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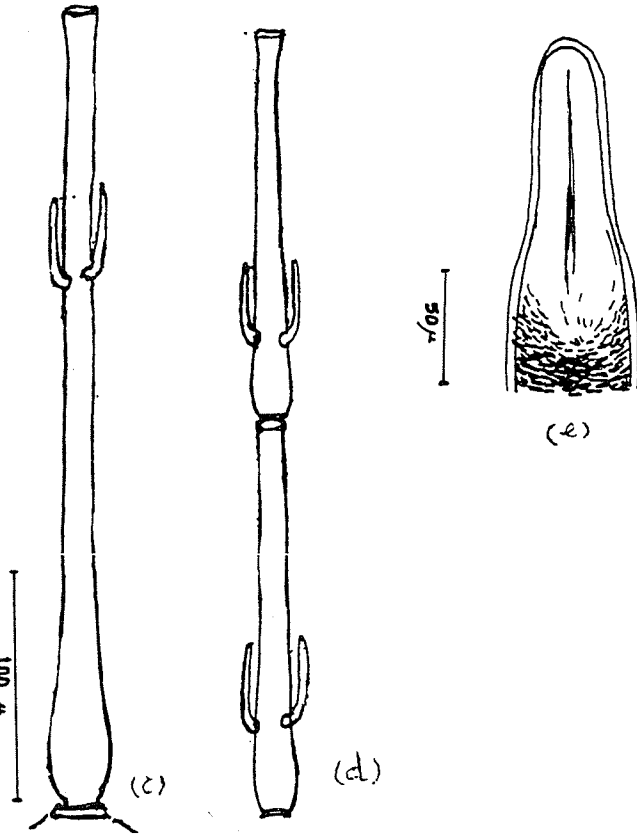
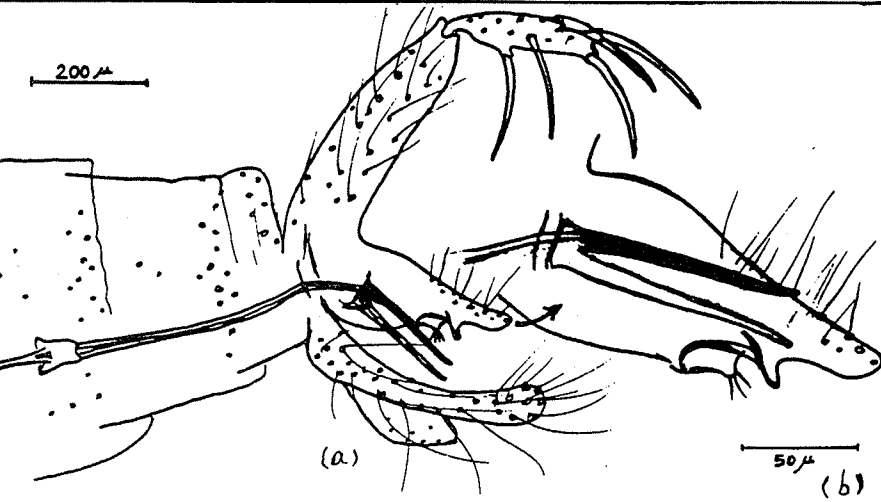


Fig 3 - *Phlebotomus nadimi* N.SP. : (a) Terminalia ; (b) Paramere and Aedeagus ; (c) A3 ; (d) A4 + A5 ; (e) Pharynx.

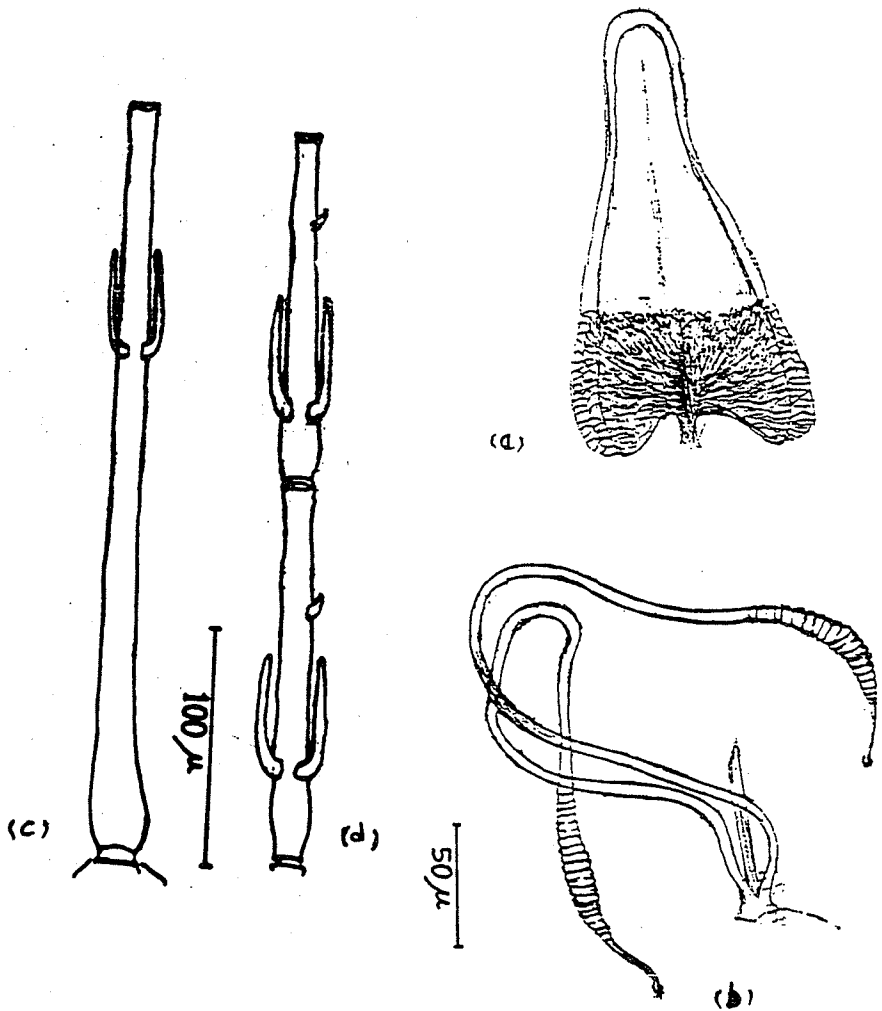


Fig 2. *Phlebotomus ilami*, N.SP. : (a) Pharynx ; (b) Spermatheca ;
(c) A3 ; (d) A4 + A5.



Fig 1- Ilam province , showing collection sites of *Phlebotomus ilami* (*) and *Phlebotomus nadimi* (+).

ventral surface , and some short terminal hairs. Aedeagus 0.1 mm long with additional sclerite 0.11 mm ; both of them are slightly long and thin fig (a,b). Lateral lobe: 0.22 mm long with several hairs. Genital pump: 0.13 mm long and filament 0.31 mm and F/P=2.3.

We place this new species in the subgenus *Euphlebotomus* on the basis of similarities with the known species of this group reported by other investigators previously (11,1,7,2).

Discussion

Some new species of sand-flies such as *Ph.ansarii* , *S.iranica* *Ph.Kazeruni* , *Ph.salehii* and *Ph.mesghalii* were described from Iran ; In 1957 and 1961 (4,3) , 1964 (10) , 1965 and 1968 (5,6) , 1968 (8) and 1970 (9).

Now , in this study , we have found two new species of *Phlebotomus* in southwest of Iran. This means that still there is room for further studies on systematic investigation of sandfly species especially in hilly areas of the country.

Acknowledgments

We express our gratitude to Dr. A.Mesdaghinia , Dean of School of Public Health and Institute of Public Health Research , Tehran University of Medical Sciences and to the staff of School of Medical Sciences , and Tarbiat Modarres University , for their interest and support in this study. Also our thanks to Dr. Yaghoubi-Ershadi , E.Mosavi and Gh.Sharifi-Rad which assisted us in the laboratory and field activities , and to Dr.A.Nadim for his continued encouragement.

The two new species are :

1) *Phlebotomus (Larrousius) ilami*, N.Sp.

Female (♀)-The description is made on the basis of two females of this species collected by sticky traps from outdoor mountainous areas, one female from the vicinity of Ilam (Center of the province), on 8/7/1994 and the other from Mehr district near Ilam on 23/7/1994, with the size : 2.7 mm, wing : length 2.25 mm, width 0.58 mm, wing index $\alpha/\beta = 1.3$. Antenna: $A_3 = 0.33$ mm, $A_3 = A_4 + A_5$, $A_3/E = 1.4$, Fig 2 (c d). Ascoid 4 = 0.05 mm and 0.03 of segment A_4 , Epipharynx : 0.235 mm. Palpa : formula 1-4-2-3-5 and RL: 1:3:3:3:4:8, Cibarium : unarmed, Pharynx : length to breadth = 2; armature occupies about 0.3 of the length of pharynx; armature's scales are condensed in the center and appear as a visible network in the margins, about 20 rows of scales in height, fig 2 (a). Spermatheca : with a long and thin neck, length of neck 0.4 of the capsule. The capsule of spermatheca is narrow with about 18-23 segments and is wider in the middle, fig 2 (b).

We place this new species in the subgenus *larrousius*. It differs from other known species in having a remarkable pharyngeal armature, resembling the peacock's feather, unlike other species of this subgenus, which have a dotted or dashed-line pharyngeal armature (11,1,7,2).

This species is named *Phlebotomus ilami*, after the location where it was discovered.

2) *Phlebotomus (Euphlebotomus) nadimi*, N.Sp.

Male (♂)-The description is made on the basis of two male of this species; both specimens were collected by sticky-traps in outdoor mountainous areas in vicinity of Ilam, on 8/7/1994, with the size : 2.3 mm. Wing : length 2.1 mm, width 0.4 mm, Wing index $\alpha/\beta = 1.5$. Antenna : $A_3 = 0.36$ mm. $A_3 = A_4 + A_5$. $A_3/e = 1.8$, fig 3 (c,d). Ascoid 4 = 0.037 mm and 0.20 of segment A_4 . Epipharynx (Labrum) : 0.21 mm. Palpa: formula 1-4-2-3-5 and RL: 1:3:5:4:5:9:4. Cibarium: Unarmed. Pharynx: length to breadth = 3.5, armature covers about 1/5 of the length of the pharynx and consists of parallel rows of dotted lines. fig 3 (e). Genitalia: Coxite 0.27 mm, without a basal process. Style: 0.14 mm, with five pointed spines at 0.5-0.6.0.7-0.9 and the tip of itself. Paramere is finger-shaped, 0.16 mm long, narrowing at about 1/3, with a small and narrow process and a visible tubercle in the

Ilam is situated in west of Iran (fig 1), limited by Kermanshah in the north, Lorestan in the east and Khuzestan in the south and south-east, and has 430 kilometers of common border with Iraq in the west. The climate is moderate in the north and north-east and in some hilly or mountainous areas, the temperatures ranging from -5°C during the winter to $25-35^{\circ}\text{C}$ during the summer. In the south (Dehloran and Mehran Districts), the summer is long, hot and dry, the maximum temperature sometimes exceeding 45°C .

A chain of mountains begins from the north-west and expands to the south-east of Ilam. The most important elevation is Kabir-Kuh (3,000 m). The only big river is Seymareh River which continues to Khuzestan province in the south where it changes its name to Karkheh River. Because of the variable climate in different areas, the population is usually unstable in some parts of the province.

Materials and methods

Sandflies were collected by sticky traps, aspirator and "CDC" light traps from different locations in the plains as well as hilly and mountainous areas. Sandflies caught by sticky traps were transferred by needle to acetone to remove the oil. After clearing, the acetone was poured off and 70% alcohol was added. For species determination, sandflies were mounted in Puri's medium.

Results

This investigation was carried out on sandflies, during April to November 1994. More than twelve thousand specimens were caught and identified. They consisted of eleven species of the genus *Phlebotomus* (*Ph.papatasi*, 27.3%; *Ph.sergenti*, 3%; *Ph.alexandri*, 1.4%; *Ph.major*, 0.9%; *Ph.tobbi*, 0.02%; *Ph.kandelakii*, 0.02%; *Ph.perfiliewi*, 0.02%; *Ph.balcanicus*, 0.02% and *Ph.halepensis*, 0.02% plus two new species, and eleven species of the genus *Sergentomyia* (*S.sintoni*, 29.8%; *S.dentata*, 26.9%; *S.antannata*, 4.5%; *S.theodori*, 0.1%; *S.mervynae*, 0.07%; *S.pawlowskyi*, 0.7%; *S.africanus*, 0.03%; *S.clydei*, 2.4%; *S.tiberiadis*, 1.5%; *S.iranica*, 1% and *S.squamipleuris*, 0.3%).

SAND-FLIES OF ILAM PROVINCE, WEST OF IRAN WITH DESCRIPTION OF TWO NEW SPECIES FROM THE GENUS PHLEBOTOMUS : *PH. ILAMI* AND *PH. NADIMI*.

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Key words: *Sand-flies*, *Phlebotominae*, *Leishmaniasis*, *Iran*

Abstract

During the period April to November 1994, an investigation was carried out on fauna of *Phlebotominae* in Ilam province, west of Iran. About 12000 sand - flies were caught by sticky trap, light trap and aspirator from different ecological regions and were identified. These sand-flies consist of 22 species (11 species from the genus *phlebotomus*: *Phlebotmus paptasi*, *Ph.sergenti*, *Ph.alexandri*, *Ph.major*, *Ph.tobbi*, *Ph.kandelakii*, *ph.perfiliewi*, *Ph.balcanicus* and *Ph.halepensis* plus two new species of *Phlebotomus* and 11 species from the genus *Sergentomyia*: *Sergentomyia sintoni*, *S.dentata*, *S.antennata*, *S.theodori*, *S.mervynae*, *S.pawlowskyi*, *S.africana*, *S.clydei*, *S.tiberiadis*, *S.iranica* and *S.squamipleuris*). The two new species from genus *Phlebotomus* (*Ph.nadimi* and *Ph.ilami*) found in this study have been described in detail.

Introduction

In view of the occurrence of many cases of zoonotic cutaneous leishmaniasis in some areas of Ilam, western Iran, and the absence of information on sandflies, this study was undertaken to elucidate the entomological and whenever possible, the epidemiological aspects of this disease in the province. The present paper shows the results of investigation on sand - flies in different ecological regions of Ilam.

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