

Species composition and dynamics of mosquito occurrence in Eastern Slovakia in 2010–2014

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The dynamics of changing mosquito populations provides significant information for evaluating the risk potential of the transmission of viruses and parasitic diseases. Mosquito surveillance is a prerequisite for an effective and efficient mosquito control program.

The aim of our study was to determine the current species composition and abundance of mosquitoes and identify potential vectors of *Dirofilaria* spp. in selected sites in Eastern Slovakia. Mosquito larvae were sampled using a sieve with small diameter. Adult mosquitoes were trapped using the CDC light trap with CO₂ baits. In the period 2010–2014, 31 682 larvae and 134 734 adults were collected, representing six genera and 23 species. The results show the following four species of mosquito were dominant: *Aedes vexans* (larvae 20.8 %; 56.5 % adults), *Culex pipiens/Cx. territans* (larvae 34.9 %; 25.0 % adults), *Ochlerotatus sticticus* (larvae 5.7 %; adults 12.1 %) and larvae of *Oc. cantans/Oc. annulipes* (5.7 %). Their seasonal dynamics of occurrence and activity were dependent on environmental conditions, mainly air temperature and rainfall. Larvae were particularly sensitive to climate changes. The year 2010 was characterized by abnormal precipitation (235 mm in May) and than warm weather. The highest number of larvae were collected in the July (33.5 %) and August (28.5 %) after the floods. In 2011, most of the larvae were sampled in April (78.0 %) and May (13.5 %). The year 2012 was the fifth warmest in Slovakia for the last 130 years. Larvae were trapped after the first intensive rains of the season, in May (48.8 %) and June (26.6 %). In 2013, larvae were sampled mainly in June (24.8 %) The final year, 2014, was the warmest (average temperature 10 °C; 2.6°C above the 1961–1990 norm), and only 2 572 larvae (July 39.2 % and August 23.3 %) were collected, as several collection sites in puddles and water conduits in stable sites had dried up. The survival of adults was not affected by weather conditions as larval stages. The maximum occurrence values for 2010 were observed in June (49.1 %) and August (33.2 %); for 2011 in May (53.4 %) and July (21.5 %); for 2012–2014, the highest frequency of adults observed were in June (32.5 %; 30.1 %; 74.6 %) and July (34.4 %; 44.2 %, 11.1 %). Overall, 22 500 female mosquitoes of eight species were examined for the presence of *Dirofilaria* spp. DNA of *D. repens* and *D. immitis* was confirmed in *Aedes vexans*. In four cases, mixed infection of both filarial species was detected.

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