



## Species diversity and abundance of *Tabanus* spp. (Diptera: Tabanidae) in different habitats of Thailand



Tanasak Changbunjong<sup>a,b,\*</sup>, Poonyapat Sedwisi<sup>b</sup>, Thekhawet Weluwanarak<sup>b</sup>, Eakanan Nitiyamatawat<sup>c</sup>, Rattana Sariwongchan<sup>d</sup>, Theeraphap Chareonviriyaphap<sup>e</sup>

<sup>a</sup> Department of Pre-clinic and Applied Animal Science, Faculty of Veterinary Science, Mahidol University, Nakhon Pathom 73170, Thailand

<sup>b</sup> The Monitoring and Surveillance Center for Zoonotic Diseases in Wildlife and Exotic Animals (MoZWE), Faculty of Veterinary Science, Mahidol University, Nakhon Pathom 73170, Thailand

<sup>c</sup> Department of Medical Entomology, Faculty of Tropical Medicine, Mahidol University, Bangkok 10400, Thailand

<sup>d</sup> Department of Natural Parks, Wildlife and Plant Conservation, Chiang Mai 50100, Thailand

<sup>e</sup> Department of Entomology, Faculty of Agriculture, Kasetsart University, Bangkok 10900, Thailand

### ARTICLE INFO

#### Keywords:

Diptera  
Diversity  
Horse flies  
Tabanidae  
*Tabanus*

### ABSTRACT

*Tabanus* spp. or horse flies (Diptera: Tabanidae) are haematophagous flies of medical and veterinary importance. They are known to cause trypanosomiasis or surra in domestic and wild animals in Thailand. This study conducted an entomological survey of horse flies from different sites in Thailand. Horse flies were collected from three different habitats: primary forests, secondary forests and villages using Nzi traps between April 2012 and December 2016. A total of 1835 female horse flies were collected and 45 species were identified. The five most abundant species were *T. striatus* (25.45%), followed by *T. megalops* (21.36%), *T. rubidus* (14.82%), *T. tamthaiorum* (7.90%) and *T. oxybeles* (6.38%). The highest proportion of horse flies was collected in villages (39.13%), followed by primary forests (34%) and secondary forests (26.87%). The species diversity of horse flies in primary forests was higher than in other habitats. The results of this study may be used for a horse fly control program.

### Introduction

*Tabanus* spp. or horse flies are classified into the suborder Brachycera, infraorder Tabanomorpha and family Tabanidae. This family includes approximately 4500 species worldwide and over 1300 species are in the genus *Tabanus* (Morita et al., 2016). The adult female of the horse fly is haematophagous, feeding on domestic or wild animals and occasionally attacking humans. Horse flies can transmit several disease pathogens including protozoa, bacteria and viruses (Foil, 1989; Mullens, 2009; Baldacchino et al., 2014). They are mechanical vectors not only of *Trypanosoma evansi* but other trypanosomes as well (*T. brucei*, *T. congolense* and *T. vivax*) (Desquesnes et al., 2013; Baldacchino et al., 2014). They can also mechanically transmit *Besnoitia besnoiti*, various bacteria such as *Anaplasma marginale*, *Francisella tularensis* and *Bacillus anthracis*, and retroviruses such as equine infectious anemia virus and bovine leucosis virus. Additionally, they are considered as a biological vector of *T. theileri* in cattle (Baldacchino et al., 2014).

Numerous studies have investigated the species distribution and/or the abundance of horse flies within countries or specific areas (Barros, 2001; Krcmar, 2005; Sasaki, 2005; Mikuska et al., 2008; Al Dhafer

et al., 2009; Hackenberger et al., 2009; Krcmar, 2011; Altunsoy and Kilic, 2012; Mavoungou et al., 2012; Müller et al., 2012; Chandra et al., 2015; Bitome Essono et al., 2015; Suh et al., 2015; Maity et al., 2016; Al Talafha et al., 2016; Lydie et al., 2017). Some studies also showed the species diversity and habitat preference of these flies (Mavoungou et al., 2012). In Thailand, previous reports on horse flies were those of Stone (1975), followed by Burton (1978) and Tumrasvin (1989). They established a list of species and their distribution in different geographical regions of the country. However, little is known about the species diversity in different habitats in Thailand. Thus the objective of this study was to determine the species and abundance of horse flies in the three main habitats including primary forests, secondary forests and villages in different geographical regions of Thailand.

### Materials and methods

#### Collection sites

Horse flies were collected at 20 localities from the different geographical regions of Thailand (Fig. 1). The collection sites were

\* Corresponding author at: Department of Pre-clinic and Applied Animal Science, Faculty of Veterinary Science, Mahidol University, Nakhon Pathom 73170, Thailand.  
E-mail address: [tanajak.cha@mahidol.edu](mailto:tanajak.cha@mahidol.edu) (T. Changbunjong).