



## A Study on the Elytral Pattern Variations of *Pachytodes erraticus* (Dalman, 1817) (Coleoptera: Cerambycidae, Lepturinae) from Turkey

### Türkiye'deki *Pachytodes erraticus* (Dalman, 1817) (Coleoptera: Cerambycidae, Lepturinae)'un Elitra Desen Varyasyonları Üzerine Bir Çalışma

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#### ABSTRACT

In this study, variation of elytral pattern of *Pachytodes erraticus* (Dalman, 1817) specimens collected from different regions of Turkey were examined. Because of the pattern of the elytral spots are systemically important in the family Cerambycidae, individual differences are presented for the first time from Turkey for *P. erraticus* with this study.

#### Keywords

Elytra, *Pachytodes erraticus*, Cerambycidae, Turkey.

#### Öz

Bu çalışmada, Türkiye'nin çeşitli bölgelerinden farklı yıllarda toplanan *Pachytodes erraticus* (Dalman, 1817) örneklerinin elytral desenlerinin varyasyonları incelenmiştir. Cerambycidae familyasında elitra noktalarının düzeni sistematik olarak önemli olduğundan, bu çalışma ile Türkiye'den ilk kez *P. erraticus* için bireysel farklılıklar sunulmuştur.

#### Anahtar Kelimeler

Elitra, *Pachytodes erraticus*, Cerambycidae, Türkiye.

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## INTRODUCTION

The Cerambycidae is known as “longhorned beetles” one of the largest families within the Coleoptera [1,2]. It has almost %10 of the identified Coleoptera species [3]. The subfamily Lepturinae often called as “the flower-visiting longhorns”. It is one of the mid-sized subfamilies, comprising about 1500 species in approximately 350 genera worldwide. According to Löbl and Smetana [4] 95 species of Lepturinae have been identified in Turkey so far. Unlike the majority of longhorn beetles those are nocturnal, most of Lepturinae species occur on flowers during daylight, making them easy to observe and collect. *Pachytodes* is one of the most common genera of Lepturinae which found on flowers. The genus is characterized by short and thick body, black elytral spots on orange background color, spine-like expansion of basal corners of pronotum, antennas that not to reach to apex of elytra. Species develop in broadleaf trees such as *Quercus*, *Betula*, *Castanea*, *Corylus*, *Crataegus*, *Prunus* and *Acer*. Larvae live under ground level in dead wood of roots. Pupation occurs in the soil. Adults emerge between May to August [5]. According to Löbl and Smetana [4] species exist within the Palearctic zone and only *P. erraticus* is present in Turkey. On the other hand, Özdikmen [6] gave *P. cerambyciformis* was also determined in Turkey.

Many species of Lepturinae exhibit a remarkable variability about elytral color patterns the same species. In this study it was aimed to examine elytral pattern variation of *Pachytodes erraticus* in Turkey for the first time.

## MATERIALS and METHODS

Specimens were mainly collected by field studies from different regions of Turkey (Central Anatolian, Marmara, Aegean and Eastern Black Sea Regions) in 2009 - 2017. Specimens were collected by using insect net and examined in Hacettepe University, Department

of Biology, Entomology Laboratory. Specimens were dorsally photographed with a Canon D100 camera for optimal examination of elytral pattern variations. Spots on the elytra were named as sutural, humeral, medial and apical (Figure 1). Whether or not spots are present, state of the medial spots (united or separated), the color of apical spot, the length of the sutural spot and elytral length/width ratio were examined.

## RESULTS and DISCUSSION

According to results of the study, individual pattern variations of adults of *Pachytodes erraticus* (Dalman, 1817) specimens from different regions of Turkey are summarized (Table 1).

Results of regional basis comparisons show different patterns. In the Aegean Region, all specimens have sutural, humeral and medial spots, whereas apical spots are hardly visible in 31% of specimens. Color of apical spots varies from very pale to black. It was determined that 31% of specimens has united medial spots. Sutural spot length ranges from 0.35 to 0.90 mm while the elytral length/width ratio ranges from 1.63 to 2.71. In the Central Anatolian Region, 89.9% of all specimens have sutural, apical, humeral and medial spots, whereas sutural spots are hardly visible in 11.1% of specimens. Color of apical spots varies from pale brown to reddish brown and black. It was determined that 33% of specimens has united medial spots. Sutural spot length ranges from 0.35 to 1 mm while the elytral length/width ratio ranges from 1.84 to 2.17. In the Marmara Region, 87.5% of all specimens have sutural, apical, humeral and medial spots, whereas sutural spots are hardly visible in 12.5% of the specimens. It has been determined that the color of apical spots is most varied in this region (from orange to red, brown and black). It was determined that 31.25% of specimens has united medial spots. Sutural spot length ranges from 0.2 to 0.85 mm while the elytral length/width ratio ranges from 1.67 to 2.83. In the Eastern Black Sea Region, 87.5%

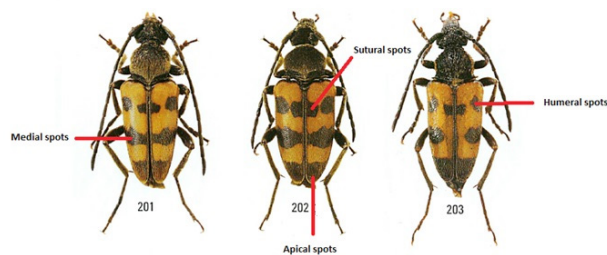


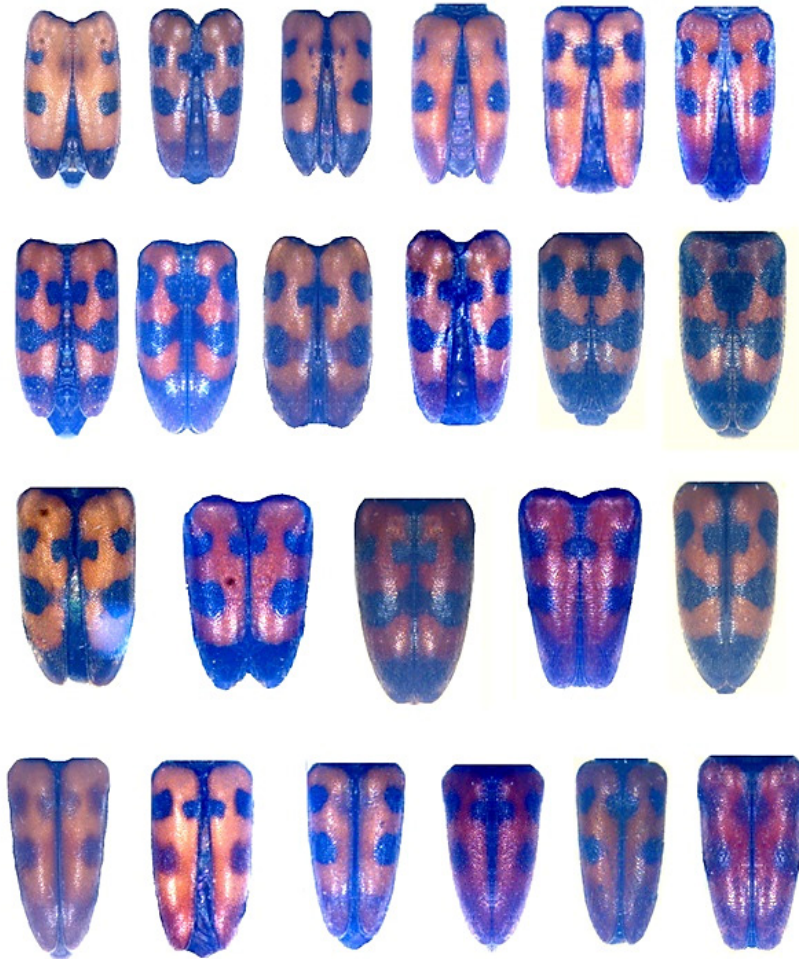
Figure 1. Elytral spots of *Pachytodes erraticus*.

of all specimens have sutural, apical, humeral and medial spots, whereas sutural and apical spots are hardly visible in 12.5% of the specimens. Color of apical spots varies from very pale to black. It was determined that all of specimens has united medial spots. Sutural spot length ranges from 0.45 to 1.3 mm while the elytral length/width ratio ranges from 1.71 to 2.1. Table 1. Elytral pattern variation of *Pachytodes erraticus* Specimens. “+”: existent; “-”: nonexistent; “+/-”: hardly visible; “?”: non-measured; “Sp”: Seperated medial spots; “Un”: United medial spots.

When all regions are considered, it is seen that the largest individual is identified in the Eastern Black Sea Region (7.2/4.2mm) while the smallest example is in the Marmara Region (4.5/2.2mm). However, it is seen that aspect ratios give close results between all regions. Specimens without sutural spots were determined in

Central Anatolian, Marmara and Eastern Black Sea Regions while specimens without apical spots in Aegean and Eastern Black Sea Regions. It is seen that color of apical spots is the most varied in Marmara Region. When the medial spots were examined, it is seen that they are separated in all specimens in Eastern Black Sea Region and the majority of specimens in other regions. In other three regions, approximately 30% of specimens have united medial spots.

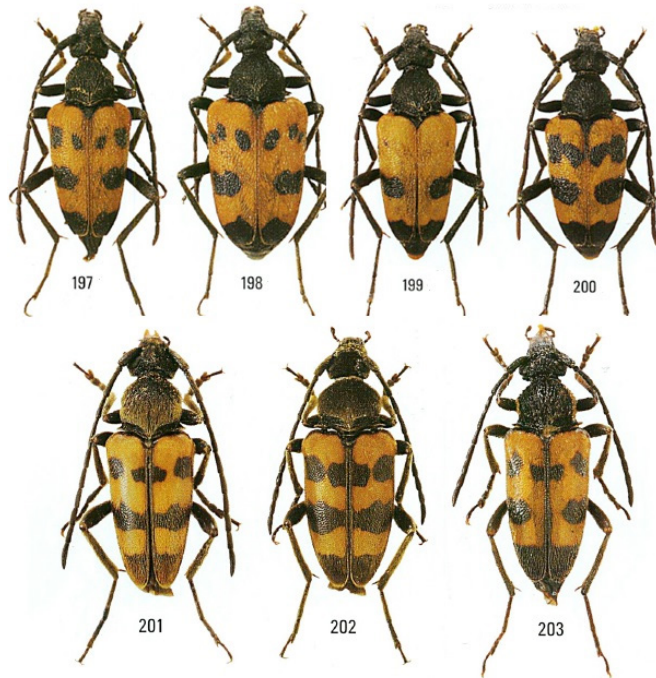
After evaluation of existing data, it is not possible to mention regionally specific significant variation on elytral patterns for specimens of *Pachytodes erraticus* in Turkey. Comparison of results of this study and Sama’s data [7], it is seen that specimens of *P. erraticus* (Figure 2) have more variation then European specimens (Figure 3). In diagnostic key given in Bense [5], “the appearance of dark coloring



**Figure 2.** Elytral variation of *Pachytodes erraticus* in Turkey.

**Table 1.** Elytral pattern variation of *Pachytodes erraticus* Specimens. “+”: existent; “-”: nonexistent; “+/-”: hardly visible; “?”: non-measured; “Sp”: Separated medial spots; “Un”: United medial spots.

		Sutural spots	Humeral spots	Medial spots	Apical spots	Sutural spots size	Medial spots	Color of apical spots	Elytra length/width ratio
AEGEAN REGION	Sample 1	+	+	+	+	0.5 mm	Sp.	Black	1.63
	Sample 2-5	+	+	+	+	0.4-0.55 mm	Sp.	Pale brown	1.91-2.71
	Sample 6-9	+	+	+	+/-	0.35-0.5 mm	Sp.	Very pale	1.81-2.5
	Sample 10-13	+	+	+	+	0.5-0.9 mm	Un.	Black	1.65-1.88
						0.54±0.17			1.99±0.33
CENTRAL ANATOLIAN REGION	Sample 1-2	+	+	+	+	0.9-1 mm	Sp.	Black	1.84-1.91
	Sample 3-4	+	+	+	+	0.4-0.8 mm	Un.	Black	1.84-1.92
	Sample 5-6	+	+	+	+	0.4-0.6 5mm	Sp.	Pale brown	2.16
	Sample 7	+	+	+	+	0.5 mm	Un.	Reddish brown	2
	Sample 8	+	+	+	+	0.35 mm	Sp.	Reddish brown	2.07
	Sample 9	+/-	+	+	+	?	Sp.	Pale reddish	2.17
						0.63±0.25			2.01±0.14
MARMARA REGION	Sample 1	+/-	+	+	+	?	Sp.	Black	1.88
	Sample 2-3	+	+	+	+	0.7-0.85 mm	Un.	Black	1.82-1.97
	Sample 4-5	+	+	+	+	0.4 mm	Sp.	Reddish	1.67-2.77
	Sample 6-7	+	+	+	+	0.5-0.6 mm	Sp.	Brown	1.67-2.83
	Sample 8	+	+	+	+	0.6 mm	Un.	Reddish	2.04
	Sample 9	-	+	+	+	?	Sp.	Reddish	1.85
	Sample 10-11	+	+	+	+	0.45-0.7 mm	Un.	Brown	1.9-2
	Sample 12	+/-	+	+	+	0.2 mm	Sp.	Black	2.16
	Sample 13-16	+	+	+	+	0.5-0.65 mm	Sp.	Orange	2-2.55
						0.54±0.16			2.07±0.35
EASTERN BLACK SEA REGION	Sample 1	+/-	+	+	+	?	Sp.	Pale brown	2
	Sample 2-4	+	+	+	+	0.8-1.3 mm	Sp.	Black	1.71-1.88
	Sample 5-6	+	+	+	+	0.6 mm	Sp.	Pale brown	2.08-2.14
	Sample 7	+	+	+	+/-	0.45 mm	Sp.	Very pale	2.18
	Sample 8	+	+	+	+	0.6 mm	Sp.	Brown	2.03
						0.75±0.28			1.99±0.16



**Figure 3.** Elytral variation of *Pachytodes cerambyciformis* (197-200) and *P. erraticus* (201-203) [7].

along the suture” is one of the identification character for *P. erraticus* and character was observed in all specimens in this study. For this reason, that could be accepted as one of the most reliable character in the diagnosis of this species.

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