

A new grasshopper pest on cultivated crops in Turkey : *Poecilimon bosphoricus* Br. - Watt. (Orthoptera : Tettigoniidae)

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Summary

Some of the *Poecilimon* species have been known as harmful long-horned grasshoppers in Turkey. The first damage of *Poecilimon bosphoricus* Br. - Watt. was recorded on sunflower (*Helianthus annuus* L.) head and leaves, wheat, alfalfa and other cultivated crops in Bolu province in mid-July in 1980. The damage has been observed in the field which was near forest at Karaaliler village of Göynük district of Bolu. The total infestation area of the harmful grasshopper was 415 da and control was carried out. The average of the population density of *P. bosphoricus* was 24 per m² and the altitude of this area is 1550 m.

In this paper, general distribution and the morphological characters of *P. bosphoricus* have been given. The length of the body and the coloration variations due to the environmental factors among the different populations were determined.

Introduction

Locally, the species of *Poecilimon* and *Isophya* are called «Yeşil çekirge» or «Yeşil ot çekirgesi» as common names in Turkey. Almost every years, certain species of the genus, *Poecilimon* and *Isophya* attack both wild plants and cultivated crops in the western part of Turkey.

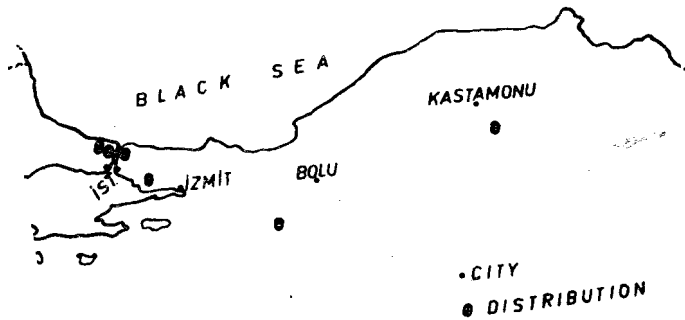
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P. bosporicus, as a new pest of sunflowers, wheat, alfalfa and other crops, was found in Bolu province for the first time in 1980. Successful control was obtained by using totally 600 kg 2.6 % gamma BHC and 140 kg 5 % Hektavin dust 1.8 kg per decar applied for 415 da area.

This grasshopper was previously reported on the oak leaves in a forest near Mollafeneri, İzmit on 26th June 1959 (Karabağ et al. 1971). But any control measure was not carried out in that year.

According to Karabağ (1958), the earliest records of *P. bosporicus* are given as follows : «İstanbul : Boğaziçi - both sides Bosphorus ♂.♀ Brunner-Wattenwyl 1878, 1832; Boğaziçi (Bosphorus), 1 ♂ Bei-Bienko 1954; İstanbul : Belgrad ormanı, 26. VII. 1910 (Fahringer) Ebner 1919, Rumelihisarı, 14. VI. 1942; Çürüksu, 22. VI. 1940, 8 ♂♂, 6 ♀♀ (M. Burr, Brit. Mus.)».

Recorded new distribution : İstanbul, Belgrad forest, 16. VI. 1959 17 ♂♂ 2 ♀♀ . Kastamonu, Tosya, Fadıra, 21. VIII. 1963 2 ♂♂ . İzmit, Mollafeneri, near Sevindikli, 23. VI. 1969 17 ♂♂ , 5 ♀♀ . Bolu, Göynük, Karaaliler, 18. VII. 1980 10 ♂♂ , 11 ♀♀ (Map 1).



Map 1. The general distribution of *Poecilimon bosporicus* in Turkey.

The morphological characters of *P. bosporicus* (Fig. 1).

Male

Fastigium truncated with a slightly groove or flat dorsally, half as broad as scape. Metazona of the pronotum only a little widened (Fig. 2) and raised (Fig. 3). Subgenital plate as long as cerci, from middle to apex slightly narrowed and hind margin with a distinct triangular excision (Fig. 6). Posterior margin of the 10th tergum straight or rounded. Cerci robust,

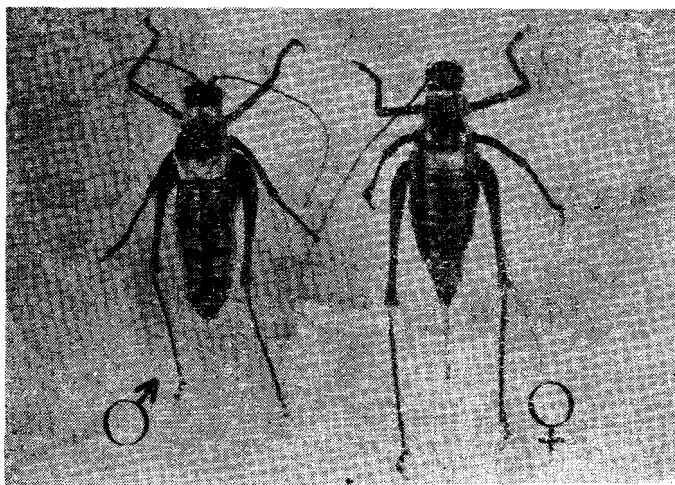


Fig. 1. General view of *Poecilimon bosphoricus*

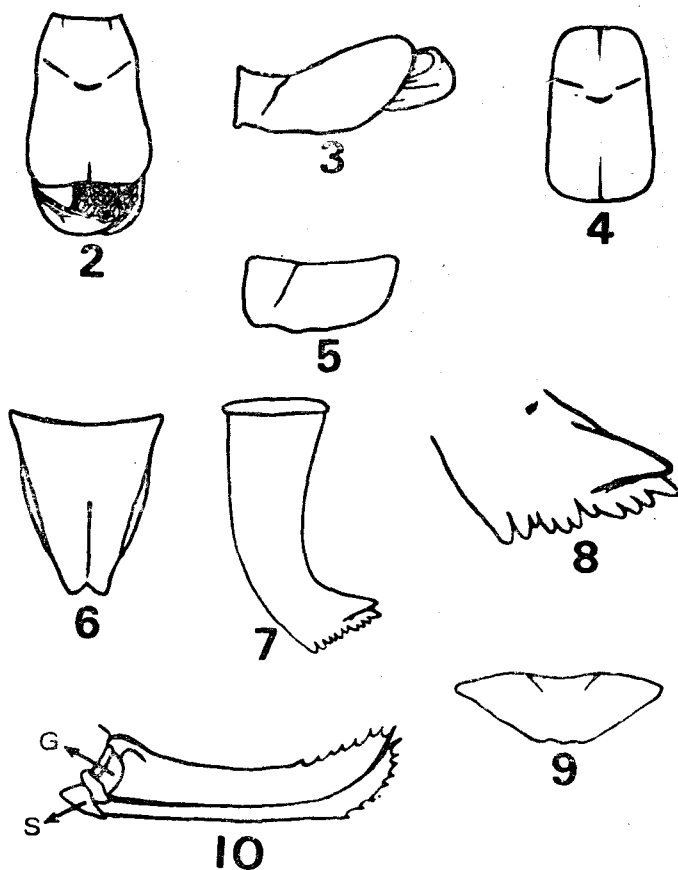
apical third of the cercus curved inward and apex with a strong tooth (Fig. 7) and apical margin with a row of (7—) 9-11 (—13) small, distinct teeth, sometimes irregular (Fig. 8).

Female

Fastigium truncated with a slightly groove or flat dorsally, half as broad as scape as in male. Metazona of the pronotum not widened (Fig. 4) and slightly raised (Fig. 5). Lamella (the lateral projection at the base of the ovipositor below gonangulum) flat in front (Fig. 10). Subgenital plate wider than long, the hind margin weakly sinuated at the median (Fig. 9). Ovipositor longer than the length of head and pronotum together, curve upwards near apex, with small teeth in apical margin (Fig. 10).

Coloration

Generally green; metazona of the pronotum reddish-brown at the middle, laterally dirty greenish-yellow. In some populations, upper surface of head, pronotum, abdomen and legs with brown-black dots. During the epidemic situation general coloration is darker, blackish-green. Tegmina of male yellow; 1st tergum of female dirty yellow with black spot at the base; subgenital plate light dirty brown; teeth of the cerci black.



Figs. 2 — 10. *Poecilimon bosporicus* ♂, (2) pronotum and tegmina from above; (3) pronotum and tegmina in profile; (6) subgenital plate from below; (7) left cercus; (8) position of the teeth at the left cercus; ♀, (4) pronotum from above; (5) pronotum in profile; (9) subgenital plate from below; (10) subgenital plate and ovipositor in profile; S: Subgenital plate, G: Gonangulum.

Measurements of male and female (mm)

According to Harz (1969), measurements of *P. bosporicus* are given as below :

Length of body ♂ 13-15, ♀ 14.5-17; pronotum ♂ 4.5-5, ♀ 4.5-5; tegmina ♂ 2-2.5, ♀ 0; posterior femur ♂ 13.5-14.5, ♀ 14-16; ovipositor 6.5-8.5 (—9).

Measurements of the different populations we determined of *P. bosporicus* are shown in Table 1.

Table : 1

Measurements of *P. bosphoricus*

Locality	Number of Samples	Length of body (mm)	Pronotum (mm)	Tegmina (mm)	Posterior femur (mm)	Ovipositor (mm)
İstanbul (Belgrat forest)	17 ♂	13.8 - 17.3	4.5 - 4.8	2 - 2.3	13.7 - 14.8	—
	2 ♀	15.7 - 17.8	4.7 - 5	0	14 - 14.8	7.8 - 8.3
Kastamonu (Tosya, Fadıra)	2 ♂	18.2 - 18.6	4.6 - 5	2.4 - 2.6	14.2 - 15	—
	— ♀	—	—	—	—	—
İzmit (Mollafeneri)	17 ♂	15 - 18.4	4.2 - 4.8	1.6 - 2.2	13.5 - 14.2	—
	5 ♀	13.9 - 18.3	4 - 4.8	0	13.8 - 15	7.8 - 8.8
Bolu (Göynük)	10 ♂	14.2 - 19.7	4 - 5.2	2.1 - 2.7	13.1 - 15.2	—
	11 ♀	14.4 - 20.6	4.8 - 5.3	0	15 - 16.8	9.4 - 10.7

Discussion

Samples of *P. bosporicus* were collected on the oak leaves in a forest during the faunistic studies in İzmit in 1969. General coloration of the adults was clear green. But the coloration in the populations of this species found in İstanbul (Belgrad forest), Kastamonu (Tosya, Fadıra) and Bolu (Göynük) was determined to be darker than the coloration in the population found in İzmit (Mollafeneri). In addition, the body length of Bolu population was found greater than the others (Table 1), and to the apical margin of the cerci of the some male individuals was seen with a row of 13 small teeth. This structure is the different situation than all of the other populations. Because, according to old records the most numbers of teeth were 11 (Harz 1969).

The most damage was observed on the cultivated areas which was gained from the forest in Bolu a few years ago.

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Özet

Türkiye'de kültür bitkilerinde yeni bir zararlı çekirge :
Poecilimon bosporicus Br.-Watt. (Orthoptera : Tettigoniidae)

Türkiye'de «Yeşil çekirge» veya «Yeşil ot çekirgesi» olarak tanınan **Poecilimon** ve **Isophya** cinsine bağlı türlerden bir kısmının kültür bitkilerinde hemen her yıl zarar yaptığı bilinmektedir.

Bolu ilinin Göynük ilçesine bağlı Karaaliler köyünde 18 Temmuz 1980 tarihinde *P. bosporicus*'un ilk defa ayçiçeği, buğday, yonca ve diğer kültür bitkilerinde ekonomik önemde zarar yaptığı saptanmıştır. Yaklaşık 415 dekar alanda 600 kg % 2.8 gamma BHC ve 140 kg % 5 Hektavin toz ilaçları 1.8 kg/da kullanılarak zararlı kontrol altına alınmıştır.

Epideminin genellikle ormandan yeni açılan kültür arazisinde meydana geldiği dikkati çekmiştir. Zararlı çekirgenin 1 m²'deki yoğunluğunun ortalama 24 adet, tarımsal savaş yapılan bulaşık alanın denizden yüksekliğinin de 1550 m olduğu belirlenmiştir.

Bu çalışmada, *P. bosporicus*'un Türkiye'de yayılışına yer verilmiş, tanınmasında yardımcı olacak morfolojik karakterleri açıklanmış, değişik populasyonlar arasında görülen vücut uzunlukları ve renk farklılıkları incelenmiştir. Bolu (Göynük) populasyonunda bazı erkek bireylerin cercus'larının uç kenarında en fazla 13 adet küçük dişin bulunduğu görülmüştür. Harz (1969) ise bunun en fazla 11 adet olduğunu belirtmektedir.

Türkiye Orthoptera faunasının tesbiti çalışmaları sırasında aynı türe 26. Haziran. 1969 tarihinde İzmit ilinin Mollafeneri ilçesine bağlı bir ormanda, meşe ağaçlarının yaprakları üzerinde çok sayıda rastlanmış ancak zararlıya karşı ilaçlı bir mücadele yapılmamıştır. Bu alandan toplanan bireylerin, diğer bölgelerdeki populasyonlara oranla renklerinin daha yeşil ve boylarının da Bolu örneklerinden daha küçük oldukları saptanmıştır (Cetvel 1).

Literatür

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