

**2nd INTERNATIONAL CONGRESS
CONCERNING THE RHYNCHOTA FAUNA
OF BALKAN AND ADJACENT REGIONS**

PROCEEDINGS

(Edited by SAKIS DROSOPOULOS)

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GREECE

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Contributions

The zoogeographical character of Balkan Heteroptera.	M. JOSIFOV	6
A preliminary list and some notes on the Cicadomorpha (Homoptera-Auchenorrhyncha) collected in Greece.	S. DROSOPOULOS, M. ASCHE and H. HOCH	8
Heteropteran fauna of Slovenia: present state and characteristics.	A. GOGALA	14
Cicadellidae of Lebanon: new facts and ideas. (Homoptera - Auchenorrhyncha).	H. ABDUL-NOUR	15
The Psylloidea of Lebanon: preliminary records and prospects.	N. ZEIDAN-GEZE	17
Cixiidae and Delphacidae (Homoptera-Fulgoroidea) from Lebanon – a preliminary synopsis.	M. ASCHE and H. HOCH	18
Heteroptera of the island of Salina (Sicily, Italy).	S. IPPOLITO	20
On the Auchenorrhyncha (Homoptera) from Aeolian island (Sicily, Italy).	V. D'URSO	23
On endemic and little known Heteroptera from Crete.	E. HEISS	28
<i>The Arocephalus longiceps</i> (Kbm.) – (Homoptera Cicadelloidea Paralimni): problems in intraspecific variability, geographical distribution and speciation.	M. ASCHE	30
<i>Patterns</i> of geographic distribution in the planthopper genus <i>Hyalesthes</i> Sign. (Homoptera Fulgoroidea Cixiidae): a phylogenetic approach.	H. HOCH	31
Species-discrimination and geographic distribution in the cydnid genus <i>Tritomegas</i> (Heteroptera, Cydnidae).	D. KAMMERSCHEN	33
Some remarks on the phylogeny of the Lygaeidae based on the male genital system.	I. HOPP	35
Electrophoretic studies on <i>Alebra albostriella</i> complex (Homoptera, Cicadellidae, Typhlocybinae).	M. LOUKAS and S. DROSOPOULOS	42
Biosystematic studies on the genus <i>Alebra</i> Fieber.	M. GILLHAM	44
A parthenogenetic planthopper found in Greece.	P.W.F. de VRIJER	46
Structures producing vibrational signals in Heteroptera.	M. GOGALA	47
The vibratory membranes in the genus <i>Euscelis</i> .	H. STRUBING and G. SCHWARZ-MITTELSTAEDT	49
Anti-predatory defence of some Rhynchota especially as it applies to avian insectivores.	D.L. EVANS	53
Structure organization and dynamics of Hemiptera-Plant communities of a mediterranean area: preliminaries and methodology.	P. PETRAKIS, V. TSELEPATIOTI-PETRAKI and S. DROSOPOULOS	54
DAPROPHECO: A specialized database system for integrated studies in Plant-Hemiptera communities.	P. PETRAKIS	62
Seasonal aspects and most important biotopes of Greece with reference to Hemiptera (Auchenorrhyncha-Homoptera and Heteroptera).	S. DROSOPOULOS	64
Round table on the management of nature reserves in Prespa.		67

Seasonal aspects and most important biotopes of Greece with reference to Hemiptera (Auchenorrhyncha - Homoptera and Heteroptera)

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Greece, the southernmost part of the Balkan peninsula, is well known for its rich flora, which over the years has been well studied. However, one can not say that the same holds for the fauna of Greece particularly concerning insects. This is due to the fact that many groups of insects consist of a large number of species, which makes it more difficult to observe, collect and identify them and also maybe due to the fact that they are less attractive than plants. Thus, studying only the group of Hemiptera during the last 10 years (often in collaboration with several hemipterologists and botanists), it is now estimated that this group of insects counts as much as one third compared to the total number of plant species found so far in Greece which are about 7000 plant species. Considering also that the Hemiptera are in general phytophagous insects, the knowledge of plant species is highly associated with faunistic investigations on this group.

Taking into account the above situation we have performed qualitative investigations which are covering almost all geographical regions of Greece and during all seasons of the year. Therefore, it is worth-while to report here, when and where large parts of the Hemiptera species occurred with reference to adult stage.

Seasonality of the Hemiptera

During the period from March until the middle of May the biotopes up to about 1000m look green and blooming. However they are not so rich in Hemiptera species as one might expect. During this period few specimens of hibernating species can be found and large numbers of specimens originating of species hibernating at the

larval stage (e.g. *Melilaila matsumuri*, *Steptanus albanicus*, *Eurysa lineata* - Homoptera and a few species of Pentatomidae, Miridae (especially on *Asphodelus* spp.), Tingidae etc. - Heteroptera). Throughout this period the Hemiptera are more common along or near coastal biotopes. However those species which are not strictly associated with coastal biotopes can be collected at higher altitudes after the middle of May until the end of July. This period is very interesting for the bulk of the Heteroptera species so it might be characterized as «Heteroptera season». At that time it is also very interesting to collect several species in these higher areas (1000 - 2000m) especially univoltine species hibernating at adult or larval stage. This period may start 10 to 20 days earlier in mountain areas of southern Greece than in those of northern Greece.

The period from the middle of July until October is unfavorable regarding abundance of Heteroptera species, while it favors bi-polyvoltine species or species hibernating as adults at higher elevations. Then, the Hemiptera fauna in coastal biotopes has almost vanished except for some xerophilous species (e.g. Issidae-Homoptera, Lygaeidae - Heteroptera). However, river banks, fresh or salt water marshes are very rich in species which are usually characteristic for these types of biotopes (e.g. Delphacidae, Cicadellidae-Homoptera and Nepomorpha, Saldidae, Leptopodidae, Nabidae, Lygaeidae-Heteroptera).

During November until February there are still interesting species to be found at low elevations, especially species with a

mediterranean or mediterranean-african distribution, or species hibernating at the adult stage.

In general, the european or eurosiberian species, which for some families represent the largest part of species in Greece, have an optimum of occurrence during June-July, while the mediterranean species which represent also a large part, samples should be taken during the whole year (especially April-May). It has been noticed that these periods can fluctuate from 1-3 weeks from year to year.

Important biotopes

Although this is a relative and complicated definition, reference is made here to the species richness of Hemiptera in some biotopes. During ten years of field expeditions it was possible to note that all protected areas, which have not been grazed or (fortunately) moderately grazed, were rich in species. On the contrary heavily grazed biotopes, largely cultivated, or polluted (marshes sprayed against mosquitoes or crops sprayed against various pests) contained only a few and common species.

Among the most rich biotopes of the Greek peninsula regarding Hemiptera several biotopes should be mentioned here. We give priority to Mount Vourinos (a protected area) as one of the most rich biotopes of Greece, also known for its rich flora, shown to the author by the botanists G. Sfikas in the end of May 1982. Since that year personally visiting this biotope together with several entomologists in August 1983 in July 1984 and in June and August 1985, an unexpected number of species and specimens were obtained. This biotope is situated near the town of Kozani (W. Macedonia) and it includes separated sides of serpentine and limestone ground. The botanist Goulimis (1968) referred to this biotope as one of the «botanical paradises» of Greece. In addition to the flowering plants which are mainly reported at this biotope, other dominant plants are: *Abies borisii regis*, *Pinus nigra*, *Juniperus* spp., *Ostrya carpinifolia*, *Acer* spp., *Buxus sempervirens*, *Festuca* spp. *Brachypodium* spp., *Carex* spp., *Juncus* spp., *Molinia*

caerulea, *Secale montanum*, *Arrhenatherum elatius*, *Dactylis glomerata*, *Deschampsia flexuosa* e.t.c. From faunistic point of view this biotope can be characterized so far as a «paradise» of Hemiptera and Lepidoptera. Very much worth mentioning is also the fact that there are many wolves in this area. Another characteristic of this biotope is the high population density of some rare species (e.g. *Parorgerius platypus*, *Chlorionidea flava* - Homoptera).

Going north from Vourinos there is another rich biotope. This is the well known «National Park of Prespa lakes». It contains part of the lakes Megali and Mikri Prespa and part of the mountains Vrodero, Triklario and Kalo Nero. Characteristic is its unique variety in plant ecosystems (Pavlidis, 1984) and the large number of Hemiptera species as pointed out in the previous congress (Drosopoulos, Asche and Hoch, 1983).

To the south of Vourinos there is another National Park on the top of Mount Oiti. This is the only National Park of southern Greece which is not grazed. It is located between 1800-2150m. Its flora is very rich (Sfikas, 1986). Some plants species have there the southernmost limit of their distribution, like the grass *Deschampsia caespitosa* reported here for first time. The extended open biotopes are dominated by several grass species very rich in Auchenorrhyncha species which have also the southernmost limit of their distribution (e.g. *Ribautodelphax falacron*, and *Acanthodelphax spinosus* - Delphacidae, Homoptera reported previously only from Mt. Falakron). Close to this National Park there is another one on the famous Mount Parnassus. This National Park is mentioned here as an example of a heavily grazed park. It does not differ from other mountains of central Greece, Pelopnesus and Grete, except for Mt. Parnon which is not that much grazed and it is very interesting for hemipterological surveys.

The famous Olympus and Falakron (W. Macedonia) mountains are also rich in Hemiptera species containing some subalpine-alpine species.

Another very important mountain-range which has been well explored by the author and other entomologists (June, July, October 1982, August 1983, May 1984 and August 1985) is called Rhodopi located north of the town of Drama, along the Bulgarian borders. It is characterized by its extensive natural woods of *Picea abies*, *Pinus nigra*, *Fagus sylvatica* and even *Betula pendula*. It includes the National Monument called «Partheno Dasos = Virgin Forest», a unique virgin forest in Europe, so far. It is surprising that an area so close to the Mediterranean sea, climatologically, floristically and faunistically does not differ much from central European ones. Indeed, some species with European or Euro-Siberian distribution occur only there in high population densities. (e.g. *Oncopsis* spp., *Javesella discolor* - Homoptera). Its value should not only be realized by the Greek authorities but internationally as well, so that it will be protected effectively (Drosopoulos, 1984).

Other biotopes at high altitudes, less interesting than those mentioned above are some mountains of the Pindus range, Pilion, Parnassus, Giona, Vardousia, Parnis (Middle - Greece) and Killini, Menalon, Parnon, Taygetus (Peloponnesus).

Concerning the lower altitude biotopes, rich in Hemiptera species, worth to be mentioned here are the oak forests of the area of Grevena (W. Macedonia) and the most frequently sampled area which is in the surroundings of the authors' place of birth (Skaloula, Province of Phokis), the South of the Peloponnesus especially Messinia, the western part of the province of Ioannina (N.W. Greece), the northern parts of Kerkyra, Euboea, Chios, Ikaria, Samothraki islands and Crete.

Wetlands, lagoons, marshes and river banks which are very common in Greece, some of them even in the islands have been extensively studied by the author and Drs. M. Asche and H. Hoch. Although they are difficult to explore because of their dense vegetation and the high temperatures combined with relatively high humidity in

summer time, we have obtained very interesting material especially in those of northern Greece. The Porto Lagos lagoon was found to be one of the most rich where several species of pontomediterranean distribution have their westernmost limits. The Aliakmon Delta and the adjacent wetlands also contained a rich Hemiptera fauna, while the Axios, Strymon and Evros deltas were less important. Among other wetlands also interesting are those of the west side of Greece (Gulf of Arta, and Acheloos Delta) and the Peloponnesus (Loutra Kajafa, Gialova and Astros).

Among the small islands of Greece special reference is made to Ikaria at the eastern side of the Aegean sea. The northwestern side of this island was very rich in Hemiptera, especially Homoptera. Finally, there are several islands of the Aegean and Ionian sea which have not yet been explored, or which have been insufficiently investigated. However, studies are in process and it is expected that in a few years these gaps will be filled up.

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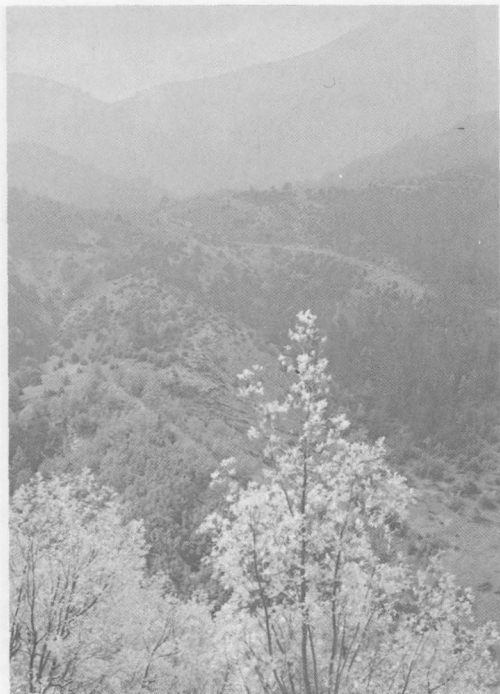


Fig. 1. View of Mount Vourinos at about 1200 m altitude in late May 1982.



Fig. 2. View of Mount Oiti at about 2000 m in the middle of June 1984.



Fig. 3. Forest of birch in Rhodopi Mts (1300 m) in the beginning of June 1982.



Fig. 4. March in Rhodopi Mts (1500 m) in the middle of July 1982.

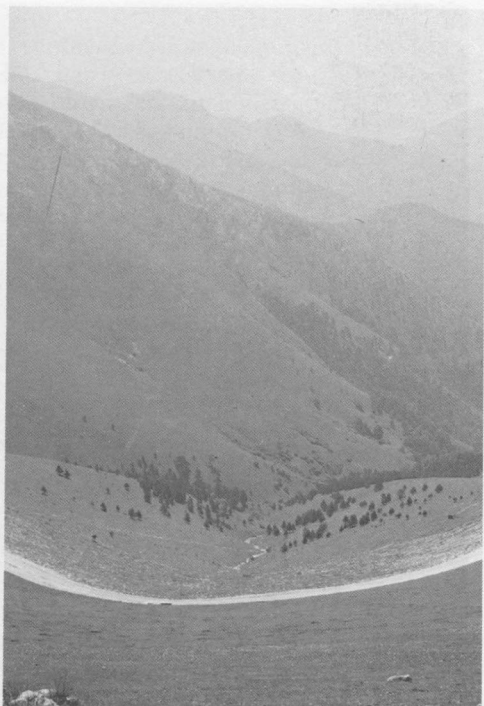


Fig. 5. View of Mount Falakron (2000 m) in the middle of June 1982.



Fig. 6. A biotope with *Eriophorum* sp. above Milies-Pindos Mt. (1500 m).

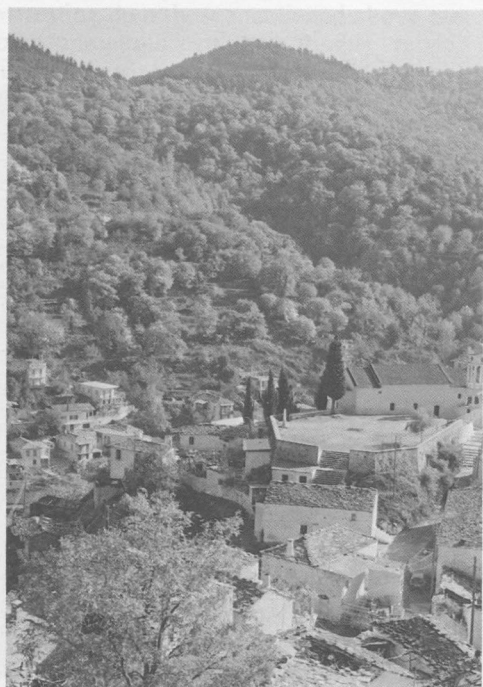


Fig. 7. View of Mount Parnon above the village of Kastanitsa (1100 m).



Fig. 8. A small march near the sea on Samotrhaki island in the beginning of June 1982 after hemipterological investigations!