

## Research Article

## Faunistic study of the subfamilies Pangoniinae and Chrysopsinae (Dip., Tabanidae) of East Azarbaijan province-Iran

Fatemeh Moayyed Mazraeh<sup>1</sup>, Samad Khaghaninia<sup>1\*</sup>, Shahzad Iranipour<sup>1</sup> and Ali Yavuz Kilic<sup>2</sup>

1. Department of Plant Protection, Faculty of Agriculture, University of Tabriz, Tabriz, Iran.

2. Department of Biology, Faculty of Science, Anadolu University, 26470 Eskişehir, Turkey.

**Abstract:** The subfamily Pangoniinae including the species *Pangonius pyritosus* Loew, 1859 as well as the species *Chrysops hamatus* Loew, 1858 (Chrysopsinae) are recorded for the first time for Iranian fauna. Diagnostic characters besides supplementary photos of the new records are provided.

**Keywords:** Tabanidae, New records, *Pangonius*, *Chrysops*

## Introduction

Tabanidae is one of the largest families in the order Diptera with more than 4300 described species worldwide. This family consists in medium to large flies (10-25mm body length long). Blood sucking females can transmit various diseases to human and domestic animals, while males visit flowers and feed on nectar and pollen. Larvae of this family are carnivorous (Chaval *et al.*, 1972). Four subfamilies Panponiinae, Chrysopsinae, Tabaninae and Sepsidinae are currently considered in this family (Manrique Saide *et al.*, 2001).

The subfamily Pangoniinae is divided into four tribes, Pangoniini, Scionini, Phildichini and Sepsidini. The members of this group are characterized by well- developed ocelli, eyes usually bare and vein R<sub>4</sub> nearly always with a strong appendix. The genus *Pangonius* Latreille, 1802 consists of nearly large and attractive horse flies with a long proboscis,

usually without frontal calli, antennae almost longer than the head length.

The Chrysopsinae are divided into three tribes, Bouvieromyiini, Chrysopsini and Rhinomyzini. These groups are slender forms, with long and slender antennae, a wide frons with a large callus and often with additional facial and genal calli, and the eyes bare with a black spots.

The genus *Chrysops* Meigen, 1803 includes small to medium sized flies with yellow or black body and brown pattern in wings; frons in female relatively broad; frontal callus prominent, rounded or oval in shape; antennae very long and slender and longer than head in deep; eyes metallic; emerald green or golden yellow with dark spotted in alive adults (Chaval *et al.*, 1972).

Numerous studies have been conducted on the subfamilies Pangoniinae and Chrysopsinae in the world (Fergosen, 1924, Majer, 2001, Al-talafha *et al* 2004, Ganeva, 2008, Muller *et al.*, 2011, Zeegers and Müller, 2012, Kilic and Ozturk, 2002). *Pangonius pyritosus* Loew, 1859 is the first report of subfamily Pangoniinae in Iran. Iranian Chrysopsinae has been poorly known. Prior to this study, Abbassian (1964) recorded *Chrysops caecutiaus* Linneaus, 1758,

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\*Corresponding author, e-mail: skhaghaninia@gmail.com

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*Chrysops flavipes* Meigen, 1804, *Nemorius caucasicus* Olsofjev, 1971, *Nemorius harvathi* Szilady, 1976, *Nemorius irritans* (Ricardo, 1901), *Nemorius shapuricus* (Abbassian-Lintzen, 1960), *Nemorius vitripennis* (Meigen, 1820) and *Silvius ochraceus* Loew, 1858 from Iran. Thus extension of our knowledge by identification of further members of these subfamilies, as well as the mentioned genera would be subject to the present and future studies.

### Materials and Methods

The specimens were collected, using a sweeping net, from grasslands and forests of East Azarbaijan province, at the northwest of Iran during 2007-2015 with longitude from 36°45' to 39°26'N and altitude from 45°5' to 48°22'E. After killing in a cyanide bottle, specimens were mounted by 0 and 1 sized pins. The species were identified based on valid keys such as Chaval *et al.* (1972). All specimens were deposited in the Insect collection of Professor Hassan Maleki Milani, Tabriz, Iran (ICHMM).

### Results

In the present study three species belonging to two subfamilies, Chrysopsinae and Pangoniinae were collected and identified which among them *Chrysops (Petersenichrysops) hamatus* Loew, 1858 and *Pangonius pyritosus* Loew, 1859 are new records for the Iranian insect fauna. Also recent record is the first report of the subfamily Pangoniinae in Iran.

#### *Chrysops caecutiaus* (Linneaus, 1758)

**Material examined:** East Azarbaijan province, Arasbaran, (Chichakli), 38°47'N, 46°31'E, 2168m, (1♂), 16 July 2013, Leg. S. Khaghaninia.

**Distribution:** Ireland, Scandinavia, Portugal, Greece, Turkey, Caucasus, China, Jordan, Iran,

Kazakhestan, Mongolia, Russia, Lebanon (Muller *et al.*, 2012)

#### *Chrysops (Petersenichrysops) hamatus* Loew, 1858 (Fig. 1, A-F)

**Material examined:** East Azarbaijan province, Bostanabad, Qurigol, 37°54'N, 46°42'E, 1918m, (1♀), 14 August 2013, Leg. S. Khaghaninia.

**Distribution:** Sweden, Bulgaria, Turkey, Lebanon (Chaval *et al.* 1972). New record for the Iranian fauna.

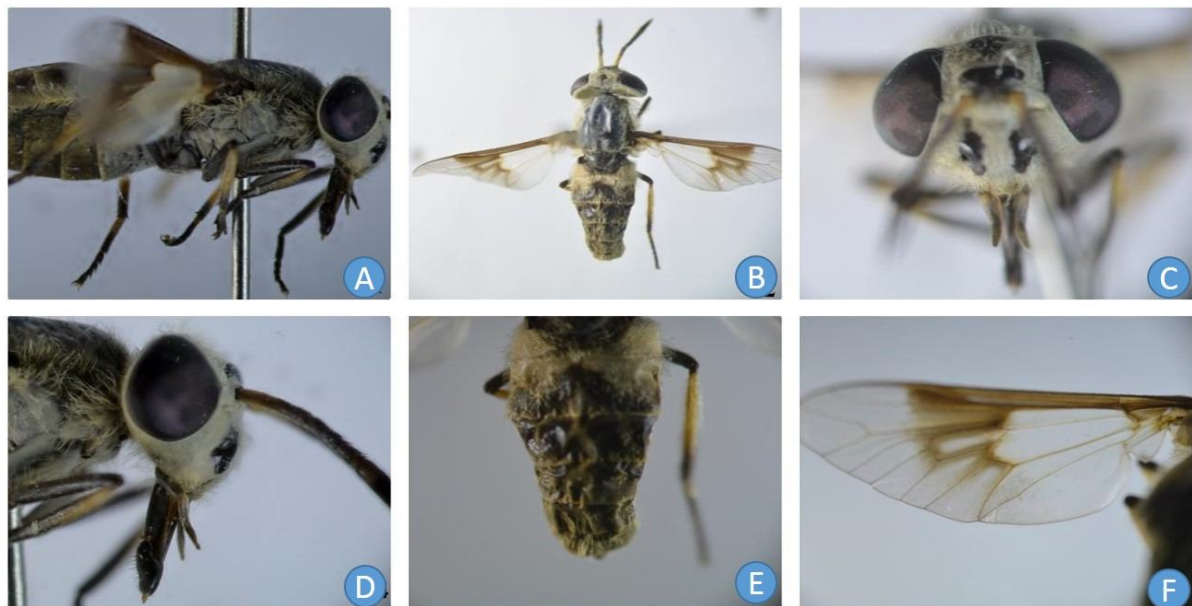
**Diagnostic characters:** Body size 9mm, frons with greyish dusting, distinctly broader than high; lower callus large and glossy black, vertex glossy black, antennae large and slender and first segment very slender, brownish, segments 2 - 3 black, segment 3 somewhat brownish at the base and slightly broader than segment 1 and 2; palpus black, slender and pointed, thorax black, plural plates with greyish dusting and covered by long hairs; coxa and femora black, tibia yellowish brown (exceptly apical half of anterior pair and apices of posterior pairs); wings clear with light brown pattern; halteres dark brown; tergites 1-2 yellow; sternites 1-2 yellow with dark medial pattern.

#### *Pangonius pyritosus* Loew, 1859 (Fig. 2, A-C)

**Material examined:** East Azarbaijan province, Arasbaran, (Chichakli), 38°47'N, 46°31'E, 2168m, (1♀), 24 June 2014, Leg. S. Khaghaninia.

**Distribution:** Portugal, Spain, France, Italy, Turkey, Caucasus, Switzerland, Australia, Hungary, Netherlands, Germany (Chaval *et al.*, 1972). New record for the Iranian fauna.

**Diagnostic characters:** Body size 17 mm; black eyes without patterns and hairs, face entirely black with yellow hairs; antenna reddish yellow, apical half of flagellum blackish; thorax glossy black, mesonotum and scutellum with yellow hairs; tibia and tarsi black; wings with light brown pattern and vein R<sub>4</sub> with appendix, halteres dark brown; tergite 1-2 with brown blotch.



**Figure 1** *Chrysops hamatus* (Loew, 1858) (female), A: lateral view, B: dorsal view, C: frontal view of head, D: lateral view of head, E: dorsal view of abdomen, F: wing.



**Figure 2** *Pangonius pyritosus* Loew, 1859 (Female), A: lateral view, B: wing, C: frontal view of head.

## Discussion

The genus *Pangonius* mainly distributed in Mediterranean region and only two rather uncertain species were described from outside of this region (Chaval *et al.*, 1972). Mediterranean climate is characterized by mild wet winters and warm to hot, dry summers (Lionello *et al.*, 2006). Although this genus has a limited distribution in Iran, this study is extending its geographical area and the species *Pangonius pyritosus* is reported for the first time from Iran with similar climatic condition.

Two species belonging to the subfamily Chrysopsinae were identified from surveys in areas having wet lands and high humidity (Qurigol and Chichakli) so it is supposed that members of this subfamily mostly prefer wet area. Our results are in agreement with the observations of Pechuman (1973).

## References

- Abbassian-Lintzen, R. 1964. Tabanidae (Diptera) of Iran X. List key and distribution of species occurring in Iran. *Annales de parasitologie* (Paris), 39 (3): 285-327.
- Al Talafha, H., Amr, Z.S., Abu Baker, M. and Katbeh Bader A. 2004. Horse flies of Jordan. *Medical and Veterinary Entomology*, 18 (4): 208-211.
- Chaval, M., Lyneborg, I. and Mouncha, J. 1972. The horse flies of Europe (Diptera: Tabanidae) *Entomological Society of Copenhagen*, pp: 38-44, 500pp.
- Fergosen, E. W. 1924. Note on the Nomenclature of Australian Tabanidae: subfamily Pangoniinae. *Bulletin of Entomological Research*, 14 (3): 251-263.
- Ganeva, D. 2008. Horse flies (Diptera: Tabanidae) of Surnena Sredna Gora mountain, Bulgaria. *Trakia Journal of Sciences*, 9 (3): 13-16.
- Kilic, A. Y. and Ozturk, R. 2002. Studies on Tabanidae (Diptera) fauna of Sultan mountain range. *Anadolu University Journal of Science and Technology*, 3 (3): 307-316.
- Lionello, P., Malanotte-Rizzoli, P., Boscolo, R., Alpert, P., Artale, V., Li, L., Luterbacher, J., May, W., Trigo, R., Tsimplis, M., Ulbrich, U. and Xoplaki, E. 2006. The Mediterranean climate: An overview of the main characteristics and issues. *Developments in Earth and Environmental Sciences*, 4 (8): 1-26.
- Majer, J. 2001. Contribution to the Tabanidae (horse and deer flies) found of Hungary. I. Pangoniinae and Chrysopsinae (Diptera: Tabanidae). *Folia Entomologica Hungarica*, 62: 247-255.
- Manrique-Saide, P., Delfin-Gonzalez, H. and Ibanez-Bernal, S. 2001. Horseflies (Diptera: Tabanidae) from protected areas of the Yucatan peninsula, Mexico. *Florida Entomologist*, 4 (3): 352- 362.
- Muller, G. C., Hogsette, J. A., Revay E. E., Kravchenko, V. D., Leshvanov, A. and Schlein, Y. 2011. New records for the horse fly fauna (Diptera: Tabanidae) of Jordan with remarks on ecology and zoogeography. *Journal of Vector Ecology*, 36 (2): 447-450.
- Muller, G., Zeegers, T., Hogsette, J., Revay, E., Kravchenko, V., Leshvano, A. and Schlein, Y. 2012. An annotated checklist of the horse flies (Diptera: Tabanidae) of Lebanon with remarks on ecology and zoogeography: Pangoniinae and Chrysopsinae. *Vector Ecology*, 137 (5): 216-220.
- Pechuman L. L. 1973. Horse flies and deer flies of virginia (Diptera: Tabanidae). *Virginia Polytechnic Institute and State University, Research Division Bulletin* 81: 1-92.
- Zeegers, Th. and Müller, G.C. 2012. A new species of *Pangonius* (Diptera: Tabanidae) from occupied Palestine. *Acta Tropica*, 125 (3): 247.

## مطالعه فون مگس‌های زیرخانواده‌های (Diptera: Tabanidae) *Chrysopsinae* و *Pangoniinae* در استان آذربایجان شرقی-ایران

فاطمه مؤید مزرعه<sup>۱</sup>، صمد خاقانی‌نیا<sup>۱\*</sup>، شهزاد ایرانی‌پور<sup>۱</sup> و علی یاووز کیلیچ<sup>۲</sup>

۱- گروه گیاه‌پزشکی، دانشکده کشاورزی، دانشگاه تبریز، تبریز، ایران.

۲- گروه زیست‌شناسی، دانشکده علوم، دانشگاه آناتولی، اسکی‌شهر، ترکیه.

پست الکترونیکی نویسنده مسئول مکاتبه: skhaghaninia@gmail.com

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**چکیده:** زیرخانواده *Pangoniinae* شامل گونه *Pangonius pyritosus* Loew, 1859 هم‌چنین گونه *Chrysops hamatuus* Loew, 1858 برای اولین بار از فون ایران گزارش می‌شوند. مشخصات افتراقی همراه با عکس‌های گونه‌های رکورد ارائه شده است.

**واژگان کلیدی:** *Chrysops*, *Pangonius*, Tabanidae، گزارش جدید.