain and hilly areas.

Phenology: adults are found in June-August in mountain area and in May-July in hill areas. It hibernates in egg-stage, nymph or adult.



Fig. 424. Tetrix bipunctata bipunctata (Å), Gainesti (Sv), 05.09.2006



Fig. 425. *Tetrix bipunctata bipunctata* (♀), 20.04.2008 (photo: Cosmin Manci)

Tetrix bipunctata kraussi Saulcy, 1888

(syn. Tetrix kraussi Lehmann, 2004)

Description: the body color is generally grey, rarely brown, with a white, dorsal stripe - it has the same body color as the subspecies *Tetrix bipunctata bipunctata*; the visible part of the posterior wing has the same length with the fore wing.

Body length: 3 8,5-10mm mm, 9 10-11mm mm.

Stridulation: the subspecies doesn't stridulate.

Distribution: it is found in Continental Europe. In Romania is found in the Carpathians. In Moldavia it can be found only in the mountain areas.

Habitat and way of life: it is a geophilous and mesophilous subspecies, living in scarce vegetation areas, on rocks or pebbles.

Phenology: adults appear in July. It hibernates in egg-stage, nymph or adult.



Fig. 426. Tetrix bipunctata kraussi (3), Zugreni Gorges (Sv), 29.07.2008



Fig. 427. *Tetrix bipunctata kraussi* (♀), Rarau Mountain (Sv), 31.07.2008

Superfamily Acridoidea

Grasshoppers that don't have the pronotum with a posterior, pointed prolongation. The pretarsus has an arolium between the claws.

Family Acrididae

Medium or large sized Grasshoppers, they have lateral temporal foveolae. In the most of cases, both the fore and the posterior wings are well developed; the majority of species are macropterous. The tympanal organs are found on the first abdominal article.

Subfamily Calliptaminae

These are Grasshoppers with thick prosternal tubercle and long cerci. The dorsal keel of the femora is denticulated. There are more than 100 species on Earth; in Romania are known only 2 genera and 3 species.

Paracaloptenus caloptenoides (Brunner von Wattenwyl, 1861)

Description: the basic body color is brown-yellow, dark brown or grey; sometimes spotted with brown. It is a micropterous species. The posterior tibias are red.

Body length: $6 \cdot 16-18$ mm, $9 \cdot 24-30$ mm.

Stridulation: the species doesn't stridulate.

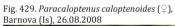
Distribution: it is a Ponto-Mediterranean species, in Romania is very rare found especially in the South of the country. In Moldavia is very rare.

Habitat and way of life: it is a geophilous, thermophilous species; it lives in meadows, forest fringes and clearings. In many cases, at first sight, it can be mistaken by a nymph of *Calliptamus*.

Phenology: adults appear at the end of July. It hibernates in egg-stage. Nymphs hatch in April-May.



Fig. 428. Paracaloptenus caloptenoides (♂), Barnova (Is), 26.08.2008





Calliptamus italicus (Linnaeus, 1758)

(syn. Acridium fasciatum Hahn, 1836)

Description: the body color is brown-yellow or grey, spotted with dark brown, especially on the fore wings. The posterior wings are pink at the base. The posterior tibias are red. The fore wings are longer than the tip of the abdomen and the tip of the knees.

Body length: 3 15-18mm, 2 22-31mm.

Stridulation: the species doesn't stridulate. In the mating period, males are making a specific sound by touching the palpes on a solid surface.

Distribution: it is a Eurasian element, common in Romania, even in the mountains (Meridional Carpathians). In Moldavia it is a common species.

Habitat and way of life: it is a geophilous, thermophilous and xerophilous species common in the plane and the hill areas. It prefers tall meadows, but it is also found in scarce vegetation areas and near the railroads.

Phenology: adults appear in July. It hibernates in egg-stage. Nymphs hatch in April-May.



Fig. 430. Calliptamus italicus (3), Pascani (Is), 26.07.2008



Calliptamus barbarus (Costa, 1836)

(syn. Caloptenus siculus Burmeister, 1838)

Description: the body color is grey or brown, often with irregular brown spots. The posterior wings are pink proximally and transparent distally. The hind femora have three large spots, sometimes united. The posterior tibia is pink or yellow.

Body length: 3 12-16mm, 9 18-30mm.

Stridulation: the species doesn't stridulate.

Distribution: it is a Eurasian species. In our country is found localized in the South of the country, in Moldavia is rare and it was found only in South and South-East.

Habitat and way of life: it is a xero-thermophilous, geophilous species, characteristic for the sandy dunes. It can be encountered along with some species, like: *Acrotylus insubricus, Myrmeleotettix antennatus* and *Chorthippus loratus*. There 3 varieties of the species *Calliptamus barbarus* in Romania, those being: v. *parvus* - with hind tibiae pink - rare, in North-Western Romania, v. *barbarus* - with hind tibiae red - very common in Southern and South-Eastern Romania (also in Southern Moldavia) and v. *pallidipes* - with the hind tibiae yellow - very rare in our country, it has been found in the Danube Delta and at Hanu Conachi.

Phenology: adults are found in July-October. It hibernates in egg-stage. Nymphs hatch in April-May.



Fig. 432. Calliptamus barbarus (3), Hanu Conachi (Gl), 15.08.2008



Fig. 433. Calliptamus barbarus (♀), Hanu Conachi (Gl), 15.08.2008

Subfamily Catantopinae

Species characterized by an almost cylindrical pronotum, without lateral keels. This group has more than 2000 species, found especially in warm areas, but some of them are also found in alpine areas.

Pezotettix giornae (Rossi, 1794)

(syn. *Platyphyma giornae* Fischer, 1853)

Description: the body color is various: grey, brown, green and sometimes yellow. The dorsal part of the body can be darker or even rubiginous. The nymphs can be brown or green. The wings are micropterous. Body length: 3 11-13mm, 2 14-17mm.

Stridulation: the species doesn't stridulate.

Distribution: it is a Circummediterranean species, very common in the South of Romania, but in the North rarer. In Moldavia is relatively frequent, especially in the South and East.

Habitat and way of life: it lives in various biotopes: forests, Bushes, grasslands etc. It is a meso-xerophilous, thermophilous species. It is a species very capable of colonizing new biotopes: in the 1980's it was known only from Southern Romania and now it can be found in great numbers in almost all the Eastern Moldavia.

Phenology: adults are found from July-August to November. It hibernates in egg-stage. Nymphs hatch in June.



Subfamily Melanoplinae

These are medium sized Grasshoppers, without lateral keels on the pronotum. The majority of them are micropterous species. It is a rich family in Holarctic species (approximately 400).

Podisma pedestris (Linnaeus, 1758)

(syn. Pezotettix pedestris Fischer, 1853)

Description: the body color is brown-yellow, sometimes black or grey; some individuals have orange spots on head, legs and fore wings. Fore wings are brown or yellow, small, with an apical lobe. The pronotum's prozone is almost equal to the metazone. The hind femora ventral part is orange or red; hind tibiae are bluish.

Body length: 3 17-20mm, 9 26-30mm.

Stridulation: the species doesn't stridulate.

Distribution: it is a Eurosiberian species, found locally in some mountains. In Moldavia it is a rare species (found on Ceahlau, Rarau, Giumalau and Calimani).

Habitat and way of life: it is a mesophilous and hygro-mesophilous species, characteristic to the mountains, found in meadows and forest clearings.

Phenology: adults appear at the end of July; it hibernates in egg-stage. Nymphs hatch in May-June.



Fig. 435. Podisma pedestris (3), Bicaz Gorges (Nt), 01.09.2008



Fig. 436. *Podisma pedestris* (♀), 27.07.2007 (photo: Lucian Pârvulescu)

Miramella ebneri Galvagni, 1953

Description: the color of the body is light or dark green, with some black lateral spots. The prozone of the pronotum is 1,5-2x longer than the metazone. The fore wings are small, brown and without an apical lobe. Body length: 3 16-19mm, 2 20-27mm.

Stridulation: the subspecies doesn't stridulate.

Distribution: it is endemic for the Carpathians. In Romania is common in the Oriental and Meridional Carpathians, but rare in the Occidental Carpathians. In Moldavia it has been found only in the mountain areas. This species is represented in our country's fauna by two subspecies, *Miramella ebneri ebneri* from the Occidental, Meridional and the Oriental Carpathians and *Miramella ebneri carpathica*, known so far only from Rodna Mountains, in the North-Western part of the Oriental Carpathians. So far in Moldavia, only the nominotypical subspecies has been found.

Habitat and way of life: it lives in the grasslands at high altitudes - in the subalpine and evergreen zone. Rarely can it be encountered at lower altitudes, but never less than 600-700m (Campulung Moldovenesc, Sv).

Phenology: adults appear in July. It hibernates in egg-stage. Nymphs hatch in May-June.



Fig. 437. Miramella ebneri (♂), Giumalau Mountain (Sv), 30.07.2008



Fig. 438. *Miramella ebneri* (♀), Ceahlau Mountain (Nt), 08.08.2008

Pseudopodisma fieberi (Scudder, 1897)

Description: the body color is green, the male femora are yellow proximally and red distally. On the head and thorax there are two lateral black stripes. The fore wings are red or pink; the male cerci are widened at the tip and the furcula is missing. The female ovipositor valves are short and end in one single dent.

Body length: 3 17-19mm, 2 22-28mm.

Stridulation: the species doesn't stridulate.

Distribution: it has a South-East European distribution. In our country it is found in the mountains and in the Transylvanian Plateau. In Moldavia is rare and localized, so far being found only in the Western part.

Habitat and way of life: it is a species characteristic to the mountain high hygro-mesophilous and hygrophilous grasslands. It is very rare in the hilly areas.

Phenology: adults are found in July-September. It hibernates in egg-stage. Nymphs hatch in May-June.



Fig. 439. Pseudopodisma fieberi (ੀ), Agapia (Nt), 25.07.2006



Fig. 440. Pseudopodisma fieberi (♀), Durau (Nt), 08.08.2008

Odontopodisma decipiens Ramme, 1951

Description: the body color is green, the wings are pink. From the head until the middle of the thorax there is a lateral black stripe that is sometimes interrupted. The posterior tibia is bluish. Hind knees and part of the genitalia are red. The epiphalus has two large, divergent, lateral lobes. The female ovipositor valves are long and end with two dents. Body length: 3 15-17mm, 2 20-24mm.

Stridulation: the species doesn't stridulate.

Distribution: it is a South-Eastern European species, found in Romania especially in the Southern part. In Moldavia is rare and localized in South-Eastern and Eastern forests.

Habitat and way of life: it is an arbusticolous and praticolous species, found in forest fringes and clearings. It lives in bushes, on *Rubus, Ribes* etc., being difficult to be spotted because of its green color.

Phenology: adults appear in June and lives until August; it hibernates in egg stage. Nymphs hatch in April.



Fig. 441. Odontopodisma decipiens (3), Balatau-Prut (Is), 08.07.2008



Fig. 442. *Odontopodisma decipiens* ($\stackrel{\frown}{\circ}$), Balatau-Prut (Is), 08.07.2008

Subfamily Acridinae

Acrida ungarica (Herbst, 1786)

(syn. Truxalis bicolor Thunberg, 1815)

Description: the body is oblong and its color is green, yellow or brown with longitudinal stripes. It has opistognat head and lanceolate antennae with flattened antennomeres.

Body length: 31-39mm, 946-61mm.

Stridulation: the species doesn't stridulate.

Distribution: it is a Circummediterranean species. In our country is very common in the Southern part but rare and localized in the East and West. In Moldavia is more frequent in the Eastern and Southern areas.

Habitat and way of life: it is a xero-thermophilous species which lives in meadows, clearings and sandy dune vegetation. Usually it inhabits the high grasslands. Because of its body shape, this species if difficult to be seen in the grasses.

Phenology: adults appear in July-August and live until October. It hibernates in egg-stage. Nymphs hatch in June.



Fig. 443. Acrida ungarica (3), David's Valley (Is), 10.09.2008



Fig. 444. *Acrida ungarica* (♀), Husi (Vs), 28.09.2003

Subfamily Oedipodinae

These are large sized Locusts with the intercalary vein present in the median area; the posterior wings are often vividly colored. The prolongation of the first abdominal sternite is wider than longer.

Locusta migratoria (Linnaeus, 1758)

Description: the Migratory Grasshopper is the biggest Grasshopper from Romania. It is a typical migratory insect and has two different biological forms. The solitary phase: the body color is green, with the fore wings green or brown. The hind wing is transparent, greenish. The legs are green-bluish. The pronotum's median carena is raised. The gregarious phase: the body is usually brown or greyish, with longer wings and the pronotum's median carena low.

Body length: 30-40mm, 35-55mm.

Stridulation: the calling song is a short echeme of few syllables. It stridulates during daytime.

Distribution: it is a Palaearctic species, in our country being very rare. In the past century, the biggest populations of the Migratory Grasshopper in Europe were the ones located in Danube Delta. Now the species is very rare even there. It is rare in Moldavia, so far it has been found on Siret and Prut meadows and near lakes, but long time ago. It was supposed to be disappeared from Moldavia, but we found a female in 2008, on a country road near a corn-field, close to Pascani (Is).

Habitat and way of life: it is a praticolous and hygrophilous species. The species is shy and flies very well, usually for a long distance and on great heights.

Phenology: adults can be found from July to November. It hibernates in egg-stage. Nymphs hatch in April-May.



Fig. 445. *Locusta migratoria* ($\stackrel{\frown}{\hookrightarrow}$) - solitary phase, 15.07.2008

Oedaleus decorus (Germar, 1826)

Description: the body color is green, rarely testaceous, with black spots on the fore wing. The lateral keels of the pronotum are bordered with white stripes, interrupted in the median zone. The posterior wing is transparent, greenish, with a transversal black stripe. The posterior tibia is red or brown in the apical 2/3.

Body length: 3 19-22mm, 2 25-32mm.

Stridulation: an echeme of few syllables, very rarely emitted. It stridulates during daytime.

Distribution: it is a Circummediterranean species, in our country is found especially in the Southern part. It is rare in Moldavia.

Habitat and way of life: it is a geophilous, xero-thermophilous species, living in hill and plane regions. It prefers places with scarce vegetation or grazed pastures.

Phenology: adults can be found in July-October. It hibernates in egg-stage. Nymphs hatch in April-May.



Fig. 446. Oedaleus decorus (3), David's Valley (Is), 11.08.2008



Fig. 447. *Oedaleus decorus* ($\stackrel{\bigcirc}{\hookrightarrow}$), David's Valley (Is), 11.08.2008

Psophus stridulus (Linnaeus, 1758)

Description: the Rattle Grasshopper's male body color is dark brownblack, in female being lighter. The pronotum has foveolae on each side of the median keel. The posterior wing is reddish and apical black. The posterior tibia is black

Body length: 3 22-26mm, 9 27-33mm.

Stridulation: the males make a crepitation during their flight or sometimes while they stay on the ground. Sometimes they stridulate the normal way, but more quietly.

Distribution: it is a Eurosiberian species, in our country being found only in the Carpathians, rarely in the hilly area. It is very common in the mountain region from Moldavia.

Habitat and way of life: it is a geophilous species characteristic to mountain grasslands. Like the majority of the mountain species it prefers sunny meadows. The males as well as the females produce a crepitation during flight, made by the thicker veins on the hind wings. The male mating ritual is made on sunny weather by flying 2-3 meters off the ground describing a loop in the air and crepitating. During the flight, they are easily spotted because of their vivid red posterior wings.

Phenology: adults appear in July. It hibernates in egg-stage. Nymphs hatch in May.



Fig. 448. Psophus stridulus (3), Gainesti (Sv), 03.08.2008



Fig. 449. *Psophus stridulus* (♀), Campulung Moldovenesc (Sv), 20.08.2005

Celes variabilis (Pallas, 1774)

Description: the body color is variable: black, brown or grey. The posterior wings are vivid red, with the anterior and apical borders greyish. The median keel of the pronotum is cut by a transversal groove. The posterior tibia is black or grey.

Body length: 3 18-19mm, 2 24-30mm.

Stridulation: it stridulates in short echemes, only in sunlight.

Distribution: it is a Central Asia-South European species, quite rare in Romania. In Moldavia it can be found in few spots in the South and East.

Habitat and way of life: it is a geophilous and praticolous, xerophilous and thermophilous species. It prefers short or scarce vegetation meadows, rarely gravel areas.

Phenology: adults appear in July; it hibernates in egg-stage. Nymphs hatch in April.



Fig. 450. Celes variabilis (3), Craiesti (Gl), 13.07.2008



Fig. 451. *Celes variabilis* ($\stackrel{\bigcirc}{\hookrightarrow}$), Craiesti (Gl), 13.07.2008

Oedipoda caerulescens (Linnaeus, 1758)

(syn. *Oedipoda fasciata* Stål, 1873)

Description: the body color is uniform: grey, brown, reddish or blue. The posterior wing is blue, with a black, wide, transversal stripe in the posterior third of the wing. The posterior tibia is also blue. This genus easily recognizable because of the dorsal carina of hind femora - which is abruptly lowered in its midlenght.

Body length: ? 15-17mm, ? 23-27mm.

Stridulation: the syllables have a low intensity and are grouped in short echemes. It stridulates in sunlight.

Distribution: it is a Holopalaearctic species known from North Africa, Europe and Central Asia. In our country is very common and widely spread. It is also common in Moldavia.

Habitat and way of life: it is a xero-thermophilous and geophilous species. It lives in various biotopes: meadows, abrupt and barren hills, dunes and rocks, even on the railway bed.

Phenology: adults appear in July. It hibernates in egg-stage. Nymphs hatch in May.



Fig. 452. Oedipoda caerulescens (♂), Cristesti (Is), 27.08.2008



Fig. 453. *Oedipoda caerulescens* (♀), Cristesti (Is), 27.08.2008

Sphingonotus caerulans (Linnaeus, 1767)

Description: the body color is variable: grey, brown, yellow, rubiginous and even bluish. The posterior wing is light blue at the base and apically transparent. The hind tibia is light blue.

Body length: $3 \cdot 16-23$ mm, $9 \cdot 27-31$ mm.

Stridulation: the syllables have low intensity, grouped in small echemes, repeated at intervals of several seconds. It stridulates during the day, in sunlight.

Distribution: the species is distributed in Europe. In Romania is localized in sandy areas, in stony areas and in some river beds; sometimes they appear in warm areas (on the railway bed). In Moldavia is moderate common.

Habitat and way of life: it is a geophilous and thermophilous species. It lives in sandy areas and stony river beds, with scarce vegetation.

Phenology: adults appear in July. It hibernates in egg-stage. Nymphs hatch in May.



Fig. 454. Sphingonotus caerulans (3), Cristesti (Is), 27.08.2008



Fig. 455. Sphingonotus caerulans (♀), Cristesti (Is), 27.08.2008

Acrotylus insubricus (Scopoli, 1786)

Description: the body color is grey or brown-yellow, with dark spots on the fore wings. The posterior wings are red with a moon-like black stripe and the apical part not colored. Seldom, we can find individuals with posterior wings orange. The posterior tibia is grey or yellow. Body length: 3 13-16mm, 2 16-20mm.

Stridulation: the song consists of short echemes, repeated at long time intervals. It stridulates during the day, in sunlight.

Distribution: it is a Circummediterranean species, widely distributed in Northern Africa, Southern Europe, Asia Minor, Syria, Iran and Iraq. In Romania it is found in the South of the country. It is rare in the South and in the Center of Moldavia.

Habitat and way of life: it is a geophilous and xerophilous species, characteristic for the sandy dunes habitats. At night, the adults are hiding in galleries dug in the sand.

Phenology: adults appear in August and they hibernate in this stage. In spring they get out of hibernation, they mate and lay eggs. The hatching takes place quickly; the nymphs become adults in about 2 months.



Fig. 456. Acrotylus insubricus (♂), Hanu Conachi (Gl), 15.08.2008



Fig. 457. Acrotylus insubricus (♀), Hanu Conachi (Gl), 15.08.2008

Acrotylus longipes (Charpentier, 1845)

Description: the body color is light grey or brown-yellow, usually having the same color as the sandy dunes where it lives. The posterior wings have the base yellow, sometimes with a tint of orange. The posterior tibia is blue.

Body length: $3 \cdot 14-17$ mm, $9 \cdot 20-23$ mm.

Stridulation: it resembles the one of the previous species. It stridulates during daytime.

Distribution: it is a Mediterranean and African element. In Romania it can be found in the South-Eastern part. It is very rare, found so far on the sandy dunes from Hanu Conachi (Gl) in the Southern Moldavia.

Habitat and way of life: it is a geophilous, xero-thermophilous species. We can almost always see this species taking sunbaths on the sand. Usually it can be found along with *Acrotylus insubricus, Sphingonotus caerulans* and *Calliptamus italicus*.

Phenology: adults appear in July, and it hibernates in egg-stage. Nymphs hatch in April-May.



Fig. 458. Acrotylus longipes (3), 03.08.2006



Fig. 459. Acrotylus longipes (\updownarrow), 17.08.2006

Aiolopus thalassinus (Fabricius, 1781)

Description: the body color is green or brown, rarely yellow, with dark spots on the fore wings, pronotum and head. Pink individuals are exceptional. The posterior wing is light green. The hind femora have some dark spots and the hind tibiae are red distally and yellow proximally. Body length: 3 14-21mm, 2 23-31mm.

Stridulation: it has short echemes emitted during the day.

Distribution: Holopalaearctic species known from Europe, Northern Africa and Palaearctic Asia. In Moldavia it is moderate common in hygrophilous and mesophilous lawns.

Habitat and way of life: it is a hygrophilous and hygro-mesophilous species, praticolous and geophilous. It prefers living in the low grasslands, usually being found in the vegetation near lakes. It can also be encountered in mesophilous grasslands or alongside country roads, but rarely.

Phenology: the adults appear in July. It hibernates in egg stage. Nymphs hatch in June.



Fig. 460. Aiolopus thalassinus (&), Harmanestii Noi (Is), 17.08.2008



Fig. 461. Aiolopus thalassinus (\updownarrow), Harmanestii Noi (Is), 17.08.2008

Epacromius coerulipes (Ivanov, 1888)

Description: the body color is brown, yellow, grey or red-purple. Usually, the head and the pronotum have a longitudinal white-yellow stripe dorsally. The median field is divided in two symmetrical parts by the intercalary vein. The foveolae are triangulated.

Body length: $\sqrt[3]{12-16}$ mm, $\sqrt[9]{21-25}$ mm $\sqrt[9]{.}$

Stridulation: the calling song resembles the one of the previous species. It stridulates during daytime.

Distribution: it is a South Palearctic species. In our country this species is quite rare, being found in the eastern part of the country in hygrophilous grasslands. This is the first record of the genus *Epacromius* in Moldavia.

Habitat and way of life: it is a hygrophilous and hygro-mesophilous species, praticolous and geophilous. It can also be found on salty soils. We found it at Marzesti, Letcani and David's Valley (Is), in late September 2008.

Phenology: the adults appear in July. It hibernates in egg stage. Nymphs hatch in June.



Fig. 462. Epacromius coerulipes (3), Marzesti (Is), 30.09.2008



Fig. 463. *Epacromius coerulipes* ($\stackrel{\frown}{}$), Marzesti (Is), 30.09.2008

Paracinema tricolor bisignata (Charpentier, 1825)

Description: the body color is green with 2 black stripes on the pronotal lateral keels and the fore wings. Rarely can we find brown-yellow or rubiginous individuals. The posterior wings are green. The hind tibiae are red or orange.

Body length: 324-27mm, 37-41mm.

Stridulation: the song consists of syllables grouped in short echemes. It stridulates during daytime.

Distribution: it is a Circummediterranean subspecies, frequent in Southern Muntenia and Dobrogea. It is rare in Moldavia, localized on Siret Valley and more frequent in the Eastern part of the region.

Habitat and way of life: it lives in tall hygrophilous lawns. It is very shy and can fly on large distances, sometimes longer than 30 m. Because of its color it is difficult to be spotted in the high grasses.

Phenology: the adults are found from July to November. It hibernates in egg stage. Nymphs hatch in May-June.



Fig. 464. Paracinema tricolor bisignata (3), Chirita (Is), 20.09.2007



Fig. 465. Paracinema tricolor bisignata (\updownarrow), Chirita (Is), 20.09.2007

Mecostethus alliaceus (Germar, 1817)

Description: the Marsh Grasshopper has a light green or yellow color, with one lateral black stripe on the head, pronotum and fore wings. The posterior wings are pale green or yellow. Some brown individuals are very rare.

Body length: 3 15-22mm, 2 27-31mm2.

Stridulation: the syllables are grouped in a short echeme, which is repeated after several minutes. It stridulates during the day.

Distribution: it is a Eurosiberian species, known from Europe Asia Minor, Caucasus, Siberia and Northern China. In our country is rare and localized, found all over the country. It is rare and localized in Moldavia.

Habitat and way of life: it is a hygrophilous species living in tall grasslands. It can be found in the vegetation near lakes and in swamps with high grasses. In Moldavia it can be found in some mountain grasslands but also near lakes and rivers on the Moldavian Plateau. In the mountain lawns, the species prefers only the hygrophilous and hygromesophylous areas.

Phenology: the adults appear in July. It hibernates in egg stage. Nymphs hatch in May-June.



Fig. 466. Mecostethus alliaceus (ै), Gainesti (Sv), 03.08.2008



Fig. 467. *Mecostethus alliaceus* (♀), Gainesti (Sv), 03.08.2008

Stethophyma grossum (Linnaeus, 1758)

Description: the Large Marsh Grasshopper has the basic body color brown-yellow or olive-green. The fore wings are brown with a yellow stripe. The inferior margin of the hind femora is red. The hind tibiae are yellow or olive-green. Sometimes rubiginous individuals can be encountered.

Body length: 3 20-22mm, 9 29-31mm.

Stridulation: males are stridulating in an unusual way moving their posterior legs on the fore-wings surface from frons to back. The sound obtained resembles a finger clap. It stridulates during the day in sunlight.

Distribution: a Eurosiberian species found in many hygrophilous area from m Romania. In Moldavia it is quiet a common species, being found in plane, hilly and mountain areas.

Habitat and way of life: a praticolous species, it lives in high hygrophilous lawns, in swamps with high vegetation. Males can be easily recognizable because of their particular stridulation, easily to be distinguished from other hygrophilous species stridulation.

Phenology: the adults appear in July-August. It hibernates in egg stage. Nymphs hatch in June.



Fig. 468. Stethophyma grossum (3), Topile (Is), 27.08.2008



Fig. 469. *Stethophyma grossum* (♀), Topile (Is), 27.08.2008

Subfamily Gomphocerinae

This family has numerous species, found in great numbers in grasslands. Stridulation is different from one species to another. Numerous species difficult to distinguish by classical morphological traits can be easily identified by their specific stridulation.

Euthystira brachyptera (Ocskay, 1826)

Description: the Small Gold Grasshopper has the body color metallic green, sometimes yellow-gold, always with metallic luster. The fore wings can be green, brown or pink. We can find also macropterous individuals, especially in the mountains.

Body length: 3 14-17mm, 2 20-22mm.

Stridulation: the song can be mistaken sometimes for the one of *Metrioptera bicolor*, the short syllables are grouped 4-6 in an echeme that is repeated after a break of few seconds. It stridulates during the day and rarely in the evening.

Distribution: a Eurosiberian element, widely distributed in our country, excepting the plane areas. In Moldavia it is frequent in forest glades and mountain grasslands.

Habitat and way of life: a praticolous and mesophilous species, typical forest species, it can be found in mountain and hilly areas. In mountains it reaches the alpine grasslands, together with *Isophya camptoxypha*, *Miramella ebneri* and *Myrmeleotettix maculatus*.

Phenology: the adults appear in June, it hibernates in egg stage. Nymphs hatch in April-May.



Fig. 470. Euthystira brachyptera (&), Potoci (Nt), 02.07.2008



Fig. 471. Euthystira brachyptera (♀), Potoci (Nt), 02.07.2008

Chrysochraon dispar (Germar, 1834)

Description: the Large Gold Grasshopper male is macropterous and has a green-yellow or light brown body color, with metallic luster. The female is usually micropterous and has a metallic body color: grey, golden, orange or rubiginous. Near Neamt Monastery (Nt) we have observed a great variety of colors in females, this being one of the biggest populations of this species we have observed in Moldavia.

Body length: 3 15-19mm, 2 3-27mm.

Stridulation: short metallic syllables grouped 13-20 in short echemes (1-2s) which are repeated after several seconds. It stridulates during the day and the evening.

Distribution: it is a Eurosiberian species, in Romania is localized, in low number of individuals. In Moldavia it can be found in some forest glades or fringes in the hilly and mountain areas.

Habitat and way of life: it is a praticolous species which lives in forest fringes and mountain meadows, always preferring the hygrophilous and hygro-mesophilous areas with high grasses.

Phenology: the adults appear in July. It hibernates in egg stage. Nymphs hatch in June.



Fig. 472. Chrysochraon dispar (♂), Poiana Largului (Nt), 02.07.2008



Fig. 473. *Chrysochraon dispar* ($\stackrel{\frown}{\hookrightarrow}$), Vanatori Neamt (Nt), 25.07.2006

Arcyptera fusca (Pallas, 1773)

Description: the Large Banded Grasshopper's body color is green-olive to yellow. The foveolae are underdeveloped. The pronotum is dorsally dark green or black. The fore wings have a yellow stripe; the hind wings are dark. The posterior tibia is red distally and yellow proximally; hind knees are dark.

Body length: 3 22-30mm, 9 29-42mm.

Stridulation: different syllables form loud echemes, each lasting about 2-4s. Males also have a flight crepitation.

Distribution: it is a Eurosiberian species; in Romania was found in all the Carpathians. In Moldavia it has been found in the mountain area, very rarely does it occur in hilly areas (Barnova, Is).

Habitat and way of life: it is a typical mountain species, praticolous, living in high mesophilous meadows. Both males and females are very shy and, if scared, they fly for a distance of many meters.

Phenology: the adults appear in July - August. It hibernates in egg stage. Nymphs hatch in May.



Fig. 474. Arcyptera fusca (), Ceahlau Mountain (Nt), 04.08.2007



Fig. 475. *Arcyptera fusca* (♀), 02.08.2008 (photo: Claudia Irina Deleanu)

Dociostaurus brevicollis (Eversmann, 1848)

Description: it has a yellow-grey or brown body color, with many dark spots. The lateral keels of the pronotum are positioned in "X" and are margined with white or yellow; the middle part of each keel is brown or grey. Usually the fore wings have a white stripe. Body length: 3 12-14mm, 2 17-23mm.

Stridulation: the calling song is formed of syllables grouped in short echemes, of about 3-4s, repeated after several seconds. It stridulates during the day in sunlight.

Distribution: it has a Central Asian-Pontic distribution, being common especially in the South of the country. It is rare and localized in Moldavia.

Habitat and way of life: it is a xero-thermophilous, praticolous and geophilous species, it lives in various habitats: meadows, grasslands, psamophilous habitats with low vegetation, clearings etc.

Phenology: the adults appear in June and can be seen until late September. It hibernates in egg stage. Nymphs hatch in April-May.



Fig. 476. Dociostaurus brevicollis (3), David's Valley (Is), 28.08.2008



Fig. 477. *Dociostaurus brevicollis* (\updownarrow), David's Valley (Is), 28.08.2008

Stenobothrus stigmaticus (Rambur, 1838)

(syn. Chorhippus ramburi Fieber, 1852)

Description: the Lesser Mottled Grasshopper's body color is greenyellow, often with brown-grey spots on the fore wings. The lateral keels of the pronotum are white, bordered with black. Often, the white stripes continue on the fore wings. The Cu_1 and Cu_2 veins are separate and distinctly divergent, the radial vein is straight. The median area has irregular venation. This is the smallest *Stenobothrus* species from our country.

Body length: \bigcirc 10-13mm, \bigcirc 14-18mm.

Stridulation: about 25-40 syllables are grouped in short echemes (1-3s) of low intensity which can be heard only from less than 5 meters away. It stridulates during the day in sunlight.

Distribution: it is a Eurosiberian; in Romania it is common, excepting the Southern planes. It is very frequent in the West and North of Moldavia.

Habitat and way of life: it is a characteristic species to the mesophilous and hygro-mesophilous meadows from the hilly and mountain regions. It is a praticolous species which usually can be encountered in low grasslands.

Phenology: the adults are found from July to October. It hibernates in egg stage. Nymphs hatch in May.



Fig. 478. Stenobothrus stigmaticus (3), Varatec (Nt), 28.09.2007



Stenobothrus lineatus (Panzer, 1796)

Description: the Stripe Winged Grasshopper has the body color variable: yellow, brown, green, pink-garnet etc. The lateral keels of the pronotum are white, bordered with black. Often, the white stripes continue on the fore wings. The fore wing is broader; the median area reaches half of its length. The radial vein is sinuous. Pink individuals are very rare. Body length: 3 16-19mm, 3 22-25mm.

Stridulation: the echeme lasts for 10-20s and every syllable lasts for about 1s. During stridulation the legs have asynchronised movements. It stridulates during daytime. During the courtship song, which is longer and lower in intensity, we have seen males stridulating with one hind leg at the time.

Distribution: it is a Eurosiberian species, common in all Romania mostly in hill and mountain areas. In Moldavia is frequent.

Habitat and way of life: it is a common spread species in mesophilous and meso-xerophilous lawns. It can be encountered in high numbers in plane, hilly and mountain tall grasslands.

Phenology: the adults appear in June-July. It hibernates in egg stage. Nymphs hatch in April-may.



Fig. 480. Stenobothrus lineatus (3), Lilieci (Bc), 22.07.2007



Fig. 481. Stenobothrus lineatus (♀), Lepsa (Vn), 14.08.2008

Stenobothrus nigromaculatus (Herrich-Schäffer, 1840) (svn. *Oedipoda luteicornis* Fischer von Waldheim, 1846)

Description: the Black Spotted Grasshopper has the body green or brown-orange with dark spots on the fore wings. The lateral keels of the pronotum are white, limited with black. The fore wing is narrower, the median area stretching on $\frac{2}{3}$ of its length. The radial vein is straight. Males have the posterior part of the abdomen orange or red. Body length: $\frac{2}{3}$ 15-17mm. $\frac{9}{3}$ 19-25mm.

Stridulation: the echeme sequence has about 2-6 echemes, separated by intervals of 1-3s. It stridulates during the day.

Distribution: it is a Eurosiberian species. In Romania is common in Transylvania and localized in other regions. It is rare and localized in Moldavia.

Habitat and way of life: it is a praticolous, xero-thermophilous species, living in pastures, meadows and clearings. It is rare in the plane areas and more frequent in hilly and even in the mountain areas.

Phenology: the adults appear in June-July. It hibernates in egg stage. Nymphs hatch in April-May.



Fig. 482. Stenobothrus nigromaculatus (3), Harboanca (Vs), 20.07.2007



Omocestus viridulus (Linnaeus, 1758)

Description: the Common Green Grasshopper female body color is green or rarely brown and olive or green in males, rarely brown. The vertex has a median keel, stigma with red veins, the epiphalus apophysis is thick. The ovipositor valves are long and the maxillary palpes are usually green or yellow.

Body length: 3 14-16mm, 9 20-22mm.

Stridulation: the calling song can be heard from far distances and consists of a quick succession of syllables, grouped in an echeme lasting 10-20s. It stridulates only in sunny days.

Distribution: a Eurosiberian species, common in Northern Europe and Siberia. In Romania it can be found in the mountains, common in the Oriental Carpathians and rare in the Meridional Carpathians. In Moldavia it is common in the mountain area.

Habitat and way of life: it is a typical mountain species, mesophilous and praticolous. Sometimes there are many males stridulating in relatively small forest glades, their long calling songs being almost the only ones we can hear.

Phenology: adults are found from July to October. It hibernates in egg stage. Nymphs hatch in May.



Fig. 484. *Omocestus viridulus* (\circlearrowleft), Giumalau Mountain (Sv), 30.07.2008



Fig. 485. *Omocestus viridulus* ($\stackrel{\frown}{\circ}$), Ceahlau Mountain (Nt), 07.08.2008

Omocestus rufipes (Zetterstedt, 1821)

(syn. Omocestus ventralis (Zetterstedt, 1821))

Description: the Woodland Grasshopper's body color is brown, black, green or grey with an orange-red abdomen in males. Sometimes it has a green dorsal stripe. The pronotal lateral keels are white, limited with black. The vertex doesn't have a median keel. The stigma has white veins and the hind wings are dark. The epiphalus apophysis is thin. The ovipositor valves are short. The maxillar palpes are black with a white apical spot.

Stridulation: 70-200 syllables are grouped in long echemes, of about 5-10s. It stridulates during the day.

Distribution: it is a Eurosiberian species, common in Romania. It is very frequent in Moldavia.

Habitat and way of life: it is a eurybiont species, praticolous, very common in mesophilous and xerophilous habitats: meadows, grasslands, clearings, forest fringes, alongside country roads etc.

Phenology: the adults appear in June-July. It hibernates in egg stage. Nymphs hatch in April-May.



Fig. 486. Omocestus rufipes (♂), Vatra Dornei (Sv), 28.07.2008



Omocestus haemorrhoidalis (Charpentier, 1825)

Description: the body color is brown or greyish, rarely green - it has the same colors as the species *Omocestus rufipes*, but lighter; the dorsal part of the body is usually grey. The hind wings are transparent. The epiphalus apophysis is straight.

Body length: $\sqrt[3]{12-13}$ mm, $\sqrt{16-19}$ mm $\sqrt[9]{.}$

Stridulation: 50-150 syllables are grouped in shorter echemes, of about 2-4s. It stridulates during the day.

Distribution: a Eurosiberian species, in Romania can be encountered in some mountain and hilly areas. It is very rare in Moldavia.

Habitat and way of life: it is a praticolous species, living in mesophilous grasslands. Usually it prefers the short grasslands from the mountain areas, where it can be find along with *Stenobothrus stigmaticus* and *Chorthippus biguttulus*. Rarely has it been encountered in hilly lawns, like in David's Valley near Iasi.

Phenology: the adults appear in July. It hibernates in egg stage. Nymphs hatch in May.



Fig. 488. Omocestus haemorrhoidalis (3), Durau (Nt), 08.08.2008



Fig. 489. Omocestus haemorrhoidalis (\updownarrow), Durau (Nt), 08.08.2008

Omocestus petraeus (Brisout de Barneville, 1856)

Description: the Rock Grasshopper's body color is grey-yellowish with dark spots on the fore wings. Dorsally, sometimes there is a light grey or brown stripe. The lateral keels of the pronotum are yellowish or white. The fore wings are shorter than the posterior knees. The fore wing stigma is yellow.

Body length: $3 \cdot 10-12$ mm, $9 \cdot 13-15$ mm.

Stridulation: short echemes are grouped in echeme sequences of about 10-20 echemes and lasting 2-5s. It stridulates during the day in sunlight.

Distribution: it has a Central Asian-South European distribution. In Romania is rare and localized, especially in the Southern part.

Habitat and way of life: it is a thermo-xerophilous species, characteristic to the steppic regions. It lives in plane areas, rarely it has been found in hilly areas - like in the South-Eastern part of Moldavia.

Phenology: the adults appear in July and can be encountered even in October. It hibernates in egg stage. Nymphs hatch in April-May.



Fig. 490. Omocestus petraeus (3), Cuca (Gl), 13.07.2008



Fig. 491. Omocestus petraeus (♀), Cuca (Gl), 13.07.2008

Omocestus minutus (Brullé, 1832)

Description: the body color is grey-yellowish, rarely brown or rubiginous. The fore wings have dark spots and are longer than the posterior knees - this being an easy way to separate this species from *Omocestus petraeus*. The fore wing stigma is white or yellow. Body length: 3 11-12mm, 2 13-16mm.

Stridulation: many syllables grouped in very short echemes. About 5-10 echemes are grouped in echeme sequences. It stridulates during sunlight.

Distribution: it has a Pontic distribution from Southern Ukraine and Romania. In Romania it is present in the Southern part of the country, in Moldavia is rare, found in South-East and East.

Habitat and way of life: it is a xerophilous, thermophilous species, living especially on sand dunes or biotopes with sandy soils. Sometimes it can be found in meso-xerophilous meadows also.

Phenology: the adults are found from July to October. It hibernates in egg stage. Nymphs hatch in April-May.



Fig. 492. Omocestus minutus (3), Hanu Conachi (Gl), 15.08.2008



Fig. 493. Omocestus minutus (♀), Craiesti (Gl), 13.07.2008

Myrmeleotettix antennatus (Fieber, 1853)

Description: the body color is brown-yellowish or grey, with dark spots on the fore wings. The club of the antenna is well developed. The tip of the epiphalus is long and curved. In males, usually the dorsal part of abdomen is orange.

Body length: $\sqrt[3]{11-13}$ mm, $\sqrt{2}$ 13-16mm.

Stridulation: the song consists of repeated short echemes in an echeme sequence, performed during sunlight.

Distribution: it is a Eurosiberian species, very rare in Romania. In Moldavia it has been found at Hanu Conachi sandy dunes.

Habitat and way of life: it is a xerophilous, praticolous species, living especially on sandy dunes and in areas with psamophilous vegetation. It is accompanied by the species *Acrotylus insubricus, Sphingonotus caerulans* and *Calliptamus barbarus*.

Phenology: the adults appear in June. It hibernates in egg stage. Nymphs hatch in April-May.



Fig. 494. Myrmeleotettix antennatus (ै), Hanu Conachi (Gl), 15.08.2008



Fig. 495. Myrmeleotettix antennatus ($\c \bigcirc$), Hanu Conachi (GI), 15.08.2008

Myrmeleotettix maculatus (Thunberg, 1815)

Description: the Mottled Grasshopper is one of the smallest Grasshoppers from Romania. It has the body color variable, but usually brown, green or yellow. Many individuals have a variety of colors, including white, rubiginous, grey etc. Pronotal lateral keels are strongly curved. The club of the antenna is less developed. The tip of the penis is short and straight.

Body length: \bigcirc 11-12mm, \bigcirc 14-16mm.

Stridulation: the calling song has a low intensity; the echeme sequence lasts for 10-15s and is composed from 10-25 echemes. The courtship stridulation is lower in intensity and consists in longer echemes. During courtship, the male jumps around the female.

Distribution: it is a Holopalaearctic species, distributed in Europe, Palaearctic Asia, and North Africa. In Romania it can be found in mountain and hilly areas. In Moldavia and it is rare, so far found in some mountain areas.

Habitat and way of life: it lives in different habitats, preferring sunny, rocky and grazed meadows. It can be seen in small numbers in some mountain low grasslands, as in Ceahlau or Giumalau.

Phenology: the adults appear in late June and can be encountered even in early October, depending on the first frost. It hibernates in egg stage. Nymphs hatch in May.



Fig. 496. Myrmeleotettix maculatus (3), Giumalau Mountain (Sv), 30.07.2008



Fig. 497. Myrmeleotettix maculatus (♀), Ceahlau Mountain (Nt), 07.08.2008

Gomphocerippus rufus (Linnaeus, 1758)

Description: the Rufous Grasshopper's body color is light or dark brown, sometimes with a white stripe on the fore wings. Rare green individuals with the white back are very beautiful. The club of the antenna has the tip white. The anterior margin of the fore wing has a basal sinus. Body length: 3 14-17mm, 2 20-24mm.

Stridulation: the echeme sequence is composed of 20-80 echemes and usually lasts for 3-10s. It stridulates during the day, usually in sunlight.

Distribution: it is a Eurosiberian species, present in Romania especially in the deciduous forests. In Moldavia it can has been found only in forest areas.

Habitat and way of life: it is a mesophilous, praticolous species, characteristic to forest habitats. It prefers both hilly and mountain areas, but it can be found in plane forests, sometimes in big numbers. It lives in forest glades, fringes and lawns near the forests.

Phenology: the adults appear in late June and July; bigger numbers can be seen in August and early September. It hibernates in egg stage. Nymphs hatch in April-May.



Fig. 498. Gomphocerippus rufus (3), Gainesti (Sv), 02.08.2008



Stauroderus scalaris (Fischer von Waldheim, 1846)

Description: the Large Mountain Grasshopper has the body color green or brown, sometimes yellow. The lateral keels of the pronotum are bordered with black. The fore wings are widened, the posterior wings are dark. The hind tibiae are red-orange or yellow.

Body length: \bigcirc 17-21mm, \bigcirc 21-28mm.

Stridulation: the echeme sequence has a high intensity and lasts for 15-30s. It is composed of 20-50 echemes. Also it crepitates during the flight, but not as loud as *Psophus stridulus*. It stridulates usually during sunlight.

Distribution: it is a Eurosiberian species, present in Romania in the Carpathians and in Transylvania. In Moldavia it has been found only in the mountain area.

Habitat and way of life: it is a mesophilous, praticolous species, living in high and sunny mountain grasslands. It is a very shy Grasshopper and with few jumps it disappears in the grass. Nevertheless it can be easily be remarked by listening to its loud stridulation.

Phenology: the adults appear in July and they can be encountered even in early October. It hibernates in egg stage. Nymphs hatch in May.



Fig. 500. Stauroderus scalaris (🖒), Potoci (Nt), 02.08.2008



Fig. 501. Stauroderus scalaris (♀), Poiana Largului (Nt), 04.08.2007

Chorthippus apricarius (Linnaeus, 1758)

Description: the Upland Field Grasshopper's body color is yellow, brown or, rarely, green. The fore wings are usually light brown. The median area on the fore wing is wide and the Cu_1 and Cu_2 veins usually have anastomoses. The tympanum is oval, wide, 2-3 times longer than wide. Females have the fore wings shorter than abdomen and this fact is very visible in late summer the abdomen is even longer, due to the upcoming egg laying.

Body length: $3 \cdot 13-15$ mm, $9 \cdot 18-21$ mm.

Stridulation: the echeme sequence is 10-30s long and it is composed of 50-150 echemes. It starts in low tone and rises gradually in intensity, resembling an old locomotive.

Distribution: it is a Eurosiberian species, found localized in our country; in Moldavia it is frequent in the forest areas and sometimes in meadows.

Habitat and way of life: it is a praticolous species, living in mesophilous lawns, forest clearings, forest fringes, in mountain and hilly areas. It can also be found in the vegetation alongside the country roads.

Phenology: the adults appear in July. It hibernates in egg stage. Nymphs hatch in April-May.



Fig. 502. Chorthippus apricarius (♂), Adancata (Sv), 16.07.2007



Fig. 503. *Chorthippus apricarius* (♀), Slanic Moldova (Bc), 20.08.2007

Chorthippus biguttulus hedickei (Ramme, 1942)

Description: the Bow-winged Grasshopper has the body color very variable: brown, grey, white-greyish, green, yellow, pink-garnet etc. The male costal area is widened. The keels of the pronotum are well delimited by white stripes. Like in other *Chorthippus* species, the fore wings can have small dark spots. Males in the group *Chorthippus biguttulus-mollis-brunneus* can be easily identified either by the morphology of the fore wing, either - much easier - by listening to their calling song, very different from one species to another. Females are almost impossible to be distinguished, but there is an easy way for identify them: if we follow the courtship song of a male, we can identify the female involved by identifying the singing male.

Body length: \bigcirc 15-18mm, \bigcirc 22-26mm.

Stridulation: the calling song usually consists in 3 echeme sequences, each one in crescendo. The first echeme sequence is longer. It stridulates during the day.

Distribution: *Chorthippus biguttulus* is a Holopalaearctic species. It is common our country, especially in Moldavia.

Habitat and way of life: it lives in hilly and mountain areas in mesophilous and meso-xerophilous grasslands. Especially in late summer and early autumn, its beautiful calling song is the dominant sound in many grasslands in central and Eastern Moldavia.

Phenology: the adults appear in June and can be seen even in November. It hibernates in egg stage. Nymphs hatch in April-May.



Fig. 504. Chorthippus biguttulus hedickei (♂), Gura Humorului (Sv), 01.09.2007



Fig. 505. Chorthippus biguttulus hedickei (\updownarrow), Pascani (Is), 30.08.2008

Chorthippus brunneus (Thunberg, 1815)

(syn. *Gryllus bicolor* Charpentier, 1825)

Description: the Field Grasshopper has the body color variable: grey, dark grey, green, yellow, brown or pink-garnet. The fore wings are narrow and longer, usually surpassing the hind knees. Comparing to *Chorthippus biguttulus*, the subcostal area on the fore wing is narrow. All in all, the ratio between the length and the width of male's fore wings is bigger in *Chorthippus brunneus* than in *Chorthippus biguttulus*.

Body length: $\sqrt[3]{14-18}$ mm, $\sqrt{2}$ 18-24mm.

Stridulation: the echemes are short, lasting 1-2 seconds and repeated at several seconds. It stridulates during sunlight.

Distribution: it is a Holopalaearctic species; it is one of the most common Grasshoppers in our country in all the regions except high mountains. In Moldavia is common especially in East and South.

Habitat and way of life: it is a typical eurybiont species, living in various meso-xerophilous habitats. Still it prefers low grasslands or areas without any vegetation at all, rarely can it be seen in high lawns.

Phenology: the adults appear in May-June and can be seen until November or, in the hot years, even in early December; it is a bivoltin species. It hibernates in egg stage. Nymphs hatch in April-May and then in July-August.



Fig. 506. Chorthippus brunneus (3), Agapia (Nt), 01.07.2008



Fig. 507. Chorthippus brunneus (\updownarrow), Iasi (Is), 07.09.2008

Chorthippus mollis (Charpentier, 1825)

Description: the Lesser-field Grasshopper has the body color the same as the previous species. The width of the costal area is situated between the species *C. brunneus* and *C. biguttulus*, but the best way to identify the males is by listening to their calling song, much longer than in *Chorthippus biguttulus* or *Chorthippus brunneus*.

Body length: $3 \cdot 13 \cdot 17 \text{mm}$, $17 \cdot 22 \text{mm}$.

Stridulation: the echemes are grouped in a long echeme sequence, in crescendo, of 15-30s, ending progressively quieter. It stridulates during the day.

Distribution: a Eurosiberian species. In Romania is rare, found especially in Tisa basin and in Transylvania. In Moldavia is very rare and has been encountered so far in the Eastern part.

Habitat and way of life: it is a praticolous species, living in mesoxerophilous or xerophilous meadows. Near Iasi, at David's Valley, Marzesti and Horlesti, the Lesser-field Grasshopper is the dominant species in late summer and in September, sometimes this species calling song being the only sound in these lawns.

Phenology: the adults appear in June-July. It hibernates in egg stage. Nymphs hatch in April-May.



Fig. 508. Chorthippus mollis (3), David's Valley (Is), 29.08.2008



Fig. 509. *Chorthippus mollis* ($\stackrel{\frown}{\hookrightarrow}$), David's Valley (Is), 29.08.2008

Chorthippus macrocerus purpuratus (Voroncovskij, 1927)

Description: the body color is usually brown-grey of different tints. The male's fore wing is longer or has the same length as the abdomen; the female fore wing is shorter than the abdomen. The costal area is widened the middle of the fore wing. The posterior tibias are usually yellow. Body length: 3 13-15mm, 2 17-20mm.

Stridulation: the echemes are short, about 2s long. It stridulates during the day.

Distribution: the subspecies is distributed from Eastern Romania to North-West Kazakhstan. In Moldavia is rare, it has been recently found, in the year 2005, in some forest fringes and grasslands from the Eastern part.

Habitat and way of life: it is a xerophilous, praticolous subspecies, found in forest clearings and meadows near forests. It is one of the few orthoptera that can still be found in forest glades in the autumn, along with *Phaneroptera falcata*, *Ephippiger ephippiger*, *Gomphocerippus rufus* or *Pezotettix giornae*.

Phenology: the adults appear in June-July and can be seen even in October. It hibernates in egg stage. Nymphs hatch in April-May.



Fig. 510. Chorthippus macrocerus purpuratus (3), Marzesti (Is), 30.09.2008



Fig. 511. Chorthippus macrocerus purpuratus ($\stackrel{\circ}{\hookrightarrow}$), Marzesti (Is), 30.09.2008

Chorthippus pullus (Philippi, 1830)

Description: the Gravel Grasshopper's body color ranges from brown, grey or pink-garnet. The costal area on the fore wing is broadened in the distal part. In females, the wings do not surpass the abdomen. The posterior tibiae are usually red or orange, with the proximal part grey or brown. The hind knees are dark.

Body length: $\sqrt[3]{12-15}$ mm, $\sqrt[9]{18-20}$ mm.

Stridulation: the echemes are 2-4s long, ending very harmonious. It stridulates during daylight.

Distribution: it is a Central European species. In our country is found in the Oriental Carpathians, is rare in the Meridional Carpathians and missing from the Apuseni Mountains. It is rare in Moldavia, it can be found only in mountain areas.

Habitat and way of life: usually it lives in forest clearings and fringes, in poor vegetation areas, rocky areas, in riverbeds from the mountain areas. Usually in the riverbeds it lives along with *Tetrix tuerki* and *Chorthippus brunneus*.

Phenology: adults can be found in July. It hibernates as an egg-stage. Nymphs hatch in April-May.



Fig. 512. Chorthippus pullus (3), Agapia (Nt), 01.07.2008



Fig. 513. *Chorthippus pullus* ($\stackrel{\frown}{}$), Putna (Sv), 24.08.2007

Chorthippus albomarginatus (De Geer, 1773)

Description: as in *Chorthippus oschei*, the body color is variable: green, brown, etc. The keels of the pronotum are almost parallel. In female, the fore wing has a white stripe in the costal area. The radial vein on the fore wing is visibly "S" curved.

Body length: 313-15mm, 18-23mm.

Stridulation: the echemes of the calling song last for about 1s. The courtship song is complicated and consists in many equal and alternate higher-intensity and lower-intensity echemes.

Distribution: in Europe, the species *Chorthippus albomarginatus* is known from Central and Northern parts. In Romania is known so far only from the North-Western part of Moldavia, but more thoroughly studies are needed on this species and the close related species, *Chorthippus oschei*.

Habitat and way of life: praticolous species, it inhabits the mesophilous grasslands from hilly and mountain areas. It is very common in grasslands and in the vegetation alongside the roads.

Phenology: adults can be seen from July to September. It hibernates in the egg-stage. Nymphs hatch in April-May.



Fig. 514. Chorthippus albomarginatus (3), Vanatori Neamt (Nt), 02.09.2008



Fig. 515. *Chorthippus albomarginatus* ($\stackrel{\frown}{\circ}$), Vanatori Neamt (Nt), 02.09.2008

Chorthippus oschei Helversen, O. von, 1986 Chorthippus albomarginatus × oschei (Vedenina & Helversen, O. von, 2003)

Description: the body color is variable: green, yellowish, brown, grey etc. Usually the dorsal part of the body is brown. The radial vein on the fore wing is "S" shaped.

Body length: $\stackrel{\wedge}{\circlearrowleft}$ 13-15mm, $\stackrel{\cap}{\hookrightarrow}$ 18-23mm.

Stridulation: the echemes of the typical calling song last for 1-2s. It stridulates during the day. The courtship song is more complicated and it constitutes a differentiation criterion for the species *Chorthippus albomarginatus* and *Chorthippus oschei*. Those two species hybridize in the Eastern part of Moldavia (Romania), in the Republic Moldavia and in Ukraine. The stridulation of the hybrid is intermediate between the ones of the parental species. Also the movements of the posterior legs during stridulation are different between the two species and the hybrid. Thus, in *Chorthippus oschei*, the male opens the tibia from the femora and at the end of the courtship song it raises the tarsus way over the fore wings. The hybrid, during the courtship song, raises the tarsus only to the level of the fore wings and the tip of the abdomen. In contrast with the first two, *Chorthippus albomarginatus* does not separate the hind tibia from the hind femora during the courtship stridulation.

Distribution: *Chorthippus oschei* is known from South-Eastern Europe. In Romania is widely distributed, excepting the North-Eastern area. In Moldavia it can be found in the Southern part of the region. The hybrid between the two species is known from North-Eastern Romania, Republic of Moldavia and Ukraine. In Moldavia, the hybrid is widely distributed in the Central, Northern and Eastern parts.

Habitat and way of life: it lives in different hygro-mesophilous, mesophilous or meso-xerophilous habitats. It is a species characteristic to grasslands.

Phenology: adults can be found from July to September. It hibernates in egg-stage. Nymphs hatch in April-May.



Fig. 516. Chorthippus oschei (♂), Dumbraveni (Vn), 15.09.2008



Fig. 517. *Chorthippus oschei* (♀), Dumbraveni (Vn), 15.09.2008

Chorthippus loratus (Fischer von Waldheim, 1846)

(syn. Chorthippus brauneri Znoiko, 1928)

Description: the body color is variable; it is usually yellow with a brown or grey tint, almost unicoloured. The dorsal part of the body can be yellow or white. The lateral keels of the pronotum are visibly curved and often bordered with white and black.

Body length: $\sqrt[3]{14-16}$ mm, $\sqrt[9]{18-24}$ mm.

Stridulation: the echemes are short, of about 3-4s long. It stridulates only in sunlight.

Distribution: it is a Pontic species found in Caucasus, Ukraine, Romania and the Balkanic Peninsula. In Romania it is common in the South and frequent in Dobrogea. In Moldavia is rare and it is found in the South and the South-East.

Habitat and way of life: it lives in xerophilous grasslands, being a thermophilous species characteristic for the plane regions in the South. It is a very common species in some high lawns, like in the surroundings of Hanu Conachi (Gl), along with *Acrotylus insubricus, Pezotettix giornae* and *Calliptamus barbarus*.

Phenology: adults can be found in July. It hibernates as an egg-stage. Nymphs hatch in April-May.



Fig. 518. Chorthippus loratus (3), Hanu Conachi (Gl), 15.08.2008

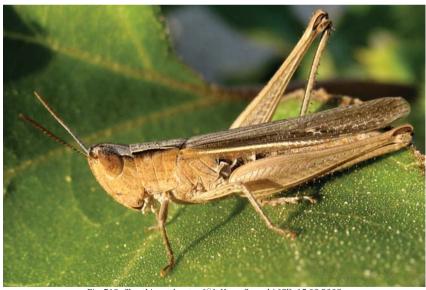


Fig. 519. Chorthippus loratus ($\stackrel{\frown}{\hookrightarrow}$), Hanu Conachi (Gl), 15.08.2008

Chorthippus dichrous (Eversmann, 1859)

Description: the Two-colored Grasshopper has yellow, brown, green or sometimes grey body color. The paranotum sometimes with a longitudinal dark stripe. The lateral keels of the pronotum are slightly divergent in the posterior part. The radial vein on the fore wing is curved in "S" shape. It is one of the biggest *Chorthippus* species from Romania. Body length: 3 15-21mm, 2 21-30mm.

Stridulation: the calling song consists of echemes lasting 0,3-0,5s; it stridulates during the day.

Distribution: it is a Central Asian-Pontic species. In our country is frequent in the South of the country, rarely can be found in the hill areas. In Moldavia it is very rare, distributed in the South-East.

Habitat and way of life: it is a thermo-xerophilous species, praticolous, preferring the high lawns from the plane areas. This Grasshopper can be confounded with *Chorthippus dorsatus*, but the last one is smaller and rarely can be seen in the South-Eastern part of Moldavia. Sometimes, the Two-colored Grasshopper can be encountered in meso-hygrophilous high meadows.

Phenology: adults can be found from July to October. It hibernates as an egg-stage. Nymphs hatch in April-May.



Fig. 520. Chorthippus dichrous (3), Galati (Gl), 17.07.2006



Fig. 521. Chorthippus dichrous (♀), Galati (Gl), 17.07.2006

Chorthippus dorsatus (Zetterstedt, 1821)

Description: the Steppe Grasshopper's body color is usually brown, with the dorsal part green, brown, yellow or garnet. The pronotal keels are slightly curved. The radial vein on the fore wing is straight. Wings always surpass the tip of abdomen.

Body length: $\sqrt[3]{14-16}$ mm, $\sqrt[9]{19-23}$ mm.

Stridulation: the song consists of a series of short echemes (each lasting for about 1s). This series lasts for 10-25s. It stridulates during the day.

Distribution: it is a Eurosiberian species, widely distributed in the Northern parts of the Palaearctic Asia and Europe. In Romania it is a common species, rarer in the Southern part of the country. In Moldavia it is quite frequent, especially in the mountains.

Habitat and way of life: it is a common species in different mesophilous and hygrophilous habitats. It prefers the mountain and hilly areas, being rarer in the plains. It has been found in forest fringes and glades, in different mesophilous laws and meadows.

Phenology: adults can be found in July-October. It hibernates as an egg-stage. Nymphs hatch in April-May.



Fig. 522. Chorthippus dorsatus (♂), Gura Humorului (Sv), 23.08.2006



Fig. 523. Chorthippus dorsatus (♀), Gura Humorului (Sv), 23.08.2006

Chorthippus montanus (Charpentier, 1825)

Description: the Water-meadow Grasshopper has the body color green. Sometimes the dorsal part of the head and pronotum can be yellow, grey or red. The pronotal lateral keels can be limited with dark brown or black. The male posterior wings reach the stigma of the fore wing. The female fore wings are longer than half of the abdomen. The ovipositor valves are long.

Body length: 3 15-17mm, 9 19-23mm.

Stridulation: the calling song consists in an echeme composed of 10-20 syllables, the echeme lasting for 2-5 seconds. It stridulates during the day.

Distribution: it is a Eurosiberian species, known from Central and Northern Europe, Siberia and Mongolia. In Romania it is common in Transylvania and missing from the Southern part of the country. It is rare and localized in Moldavia, being found only in mountain areas.

Habitat and way of life: it is a species characteristic to the hygrophilous meadows from the mountain areas. Along with the Water-meadow Grasshopper, we usually can encounter *Chorthippus dorsatus, Stethophyma grossum, Metrioptera roeselii, Conocephalus fuscus,* or, more rarely, *Mecostethus alliaceus* - as near Gainesti (Sv).

Phenology: adults can be found in July-October. It hibernates as an egg-stage. Nymphs hatch in April-May.



Fig. 524. Chorthippus montanus (3), Putna (Sv), 25.08.2007



Fig. 525. *Chorthippus montanus* (\updownarrow), Putna (Sv), 25.08.2007

Chorthippus parallelus (Zetterstedt, 1821)

Description: the Meadow Grasshopper has the body color green, brown, greyish or yellow. Sometimes dark individuals can be encountered. The fore wings are shorter than the abdomen; male's posterior wings being longer than half of the abdomen. The hind wings are very small and don't reach the stigma on the fore wings. The ovipositor valves are short. Body length: 3 13-16mm, 3 18-22mm.

Stridulation: 10-20syllables are grouped in an echeme, lasting for 1-2s. It stridulates during the day.

Distribution: it is a well spread species in Palaearctic Europe and Asia. In Romania it is one of the most common species, being found in all regions, from the seashore to the high mountains. It is also very common in Moldavia.

Habitat and way of life: it is a eurybiont species, praticolous, preferring hygrophilous or mesophilous grasslands. Especially in late June and in July, the Meadow Grasshopper's song is one of the most familiar in hygrophilous areas and even in forest glades, alongside *Euthystira brachyptera* and *Metrioptera bicolor*.

Phenology: adults can be found in June-July and rarely in the autumn. It hibernates as an egg-stage. Nymphs hatch in April-May.



Fig. 526. Chorthippus parallelus (3), Onesti (Bc), 14.08.2007



Fig. 527. Chorthippus parallelus (\updownarrow), Pascani (Is), 07.07.2008

Euchorthippus pulvinatus (Fischer de Waldheim, 1846)

Description: the Sharp-Tailed Grasshopper has the body color browngrey. The head is big and this is an easy way to separate this genus from *Chorthippus*. The fore wing is longer than the tip of the abdomen (still, some females preparing for egg laying can have the abdomen longer than the wings). The posterior wings have the same length as the fore wings. Body length: 3 15-17mm, 3 22-25mm.

Stridulation: the song consists of echemes grouped in short sequences of echemes, each lasting for 1-2s. It stridulates during the day.

Distribution: it is a Central Asian-Mediterranean element. In our country it is found localized, in steppic regions. In Moldavia it is rare and localized especially in the East and South-East.

Habitat and way of life: it is a xero-thermophilous species, praticolous, characteristic for the steppic regions. It prefers high grasslands and sometimes it can be encountered in forest glades and fringes.

Phenology: adults can be found from July to October. It hibernates in egg-stage. Nymphs hatch in April-May.



Fig. 528. Euchorthippus pulvinatus (♂), Iasi (Is), 20.07.2007



Fig. 529. *Euchorthippus pulvinatus* (♀), Iasi (Is), 20.07.2007

Euchorthippus declivus (Brisout de Barneville, 1848)

Description: the Straw-colored Grasshopper has the body color the same as the previous species, but yellowish or grey individuals may also appear. Usually the paranotum has longitudinal brown stripes. The fore wing is shorter than the tip of the abdomen; the posterior wings are shorter than the fore wings.

Body length: 3 14-17mm, 9 19-25mm.

Stridulation: the echemes are grouped in a sequence of a very variable number of echemes, each lasting 1-2s. It is very similar to the song of the species *Euchorthippus pulvinatus*. It stridulates during the day.

Distribution: it is a Southern European element. In our country it is a common species; it is widely distributed in Moldavia.

Habitat and way of life: it lives in various habitats: mesophilous, xero-mesophilous and xerophilous. It is found in meadows, clearings and meadows etc. Especially in late summer, its calling song can be heard in many lawns from Eastern Moldavia, alongside the stridulations of *Chorthippus biguttulus* and *Chorthippus brunneus*.

Phenology: adults can be found from June-July to October. It hibernates as an egg-stage. Nymphs hatch in April-May.



Fig. 530. Euchorthippus declivus (3), Humosu (Is), 09.07.2008



Fig. 531. *Euchorthippus declivus* (♀), Humosu (Is), 09.07.2008

OTHER POSSIBLE SPECIES

Leptophyes boscii Fieber, 1853 - a South-East European species, rare in Romania. In Moldavia it can be found in the forests from the Northern part of this region. It lives in xero-mesophilous grasslands and Bushes. The adults can be found from July.

Leptophyes punctatissima (Bosc, 1792) - a North European species, it is very rare in Romania. In Moldavia it is possible to be encountered in the Northern part. It lives in mesophilous Bushes. Adults can be found from August to October.

Platycleis montana Kollar, 1833 - a Central European species, rare in our country. In Moldavia, so far it has been found in Vrancea Mountains and near Suceava. It prefers the xerophilous and meso-xerophilous lawns. The adults can be found from July.

Onconotus servillei Fischer von Waldheim, 1846 - a Central Asian-Pontic species, very rare in our country and protected. So far it has been found in a few localities in the South, South-East and East. In Moldavia it is known only from Iasi. It is a geophilous and praticolous species, living hidden in Bushes. The adults can be found from June to August (fig. 532).

Bradyporus dasypus (Illiger, 1800) - a Balkanic species, in Romania can be found in Dobrogea and very rarely in the Eastern part of Moldavia. It lives in the grasslands and Bushes near the forests or along the streets. The adults can be seen from May-June to August (fig. 533).

Callimenus macrogaster longicollis (Fieber, 1853) - a very beautiful Balkanic species, but very rare in Romania: Babadag forest in Dobrogea and Valea lui David near Iasi, in Moldavia. Like *Bradyporus*, this big Ensiferan lives in Bushes. Adults appear in June.

Nemobius sylvestris (Bosc, 1792) - a West Palaearctic species, rare in Romania, so far it has been found only near Suceava, in Moldavia. It lives in the forests, hidden under dead leaves in the leaf litter. Adults can be found all over the year.

Myrmecophilus acervorum (Panzer, 1799) - a West Palaearctic species, rare in Romania. Due to the hidden way of life, in ant's nests, it is

possible to be found in Moldavia. Adults can be found all over the year (fig. 534).

Depressotetrix depressus (Brisout de Barneville, 1848) - a Circummediterranean species, rare in the Southern part of Romania. Very rare in Moldavia. It is a geophilous and xerophilous species. Adults can be found in spring and summer, sometimes adults hibernate.

Odontopodisma rubripes (Ramme, 1931) - an endemic species for the Carpathians, can be found only in Romania, Ukraine, Hungary and Czech Republic. It is very rare in the Moldavian Carpathians. The species prefers living in Bushes and tall grasses. Adults can be found from June to September.

Bryodemella tuberculatum (Fabricius, 1775) - a Eurosiberian species, very rare in Romania. It has been found so far only at Campulung Moldovenesc, near the river Moldavia. It is a geophilous species which prefers the sandy and stony river meadows. Adults can be encountered from July.

Dociostaurus maroccanus (Thunberg, 1815) - a Central Asian-Mediterranean species, rare in Romania. It has been found in Moldavia, but now the species is very rare. It lives in xerophilous grasslands. Adults appear in June (fig. 535).

Arcyptera microptera (Fischer von Waldheim, 1833) - a Central Asian-South European species, rare in Romania. In Moldavia it has been found only at Bacau and near Focsani. It is a species which prefers the xerophilous lawns. Adults can be found only in May-July.

Chorthippus vagans (Eversmann, 1848) - a Eurosiberian species, rare in Romania; in Moldavia so far it has been found in Northern part. It prefers mesophilous grasslands. Adults can be found from July to October.

Few other species can be encountered in Moldavia and most of them are introduced along with fruits, vegetables and flowers from tropical regions. For example, one of those is *Tachycines asynamorus*, a Katydid which lives especially in the glasshouses of botanical gardens.



Fig. 532. Onconotus servillei (♂), Babadag (Tl), 14.07.2008



Fig. 533. Bradyporus dasypus (3), Babadag (Tl), 14.07.2008



Fig. 534. Myrmecophilus acervorum (♀), Hagieni (Ct), 16.05.2008



Fig. 535. *Dociostaurus maroccanus* (♀), Babadag (Tl), 14.07.2008

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ERRATUM

Page	Line	Instead of	Please read
SUMMARY	8	acoustic registration	acoustic recording
1	36	1900, and 1903	1900 and 1903
3	1	Zubovskia	Zubovskya
3	23	Brukental	Brukenthal
15	4	common-Cricket	Common-Cricket
18	title	ACOUSTIC REGISTRATION	ACOUSTIC RECORDING
18	18	Also we haven't put together	Also we haven't placed together
19	23	to develop, this makes	to develop and this makes
19	33	The registration of stridulations	The recording of stridulations
19	34	I accomplished the registration	We accomplished the recording
41	9	Prozone of pronotum's is	Prozone of pronotum is
43	25	(fig. 199)	(fig. 196)
56	11	they don't reach	they reach
64	4	pronto	pronotum
64	18	Morphologically, it looks very	Morphologically, males look very
120	4	female's genital plate's shape	female's subgenital plate's shape
188	6	the subspecies doesn't stridulate	the species doesn't stridulate
192	3	middle of the thorax	end of the thorax
204	6	This genus easily recognizable	This genus is easily recognizable
218	9	known from Europe Asia	known from Europe, Asia
222	4	by classical morphological	by classical analysis of the morphological
250	14	but it can be found in plane	but it can also be found in plane
284	7	It lives in mesophilous Bushes	It lives in clearings with mesophilous bushes
284	17	hidden in Bushes	hidden in xerophilous bushes
284	20	and Bushes near	and bushes near
284	25	lives in Bushes	lives in high shrubs and bushes
285	9	Moldavian Carpathians	Oriental Carpathians
285	10	in Bushes and tall grasses	in bushes from forest clearings
200	10	III Daoileo aila tail Branco	0 10111 10101 010111160

^{*} The authors and the editor sincerely apologize for the errors present in the book



Fig. 516. Chorthippus oschei (3), Dumbrăveni (Vn), 15.09.2008



Fig. 517. Chorthippus oschei (♀), Dumbrăveni (Vn), 15.09.2008

