

ความหลากหลายของแมลงรึ้นดำบริเวณภาคตะวันตกของประเทศไทย

Diversity of Black Flies (Diptera: Simuliidae) in Western Region of Thailand

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บทคัดย่อ

การศึกษาความหลากหลายของแมลงรึ้นดำบริเวณภาคตะวันตกของประเทศไทยจากแหล่งน้ำไหลธรรมชาติจำนวน 8 สถานี โดย 6 สถานีอยู่ในเขตจังหวัดกาญจนบุรีและ 2 สถานีอยู่ในจังหวัดราชบุรี ทำการสำรวจศึกษาภาคสนามในระหว่างเดือนพฤษภาคม 2554-เมษายน 2555 ผลการศึกษาพบแมลงรึ้นดำทั้งหมด 2,376 ตัว สามารถจำแนกออกเป็น 11 ชนิด ได้แก่ *Simulium aureohirtum*, *S. chumpornense*, *S. gombakense*, *S. nakhonense*, *S. nodosum*, *S. parahiyangum*, *S. quinquestriatum*, *S. sheillae*, *S. siamense*, *S. tani* และ *S. weji* แมลงรึ้นดำชนิด *S. nakhonense* และ *S. quinquestriatum* เป็นชนิดเด่นและพบกระจายมากที่สุดถึง 66.7% ของแหล่งน้ำไหลทั้งหมด ในขณะที่ชนิด *S. aureohirtum* และ *S. chumpornense* มีเปอร์เซ็นต์การพบน้อยที่สุด

ABSTRACT

Diversity of black flies (Diptera: Simuliidae) in western region of Thailand was investigated. Black flies were collected from 8 stream sites (6 sites in Kanchanaburi and 2 sites in Ratchaburi) during May 2011 - April 2012. The following 11 black fly species were identified among 2,376 larvae: *Simulium aureohirtum*, *S. chumpornense*, *S. gombakense*, *S. nakhonense*, *S. nodosum*, *S. parahiyangum*, *S. quinquestriatum*, *S. sheillae*, *S. siamense*, *S. tani* and *S. weji*. *S. nakhonense* and *S. quinquestriatum* were the dominant species and they were the most widely distributed, occurring at 66.7% of the stream sites, whereas *S. aureohirtum* and *S. chumpornense* were the rare species in this study.

คำสำคัญ: แมลงรึ้นดำ, *Simulium*, ความหลากหลาย, ภาคตะวันตก

Keywords: black flies, *Simulium*, diversity, Western Thailand

INTRODUCTION

Black flies (Family: Simuliidae) are a group of aquatic insects with approximately 2,000 described species worldwide. Taxonomy of black flies has been studied extensively in many countries of the world (e.g., Takaoka and Davies, 1995; Hamada et al., 2002; Adler et al., 2004), making them one of the best-known families of aquatic insect at the species level. In Thailand, morphotaxonomy has been the focus of most simuliid studies (Kuvangkadilok and Takaoka, 2000) with some cytotaxonomic works in northern, southern and northeastern regions (Kuvangkadilok et al., 1999; Jitklang et al., 2008). Thus, the western regions of Thailand were selected as major sites for sampling in the present study to describe species based on morphology and integrated approach to ecology of black flies.

MATERIALS AND METHODS

The study was conducted in Kanchanaburi and Ratchaburi provinces that consist of mountains as a main source of streams and rivers. Black flies were collected from 8 stream sites (6 sites in Kanchanaburi and 2 sites in Ratchaburi) during May 2011 - April 2012 (Fig. 1). They were fixed in freshly prepared Carnoy's fixative and were identified using conventional morphological keys (e.g., Takaoka and Suzuki, 1984; Takaoka and Choochote, 2004).



Figure 1 Stream sites in Kanchanaburi and Ratchaburi provinces.

RESULTS AND DISCUSSION

The following 11 black fly species were identified among 2,376 larvae: *Simulium aureohirtum*, *S. chumpornense*, *S. gombakense*, *S. nakhonense*, *S. nodosum*, *S. parahiyangum*, *S. quinquestriatum*, *S. sheilae*, *S. siamense*, *S. tani* and *S. weji*. The frequency of species occurrence was calculated as the number of sites from which a species was taken, divided by the total number of sites sampled. The most frequently collected species were *S. nakhonense* and *S. quinquestriatum*, accounting for 66.7% (Fig. 2). *S. aureohirtum* and *S. chumpornense* were considered rare species in this study because they had a low percent occurrence (8.3%). *S. nakhonense* was collected from a wide range of streams with many substrate types, whereas *S. chumpornense* was restricted to sandy streams (Jitklang, 2008) (Fig. 3). This finding supports the previous findings that widely distributed species tend to be locally more abundant, and have wider niches with regard to environmental factors, whereas more restricted species tend to be locally more uncommon with narrower niches. This trend indicates that niches are likely to affect the distribution and abundance of stream insects (Heino, 2005). Furthermore, *S. nakhonense* mostly occurred together with other species in the *striatum* group such as *S. quinquestriatum* and also *S. nodosum* in the *nobile* group.



Figure 2 The dominant black fly species.



Figure 3 The rare black fly species.

CONCLUSION

A total of 11 black fly species were found in western regions of Thailand: *Simulium aureohirtum*, *S. chumpornense*, *S. gombakense*, *S. nakhonense*, *S. nodosum*, *S. parahiyangum*, *S. quinquestriatum*, *S. sheilae*, *S. siamense*, *S. tani* and *S. weji*. *S. nakhonense* and *S. quinquestriatum* were the most widely distributed, occurring at 66.7% of the sites in western Thailand and they were the dominant species, whereas *S. aureohirtum* and *S. chumpornense* were the rare species in this study.

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