

## INTRODUCTION

Keys for the identification of *Culex* mosquitoes are required for studies on the epidemiology and transmission of Japanese encephalitis (JE), an important public health problem in Thailand and Southeast Asia. Although mosquitoes of several genera have been found infected with JE virus, the majority of isolations are from species of *Culex* subgenus *Culex*, several of which are recognized as major vectors in the Oriental Region. References to *Culex* appear in scattered, out-of-date publications, eg, Barraud (1934, India) and Bram (1967, Thailand), and are not readily available or particularly useful for field entomologists and researchers. The most recent illustrated key to *Culex* in Thailand (Rattanaarithikul and Panthusiri, 1994) only includes the medically important species of subgenus *Culex*.

To assist public health workers and entomologists in the identification of fourth-instar larvae and adult females of *Culex* and *Lutzia*, keys are provided here for the species of these genera that occur in Thailand. The keys can be used to initially identify specimens to subgenus and species group, and finally to species. Differential and diagnostic characteristics are highlighted on drawings and, whenever possible, were chosen so that they could be observed using a hand lens (10x) or dissecting microscope (10-40x). Morphological terminology follows Harbach and Knight (1980, 1982). The keys are structured like those of Harbach (1985). Generic and subgeneric abbreviations are those of Reinert (2001), Tanaka (2003) and Rattanaarithikul *et al* (2005). Species author names are given in Table 1.

## SYSTEMATICS

The morphological characters used here are based on original observations and previous usage in the literature. The following references were especially helpful: Barraud (1934), Belkin (1962), Bram (1967), Mattingly (1971), Sirivanakarn (1970, 1971, 1972, 1973a,b, 1976, 1977a,b,c), Harrison (1987), Tanaka *et al* (1979), Harbach and Rattanaarithikul (1988), Harbach and Mongkolpanya (1989), Tanaka (2003, 2004), and Rattanaarithikul *et al* (2005).

The majority of Oriental species of subgenus *Metalutzia* of *Lutzia* and subgenera *Culex* and *Oculeomyia* of *Culex* are very well characterized as adults by the presence of conspicuous ornamentation and features of the maxillary palpus, proboscis, thorax, legs, wings, and abdomen. In contrast, adults of subgenera *Culiciomyia*, *Eumelanomyia* and