Lophoceraomyia of *Culex* are particularly difficult to distinguish because many species lack conspicuous differences. Also, the females of most species are poorly known and not well studied.

The cibarial armature of females has been incorporated as a supplementary character, *eg*, (*Cx. tritaeniorhynchus*), however this structure has not so far been found to be useful in any species of *Culex*. Structures of the male genitalia are important at various levels (subgenera, groups, subgroups, and complexes), *eg*, phallosome, proctiger, and subapical lobe. The antennae of *Lophoceraomyia* males provide good characters but are more reliable when correlated with associated larval and/or pupal stages.

Because male genitalia, male antennae, and female cibarial armature require dissection and mounting on microscope slides, only the external characters of adult females reared from larvae or pupae are used in the keys. The immature stages show a number of specific characters that are very useful in the diagnosis of most species except those of *Lutzia* subgenus *Metalutzia*.

CULEX AND *LUTZIA* MOSQUITOES AS DISEASE VECTORS IN THAILAND

Japanese encephalitis

Japanese encephalitis (JE) is a serious public health problem across southern Asia, including Thailand. After the first epidemic of JE in Thailand in 1969, there were some 1,500-2,500 reported cases of viral encephalitis each year from 1970-1985 (Rojanasuphot and Tsai, 1995). Japanese encephalitis virus is maintained in nature by a complex cycle that involves pigs as amplifying hosts, bird, and mammalian reservoirs and mosquito vectors. The primary vectors of JE are various species of subgenus *Culex.* The best known and most important vectors are members of the Vishnui Subgroup, *ie*, *Cx. tritaeniorhynchus, Cx. pseudovishnui,* and *Cx. vishnui. Culex tritaeniorhynchus* is considered to be the principal vector of JE (Gould *et al,* 1974). C*ulex gelidus* is regarded as an important vector of JE in both Malaysia and Thailand (Gould *et al,* 1962; Gingrich *et al*, 1992), and has been found naturally infected with the virus in Thailand and Vietnam (Gould *et al*, 1974; Thao *et al*, 1974). Two strains of JE virus have been isolated from *Cx. fuscocephala* in Thailand (Gould *et al,* 1974), *Cx*. *quinquefasciatus* has been found infected with JE virus in Vietnam (Thao *et al,* 1974), and JE virus has been isolated from *Cx. bitaeniorhynchus* and *Cx. infula* in India (Rodrigues, 1988; Samuel *et al*, 1998).

Filariasis

Wuchereria bancrofti and *Brugia malayi* cause Bancroftian and Brugian filariasis, respectively. *Brugia malayi* occurs as periodic and subperiodic forms and is primarily found in the flat coastal areas in the southern part of Thailand. *Wuchereria bancrofti* occurs primarily in the hilly, forested areas in the western part of the country. The main vectors of *B. malayi* are species of *Mansonia*. *Wuchereria bancrofti* is largely an urban and suburban disease in many parts of the world due to the habits of its principal vectors, *Downsiomyia, Finlaya,* and *Mansonia* species (Harinasuta *et al,* 1970; Gould *et al,* 1982; Sucharit *et al,* 1988; Division of Filariasis, 1995).

During the preparation of this manuscript, Reinert *et al* (2004) elevated the generic names *Downsiomyia* and *Finlaya* for filarial vectors previously included in subgenus *Finlaya* of *Aedes.*

Culex quinquefasciatus is the predominant vector of urban filariasis in some areas of Africa and the Oriental Region. In Thailand, a nocturnally periodic form of *W. bancrofti* is transmitted by *Cx. quinquefasciatus* (Sucharit *et al,* 1988; Division of Filariasis, 1996; Jitpakdi *et al,* 1998). *Culex bitaeniorhynchus* has been found naturally infected with larvae of *W. bancrofti* in India (Iyengar, 1938) and *B. malayi* in Sri Lanka (Carter, 1948). *Culex sitiens* is a potential vector of human pathogens. It has been found naturally infected with larvae of *B. malayi* in Thailand (Iyengar, 1953).

THE *CULEX* AND *LUTZIA* FAUNA OF THAILAND

The *Culex* fauna of Thailand was first noted by Stanton (1920). Edwards (1922) included some general records from Thailand, and Barraud and Christophers (1931) reported on species collected by JA Sinton during a two-week railway tour of the country. Causey (1937) summarized information collected during a four-year stay in Thailand, and Iyengar (1953) listed 48 species and subspecies from southern Thailand. Thurman and Thurman (1955) reported mosquito specimens collected from light traps in northern Thailand and found that 78% were *Culex.*

Thurman (1959) listed 42 species in six subgenera, *ie, Culex*, *Culiciomyia*, *Mochthogenes*, *Neoculex*, *Lophoceraomyia*, and *Lutzia*. Bram (1967) treated 61 species of these subgenera and one species of a new subgenus, *Thaiomyia*, which was synonymized with *Culiciomyia* by Harrison (1987).