

## A study on the genus *Dorcadion* Dalman (Coleoptera: Cerambycidae) from Golestan, Guilan, Mazandaran, Provinces of North Iran

Hamid Sakenin<sup>1</sup> and Najmeh Samin<sup>2</sup>

- 1- Department of Plant Protection, Islamic Azad University, Qaemshahr Branch, Mazandaran, Iran; email: hchelave@yahoo.com  
 2- Young Researchers Club, Science and Research Branch, Islamic Azad University, Tehran, Iran; email: n\_samin63@yahoo.com

### ABSTRACT

The fauna of *Dorcadion* spp. (Coleoptera: Cerambycidae: Lamiinae) from northern Iran is studied in this paper. A total of 43 species in four subgenera *Carinatodorcadion* (three species), *Cribridorcadion* (thirty seven species), *Maculatodorcadion* (one species) and *Megalodorcadion* (two species) were collected and identified.

**Key words:** *Dorcadion*, Dorcadionini, Lamiinae, Cerambycidae, Coleoptera, Iran

### INTRODUCTION

Longhorn beetles (Cerambycidae) belong to one of the most attractive beetle groups, distributed all over the world. To date more than 25,000 species of Cerambycidae have been described worldwide (Sama *et al.*, 2010). The tribe Dorcadionini includes six genera, *Dorcadion* Dalman, 1817; *Neodorcadion* Ganglbauer, 1884; *Trichodorcadion* Breuning, 1942; *Iberodorcadion* Breuning, 1943; *Eodorcadion* Breuning, 1947 and *Politodorcadion* Danilevsky, 1996 (Breuning, 1946; Braun, 1979). The tribe Dorcadionini has Palaearctic (North Africa to China) and Oriental (India to Nepal) chorotypes. *Trichodorcadion* Breuning, 1942 has Oriental chorotype (India, Nepal). *Iberodorcadion* Breuning, 1943 has European (chiefly Iberian) chorotype (Spain to Poland). *Eodorcadion* Breuning, 1947 has East-Palaearctic chorotype (Russia, Siberia, Mongolia, China); *Politodorcadion* Danilevsky, 1996 has Asian chorotype (Kazakhstan, W Siberia, China) (Özdikmen, 2010).

The three north Iranian provinces of this study border the southern shores of the Caspian Sea. They comprise vast forests with great plant diversity. Forests tend to be extremely large and continuous areas with gradual boundaries, thus quantitative evaluation of controls becomes very difficult and expensive but remain important as many cerambycids can inflict serious damage to forests in northern Iran (Braun 1978; Vives 2000) and reduce the economic value of timber. Some unique ecological attributes are present in these relatively complex forest environments including a diversity of species, ages, intraspecific genetic composition, spacing and stocking

levels (Dahlsten & Mills, 1999). It is important to look at some of these ecological attributes in detail as the opportunities for biological control vary depending on the environment and species involved (Baker, 1972).

### MATERIALS AND METHODS

The specimens were collected by using fermenting bait traps and other methods as described below. Collecting was carried out from several regions of three provinces of northern Iran namely, Golestan, Guilan and Mazandaran through 2005-2009. The traps were charged with a mixture containing wine (100 ml), water (900 ml), sugar (25 g), and vinegar (25 ml) (Ulu *et al.* 1995). For each tree species 10 logs, 60-80 cm in length and 15-25 cm in diameter, were cut and brought into forest depots. Logs of each tree species were stored separately as trap logs in each selected forest depot. In addition, trap logs, 3 m in length and 15-20 cm in diameter, were placed inside the forests to identify wood-destroying insect species in the forests. Trap logs were checked every 20-25 days, and logs with insect activity were brought into the laboratory to observe adult emergence. Logs left inside the forests were first cut into pieces 50-60 cm long and brought into the laboratory periodically. Collected specimens were prepared and identified using a stereomicroscope. This process continued until the end of insect emergence from each log (Akbulut *et al.*, 2008). Many of the materials were studied by the first author and Dr. D. Makhan (Willem Bilderdijkhove, the Netherlands), and some others by H. Borumand. In this paper identification, classification and nomenclature of the longhorn beetles suggested by Önalp (1990, 1991), Bense (1995), Althoff & Danilevsky (1997), Danilevsky (2004), Özdikmen (2008, 2010) and Özdikmen *et al.* (2010) is followed.

### RESULTS

A total of 43 species of *Dorcadion* were collected from northern Iran. The list of species is given below.

#### Tribe Dorcadionini Latreille, 1825

= Dorcadionini Swainson & Shuckard, 1840 (incorrect original stem)

= Dorcadodiidae Gistel, 1856  
 = Dorcadionitae Thomson, 1860  
 = Dorcadionites Fairmaire, 1864  
 = Dorcadionides Lacordaire, 1869  
 = Dorcadiini LeConte, 1873  
 = Dorcadionini Breuning, 1948, 1958, 1962  
 Type genus: *Dorcadion* Dalman, 1817

Body large, oval and convex. Head voluminous and inclined, with wide membrane between clypeus and labrum (typical for *Eodorcadion*). Antennae short and thick, without ciliate undersides. The first antennal segment without, or at most with an open scar, longer to at most a little shorter than third segment than the third. Eyes small, narrow, emarginate, finely faceted, their lower lobes transverse or oblique. Pronotum in general is quadrangular or slightly more wider and with strong lateral conic tubercles. Prosternal process arched and unarmed. Metasternum very much short. The mesothoracic coxal cavities opened. Elytra strongly fused, imbricated, never dehiscent, oval, with or without distinct humeral carina. Elytra more or less tapering toward apex and toward base. Developed membranous hind wings absent. Wing almost completely reduced, normally very small. Elytra covered with recumbent pubescence and numerous stout erect setae. Legs short and thick; front femora protruding outside; middle tibiae with an external groove or sinus (Breuning, 1962; Villiers, 1978; Cherepanov, 1990; Vives, 2000; Danilevsky & Kasatkin, 2006).

#### List of *Dorcadion* species from north Iran

***Dorcadion (Carinatodorcadion) aethiops* (Scopoli, 1763)**

Material: Mazandaran province: Behshahr, July 2007.

***Dorcadion (Carinatodorcadion) carinatum* (Pallas, 1771)**

Material: Guilan province: Roodsar, August 2005. Mazandaran province: Ramsar, July 2007.

***Dorcadion (Carinatodorcadion) fulvum* (Scopoli, 1763)**

Material: Guilan province: Astara, September 2007.

***Dorcadion (Cribridorcadion) albonotatum* Pic, 1895**

Material: Golestan province: Golestan National Park, July 2006.

***Dorcadion (Cribridorcadion) atticum* Kraatz, 1873**

Material: Mazandaran province: Joibar, September 2006.

***Dorcadion (Cribridorcadion) beckeri* Kraatz, 1873**

Material: Mazandaran province: Savadkooh, August 2007.

***Dorcadion (Cribridorcadion) bistratum* Pic, 1898**

Material: Mazandaran province: Neka, July 2007.

***Dorcadion (Cribridorcadion) bithyniense* Chevrolat, 1856**

Material: Golestan province: Golestan National Park, July 2006. Mazandaran province: Nooshahr, August 2006.

***Dorcadion (Cribridorcadion) blanchardi* Mulsant & Rey, 1863**

Material: Guilan province: Chaboksar, September 2009.

***Dorcadion (Cribridorcadion) cinerarium* (Fabricius, 1787)**

Material: Mazandaran province: Ramsar, September 2005.

***Dorcadion (Cribridorcadion) culminicola* J.Thomson, 1868**

Material: Golestan province: Kordkoy, June 2006.

***Dorcadion (Cribridorcadion) decipiens* (Germar, 1824)**

Material: Guilan province: Fooman, August 2005.

***Dorcadion (Cribridorcadion) deyrollei* Ganglbauer, 1884**

Material: Mazandaran province: Noor, October 2007.

***Dorcadion (Cribridorcadion) equestre* (Laxmann, 1770)**

Material: Guilan province: Bandar-Anzali, September 2007.

***Dorcadion (Cribridorcadion) etruscum* (Rossi, 1790)**

Material: Mazandaran province: Nooshahr, August 2006. Guilan province: Lahijan, August 2008.

***Dorcadion (Cribridorcadion) gallipolitanum* J.Thomson, 1867**

Material: Guilan province: Chaboksar, September 2008.

***Dorcadion (Cribridorcadion) halepense* Kraatz, 1873**

Material: Mazandaran province: Babol, September 2005.

***Dorcadion (Cribridorcadion) hellmanni* Ganglbauer, 1884**

Material: Guilan province: Rasht, September 2007.

***Dorcadion (Cribridorcadion) iconiense* K. Daniel, 1901**

Material: Mazandaran province: Amol, September 2009.

***Dorcadion (Cribridorcadion) indutum* Faldermann, 1837**

Material: Mazandaran province: Savadkooh, August 2007.

***Dorcadion (Cribridorcadion) kasikoporanum* Pic, 1902**

Material: Golestan province: Golestan National Park, July 2006. Mazandaran province: Galogah, September 2007.

***Dorcadion (Cribridorcadion) lameeri* Théry, 1896**

Material: Mazandaran province: Qaemshahr, July 2007.

***Dorcadion (Cribridorcadion) lineatocolle* Kraatz, 1873**

Material: Golestan province: Ali-Abad, June 2006.

***Dorcadion (Cribridorcadion) lugubre* Kraatz, 1873**

Material: Mazandaran province: Chalus, October 2007.

***Dorcadion (Cribridorcadion) micans* J.Thomson, 1867**

Material: Guilan province: Rasht, September 2008.

***Dorcadion (Cribridorcadion) murrayi* Küster, 1847**

Material: Guilan province: Fooman, August 2005.

***Dorcadion (Cribridorcadion) olympicum* Kraatz, 1873**

Material: Mazandaran province: Babol, September 2006.

Mazandaran province: Savadkooh, August 2009.

***Dorcadion (Cribridorcadion) pedestre* (Poda von Neuhaus, 1761)**

Material: Mazandaran province: Shahsavar, September 2005.

***Dorcadion (Cribridorcadion) punctipenne* Küster, 1852**

Material: Mazandaran province: Chalus, October 2007.

***Dorcadion (Cribridorcadion) rosti* Pic, 1900**

Material: Mazandaran province: Fereydonkenar, August 2006.

***Dorcadion (Cribridorcadion) scopolii* (Herbst, 1784)**

Material: Golestan province: Minoodasht, July 2006.

***Dorcadion (Cribridorcadion) scrobicollae* Dalman 1817**

Material: Mazandaran province: Chalus, October 2007.

***Dorcadion (Cribridorcadion) semibrunneum* Pic, 1903**

Material: Guilan province: Roodbar, September 2008.

***Dorcadion (Cribridorcadion) semivelutinum* Kraatz, 1873**

Material: Mazandaran province: Savadkooh, August 2007.

***Dorcadion (Cribridorcadion) sodale* Hampe, 1852**

Material: Mazandaran province: Sari, July 2009.

***Dorcadion (Cribridorcadion) subinterruptum* Pic, 1900**

Material: Guilan province: Masal, August 2005.

***Dorcadion (Cribridorcadion) sulcipenne* Küster, 1847**

Material: Golestan province: Kordkoy, June 2006.

***Dorcadion (Cribridorcadion) tauricum* Walth, 1838**

Material: Mazandaran province: Mahmood-Abad, August 2006.

***Dorcadion (Cribridorcadion) theophilei* Pic, 1898**

Material: Mazandaran province: Shahsavar, September 2005. Guilan province: Lahijan, August 2008.

***Dorcadion (Cribridorcadion) weyersi* Fairmaire, 1866**

Material: Guilan province: Rasht, September 2007.

***Dorcadion (Maculatodorcadion) quadrimaculatum* Küster, 1848**

Material: Mazandaran province: Babol, September 2009.

***Dorcadion (Megalodorcadion) escherichi* Ganglbauer, 1897**

Material: Mazandaran province: Savadkooh, August 2007.

***Dorcadion (Megalodorcadion) parallelum* Küster, 1847**

Material: Guilan province: Astara, September 2007.

**DISCUSSION**

The collecting 43 *Dorcadion* species from northern Iran during this project established by the first author in 2005 indicates that the fauna of Iranian *Dorcadion* is diverse. Longhorn beetles are one of the most important pests of forests and may cause extensive timber damage. Determining the species diversity of these forest pests is very important for preventing severe damage to ecosystems, and would also permit the definition of efficient strategies for decreasing population densities and successful control. The fauna of Iranian Cerambycidae is poorly studied (Modarres Awal, 1997; Radjabi, 1991; Borumand, 2004; Sakenin et al., 2008, 2011) and therefore further studies are necessary in different provinces, especially those with vast forest ecosystems to determine the exact importance of these forest pests along with the identification of their host plants and natural enemies.

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**REFERENCES**

- Akbulut, S., Keten, A. and Yuksel, B. 2008. Wood destroying insects in Düzce province. *Turkish J. Zoology* 32: 343-350.
- Althoff, J. and Danilevsky, M.L. 1997. *A check-List of longicorn beetles (Coleoptera, Cerambycoidea) of Europe*. Slovensko Entomološko Društvo Štefana Michielija, Ljubljana, 64 pp.
- Baker, W.L. 1972. Eastern forest insects. *U. S. Department of Agriculture & Forest Service Misc. Publ.* 1175, 642 pp.
- Bense, U. 1995. *Illustrated key to the Cerambycidae (excl. Dorcadionini) and Vesperidae of Europe*. Margraf Verlag, Germany, 512 pp.
- Borumand, H. 2004. The list of Cerambycidae (Coleoptera) in the Hayk Mirzayans Insect Museum of Plant Pests and

- Diseases Research Institute. *Insect Taxonomy Research Department* No. 10, 52 pp.
- Braun, W. 1978. Die Dorcadienausbeute der Forschungsreisen von W. Heinz 1963-1977, Faunistische Aufstellung, Beschreibung einer neuen Unterart und Bemerkungen zur Systematik wenig bekannter Arten (Coleoptera, Cerambycidae), *Nachrichtenblatt der Bayerischen Entomologen* 27 (6): 101-116.
- Braun, W. 1979. Beitrag zur Kenntnis der Gattung *Dorcadion* Systematisch neu bewertete Dorcadion-Formen (Col., Cerambycidae). *Nachrichtenblatt der Bayerischen Entomologen* 28 (5): 81-86.
- Breuning, S. 1946. Nouvelles formes de *Dorcadion*. *Miscellanea Entomologica*, 43: 93-132.
- Breuning, S. 1962. Revision der Dorcadionini. *Entomologische Abhandlungen und Berichte aus dem Staatlichen museum für Tierkunde in Dresden*, 27: 665.
- Cherepanov, A.I. 1990. *Cerambycidae of northern Asia*. Volume 3, Lamiinae, Part I. New Delhi, India: Amerind Publishing Company Pvt. Ltd., 300 pp.
- Dahlsten, D.L. and Mills, N.J. 1999. Biological control of forest insects. In: *Handbook of biological control: Principles and applications* (Bellows, T.S., Jr. & T.W. Fisher, eds.). Academic Press, San Diego, CA. 1046 pp.
- Danilevsky, M.L. 2004. *Systematic list of longicorn beetles (Cerambycoidea) of the territory of the former USSR* (on the base of "Systematic list of longicorn beetles of the USSR" by A.L. Lobanov, M.L.
- Danilevsky, S.V. Murzin, 1981, and computer databases by A.L. Lobanov, 1979-1990). <http://www.zin.ru/Animalia/Coleoptera/eng/dbase30.htm>.
- Danilevsky, M.L. and Kasatkin, D.G. 2006. Further investigation of Dorcadionini (Coleoptera: Cerambycidae) endophallus with a revision of taxonomical position of the genus *Trichodorcadion*
- Breuning, 1942. *Russian Entomol. J.* 15(4): 401-407.
- Modarres Awal, M. 1997. Family Cerambycidae, pp. 142-151. In: *List of agricultural pests and their natural enemies in Iran*. Ferdowsi University Press, 429 pp.
- Önalp, B. 1990. Systematic researches on *Dorcadion* Dalman, 1817 species in Turkey (Coleoptera, Cerambycidae: Lamiinae) I, *H. Ü. Eđitim Fakóltesi Dergisi* 5: 57-102.
- Önalp, B. 1991. Systematic researches on *Dorcadion* Dalman, 1817 species in Turkey (Coleoptera, Cerambycidae: Lamiinae) II. *H. Ü. Eđitim Fakóltesi Dergisi* 6: 191-227.
- Özdikmen, H. 2008. The longicorn beetles of Turkey (Coleoptera: Cerambycidae) Part III – Aegean Region. *Munis Entomology & Zoology* 3 (1): 355-436.
- Özdikmen, H. 2010. The Turkish Dorcadionini with zoogeographical remarks (Coleoptera: Cerambycidae: Lamiinae). *Munis Entomology & Zoology* 5(2): 380-498.
- Özdikmen, H., Güven, M. and Gören, C. 2010. Longhorned beetles fauna of Amanos Mountains, Southern Turkey (Coleoptera: Cerambycidae). *Munis Entomology & Zoology* 5, suppl.: 1141-1167.
- Radjabi, G.H. 1991. *Insects attacking rosaceous fruit trees in Iran*. Ministry of Iran Agriculture, Plant Pests and Diseases institute, Tehran, 221 pp.
- Sakenin Chelav, H., Eslami, B., Samin, N., Imani, S., Shirdel, F. and Havaskary, M. 2008. A contribution to the most important trees and shrubs as the hosts of wood-boring beetles in different regions of Iran and identification of many natural enemies. *J. Plant and Ecosystem* 16: 27-46.
- Sakenin, H., Samin, N., Moemen Beitollahi, S., Ezzatpanah, S., Havaskary, M., Rastegar, J., Valizadeh, A. and Shakouri, M.J. 2011. A study on the longhorn beetles (Coleoptera: Cerambycidae) from north-western Iran. *Calodema* 143: 1-19.
- Sama, G., Buse, J., Orbach, E., Friedman, A., Rittner, O. and Chikatunov, V. 2010. A new catalogue of the Cerambycidae (Coleoptera) of Israel with notes on their distribution and host plants. *Munis Entomology & Zoology* 5(1): 1-55.
- Ulu, O., Önuçar, A., Zümreođlu, A., Uzun, S., Ergüden, T. M., Aykaç, K., Kýlýç, M., Çakýr, O., Ceylan, S. and Koçlu, T. 1995. Kiraz bahçelerinde entegre mücadele araptýrma, geliptirme ve uygulama projesi. BKA/U17, 1. Dilim sonuç raporu (Unpublished report), Ýzmir, 84 pp.
- Villiers, A. 1978. Faune des Coléoptères de France I. Cerambycidae. *Encyclopédie Entomologique*, XLII, P. Lechevalier ed., Paris, 611 pp.