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Weevils (Coleoptera: Curculionoidea) of Taleghan Region (North of Iran) with Reporting of Ten New Records for Iran

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ABSTRACT

The faunistic knowledge of Iranian weevils is still relatively low, especially in comparison with the vastness and rich environment of this country. During the years 2014-2015, a faunistic study on superfamily Curculionoidea was done in Taleghan Region. This region is located on the southern slope of the Alborz Mountains and irrigated by several rivers. Taleghan Region is known mainly for its green landscape which is covered mostly by rangelands, grasslands, but also agricultural farms and fruit gardens. Recently, several human activities have shaped into the Taleghan landscapes and then it resulted in a dramatic reduction of vegetation. In our study a total of 51 species of weevils were confirmed for this region and 10 of them (*Hemitrichapion pavidum* (Germar, 1817)*, Protapion laevicolle* (Kirby, 1811), *Pseudoprotapion elegantulum* (Germar, 1818), *P. astragali astragali* (Paykull, 1800), *Mecinus labilis* (Herbst, 1795), *Mogulones asperifoliarum* (Gyllenhal, 1813), *Tychius* astragali Becker, 1862, *T. callidus* Caldara, 1990*, T. tridentinus* Penecke, 1922, and *T. trivialis* Boheman, 1843) have been recorded in Iran for the first time. In addition, a brief discussion is given for several species considered as rare weevils or interesting records for Iranian fauna. Finally, the environmental factors with influence effect into the weevil community in Taleghan Region are discussed.

Key words: Alborz Mountains, Brentidae, Curculionidea, Taleghan Region, faunistic study, grasslands, Iran, new records, rangelands.

INTRODUCTION

The superfamily Curculionoidea includes 62000 species (Oberprieler *et al*., 2007). With regard to species number, into the superfamily Curculionoidea, the main species diversity is assigned to families Brentidae and especially Curculionidae (Löbl and Smetana, 2011).The family Curculionidae, commonly called weevils, is one of the numerous family in Coleoptera (Alonso-Zarazaga, M. A., Lyal, C. H., , 1999; Mckenna *et al*., 2015). According to their diversity and huge numbers of species, there is a permanent debate about the internal classification (Marvaldi *et al*., 2002; Oberprieler e*t al*., 2007; Jordal *et al*., 2014).

Iran is a vast country with huge numbers of varieties in landscapes and weather conditions (Zehzad *et al*., 2002). This rich environmental condition led to the high diversity of flora of Iran Plateau (Ghahreman and Attar, 1999) that affects the species

richness of herbivorous insects, like weevils. In the lastest Iranian checklist, Legalov *et al*. (2010) catalogued 711 species of Curculionoidea for Iran fauna. Unfortunately, the number of weevils that has been reported from Iran is not compatible with the vastness and biodiversity of this Country. Our today's perception of Curculionoidea in Iran is indebted to the efforts of Modares Aval (1997) and Broumand (1998). However, during the last decade, some dispersal faunistic studies have been done in order to increase the local knowledge of weevil diversity in Iran (Ghahari *et al*., 2009, 2010; Modarres Awal and Hosseinpour Jajarm, 2010; Sadeghi *et al*., 2010; Ghahari and Legalov, 2011; Ghahari and Arzanov, 2012; Ghahari and Colonnelli, 2012; Sanaei *et al*., 2015). Respect to the specialists' attention to the Iran fauna, the number of new confirmed Iranian endemic weevil species is still growing up (Gültekin and Podlussany, 2012; Borovec, 2014; Gültekin and Shahreyary-Nejad, 2015). It is obvious that certain number of species is still undetected and it means that the Iran fauna will remain as a big potential for future faunistic studies.

To continue the faunistic surveys in unstudied areas of Iran, we investigated for weevils in the Taleghan Region (in Alborz Province). The Taleghan Region includes Taleghan city and 76 villages and it is located at 140 km from northwest of Tehran (Monavari *et al*., 2013). Taleghan Region is bordered by the roads of the Karaj city from east, the Alamout Mountain from west, and the Alborz Mountains from north. This region consists of the area of almost 955.7 km^2 (Monavari *et al*., 2013) and the altitude in this area varies from 1500 to 3500 meters (Kiyani, 2013). This area is boosted by several rivers. The watershed of Taleghan Region is situated in the Sefidroud basin (Guest *et al*., 2006). This region is semi humid and it is affected mostly by the presence of the Alborz Mountains and Taleghan Dam (Kiyani, 2013). The average annual precipitation is 455 mm, maximal temperature is +35°C and minimal temperature is -24°C in a year (Siroosi *et al*., 2013). The vegetation of Taleghan varies from agricultural fields and fruit gardens to rangelands, grasslands and wetlands. These green areas make the Taleghan Region a suitable place for attracting many tourists (Kiyani, 2013). However, the tourist attraction has also made several damages for environment health such as water pollution (Kiyani, 2013). Moreover, recent soil erosion and sheep overgrazing led to the sudden turn of green lands into the bare lands.

The main aim of this faunistic study was to identifiy the weevil species from Taleghan Region to understand the weevil community in this region and also to investigate for the new possible records or even species in Iran. Determining factors for weevil diversity in Taleghan Region and possible treats for weevil habitat are discussed.

MATERIALS AND METHODS

During 2014-2015, several field activities were performed in Taleghan Region (Fig. 1). A total of 10 localities in this region were visited on different dates (Table 1).The selected sites were usually closed to the some streams (Fig. 2). We collected weevils mainly in the open grasslands, rangelands and wetlands by sweeping. In the wetlands, we also looked under stones and plant debris. In addition, we sampled also on a few trees in the area by umbrella beat traps. A total of 50 wet pitfall traps

filled with chloroform were placed in different sites (Glinak, Taleghan Dam, Hasanjun, Nazizan and Jazinan) and controlled after 24-48 hours. After the field activity, all weevil specimens were mounted on cart points in the laboratory. In order to simplify the identification progress, the male genitalia was dissected. The specimens were identified by keys from the following publications: (Hoffman, 1958; Monaco, 1970; Dieckmann, 1980; 1988; Alonso-Zarazaga, 1990; Caldara, 1990, 1993; Morris, 1990; Sobhian *et al*., 1992; Wanat, 1995; 1997; El-Akkad; 1998; Pelletier , 1999; Colonnelli, 2004; Meleshko and Korotyaev, 2005; Bahr *et al*. 2006; Bayer *et al*., 2007; Gültekin, 2006; Friedman and Freidberg, 2007; Yunakov and Korotyaev, 2008; Skuhrovec, 2009; Velázquez de Castro, 2009, 2011; Balalaikins *et al*., 2010; Stüben *et al*., 2010; Gültekin, and Podlussany, 2012; Skuhrovec *et al*., 2012, 2014; Stüben *et al*., 2013, 2014) and then confirmed by specialist in some group of weevils (see Acknowledgements). For list of species, we followed the classification of Löbl and Smetana (2011; 2013), which is based on main work done by Alonso-Zarazaga and Lyal (1999). However, according to Oberprieler *et al.* (2007) and Bouchard *et al.* (2011) and also recent molecular phylogenetic analysis based on full mitochondrial gnome of weevils (Gillett *et al.*, 2014), we used the family Brentidae instead of Apionidae here.

Table 1. Coordination, elevation and date of collecting for each station.

Station	Coordination	Elevation	Date of collecting
Taleghan Dam	N: 27°11′45.4″ E: 50°38′2.5″	1715 m	30.8.2014 10.4.2015 8.8.2015
Gelinak	N: 36°10′42.6″ E: 50°51′12.8″	1315 m	9.5.2015 31.8.2014
Hasanjun	N: 36°12′8.7 E: 50°45′32.8″	1889 m	31.8.2014
Jazinan	N: 36°12′41.2″ E: 50°47′1.6″	2023 m	10.5.2015
Khasban	N: 36°11′37″ E: 50°46′57.7″	1939 m	10.5.2015
Naviz	N: 36°12′12.8″ E: 50°51′47.9″	2120 m	9.5.2015 13.7.2015
Karkabud	N: 36°13′5.9″ E: 50°51′12″	2215 m	1.9.2014
Kuein	N: 36°11′35.9″ E: 50°52′5.3″	1930 m	1.9.2014
Dizan	N: 36°12′12.8″ E: 50°51′47.9″	2120 m	11.5.2015
Askan	N: 36°10′12.3″ E: 51°01′30.4″	1841 m	3.9.2014

The Iranian distributions of species were mostly adopted from the following publications: (Caldara, 1990; Wanat, 1995; Modarres Awal, 1997; Borumand, 1998; Pelletier, 1999; Colonnelli, 2004; Legalov *et al*., 2010; Ghahari and Legalov, 2011; Löbl and Smetana, 2011; Ghahari and Colonnelli, 2012; Gültekin and Podlussany, 2012; Löbl and Smetana, 2013; Sanaei *et al*., 2015). The specimens were kept in Zoological Museum, University of Tehran (ZUTC) and also personal collection of the first author.

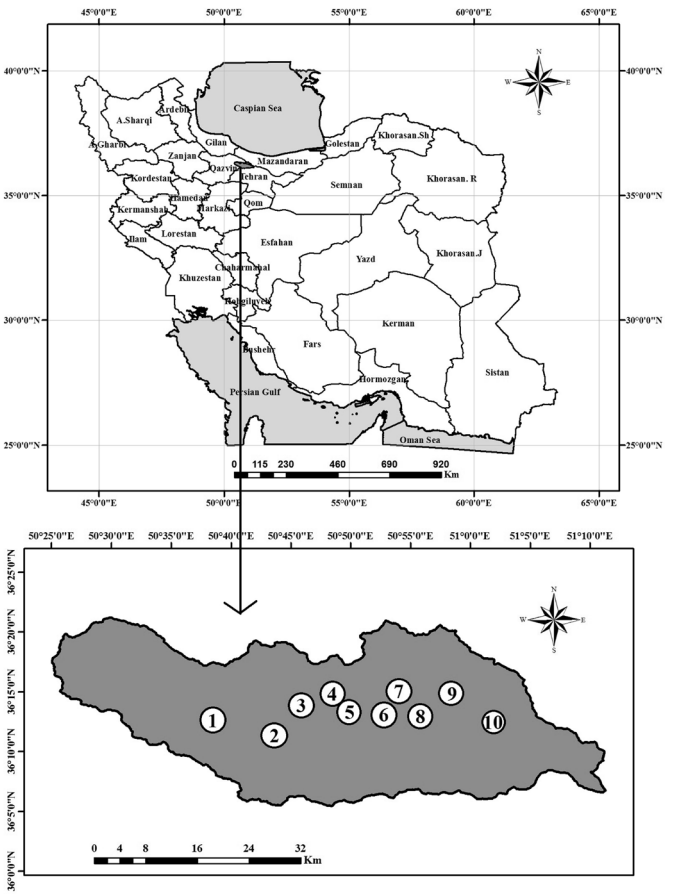

Fig. 1. The locality of Taleghan region in Iran and the localities of each station in Taleghan, 1: Taleghan Dam, 2: Gelinak, 3: Hasanjun, 4: Jazinan, 5: Khasban, 6: Naviz, 7: Karkabud, 8: Kuein, 9: Dizan, 10: Askan.

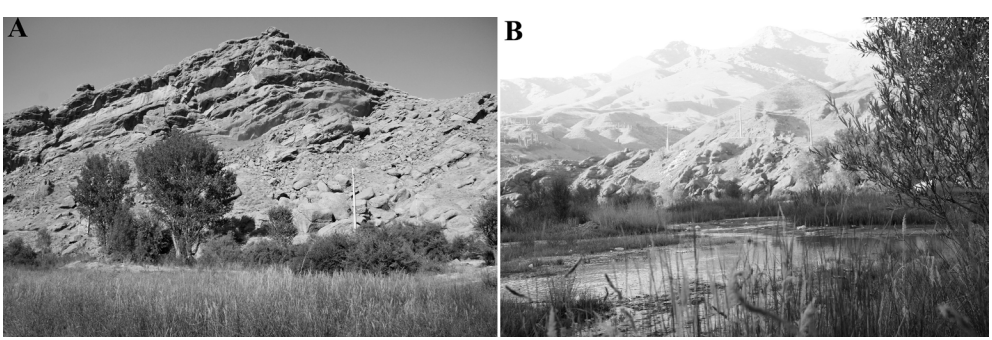

Fig. 2. Two selected different habitats in Taleghan. A. Open grasslands in Jazinan, B. River basin of Taleghan Dam.

Knowledge about the Palaearctic distribution of each species follows (Löbl and Smetana, 2011; 2013). In the addition, the family name of host plant for each species was given.

RESULTS

A total of 538 weevil specimens, which has been identified into 51 species from four families, nine subfamilies, 24 tribes and 29 genera were collected. The majority of the specimens were collected by the sweeping method. Only *Sphenophorus parumpunctatus* Gyllenhal, 1838 and *Larinus scolymi* (Olivier, 1807) were collected individually under the stones. We have no observation of any weevil specimen by using umbrella beat or even pitfall traps. *Epirhynchites auratus* (Scopoli, 1763) was the only species which was collected on trees. The list of species is arranged in Table 2.

DISCUSSION

In this study, 10 species from 51 identified species were recorded for the Iran fauna for the first time (Table 2). All these new records belong to tiny weevils with less than 5 mm length: Brentidae: *Hemitrichapion pavidum* (Germar, 1817)*, Protapion laevicolle* (Kirby, 1811), *Pseudoprotapion elegantulum* (Germar, 1818), *P. astragali astragali* (Paykull, 1800); Curculionidae: *Mecinus labilis* (Herbst, 1795), *Mogulones asperifoliarum* (Gyllenhal, 1813), *Tychius astragali* Becker, 1862, *T. callidus* Caldara, 1990*, T. tridentinus* Penecke, 1922, *T. trivialis* Boheman, 1843. More attention to the Iranian fauna of mentioned groups may result to the loads of scientific achievements.

Araxia mucronata Khnzorian, 1957: The first description of *A. mucronata* was done on specimens from Armenia (Khnzorian, 1957). Yunakov and Korotyaev (2008) reported this species also from Turkey, Transcaucasia and Turkmenistan. According to the mentioned report, the presence of this species in Iran was expected. Davidian and Gültekin (2015) reported a specimen of *A. mucronata* from Tehran collected in 1961. The new record from Taleghan fills the gap between its distributions in the northern part of the Middle East.

Wittmerrella viridisetosa Pesarini, 1973: This is the only species of genus *Wittmerrella* recorded by Pesarini (1973) from Mazandaran (North of Iran). There was no other record until a recent report from Turkey (Yunakov and Klass, 2012). However, this species was recently collected from 3 different localities in Taleghan Region with relatively high abundance only in females. The males of this species were never described. Our specimens in this study were also females. As Yunakov and Klass (2012) suggested, this species can be closely related to genus *Polydrusus*. We suggest this species may have a parthenogenesis life cycle as some of *Polydrusus* species (Kajtoch and Lachowska-Cierlik, 2009). In addition, *W. viridisetosa* is a common species in Taleghan Region, therefore, it is assumed that the range of its distribution should be more wide than only our current recorded localities. The host plant of *W. viridisetosa* is still unknown. However, all specimens were collected by sweeping grasslands with domination of *Hypericum perforatum* (Hyericaceae). It is suggested that Hypericaceae might be a potential host plant of this species.

Table 2. List of all collected species with additional information.

Species name	Subfamily	Iran distribution	World distribution	Examined materials	Host plant
Epirhynchites auratus (Scopoli, 1763)	Rhynchitinae	Well distributed	W/C Palaearctic	3♂♂, Gelinak 31.8.2014.	Rosaceae
Apion frumentarium (Linnaeus, 1758)	Apioninae	Well distributed	W/C Palaearctic	2 ♂♂ Karkabud 1.9.2014, 1 ♀Gelinak 31.8.2014, 1 ♀Hasanjun 31.8.2014	Polygonaceae
Protapion trifolii (Linnaeus, 1768)	Apioninae	Well distributed	W/C Palaearctic	14 ♂♂ 18 ♀♀ Kuein 21.9.2014, 3 ♀♀ Gelinak 9.5.2015, 12 ♀♀ 8 ♂♂ Jazinan10.5.2015	Fabaceae
Protapion filirostre (Kirby, 1808)	Apioninae	Tehran	W Palaearctic & Russia	1 ♀ Gelinak 9.5.2015	Fabaceae
Protapion laevicolle (Kirby, 1811)	Apioninae	**New Record**	W Palaearctic	2 ♀♀1 ♂ Dizan 11.5.2015	Fabaceae
Protapion varipes (Germar, 1817)	Apioninae	NW	W Palaearctic	2 ♂♂ Askan 3.9.2014	Fabaceae
Ceratapion scalptumcaviceps (Desbrochers des Loges, 1870)	Apioninae	Well distributed	E Europe & C Palaearctic	3 ♂♂ 2 ♀♀Taleghan Dam 30.8.2014, 5 ♂♂ 2 ♀♀ Gelinak 31.8.2014	Asteraceae
Ceratapion basicorne (Illiger, 1807)	Apioninae	E Azarbaijan, Isfahan	W Palaearctic	2 ♂♂ 4 ♀♀ Gelinak31.8.2014	Asteraceae
Hemitrichapion pavidum (Germar, 1817)	Apioninae	**New Record**	W Palaearctic	6 ♂♂ 2 ♀♀, Gelinak 9.5.2015	Fabaceae
Hemitrichapion reflexum (Germar, 1833)	Apioninae	Ardabil	W Palaearctic	7 ♂♂ 8 ♀♀ Naviz 13.7.2015, 3 ♂♂ Taleghan Dam 8.8. 2015	Fabaceae
Holotrichapion pullum (Gyllenhal, 1833)	Apioninae	E Azarbaijan, Khorasan	W Palaearctic	1 ♀ Naviz 9.5.2015, 2 ♂♂ Taleghan Dam 8.VIII. 2015	Fabaceae
Oxystoma ochropus (Germar, 1818)	Apioninae	Azarbaijan, Isfahan	W Palaearctic	2 ♂♂ Kuein 1.9.2014, 5 ♂♂ Naviz 13.7. 2015	Fabaceae
Pseudoprotapion elegantulum (Germar, 1818)	Apioninae	**New Record**	W Palaearctic	2 ♂♂ Gelinak 31.8.2014, 1 ♂ 1 ♀ Taleghan Dam 10.4. 2015	Fabaceae
Pseudoprotapion astragali a*stragali* (Paykull, 1800)	Apioninae	**New Record**	W/C Palaearctic.	2 ♀♀ Dizan 11.5.2015	Fabaceae
Rhopalapion longirostre (Olivier, 1807)	Apioninae	Well distributed	Holarctic	1 ♀ Taleghan Dam 10.4.2015, 1 ♀ Naviz 13.7.2015	Malvaceae
Isochnopterapion loti (Kirby, 1808)	Apioninae	E Azarbaijan	W Palaearctic	2 ♀ Naviz 9.5.2015.	Fabaceae
Squamapion latesquamatum Wanat, 1997	Apioninae	Lorestan, Tehran	Asia Minor	3 ♀ 1 ♂ Kuein 1.9.2014	Unknown
Sphenophorus parumpunctatus Gyllenhal, 1838	Rhynchophorinae	Khuzestan	W Palaearctic	1 ♂ Taleghan Dam 10.4.2015, 11 ♂♂ 7 ♀♀ Taleghan Dam 8.8.2015	Fabaceae
Sitona cylindricollis Fahraeus, 1840	Entiminae	Well distributed	Holarctic	10 ♂♂ 8 ♀♀ Gelinak 8 31.8.2014, 3 ♂♂ Dizan 11.5.2015, 4 ♂♂ 6 ♀♀Jazinan 10.5.2015.	Fabaceae
Sitona humeralis Stephens, 1831	Entiminae	Well distributed	Holarctic	15 ♂♂ 23 ♀♀ Dizan 31.8.2014, 11 ♂♂ 12 ♀♀ Naviz 9.5. 2015, 5 ♂♂ Jazinan 10.5.2015	Fabaceae
Sitona concavirostris Hochhuth, 1851	Entiminae	Well distributed	W/C Palaearctic.	3 ♂♂ 4 ♀♀ Gelinak 31.8.2014, 4 ♂♂ 2 ♀♀ Gelinak 9.5.2015, 9 ♂♂ 1♀ Khasban 10.5.2015	Fabaceae
Sitona longulus Gyllenhal, 1834	Entiminae	Well distributed	W/C Palaearctic.	6 ♂♂ 10 ♀♀ Gelinak 31.8.2014	Fabaceae
Sitona macularius (Marsham, 1802)	Entiminae	Well distributed	W/C Palaearctic.	5 ♂♂ Kuein 1.9.2014	Fabaceae
Araxi amucronata Khnzorian, 1957	Entiminae	Tehran	N Middle East	5 ♀♀Kuein 1.9.2014, 3 ♀♀ Khasban 10.5.2015, 8 ♀♀ Naviz 13.7.2015	Unknown
Polydrusus pilifer Hochhuth, 1847	Entiminae	Well distributed	W/C Palaearctic.	2 ♀♀ Karkabud 1.9.2014, 21 ♀♀ Askan 1.9.2014, 15 ♀♀ Khasban 10.5.2015, 7 ♀♀ Naviz 9.5. 2015, 11 ♀♀ Naviz 13.7. 2015	Rosaceae
Wittmerrella viridisetosa Pesarini, 1973	Entiminae	Mazandaran	Iran &Turkey	1 ♀ Askan 1.9.2014, 4 ♀♀ Naviz 9.5. 2015, 9 ♀♀Gelinak 9.5.2015	Unknown
Chloebius immeritus Boheman, 1834	Entiminae	Ghazvin, Tehran	Palaearctic	1 ♀ Hasanjun 31.8.2014	Fabaceae
Pholicodes fausti (Reitter, 1890)	Entiminae	Azarbaijan	Middle East	2 ♀♀ Jazinan 10.5.2015	Unknown
Strophomorphus porcellus (Scjoenherr, 1832)	Entiminae	Tehran	W/C Palaearctic	2 ♀♀, Askan 3.9.2014, 1 ♀♀ Gelinak 9.5.2015	Polyphagous

In distribution columns: E=East, W=Western, C=Central and N=North.

Table 2. Continued.

Species name	Subfamily	Iran distribution	World distribution	Examined materials	Host plant
Hypera postica (Gyllenhal, 1813)	Hyperinae	Well distributed	Holarctic	2♂♂ 4♀♀ Askan 9.2014, 4♂♂ 6♀♀ Naviz 9.5. 2015, 5♂♂ 11♀♀ Gelinak 9.5.2015. 8♂♂ 8♀♀ Jazinan 10.5. 2015, 2♀♀ Khasban 10.5.2015, 12♂♂17 ♀♀ Dizan 11.5.2015	Fabaceae
Hypera farinosa (Boheman, 1840)	Hyperinae	NW	E Europe & C Palaearctic	1 ♀ Taleghan Dam 10.4. 2015	Fabaceae
Lixus ascanii Linnaeus 1767	Lixinae	Golestan	W Palaearctic	1 ♀ Hasanjun 31.8.2014	Brassicaceae
Lixus pulverulentus Scopoli 1763	Lixinae	Well distributed	W/C Palaearctic	1 ♂ Jazinan10.5.2015	Malvaceae
Lixus recurvus Olivier, 1807	Lixinae	Golestan	Caucasus, Iran, Turkey	2 ♀♀ Karkabud 1.9.2014	Malvaceae
Larinus scolymi (Olivier, 1807)	Lixinae	Well distributed	W Palaearctic	1 ♂ Taleghan Dam 8.8.2015	Asteraceae
Larinus iranicus Gültekin and Podlussány, 2012	Lixinae	NW	Iran	1 ♂ Gelinak 31.8.2014	Unknown
Bangasternus orientalis (Capiomont, 1873)	Lixinae	Well distributed	W Palaearctic	3 ♂♂ Naviz 9.5. 2015, 5 ♂♂ 2 ♀♀ Dizan 11.5.2015	Asteraceae
Malvaevora timida (Rossi, 1792)	Baridinae	Well distributed	W/C Palaearctic	1 ♀ Taleghan Dam 10.4. 2015	Malvaceae
Cionus olivieri Rosenhauer, 1838	Curculioninae	Well distributed	W/C Palaearctic	1 ♀ Kuein 1.9.2014	Scrophulariaceae
Mecinus labilis (Herbst, 1795)	Curculioninae	**New Record**	W Palaearctic`	1 ♂ Karkabod 1.9.2014 1 ♂ Dizan 11.5.2015	Plantaginaceae
Tychius aureolus Kiesenwetter, 1851	Curculioninae	Well distributed	W/C Palaearctic	2 ♂♂ 6 ♀♀ Dizan 30.8.2014, 1 ♂ Naviz 9.5.2015	Fabaceae
Tychius picirostris (Fabricius, 1787)	Curculioninae	Golestan, Lorestan	Holarctic	2 ♂♂ Naviz 9.5.2015	Fabaceae
Tychius tridentinus Penecke, 1922	Curculioninae	**New Record**	W/C Palaearctic	1 ♂ Taleghan Dam 10.8.2014	Fabaceae
Tychius astragali Becker, 1862	Curculioninae	**New Record**	N America, E Europe	3 ♂ Taleghan Dam 10.4.2015	Fabaceae
Tychius trivialis Boheman, 1843	Curculioninae	**New Record**	W Palaearctic	1 ♂ Naviz 9.5. 2015	Fabaceae
Tychius callidus Caldara, 1990	Curculioninae	**New Record**	Armenia and Macedonia	1 ♂ Kuein 1.9.2014	Fabaceae
Tychius hiekei Caldara, 1990	Curculioninae	Mazandaran, Sistan	Armenia and Iran	2 ♂♂Jazinan 10.5. 2015, 1 ♀ Taleghan Dam 10.4.2015.	Fabaceae
Ceutorhynchus chalybaeus Germar, 1824	Ceutorhynchinae	Mazandaran	W/C Palaearctic	2 ♂♂ Khasban 10.5.2015, 12 ♂ Gelinak 9.5.2015	Brassicaceae
Ceutorhynchus hirtulus Germar, 1824	Ceutorhynchinae	Khorasan	W Palaearctic	2 ♂♂ Khasban 10.5.2015, 12 ♂ Gelinak 9.5.2015	Brassicaceae
Ceutorhynchus sulcicollis (Paykull, 1800)	Ceutorhynchinae	Mazandaran	W Palaearctic	1 ♀♀ Taleghan Dam 10.4.2015	Brassicaceae
Mogulones asperifoliarum (Gyllenhal, 1813)	Ceutorhynchinae	**New Record**	W Palaearctic	1 ♂Gelinak 9.5.2015, 1 ♂ Taleghan Dam 10.4.2015	Brassicaceae

In distribution columns: E=East, W=Western, C=Central and N=North.

Strophomorphus porcellus (Scjoenherr, 1832): The only Iranian record of this species from Tehran was published by Pelletier (1999). In this study, we confirmed Taleghan Region as another locality for this species in Iran.

Lixus ascanii Linnaeus, 1767: This species was recorded from Golestan Province (Ghahari and Colonnelli, 2012). According to the Golestan record (NE Iran) our new record from Taleghan Region and also its wide distribution in Europe and the Middle East, this species may be distributed from West to East of Iran.

Larinus scolymi (Olivier, 1807): This species is considered as a common species in Western Palaearctic. There was no precise direct report of *L. scolymi* from Iran, however, taxon *L. flavescens* Germar, 1824 (recently the synonym of *L. scolymi*) has been already recorded from Iran (Borumand, 1998; Nematolahi, 2010). In our study this species was found surprisingly only in lapidicolous habitat.

Larinus iranicus Gültekin and Podlussany, 2012: This endemic species of Iran was recently described by Gültekin & Podlussany (2012). The localities of paratypes were

limited to the East of Iran (East Azarbayijan, Hamadan and West Azarbayijan). Our new record from Taleghan Region has extended the known distribution area of this species.

Tychius hiekei Caldara, 1990: According to the geographic data of the paratypes of *T. hiekei* Caldara (1990) mentioned one locality in Armenia and two localities in Iran (Mazandaran, Sistan and Baluchestan). After 25 years, this is the first record for this species. According to these data, the distribution range of this species should be extended from the North to the South East of Iran (near to Pakistan border).

Ceutorhynchus hirtulus (Germar, 1824): This species was reported by Colonnelli (2004) for the first time from Khorasan (East of Iran). According to the new record of this species from North of Iran (Taleghan Region), our information about the distribution of this species is quietly extended.

Ceutorhynchus sulcicollis (Paykull, 1800): Several records (Colonnelli, 2004; Barari and Alziar, 2008; Barari and Serri, 2010) confirmed this species only in Mazandaran province. However *C. sulcicollis* is known as a pest of oilseed rape and a common species in Europe (Grantiņa *et al*., 2011). The abundance of grape gardens in Mazandaran province is one of the reasons of over attention to *C. sulcicollis* in Mazandaran. Due to an economic importance of this pest, the Iranian geographic distribution of *C. sulcicollis* should be studied by further detailed research.

The species richness of plants and vegetation is the key factor for weevil diversity in each region. Several river basins and the high quantity and quality of underground waters led to the vast green area in most of the parts of Taleghan Region (Moghaddam *et al*., 2013). Moghaddam *et al*. (2013) detected 547 water springs in just a limited area of Taleghan Region. In the addition, the average of solar radiation in Taleghan is relatively high (4.5 kWh/m^2) (Shiroudi and Taklimi, 2011). High solar radiation, huge source of available water and also high annual precipitation (Kiyani, 2013) are responsible for growth of variety of plants especially in rangelands that affect weevil fauna as well.

The most frequent plant families in rangelands of Taleghan Region are following: Gramineae, Hypericaceae, Compositae, Labiatae and Fabaceae (Fahimipoor *et al*., 2010). According to the diversity of plant species in rangelands and grasslands, the high diversity of Apioninae species is expected in this region. In the current study, we confirmed 16 species of Apioninae and four of them were recorded in Iran for the first time. Legalov *et al*. (2010) listed 70 Apioninae for the Iran fauna. In the comparison of the area of Iran (1,623,779 km^2) (Zehzad *et al*., 2002) and Taleghan (955.7 km^2), the finding of 16 Apioninae species in such small area could be considered as a high number. However, it is suggested that a total number of known Apioninae species in Iran is not compatible to environment richness and vastness of Iran and more investigation should be done.

It seems that the weevil fauna of the grasslands and rangelands of Taleghan are also affected by presence of many agricultural fields. For instance, *Hypera postica* (Gyllenhal, 1813), *Tychius aureolus* Kiesenwetter, 1851 and several species of genus *Sitona* that are found in our current study, are the most known and also frequent pests of alfalfa in Iran (Sanaei *et al*., 2015). The alfalfa is cultivated for feeding cattle in many

villages in Taleghan Region. The weevil community in Taleghan Region can be affected also by other factors. During last decades, it was observed significant degradation of the vegetation in this region. Between years 1987 to 2007, more than 90% of the agricultural fields and 30% of rangelands of limited studied area of Taleghan Region changed turned to bare lands (Kiyani, 2013). Taleghan Dam (Fig. 2) is an important source of drinking water and create also electric power not only for Taleghan but also for Tehran (Capital of Iran) (Kazemi *et al*., 2012). The coast of Taleghan Dam is an attractive location for tourists and this is the main source of environmental waste and pollution (Kazemi *et al*., 2012; Kiyani, 2013). The volume of human mediate waste plus overgrazing of livestock are the main reasons for sudden change of vegetation in Taleghan Region (Kiyani, 2013). These environmental problems may have an unrecoverable damage to the fauna, especially the herbivorous species like weevils. In order to decrease the future extinction of several species, the environmental management in Taleghan Region is highly recommended.

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