

One Health in practice: a socio-ecological approach for the study and management of zoonotic diseases associated with free-roaming dogs in Southeast Asia (SEAdogSEA)

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Free-roaming domestic dogs are widespread in SE Asia, occurring in most biomes and interacting with human commensals in many diverse ways. Major public health threats in the region are associated with dogs, but their role in the epidemiology of numerous other zoonotic diseases is still unknown. This depends on a complex interplay between ecological drivers associated with dogs and the habitats in which they roam, and socio-anthropological parameters associated with the humans with whom they interact.

The interdisciplinary projects SEAdogSEA associated several teams from Europe and SE Asia (2019/2023), with the aim to study dog-human-environment interactions and associated epidemiological risks in four villages selected in three countries: Thailand (Nan province), Indonesia (Bali), and Cambodia (Kandal and Stung Treng provinces).

Three main interdisciplinary protocols were carried out: i) Monitoring dog movements and habitat use, mobilising ecology (GPS collars) and socio-anthropology; ii) Assessing dog contact patterns using camera-traps images analysed by Artificial Intelligence for dog re-identification; iii) Pathogen screening (arboviruses, ectoparasites and blood parasites, leptospirosis, ...) and microbiome analysis in dog/dog-owner paired samples.

We present selected results illustrating the complex interplay between dogs' ecology, owners' social characteristics and occupation, and the associated risks of zoonotic diseases (e.g. typology of dog movements/spatial behaviour). Recommendations are given for a more (than) One Health management of sanitary risks associated with domestic dogs in rural and semi-urban settings in SE Asia, including a discussion on the potential use of domestic dogs as sentinels/indicators of the infectious risks to which their owners are exposed.