

Vector-Borne Diseases: Impact of Climate Change on Vectors and Rodent Reservoirs  
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## Climatic extremes and mosquito occurrence in the Czech Republic

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At the Intergovernmental Panel on Climate Changes (IPCC) in Paris in February 2007 important conclusions were approved. One of them stated: At continental, regional and ocean basin scales, numerous long-term changes in climate have been observed. These include changes in arctic temperatures and ice, widespread changes in precipitation amounts, ocean salinity, wind patterns and aspects of extreme weather including droughts, heavy precipitations, heat waves and intensity of tropical cyclones. Over the last 10 years we have witnessed such extremes of weather patterns on the territory of the Czech Republic. Since 1997 the country has suffered catastrophic floods. In July 1997 and August 2002 floods were caused by intensive precipitations. Each of these floods resulted in a massive **occurrence of mosquitoes - potential vectors of mosquito-born diseases** - of *flood water* species *Aedes vexans* (in flooded meadows) and *Ochlerotatus sticticus* (in flooded forests). In April 2006 the flood was caused by rapid thaw of unusually large quantities of snow in the end of extreme severe winter. *Snow melt* species *Oc.cantans* and *Oc.cataphylla* prevailed (especially in the Labe Lowland, in the Morava /Dyje basin *flood water* species developed as well). To control larval populations around larger human settlements Vectobac G (in a dosage of 10-15 kg/ha) applied aerially and Vectobac 12AS applied by ground were used.

On the contrary the last winter was extremely warm which resulted in unusual early hatching of *Ochlerotatus* larvae. In the Labe Lowland on February 2, 2007 we recorded the occurrence of 2nd instar *Oc.cantans* and *Oc.cataphylla* larvae (usual time for hatching of those species is mid-March). Moreover, and for the first time in the Czech Republic, hibernating larvae of *Culiseta annulata* (4th instar) were found in the Melnik area (50°N,15°E) at the same time.

During almost forty years of mosquito studies the following changes which might be attributed to the local climate warming, were observed by the author. In the last few years *Oc. sticticus* hatched in March - April in some breeding sites of the Melník and Podebrady areas in the Labe Lowland (approx. 50°10'N). This species did not occur so early in spring in over the last 35 years here, in contrast to its regular appearance in the early spring in the southern and warmer parts of the Morava and Dyje basins (approx. 48°40'N). On the other hand the disappearance of *Culiseta alaskaensis* and a very low percentage of *Oc.communis* in this region was recorded. Quite recently occasional anthropophily (in August-October) of unautogenous biotype of *Culex pipiens* has been observed in Prague (the biotype regularly bites men in warmer parts of Moravia).

More observations will be needed in future years to consider the permanence of our findings of local mosquito fauna due to the climate change.

