

Forensically Important Blow Flies (Diptera: Calliphoridae) of Iran with two new records for the country

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Abstract

Blowfly (Diptera: Calliphoridae) identification is a pre-requisite to the field of sanitary biology, medical, veterinary, and forensic entomology. The specimens were collected using fly traps in eight regions of Fars province, Iran. A total of 10 species belonging to four genera were recorded out of which *Calliphora pattoni* Aubertin, 1931 and *Chrysomya phaonis* (Seguy, 1928) are new records for the country.

Keywords: *Calliphoridae*, check list, Blowfly, Fars province, Iran.

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Introduction

The members of Calliphoridae (Diptera: Oestroidea) represent cosmopolitan group of calypterate flies, widely distributed in all the zoogeographical regions of the world. The group is represented by 1500 species included in about 150 genera from the world (Triplehorn and Johnson, 2005; Tomberlin *et al.*, 2011). This heterogenous group of flies is of great significance in terms of medical, veterinary, and economic concerns. Some of the species belonging to subfamily Calliphorinae, Chrysomyinae, Luciliinae and Toxotarsinae are well known for their potential to calculate post-mortem interval (minPMI) in homicidal cases, parasitizing animal tissue and for transmission of pathogenic microorganisms (Hall & Wall, 1995; Rognes, 1991; Hassan *et al.*, 2018). Adults of Calliphoridae are medium to large sized flies, often metallic blue, or metallic green in colour. These are among the first insects to arrive at corpse and the larvae play a significant role in decomposition of the carrion (Byrd & Castner, 2009). Because of their ubiquitous presence, forensic entomologists strongly rely on blow flies as substantial evidence, and its reliability depends on correct species identification of the collected insect evidence

from the crime scene (Akbarzadeh *et al.*, 2015). Herein, we present a checklist of forensically important blow flies in Fars Province, with new records for the country.

Materials and Methods

The study was conducted in the months of June to October for two consecutive years (2015 and 2016). The samples were collected from different parts of Fars province (27°2'-32°42'N, 50°42'-55°38'E), which include Shiraz, Marvdasht and Sivand in North, Kuhmare Sorkhi in South, Maharlu in Southeast, Beyza, Ghalat and Ardakan in Northwest (Fig.1). For collection of blow fly specimens, pyramidal traps and plastic water bottle fly traps were employed. A dog carcass was also used as bait to collect maximum diversity of forensically important flies from the region. The corpse was placed in a metal frame cage (1.5m²) covered with mesh wire screen, to protect the carcass from stray animals and vertebrate scavengers. The blow fly specimens thus collected were identified following the descriptions as detailed in Senior-White *et al.* (1940); Akbarzadeh *et al.* (2015).

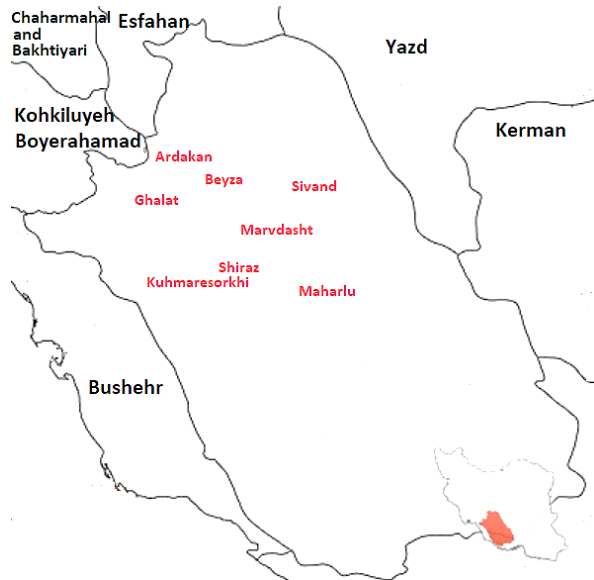


Figure 1: Blow fly collection localities in Fars Province, Iran

Results

A total of 18677 calliphorid specimens were collected from the study area, falling in four subfamilies: Calliphorinae, Luciliinae, Chrysomyinae, and Polleniinae. A total of 10 species were collected of which *Calliphora pattoni* and *Chrysomya phaonis* are new records for the country (Table 1).

Discussion

Blowflies occur in all biogeographic regions of the world (Thompson, 2006) and have been extensively studied in South America (Carvalho and Mello-Patiu, 2008), Argentina (Mariluis *et al.*, 2008), North America (Whitworth, 2006; Marshal *et al.*, 2011), Portugal (Prado e Castro *et al.*, 2016), East and South Asia (Bharti, 2011; Yang *et al.*, 2014; Hassan *et al.*, 2018), and Afrotropical region (Irish *et al.*, 2014). Blow flies of the middle East region were studied by Akbarzadeh *et al.* (2015) and a key was provided. The present study was conducted in the Fars Province of Iran (one of the 31 provinces) located in the southern part of the country. Due to the topography of the studied region, the area witnesses distinct climatic seasons and thus support the development of varied blow fly species. Akbarzadeh *et al.* (2015) and Keshavarzi *et al.* (2016) reported the presence of *Calliphora vicina*, *Lucilia sericata*, *Chrysomya albiceps*, *Chrysomya bezziana*, *Chrysomya rufifacies* from the region. The present study has added *Pollenia rudis* as new record for the province and *Calliphora pattoni* and *Chrysomya phaonis* as new records for the country.

Table 1: List of blow fly species collected from Fars Province region of Iran

Family	Subfamily	Genus	Species
Calliphoridae	Calliphorinae	<i>Calliphora</i>	<i>Calliphora vicina</i> (Robineau-Desvoidy, 1830)
			<i>Calliphora pattoni</i> Aubertin, 1931
	Luciliinae	<i>Lucilia</i>	<i>Lucilia cuprina</i> (Wiedemann, 1830)
			<i>Lucilia sericata</i> (Meigen, 1826)
	Chrysomyinae	<i>Chrysomya</i>	<i>Chrysomya albiceps</i> (Robineau-Desvoidy, 1830)
			<i>Chrysomya bezziana</i> (Villeneuve, 1914)
			<i>Chrysomya megacephala</i> (Fabricius, 1794)
			<i>Chrysomya phaonis</i> (Seguy, 1928)
			<i>Chrysomya rufifacies</i> (Macquart, 1943)
	Polleniinae	<i>Pollenia</i>	<i>Pollenia rudis</i> (Robineau-Desvoidy, 1830)

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