

Ichneumonidae (Hymenoptera) Species Associated with Some Umbelliferae Plants Occurring in Palandöken Mountains of Erzurum, Turkey

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Received: 20.07.2006

Abstract: The Ichneumonidae species associated with Umbelliferae plants in Palandöken Mountains in Erzurum were investigated between July 1996 and August 1997. Among the 5 plant species, *Seselis libanotis* and *Carum carvi* were more attractive for ichneumonid species than the rest of the species. The first one was visited by 13 ichneumonid species with 109 individuals and the second one was visited by 9 species with 220 individuals. All these plant species could be accepted good nectar reservoir for ichneumonids.

Key Words: Umbelliferae species, Ichneumonidae, Palandöken Mountains, Turkey

Palandöken Dağlarında (Erzurum, Türkiye) Bazı Ichneumonidae (Hymenoptera) Türleri ile İlişkili Umbelliferae Türleri

Özet: Bu çalışmada, 1996 ve 1997 yıllarının temmuz ve ağustos aylarında Palandöken Dağları'ndaki Umbelliferae bitkilerini ziyaret eden Ichneumonidae türleri araştırılmıştır. Belirlenen beş tür içerisinde *Seselis libanotis* ve *Carum carvi* bitkilerinin diğerlerine oranla daha fazla ichneumonid türü cezbediği belirlenmiştir. İlk tür, 109 bireyle 13 ichneumonid türü, ikincisi ise 220 bireyle 9 ichneumonid türü tarafından ziyaret edilmiş ve bu türlerin ichneumonidler için iyi birer nektar kaynağı olduğu anlaşılmıştır.

Anahtar Sözcükler: Umbelliferae türleri, Ichneumonidae, Palandöken, Turkey

Introduction

Erzurum is fourth in size among the provinces of Turkey. The majority of the province is high altitude. Most plateaus in the province are about 2000 m high from sea level, and the mountainous regions beyond the plateaus are 3000 m or higher. Depression plains are located between the mountains and plateaus. The southern mountain ranges of Erzurum are Palandöken Mountains with the altitudes of 2200 to 3176 m. The topographic and climatic structures give to the province the opportunity of host-rich and diverse fauna and flora (Yıldırım and Strumia, 2000).

Ichneumonidae are the largest family in the Hymenoptera and one of the largest in the Insecta with at least 60,000 species in 35 subfamilies worldwide (Wahl,

1993). According to Çoruh and Özbek (2005), Turkish fauna of the Ichneumonidae is currently represented by 731 species in 262 genera.

Plant–insect relationships are of great importance to ecosystem (Petanidou and Lamborn, 2005). Pemberton and Hoover (1980) listed the records of insects (in 66 genera) associated with plants. Campobasso et al. (1999) compiled information on palearctic insects that were collected or reared from 166 species of plants of Eurasian origin.

Recently various faunal studies on the family Ichneumonidae have been performed by Pekel (1999), Özbek et al. (2000), Pekel and Özbek (2000), Pekel et al. (2000), Çoruh (Pekel) et al. (2002), and Çoruh et al. (2004) in Erzurum and neighboring provinces.

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In this study, 21 species of ichneumonids belonging to 5 subfamilies (Banchinae, Cryptinae, Ichneumoninae, Ophioninae, and Pimplinae) were determined associated with 5 species of Umbelliferae in Palandöken Mountains of Erzurum.

Materials and Methods

The insect and plant materials were collected in Palandöken Mountains (Erzurum) between July 1996 and August 1997. The plant specimens were collected by hand and pressed. The ichneumonids were swept from flowering Umbelliferae plants by insect net and were killed in killing jars with ethyl acetate and brought to the laboratory. Determination of the ichneumonids was done by the second author and plant species were determined by the first author. The insect materials mentioned in this study were deposited in the Entomology Museum, Erzurum, Turkey (EMET). Undetermined specimens were identified by Dr. Janko Kolarov (Bulgaria). Plant samples were deposited at the Herbarium of Plant Protection Department, Atatürk University, Erzurum, Turkey.

Results

In the present study, 21 ichneumonid species were found associated with 5 species of Umbelliferae plants in Palandöken Mountains (Erzurum). All of these plant species could be popular food sources for ichneumonid species due to the fact that ichneumonids feed largely on the nectar of the flowers of these plants.

Plant species: *Carum carvi* Linnaeus

Enicospilus ramidulus Linnaeus: 2 ♀♀, 3 ♂♂.

Glyphicnemis vagabunda Gravenhorst: 5 ♀♀, 2 ♂♂.

Meringopus calescens Gravenhorst: 140 ♀♀, 23 ♂♂.

Meringopus cyanator Gravenhorst: 13 ♀♀, 10 ♂♂.

Meringopus titillator Linnaeus: 6 ♂♂.

Ophion mocsaryi Brauns: ♀.

Ophion pteridis Kriechbaumer: 2 ♀♀.

Ophion slaviceki Kriechbaumer: 3 ♀♀.

Pimpla hypochondriaca Retzius: 5 ♀♀, 5 ♂♂.

Plant species: *Daucus carota* L.

Aritranis femoralis Gravenhorst: 2 ♀♀.

Cryptus spiralis Geoffroy: 3 ♂♂.

Cryptus viduatorius Fabricius: ♀, 4 ♂♂.

Pimpla hypochondriaca Retzius: 4 ♀♀, 5 ♂♂.

Plant species: *Ferula communis* L.

Coelichneumon leucocerus Gravenhorst: 18 ♂♂.

Cryptus spiralis Geoffroy: 4 ♂♂.

Cryptus viduatorius Fabricius: 6 ♂♂.

Pimpla hypochondriaca Retzius: 5 ♀♀, 4 ♂♂.

Protichneumon coqueberti Wesmeal: 2 ♀♀, 4 ♂♂.

Protichneumon fusorius Linnaeus: ♂, ♀.

Plant species: *Pimpinella tragiium* Vill.

Exetastes fornicator Fabricius: 27 ♀♀, ♂.

Mesostenus albinotatus Gravenhorst: 6 ♀♀, 8 ♂♂.

Mesostenus transfuga Gravenhorst: 2 ♂♂.

Plant species: *Seselis libanotis* (L.) W. Koch

Amblyjoppa fuscipennis Wesmeal: 14 ♀♀, 25 ♂♂.

Coelichneumon leucocerus Gravenhorst: 26 ♂♂.

Enicospilus ramidulus Linnaeus: 2 ♀♀.

Glyphicnemis vagabunda Gravenhorst: 10 ♀♀.

Mesostenus transfuga Gravenhorst: ♂.

Meringopus titillator Linnaeus: 2 ♂♂.

Ophion brevicornis Morley: 1 ♂.

Ophion mocsaryi Brauns: 1 ♂.

Ophion pteridis Kriechbaumer: ♀.

Ophion slaviceki Kriechbaumer: 2 ♀♀.

Pimpla hypochondriaca Retzius: 4 ♀♀, 8 ♀♀.

Protichneumon coqueberti Wesmeal: 4 ♀♀, 5 ♀♀.

Protichneumon fusorius Linnaeus: ♂, 2 ♀♀.

Discussion

Among the 5 Umbelliferae plant species, *Seselis libanotis* and *Carum carvi* were visited by 13 ichneumonid species with 109 individuals and 9 species with 220 individuals, respectively. Interestingly, *Meringopus calescens* visited *C. carvi* more abundantly than the rest of the species (163 individuals). This could be related to higher population of *M. calescens* or this particular plant species is more attractive to *C. carvi* than the other ichneumonid species. *Ferula communis* followed with 6 species and 45 individuals. *Daucus carota* and *Pimpinella tragi* were visited by 4 ichneumonid species with 44 individuals and 3 species with 19 individuals, respectively. Hence, *Seselis libanotis* and *Carum carvi* appears to be the most attractive plant species as nectar sources for the ichneumonids occurring in Palandöken Mountains. Maingay et al. (1991) showed that *Foeniculum vulgare* Miller (Apiaceae) attracted 48 species of ichneumonid wasps in Massachusetts. Bugg et al. (1989) observed 20 species of Ichneumonidae taking extra floral nectar from faba bean from late September through late October. In northern California, *Polygonum aviculare* L. (Polygonaceae) and *Ammi visnaga* (L.) Lamarck (Apiaceae) were suggested respectively by Bugg et al. (1987) and (Bugg and Wilson (1989) as major nectar sources for beneficial entomophagous insects including

ichneumonids. They indicated that both of these weed species commonly occur on agricultural field margins.

Although these Umbelliferae species occurring in Palandöken Mountains could be considered as weeds on pastures and meadows, they are good food sources for ichneumonids, which are important beneficial insects as parasitoids of many destructive pests of Coleoptera, Lepidoptera, and other group of insects and arachnids. Since the traditional practices employed by farmers have important ramifications for insects, crop rotation, toleration of some weeds, field-margin vegetation, and modified planting or tillage schemes may affect pests and beneficial insects. In the maintenance of natural balance and in the solution of insect pest problems, conservation of natural vegetation is very important unless they constitute a problem as weeds in agricultural lands. Andow (1988) emphasized the importance of wild plants for beneficial insects within and outside crop lands.

Acknowledgement

We are deeply indebted to Prof. Dr. Hikmet Özbek for his assistance in preparation of this paper. We thank Prof. Dr. Janko Kolarov for determination of undetermined ichneumonid species.

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