ACADÉMIE d'AGRICULTURE de FRANCE

AGRICULTURE ■ ALIMENTATION ■ ENVIRONNEMENT

La santé des écosystèmes comme contribution à l'approche "Une Seule Santé" (One Health) pour la santé des territoires

L'observatoire social-écologique biodiversité et santé de Saenthong

Serge Morand et coll.

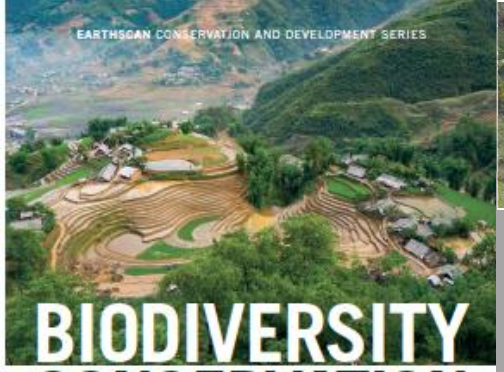
HealthDEEP
HEALTH, DISEASE ECOLOGY, ENVIRONMENT AND POLICY
INTERNATIONAL RESEARCH LABORATORY
CNRS - KASETSART UNIVERSITY -MAHIDOL UNIVERSITY

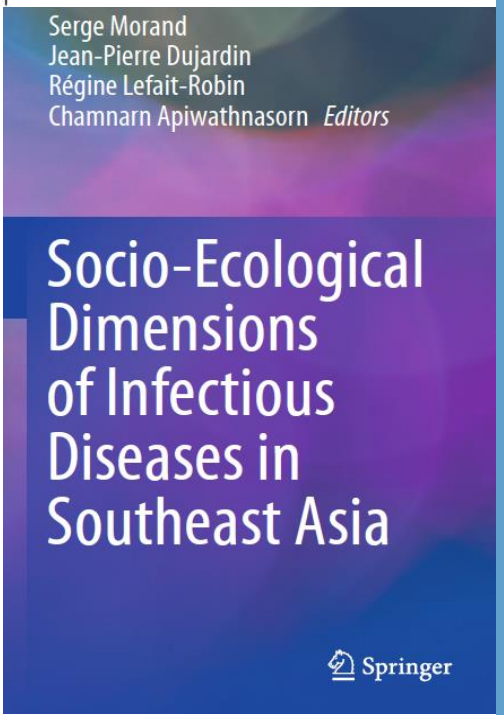
cnrs INEE

KU KASETSART UNIVERSITY Faculty of Veterinary Technology

MAHIDOL UNIVERSITY *Wisdom of the Land*
Faculty of Tropical Medicine

TICA
Thailand International Cooperation Agency



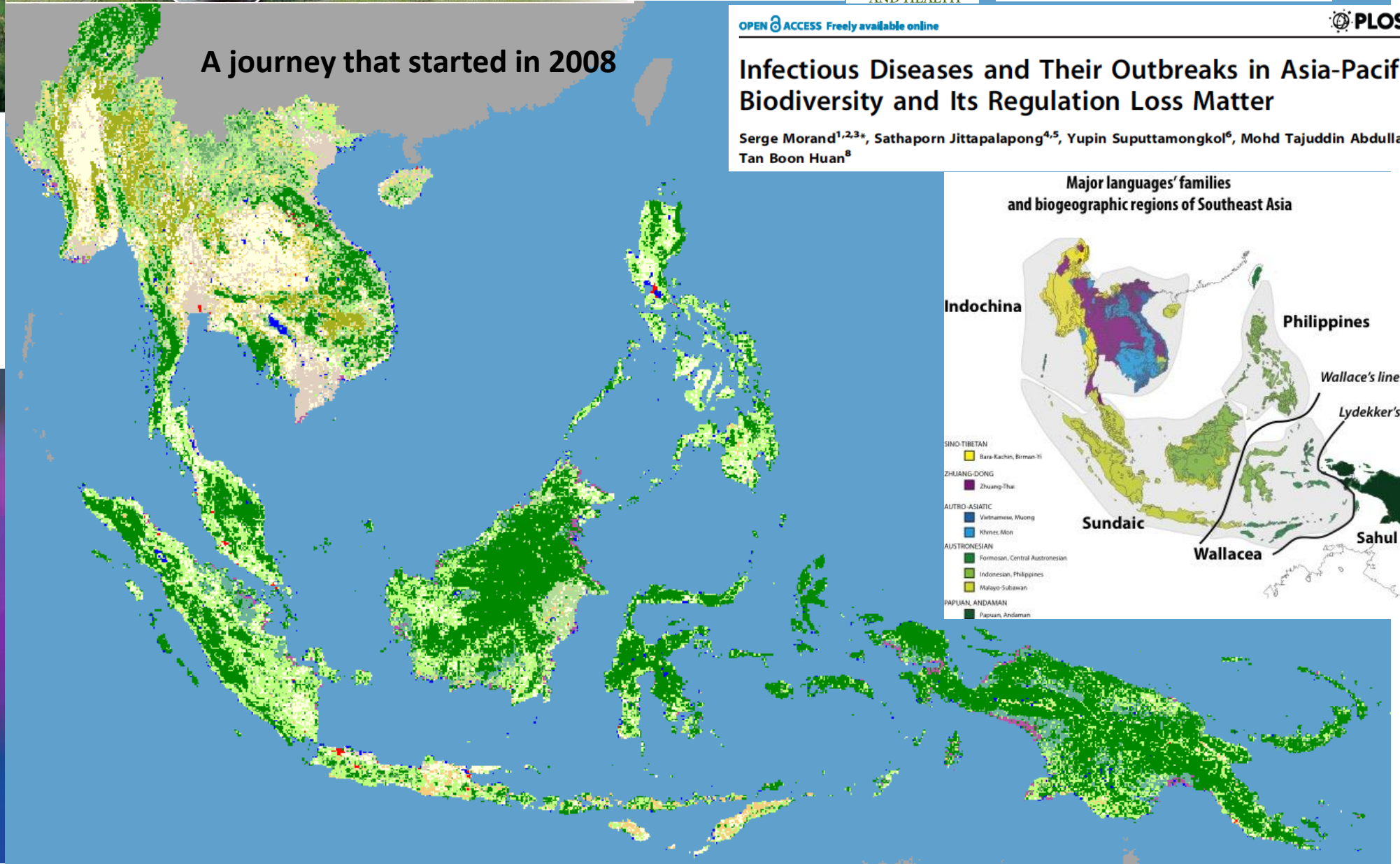


BiodivHealthSEA.org

BIODIVERSITY AND HEALTH

AGENCE NATIONALE DE LA RECHERCHE ANR

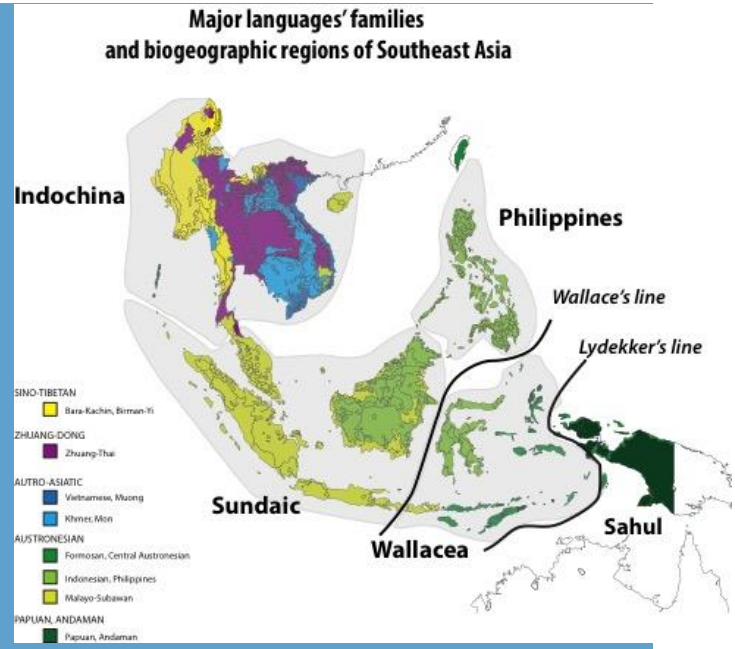
A journey that started in 2008



OPEN ACCESS Freely available online PLOS ONE

Infectious Diseases and Their Outbreaks in Asia-Pacific: Biodiversity and Its Regulation Loss Matter

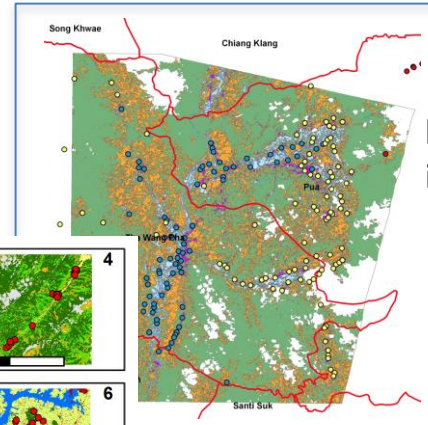
Serge Morand[1,2,3]*, Sathaporn Jittapalapong[4,5], Yupin Suputtamongkol[6], Mohd Tajuddin Abdullah[7], Tan Boon Huan[8]



CERoPath
BiodivHealthSEA
FutureHealthSEA

2008 … 2022

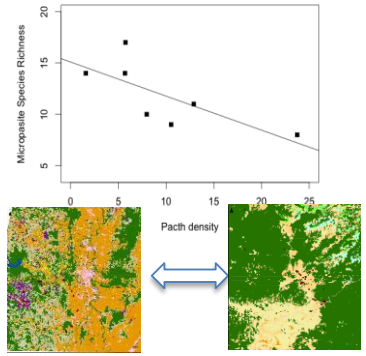
34 field trips
14 Land use developed
4, 000 rodents & pathogens

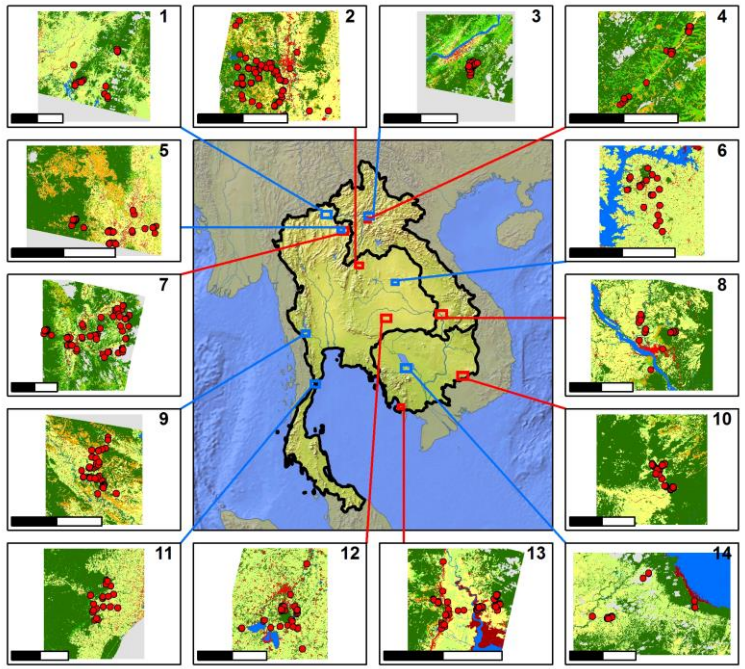


LULC and Health
leptospirosis
in humans and rodents

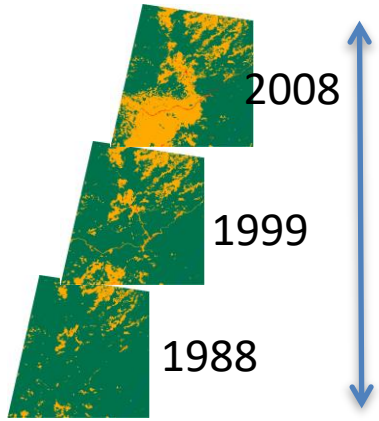
Province Nan

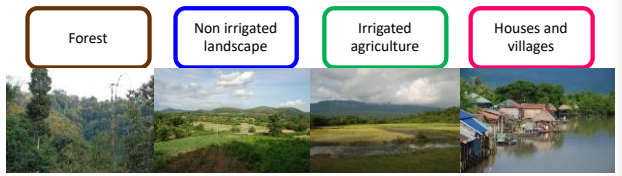
Land Use changes & rodent-borne disease diversity

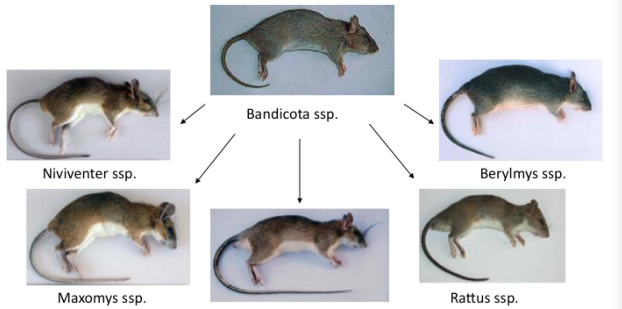




LUCL Temporal change

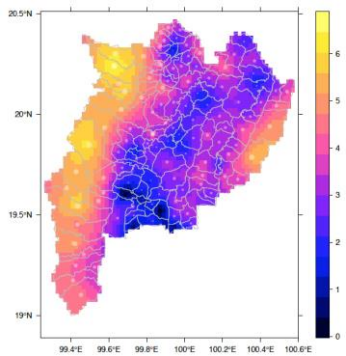






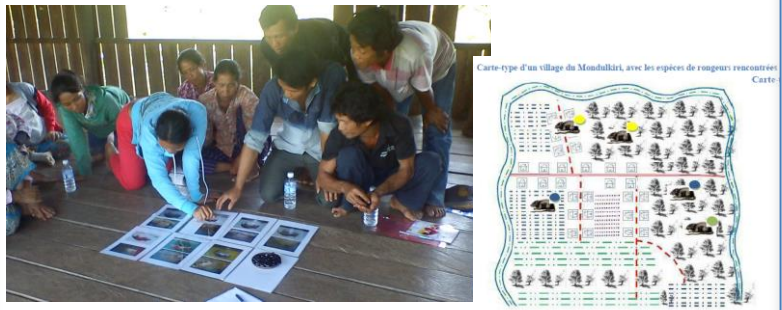
Prions
Retrovirus
Viruses Hantavirus, LCMV, Arenavirus, Cowpox
Bacteria *Leptospira*, *Orientia*, *Bartonella*
Protists *Trypanosoma*, *Cryptosporidium*, *Toxoplasma*, *Babesia*
Helminths (30 species)
Arthropods Fleas, lice, Chigger mites(40), ticks

Epidemiology

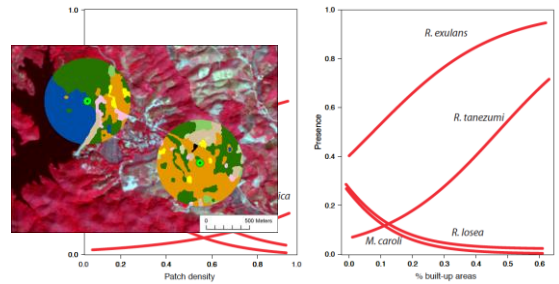


Scrub typhus in Chiang Rai

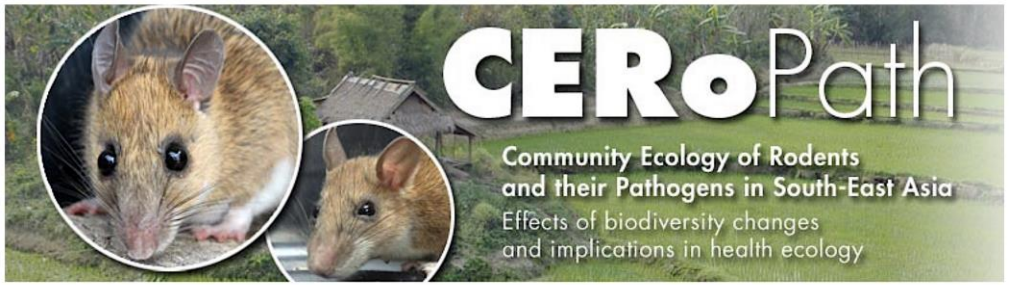
Social Representation
Participatory mapping

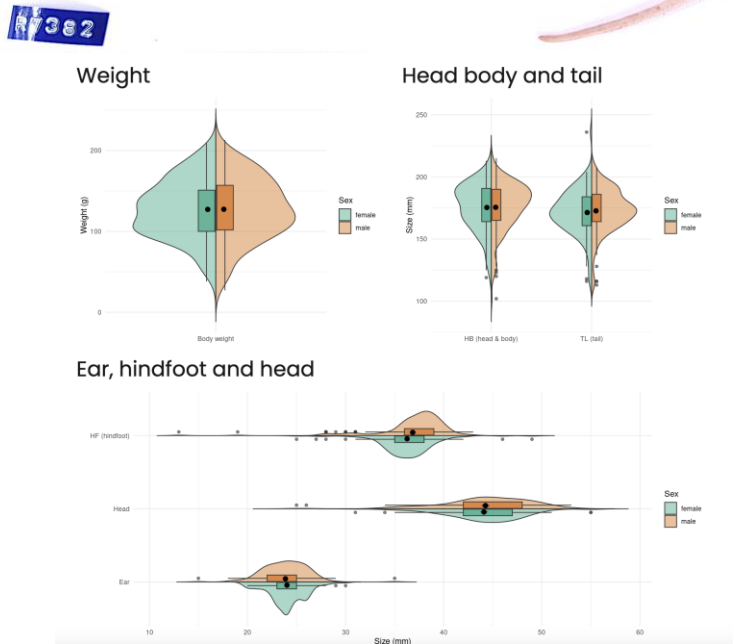


Environmental Niche Modelling

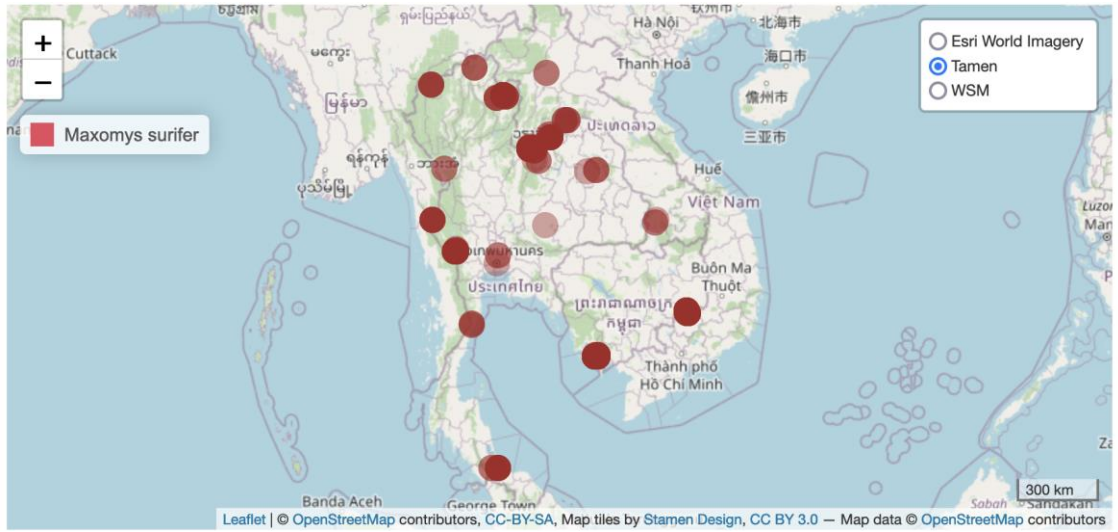


CERoPath Home Enter species Pictures Map Habitat Measurements DATA Barcoding tool

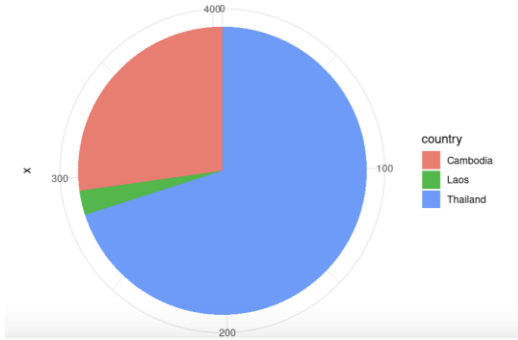




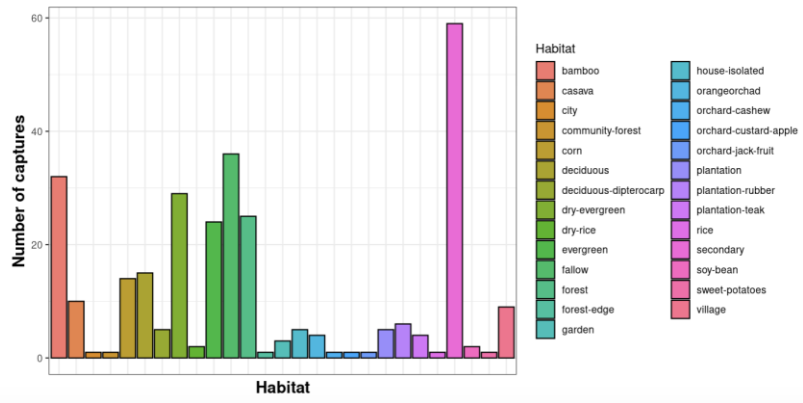
Maxomys surifer

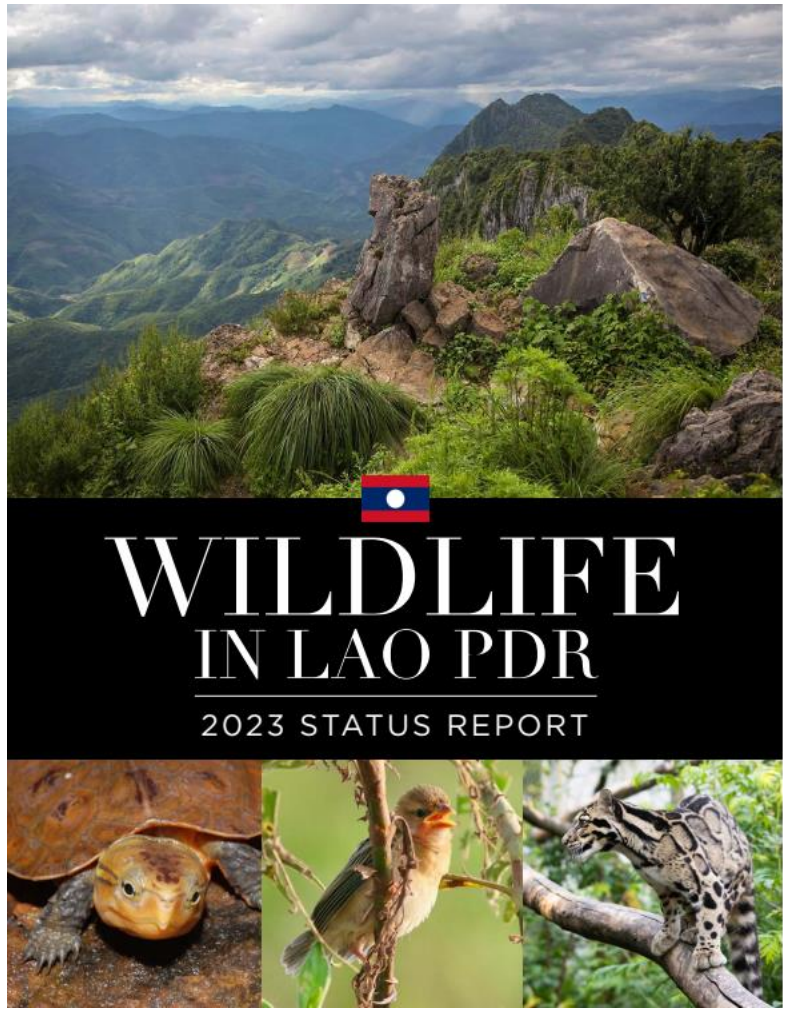


Number of captures per country



Number of captures per habitat (high)





ORDER RODENTIA, SUPERFAMILY MUROIDEA

SERGE MORAND
CNRS & Faculty of Tropical Medicine, Mahidol University (Thailand)

ANNOTATED LIST OF SPECIES

Rattini

Nine genera, 27 species in Lao PDR.

***Bandicota indica* Greater Bandicoot Rat**

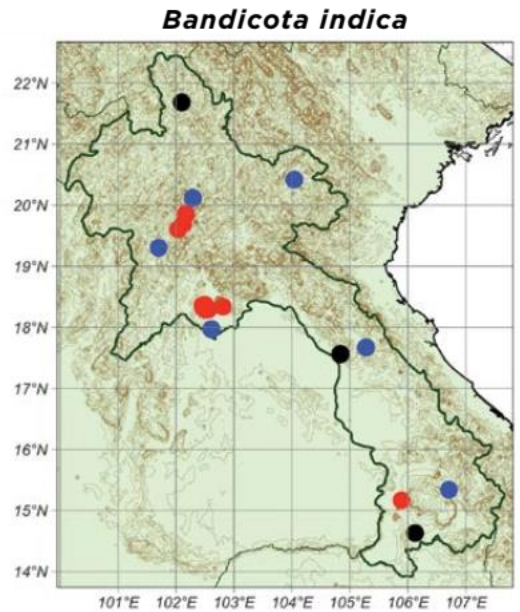
CONSERVATION SIGNIFICANCE: Low (Globally Least Concern).

DISTRIBUTION: Northern Northern Lao (one locality, GBIF), Central Northern Lao (three localities, CSIRO, CERoPath), Eastern Northern Lao (one locality, CSIRO), Western Northern Lao (one locality, CSIRO), Northern Lao Lowlands (five localities, GBIF, CSIRO, CERoPath), Central Lao Lowlands (one locality, CSIRO), Southern Lao Lowlands (one locality, CERoPath), Northern Annamites (one locality, CSIRO), Central Annamites (one locality, CSIRO).

HABITATS: Grassy areas in upland conifer and broad-leaved forest (Marshall 1977). All kinds of cropland (rice field, corn, cassava, sugarcane), broad-leaved forest, fallow, orchard (CERoPath).

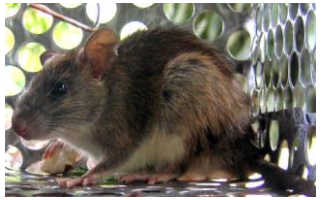
POPULATION STATUS AND TRENDS: Recorded from Phongsaly to Champasak. Probably present in all Tier 1 regions of Lao PDR. Locally observed in relatively high density in cropland (CERoPath).

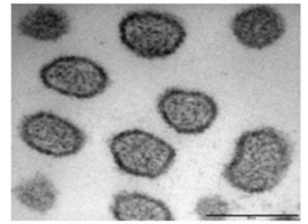
TAXONOMY: First described by Bechstein (1800).

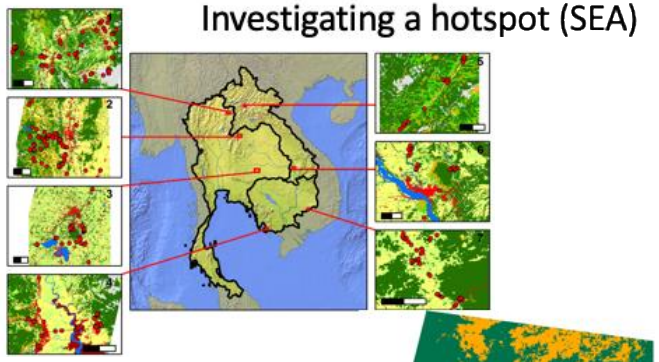


Changing landscapes of Southeast Asia and rodent-borne diseases: decreased diversity but increased transmission risks

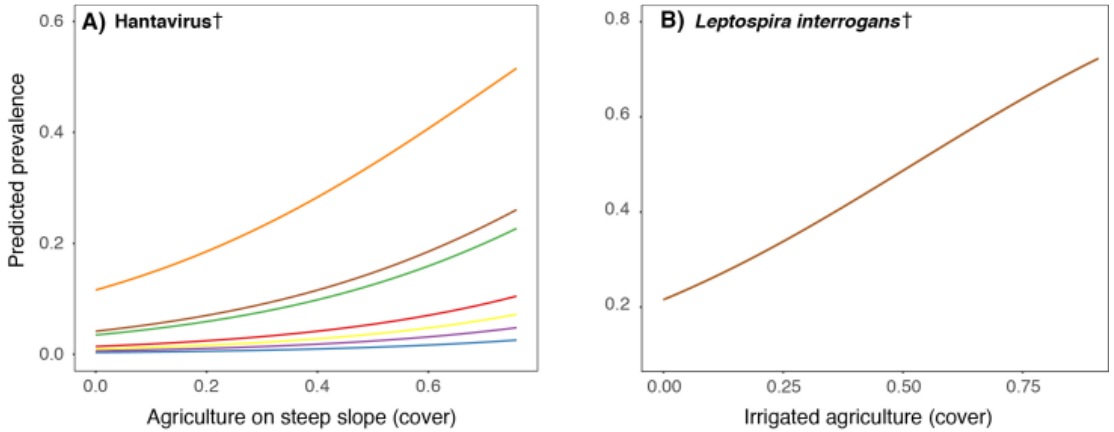
Serge Morand,[1,2,17] Kim Blasdell,[3] Frédéric Bordes,[4] Philippe Buchy,[5,6] Bernard Carcy,[7] Kittipong Chaisiri,[2] Yannick Chaval,[8] Julien Claude,[4] Jean-François Cosson,[9] Marc Desquesnes,[10,11] Sathaporn Jittapalapong,[12] Tawisa Jiyipong,[10,13] Anamika Karnchanabanthoen,[7,12] Pumhom Pornpan,[10,14] Jean-Marc Rolain,[13] and Annelise Tran[15,16]







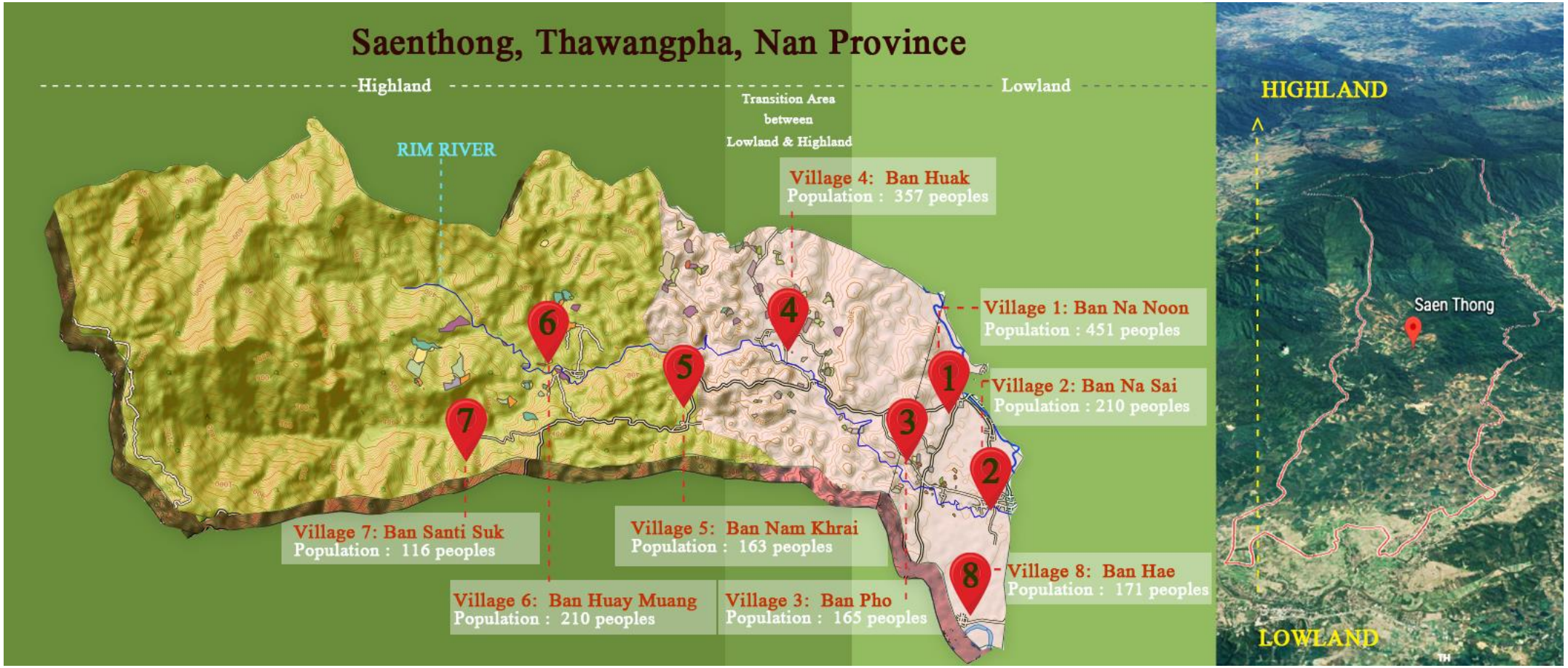
Linking changing landscape and Ro-Bo diseases



Increasing rodent-borne disease risks with agricultural extension and urbanisation

Ecol. Applicat. 2019

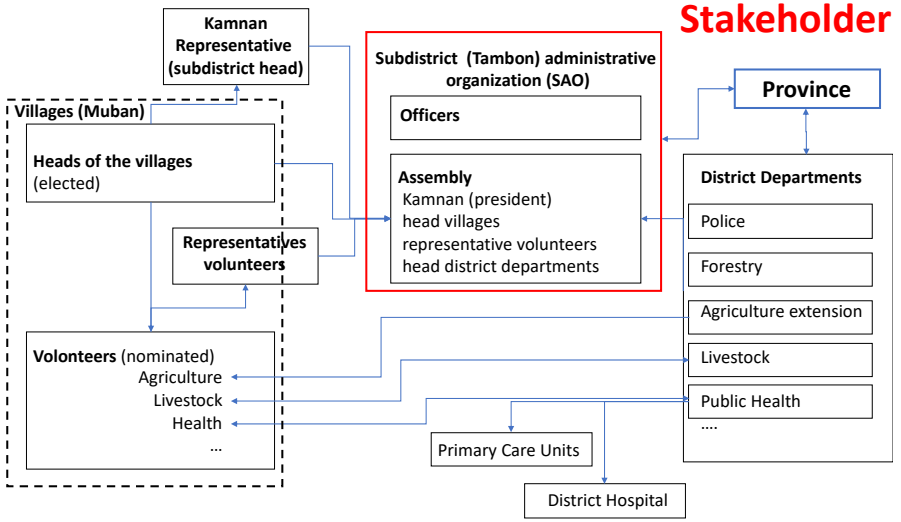
Observatoire social – écologique biodiversité et Santé de Saenthong

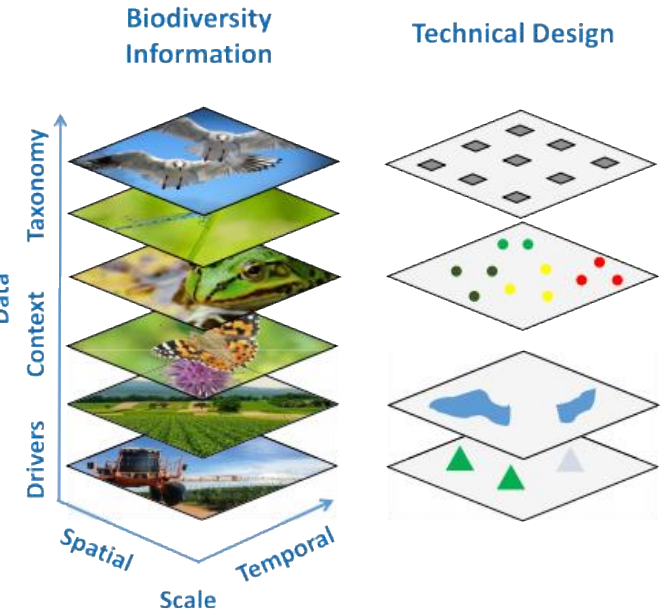


Social-ecological observatory of biodiversity & health of Saenthong (Nan, Thailand) 2008 - ongoing

Community engagement

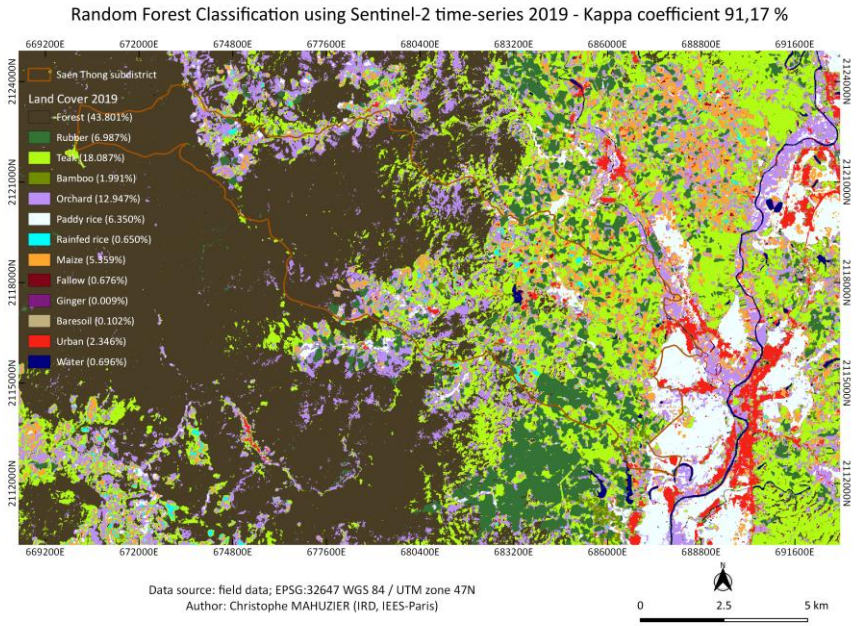
Stakeholder network

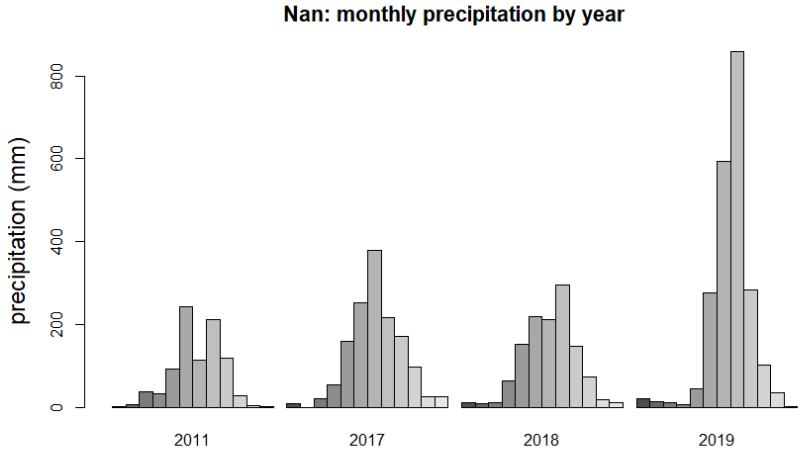




Studies (technical design)	Financial support	Date	Engagement
Rodent-borne zoonoses	ANR CERoPath, ANR BiodivHealthSEA	2008-2016	Animal ethics
Tick-borne diseases	métaprogramme INRA	2014-2015	Animal ethics, ethics, consents
Mosquito-borne diseases	FutureHealthSEA, MU Trop Med	2018-2021	Animal ethics, ethics, consents
Food-borne diseases	BiodivHealthSEA,FutureHealthSEA	2012-2021	Animal ethics, ethics, consents
Antimicrobial resistance	ANR FarmResist	2018-2021	Animal ethics, ethics, consents
Exposome pesticides,	FutureHealthSEA	2018-2021	Animal ethics, consents, community engagement
Animal traditional pharmacopea	DIM Santé, IRD-Collège de France	2020-2021	Nagoya Protocol, community engagement
Microbiota	FutureHealthSEA, FarmResist, MU TropMed	2018-2020	Animal ethics, ethics, consents
Rickettsial diseases	MOURU	2020-2021	Animal ethics, human ethics
Dog & community health	ANR SEAdogSEA	2019-2021	Animal ethics

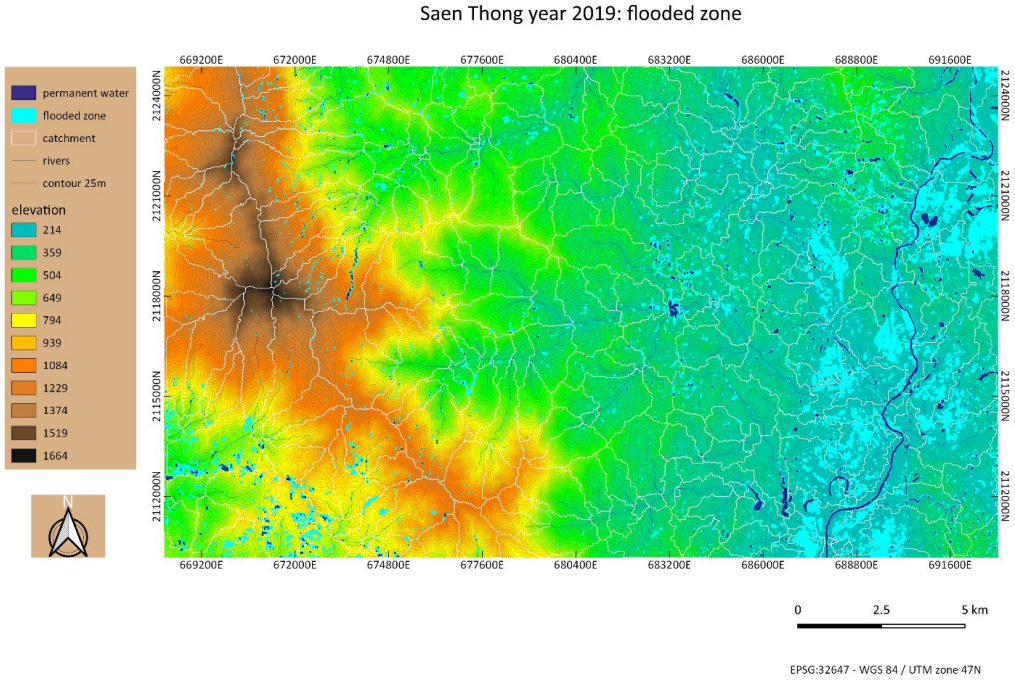
Land Use Land Cover

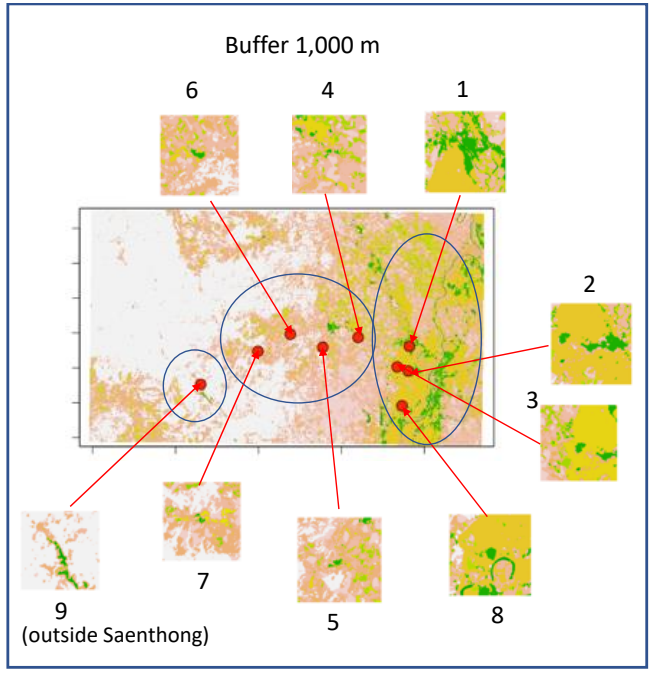




Annelise Tran

Christophe Mahuzier

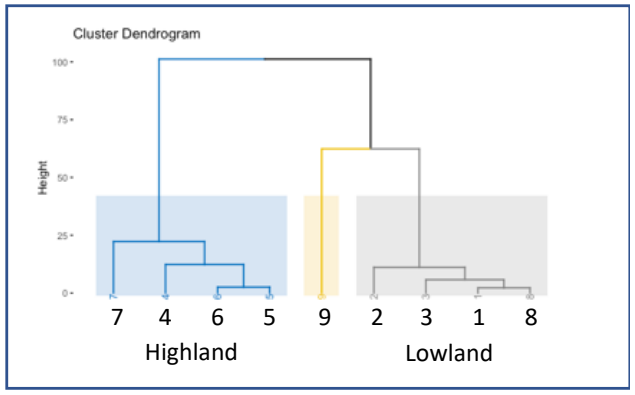




Extract / characterize LU around each village (buffer)

Land metrics, connectivity
libraries: landmetrics, lconnect

Entropy / diversity
libraries: belg, SpatEntropy

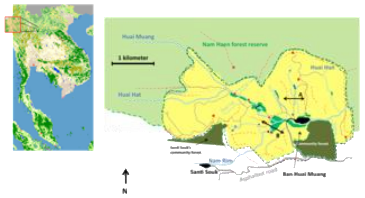


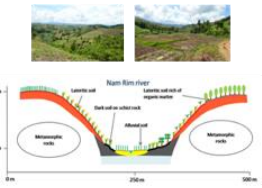
Agrarian diagnostic
Land units characterisation

Christian Valentin

Analysis-diagnostic of an agrarian system

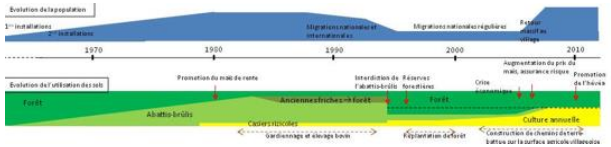
Interactions between communities and their social and natural environment





1. Health risk exposure evolution throughout the agrarian history

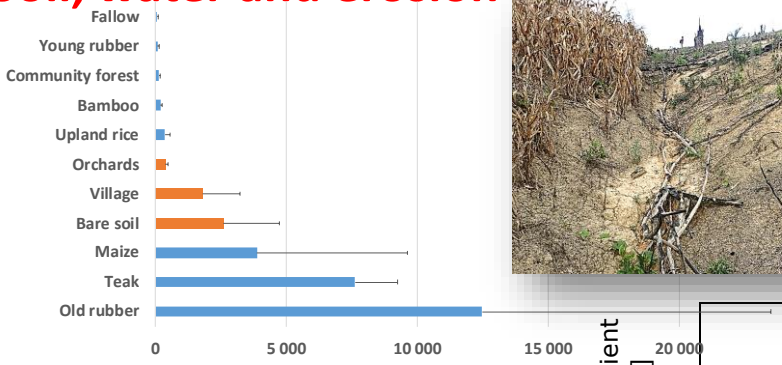
2. Increased differentiation of farming systems and social actors types at the village level



Bounsamay Soulileuth

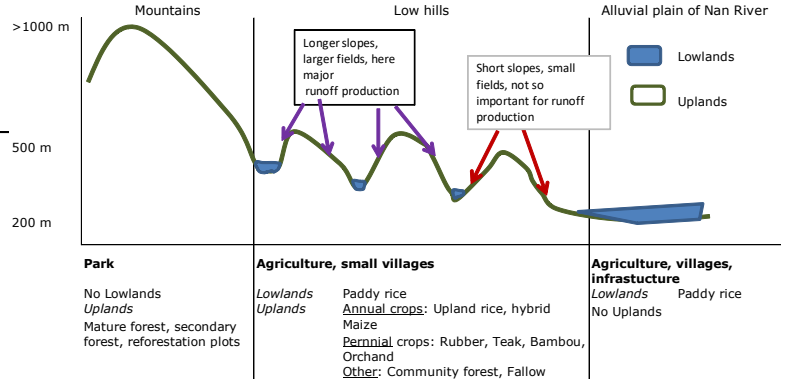
Anneke de Row

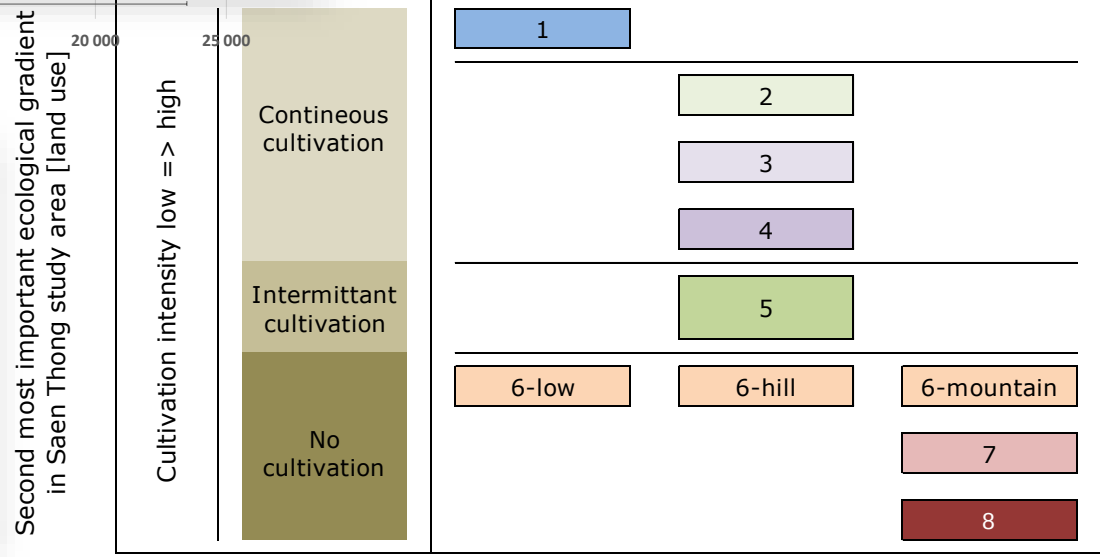
Soil, water and erosion



Soil loss (g m-2 year-1)

Most important ecological gradient in Saen Thong study area [geomorphology]





List of land units

1 - Wet rice, irrigated crops

2 - Contineous cultivation of annual crops (e.g. Maize)

3 - Polyculture of perennial crops (e.g. Orchards)

4 - Monoculture of perennial crops (e.g. Rubber, Teak, Bambou)

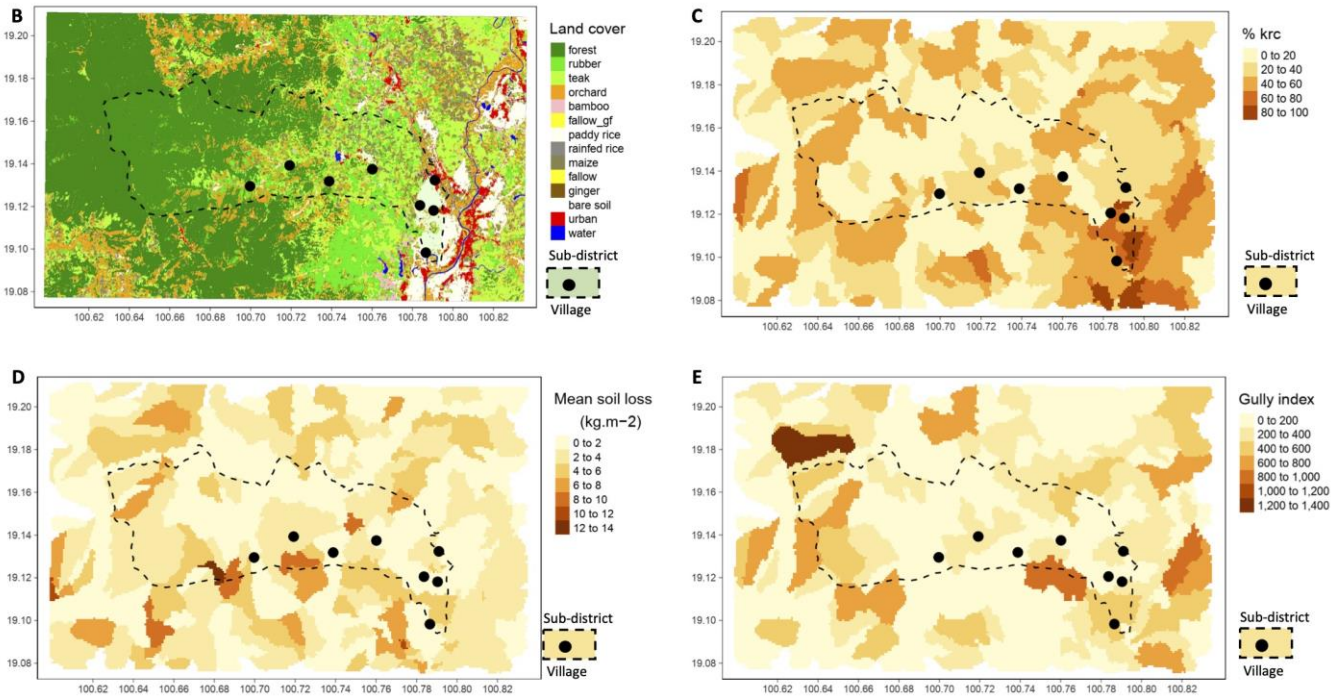
5 - Rotations of upland rice and short fallows

6 - Community forest

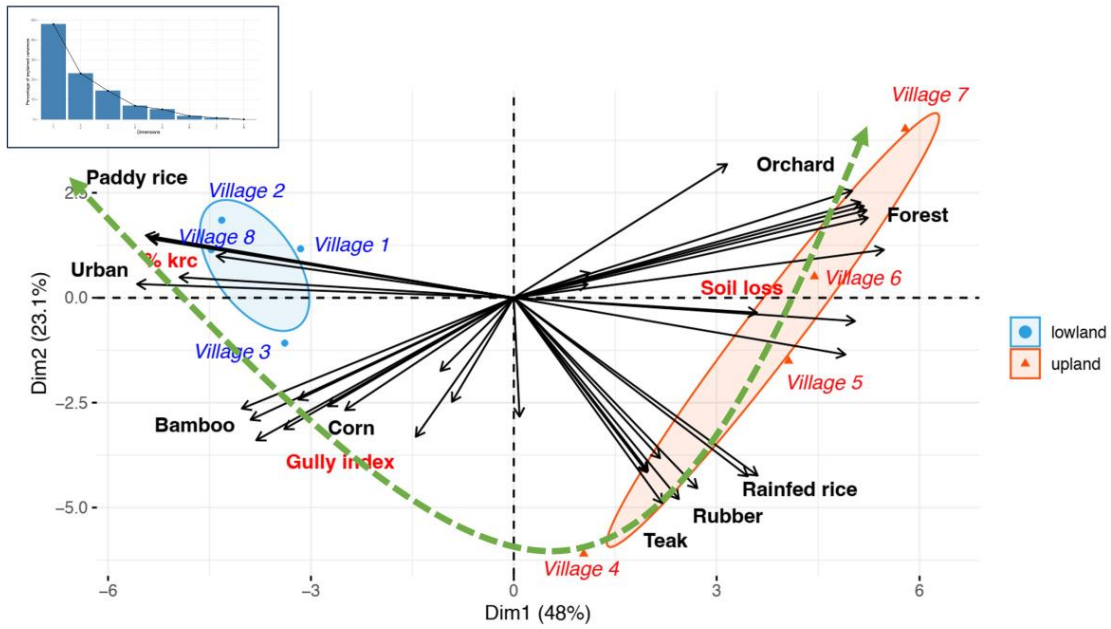
7 - Secondary forest

8 - Mature forest

Land use and soil erosion



A gradient




Kittipong Chaisiri


Alexis Ribas

Hsuanwien Chen


Michel de Garine

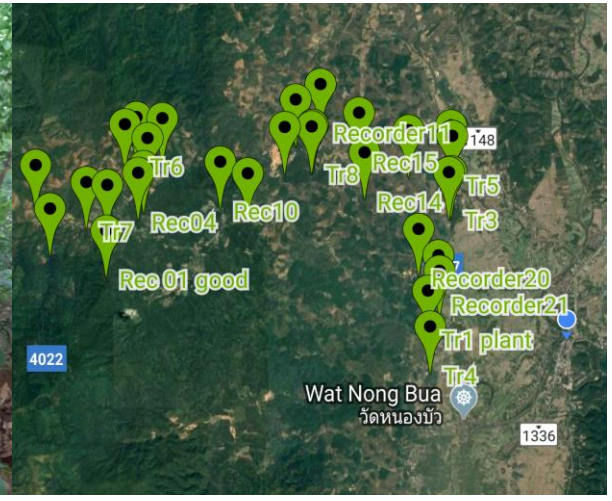

Anamika Kittiyakan

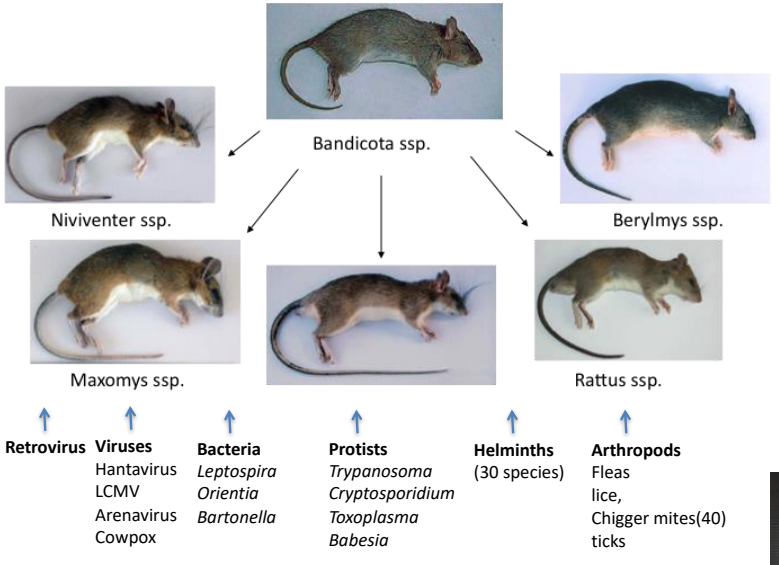
Biodiversity

Chuanphot Thinphovong

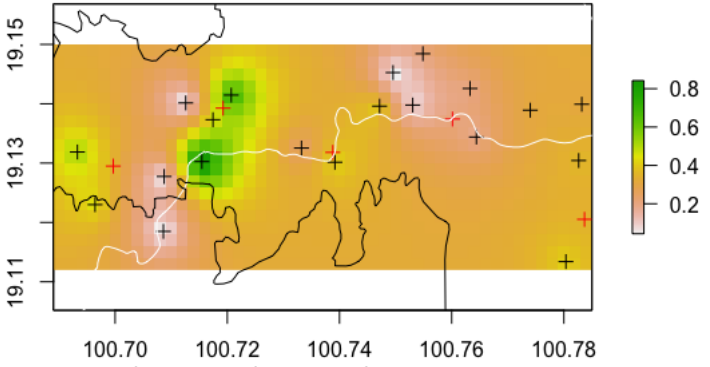
Domestics

Soundscape ecology

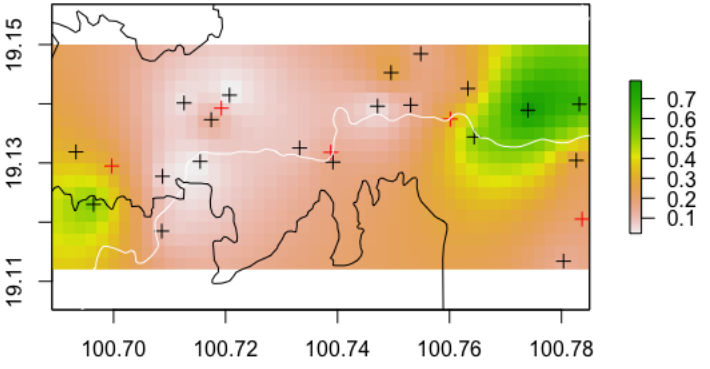




6h00 Anthropophony

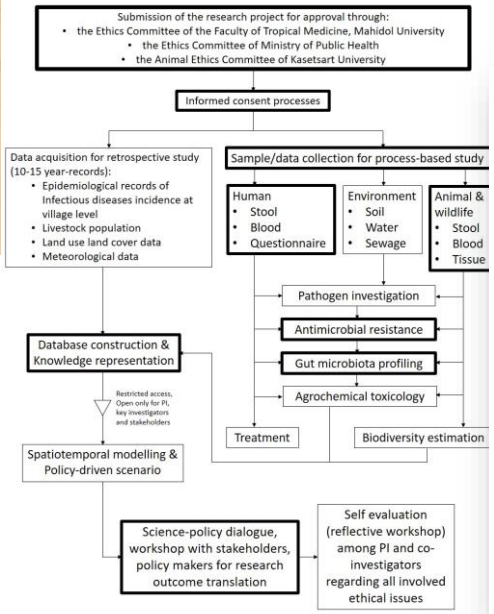


24h00 Anthropophony

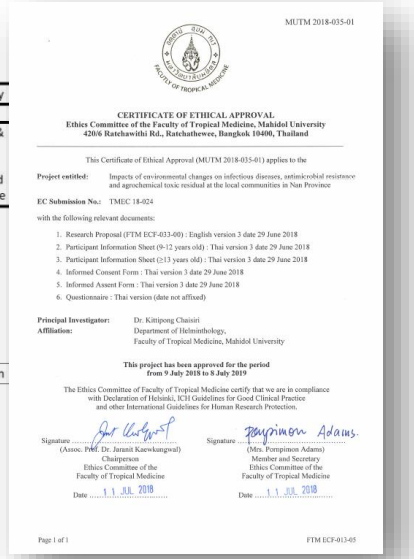


Food-borne diseases

Epidemiology / questionnaires



Technical design



MUTM 2018-035-01

CERTIFICATE OF ETHICAL APPROVAL
Ethics Committee of the Faculty of Tropical Medicine, Mahidol University
420/6 Ratchawithi Rd., Ratchathewee, Bangkok 10400, Thailand

This Certificate of Ethical Approval (MUTM 2018-035-01) applies to the

Project entitled: Impacts of environmental changes on infectious diseases, antimicrobial resistance and agrochemical toxic residual at the local communities in Nan Province

EC Submission No.: TMEC 18-024

with the following relevant documents:

1. Research Proposal (FTM ECF-033-60) : English version 3 date 29 June 2018
2. Participant Information Sheet (9-12 years old) : Thai version 3 date 29 June 2018
3. Participant Information Sheet (≥13 years old) : Thai version 3 date 29 June 2018
4. Informed Consent Form : Thai version 3 date 29 June 2018
5. Informed Assent Form : Thai version 3 date 29 June 2018
6. Questionnaire : Thai version (date not affixed)

Principal Investigator: Dr. Kittipong Chaisiri
Affiliation: Department of Helminthology, Faculty of Tropical Medicine, Mahidol University

This project has been approved for the period from 9 July 2018 to 8 July 2019

The Ethics Committee of Faculty of Tropical Medicine certify that we are in compliance with Declaration of Helsinki, ICH Guidelines for Good Clinical Practice and other International Guidelines for Human Research Protection.

Signature ..... (Assoc. Prof. Dr. Jaranit Kaewkungwal) Chairperson Ethics Committee of the Faculty of Tropical Medicine Date ..... 11 JUL 2018

Signature ..... (Mrs. Pompimon Adams) Member and Secretary Ethics Committee of the Faculty of Tropical Medicine Date ..... 11 JUL 2018

Page 1 of 1 FTM ECF-013-05

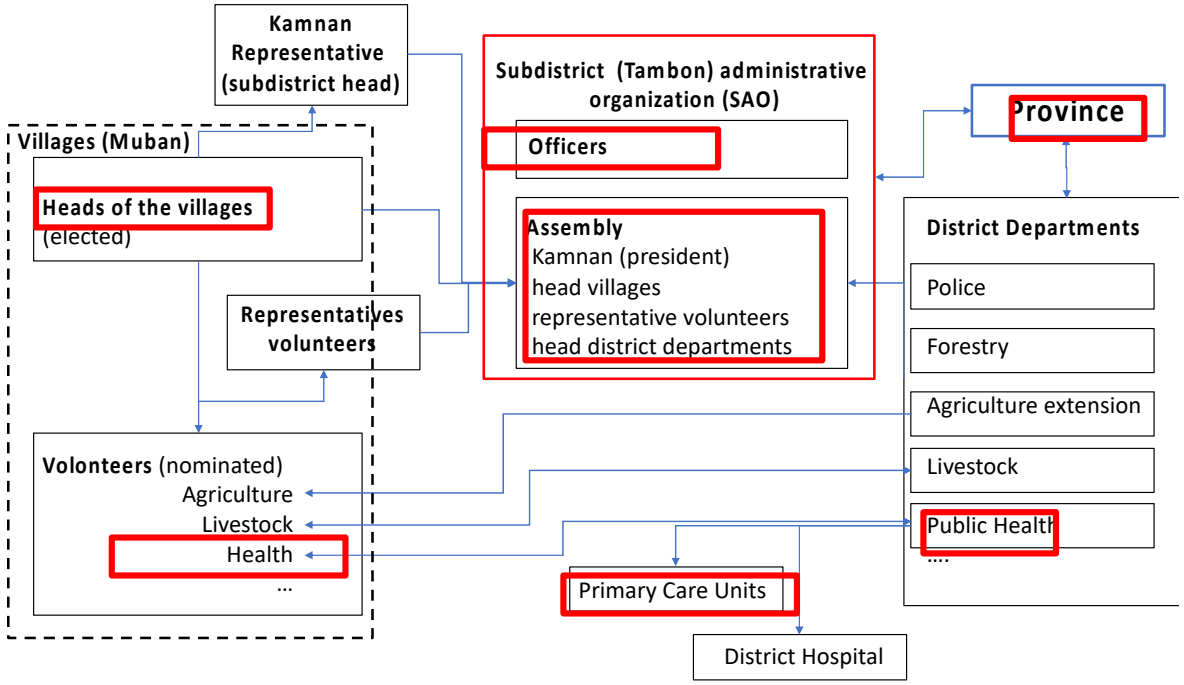
Ethics

Ajala Prommi

Kittipong

Stakeholder network

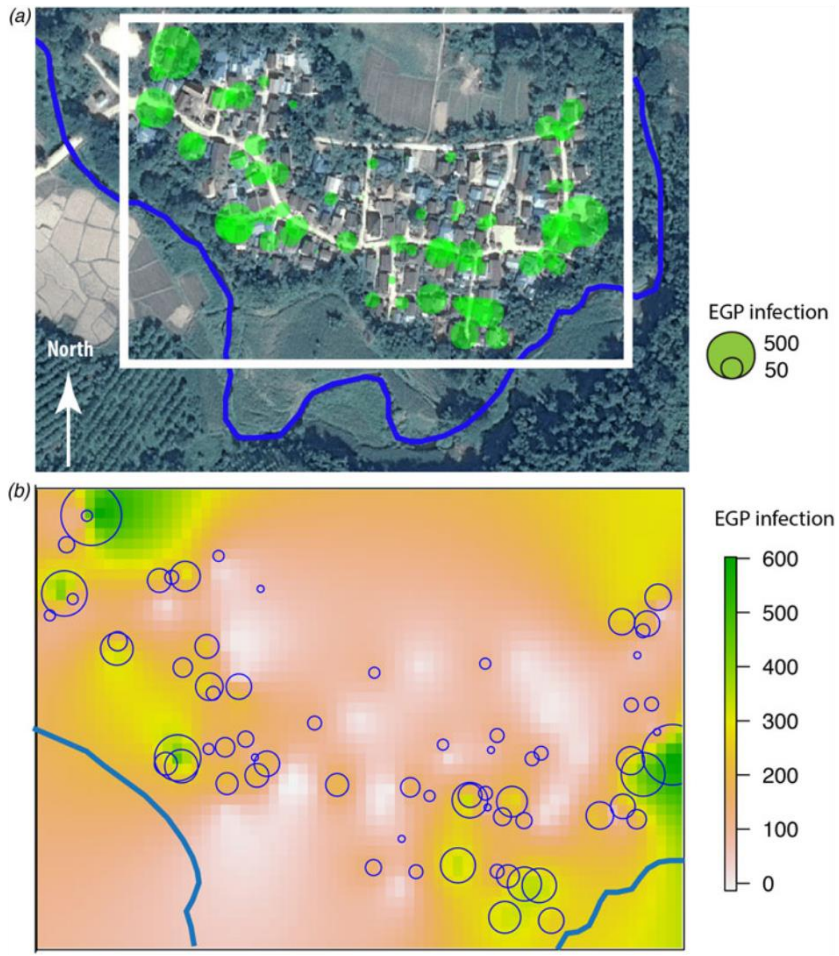
Food contest (health education)



Parasitic infections in relation to practices and knowledge in a rural village in Northern Thailand with emphasis on fish-borne trematode infection

K. Chaisiri[1], C. Jollivet[2], P. Della Rossa[2,3], S. Sanguankiat[1], D. Wattanakulpanich[1], C. Lajaunie[4], A. Binot[2,5], M. Tanita[6], S. Rattanapikul[6], D. Sutdan[7], S. Morand[8] and A. Ribas[9]

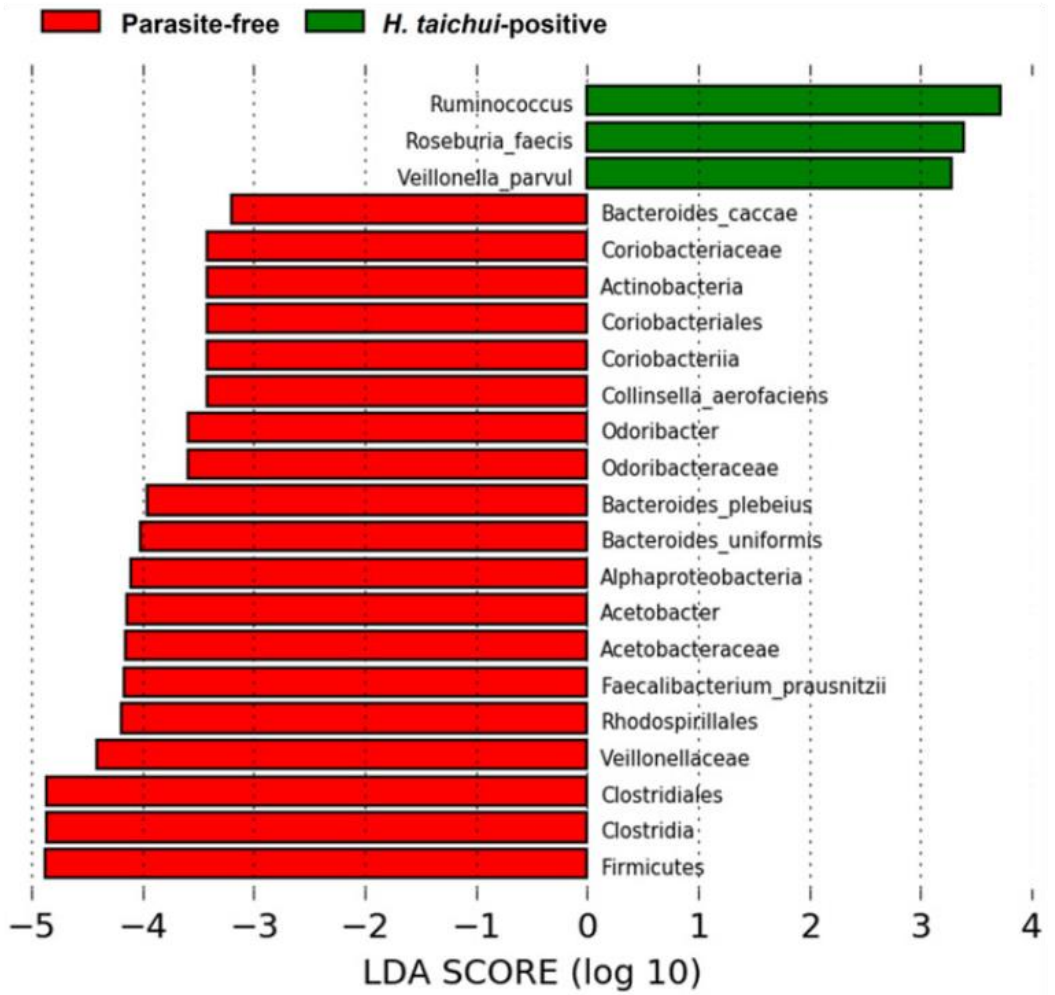
Epidemiology and Infection



Intestinal parasites in rural communities in Nan Province, Thailand: changes in bacterial gut microbiota associated with minute intestinal fluke infection

Parasitology

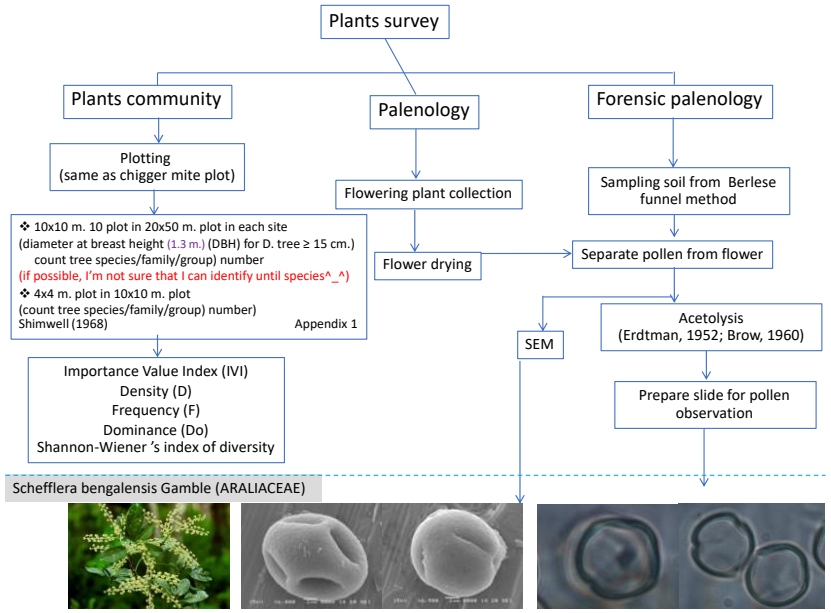
Ajala Prommi[1], Pinidphon Prombutara[2,3], Dorn Watthanakulpanich[1], Poom Adisakwattana[1], Teera Kusolsuk[1], Tippayarat Yoonuan[1], Akkarin Poodeepiyasawat[1], Nirundorn Homsuwan[1], Samreong Prummongkol[4], Malee Tanita[5], Sungkhom Rattanapikul[5], Chuanphot Thinphovong[6], Anamika Kritiyakan[6], Serge Morand[1,6,7] and Kittipong Chaisiri[1]

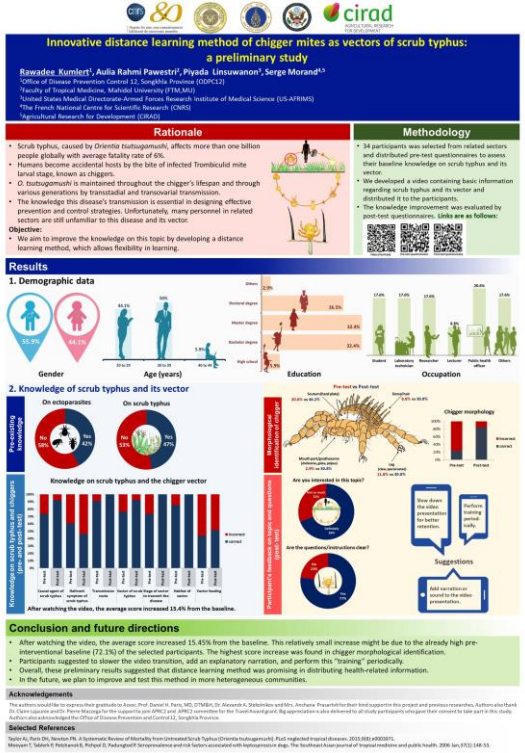


SOUTHEAST ASIA-EUROPE
JOINT FUNDING SCHEME FOR
RESEARCH AND INNOVATION

Chigger mites scrub typhus

Technical design



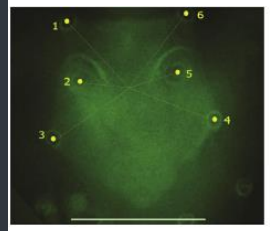


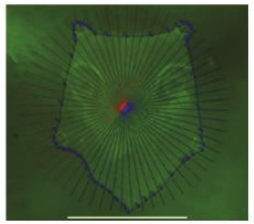
Rawadee Kumlert

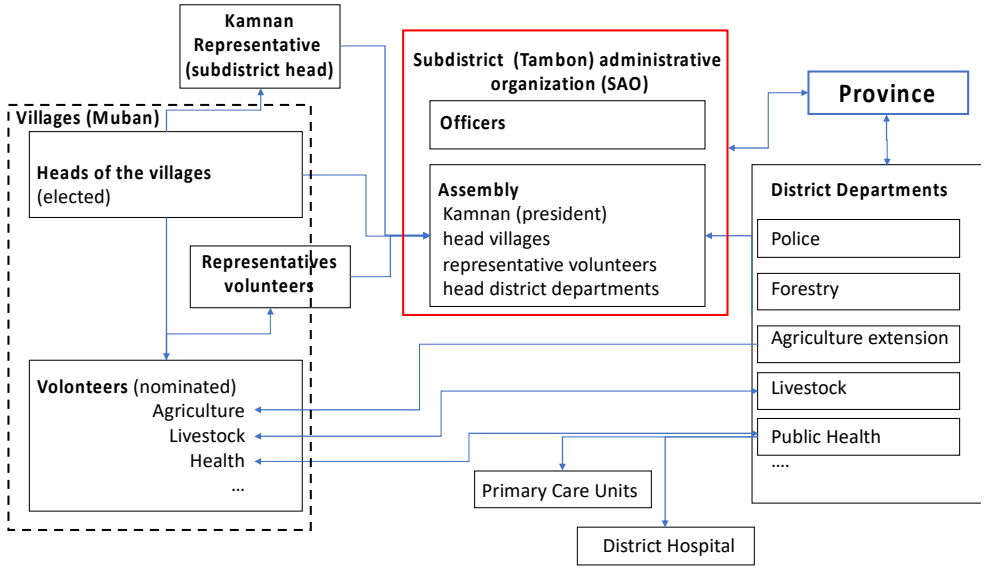
Kittipong Chaisiri

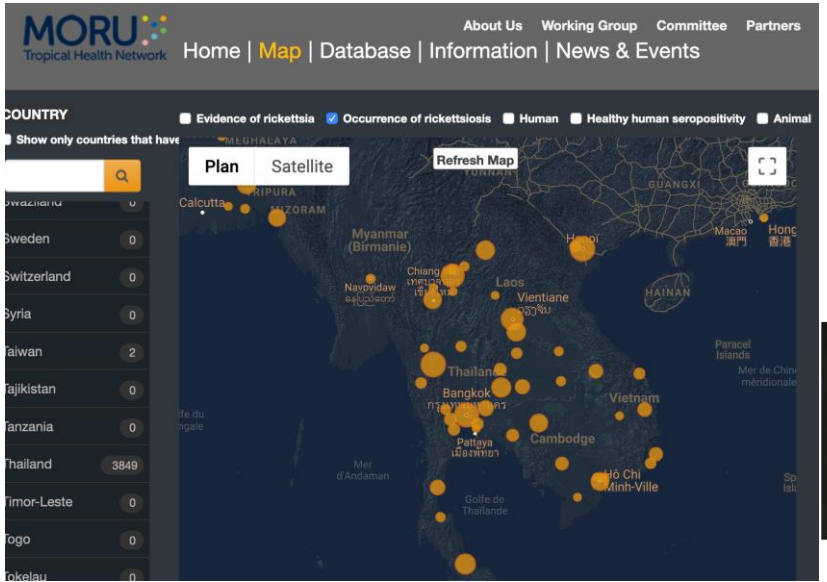
Suchada Sumruayphol

Stakeholder network





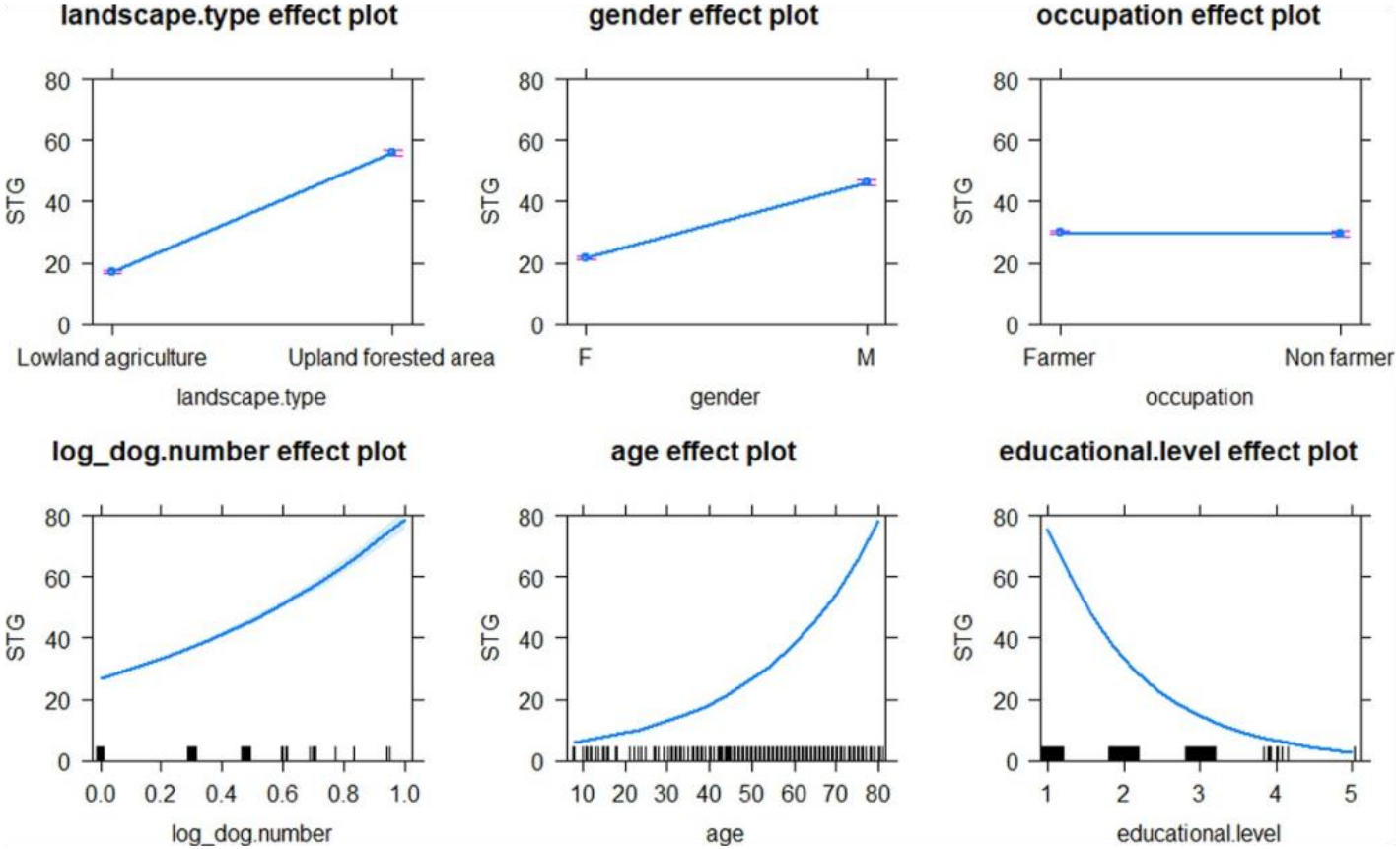


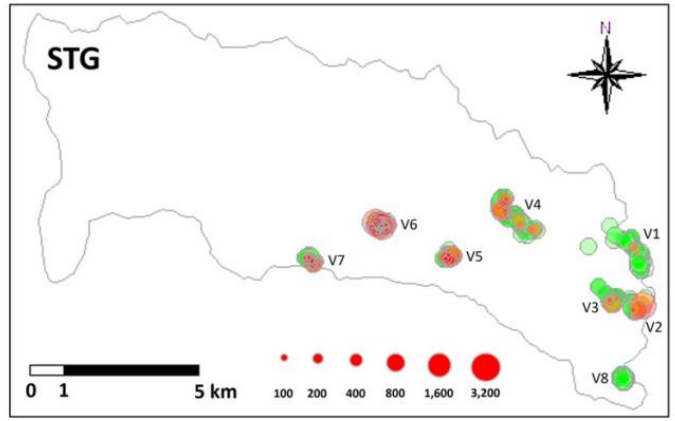


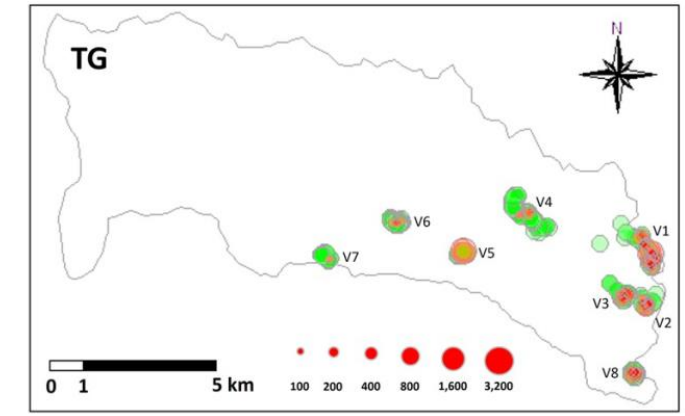
Risk factors analysis for neglected human rickettsioses in rural communities in Nan province, Thailand: A community-based observational study along a landscape gradient

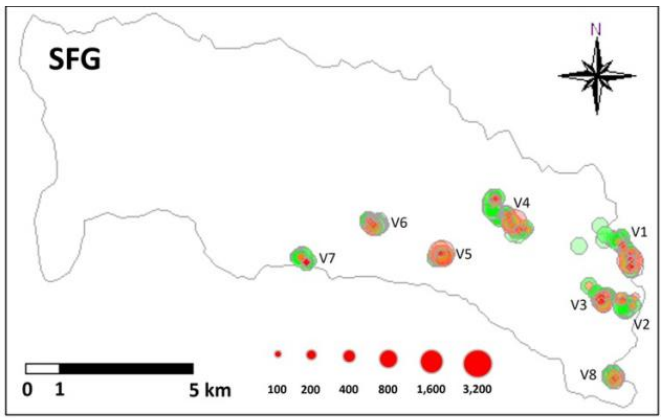
Kittipong Chaisiri[1]*, Ampai Tanganuchitcharnchai[2], Anamika Kritiyakan[3], Chuanphot Thinphovong[3], Malee Tanita[4], Serge Morand[1,3,5], Stuart D. Blacksell[2,6]*

Scrub typhus seropravalence







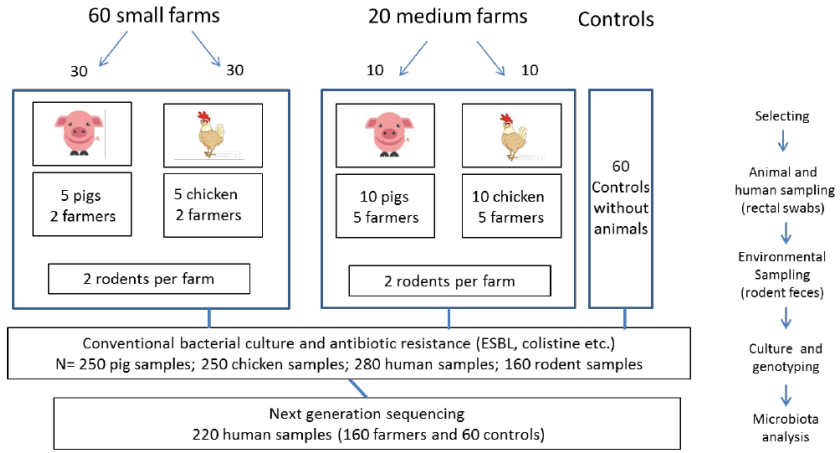


PLOS NEGLECTED TROPICAL DISEASES

SOUTHEAST ASIA-EUROPE
JOINT FUNDING SCHEME FOR
RESEARCH AND INNOVATION

FarmResist

Technical design

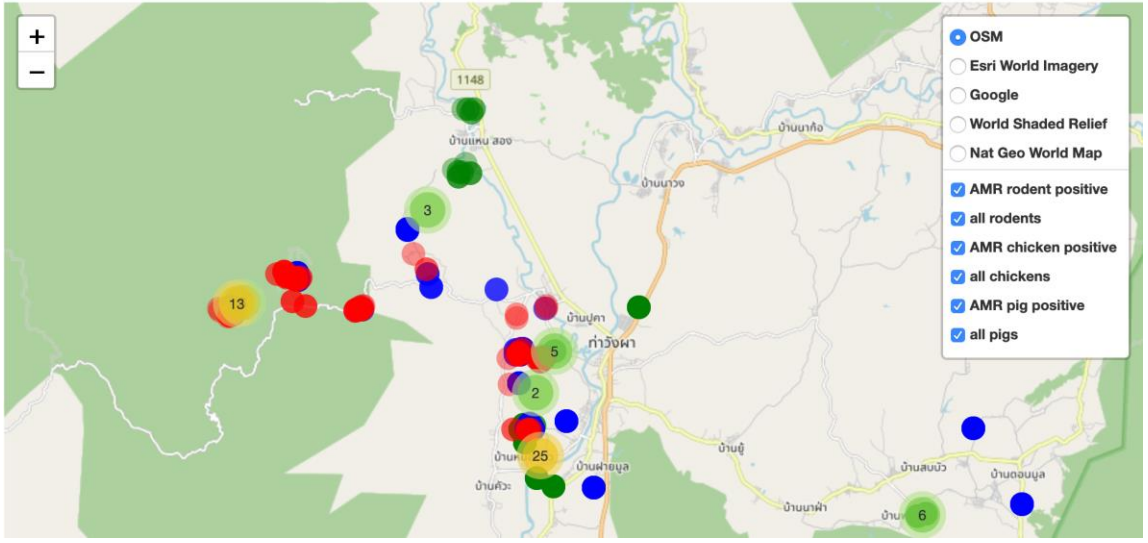


Selecting
↓
Animal and human sampling (rectal swabs)
↓
Environmental Sampling (rodent feces)
↓
Culture and genotyping
↓
Microbiota analysis

Protocols published in PLoS (2021)

Genetic / phenotypic / epidemiology

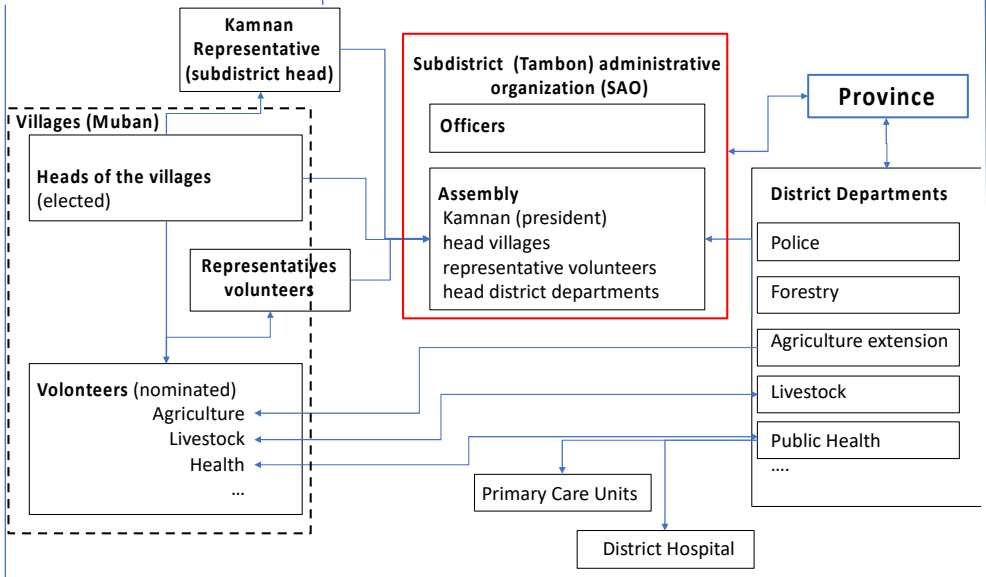
13/07/2020



Jean-Marc Rolain | Markus Hilty | Anne Oppliger

Duangdao Sudatip | Visanu Thamlikitkul | Anamika

Stakeholder network

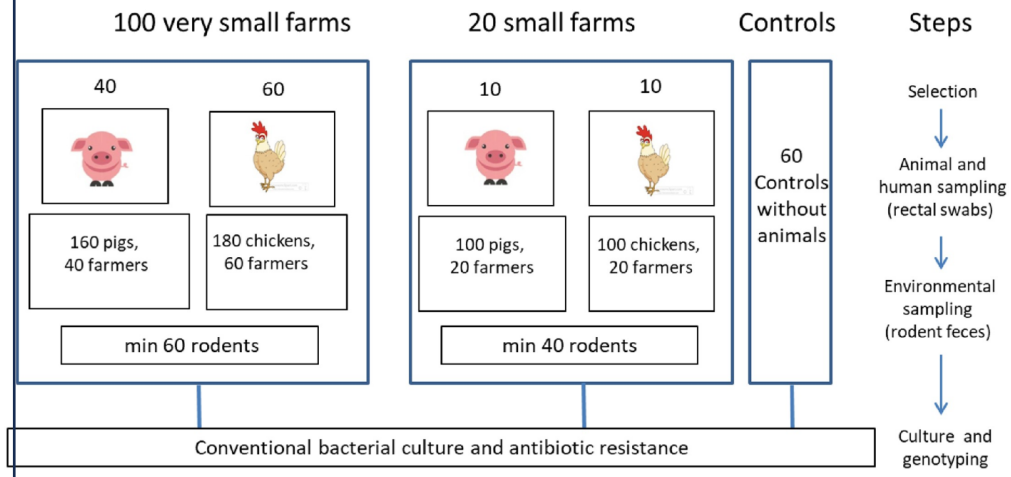


Publication of protocols

REGISTERED REPORT PROTOCOL **PLOS ONE**

A One Health approach to assessing occupational exposure to antimicrobial resistance in Thailand: The FarmResist project

Duangdao Sudatip[1,2,3], Kittipong Chasiri[4], Anamika Kritiyakan[5], Wantanee Phanprasit[1], Chuanphot Thinphovong[4], Surapee Tiengrim[6], Visanu Thamlikitkul[7☯], Rim Abdallah[8], Sophie Alexandra Baron[8], Jean-Marc Rolain[8☯], Serge Morand[5,9☯], Markus Hilty[2☯], Anne Oppliger[3☯*]

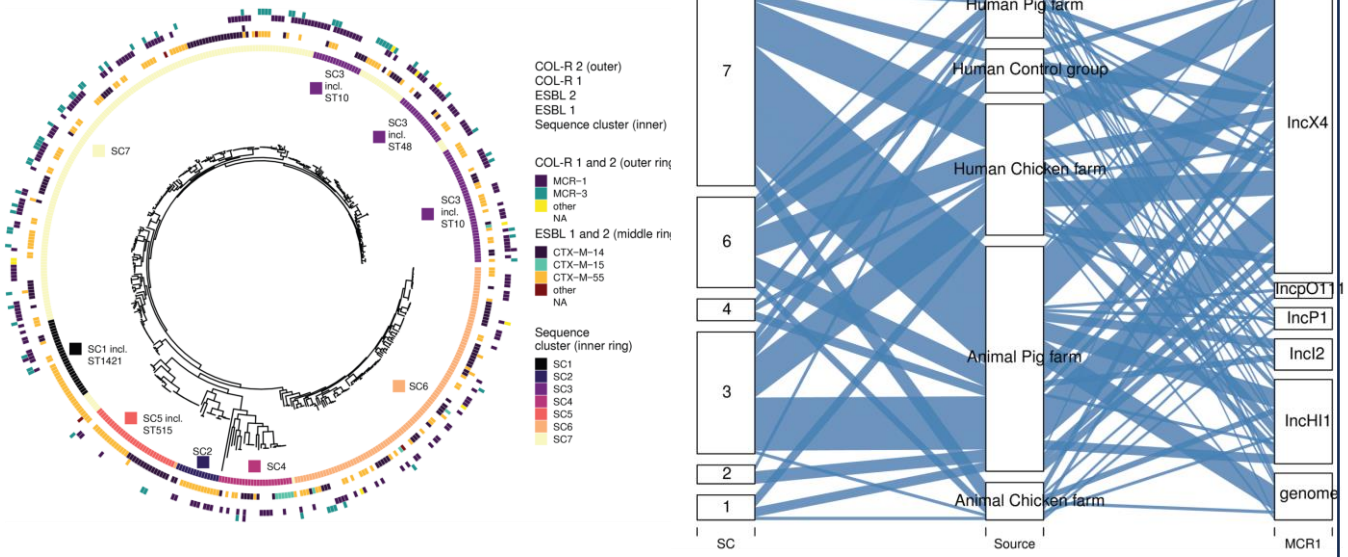


Publication of results

MICROBIAL GENOMICS

The risk of pig and chicken farming for carriage and transmission of *Escherichia coli* containing extended-spectrum beta-lactamase (ESBL) and mobile colistin resistance (*mcr*) genes in Thailand

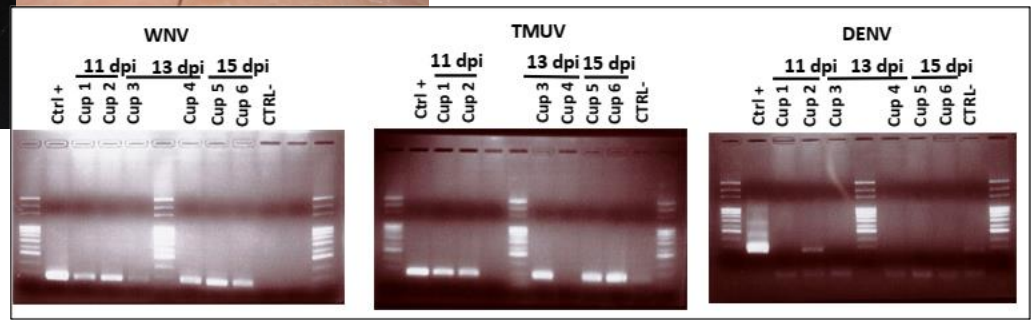
Duangdao Sudatip[1,2,3,4]†, Nadezda Mostacci[2]†, Surapee Tiengrim[5], Visanu Thamlikitkul[6], Kittipong Chasiri[7], Anamika Kritiyakan[6], Wantanee Phanprasit[1], Chuanphot Thinphovong[5], Rim Abdallah[8], Sophie Alexandra Baron[8], Jean-Marc Rolain[8], Serge Morand[7,9], Anne Oppliger[3] and Markus Hilty[2,*]



SOUTHEAST ASIA-EUROPE
JOINT FUNDING SCHEME FOR
RESEARCH AND INNOVATION

Technical design

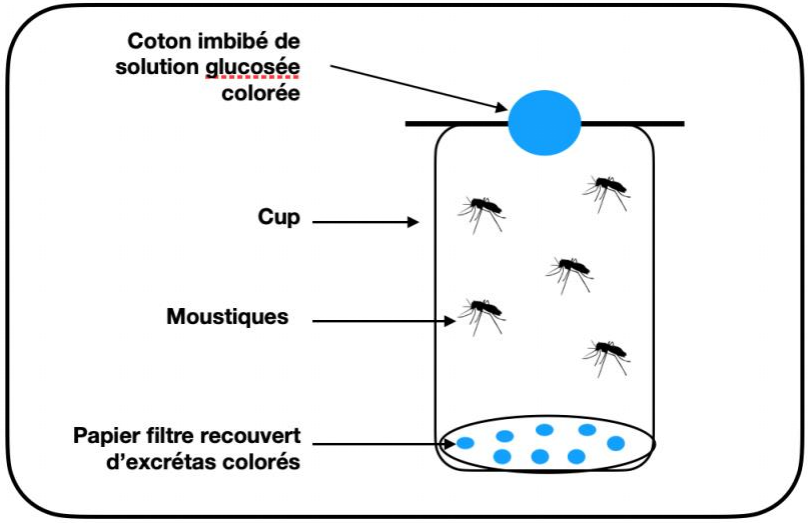
Mosquitoes
bird-borne diseases
MUSE INGENIOUS



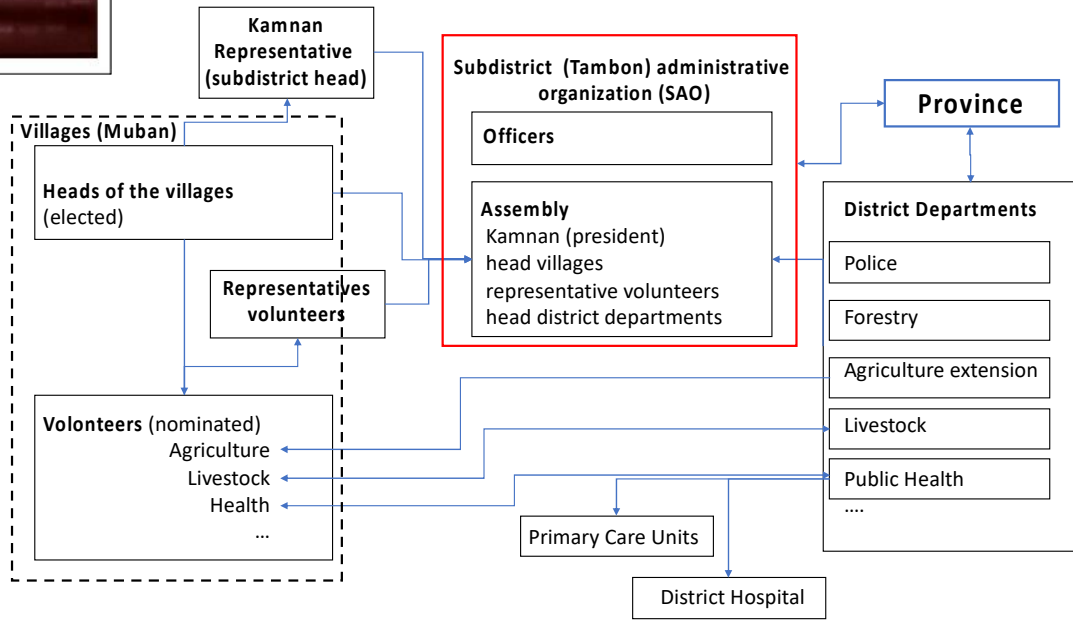
Sungsit Sungvornyothin

Rodolphe Hamel

Ronald Vargas



Stakeholder network



ORIGINAL RESEARCH
published: 17 October 2019
doi: 10.3389/fmicb.2019.02315

frontiers in Microbiology

Monitoring Silent Spillovers Before Emergence: A Pilot Study at the Tick/Human Interface in Thailand

Sarah Temmam[1], Delphine Chrétien[1], Thomas Bigot[1,2], Evelyne Dufour[3], Stéphane Petres[3], Marc Desquesnes[4,5,6], Elodie Devillers[7], Marine Dumarest[1], Léna Yousfi[7], Sathaporn Jittapalapong[8], Anamika Karnchanabanthoeng[8], Kittipong Chaisiri[9], Léa Gagnieur[1], Jean-François Cosson[7], Muriel Vayssier-Taussat[7], Serge Morand[10,11], Sara Moutailler[7] and Marc Eloit[1,12]

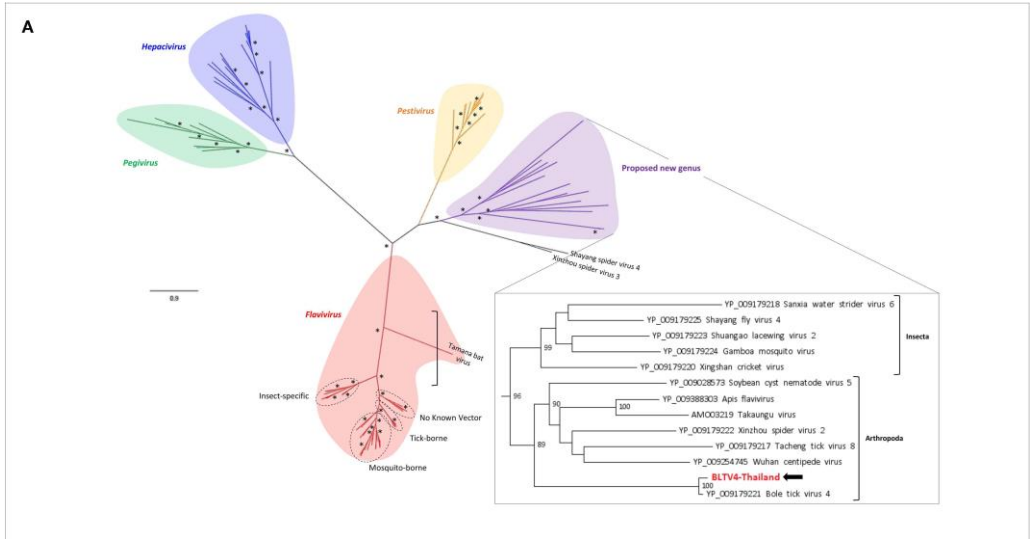
High-Throughput Sequencing and Bioinformatics Analyses of Tick Virome

Illumina HiSeq2000

266 ticks from Village 6 (2012):

- *Rhipicephalus sanguineus,*
- *Amblyomma sp.,*
- *Boophilus sp.,*
- *Dermacentor marginatus,*
- *Hyalomma sp. and*
- *Haemaphysalis sp*

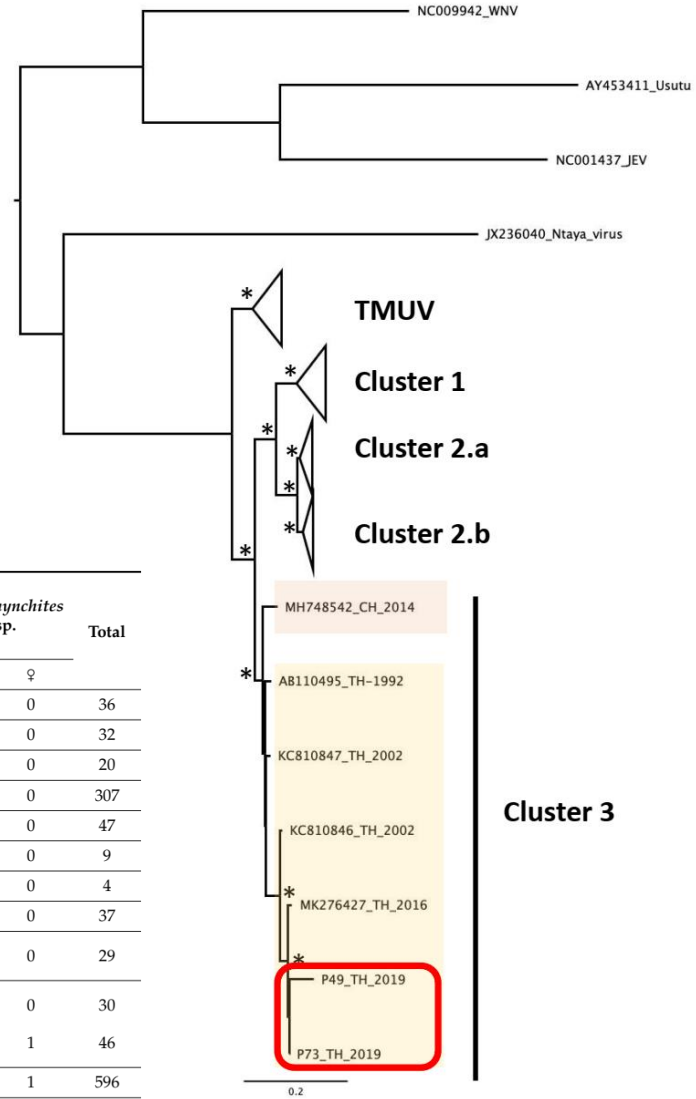
Flaviviridae-, Rhabdoviridae-, Chuviridae-, Phenuiviridae-, and Orthomyxoviridae-related viruses.



2019

Identification of the Tembusu Virus in Mosquitoes in Northern Thailand

Rodolphe Hamel [1,2,3,*,†], Ronald Enrique Morales Vargas [4,5,†], Dora Murielle Rajonhson [4], Atsushi Yamanaka [6], Jiraporn Jaroenpool [7,8], Sineewanlaya Wichit [2,3], Dorothée Missé [1], Anamika Kritiyakan [9], Kittipong Chaisiri [10], Serge Morand [1,9,‡] and Julien Pompon [1,‡]



Collection Site	*Ae. albopictus*		*Ae. aegypti*		*Aedes* sp.		*Cx. quinquefasciatus*		*Cx brevipalpis*		*Cx. hutchinsoni*		*Cx. nigropunctatus*		*Culex* sp.		*Cx. vishnui*		*Cx. tritaeniorhynchus*		*Armigeres* sp.		*Arm. kesseli*		*Arm. subalbatus*		*Anopheles* sp.		*An. subpictus*		*Mansonia* sp.		*Toxorhynchites* sp.		Total
	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	
Village 1	0	0	0	0	0	0	2	6	0	0	0	0	0	0	0	10	0	17	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	36
Village 2	0	2	0	0	0	0	1	5	0	1	0	1	0	0	1	8	1	8	0	0	0	1	0	2	0	0	0	0	1	0	0	0	0	0	32
Village 3	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	10	1	5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	20
Village 4	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	**96★**	1	**181★**	0	7	0	7	0	5	0	0	0	3	0	3	0	0	0	0	307
Village 5	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	19	0	19	0	0	0	1	0	4	0	1	0	0	0	0	0	0	0	0	47
Village 6	0	3	0	0	0	1	0	0	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
Village 7	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0		0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4
Village 8	1	3	0	**2★**	0	0	0	1	0	0	0	0	0	1	2	14	1	2	0	0	0	3	0	0	0	0	0	4	0	2	0	1	0	0	37
Forest session 1	0	15	0	0	0	3	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	1	0	6	0	1	0	0	0	0	0	0	0	0	29
Forest session 2	0	18	0	0	0	1	0	0	0	0	0	0	0	0	0	**2★**	0	0	0	0	0	5	0	4	0	0	0	0	0	0	0	0	0	0	30
Forest session 3	0	8	0	0	0	**27★**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	4	0	0	0	0	0	0	0	0	0	1	46
Individuals	1	54	0	2	0	35	3	13	0	4	0	2	0	1	4	164	4	233	0	7	0	25	0	26	0	2	0	8	0	6	0	1	0	1	596
positive pools/Nbr of pool for each species	0/1	0/11	0	**1**/1	0	**1**/8	0/2	0/6	0/1	0/2	0	0/2	0	0/1	0/3	**2**/24	0/4	**2**/24	0	0/1	0	0/8	0	0/7	0	0/2	0	0/3	0	0/3	0	0/1	0	0/1	6/116

★ mosquito collection presenting positive pools for flavivirus family detection.

Ethics

Dogs
SEAdogSEA

Questionnaires on owners' attitudes

Molecular screening *of Babesia spp., Ehrlichia spp, Hepatozoon spp., Bartonella spp.*

DNA barcoding ticks, fleas

Microbiome

GPS collars

Technical design

Khanh Bui

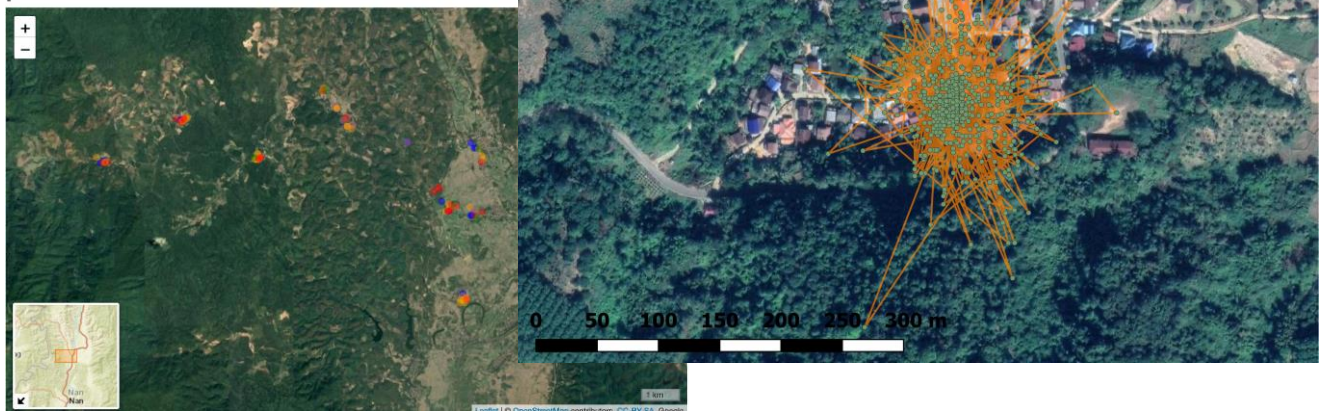
Chuanphot

Michel de Garine

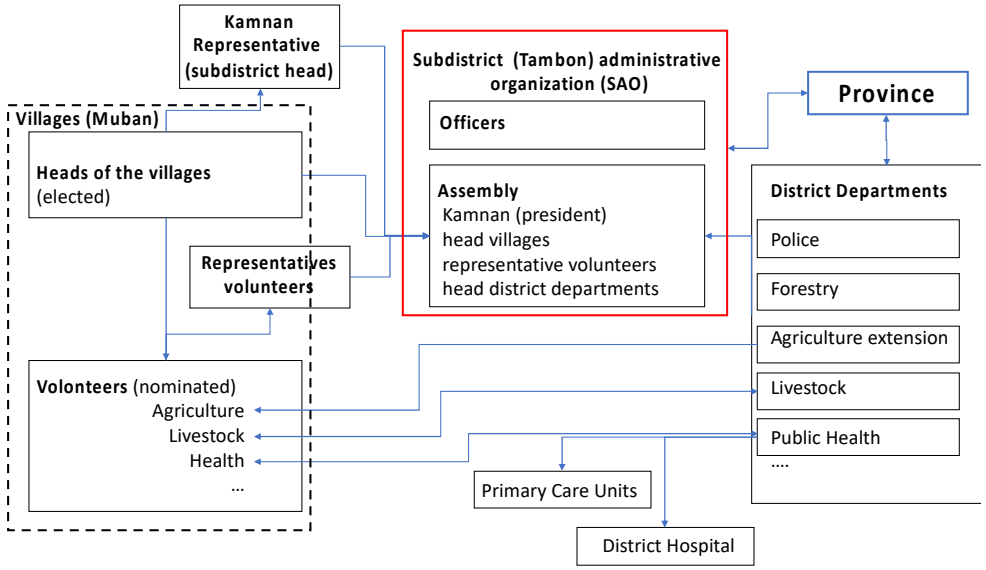
Anan Phonphoem

Anamika

Dog movement



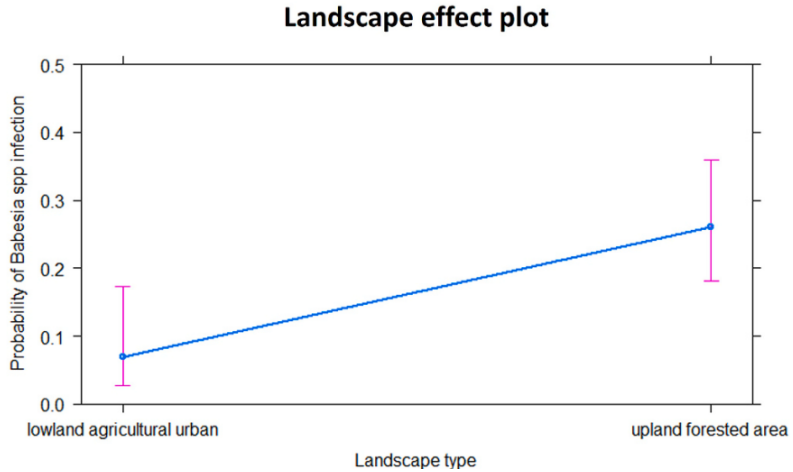
Stakeholder network

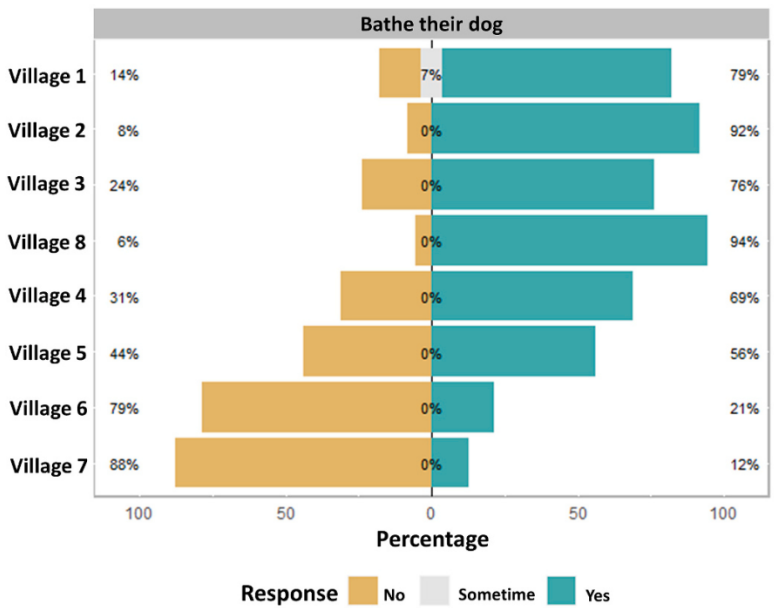


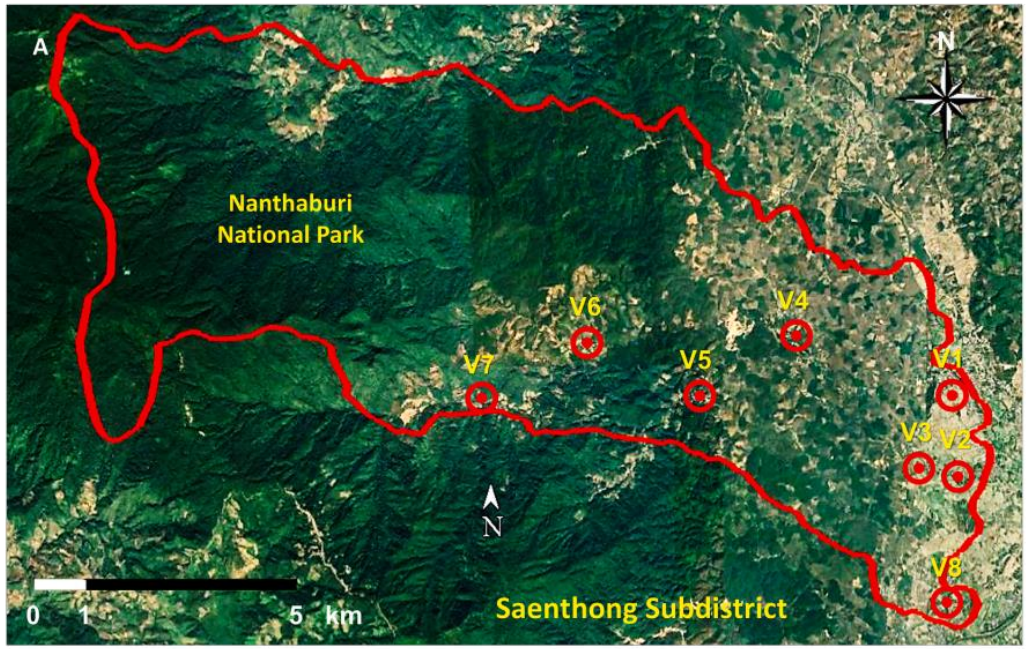
Veterinary Parasitology: Regional Studies and Reports

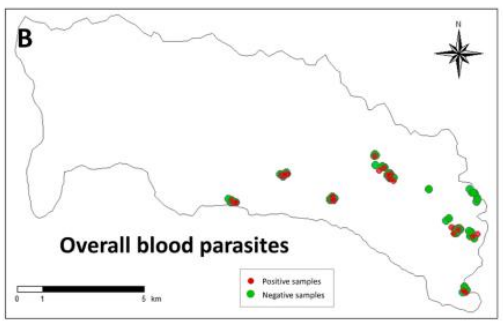
Dog blood parasite infection in upland and lowland communities of northern Thailand: The role of environment and care of dog owners

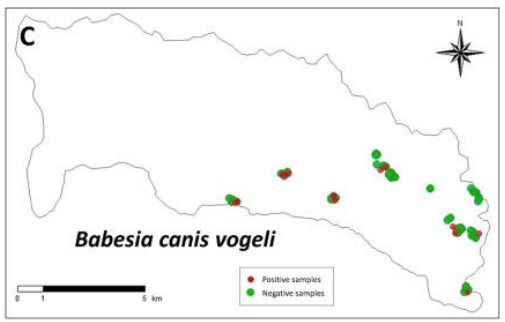
Yossapong Paladsing [a], Bui My Thuy Khanh [b], Chuanphot Thinphovong [a], Surapon Ketwang [c], Kittipong Chaisiri [d], Bernard Carcy [e], Michel De Garine-Wichatitsky [f], Serge Morand [g], Tawin Inpankaew [h], Anamika Kritiyakan [a,*]

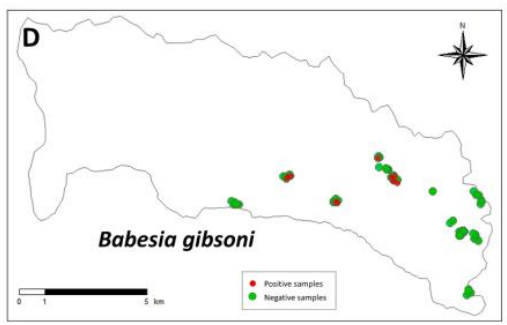


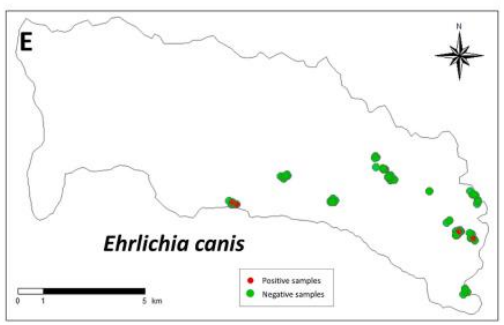












Movements of dogs in Saenthong

ANR SEAdogSEA

Individual dog (ID)

D249

Choose session

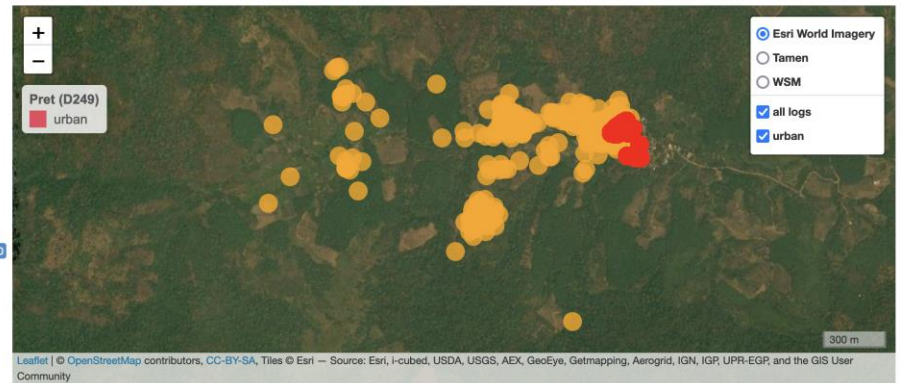
3

Choose habitat

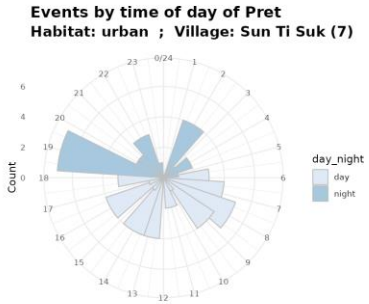
urban

Time range

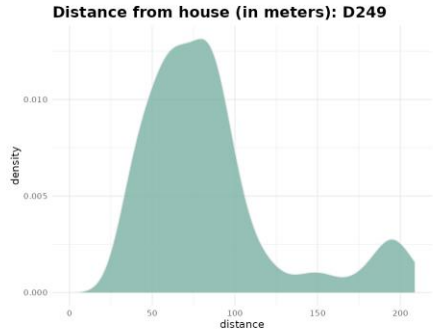
2022-02-01 17:30:20



Habitat



Distance



Data

Project SEAdogSEA

Blood parasites

ANR FururеHealthSEA

Choose village

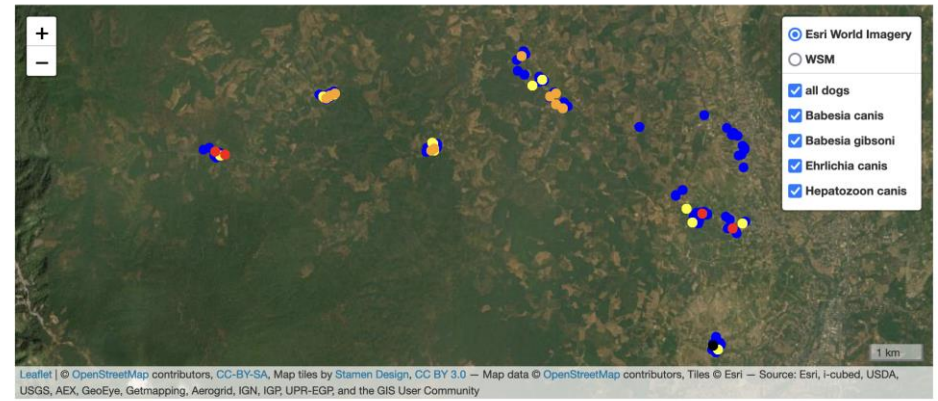
U7 Sun Ti Suk, U6 I

Choose landscape

upland forested ar

Choose question

bath_dog



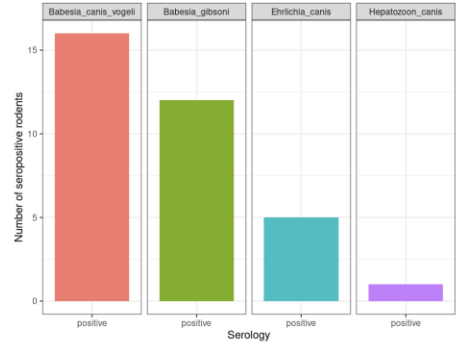
Data

Project FutureHealthSEA

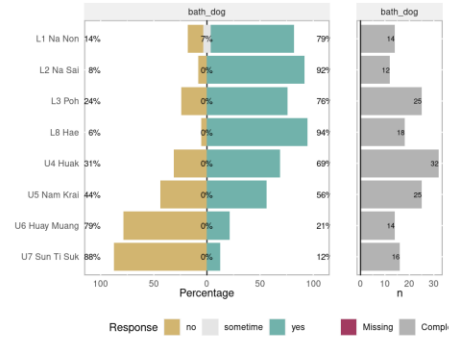
Conception

HealthDEEP

Epidemiology



Response question



Participatory Mapping Method

- **Preliminary interview 8 villages**
  - Crops — Corn, Rice, Tobacco, Longan, Teak, Rubber ,Rambutan, Litchi, etc.
  - Agricultural form — Single crop a year / rotate 3 crops per year
  - Pesticide use
    - Herbicide - Paraquat ,Glyphosate, Atrazine, Almix, Bu
    - Insecticide – Cypermethrin, Abamectin
  - Field
- **Select 3 villages for Meeting** — Ban Huay Muang, Ban Huak, Ban Poh
- **QGIS / Google Earth / R**

Pesticides

Chuanphot Thinphovong

Pongchai Dumrongrojwatthana

Tanaradee Khumya

Technical design

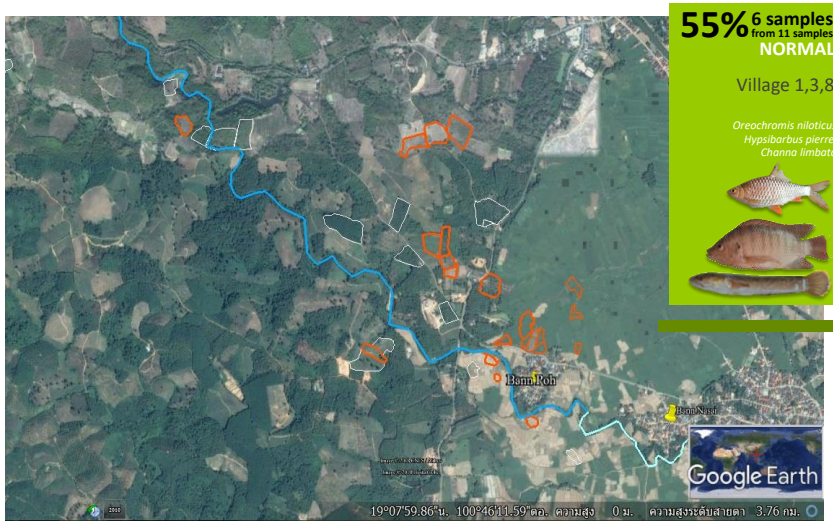
Glyphosate exposure

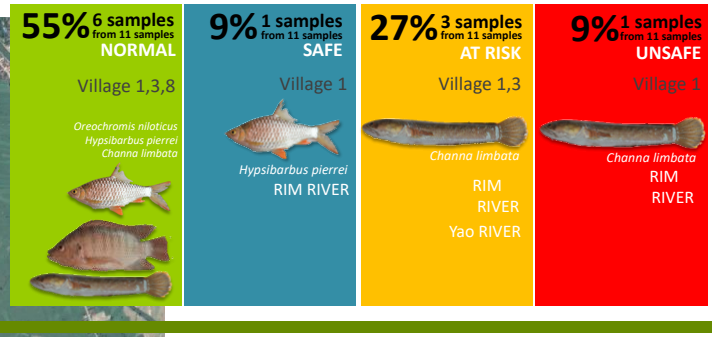
Flavie Goutard

Ada Roy

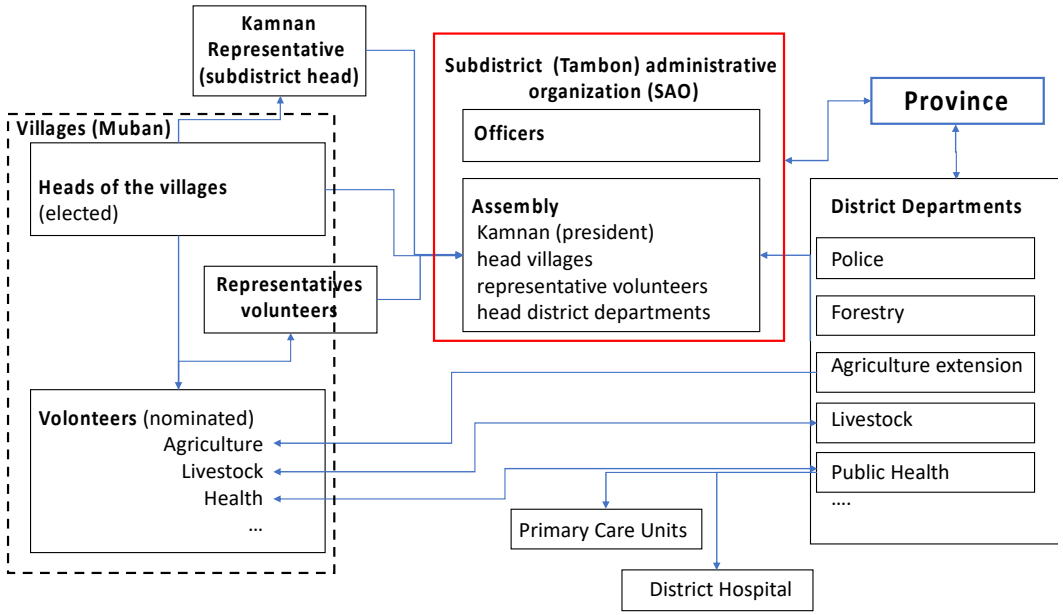
Anamika

Maps, Questionnaires, epidemiology



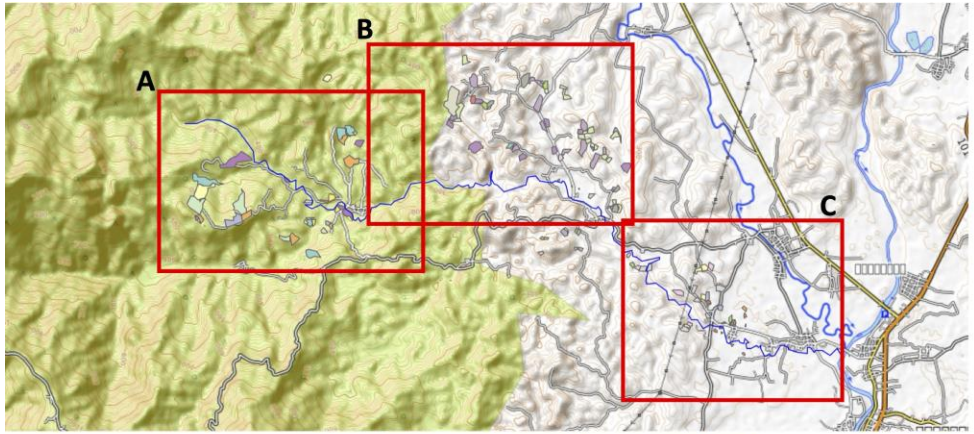


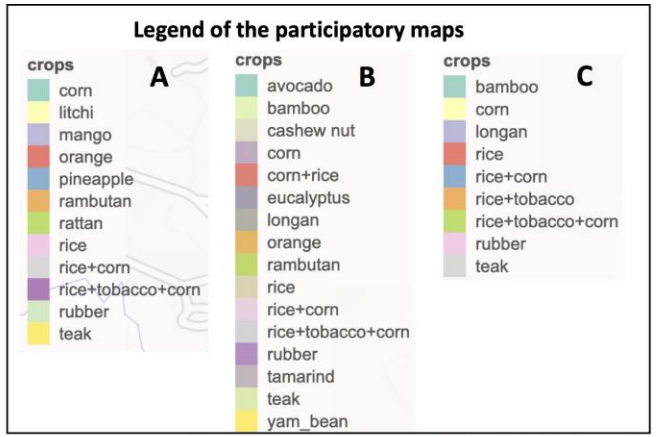
Stakeholder network

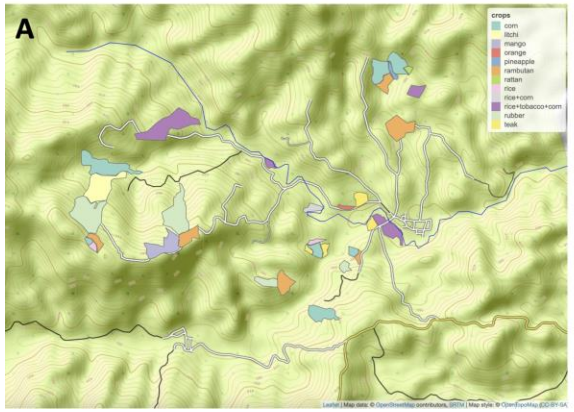


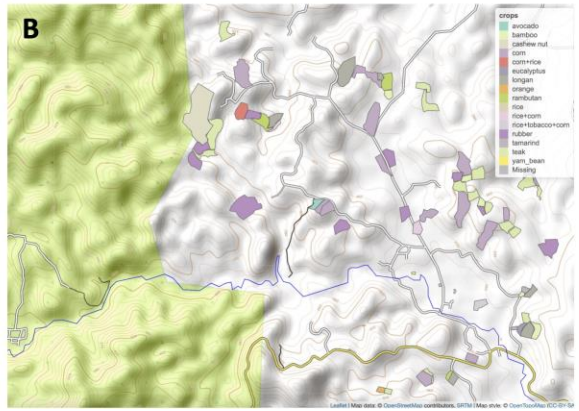
Participatory mapping

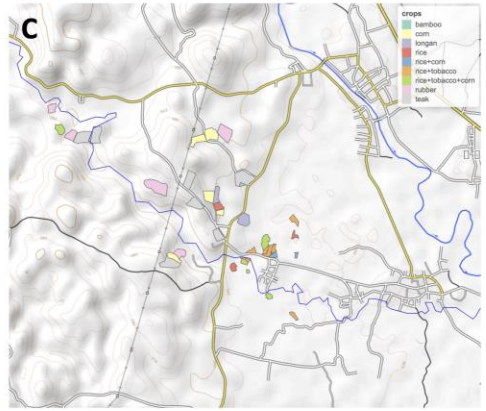
Crops	Glyphosate	Paraquat	Atrazine	Almix®	Butachlor	Cypermethrin	Abamectin
rice	X	X		X	X		X
corn	X	X	X				X
tobacco		X				X	
rambutan orchard	X	X					
longan orchard	X	X				X	
orange orchard	X						X
lychee orchard	X						
mango orchard	X						
rubber plantation	X	X					



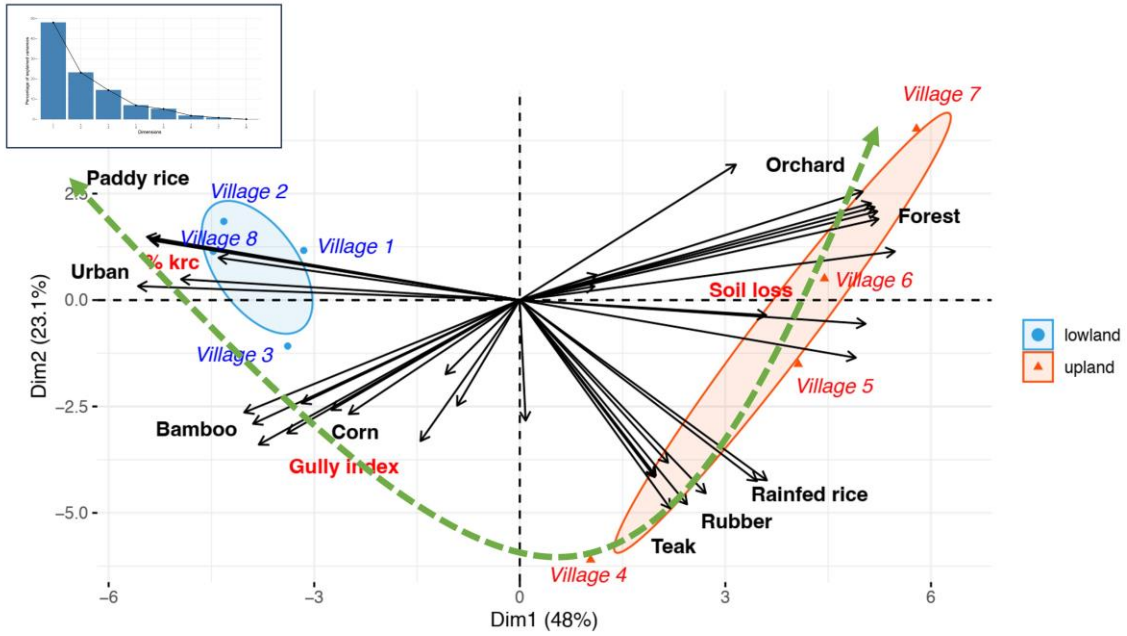


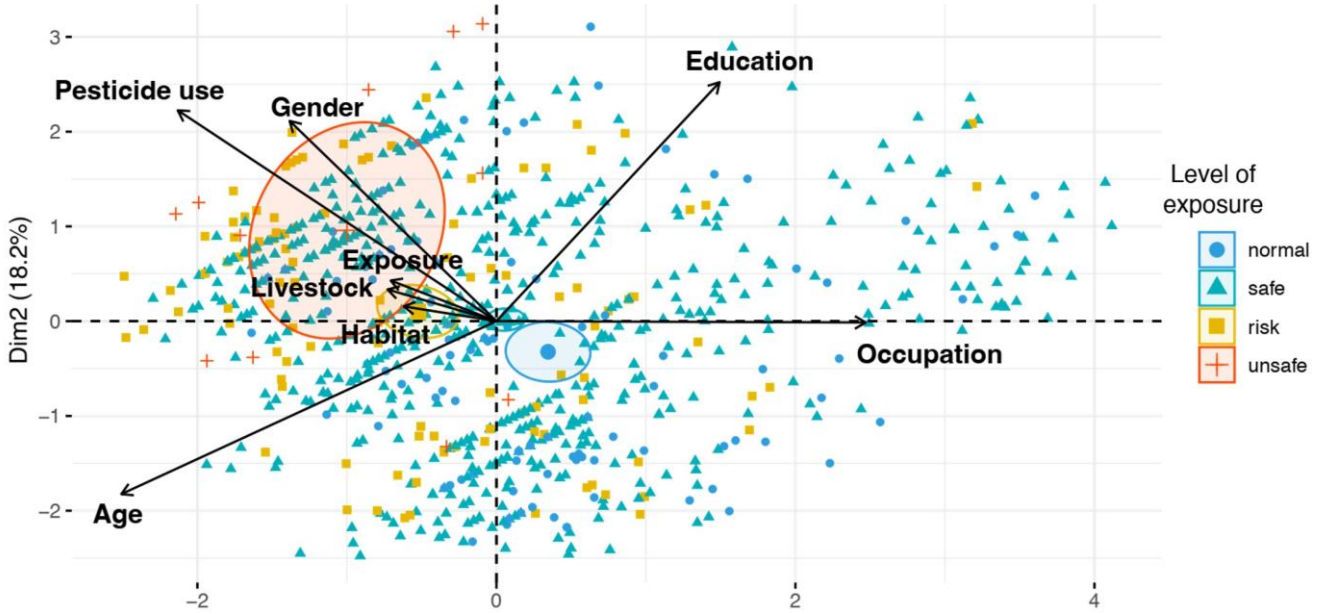




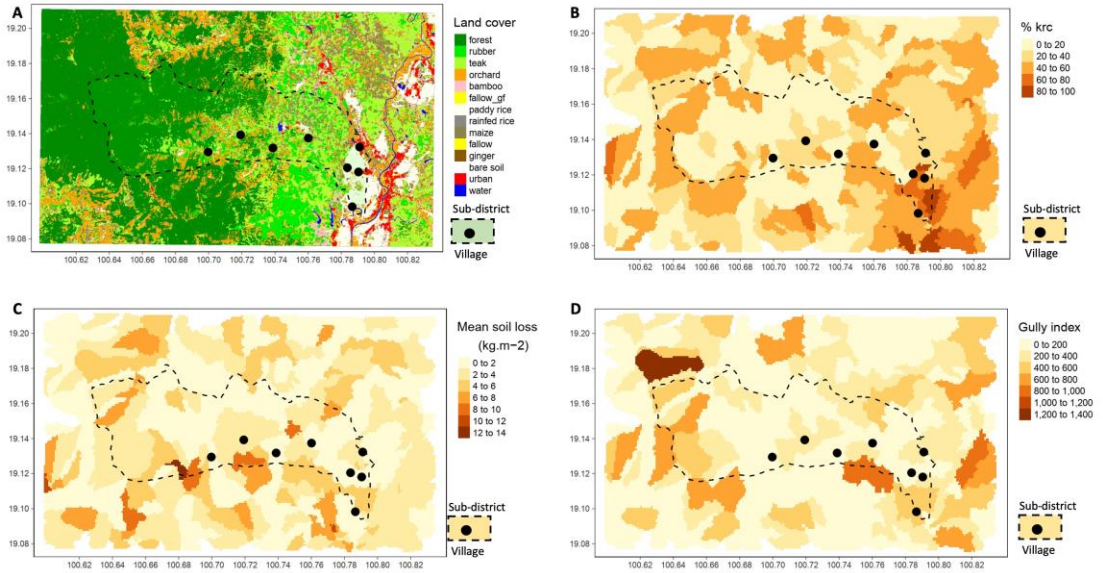


Exposure to pesticides

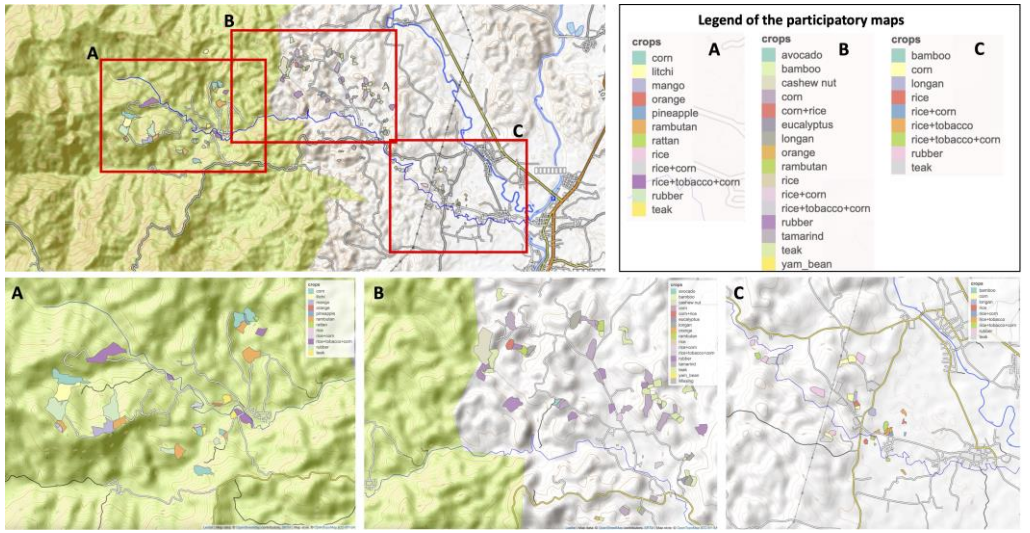




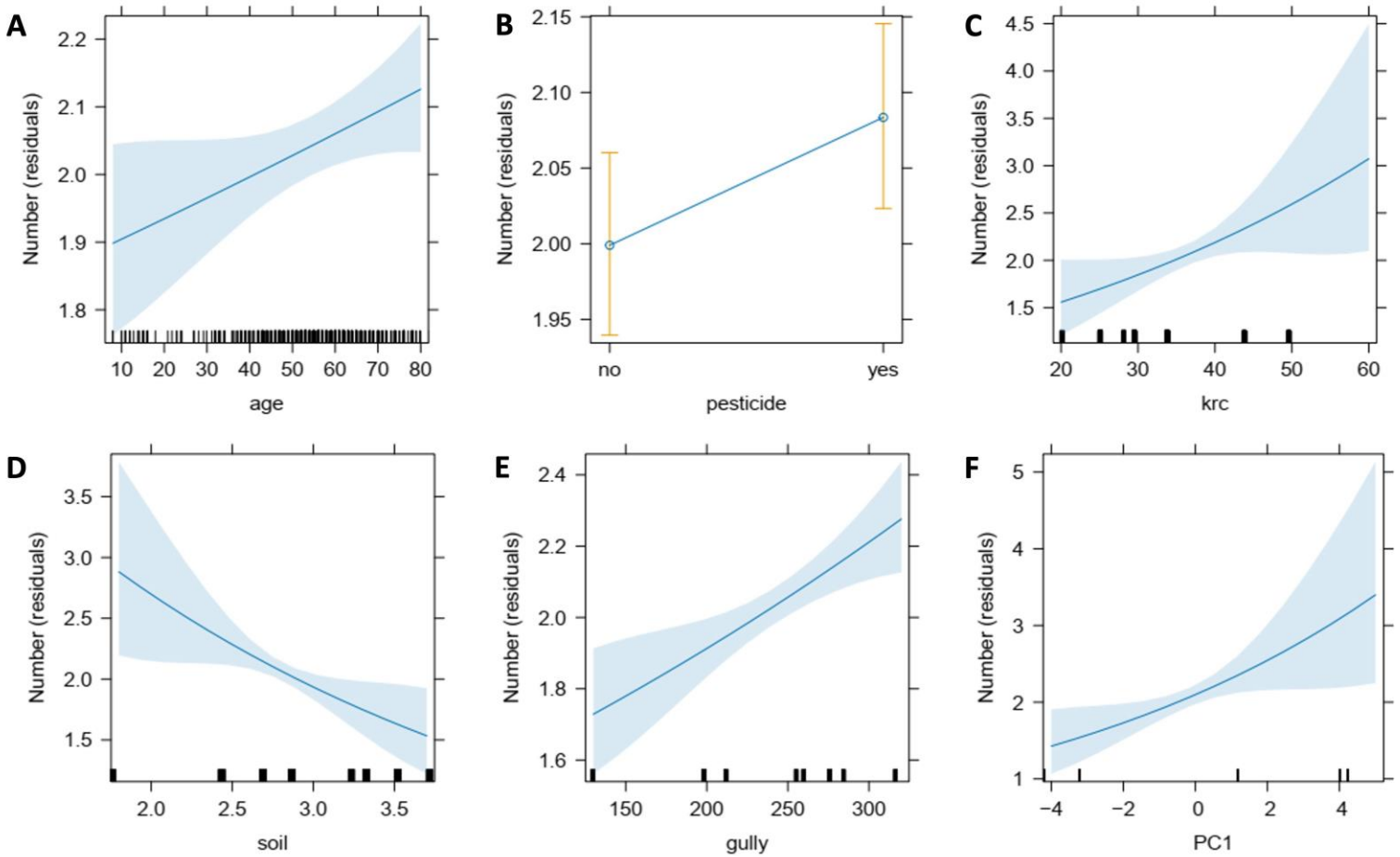
Land use and soil erosion



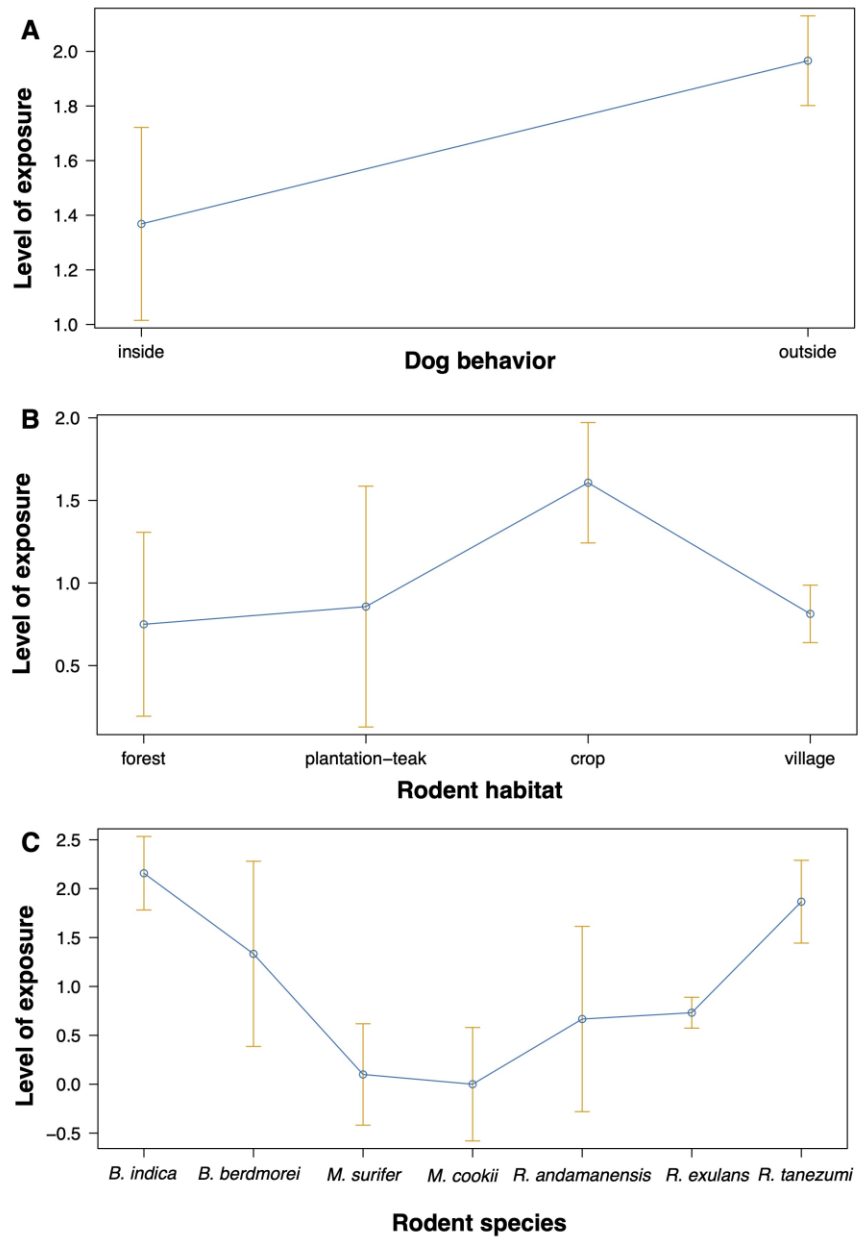
Participatory mapping crops and pesticides



Human exposure (AChE)

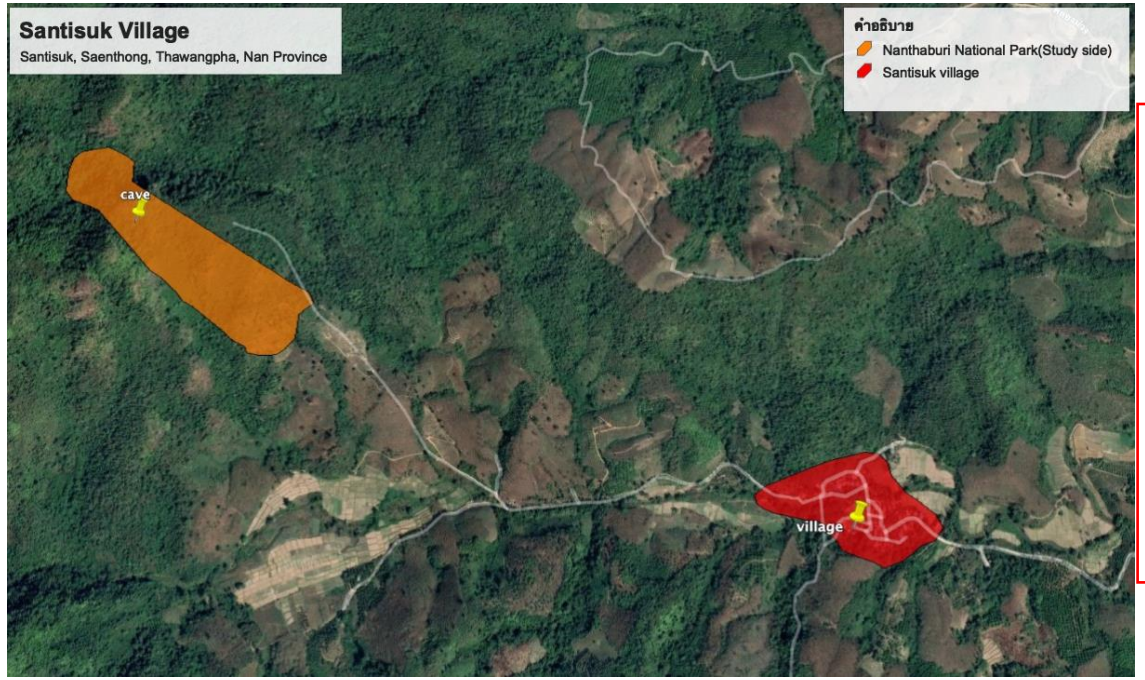


Animal exposure (AChE)



Is rewilding (refaunation) following reforestation a health risk?

Reforestation area



Stakeholder

- PCU & Dpt Public Health
- Sub-district Administration
- Nonthaburi Nat Park & Dpt National Park
- Community Ban Santisuk
- Volunteers Health, Livestock, wildlife
- Trop Med MU, Vet Tech KU, PSU, KMU

Sound recorders

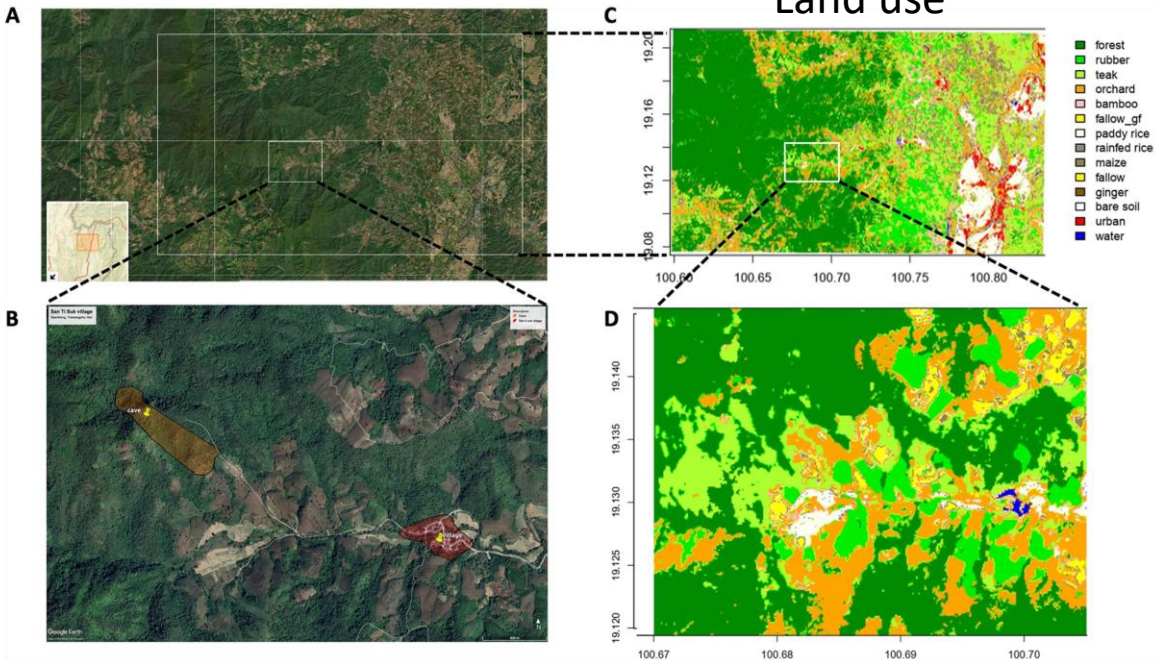
Camera traps

Live trapping

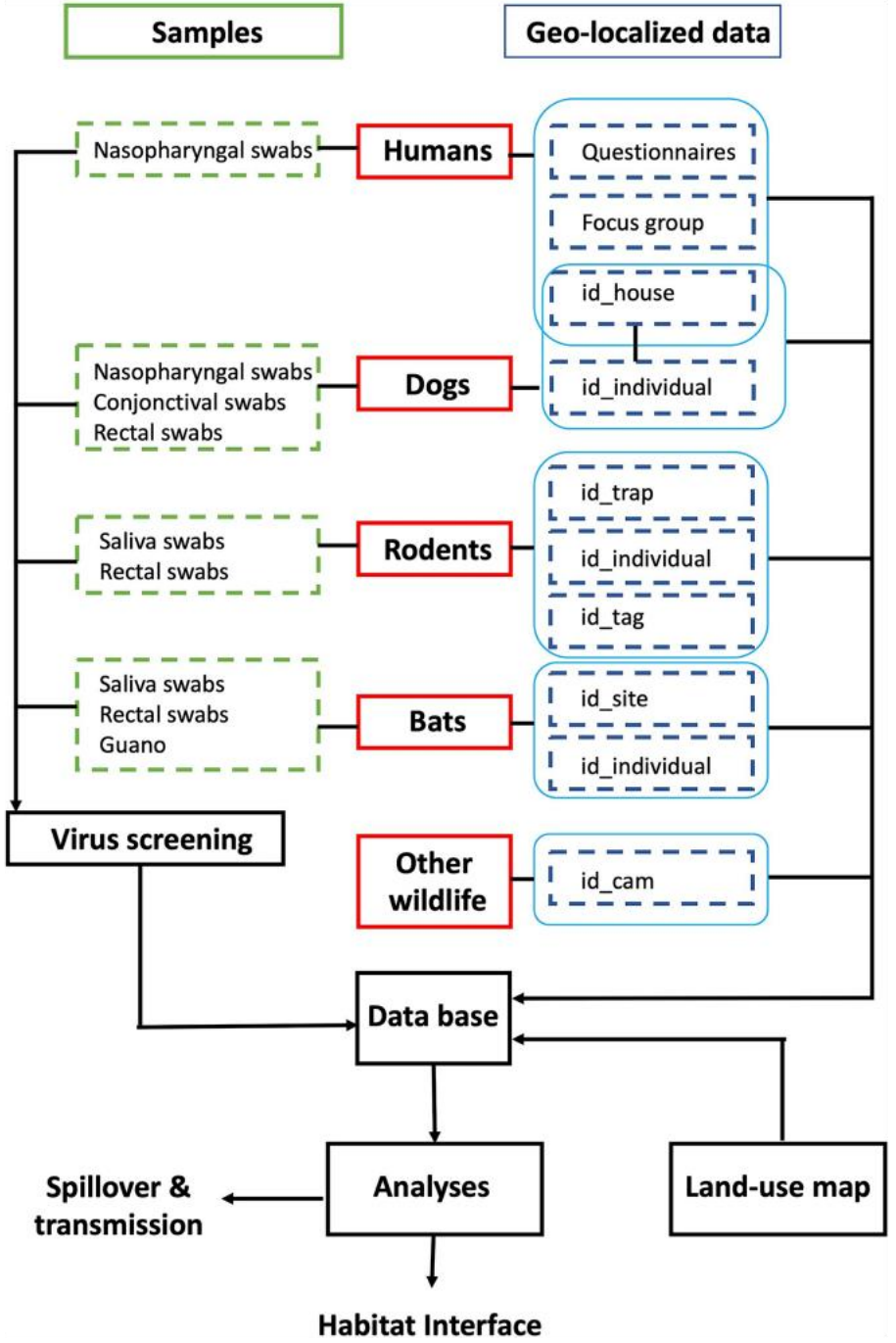
STUDY PROTOCOL

A protocol and a data-based prediction to investigate virus spillover at the wildlife interface in human-dominated and protected habitats in Thailand: The Spillover Interface project

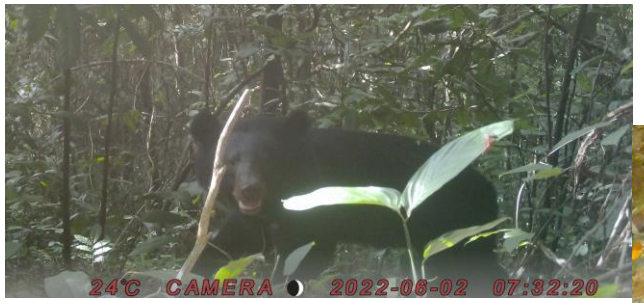
Chuanphot Thinphovong[1]*, Ewan Nordstrom-Schuler[1], Pipat Soisook[2], Anamika Kritiyakan[1], Ronnakrit Chakngean[3], Sakarin Prapruti[4], Malee Tanita[5], Yossapong Paladsing[1], Phurin Makaew[1], Awatsaya Pimsai[2], Abdulloh Samoh[2], Christophe Mahuzier[6], Serge Morand[1,7,8], Kittipong Chaisiri[8], Waraphon Phimpraphai[9]

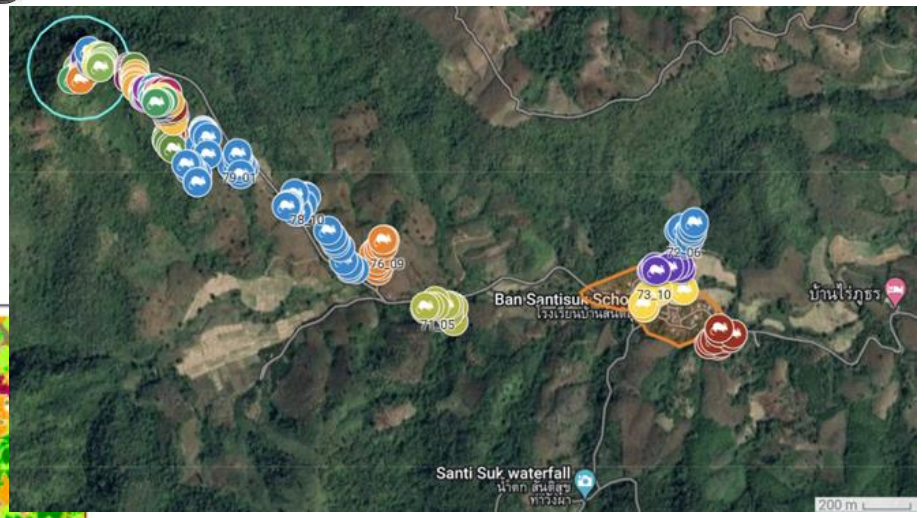


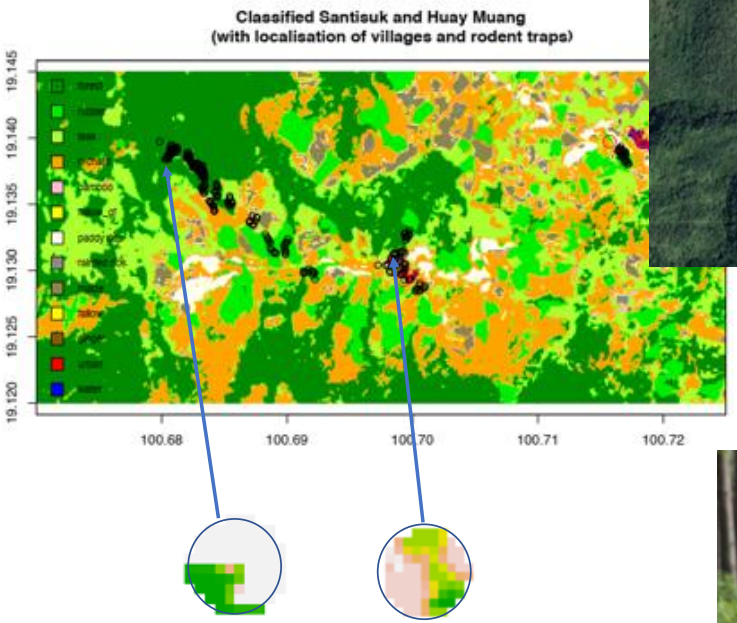
Land use



Camera traps

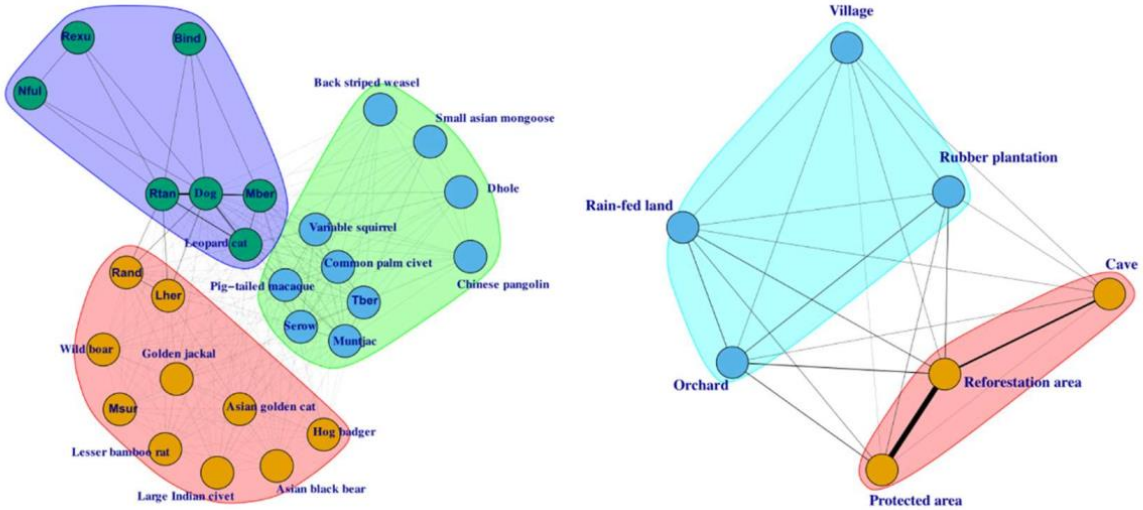


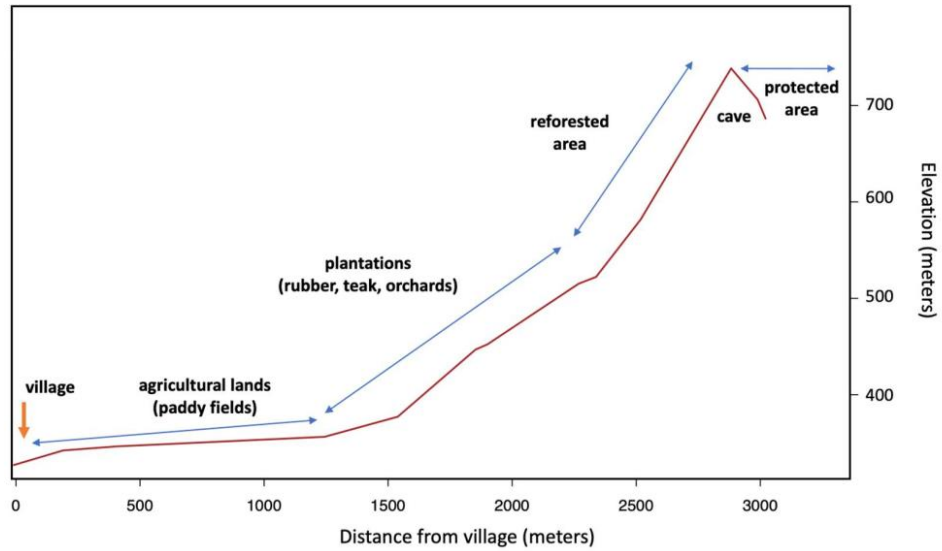


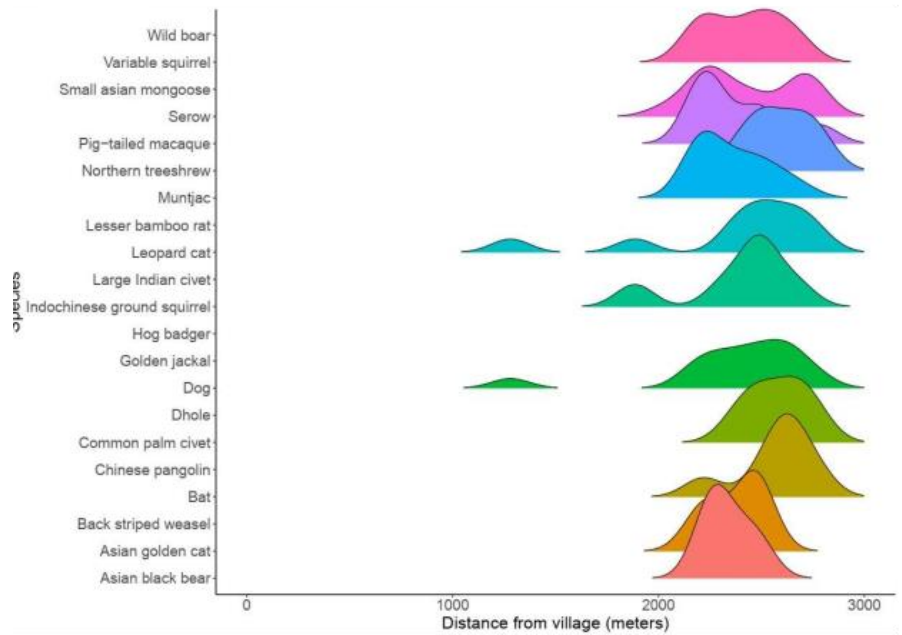


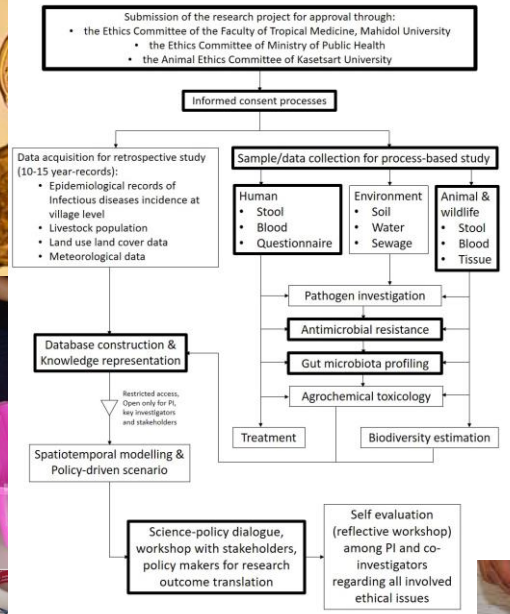
From Protected Habitat to Agricultural Land: Dogs and Small Mammals Link Habitats in Northern Thailand

Chuanphot Thinphovong [1], Anamika Kritiyakan [1], Ronnakrit Chakngean [2], Yossapong Paladsing [1,3], Phurin Makaew [1], Morgane Labadie [4], Christophe Mahuzier [5], Waraphon Phimpraphai [6], Serge Morand [7,*] and Kittipong Chaisiri [8]





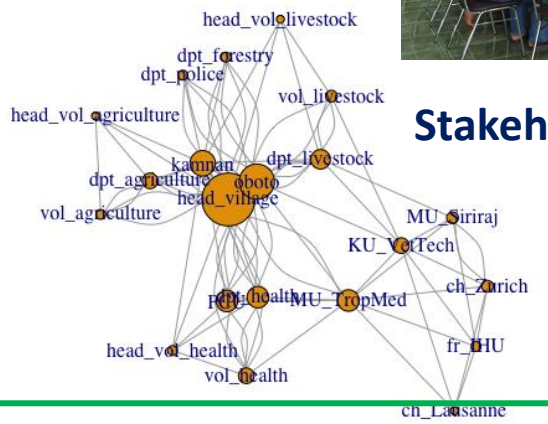




Technical design

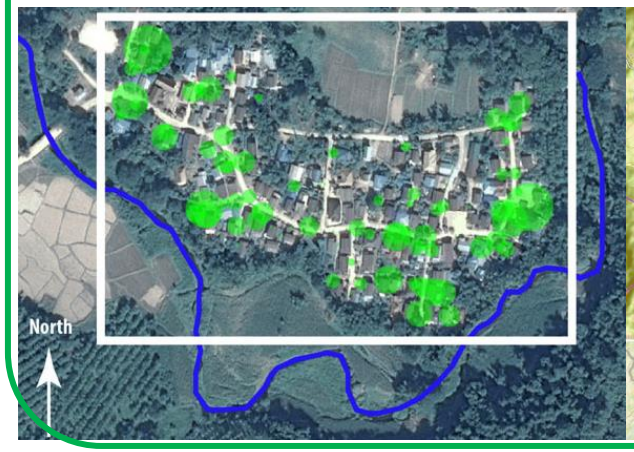
Participatory Mapping Method

- **Preliminary interview 8 villages**
  - Crops — Corn, Rice, Tobacco, Longa, Rubber ,Rambutan, Litchi,
  - Agricultural form — Single crop a year / rotate
  - Pesticide use
    - Herbicide - Paraquat ,Glypho
    - Insecticide – Cypermethrin, Abamectin
  - Field
- **Select 3 villages for Meeting** — Ban Huay Muang, Ban Huak, Ban Poh



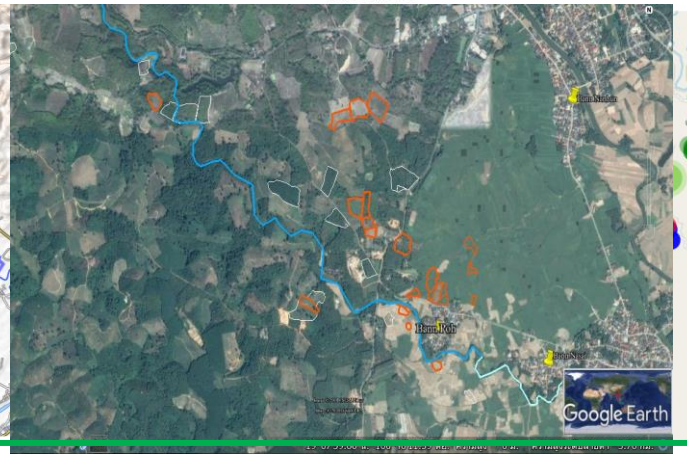
Stakeholder network

Epidemiology / questionnaires

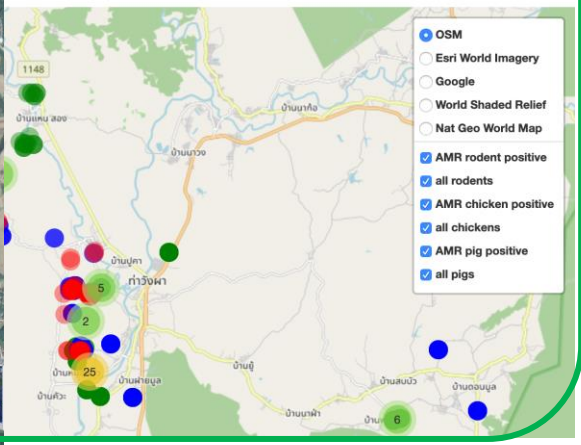


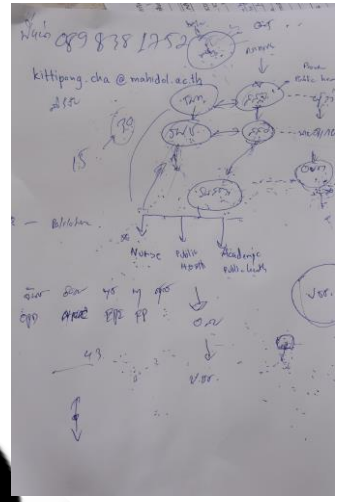
Household mapping

Participatory mapping



Genetics / phenotypics





Imagining future

Problem formulation

Protocol design

Implementation design

Stakeholder engagement

ethics engagement

Realisation

Analysing results

Communicating (multiple values)

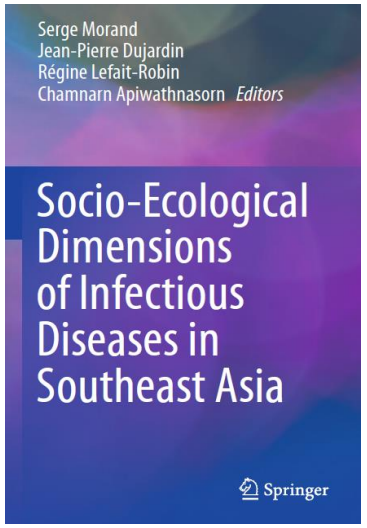
Recommendations

Trace documentation

- Data
- Pictures
- Maps
- Protocols
- Ethics
- Scientific articles
- Reports

Dissemination

Advocacy



Research Exhition
The Saenthong Experience.
10 Years of Collaborative Projects
on Biodiversity and Community Health

10 ปี ความร่วมมืองานวิจัยสุขภาพและความเป็นอยู่ที่ดีในตำบลแสนทอง
"ร่วมเรียนรู้ อนุรักษ์ และพัฒนาอย่างยั่งยืน"

The Saenthong Experience.
10 Years of Collaborative Projects on Biodiversity and Community Health.

BIODIVERSITY AND HEALTH

Research Exhition
The Saenthong Experience.
10 Years of Collaborative Projects
on Biodiversity and Community Health

ขอเชิญเข้าร่วมงานนิทรรศการ

10 ปี ความร่วมมืองานวิจัยสุขภาพและความเป็นอยู่ที่ดีในตำบลแสนทอง
"ร่วมเรียนรู้ อนุรักษ์ และพัฒนาอย่างยั่งยืน"
The Saenthong Experience.
10 Years of Collaborative Projects on Biodiversity and Community Health.

วันที่ 4-5 สิงหาคม 2565
ณ หอประชุม ที่ว่าการอำเภอท่าวังผา อำเภอท่าวังผา จังหวัดน่าน

Health and Well-being

Animal Health and Sustainable Agriculture

Environment Conservation and Tourism


ขอเชิญเข้าร่วมงานนิทรรศการ
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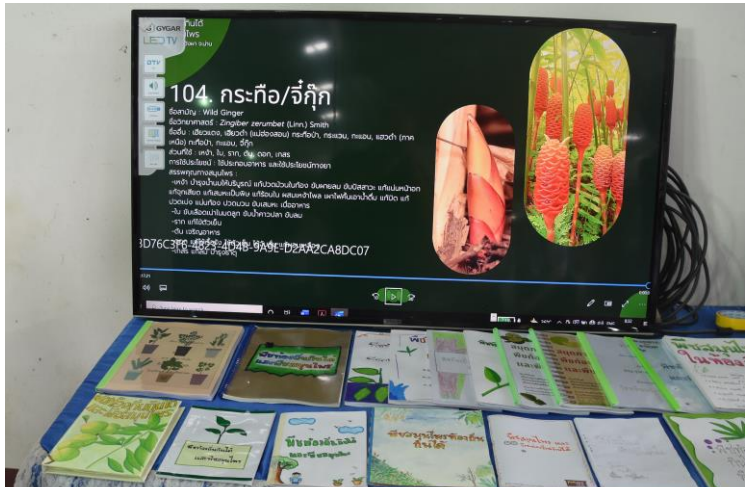
Research Exhition
The Saenthong Experience.
10 Years of Collaborative Projects
on Biodiversity and Community Health
Health and Well-being
Animal Health and Sustainable Agriculture
Environment Conservation and Tourism
THE DOCUMENTARY OF BIODIVERSITY AND HEALTH


BuffFarm
ONE HEALTH


วงจรชีวิต
ยุงลายพาหะนำโรค


104. กระทือ/จี๋กุ๊ก

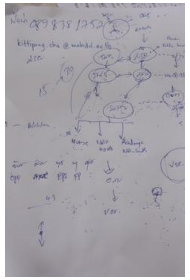
A Social-Ecological and One Health Observatory: Ten Years of Collaborative Studies in Saen Thong (Nan, Thailand)

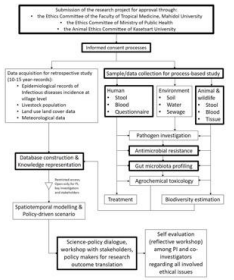
This One Health case reports ten years of collaborative projects between researchers of several institutions of France and Thailand and local communities, local authorities and administrations in Saen Thong sub-district (Nan Province, Thailand). Saen Thong's experience recognizes the role of the primary care unit (PCU) as a boundary spinner and the importance of ethics at the core of the community engagement.

Authors: Kittipong Chaisiri[1], Anamika Kritiyakan[2], Rawadee Kumlert[3], Claire Lajaunie[4], Purin Makaew[1], Serge Morand[5], Yossapong Paladsing[2], Malee Tanita[6], and Chuanphot Thinphovong[1]

A healthy food contest

Community engagement





Mapping health issues

Problem formulation

Protocol design

Implementation design

Ethics

Realization

Analysis

Recommendations

Communication translation

THE WORLD BANK
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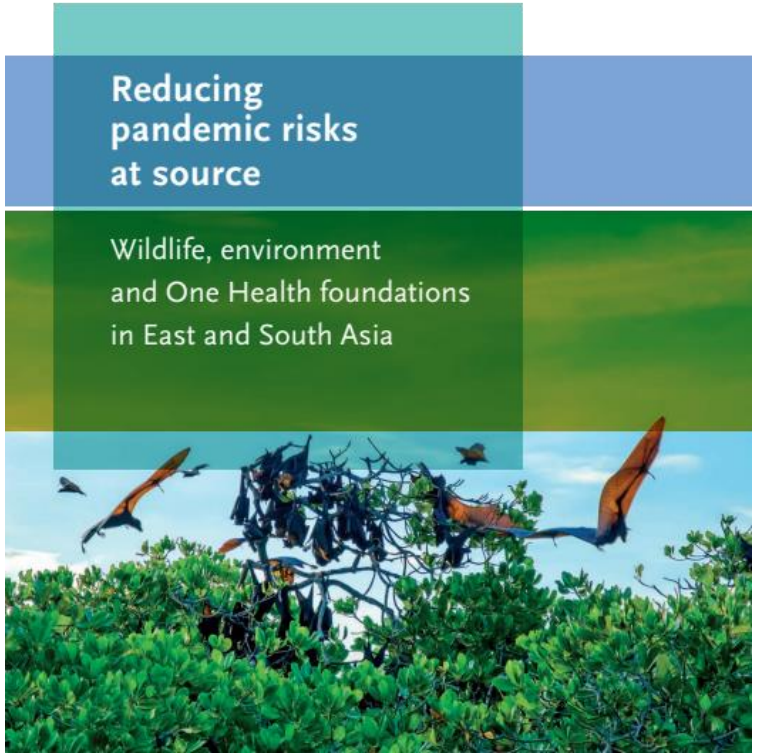
Food and Agriculture Organization of the United Nations



A One Health prevention at the source

One Health High Level Expert Panel (OHHLEP)

*In November 2020 at the Paris Peace Forum FAO, OIE, UNEP and WHO create a multidisciplinary One Health High-Level Expert Panel (OHHLEP) with the support of **France** and **Germany***

Co-chairs

Wanda Markotter

Professor, Centre for Viral Zoonoses, University of Pretoria, South Africa

Learn more ›

Thomas Mettenleiter

President of the Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Germany

Learn more ›

Food and Agriculture Organization of the United Nations

WORLD ORGANISATION FOR ANIMAL HEALTH

UN environment programme

World Health Organization

Wiku Bakti Adisasmito ›
Professor in Health Policy, University of Indonesia, Indonesia

Casey Barton-Behravesh ›
Personal capacity, United States of America

Salome Bukachi ›
Associate Professor, Institute of Anthropology, University of Nairobi, Kenya

Natalia Cediel Becerra ›
Lecturer and researcher, Universidad de la Salle Bogotá, Colombia

Janice Ciacci-Zanella ›
Veterinarian researcher in the area of Animal Virology and Director General of Swine and Poultry Research Center, EMBRAPA, Brazil

Osman Dar ›
Consultant in Global Public Health, Public Health England / Director - One Health Project, Chatham House, Royal Institute of International Affairs, United Kingdom of Great Britain and Northern Ireland, Pakistan

Baptiste Dungu ›
Chief Executive Officer, Onderstepoort Biological Products SOC (OBP), South Africa, Democratic Republic of the Congo

George Fu Gao ›
Director-General, Chinese Center for Disease Control and Prevention, People's Republic of China

Margaret Khaitsa ›
Professor of International Veterinary Epidemiology, Mississippi State University, Uganda

Catherine Machalaba ›
Senior Policy Advisor and Senior Scientist, EcoHealth Alliance, United States of America

Serge Morand ›
Director of Research, CNRS, Montpellier University, France

Salama Al Muhairi ›
Director of Veterinary Laboratories Division, Abu Dhabi Agriculture and Food Safety Authority, United Arab Emirates

Pépé Bilivogui ›
Technical Consultant, Project REDISSE (World Bank/OOAS), Guinea

Natalia Casas ›
National Zoonoses Coordinator, Ministry of Health of Argentina, Argentina

Abhishek Chaudhary ›
Assistant Professor, Dept. of Civil Engineering, Indian Institute of Technology (IIT) Kanpur, India

Andrew Alexander Cunningham ›
Deputy Director of Science, Zoological Society of London, United Kingdom of Great Britain and Northern Ireland

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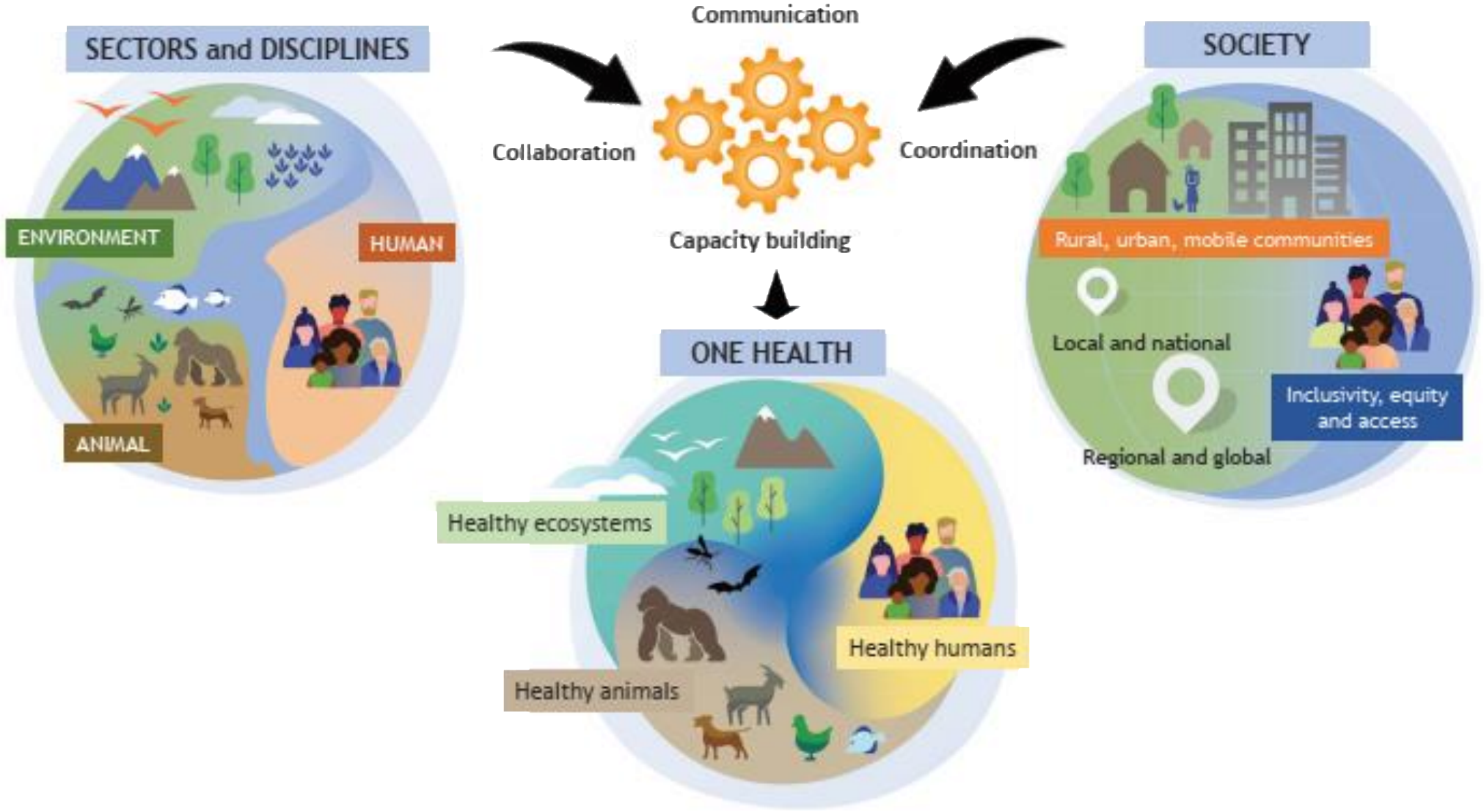
Deputy Head, Russian Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing, Russian Federation

Lei Zhou ›
Chief of Branch for Emerging Infectious Disease, China CDC, People's Republic of China

1. A definition of the One Health approach



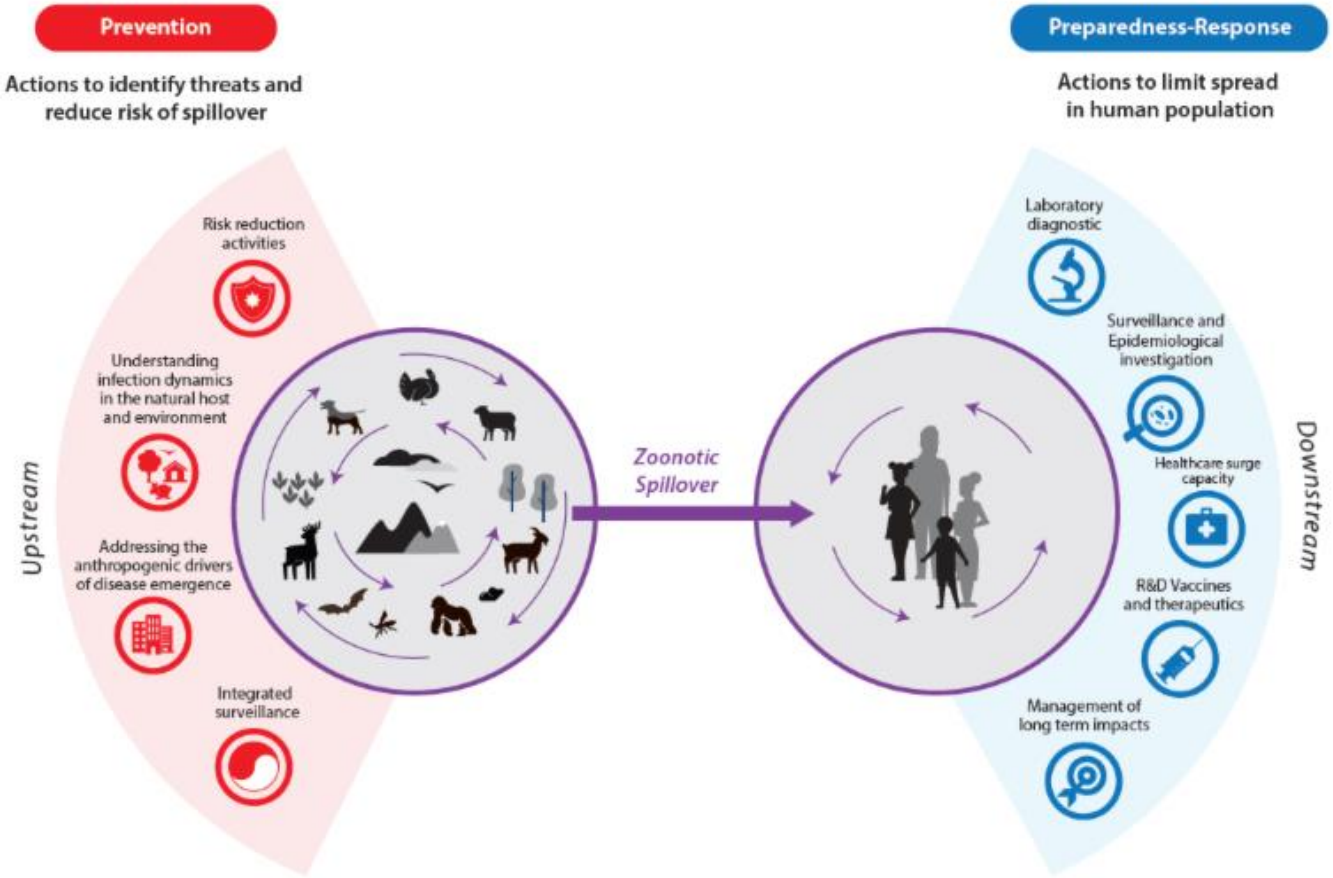
2. A definition of prevention of zoonotic spillover to humans

ONE HEALTH HIGH-LEVEL EXPERT PANEL

PREVENTION OF ZOONOTIC SPILLOVER

FROM RELYING ON RESPONSE TO REDUCING THE RISK AT SOURCE

OHHLEP whitepaper/Opinion piece



OHHLEP Term 2

26 members (13 from Term 1)

First meeting: April 2024

Dr Yewanda Alimi
One Health Unit Lead, the Africa Centers for Disease Control

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Consultant in Global Public Health, Public Health England / Director - One Health Project, Chatham House, Royal Institute of International Affairs, United Kingdom of Great Britain and Northern Ireland, Pakistan

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Director of the One Health Office at the U.S. Centers for Disease Control and Prevention (CDC)

Professor Gian Luca Burci
Senior Visiting Professor of International Law at the University of Geneva, Switzerland

Dr Dominique Charron
Visiting Professor, One Health Institute, University of Guelph, Canada

Dr Anna Maria Conte
Head of the Statistics and Geographic Information Systems (GIS) Unit, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale" (IZSAM) Teramo, Italy

Professor Carlos Gonçalo Afonso Rolhas Fernandes Das Neves
Chief Scientist of the European Food Safety Authority (EFSA) in Parma, Italy

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Australian Centre for Health Engagement, Evidence and Values, University of Wollongong

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Professor David Hayman
Professor of Infectious Disease Ecology, Massey University, New Zealand

Dr Hugo Mantilla-Meluk
Professor of Evolution, Sustainable Development and One Health, Biology Program, Universidad del Quindío, Colombia, and the Founder and Director of the Centro de Estudios de Alta Montaña

Professor Thomas Mettenleiter
President (retired) of the Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Germany

Dr Salama Al Muhairi
Manager of Research and Development at the National Emergency Crisis and Disaster Management Authority, United Arab Emirates

Dr Hung Nguyen-Viet
Co-Leader of Animal and Human Heath Program at the International Livestock Research Institute

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Senior Epidemiologist at the Science, Technology, and Innovation Secretariat. Office of the President, Kampala, Uganda

Professor Ryan Blake Williams
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Deputy Head of the Department of Epidemiology and Public Health, Swiss Tropical and Public Health Institute, Basel, Switzerland

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Professor of Medicine at the Institute for Health Sciences, Kunming Medical University, Kunming, China

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Dr Catherine Machalaba
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Professor Serge Morand
Director of Research, CNRS, Montpellier University, France

Ms Natiela Beatriz de Oliveira
Specialist in the One Health Technical Group, General Coordination of Surveillance of Zoonosis and Vector-borne Diseases, Department of Communicable Diseases, Ministry of Health, Brazil

Professor Maxine A. Whittaker
Public Health Physician, Medical Anthropologist and Health Systems Researcher and Director of the WHO Collaborating Centre for Vector Borne and Neglected Tropical Disease

Dr Xiao-Nong Zhou
Chief Scientist of Parasitic Disease Control at the Chinese Center for Disease Control, and the Director of the WHO Collaborating Centre for Tropical Diseases, China

Supported by: Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection — based on a decision of the German Bundestag

BMUV

Convention on Biological Diversity

Secretariat of the CBD

UNDP

UN environment programme

UN Environment Programme

World Organisation for Animal Health Founded as OIE

WOAH

World Health Organization

WHO

IUCN

IUCN

EcoHealth Alliance

EcoHealth Alliance

Demonstrate

Achieve a shared and deeper understanding of the links between nature, climate change and health across sectors and stakeholder groups, while demonstrating the value of multidisciplinary evidence and participatory models to raise awareness and provide a strong rationale for investment and action

Operationalize

Operationalize action and policy to foster enabling environments for disease prevention at source

Enable

Enable and strengthen the capacity and knowledge of key stakeholders to manage knowledge, action, advocacy and decision-making, leveraging the links between nature, climate change and health

Sustain

Sustain effective collaboration and governance structures to facilitate preventative planning, action, accountability and policy

A systems approach to identifying needs and co-developing pathways

Technical Advisory Group (TAG)

Mariam Wallet Aboubakrine

Franck Berthe

Mirna Kay Cunningham Kain

Nitish Debnath

Rumbidzai Gondo

Gladys Kalema-Zikusoka

Serge Morand

Julius Nziza

Christina Pettan-Brewer

Marcela Uhart

Katie Woolaston

PREZODE

Preventing zoonotic disease emergence

Pillar 1
Zoonotic risk assessment

Pillar 2
Zoonotic risk reduction

Pillar 3
Early detection and socio-economic impact evaluation

Pillar 4
Global surveillance system of zoonotic risks

Pillar 5 – Stakeholders engagement / co-development of health networks and policies

Result 1
Stakeholders at local level **understand the risks and implement actions to prevent** them

Result 2
Stakeholders implement the **health and biodiversity policies** they have co-developed

Result 3
A real time **One Health** surveillance system based on user needs is operational at all levels

Result 4
The **science-society-policy dialog** is strong and permanent to define relevant health management strategies

RÉPUBLIQUE FRANÇAISE cirad INRAE IRD

HealthDEEP
HEALTH, DISEASE ECOLOGY, ENVIRONMENT AND POLICY
INTERNATIONAL RESEARCH LABORATORY
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KU
KASETSART
UNIVERSITY

University

Merci