

Genetic Diversity and Gene Flow among Stable Fly Populations, *Stomoxys calcitrans* (L.) in Thailand

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ABSTRACT

Isozymes from five wild-caught *Stomoxys calcitrans* (L.) were compared using starch gel electrophoresis to estimate the rates of gene flow between and among *S. calcitrans* populations from five different geographic regions of Thailand. Among ten enzyme systems, 13 putative loci and 10 polymorphisms were detected. Limited genetic differentiation among the five populations was observed as indicated by the low F_{ST} (0.078). The highest percentage of polymorphic loci was observed in eastern Trat province and northern Chiang Mai province (69.2%), whereas the lowest percent polymorphism was seen in south-central Saraburi province (23.1%). Gene flow between populations varied from 6.16 to 15.38 reproductive migrants per generation with no fixed genetic differences detected. Among the five population samples, no correlation was seen between genetic and geographical distances showing that sampled *S. calcitrans* fit closely in the same cluster taxa. The genetic and epidemiological ramifications of these findings are discussed.

Key words: *Stomoxys calcitrans*, genetics, isozyme, gene flow, Thailand

INTRODUCTION

Stable fly (Muscidae: Stomoxyinae) in the genus *Stomoxys* contains at least eighteen described species (Zumpt, 1973). Both sexes are avid blood sucking insects and considered significant economic pests and disease vectors on livestock and other warm-blooded animals in many parts of the world (Bruce and Decker, 1958; Zumpt, 1973; Mullens *et al.*, 2006). Among these, *Stomoxys calcitrans* (L.), the most cosmopolitan species of stable fly, is an aggressive, vicious biter and will readily attack humans (Harwood and

James, 1979; Wall and Shearer, 1997). This species can serve as either mechanical or biological vectors of important veterinary diseases such as: *Trypanosoma evansi* (surra) in horses, camels and dogs; *Trypanosoma equium* in various domesticated ungulates in the Neotropics; several species of gastrointestinal *Habronema* nematodes of equines; and the filarial parasite of cattle, *Setaria cervi*. It has also been implicated in the transmission of polio virus, equine infectious anemia, anthrax and fowl pox (Lehane, 1991). Although most active near livestock areas, *S. calcitrans* can be a significant nuisance insect on

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