



818/D

Morphological identification of sand fly (Diptera: Psychodidae) species in selected endemic and non-endemic areas for leishmaniasis in Sri Lanka

K P D Ruwanika¹, B G D N K de Silva^{1*} and M B Wickramasinghe²

¹Department of Zoology, Faculty of Applied Sciences, University of Sri Jayewardenepura, Nugegoda

²Anti-Malaria Campaign, Colombo 05

Leishmaniasis is an emerging vector borne disease in Sri Lanka. Control measures have to be implemented based on proper identification of the vectorsand fly *Phlebotomus* (Diptera: Psychodidae). Galle, Matara and Tangalle in the Southern Province were selected as endemic areas based on the incidence of leishmaniasis and Mirigama and Athurugiriya in the Western Province as non-endemic areas. One hundred-ten sand flies were collected using a Cattle-Baited Net Trap (CBNT) which was set between 18.00 hours–06.00 hours in a forest side of the land in each site in a less windy location. A mouth aspirator was used for daytime collection at all localities from February to September in 2013. Identification was made using taxonomical keys based on Ilango (2010); Gajapathy and Surendran (2012). Sand flies of the genus *Phlebotomus* and *Sergentomyia* were distinguished using body size, delta (δ) distance of the wing, and number of spines on genitalia, abdominal tergites, maxillae and hypopharynx. Eleven morphometric characteristics (characters of head, wing, antennae and genitalia) were used for species level identification of the genus *Phlebotomus* that were analyzed with previously published data and further analyzed through Principal Component Analysis to identify *Phlebotomus argentipes* s.l. complex. Morphometric characterization was further used for identifying sibling species *Ph. argentipes* s.l. complex. Previously described taxonomic keys by Gajapathy and Surendran (2012) were used for species level identification of the genus *Sergentomyia*.

With the exception of the wing index, all the other morphometric characteristics (10 characteristics) belonged to *Ph. argentipes* s.s. Thus, 91% of the morphometric characteristics of sixty sand flies of the genus *Phlebotomus* from both endemic areas in the Southern Province (Tangalle and Matara) and non-endemic areas in the Western Province (Mirigama) belonged to *Ph. argentipes* s.s. All the samples of *Ph. argentipes* s.s. (100%) in the present study belonged to *Ph. argentipes* s.s. morphospecies A according to the length of sensilla chaeticum on the second flagellomere (0.46-0.05 mm). Morphometric characteristics of fifty sand flies of the genus *Sergentomyia* spp in both endemic and non-endemic locations totalling (100%) differed from previously published data. *Sergentomyia zeylonica* was from both endemic and non-endemic locations identified based on the male genital characteristics. Two unknown species of the Family Psychodidae were present in the collection from Bathigama, Dikwella in the Matara District.

Keywords: Leishmaniasis, morphological identification, *Phlebotomus*, *Sergentomyia*