INTRODUCTION

The problem of cryptic diversity has grown into a hot topic in bat taxonomy during recent years. This is especially so for the region of western Palearctic. The list of bat fauna has expanded from 31 to 46 species due to discoveries of cryptic species alone (cf. e.g., Corbet, 1978 or Horáček et al., 2000 versus Mayer and Helversen, 2001; Helversen et al., 2001; Kiefer et al., 2002; Spitzenberger et al., 2001; Mucedda et al., 2002; Hulva et al., 2004; Simmons, 2005 and/or Spitzenberger et al., 2006) since the first cases of sympatric sibling species were reported there in sixties and seventies. Most of these discoveries appeared recently through the application of molecular methods. Although a significant degree of population substructures was not expected in volant mammals, molecular tools revealed a surprising amount of phylogenetic gaps in a variety of phylogeographic patterns. This calls not only for rearrangements in taxonomy of the respective clades but also for reconsideration of the speciation mechanisms producing the cryptic species diversity.

The discovery of these cryptic species questioned the universality of a standard model of allopatric speciation explaining the sympatric situations by secondary range extension of the respective allopatric species. This resulted in a lively discussion on speciation under parapatric or sympatric conditions and on the ecological and behavioral mechanisms that may affect it (see e.g., Losos and Glor, 2003 for a review). A detailed model of sympatric speciation in bats was first proposed by Jones (1997) and Barratt et al. (1997) who stressed the possible role of divergence in echolocation call frequency for niche partitioning and social recognition in the speciation process of the western Palearctic cryptic species group, Pipistrellus pipistrellus. An example of such a model of speciation has recently been provided in the case of the SE Asiatic large-eared horseshoe bats (Rhinolophus phillipinensis) where switching of frequencies to different harmonics of the same fundamental frequency was shown to be major factor that promoted reproductive isolation of three sympatric size morphs of this bat (Kingston and Rossiter, 2004). Correspondingly, multiple