



<http://dx.doi.org/10.11646/zootaxa.3887.4.2>

<http://zoobank.org/urn:lsid:zoobank.org:pub:CB9A564A-B058-428B-8D03-8B92F641AF18>

A checklist of stag beetles (Coleoptera: Scarabaeoidea: Lucanidae) from Iran

LUCA BARTOLOZZI¹, HASSAN GHAHARI², EVA SPRECHER-UEBERSAX³ & MICHELE ZILIOLO⁴

¹Entomology Department, Natural History Museum, Zoological Section La Specola, via Romana 17, 50125 Firenze, Italy.

E-mail: luca.bartolozzi@unifi.it

²Department of Plant Protection, Shahre Rey Branch, Islamic Azad University, Tehran, Iran. E-mail: hghahari@yahoo.com

³Department of Biowissenschaften, Entomologie, Naturhistorisches Museum, Augustinergasse 2, CH - 4051 Basel, Switzerland.

E-mail: eva.sprecher@bs.ch

⁴Natural History Museum, Corso Venezia 55, 20121 Milano, Italy. E-mail: michele.zilioli@comune.milano.it

Abstract

An updated checklist of the Lucanidae (Coleoptera) from Iran is given. New locality records are listed and some dubious distributional records are discussed. *Dorcus vavrai* Nonfried, 1905 is placed in synonymy with *Dorcus peyronis* Reiche and Saulcy, 1856 (**new synonymy**). The female of *Lucanus xerxes* Král, 2004 is described. A key for the identification of the Iranian stag beetle species is also provided and all the species are figured.

Key words: Coleoptera, Lucanidae, synonymy, checklist, identification key, Iran

Introduction

Lucanidae (Coleoptera: Scarabaeoidea) is a family with a worldwide distribution; the total number of species is around 1,700. The taxonomy of this group is quite complex and made difficult by the extremely strong sexual dimorphism and the allometry of male specimens.

Very few papers so far have been dedicated to the stag beetle fauna of Iran. In fact, the only one totally devoted to the Lucanidae of Iran was published by Král (2004). Descriptions or quotations are scattered in other literature dealing more generally with the Scarabaeoidea fauna of the Near East (e.g., Motschulsky 1845, 1870; Petrovitz 1980, 1981; Bunalski *et al.* 2014), Palaearctic (Reitter 1902; Dzhambezhishvili 1979; Nikolajev 1987; Baraud 1993; Bartolozzi & Sprecher-Uebersax 2006), and Asia (Král 1994; Schenk 2003), in revisions (e.g., Kraatz 1860; Planet 1899; Hatch 1928; Weise 1960; Imura 2010), or in Lucanidae catalogs (Maes 1992; Mizunuma & Nagai 1994; Krajcik 2001, 2003; Fujita 2010).

Iran forms a large part of the Iranian plateau, and covers an area of 1,623,779 km². It is bordered to the north by the Caucasus Mountains, Middle Asian natural regions, and the Caspian Sea (-27 m below sea level); to the west by the Anatolian and Mesopotamian regions; to the east by the eastern part of the Iranian plateau (Afghanistan and adjacent west Pakistan) and the Baluch-Sindian region; and finally to the south by the Persian Gulf and Gulf of Oman, which are connected by the latter to the Indian Ocean (Fig. 1). Climatologically, Iran is a predominantly arid and semi-arid country, but the northern slopes of the Alburz ranges and the Caspian lowland receive 800 to 2000 mm annual rainfall, making them the most humid parts of the country. The Dasht-e Kavir and Dasht-e Lut deserts are the driest areas with an annual precipitation of less than 150 mm. The highlands receive between 250 and 800 mm (Zehzad *et al.* 2002).

The purpose of this paper is to summarize with distribution data the nine species of Lucanidae from Iran belonging to five genera (not taking into consideration doubtful or erroneous quotations). This work contributes towards a better understanding of the distribution of the stag beetles in the Iranian territory, as has been recently done for other Coleoptera groups (e.g., Legalov *et al.* 2010; Ghahari & Arzanov 2012; Ghahari & Colonelli 2012; Lason & Ghahari 2013). We summarize below nine species of Lucanidae from Iran belonging to five genera (not taking into consideration doubtful or erroneous quotations), with distribution data.

-.	Mandibles shorter than head	<i>Platycerus caraboides caraboides</i> (female) (Fig. 13)	
8.	Mandibles longer than head with a multidentate laminar process at the inner side	<i>Platycerus primigenius</i> (male) (Fig. 14)	
-.	Mandibles shorter than head	<i>Platycerus primigenius</i> (female) (Fig. 15)	
9.	Underside of the tarsomeres 1–4 with two series of small, symmetrical, longitudinal bristles along the outer margin of each tarsomere, onychium with one longitudinal series of short, dense, regular bristles		10
-.	Underside of the tarsomeres 1–4 with two distal, symmetrical, protuberant tufts on the outer margin of each tarsomere, plantar side of the onychium with one distal tuft of long bristles		14
10.	Mandibles longer than head		11
-.	Mandibles shorter than head		13
11.	Apex of mandibles not bifid	<i>Lucanus xerxes</i> (male) (Fig. 22)	
-.	Apex of mandibles bifid		12
12.	Mandibles with apical fork strong.	<i>Lucanus ibericus ibericus</i> (male) (Fig. 24)	
-.	Apical fork with the inferior tooth small or almost absent	<i>Lucanus ibericus subvelutinus</i> (male) (Fig. 26)	
13.	Antennomere 4 shorter than 3, canthus thin	<i>Lucanus xerxes</i> (female) (Fig. 23)	
-.	Antennomere 4 as long as 3, canthus robust.	<i>Lucanus ibericus</i> (female) ¹ (Figs. 25, 27)	
14.	External border of the mesotibiae and metatibiae with a single strong spine.		15
-.	External border of the mesotibiae and metatibiae with a large spine and 1–3 smaller ones		16
15.	Mandibles curved, with a vertical tooth, head flat	<i>Dorcus parallelipipedus</i> (male) (Fig. 16)	
-.	Mandibles small, without vertical tooth, head with two small tubercles	<i>Dorcus parallelipipedus</i> (female) (Fig. 17)	
16.	Mandibles longer than head, postocular protuberance large.		17
-.	Mandibles shorter than head, postocular protuberance small		18
17.	Mandibles with two median teeth at the inner side, one on the upper margin, one on the lower one	<i>Dorcus peyronis</i> (male) (Fig. 18)	
-.	Mandibles with only one median tooth at the inner side, on the upper border.	<i>Dorcus prochazkai</i> (male) (Fig. 20)	
18.	Sides of prothorax rounded, postocular apophysis larger	<i>Dorcus peyronis</i> (female) (Fig. 19)	
-.	Sides of prothorax more parallel, postocular apophysis smaller.	<i>Dorcus prochazkai</i> (female) (Fig. 21)	

Acknowledgements

We wish to thank the following colleagues for having supplied data or for letting us consult collections: Olof Bistrom (FNHM); Alain Galant (Luttre, Belgium); Gianluca Magnani (Cesena, Italy); Laszlo Nádai (Budapest, Hungary); Alireza Naderi (NMNHI); Klaus-Dirk Schenk (Wehretal, Germany); Joachim Willers (MZB). We thank our colleague Stéphane Boucher (Muséum National d'Histoire Naturelle, Paris, France) and an anonymous reviewer for their useful suggestions. Klaus-Dirk Schenk kindly supplied the photographs of *Dorcus prochazkai*. We are grateful to Ms. Juliet Strachan (Florence, Italy) for the revision of the English text. We are also grateful to Mr Amir Dameri (Shiraz, Iran) who so kindly and cordially hosted one of us (LB) in Shiraz. Very special thanks are due to Miss Kiandokht Mohebbi (Tehran, Iran) for her invaluable help in Iran. The research was partially supported by the Shahre Rey Islamic Azad University.

References cited

- Afshar, J. (1944) *Les noms scientifique de quelques coléoptères de l'Iran et leurs importance en agriculture*. Ministry of Agriculture, Tehran, Iran, 22 pp.
- Baraud, J. (1993) Les Coléoptères Lucanoidea de l'Europe et du Nord de l'Afrique. *Bulletin mensuel de la Société linnéenne de Lyon*, 62, 42–64.
- Bartolozzi, L. & Sprecher-Uebersax, E. (2006) Lucanidae. In: Löbl, I. & Smetana, A. (Eds.), *Catalogue of Palaearctic Coleoptera. Vol. 3. Scarabaeoidea – Scirtoidea – Dascilloidea – Buprestoidea – Byrrhoidea*. Apollo Books, Stenstrup, Denmark, pp. 63–77.
- Bunalski, M., Samin, N., Ghahari, H. & Hawkeswood, T. (2014) Contributions to the knowledge [of] the scarab beetles of Golestan province, northern Iran with checklist of Iranian Scarabaeoidea (Coleoptera). *Polish Journal of Entomology*, 83, 141–170.
<http://dx.doi.org/10.2478/pjen-2014-0011>
- Campadelli, G. (1989) Biological notes on *Dinera ferina* Fall. (Dipt. Tachinidae), a parasitoid of *Sinodendrum cylindricum* L. (Col. Lucanidae). *Bollettino dell' Istituto di Entomologia "Guido Grandi" della Università degli Studi di Bologna*, 43, 75–78.

1. The females of the two subspecies (*Lucanus ibericus ibericus* and *Lucanus ibericus subvelutinus*) are extremely similar and hard to separate morphologically.

- Cox, K., Thomaes, A., Antonini, G., Zilioli, M., De Gelas, K., Harvey, D., Solano, E., Audisio, P., McKeown, N., Shaw, P., Minetti, R., Bartolozzi, L. & Mergeay J. (2013) Testing the performance of a fragment of the COI gene to identify western Palaearctic stag beetle species (Coleoptera, Lucanidae). *In: Nagy, Z.T., Backeljau, T., De Meyer, M. & Jordaens, K. (Eds.), DNA barcoding: a practical tool for fundamental and applied biodiversity research. Zookeys*, 365, 105–126.
<http://dx.doi.org/10.3897/zookeys.365.5526>
- Didier, R. & Séguy, E. (1953) Catalogue illustré des Lucanides du Globe. Texte. *Encyclopédie entomologique (A)*, 27, 1–223.
- Dzhambazishvili, Y.A.S. (1979) *Plastinchatousyie zhuki Gruzii [Coleoptera: Scarabaeoidea of Georgia]*. Mecniyereba, Tbilisi, Georgia, 279 pp. [in Russian]
- Fujita, H. (2010) The lucanid beetles of the world. *Mushi-Sha's Iconographic Series of Insects*, 6, 1–472.
- Ghahari, H. & Arzanov, Y.G. (2012) Curculionidae (Coleoptera: Curculionoidea) from Lorestan Province, Western Iran. *Archives of Biological Science, Belgrade*, 64, 359–364.
<http://dx.doi.org/10.2298/abs1201359g>
- Ghahari, H. & Colonnelli, E. (2012) Curculionoidea from Golestan province, northern Iran (Coleoptera). *Fragmenta entomologica, Roma*, 44, 101–161.
- Gusakov, A.A. (2003) New species of the lamellicorn beetles (Coleoptera: Scarabaeoidea: Lucanidae, Scarabaeidae) from the Palaearctic region. *Bulletin of the Moscow Society of Naturalists*, 108, 26–30. [in Russian, English abstract]
- Hatch, M.H. (1928) The species of *Sinodendron*. *The Pan Pacific Entomologist*, 4, 175–176.
- Iablokov-Khnozorian, S.M. (1967) *Nasekomye zhestkokrylye. Fauna Armyanskoy SSR. Tom VI. Plastinchatousyie (Scarabaeoidea)*. Akademia nauk Armyanskoy SSR, Yerevan, Armenia, 223 pp. [in Russian]
- Imura, Y. (2010) *The genus Platycerus of East Asia*. Taita Publishers, Hradec Kralove, Czech Republic, 240 pp.
- Kraatz, G. (1860) Ueber die europäischen Hirschkäfer (Zweites Stück). *Berliner Entomologische Zeitschrift*, 4, 265–278.
- Krajcik, M. (2001) *Lucanidae of the World. Catalogue - Part I. Checklist of the Stag Beetles of the World (Coleoptera: Lucanidae)*. Printed by the Author, Most, Czech Republic, 108 pp.
- Krajcik, M. (2003) *Lucanidae of the World. Catalogue - Part II. Encyclopaedia of the Lucanidae (Coleoptera: Lucanidae)*. Printed by the Author, Plzen, Czech Republic, 197 pp.
- Král, D. (1994) *Sinodendron yunnanense* sp. nov. from China, with a key to the Palaearctic species of this genus (Coleoptera: Lucanidae). *Entomological Problems*, 25, 47–52.
- Král, D. (2004) *Lucanus (Pseudolucanus) xerxes* sp. nov. (Coleoptera: Lucanidae) from the Zagros Mts., with some distribution data to the lucanid fauna from Iran. *Acta Societatis Zoologicae Bohemicae*, 68, 183–189.
- Lason, A. & Ghahari, H. (2013) A checklist of the Kateretidae and Nitidulidae of Iran (Coleoptera: Cucujoidea). *Zootaxa*, 3746 (1), 101–122.
<http://dx.doi.org/10.11646/zootaxa.3746.1.4>
- Legalov, A.A., Ghahari, H. & Arzanov, Y.G. (2010) Annotated catalogue of Curculionid-beetles (Coleoptera: Anthribidae, Rhynchitidae, Attelebidae, Brentidae, Brachyceridae, Dryophthoridae and Curculionidae) of Iran. *Amurian zoological Journal*, 2, 191–244.
- Maes, J.M. (1992) Lista de los Lucanidae (Coleoptera) del mundo. *Revista Nicaraguense de Entomología*, 22, 1–60. 22B, 61–121.
- Mizunuma, T. & Nagai, S. (1994) The lucanid beetles of the world. *Mushi Sha'Iconographic Series of Insects*, 1, 1–339.
- Modarres Awal, M. (1997) Family Lucanidae (Coleoptera). *In: Modarres Awal, M. (Ed.), List of Agricultural Pests and their Natural Enemies in Iran*. Ferdowsi University Press, Mashhad, Iran, pp. 178.
- Motschulsky, V. (1845) Remarques sur la collection de Coléoptères russes. *Bulletin de la Société des Naturalistes de Moscou*, 18, 1–127.
- Motschulsky, V. (1870) Énumération des nouvelles espèces de Coléoptères rapportés de ses voyages. Lucanides. *Bulletin de la Société Impériale des Naturalistes de Moscou*, 43, 18–49.
- Nikolajev, G.V. (1987) *Plastinchatousyie zhuki (Coleoptera, Scarabaeoidea) Kazakhstana i Sredney Azii [Scarabaeoidea (Coleoptera) of Kazakhstan and Middle Asia]*. Izd. Nauka KazSSR, Alma-Ata, Kazakhstan, 232 pp. [in Russian]
- Nonfried, A.F. (1905) Neue Lucaniden. *Berliner entomologische Zeitschrift*, 50, 11–13.
<http://dx.doi.org/10.1002/mmnd.19050500105>
- Petrovitz, R. (1980) Österreichische Entomologischen Expeditionen nach Persien und Afghanistan. Beiträge zur Coleopterenfauna. Teil XII, Weiteres über Lamellicornia aus Iran. *Annalen der Naturhistorischen Museum Wien*, 83, 597–638.
- Petrovitz, R. (1981) Ergebnisse der Tschechoslovakish-Iranischen Entomologischen Expeditionen nach dem Iran (Mit Angaben über einige Sammelresultate in Anatolien). Coleoptera: Lamellicornia. *Acta entomologica Musei Nationalis Pragae*, 40, 317–332.
- Planet, L. (1899) *Essai monographique sur les Coléoptères des Genres Pseudolucane et Lucane*. Deyrolle Fils Ed., Paris, 111 pp.
- Reiche, L. & Saulcy, F. de (1856) Espèces nouvelles ou peu connues de Coléoptères, recueillies par M. F. de Saulcy, membre de l'Institut, dans son voyage en Orient, et décrites par MM. L. Reiche et Félicien de Saulcy. (Suite) (1). *Annales de la Société Entomologique de France, Series 3*, 4, 353–422.
- Reitter, E. (1902) Drei neue Coleopteren aus Italien und Persien. *Wiener entomologische Zeitung*, 21, 81–82.
- Sakenin, H., Eslami, B., Samin, N., Imani, S., Shirdel, F. & 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. *Plant and Ecosystem*, 16, 27–46. [in Persian, English abstract]
- Schenk, K.-D. (2003) Beitrag zur Kenntnis der Hirschkäfer Asiens (Coleoptera, Lucanidae). *Facetta*, 22, 6–28.
- Schenk, K.-D. & Fiedler, F. (2011) Ein neuer Fund von *Lucanus (Pseudolucanus) busignyi* in der Türkei. *Beetles World*, 5, 11–16.
- Weise, E. (1960) Die paläarktischen Arten der Gattung *Platycerus* Fourcr. (Col., Lucanidae). *Entomologische Blätter*, 56, 133–149.
- Zehzad, B., Kiabi, B.H. & Madjnoonian, H. (2002) The natural areas and landscape of Iran: an overview. *Zoology in the Middle East*, 26, 7–10.
<http://dx.doi.org/10.1080/09397140.2002.10637915>