

METHODS

This series of publications is only possible because of three US Army researchers, John E Scanlon, Douglas J Gould, and EL Peyton, who understood identification of the mosquito species was the most basic and essential tool in fighting mosquito-borne diseases in Thailand. Early on their efforts solidified certain methods for collections, processing specimens, and taxonomic study of specimens. These guidelines established a regimen of : (1) long-term and extensive collections of mosquitoes in all life stages from as many areas of the country as possible; (2) extremely accurate and thorough collection records; (3) careful preparation and preservation of specimens; (4) rearing adults individually from isolated individual larvae with the preservation and correlation (number code) of the fourth-instar and pupal exuviae with the adult; (5) studies of all stages of each species collected; (6) thorough and rapid descriptions of new species, and (7) thorough taxonomic studies of the taxa found in Thailand and their relationships with species from adjacent areas. These guidelines have been followed by numerous mosquito researchers who have subsequently worked in Thailand. More recently, newer methods such as cytogenetic, biochemical, and molecular techniques have been used to more clearly define species complexes that could not be precisely defined by morphological studies. However, once new species were discovered by these techniques, morphological studies were initiated to find possible characters for field workers to use. Over 40 years have past since these efforts began and their impact has been tremendous. Nearly 500,000 specimens have been preserved and have been or will eventually be studied. Thailand, which is approximately the size of the State of California, USA, currently has 436 species of mosquitoes, which represent 12.5% of the approximately 3,477 mosquito species recognized in the world.

Taxonomic names used in this and the following sections are based on Knight and Stone (1977) and supplements to that publication (Knight, 1978a; Ward, 1984; Gaffigan and Ward, 1985; and Ward, 1992). During the last four years *Ochlerotatus*, *Ayurakitia*, and *Verrallina* have been elevated to generic status (Reinert 1999, 2000c,d), and during the last 10 years a number of species groups in what was previously called *Aedes* have been recognized as distinct subgenera. These are now divided among *Aedes* (*Aedes*, *Fredwardsius*, *Scutomyia*), *Ochlerotatus* (*Bruceharrisonius*, *Kenknightia*, *Ochlerotatus*), and *Verrallina* (*Harbachius*, *Neomacleaya*, and *Verrallina*). Currently there are ongoing studies at the Tribe Aedini level and new generic names will be introduced in Section VI. In addition to these changes many genetic forms of *Anopheles* occurring in Thailand have been recognized recently in metaphase mitotic chromosome studies and desig-

nated by alphabetical characters, *ie*, A, B, C, D, *etc.* These studies have given a great boost to the systematic studies of the *Anopheles* of Thailand. They have elucidated major differences in what were once considered firm classical species. Thus, many karyotype-, polytene-chromosome, molecular, cross-mating, and in-depth morphological studies are needed to resolve the status of these forms. In this regard, the reader should not assume that genetic form 'A' of a given species automatically represents the classical morphologically described species, *eg*, *An. minimus* Theobald, 1901. To the contrary, the assignment of the alphabetical characters to these various genetic forms was done, for the most part, without regard to the type locality of the nominotypical named species. Many of these genetic forms may eventually prove to be distinct species, whereas others may only represent intraspecies genetic polymorphs. Since the status of these genetic forms is unresolved they should not be described and named according to the International Code of Zoological Nomenclature. Thus, they are listed here simply as genetic forms and not counted as species. Summaries of recent changes to Thai mosquito names are given in Tables 1-3 of this section.

Morphological terminology used in this study follows Harbach and Knight (1980, 1982). The keys are structured like those of Harbach (1985). Abbreviations for the generic and subgeneric names in this and the following sections follow Reinert (2001a, 2003a) and Tanaka (2003). Generic keys are provided for adult females and fourth-instar larvae. If a specimen cannot be identified with our keys, the user may conclude that it was too badly damaged and rubbed, it represents a new species, a species not previously known to occur Thailand, or there has been a misinterpretation of a character state. In cases where no characters are known for distinguishing species within a group taxon, *eg*, Niveus Group of *Ochlerotatus* (*Finlaya*), the keys only provide identification to group level.

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