



IMPORT OF *HYALOMMA* TICKS IN GERMANY, 2018

Background

Ticks of the genus *Hyalomma* mainly live in afrotropical and palearctic regions.

H. marginatum is a vector for some pathogens of medical and veterinary importance like Crimean Congo Hemorrhagic Fever (CCHF) and West Nile virus as well as *Rickettsia aeschlimannii*, *Babesia caballi* and *Theileria annulata*. *H. rufipes* is the most widespread *Hyalomma* species in Africa and also known as a vector for the CCHF virus, *Rickettsia* spp., *Anaplasma marginale* and *Babesia occultans*. It is assumed that larvae and nymphs of both tick species are regularly imported by migrating birds to Europe. However, due to current climatic conditions these *Hyalomma* larvae and nymphs do not develop to adult animals and do not establish permanent populations in Central Europe.

Results

In 2018, ten *H. marginatum* and eight *H. rufipes* specimens have been found in various regions of Germany (Federal States of Baden-Wuerttemberg, Hesse, Rhineland-Palatine, Lower Saxony and Schleswig-Holstein). An additional seventeen ticks have been identified as *Hyalomma* based on photos (Chitimia-Dobler et al., 2019). All reported and confirmed tick findings were in western Germany along the main western migratory route of birds from West Africa via Spain and France to Scandinavia. 2018 was the warmest and second driest year in Germany since the beginning of weather recording in 1881 favoring the development of imported *Hyalomma* nymphs to adult animals.

Tests for the CCHF virus, *Coxiella burnetii* (the agent of Q fever), *Coxiella*-like organisms, *Babesia* spp. and *Theileria* spp. revealed negative. However, nine ticks were tested positive for

rickettsiae using a pan-Rick PCR test and by further analyses *R. aeschlimannii* has been identified. *R. aeschlimannii* is a member of the spotted fever group and is an important human pathogen. Six of seven *ompA1* sequences obtained from the German samples showed to be 100% identical to strains from different areas of the world (Russia, Israel, Spain, Portugal, Turkey), while one sample was identical to a sequence found in Senegal.

In parallel to the investigations by Chitimia-Dobler et al., (2019), nineteen *Hyalomma* ticks found in various Federal States in Germany have been analyzed by Hagedorn (2019) for the presence of *Anaplasma phagocytophilum*, *Borrelia burgdorferi*, *Babesia* spp., *Candidatus Neoehrlichia mikurensis* and *Rickettsia* spp., but none of these pathogens could be identified in the nineteen ticks.

In 2018, adult *Hyalomma* ticks have not only been found in Germany. In October 2018, a male *H. marginatum* tick was removed from a horse in the State of Lower Austria. In this tick, *R. aeschlimannii* could be identified, but no other pathogen (Duscher et al., 2018).

In the context of *Hyalomma* ticks being imported by migrating birds to Central Europe, it should be noted that recently, the CCHF virus has been identified in a *H. rufipes* nymph collected from a bird (*Saxicola rubetra*) on the island of Ventone, Italy, in April 2017 (Mancuso et al., 2019).

So far this year, six *Hyalomma* ticks have been found in Germany, five from a horse farm in North Rhine-Westphalia and one tick from a horse in Lower Saxony (Universität Stuttgart-Hohenheim, 2019). It is suspected that these ticks have overwintered in Germany. Overwintering of *Hyalomma* ticks does not automatically mean that this tick genus has established itself in Germany, because it is difficult for male and



female ticks to find each other for copulation at such a low population density. However, as five *Hyalomma* ticks have been found at one horse farm, this makes it possible that a discrete population arises in a given area.

Discussion

While many or even countless larvae and nymphs of *Hyalomma* ticks may be imported yearly by migrating birds to Germany and other Central European countries and Scandinavia, these usually do not develop to adult ticks because of unfavorable climatic conditions for this tick genus. 2018 was an uncommonly dry and hot year in Central Europe, such that living conditions for *Hyalomma* became excellent and nymphs could develop to adult ticks. It seems that adult *Hyalomma* ticks have overwintered in Germany, and now the question arises, if *Hyalomma* can establish itself at least in some regions of Germany with a mild climate, or if the occurrence of adult *Hyalomma* ticks in 2018 remains a singular phenomenon.

Literature

Chitimia-Dobler et al.

Imported *Hyalomma* ticks in Germany in 2018
Parasit. Vectors 2019; 12:134, DOI: 10.1186/s13071-019-3380-4

Duscher et al.

Adult *Hyalomma marginatum* tick positive for *Rickettsia aeschlimannii* in Austria, October 2018
Euro Surveill. 2018; 23 (48):pii=1800595.

Hagedorn, D.

Fund von Zecken der Gattung *Hyalomma* in Deutschland

(Discovery of ticks of the genus *Hyalomma* in Germany)

Epid. Bull. 2019; 7:70-71, DOI: 10.25646/5893

Mancuso et al.

Crimean-Congo Hemorrhagic Fever virus in tick from migratory bird, Italy

Emerg. Infect. Dis. 2019, in press, DOI: 10.3201/eid2507.181345

Universität Stuttgart-Hohenheim

Tropische Zecken: Neu eingewanderte Art überwintert erstmals in Deutschland

(Tropical ticks: Newly immigrated species overwintered for the first time in Germany)

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