

# Canine *Dirofilaria* infection – from species to disease in the last decade

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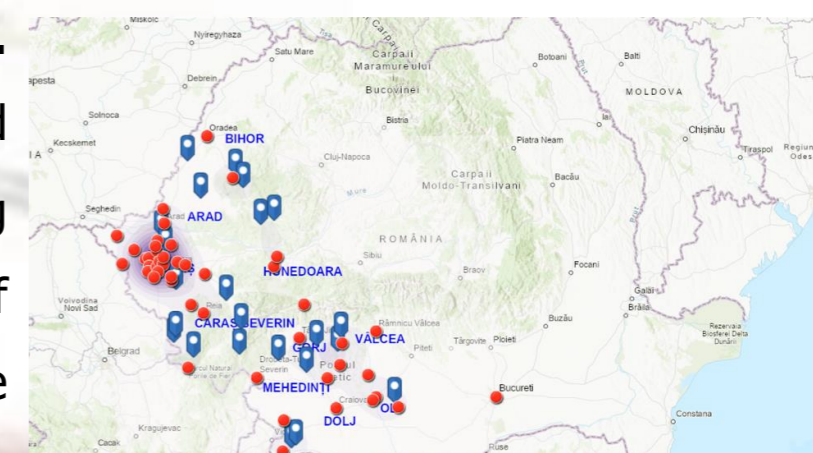
## INTRODUCTION.

*Dirofilaria* infections in dogs are recognized as widespread mosquito-borne diseases caused by the filarioid nematodes (*Onchocercidae*) species *Dirofilaria immitis* and *Dirofilaria repens*, with zoonotic potential. The encountered clinical manifestations can largely vary, from asymptomatic to severe, depending by the involved microfilariae species.

The study was undertaken to provide valuable data on the occurrence of *Dirofilaria* infections in dogs during a long-term survey achieved in Western and South-Western Romania.

## MATERIALS AND METHODS.

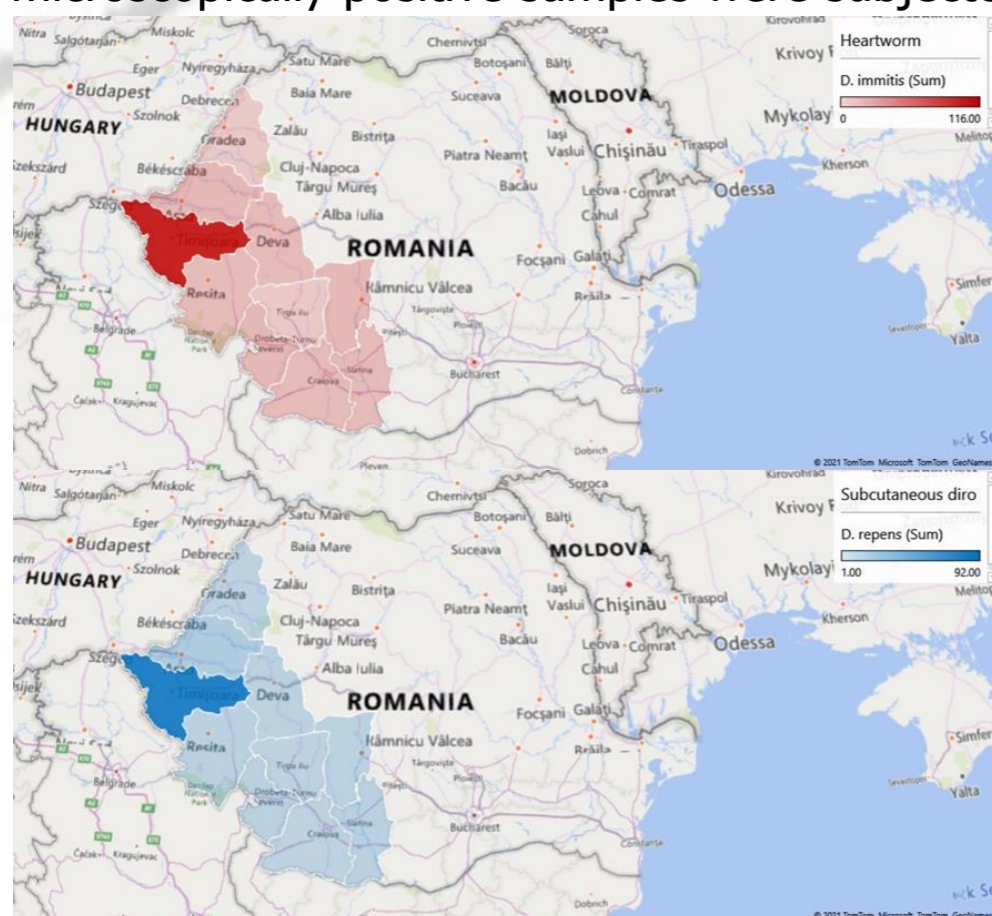
Blood samples (~3 ml) of 1088 dogs, originating from 73 localities of 11 Western and South-Western counties of Romania, were collected in sterile vacutainer tubes containing EDTA, and assayed by the modified Knott test for the presence and differentiation of *Dirofilaria* spp. based on their morphological features. Subsequently, all of the microscopically positive samples were subjected to molecular analysis for confirmation.



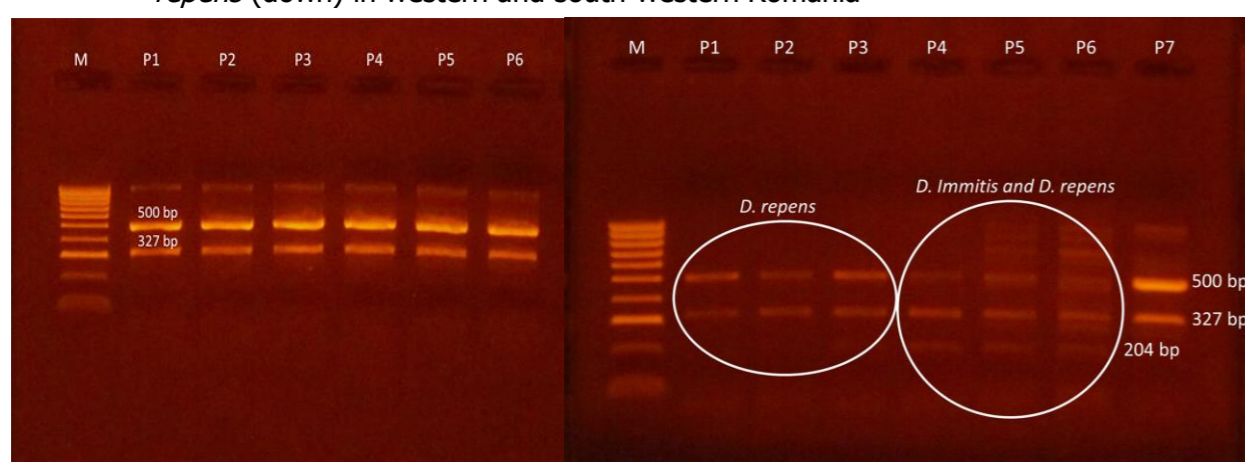
Geographical distribution of dogs sampled for *Dirofilaria* infection in western and south-western Romania (red dots – *Dirofilaria* positive, blue dots – *Dirofilaria* negative)

## RESULTS AND CONCLUSIONS.

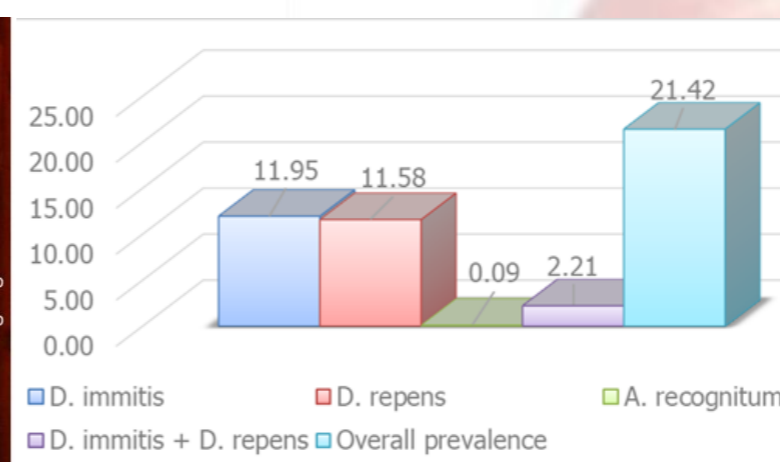
Altogether, the obtained data showed a prevalence value of 21.42% (233/1088) of canine dirofilariosis in the investigated region. Thus, the identified species in case of mono-infections were *D. immitis*, *D. repens* and *Acanthocheilonema reconditum* in 106 (9.74%), 102 (9.38%) and 1 (0.09%) sample, respectively. Twenty-four (2.21%) samples exhibited simultaneous presence of *D. immitis* and *D. repens*. No correlation was found ( $p > 0.05$ ) between the infection status and the breed of the dogs, but animals older than one-year, male gender, rural habitat and shelter dogs were positively associated ( $p < 0.05$ ) with the pathogen prevalence, and can be considered risk factors in acquiring infection.



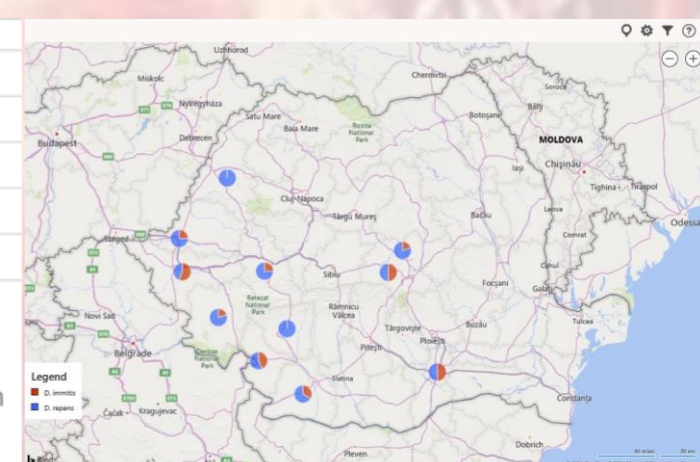
Geographical distribution of dogs positive for *D. immitis* (up) and *D. repens* (down) in western and south-western Romania



Migration bands of products resulted from multiplex - PCR during molecular diagnostic of *Dirofilaria* spp. (M- molecular weight-size marker; P1-7 positive samples)



General prevalence of canine *Dirofilaria* infections in western and south-western Romania



Geographical distribution of canine *Dirofilaria* infections in western and south-western Romania

Canine dirofilariosis is continuously expanding in Romania, and the prevalence of *D. immitis* and *D. repens* is very similar- 11.95% and 11.58% respectively. The results of the present investigation suggest the possible zoonotic risks for humans in the screened area, and consequently, it becomes imperative to increase the awareness of veterinarians, but also of physicians regarding the continuous spread of these zoonotic filariae.