6th International Conference of Rodent Biology and Management & 16th Rodens et Spatium, 2018, Potsdam

Response to Human Induced Changes

Peri-urban black rats host a rich assembly of ticks with no clear consequences for rat condition

Henry W. Lydecker, Dieter F. Hochuli, Peter B. Banks

The University of Sydney, Sydney, Australia, henry.lydecker@sydney.edu.au

Zoonotic diseases have rapidly emerged as public health threats, alongside human modifications to the environment and ecological communities. Urban adapted human commensal species may support ectoparasite communities within and near urban areas, and in turn play a role in zoonotic disease emergence and transmission. The black rat Rattus rattus is globally distributed, and has been implicated in human disease for centuries; however its role in supporting ectoparasite communities in the cities that it has spread to around the world has not been fully explored. We examined the ticks parasitizing Rattus rattus in a remnant bush area within Sydney, Australia in order to explore the role of introduced rats in the ecology of ticks, and the relationship between Rattus rattus and ticks by testing rat characteristics as predictors of tick abundance. Here we show that six species of native Australian tick parasitize Rattus rattus in urban Australia. The majority of ticks parasitizing Rattus rattus are lxodes holocyclus, a tick associated with significant impacts to companion animals, and some human health concerns. Two other species of Ixodes, Ixodes hirsti and Ixodes tasmani, were also common. Surprisingly, we found that ticks were more abundant on Rattus rattus in better condition. Our study shows that Rattus rattus supports a rich assembly of ticks in a remnant forest in urban Australia, and that as the Rattus rattus in best condition have the most ticks, tick parasitism at the level observed does not appear to negatively impact Rattus rattus. Urban human commensals, such as Rattus rattus, may play be important hosts for ticks in human modified environments, and further study should investigate the roles of these species in both tick and disease ecology.

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Editors:

Jens Jacob¹ and Jana Eccard² ¹Julius Kuehn Institute, Federal Research Centre for Cultivated Plants, Institute for Plant Protection in Horticulture and Forests, Vertebrate Research, Toppheideweg 88, 48161 Münster, Germany ²University of Potsdam, Institute of Biochemistry and Biology, Animal Ecology Group, Maulbeerallee 1, 14469 Potsdam, Germany

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