
**NEW HOST PLANTS OF *DELAGRANGEUS* (S.STR.)
ANGUSTISSIMUS ANGUSTISSIMUS PIC, 1892
(CERAMBYCIDAE: CERAMBYCINAE)**

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ABSTRACT: Surveys for the present study were carried out the cypress trees of *Cupressus arizonica* Greene and *Cupressus sempervirens* Linnaeus (Cupressaceae) especially on the roadsides in Kahramanmaraş province and its districts. Thus, we have discovered new host plants, *Cupressus arizonica* Greene and *Cupressus sempervirens* Linnaeus (Cupressaceae), for *Delagrangeus* (s.str.) *angustissimus angustissimus* Pic (Cerambycidae: Cerambycinae) from Kahramanmaraş province of South Turkey. Hereby, updated host plant associations of the longhorn beetle are also presented in the text. Moreover, the bark beetles *Phloeosinus armatus* Reitter on or in *Cupressus arizonica* and *Phloeosinus aubei* (Perris) on or in *Cupressus sempervirens* with the longhorn beetle *Delagrangeus angustissimus angustissimus* Pic were also determined. All three beetle species, *Delagrangeus angustissimus angustissimus* Pic (Cerambycidae), *Phloeosinus armatus* Reitter (Scolytidae) and *Phloeosinus aubei* (Perris) (Scolytidae) are recorded for the first time from Kahramanmaraş province.

KEY WORDS: Cerambycidae, Scolytidae, new host plant, Kahramanmaraş, Turkey

The longhorn beetle genus *Delagrangeus* Pic, 1892: xciii is one of three genera (with genera *Deilus* Audinet-Serville, 1834: 73 and *Prosype* J. Thomson, 1864: 248) in Palaearctic region of tribe Deilini (Cerambycidae: Cerambycinae). The genus includes two subgenera as the nominative subgenus and *Gertius* Sama, 1994: 557 in Palaearctic region, each represented only by a species.

The nominative subgenus, *Delagrangeus* Pic, 1892: xciii, is represented with the species *Delagrangeus angustissimus* that is the type species of the genus and so the nominative subgenus. The E-Mediterranean longhorn beetle species was described by Pic (1892: xciii) from Hatay province (Akbeş district) in Southern Turkey. It currently includes three subspecies as the nominative subspecies [endemic to Turkey], *Delagrangeus angustissimus liviae* Pesarini & Sabbadini, 2004: 93 [endemic to Greece (Rodos)] and *Delagrangeus angustissimus troodi* Sama, 1994: 556 [known only from Cyprus and Lebanon]. Therefore, it is represented only by the nominotypical subspecies in Turkey (Özdikmen, 2021a; Danilevsky, 2022). Accordingly, the subspecies has an Anatolian chorotype (Pic, 1892; Pesarini & Sabbadini, 2004; Sama, 1994; Özdikmen, 2021a; Danilevsky, 2022; Tavakilian, 2022).

Cupressaceae is a family known as cypresses of the order Pinales of the class Pinopsida. There are many taxa belonging to this family. Exotic species such as *Cupressus arizonica* Greene, 1882, *Cupressus sempervirens* Linnaeus, 1753, *Chamaecyparis lawsonia* (A. Murray) Parl. 1864[1865], *Cupressocyparis leylandii* (A.B. Jacks. & Dallim.) Dallim., 1937, *Thuja* ssp. are very common in Turkey. They are found in almost every region of Turkey like natural species.

While junipers, cypresses, which are taxa of the family, grow naturally in Turkey, many exotic species are also grown in Turkey as park, garden and ornamental plants. Due to their rapid growth and beautiful appearance, they are seen in almost every part of Turkey in parks and gardens and cemeteries. Apart from this, they are also used as wind curtains at the garden edges in some places. *Cupressus arizonica* is the most cultivated and used species among these exotic species. *Chamaecyparis lawsonia* (A. Murray) Parl. 1864[1865], *Cupressocyparis leylandii* (A.B. Jacks. & Dallim.) Dallim., 1937 are among the exotic species whose use has increased a lot in recent years.

Cupressus arizonica and *Cupressus sempervirens* are drought resistant species in their natural habitat. Kahramanmaraş city center and its surroundings are high in terms of ground water. In places with high ground water, these trees get stressed and are invaded by various bark and longhorn beetles, which are secondary pests. In Kahramanmaraş, especially the cypress trees planted in the middle refuges of the roads are also infected with the *Seiridium cardinale* disease, which is called cypress cancer, as a result of the continuous irrigation of the grass in the lower part.

In this study, the damages of the longhorn beetle *Delagrangeus angustissimus angustissimus* Pic, 1892 on the Cupressaceae family members, which are widely used in urban parks and landscapes, home gardens, and roadsides throughout Kahramanmaraş province, were investigated.

MATERIAL AND METHODS

This study was carried out in Kahramanmaraş province between 2018-2022. In January 2021, intensive studies were started on the drying of blue cypress and black cypress in KSU Avşar campus and in some areas in Kahramanmaraş city center and continued until today. For this study, surveys were carried out on the roadsides in Kahramanmaraş province and its districts, plant individuals whose health status deteriorated and dried up were determined, their locations were recorded. Insect exit holes were searched on the trunk and branches of the dried individuals, branch pieces were taken from the dried trees to the extent possible, and the date, place, location and coordinate information of the sample were written on it. The twigs brought to the laboratory were split longitudinally with the help of a knife and twig shears, and adult longhorn beetles were removed. In this way, a large number of adult longhorn beetles were obtained. They were identified by the second author, Prof. Dr. Hüseyin Özdikmen as *Delagrangeus angustissimus angustissimus* Pic, 1892 that is an endemic subspecies to Turkey.

RESULTS AND DISCUSSION

Delagrangeus angustissimus angustissimus Pic, 1892 (Figs. 1, 2) is rather narrowly distributed in Turkey. It has been recorded only from five provinces in

Asian Turkey (Anatolia) up to now. Its known provincial and regional distribution in Turkey given in figure 3.



Figure 1. *Delagraneus angustissimus angustissimus* Pic, 1892 (Kahramanmaraş prov.: Onikişubat district, Avşar Campus of KSU, 09.III.2021, 600 m, *Cupressus arizonica*, leg. B. Laz).



Figure 2. An adult of *Delagraneus angustissimus angustissimus* Pic, 1892 in wood of host plant, cypress (Kahramanmaraş prov.: Onikişubat district, Avşar Campus of KSU, 09.III.2021, 600 m, *Cupressus arizonica*, leg. B. Laz).

As mentioned above, the nominative subspecies was originally recorded by Pic (1892: xciii) from Hatay province (Akbez district) in Southern Turkey. After original description, *Edithia carbonaria* that is the type species of the monotypic genus *Edithia* Reitter, 1899: 160, was described by Reitter (1899: 160) from Mardin province in Southeastern Anatolia of Turkey. It is a synonym of the nominative subspecies. Also, *Mimophymatodes asiaticus* that is the type species of the monotypic genus *Mimophymatodes* Pic, 1920e: 21, was described by Pic (1920: 21) from Konya province (Akşehir district) in Southern part of Central Anatolia of Turkey. It is a synonym of the nominative subspecies too. Then, the nominative subspecies was recorded by Demelt (1963), Holzschuh (1975) and Sama et al. (2012) from Mersin province (Namrun = Çamlıdere district) in Southern Anatolia of Turkey. It was also recorded by Adlbauer (1988) from Mersin province (Silifke and Gülnar districts) and by Sama et al. (2011) and Özbek et al. (2015) from Mersin province (Erdemli district) in Southern Anatolia

of Turkey. In addition, it was recently reported by Özdikmen & Tezcan (2020) from Mersin province (Anamur district) and by Hoskovec et al. (2022) from Adana province (Tekir district) in Southern Anatolia of Turkey.

Therefore, it has been recorded only from five provinces as Adana, Hatay, Konya, Mardin and Mersin provinces in Asian Turkey (Anatolia) up to now. Thus, it is a new record for Kahramanmaraş province (the present study).



Figure 3. Provincial and regional distribution of *Delagrangeus angustissimus* Pic, 1892 in Turkey (4 = Central Anatolian region, 6 = Mediterranean region, 7 = Southeastern Anatolian region).

Cupressus sempervirens and *Cupressus arizonica* are among the most used tree species in the landscape of Kahramanmaraş city center. These species are found in all areas such as schools, mosques, hospitals, parks and cemeteries, the central refuges of the main streets in the city center and ring roads. While *Cupressus sempervirens* is a native species of Turkey, *Cupressus arizonica* is an exotic species. It is known as the blue cypress in Turkey and is a species that is widely used in parks, gardens and roadsides, in urban landscapes. It is cultivated in almost all parts of Turkey and used for various landscaping purposes because it is a drought-resistant and contented species in terms of its growing characteristics, and it is magnificent in terms of appearance.

In January 2021, intensive studies were started on the drying of blue cypress and black cypress in some areas in KSU Aşağı campus and Kahramanmaraş city center. In the examinations made, it has been observed that the leaves of the cypresses are falling from the inside to the outside and from the bottom to the ends, and there are intense resin flows on the tree. When the bark parts of the cypresses with resin leaks were removed with the help of a knife, it was seen that there were bark beetle eating ways. Of these, adults of the bark beetle *Phloeosinus armatus* Reitter, 1887 (Scolytidae) were obtained (Figs. 4, 5). Under the bark, tunnels in the wood have a pattern similar to the shape of the centipede (Fig. 6).

In addition, holes were observed in the side branches and on the trunk, and the cut wood parts were split in the Entomology laboratory of KSU Forest Engineering on 2021 and many adult longhorn beetles, *Delagrangeus angustissimus angustissimus* Pic, 1892, were obtained.



Figure 4. *Phloeosinus armatus* Reitter, 1887 (Scolytidae) (Kahramanmaraş prov.: Onikişubat district, Avşar Campus of KSU, 18.II.2022, 600 m, *Cupressus arizonica*, leg. B. Laz).



Figure 5. An adult of *Phloeosinus aubei* (Perris, 1855) in wood of host plant (Kahramanmaraş prov.: Onikişubat district, Bediizaman Boulevard, 22.V.2018, 670 m, *Cupressus sempervirens*, leg. B. Laz).



Figure 6. Tunnels (similar to the shape of the centipede) in the wood of host plant of *Phloeosinus armatus* Reitter, 1887 (Kahramanmaraş prov.: Onikişubat district, Avşar Campus of KSU, 14.III.2022, 600 m, *Cupressus arizonica*, leg. B. Laz).

The Turkish endemic longhorn beetle *Delagrangeus angustissimus angustissimus* Pic, 1892 (Cerambycidae: Cerambycinae) has medium length between 6-12 mm for adult stage. Its host plants include species in the coniferous genera *Juniperus* and *Cupressus* (Cupressaceae) especially, although this wood-boring beetle has been also reported from coniferous trees of *Pinus* sp. (Pinaceae) and broadleaf trees of *Quercus* sp. (Fagaceae) (Table 1). As seen the following table, *Cupressus arizonica* Greene, 1882 and *Cupressus sempervirens* Linnaeus, 1753 (Cupressaceae) are new host plants of *Delagrangeus angustissimus angustissimus* Pic, 1892.

Table 1. Host plants of *Delagrangeus angustissimus angustissimus* Pic, 1892 with new host plants determined in the present study.

Host plant family	Host plant species	References
CUPRESSACEAE	<i>Cupressus arizonica</i> Greene	Present study
	<i>Cupressus sempervirens</i> Linnaeus	Present study
	<i>Juniperus sabina</i> Linnaeus	Adlbauer, 1988; Tavakilian, 2022
	<i>Juniperus</i> sp.	Holzschuh, 1975; Sama et al., 2011, 2012; Özdikmen, 2021b; Hoskovec et al., 2022; Tavakilian, 2022
FAGACEAE	<i>Quercus</i> sp.	Sama et al., 2011; Özbek et al., 2015; Özdikmen, 2021b,c; Tavakilian, 2022
PINACEAE	<i>Pinus</i> sp.	Özdikmen & Tezcan, 2020; Özdikmen, 2021b; Tavakilian, 2022

Delagrangeus angustissimus angustissimus Pic, 1892, an oligophagous longhorn beetle, was determined as an important pest of individuals belonging to the Cupressaceae family with this study. In the survey studies, it was revealed that the longhorn beetle caused the most damage to *Cupressus arizonica*, followed by *Cupressus sempervirens* species (Figs. 7-11).

In *Cupressus arizonica*, the bark beetle *Phloeosinus armatus* Reitter, 1887 (Figs. 4, 12) and the longhorn beetle *Delagrangeus angustissimus angustissimus* together cause the cypress trees to dry out.

The bark beetle *Phloeosinus armatus* Reitter, 1887 (Coleoptera: Scolytidae) has been reported from five provinces in Turkey as Balıkesir (Gönen), Antalya, Isparta (Eğirdir), İstanbul (Üsküdar-Karacaahmet), Mersin (Silifke) on *Cupressus sempervirens* and *Prunus amygdalus*. Therefore, it is a new record for Kahramanmaraş province (the present study). On the other side, although *Cupressus arizonica* at least with rare records from Italy (Covassi, 1991; Pennacchio et al., 2013) is known as a host plant for this bark beetle, but it is recorded for the first time in Turkey with the present study.

Another bark beetle species, *Phloeosinus aubei* (Perris, 1855) (Fig. 5), on *Cupressus sempervirens* trees causes drying out in the irrigated areas, especially in the trees planted in the middle refuges of the roads. The longhorn beetle *Delagrangeus angustissimus angustissimus* Pic, 1892 is seen very intensely on the side branches of *Cupressus sempervirens* trees damaged by the wind.

Also, the bark beetle *Phloeosinus aubei* (Perris, 1855) (Coleoptera: Scolytidae) has been reported from seven provinces as Adana (Feke), Antalya, Balıkesir, Bursa (Orhaneli), Denizli (Acıpayam), İstanbul (Büyükkada) and Mersin (Mut) in Turkey. Its host plants are the members of Cupressaceae family as *Cupressus sempervirens*, *Juniperus communis*, *J. excelsa* and *Thuja* sp. in Turkey. Therefore, it is a new record for Kahramanmaraş province (the present study).



Figure 7. Cypress trees more or less damaged by *Delagrangeus angustissimus* Pic, 1892 in Kahramanmaraş province (Kahramanmaraş prov.: Onikişubat district, Avşar Campus of KSU and near Piazza AVM, 09.III.2021, 560 and 600 m, *Cupressus arizonica*, leg. B. Laz).



Figure 8. Individuals of *Cupressus arizonica* afflicted with cypress cancer (Kahramanmaraş prov.: Onikişubat district).



Figure 9. Cypress trees more or less damaged by *Delagrangeus angustissimus* Pic, 1892 in Kahramanmaraş province (Kahramanmaraş prov.: Onikişubat district, Avşar Campus of KSU, 07.IV.2022, 600 m).



Figure 10. Adult exit hole(s) of *Delagrangeus angustissimus* Pic, 1892 on the host plants, cypress trees (Kahramanmaraş prov.: Dulkadiroğlu district, Bahçelievler neighborhood, 22.V.2018, 570 m, *Cupressus sempervirens*).



Figure 11. Adult exit hole(s) of *Delagrangaeus angustissimus angustissimus* Pic, 1892 on the host plants, cypress trees (Kahramanmaraş prov.: Dulkadiroğlu district, Bahçelievler neighborhood, 22.V.2018, 570 m, *Cupressus sempervirens*).



Figure 12. Adult exit hole(s) of *Phloeosinus armatus* Reitter, 1887 (Scolytidae) on the host plant, cypress tree (Kahramanmaraş prov.: Dulkadiroğlu district, Bahçelievler neighborhood, 22.V.2018, 570 m, *Cupressus arizonica*).

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