

Short Communication

First Palaearctic Record of the Bird Parasite *Passeromyia heterochaeta* (Diptera: Muscidae) from the Iranian Persian Gulf Islands

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Abstract

Background: *Passeromyia* is a muscid genus previously known from the Old World Afrotropical and Oriental regions and eastwards from Australia and the West Pacific. The genus is known from nest-dwelling larvae which may be parasites of the nestlings. This study was aimed to identify of the *Passeromyia* species in the Iranian Persian Gulf Islands.

Methods: The flies were collected during April 2010 to March 2011 on the 4 Iranian Persian Gulf islands, Greater Tunb, Lesser Tunb, Abu-Mousa and Qeshm with fly bottle trap and entomological net.

Results: During this sampling, 18 representatives of *P. heterochaeta*, a species with free-living haematophagous larvae, have been collected. The species is reported herein from Greater Tunb, Lesser Tunb, Abu-Mousa and Qeshm islands.

Conclusions: This is the first Palaearctic record of the species as well as the first report of the genus *Passeromyia* from the Palaearctic Region.

Keywords: *Passeromyia heterochaeta*, Bird parasite, Palaearctic, Iran, Persian Gulf, New record

Introduction

Passeromyia Rodhain and Villeneuve, 1915 is a small muscid genus known from only five valid species (Pont 1974). Representatives of the genus occur in the Old World Afrotropical and Oriental regions as well as Australia and the West Pacific (Pont 1974). Nests-dwelling, trimorphic larvae act as scavengers or parasites of the nestlings (Pont 1974, Skidmore 1985). In Muscidae, larval haematophagous behaviour has also been reported in *Philornis* Meinert, 1890, but the genus is restricted to the New World. In both genera larvae may realize their behaviour as free-living saprophages or either free-living or under skin haematophages. Among representatives of the genus *Passeromyia*,

P. heterochaeta (Villeneuve 1915) is the only species present in the Afrotropical Region (Couri 2007). The species is widespread in this region, and to date was reported from Botswana, Burundi, Democratic Republic of the Congo, Kenya, Nigeria, Senegal, South Africa, Tanzania, Uganda, Zambia, Zimbabwe (Pont 1974).

In the Oriental Region *P. heterochaeta* was reported from Burma, China, India, Indonesia (Sumatra), Sri Lanka, Taiwan (Pont 1974). The biology and natural history of *P. heterochaeta* has been relatively well studied. Larvae of *P. heterochaeta* pierce the skin of the nestlings and subsequently feed as a free-living hematophages, although

were also observed feeding on dead nestlings, penetrating the body and in the nostrils of the host (Pont 1974). The species was reported from a wide range of hosts and detailed list of those was provided by Pont (1974), nevertheless, impact of larval activity on certain host species population is unknown.

This study was aimed to identify and record of the *Passeromyia* species in the Iranian Persian Gulf islands.

Materials and Methods

Insects were collected during a sampling period from April 2010 to March 2011. The area of entomological survey included Iranian Persian Gulf islands belonging to Hormozgan Province in southeastern Iran: Greater Tunb (26°30'N–55°16'E, 10.3 km²), Lesser Tunb (26°14'N–55°08'E, 2.1 km²), Abu-Mousa (25°51'–26°19' N, 54°26'–55°19' E, 68.8 km²) and Qeshm (26°32'–27°06'N, 55°15'–56°30'E, 1491 km²). Flies were collected with fly bottle trap and entomological net, killed with ethyl acetate vapours, pinned, labelled and identified by the first author (AG) according to Pont (1974) and Couri (2007). Species identification of selected specimens was verified based on the collection of the Natural History Museum of Denmark (Copenhagen, Denmark). Reference specimens were deposited in the collection of the Health Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran and the Chair of Ecology and Biogeography,

Nicolaus Copernicus University, Toru , Poland. Photos were taken with Nikon 8400 digital camera mounted on a Nikon SMZ 1500 stereomicroscope (Nikon Corp, Tokyo, Japan). Figure was prepared with Combine ZP image stacking software.

Results

During the time of an entomological survey on the Iranian Persian Gulf Islands, carried out from April 2010 to March 2011, a total of 18 specimens representing *P. heterochaeta* were collected (Table 1). This is the first report of bird parasite species *P. heterochaeta* from the area of the Persian Gulf.

Representatives of *Passeromyia* can be differentiated from other houseflies based on the following combination of characters: large truncate lower squama, bare anepimeron and prosternum, meron below posterior spiracles covered with hairs, plumose arista and bowshaped wing vein M₁, long antennae and dichoptic males (Pont 1974). Adults of *P. heterochaeta* are moderately large and robust flies (body length 8–9 mm). The ground colour of thorax and abdomen is black, however the scutellum is yellow on apical half or more. *Passeromyia heterochaeta* can be discriminated from other species of the genus by the shifting priunose pattern on the abdomen, marked vittae on the dorsal surface of thorax, and both ash-grey dusted (Pont 1974). Eyes are haired, halteres brown, calypters whitish and wings are hyaline (Fig. 1).

Table 1. *Passeromyia heterochaeta* collected from the Iranian Persian Gulf islands from April 2010 to March 2011

Month \ Island	April	May	Jun	...	October	Total
Abu-Mousa	1		1			2
Greater Tunb	1	2				3
Lesser Tunb		1				1
Qeshm	1	1, 7	2		1	11
Total	3	11	3		1	18



Fig. 1. Female of *Passeromyia heterochaeta*, lateral view

Discussion

Soós and Papp (1986) in the Catalogue of Palaearctic Diptera defined the borders of the Palaearctic Region based on the already defined borders of the Afrotropical and Oriental Regions. For a consistency we followed these limits of the Palaearctic Region herein, hence according to Soós and Papp (1986) “in North Africa and the Arabian Peninsula the border extends in the Sahara along the Tropic of Cancer and joins south western confines of Pakistan”. Thus southern Iran and particularly Iranian Persian Gulf islands are discerned as a part of the Palaearctic Region. Summarizing, this is the first report of both the species *P. heterochaeta* and the genus *Passeromyia* from the Palaearctic region, hitherto unknown from this region (Pont 1986).

Evidence of range expansions have recently been provided for some species of dipterans of primary medical and veterinary importance (e.g. Grassberger et al. 2003, Szpila et al. 2008, Velasquez et al. 2013). Some representatives of *Philornis*, recently introduced to Galápagos Islands, have been revealed as causing serious mortality in birds, particularly Darwin’s finches (O’Connor et al. 2010).

Conclusion

Passeromyia heterochaeta larvae exhibit parasitic behaviour and the species was hitherto unknown from the Persian Gulf area. Future studies are necessary to establish particular distribution of *P. heterochaeta* and its effect on the local avian fauna.

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