

SPECIES DIVERSITY AND SEASONALITY OF PHLEBOTOMINE SAND FLIES (DIPTERA: PSYCHODIDAE) IN SATUN PROVINCE, THAILAND

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Abstract. Leishmaniasis is prevalent mainly in the southern provinces of Thailand where sand flies are considered to be an important vector. Sand flies were collected using Centers for Disease Control (CDC) light traps in Satun Province from June 2013 to July 2014. A total of 1,982 sand flies (1,228 females and 754 males) were collected. Only female sand flies were identified to the species level and were tested for *Leishmania* infection using polymerase chain reaction (PCR). Morphological identification revealed 2 genera and 9 species: *Phlebotomus stantoni*, *P. argentipes*, *Sergentomyia gemmea*, *S. indica*, *S. barraudi*, *S. iyengari*, *S. bailyi*, *S. perturbans*, and *S. silvatica*. *S. gemmea* (57.2%) was the most abundant species. The diversity of sand flies was highest in Thung Wa District. The sand flies were most abundant late in the hot season and early in the rainy season (April to June). The highest number of sand flies was collected in June. Significant correlations between the number of female sand flies and rainfall and between *S. gemmea* and rainfall were found. Of the female sand flies tested, none were positive for *Leishmania* spp.

Keywords: *Leishmania*, sand flies, seasonality, diversity

INTRODUCTION

Leishmaniasis is a zoonotic disease caused by parasitic protozoans of the genus *Leishmania* that are transmitted by the bite of female sand flies belonging to the subfamily Phlebotominae in the family Psychodidae (Desjeux, 1996; Herwaldt, 1999; Kobets *et al*, 2012). Leishmaniasis is non-endemic in Thailand, it is sporadic. Most imported cases of cutaneous and visceral leishmaniasis have been reported in

Thai workers returning from the Middle East since 1960 (Laohapaibol and Siampakdi, 1960; Suttinont *et al*, 1987; Viriyavejakul *et al*, 1997). During 1996 and 2010, 58 leishmaniasis cases were reported from 10 provinces in Thailand. Most of these cases were in southern Thailand (Thisyakorn *et al*, 1999; Kongkaew *et al*, 2007; Sukmee *et al*, 2008; 2011). Until recently, 6 cases of autochthonous disseminated dermal and visceral leishmaniasis have been reported from different provinces in Thailand (Sukmee *et al*, 2008; Bualert *et al*, 2012; Polseela, 2012). Species of sand flies such as *Phlebotomus argentipes*, a natural vector of *Leishmania donovani* in India, Nepal, and Bangladesh have been identified in Thailand (Sukra *et al*, 2013). *P. major major*,

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