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THE SYRPHID FAUNA *(Diptera)* OF THE TISA BASIN IN YUGOSLAVIA

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Abstract

The investigations into the syrphid fauna were conducted along by the Tisa river, in 1984 and 1985. The number of 91 species was collected, out of which 12 represent new records from the Province of Vojvodina and the 2 species *(Posthosyrphus latilunulatus* (COLL.) and *Platycheirus angustatus* ZETT.*)* are new for Yugoslavia. The fauna composition is discussed on the basis of plant communities developed in the Tisa Basin, according to the distribution type, and according to the mode of larval development.

Introduction

Syrphids represent a very large and a diverse group of dipterous insects. Diversity is shown in the appearance of adults and in biology and ecology of these species. Adults feed on pollen and nectar and due to their abundance represent, from early spring to late autumn, an important group of pollinators of various plant species. In relation to the larval development, numerous are the aphidophagous species being important in the biological control of aphids, species with the saprophagous larvae playing a significant role in matter cycling, phytophagous and coprophagous species, and finally a group of species with unknown process of development.

In Yugoslavia, the syrphids represent a relatively well investigated group of insects (380 species). It should be emphasized however, that such a great number of species recorded is the result of the investigations performed in the regions characterized by a great diversity of the ecosystems present. Consequently, the fauna of syrphids is also rich and diverse. With regard to the Province of Vojvodina for instance, the regions of the Fruška Gora Hill (GLUMAC 1959) and the Vršačke Mountains (ŠIMIĆ, VUJIĆ 1984) have been investigated systematically. The syrphid group of this particular area surrounding the Tisa river in Yugoslavia has not been the subject of investigations until now. Our investigations were performed within the joint project of Hungary and Yugoslavia entitled, "The Investigations Into the Tisa River" and the preliminary results on the syrphids from the Tisa Basin are presented.

The insects were collected from early spring till late autumn of 1984 and 1985. The number of 25 localities in a narrow belt surrounding the Tisa river (from the

Hungarian border to the mouth of the river) (Fig.1) was included in the investigations. The samples were collected by using the entomological net and deposited in the collection of the Institute of Biology in Novi Sad.

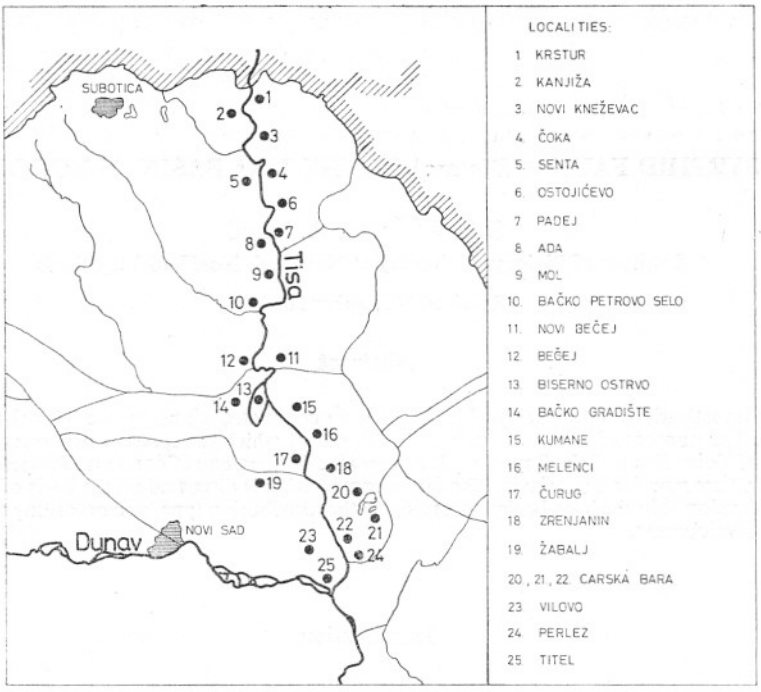

Fig. 1. Syrphidae collecting stations in the Tisa-valley

Results and Discussion

In the region under consideration the number of 91 species (Tab. 1) was found, out of which the 12 were recorded for the first time for the Province of Vojvodina:

Cheilosia melanura BECKER
Eumerus strigatus (FALLEN)
Ferdinandea nigrifrons EGGER
Lathyrophthalmus quinquelineatus FABRICIUS
Merodon distincta PALMA
Pipiza fasciata MEIGEN
Pipiza festiva MEIGEN
Platycheirus clypeatus (MEIGEN)
Platycheirus fulviventris (MACQUART)
Platycheirus peltatus (MEIGEN)
Triglyphus primus LOEW
Xylota tarda MEIGEN

The 2 species are new for Yugoslavia:
Posthosyrphus latilunulatus (COLLIN)
Platycheirus angustatus ZETTERSTEDT

By comparing our results with the data presented by TÓTH (1979) on the Hungarian portion of the Tisa Basin (Tab. 1) the two groups of species are distinguished:

I A common group of species (70 species) recorded from the Tisa Basin in Hungary and Yugoslavia.

II A differential group of species (29 species from Hungary and 21 from Yugoslavia).

Today, a broader region surrounding the Tisa river in Yugoslavia is a cultivated steppe and flood control is established. As a consequence, the autochthonous plant communities declined. Since the syrphids live in a close conjunction with the plant canopy, during their life span, plant communities have a great influence upon the presence and distribution of these species. Therefore, our results are discussed on such a basis.

1. Within the natural communities the most numerous are the alliances of white willow forests of the association *Salicetum albae-amygdalinae* SLAVNIĆ, 1952 (SLAVNIĆ 1952). When compared with other habitats investigated, the largest number of species (74, i.e. 81% of total species found) is concentrated in these communities. Predominant are the species of the forest habitats on wetlands. These are the species of the genera *Pipiza, Pipizella, Cheilosia, Platycheirus, Scaeva, Syrphus,* and *Postho-syrphus,* as well as a great number of species of the subfamily Eristalinae. The 2 species that are new for Yugoslavia and the 8 out of 12 being new for the Province of Vojvodina are found only in these habitats.

2. At certain localities, characterized by somewhat higher humidity, the fragments of the community *Scirpeto-Phragmitetum* KOCH, 1926 (SOÓ 1964—68) are found. These are, in fact, reed communities with the unfavourable living conditions for most syrphids. Only 25 species (27% of total species found) was collected. A characteristic is the presence of the species demanding wetlands. These are the species of the genera *Liogaster* and *Chrisogaster* with their larvae developing in tissues of the aquatic plants, as well as the species of the genera *Parhelophilus, Eristalis, Eurinomyia,* and *Myiatropa* with the larvae belonging to the aquatic, saprophagous group.

3. Outside the embankments, on the Chernozem Soil on loess plateaus, the communities of the alliance Festucion rupicolae SOÓ 1940 (SOÓ 1964—68) are found. The number of 30 species (33% of total found) was collected at these localities. The poverty of the number of species is evident also in this region although the finding of the samples of the genera *Merodon* and *Eumerus,* representing a characteristic of this community type, is worth mentioning. Their presence is conditioned by the presence of the bulbous plants that are required in the process of development of larvae of species of the genera mentioned.

4. In the halophylous communities of the alliance Beckmanion erucaeformis SOÓ 1933 (SOÓ 1964—68) in more wet habitats, the number of 23 species (25% of total number) was recorded. Although the number of the collected species is limited, a group of characteristic species is distinguished such as *Pelecocera latifrons, Heringia heringi,* and *Chrysogaster viduata,* as well as the species having their larvae among the aquatic saprophagous.

5. In the pasture communities of wet habitats of the alliance Agropiro-Rumicion crispi NOEDHAGEN 1940 (SOÓ 1964—68) the number of 24 species (27%) was collected. Besides the widespread species, important are the findings of the species *Triglyphus primus* and *Lathyrophthalmus quinquelineatus* that are found only in this community type and represent the new species for the Province of Vojvodina.

6. Finally, in planted, Euramerican poplar forests, the syrphid fauna is the poorest both qualitatively and quantitatively. Only 19 species was collected (21% of

total number). All of them are characterized by wide distribution. (Holarctic, Palearctic).

By analysing the percentages of species found in the region under consideration, according to the distribution type (Fig. 2), the presence of species from 6 zoogeogra-

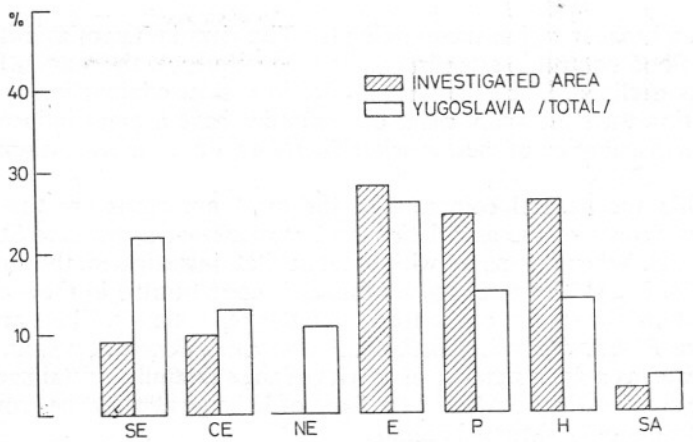

Fig. 2. Groups of species according to the type of distribution

phic regions is established. Predominant are the species widespread in Europe. A comparison of these species with those recorded for Yugoslavia brings to view the apparent absence of North European species. Also, the percentage of species widespread in Mediterranean and South Europe is reduced to more than a half. On the other hand, in the fauna of the region considered, the species characterized by the widest distribution are presented in a considerably higher percentages. This fact points to a relatively unfavourable conditions for the development of a rich and diverse syrphid fauna.

By comparing the results obtained on the percentages of species occurring in the region investigated, according to the type of larval development (Fig. 3), the following conclusions are drawn:

— the percentages of zoophagous, terrestrial saprophagous, coprophagous, and the species with unknown process of larval development are almost equal;

— the percentage of species having the phytophagous larvae (the genera *Cheilosia*, *Merodon*, and *Eumerus*) is half of that observed for the species reported for Yugoslavia;

— opposite is the situation with the species having the aquatic, saprophagous larvae, i.e. the species predominating in the region investigated.

Conclusions

Of the total of 91 species found, the 2 are new for Yugoslavia and the 12 are recorded for the first time from the Province of Vojvodina.

A relative poverty of the syrphid fauna in the Tisa Basin in Yugoslavia, as compared with other regions investigated within this country, is due to the uniformity of habitats, as well as to a remarkable anthropogenic influence.

The highest percentage of species (81%) is recorded in the natural communities

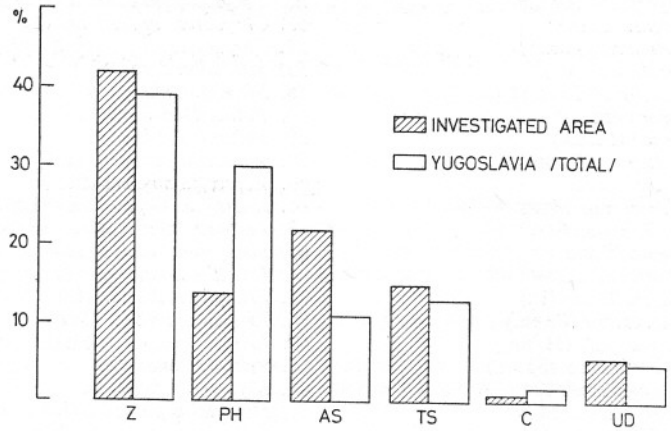

Fig. 3. Groups of species according to the type of larval development

of the alliance of white willow forests of the association Salicetum albae-amygdalinae SLAVNIĆ.

With regard to the distribution, the highest percentages within the fauna of the Tisa Basin in Yugoslavia are recorded for the syrphid species widespread in Europe.

By analysing the species present on the basis of the type of larval development, an evidently low percentage of phytophagous species due to the absence of adequate habitats is observed. On the contrary, an extremely large number of species having the aquatic, saprophagous larvae is recorded.

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List of species

⁺ differential species

1. *Pipiza fasciata* MEIG.
2. *Pipiza festiva* MEIG.
3. *Pipizella maculipennis* (MEIG.)
4. *Pipizella varipes* (MEIG.)⁺
5. *Pipizella virens* (FIZ.)
6. *Pipizella* sp.⁺
7. *Heringia heringi* ZETT.
8. *Liogaster metalina* FABR.⁺
9. *Chrysogaster viduata* L.⁺
10. *Triglyphus primus* LOEW
11. *Cheilosia flavipes* PANZ.⁺

12. *Cheilosia imperfecta* BECK.+
13. *Cheilosia intonsa* LOEW+
14. *Cheilosia melanura* BECK.+
15. *Cheilosia ruralis* (MEIG.)+
16. *Cheilosia scutellata* (FALL.)+
17. *Cheilosia soror* (ZETT.)+
18. *Neoascia dispar* (MEIG.)
19. *Neoascia podagrica* (FABR.)
20. *Paragus bicolor* FABR.
21. *Paragus haemorrhous* MEIG.
22. *Paragus tibialis* FALL.+
23. *Baccha elongata* (FABR.)
24. *Pelecocera latifrons* LOEW
25. *Melanostoma mellinum* (L.)
26. *Melanostoma scalare* (FABR.)
27. *Xanthandrus comptus* (HARR.)
28. *Platycheirus albimanus* (FABR.)
29. *Platycheirus angustatus* ZETT.
20. *Platycheirus clypeatus* (MEIG.)
31. *Platycheirus fulviventris* (MACQ.)
32. *Platycheirus peltatus* (MEIG.)
33. *Xanthogramma citrofasciatum* DEG.
34. *Xanthogramma ornatum* (MEIG.)
35. *Scaeva lapponica* (ZETT.)+
36. *Scaeva pyrastri* (L.)
37. *Scaeva selenitica* (MEIG.)
38. *Posthosyrphus latifasciatus* (MEIG.)+
39. *Posthosyrphus latilunulatus* (COLL.)+
40. *Posthosyrphus luniger* (MEIG.)
31. *Metasyrphus corollae* (FABR.)
42. *Syrphus ribesii* L.
43. *Syrphus vitripennis* MEIG.
44. *Dasysyrphus albostriatus* (FALL.)
45. *Episyrphus auricollis* (MEIG.)
46. *Episyrphus balteatus* (DEG.)
47. *Episyrphus cinctellus* (ZETT.)+
48. *Sphaerophoria menthastri* (L.)
49. *Sphaerophoria rueppellii* (WIED.)
50. *Sphaerophoria scripta* (L.)
51. *Chrysotoxum bicinctum* (L.)
52. *Chrysotoxum cautum* (HARR.)
53. *Chrysotoxum festivum* (L.)
54. *Chrysotoxum vernale* LOEW
55. *Microdon devius* (L.)
56. *Microdon mutabilis* (L.)
57. *Volucella bombylans* L.
58. *Volucella inanis* (L.)
59. *Volucella pellucens* (L.)
60. *Volucella zonaria* (PODA)
61. *Eristailnus sepulchralis* (L.)
62. *Lathyrophthalmus aeneus* (SCOP.)
63. *Lathyrophthalmus quinquelineatus* FABR.+
64. *Eristalis arbustorum* (L.)
65. *Eristalis nemorum* (L.)
66. *Eristalis pertinax* (SCOP).
67. *Eristalis pratorum* MEIG.
68. *Eristalis tenax* (L.)
69. *Myiatropa florea* L.
70. *Helophilus pendulus* (L.)
71. *Helophilus trivittatus* FABR.
72. *Mesembrius peregrinus* LOEW
73. *Parhelophilus frutetorum* (FABR.)
74. *Parhelophilus versicolor* (FABR.)
75. *Eurinomyia lineata* (FABR.)
76. *Eurinomyia lunulata* (MEIG.)
77. *Cerioides conopoides* L.
78. *Merodon clavipes* FABR.+
79. *Merodon distincta* PALMA+
80. *Merodon spinipes* (FABR.)
81. *Eumerus strigatus* (FABR.)
82. *Eumerus tricolor* MEIG.
83. *Eumerus tuberculatus* ROND.
84. *Ferdinandea cuprea* (SCOP.)
85. *Ferdinandea nigrifrons* EGG.+
86. *Ferdinandea ruficornis* FABR.+
87. *Tropidia scita* HARR.
88. *Syritta pipiens* (L.)
89. *Xylota nemorum* FABR.
90. *Xylota segnis* (L.)
91. *Xylota tarda* MEIG.

Zengőlegyek (Syrphidae, Diptera) a Tisza jugoszláv szakaszán

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Kivonat

A kutatások során előkerült 91 zengőlégy faj közül Vajdaságra 12, Jugoszláviára nézve pedig kettő bizonyult új fajnak. Az ország más tájegységeihez viszonyítva a jugoszláv Tiszaszakasz aránylag szegényes zengőlégy faunája az egyhangú élőhely és az erőteljes antropogén hatás következménye.

A 81%-os zengőlégy fajgazdaság a Salicetum albae-amygdalinae Slavnić erődtársulásra jellemző. A zengőlégy fajok elterjedése tekintetében a Tisza mentén az Európára jellemző fajok a leggyakoribbak.

A lárvatípusok tekintetében, a megfelelő élettér hiányában kifejezetten kevés a növényevő fajok jelenléte, a nagyszámú akvatikus szaprofág fajokkal szemben.

Syrphidae (Diptera) potisja u Jugoslaviji

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Abstrakt

Od ukupno zabeležene 91 vrste, dve vrste su nove za Jugoslaviju, a 12 za Vojvodinu.

Relativno siromaštvo faune sirfida u potisju Jugoslvije u odnosu na ostala istraživana područja u našoj zemlji je posledica uniformnosti staništa i izraženog antropogenog uticaja.

Najbogatije vrstama (81 %) su prirodne zajednice sastojine šume bele vrbe asocijacije *Salicetum albae-amygdalinae* Slavnić, 1952.

U pogledu rasprostranjenja najvećeg udela u fauni potisja u Jugoslaviji imaju vrste sirfida rasprostranjene u Evropi.

Analizirajući prisutne vrste u odnosu na tip larvalnog razvića uočava se izrazito mala zastupljenost fitofagih vrsta kao rezultat nepostojanja adekvatnih staništa i nasuprot tome, izuzetno veliki broj vrsta čije su larve akvatični saprofagi.

Сирфы (Syrphidae, Diptera) в югославских низовьях Тисы

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Резюме

Из обнаруженных 91 вида сирфов ранее не регистрированы на территории Воеводины 12 видов, в Югославии — 2 вида. Относительно бедная по сравнению с другими районами страны фауна сирфов обусловлена однообразием места обитания и усиленным воздействием человека.

Лесное сообщество типа *Salicetum albae- amygdalinae* Slavnić характеризовано 81 процентным разнообразием признаков видов сирфов. В отношении распространения видов сирфов в пойме Тисы чаще всего встречаются виды, характерные для Европы.

С точки зрения типов личинок, в связи с отсутствием благоприятной среды, наличие травоядных видов незначительно по сравнению с многочисленными видами, обитающими в воде, в иле.