

STRUCTURE

- Ministry of Natural Resources and Environment (MNRE)
 - Department of National Parks, Wildlife, and Plant Conservation (DNP)
 - Wildlife Conservation Bureau
 - Wildlife Breeding Division
 - Wildlife Breeding Centers
 - Wildlife Management Division
 - Wildlife Rescue Centers
 - Bangchuaeng Wildlife Management Development Center
 - Zoological Park Organization (ZPO)
 - Department of Zoo Development (DZO)
 - Administration
 - Animal Health
 - Production and Promotion
 - Bureau of Disease Control and Veterinary Service
 - Animal Product Standards
 - Department of Fisheries, Ministry of Agriculture and Cooperatives (MOAC)
 - Division of Aquatic Animal Health Research and Development
- Ministry of Public Health

POLICY

Governing support for policy is challenging

Revised policies:

- CU-EN MOU for wildlife disease surveillance
- 30-year National Strategic Plan of Thailand, 2018-2048
 - Promotion for the Well-being of Thai People
 - focused on OI concept encompassing surveillance, prevention, treatment, and control of zoonoses
- The 12th National Economic and Social Development Plan - Strategy 6.1 in Developing integrated health and environmental surveillance mechanisms and
- improving health and environmental surveillance data on population health, zoonotic diseases, zoonoses, and key public health resources,

LAW

Existing laws covers trade, captive husbandry, care for injured, sick, or weak animals, animal welfare for wildlife, and disease control measures during epidemics for all animals.

- Wildlife Conservation and Protection Act, BE2550 (2007) - DNP
- Animal Epidemic Act BE2558 (2015) - DLD



SOP/GUIDELINES

- Guidelines are focused on specific diseases (e.g. OI, ASF, Av. Influenza) but are created to develop the guidelines in response to disease situations
- An AI guideline is being developed by DDC, DLD, CPD
- General guidelines for wildlife are unavailable
- Need policy to support development of guidelines
- Need SOPs for discovery of sick/wild animals

COLLABORATION & OH

Official Consultative Network

- Coordinating Unit for One Health (CUOH)
 - Coordinating unit under Department of Disease Control (DDC)
 - Established in 2014 by the National Committee on Emerging Infectious Diseases
 - Preparedness and Response of Public Health
 - Collaboration between Department of Disease Control, Department of Medical Sciences, DLD (NPH) and DNP
 - MOU between seven (7) ministries (Ministry of Agriculture and Cooperatives, Ministry of Natural Resources and Environment, Ministry of Social Development and Human Security, Ministry of the Interior, Ministry of Labour, Ministry of Education, Ministry of Public Health and the Thai Red Cross Society)
 - OH Zoonotic Diseases Prioritization
 - Zoonotic Influenza
 - Zoonotic viral diseases (COVID-19, SARS, MERS)
 - Nipah virus
 - Rabies
 - Escherichia
 - The MOU and Issue 13: Promotion for the Well-being of Thai People - provide CUOH with 4 mechanisms which are coordination mechanism, research and development, workforce development, and assessment.

Others

- Monitoring and Surveillance Centre for Zoonotic Diseases in Wildlife and Exotic Animals (MWSZ/EN)
 - Faculty of Veterinary Science (FVS), Mahidul University (MU)
 - Thailand National Wildlife Health Center (Thailand-NWHC) of MOZ/WZ since 2011
 - Collaboration between PIS, MU, DNP, DLD, and Department of Marine and Coastal Resources
- DNP + DLD on preventing LSD from livestock to wildlife

RESEARCH

One Health surveillance of Nipah Virus (page and page) - 2007

- Chulalongkorn University
- Kasetsart University
- DDC, MOPIH
- DLD under Ministry of Agriculture and Cooperatives
- CND

Study site: Chantabul province

- Access the biggest P. fly colonies

Results

- 10,000 bats positive (2006)
- 7,961 bats positive (2016)

Impacts

- Preventive control measures
- Increased surveillance of pigs and humans in vicinity of known Nipah-infected areas
- Increased vigilance and reduced risk behaviors

INTERNATIONAL

- Mechanism: letter of agreement
- WGAN Training Program to develop capacity for zoonoses with Thailand National Wildlife Health Center (Thailand - NWHC) of MOZ/WZ
- Establishing a WGAN
- Collaborating Centre in Wildlife Health and Biodiversity in MU with USGS National Wildlife Health Center's support (ongoing)

Mechanism of collaboration is semi-coordinating

- Limited international collaborations on wildlife health (e.g. WGAN, FAO, DDC)
- Need visibility
- Suggest the engaging more influential organizations like OIE and WCA to advocate for wildlife health, as their involvement may carry greater weight with policymakers who may not have an animal or veterinary background

LOCAL

MU is existing DNP have guidelines if involving wildlife

- Zoological Park Organization (MNRIS)
- Private zoo - under DNP with Wildlife Conservation and Protection Act
- King Chulalongkorn Memorial Hospital
- Thai Red Cross Society
- NGO
- Communities

FINANCIAL

- Obtain funding from DNP but is inadequate
- Attempts to obtain fund from international organizations
- Local MOU to support equipment and logistics
- Proposed requests needed to obtain funding during emergencies

Projects

- TSR
- PREDCCT (USAID)
- LACADMS (EU)
- PREDCCT (USAID)
- SDI in wildlife (AFPC/FAO)
- Wildhealth project (DFRA)
- Options for surveillance in wildlife (Canada Research Institute)

PHYSICAL

- Eight (8) wildlife clinics for 21 protected areas
- Share some medical resources with CDDO
- Not dedicated
- Some mobile clinics for veterinarians
- Limited wildlife clinics in some regions

HUMAN

- Only one to two veterinarians
- Shared by one to several
- Not all have animal science education
- CDDO
- Few guards
- Needs more manpower, especially at the regional level

ANIMAL HEALTH

- Subdivision related to wildlife health:
- Department of National Parks, Wildlife and Plant Conservation (DNP)
 - Wildlife Conservation Bureau
 - Wildlife Breeding Division (23 breeding centers)
 - Wildlife Health Management (2 rescue centers)
 - Bangchuaeng Wildlife Management Development Center

Other organizations:

- Rescue centers
- Universities

ANIMAL WELFARE

- Quality Protection and Welfare of Animals (QPWA) under DNP
- Animal welfare standards under development through DNP

Needs to improve animal welfare in captivity

SURVEILLANCE

- Passive surveillance
- Record of abnormal death of wild birds (AD)
 - Samples from dead animals
 - Quarant and sampling from national parks (NP)
 - Lesion monitoring through field rangers
 - Camera traps
 - Collection of samples from captive wild boar (AWF)

Active surveillance

- Samples from migratory and legal birds
- Samples from clinics
- EDOs in wildlife in DNP: Faculty of Forestry, KU, King Chulalongkorn Memorial Hospital, Thai Red Cross Society

Priorities

- Zoonotic influenza
- Nipah virus
- Emerging Coronavirus
- Rabies
- Escherichia
- Wild pathogen in nonhuman primates
- MERS
- Antimicrobial Resistance

LABORATORY

- National Institute of Animal Health (NIHAH)
- Universities
- Labors have their own protocols
- Materials not calibrated to species-level (e.g. PCR assays to identify species)
- Establishing wildlife standards cross-chain systems such as well
- Challenged when standards are discovered late

- Lack knowledge and awareness on biosafety and biosecurity, zoonotic risks among professional and technical staff
- Need laboratory capacity building for wildlife diseases (e.g. monkey pox, coronavirus)

DATA

- DNP has authority over wildlife data
- National Institute of Animal Health (NIHAH)
- LIMS system
- Lack of information sharing practices and systems (e.g. prevention did not make data available)
- Need app, centralized and cloud database

REPORTING

- Reporting based on need basis
- MND reporting system, monthly report on morbidity and mortality, diagnosis and management
- Data from sanctuary and national parks will be to the regional office in case managed by a veterinarian and regional animal husbandry officer
- 1 regional office to 4-5 provinces
- SDZ
- BNSTR @ National Conservation Agency (NA) office

- Community reporting to rangers in sanctuary format - WAHIS

- Challenge to maintain consistent reporting and complete reports from all regions/provinces (e.g. sometimes only regional level report)
- Veterinarians in national parks report to the National Park Office rather than the Wildlife Conservation Office, requiring coordination through the Director General and lacking direct authority of DNP over veterinarians in regional offices or national parks.
- Bureaucratic processes to obtain information from vets
- National border is huge and control is limited to the gates
- Does not include wildlife outside of DNP's jurisdiction

RISK ANALYSIS & ZOOSES

- High-risk interface like live markets, bird-selling
- Buffer zones are created between national parks and communities and farms (e.g. to prevent livestock PMO and LSD to wildlife)

- High-risk interfaces (needs more evidence)
 - Bat caves (respiratory fungal infection)
 - Ecotourism is considered low risk

RESPONSE

- Necropsy of wildlife carcasses
- Lack disease investigation/response team

ENVIRONMENT

- Quality of Environment and
- Environmental data (e.g. rainfall) are collected by forest rangers and reported to DNP via hard copy

ASSESSMENT

- None focused on wildlife health
- MR-JEE based studies are more focused on human health
- Evaluation proposed development of wildlife health system and good wildlife ID

TRAINING

- Some courses (e.g. veterinary) are available in its curriculum
- Parents training focuses on domestic animals rather than wildlife
- Day one competency on wildlife for graduates is low

Training needed

- Development of guidelines and SOPs
- Basic first aid
- Biosafety
- Immunoassay
- Wildlife vet training in regional offices
- For DLD staff at district levels the assist with wildlife rescue work

TRACEABILITY

- No mechanism for non-OIEIS

COMMUNICATION

- Public communication sector - website
- Press release
- Contribution of other sectors/ministries