

First detection of the canine heartworm *Dirofilaria immitis* in German mosquitoes

Insel Riems / Müncheberg, 19 September 2013. Scientists of the Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health (FLI), Greifswald - Insel Riems, and of the Leibniz Centre for Agricultural Landscape Research (ZALF), Müncheberg, have detected larvae of several mosquito-borne roundworm species in endemic mosquitoes, including for the first time the canine parasite *Dirofilaria immitis* (heartworm), which is widespread in the Mediterranean area. This parasite can cause severe cardiac and pulmonary dysfunction in infected animals.

D. immitis has been detected twice, in mosquitoes from Baden-Wuerttemberg (Breisgau) and Brandenburg (Havelland). The introduction route of the pathogen to Germany is unclear. While in Southern Germany mosquitoes carrying the parasite may have been introduced by vehicular traffic from affected regions in Southern Europe, detection of the pathogen in Brandenburg is most likely the result of a local infection of the mosquito(es). A possible source of infection may be dogs which have been imported from the Mediterranean region or have brought back the parasite from a journey to this area. However, there is no proof for these hypotheses so far.

Larvae of the heartworm which are transmitted by mosquitoes mature into adults in the vertebrate host and release larvae into the bloodstream which can then be ingested by bloodsucking mosquitoes. In the host, the adult roundworms infest the pulmonary arteries and the right heart ventricles. Depending on the infectious dose, massive pulmonary and cardiac dysfunction may occur. So far, there is no report of infections of dogs with *D. immitis* in Germany.

Furthermore, the scientists have detected the roundworm *Dirofilaria repens* in mosquitoes from the northern Upper Rhine area. First signs for the occurrence of this parasite in Germany were already seen in 2004 and 2007. As for *D. immitis*, dogs and related species (foxes, martens etc.) are the primary hosts of *D. repens*. *Dirofilaria repens* causes inflammatory skin changes, sometimes changes of internal organs which can impair the general condition of the host, but as a rule are not life-threatening.

For both parasite species, humans are dead-end hosts and the life cycle of the parasite ends before it has reached the reproductive stage. Infection of humans is often asymptomatic, however it may lead to the formation of nodules encapsulating the dead worm in the subcutaneous tissue, occasionally also in the lung and conjunctiva of the eye. Rarely, *Dirofilaria* infection can cause meningitis.

A northward spread of *Dirofilaria* from the Mediterranean region has been observed for some time. Climate change and intensive international trade with dogs are discussed as possible causes. While in central and Eastern Europe local cases of *D. repens* infection occur at an increasing rate, only introduced cases of *D. immitis* infection have been observed.

The investigations on mosquito-borne pathogens are part of the national mosquito monitoring carried out in close cooperation between FLI and ZALF since 2011.

For questions and requests for interviews please contact the FLI press and public relations office or the ZALF press office:

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