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CYTOGENETIC STUDIES OF THE ANOPHELES NIVIPES GROUP

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## ABSTRACT

The *philippinensis/nivipes* complex is a very good example of the relationship of polymorphism and speciation, and their adults female are almost isomorphic. Polytene chromosomes of *An. nivipes* were examined for the chromosomal arrangement and for phylogenetic relationships between *nivipes* and its relatives. *An. nivipes* has a banding pattern homosequential with *philippinensis* except the two fixations of paracentric inversion alternatives on arm 2 and arm 5. There are two forms within the taxon *nivipes* from allopatric natural populations, defined by the two marked X-chromosome; one is standard arrangement,  $X^{+b}$  that was called form A, and another one is inverted arrangement,  $X^b$  of form B, and form A is more common than form B. Two small samples from Phetchabun population showed sympatry of both forms without heterozygotes.

Reciprocal crosses between these two forms gave F1 males which were apparently fertile, while F1 females showed the typical loop arrangement of inversion heterozygotes, which are very good species markers. Interspecific crosses between each form of *nivipes* to *philippinensis* showed almost completely asynapsis of all chromosomes.

The evidence from natural populations suggested that there are two species within *nivipes* group. It is a result of positive assortative mating within two groups marked by the two X-chromosome arrangements due to allopatric speciation.

*An. nivipes* shares the  $X^b$  inversion with *An. philippinensis* which is the ancestor of other relative species in the *annularis*

group. Consequently, both species within this taxon derived from *An. philippinensis* by two inversions, 2t and 5l, and the species A is closer to the ancestor than the species B. That means *An. nivipes* species A is the ancestor of the taxon and then it has diverged by a mode of speciation, the allopatric speciation, to species B.

