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Ecophysiological and morphological variations in mosquitoes of the *Culex pipiens* complex (Diptera: Culicidae)*

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Abstract. Mosquitoes of the *Culex pipiens* Linné, 1758 complex are distributed all over the world, and are of great medical and veterinary importance. They are active bloodsuckers primarily in urban environments, and serve as vectors of various pathogens infecting man and/or animals. This complex is characterized by a high ecological plasticity, and intricate taxonomic structure. The complex includes *C. pipiens pipiens* (anautogenous *pipiens* and autogenous *molestus* Forskĺl, 1775 forms), *C. p. quinquefasciatus* Say, 1823, *C. p. pallens* Coquerell, 1898, *C. p. australicus* Dobrotworsky et Drummond, 1933, *C. torrentium* Martini, 1924 and *C. vagans* Wiedeman, 1828. The taxonomic status of some members of the complex is under debate. The peculiarity of the *C. pipiens* complex is that there are significant ecophysiological differences between its members, which are relatively morphologically similar. The main taxonomic characters vary. Typological and geographical variations are reflected in the male genital index DV/D. Habitat, geographical, combinative and modificative variations are reflected in the siphonal index of larvae. The degree of morphological divergence between the members was estimated using discriminant analysis. Ecophysiological differences include autogeny, stenogamy or eurygamy, reproductive diapause, and the ecological requirements of the larvae. Some of the morphological features (mean siphonal index) correlate with the ecophysiological ones, such as autogeny, stenogamy, or habitat attachment. In the temperate zone there are three mechanisms, which are result in reprodctive isolation between sympatrically 7coexisting *molestus* and *pipiens* forms: the habitat specialization of larvae, the pattern of diapause inheritance (the F1 hybrids cannot diapause and are doomed to die in winter), and differences in mating behaviour.

Ecophysiological variation, morphological variation, *Culex pipiens* complex, Diptera, Culicidae

INTRODUCTION

The existence of the *Culex pipiens* Linné, 1758 complex of mosquitoes was established a long time ago but only since 1960 have specialists regarded this complex as global problem. This is because they actively attack humans and are of great medical and veterinary importance. The necessity for research on the *Culex pipiens* complex was officially registered in 1964, at the WHO-guided International seminar, at which numerous lectures on mosquito systematics, ecology, physiology, genetics, pesticide resistance, and control were presented (Anonymus 1965). By that time the close connection the abundance of these mosquitoes and active urbanization all over the world was established. This trend was subsequently confirmed. With the passage of time, the views on the structure and of the complex and the taxonomic status of its members changed, but the *C. pipiens* complex still remains an exciting topic of research and discussion. We agree with Harbach et. al. (1985: 19) who wrote, "The taxonomy of the *pipiens* complex is an enigma complicated by

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