



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)

Michel de Garine-Wichatitsky, Animika Kritiyakan, Wayan Tunas Artama, Sowath Ly, Johan Michaux, Areeya Kriengudom, Ketsarin Kamyngkird, Chuanphot Thinhovong, Kittipong Chaisiri, Barandi Sapta Widarton, et al.

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One Health in practice: SEAdogSEA!

A socio-ecological approach for the study and management of zoonotic diseases associated with free-roaming domestic dogs in South-East Asia

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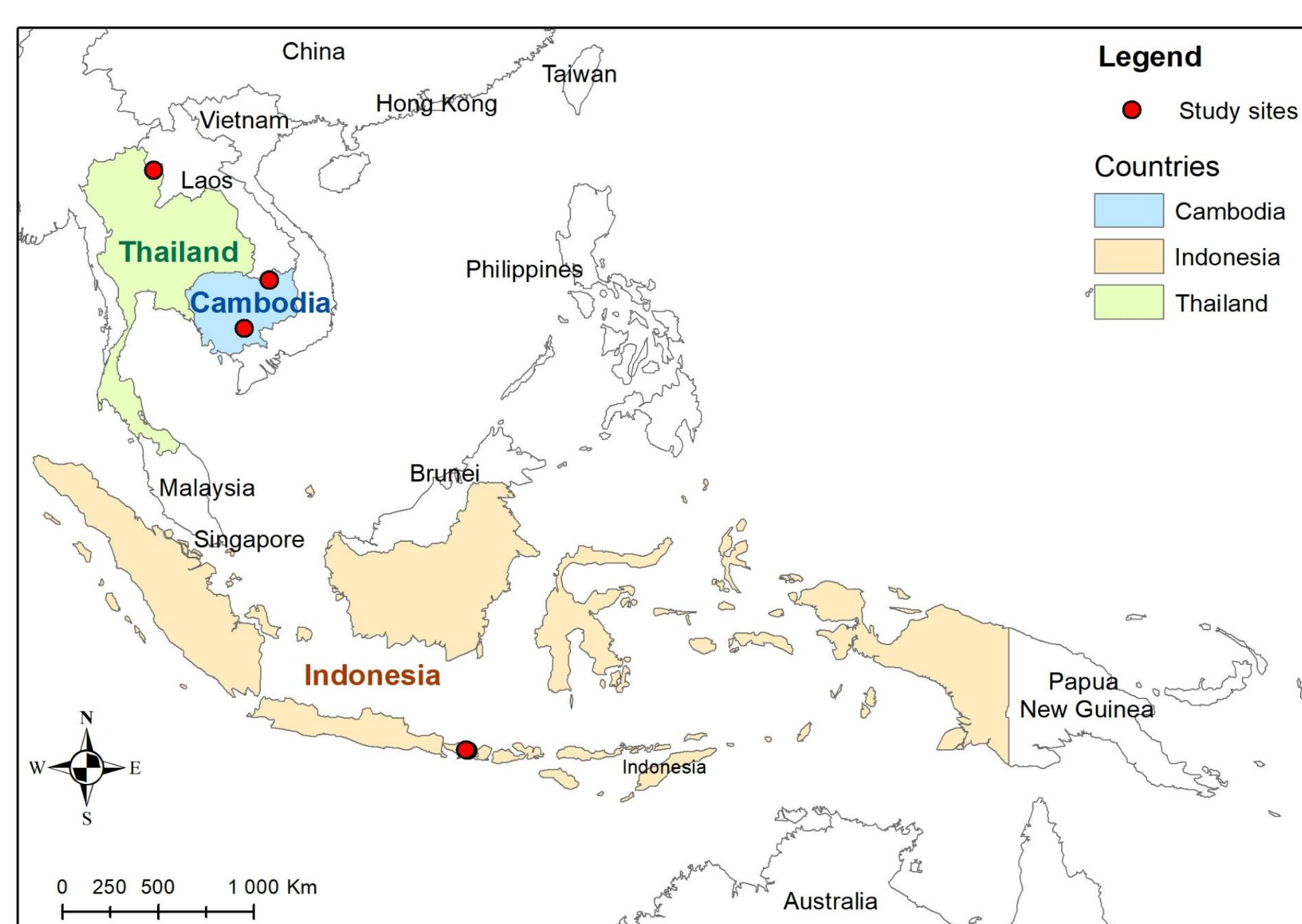


Context

Dog was the first domesticated species by humans, interacting as commensal in human societies for more than 30,000 years. Domestic dogs provide multiple (socio-economic, cultural, recreational...) benefits, while also negatively impacting on the health of Humans (zoonosis, NTD), of other domestic animals, and of the environment (including wildlife). Widespread free-roaming dog populations in SE Asia call for integrated innovative One Health research-action and management.

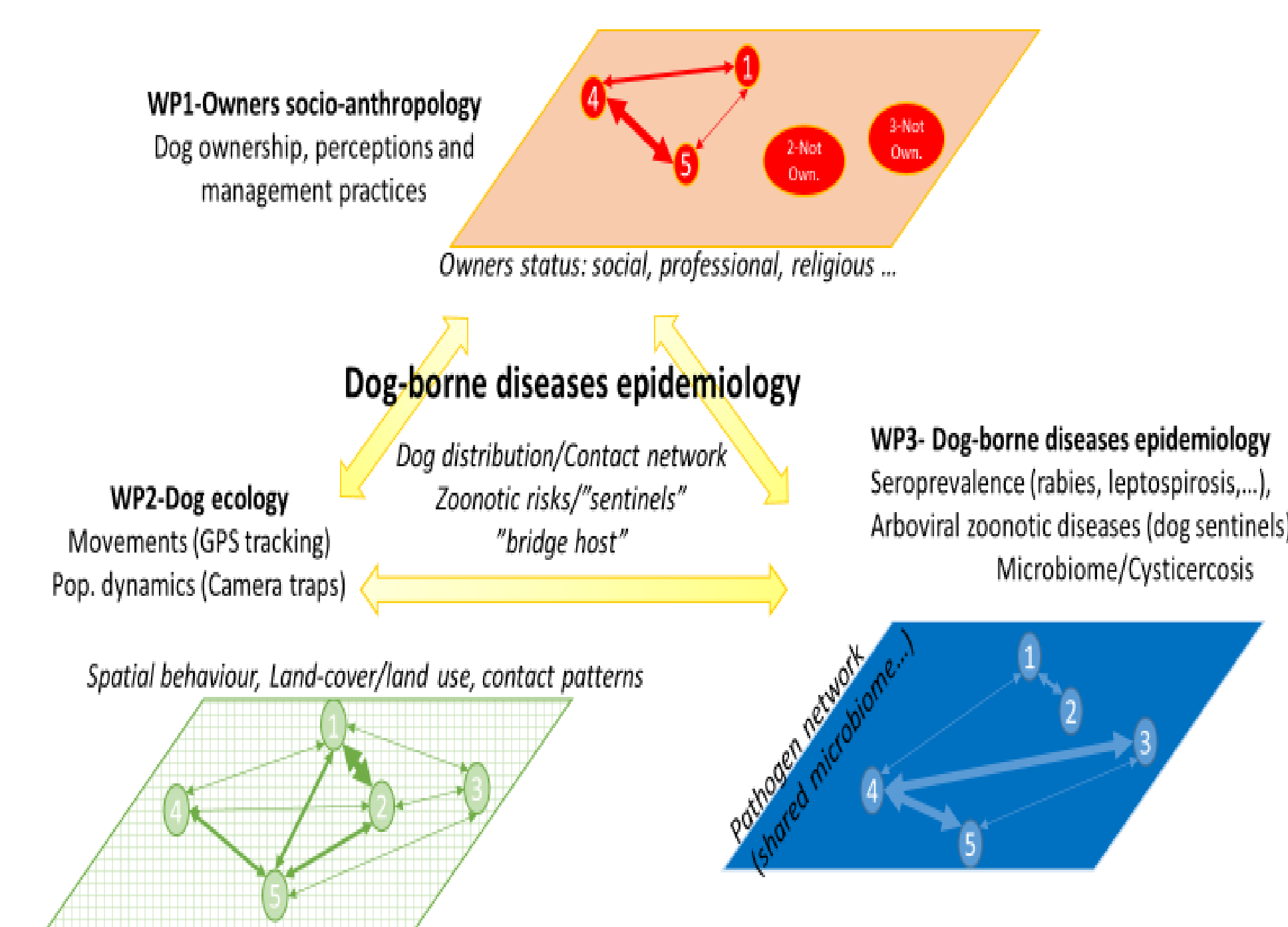
Map of study sites

Five rural and semi-urban sites in Cambodia, Indonesia and Thailand



SEAdogSEA approach

Identify social and ecological drivers of dog-associated diseases epidemiology



Participatory and AI-assisted monitoring of dog populations



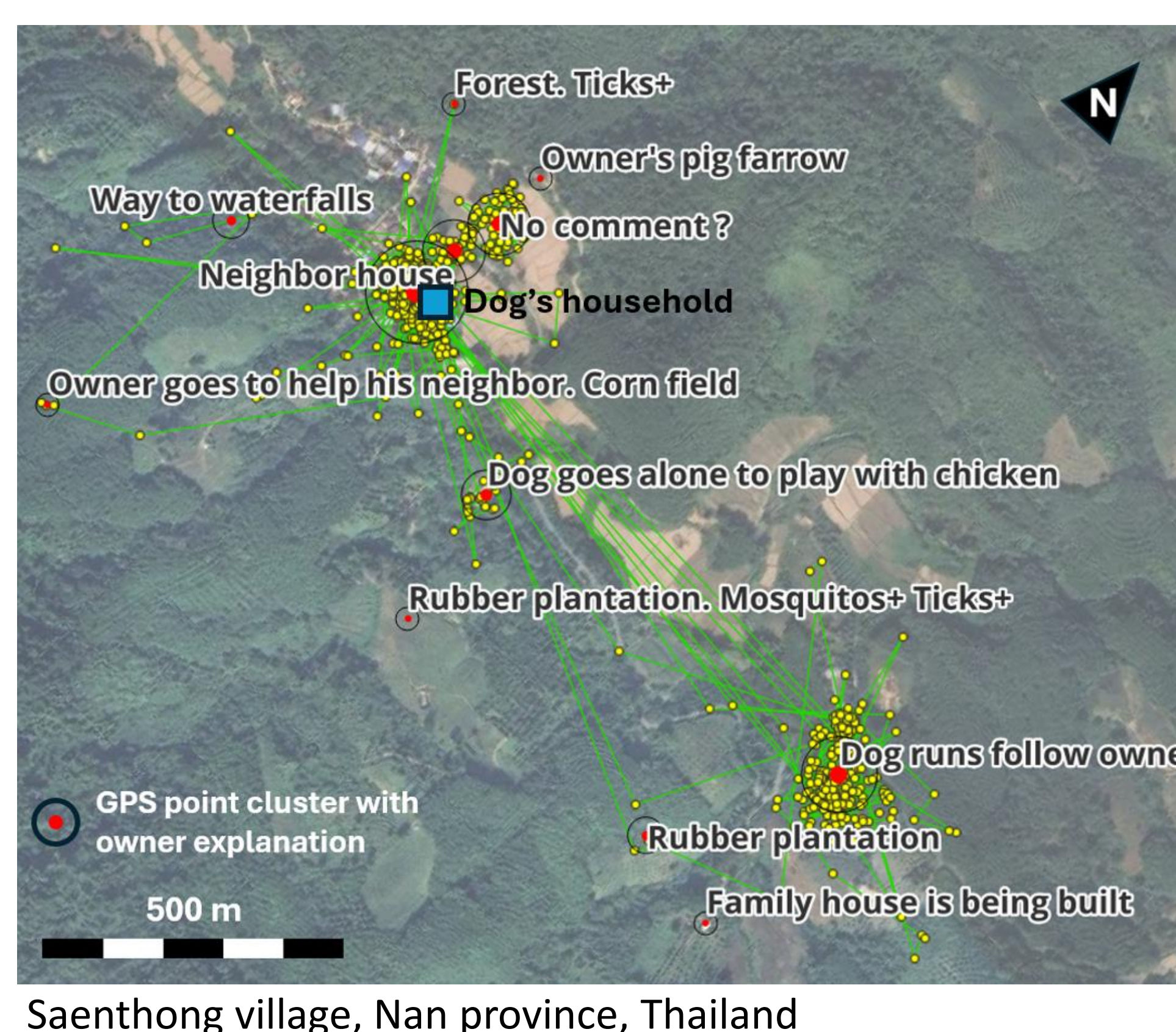
Detection, identification, and re-identification of free-roaming dogs using AI to analyse images captured in uncontrolled field conditions by participatory camera trap protocols in rural and semi-urban areas



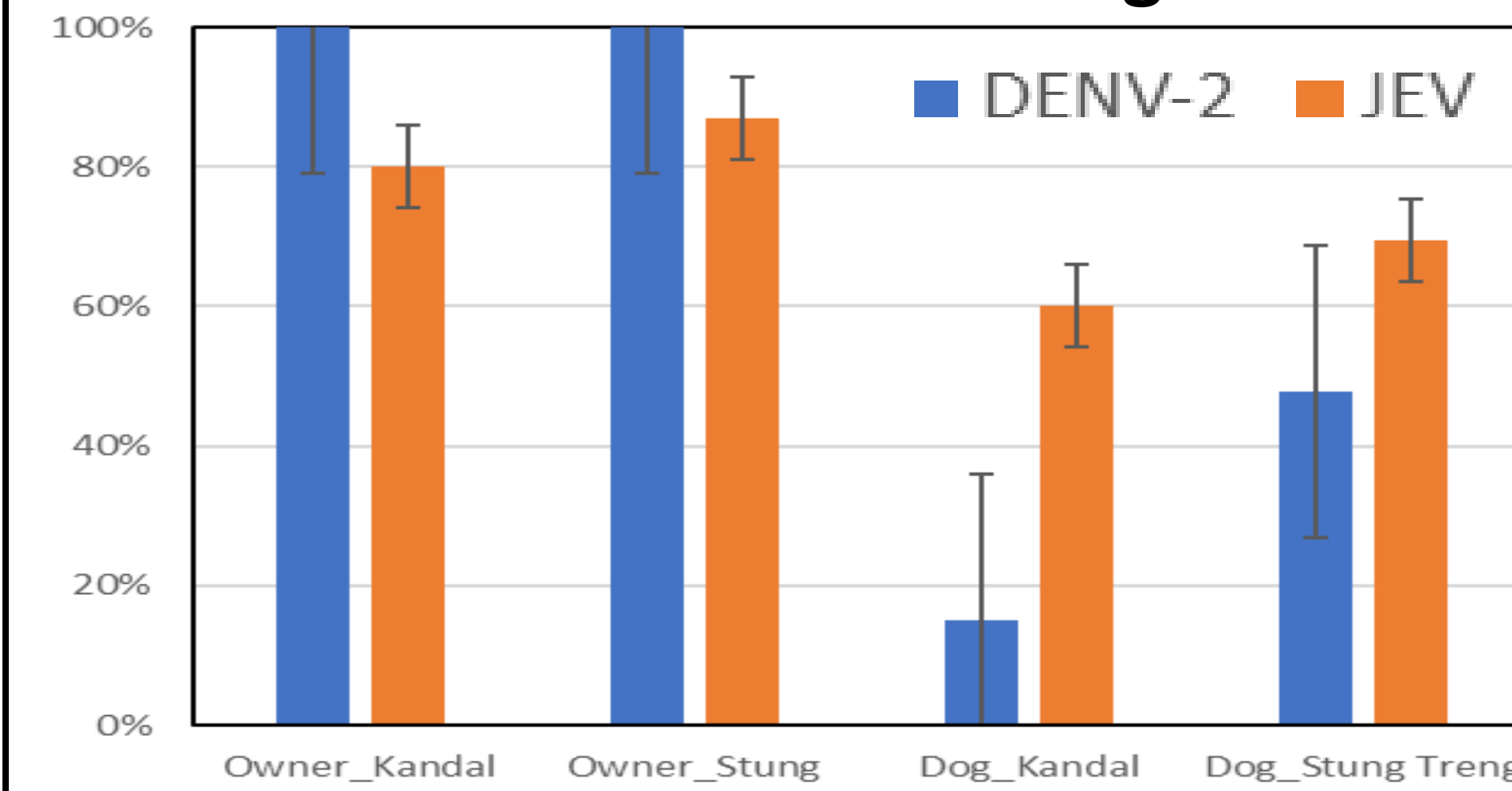
Pictures of dogs taken by camera in the village of Sibetan (Bali, Indonesia), analysed/clustered by AI

Social-ecological analysis of dog movements and owner activities

65 GPS tracking of dogs for 1 month over 6 recording sessions spanning a 4-year period, with mapped explanatory comments from owners about their activities and movements. Identification of 3 profiles of canine movements determined by ecological and social factors.



Prevalence of parasites in dog owners and their dogs



Blood samples were collected from dog owners and their dogs in two villages from Kandal and Stung Treng provinces (Cambodia).



A quantitative high-throughput Foci Reduction Neutralization Test (FRNT), requiring at least a 90% reduction of viral infection for a positive result, was conducted using dengue virus serotype 2 (DENV-2), Japanese encephalitis virus (JEV).

Affiliations and Sponsors

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Way forward

The results, methods and tools developed in SEAdogSEA will contribute to assess the potential use of dogs as sentinels of owners's infectious risks, and improve field-based dog management by targeting dog individuals most likely to get infected and spread pathogens to humans and other animals, including wildlife.