Bruchidius terrenus and Bruchidius siliquastri (Coleoptera: Chrysomelidae: Bruchinae) — First Records for Turkey

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BRUCHIDIUS TERRENUS AND BRUCHIDIUS SILIQUASTRI (COLEOPTERA: CHRYSOMELIDAE: BRUCHINAE) – FIRST RECORDS FOR TURKEY

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ABSTRACT

Albizia julibrissin Durazz and Cercis siliquastrum L. (Fabales: Fabaceae) are native to Turkey and used as ornamentals. We studied the seed beetles Bruchidius terrenus (Sharp) and B. siliquastri Delobel (Coleoptera: Chrysomelidae: Bruchinae), which infest the seeds of A. julibrissin and C. siliquastrum, respectively, and their parasitoids. We recorded both bruchines from Turkey for the first time. We also found Dinarmus acutus (Hymenoptera: Pteromalidae) as a parasitoid of both B. terrenus and B. siliquastri.

Key Words: Albizia julibrissin, Cercis siliquastrum, Dinarmus acutus

RESULTS AND DISCUSSION

Seeds of A. julibrissin collected on the Istanbul University Forestry Faculty campus and at the Atatürk Arboretum were infested (Table 1) with Bruchidius terrenus (Fig. 1). In 2011 the rate of infestation of A. julibrissin seeds with this bruchid was 71.01% from the Forestry Faculty Campus and 59.07% from the Atatürk Arboretum. The corresponding rates in 2012 were 78.05% and 52.23%. Dinarmus acutus (Thomson) (Hymenoptera: Pteromalidae: Pteromalinae) parasitized B. terrenus at both locations.

Hoebeke et al. (2009) reported about 90% of seeds of some A. julibrissin trees in USA were infested with B. terrenus. We found seeds of this plant species heavily infested with B. terrenus (Table 1), an Asian seed specialist of A. julibrissin that occurs widely in the eastern Palearctic Region, North America, Bulgaria (Morimoto 1990; Hua 2002; Hoebeke et al. 2009; Stojanova et al. 2011). According to Stojanova (2010) the presence of its host plant, an appropriate climate, and the absence of natural enemies are conditions favorable for fast and successful invasion by B. terrenus in new territories outside its native range.
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Fig. 1. *Bruchidius terrenus*, a) adult, b) larvae in seed, and c) exit hole on seed d) male genitalia e) female genitalia.
### Table 1. Emergence of the Seed Beetle *Bruchidius terrenus* from Seeds of Albizia julibrissin and Emergence of a Pteromalid Parasitoid from *B. terrenus*.

| Location                  | Year      | TSE | TIS | EH  | A   | PA  | TSE | TIS | EH  | A   | PA  |
|---------------------------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Forestry Faculty Campus   | 2011-30 Sep | 238 | 169 | 71.01 | 68 | 101 | 193 | 128 | 78 | 36 | 3 (D. a.) | 6 |
| Atatürk Arboretum         | 2011-30 Sep | 193 | 114 | 59.07 | 78 | 36 | 3 (D. a.) | 164 | 128 | 78.05 | 65 | 63 | 7 (D. a.) |
| Forestry Faculty Campus   | 2012-30 Sep | 211 | 110 | 52.23 | 84 | 26 | 4 (D. a.) | 259 | 212 | 81.85 | 168 | 44 | 11 (D. a.) |
| Atatürk Arboretum         | 2012-30 Sep | 246 | 186 | 75.61 | 124 | 62 | 5 (D. a.) |

1TSE: Total seeds examined; TIS: Total infested seeds and percentage of infested seeds; EH: Number of seeds with emergence holes; A: Number of adults; PA: Number of parasitoids; D.a.: Dinarmus acutus.

### Table 2. Emergence of the Seed Beetle *Bruchidius siliquastri* from Seeds of Cercis siliquastrum and Emergence of a Pteromalid Parasitoid from *B. siliquastri*.

| Location                  | Year      | TSE | TIS | EH  | A   | PA  | TSE | TIS | EH  | A   | PA  |
|---------------------------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Forestry Faculty Campus   | 2011-30 Sep | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   |
| Atatürk Arboretum         | 2011-30 Sep | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   |
| Forestry Faculty Campus   | 2012-30 Sep | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   |
| Atatürk Arboretum         | 2012-30 Sep | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   |

1TSE: Total seeds examined; TIS: Total infested seeds and percentage of infested seeds; EH: Number of seeds with emergence holes; A: Number of adults; PA: Number of parasitoids; D.a.: Dinarmus acutus.
Fig. 2. *Bruchidius siliquastri*, a) male, b) female, c) male pygidium, d) female pygidium showing foveae, e) male venter I, showing the large setiferous patch, f) female venter I, g) male genitalia h) female genitalia.
Seeds of the *C. siliquastrum* collected on the Istanbul University Forestry Faculty Campus and at the Atatürk Arboretum were infested (Table 2). The infestation rate of *Cercis siliquastrum* seeds by *B. siliquastri* (Fig. 2) on the Forestry Faculty campus was 81.85% and 75.61% at the Atatürk Arboretum. Also *D. acutus* was a parasitoid of *Bruchidius siliquastri* at the 2 locations. *Bruchidius siliquastri* was newly recorded in France as a seed beetle of *C. siliquastrum* (Kergoat et al. 2007), and subsequently in China, Hungary, Spain, Belgium, Slovakia, Czech Republic and Bulgaria (Stojanova et al. 2011; Šefrová 2010; Yus Ramos 2009a,b,c).

In this study we recognized that these seed beetle species are very specialized to their host plants, because we did not find *Bruchidius siliquastri* in *Albizia julibrissin* seeds nor *B. terrenus* in *Cercis siliquastrum* seeds. *Bruchidius terrenus* and *B. siliquastri*, Delobel 2007 are recorded for the first time from Turkey in our study.

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