

Workshop Work Book

Capacity Development for Wildlife Health Management in Low and Middle Income Countries



VetAgro Sup – Marcy l’Etoile (Lyon), France
Wildlife Disease Association

Workshop Work Book

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Canadian Cooperative Wildlife Health Centre

Executive Summary

The Wildlife Disease Association (WDA) held its 61st International Conference, together with the 10th biennial conference of the European Wildlife Disease Association, in Lyon (France) from Sunday July 22nd through Friday July 27th 2012. The main topic of the conference was "convergence in wildlife health". The first day of the conference was devoted to workshops focused on various topics. Dr. Ted Leighton of the Canadian Cooperative Wildlife Health Centre (CCWHC) and Dr. Sophie Valeix (VetAgro-Sup), with the assistance of the USAID program on Emerging Pandemic Threats (RESPOND and PREDICT), organized a workshop on *Capacity Development for Wildlife Health Management in Low and Middle Income Countries*. The workshop took place at VetAgro-Sup, in Marcy l'Etoile, just outside of Lyon. Sixty-one participants from twenty-eight countries attended the workshop.

The Workshop has four principal objectives: 1) to be a forum at which participants share experiences and learn from one another; 2) to clarify the nature of "capacity development," its components, and its challenges; 3) to explore the "capacities" needed to achieve "wildlife health management"; and 4) to explore "best practices" for capacity development. The workshop was a mixture of presentations, small group exercises and interactive discussions.

Speakers from seven countries focused on two major themes: 1) the nature of capacity development and; 2) their own practical experiences in participating in the development or enhancement of national and regional capacities to manage wildlife health.

Dr. Valeix, workshop co-organizer, opened the workshop and encouraged participants to learn from each other and to discuss not only successes but also problems and lessons learned.

Dr. Purvi Mehta-Bhatt, ILRI, New Delhi, emphasized that capacity development is an important pathway to achieving sustainable development; that limited capacity continues to be one of the most prominent hindrances to implementing projects in developing countries, and that it is important to identify and leverage upon the role that different international, regional and local organizations can play in building capacities.

Following Dr. Mehta-Bhatt's presentation; participants assembled in groups of 5 to 8 people and carried out an exercise that explored several components of capacity development. Participants were presented with a capacity development scenario and were asked to develop appropriate and achievable goals for the project, to identify the likely stakeholders, to identify the components of the program, and to prioritize the components for implementation. The results were then further explored in a plenary discussion.

Dr. Craig Stephen from the Centre for Coastal Health and the University of Calgary, Canada identified five important lessons in developing capacity: get the goal right; find passionate, committed and willing people; build trusting relationships with effective social groups; build human capacity first; and understand how to motivate and engage the people of the country.

Page | 3

Dr. Jonna Mazet from the Wildlife Health Center of the University of California at Davis described the Health for Animals and Livelihood Improvement (HALI) project in Tanzania which uses an interdisciplinary approach to train people and build capacity to integrate disease data and socio-economic data in order to identify the health and economic impact of diseases affecting wildlife, domestic animals and people, and then to make recommendations for preventing diseases and managing water resources.

Dr Sophie Valeix , VetAgro-Sup¹, led the participants in a development challenge game which highlighted the human population and resource inequalities around the world that frame all aspects of international development, including developing capacity in wildlife health management. Participants were divided into three teams and competed to correctly estimate global statistics on wealth and resource allocation, zoonotic diseases and wild animal populations.

Dr. Ted Leighton, Canadian Cooperative Wildlife Health Center in Saskatoon, Canada narrowed the focus from developing capacity in general to developing capacity specifically to manage wildlife health. He noted that prevention, early detection and response, and recovery programs form the core of wildlife health management, but that these must be accompanied by supportive national policies and legal frameworks, a functional governance structure, and capacity for research and training in wildlife health sciences. He noted that national government structures very often have wide gaps and uncertainties regarding who has the authority and the responsibility to manage health and disease issues in wild animals.

A second working session in small groups followed Dr. Leighton's presentation. Participants were asked to plan a national program of wildlife disease surveillance. Their task was, first, to identify the capacities needed for each component of wildlife disease surveillance and then to think through a national wildlife health management program, of which surveillance is one component, and propose the order in which each component should be implemented to produce the best long-term result and why. The results were then further explored in a plenary discussion.

Dr. Parntep Ratanakorn of the Faculty of Veterinary Science, Mahidol University in Bangkok, recounted the history and practical experience of building a wildlife conservation and wildlife veterinary program in Thailand from the 1930s to the present. Wildlife veterinarians became

¹ Now at the University of Sussex, Brighton, UK

integral to wildlife management in Thailand only as a result of issues and concerns associated with avian influenza in 2003. Now they work directly with the national parks and have established the Monitoring and Surveillance Center for Zoonotic Diseases in Wildlife and Exotic Animals (MoZWE), which interconnects staff from various ministries and organizations and carries out collaborative research and disease surveillance. Wildlife veterinary medicine now is included in veterinarian training.

Dr. Erika Alandia of the Veterinary Science for Conservation Program, Wildlife Conservation Society, Bolivia, described the surveillance network in Bolivia for reducing transmission of diseases among domestic animals, wildlife and people. This surveillance network also strives to reduce the mortality of domestic animals, ensure food security and support sustainable development. The strength of the program is that it is part of a broader management strategy for the Tacana Indigenous Territory, and indigenous organizations are heavily involved, thus ensuring the program is adapted to local realities, is accessible to anyone, and involves multiple stakeholders. A weakness of the program has been lack of involvement of the National Veterinarian Service.

Dr. Tom Nyariki from the African Union's Inter-African Bureau for Animal Resources (AU-IBAR) in Nairobi explained that AU-IBAR is the African Union's technical organ for wildlife management. Livestock was initially the key focus, but in recent years they have included wildlife and fisheries. At the moment, AU-IBAR is working on a survey of wildlife health personnel to quantify current national wildlife health management capacities. Some of AU-IBAR's capacity development initiatives have included participation in the eradication of rinderpest and management of avian influenza. AU-IBAR has created the Integrated Regional Coordination Mechanism (IRCM) for the prevention and control of transboundary animal diseases and zoonoses. Among the challenges faced by IRCM are low levels of national investment in wildlife health management, a weak knowledge base, a very narrow perspective by many wildlife and health professionals, and a weak institutional and policy environment.

Dr. Richard Kock of the Royal Veterinary College, University of London, reviewed the key messages of the Workshop as he had heard them: ● This is a complex world and wildlife health management must find its niche among competing needs and demands; ● What capacities are most needed? First identify the capacity that is most needed and then spend wisely. ● A wildlife health development program must be consistent with a country's stage of development, and must be compatible with what else is going on in the country; otherwise it will not be welcome or possible. ● Do not impose ideas; ● Capacity development is about communities: start small and build; ● Remember that the younger generation is critical to change and get the message across to them; ● Government services are confronted by many important issues. If your program will not have a practical positive impact, you may do more harm than good. Think about outcomes; justify what you are doing. ● Make sure your evidence base is good and that

communities are integrated into interdisciplinary approaches. ● Remember that money is critical; you do not need much of it, but you need to make sure you have what is needed. ● Publish, so the world knows of your successes and failures.

Page | 5

Dr. Kock summed up by throwing down a challenge. He stressed that there are few places left for wildlife and few places on earth, principally only in Africa, where human and biological production actually equals or exceeds human consumption. Thus, globally, wildlife health is threatened by the escalating ecological and economic crisis on earth in the 21st Century. As we use more resources, we drive the cycle ever faster. The basic system has to change or the biosphere will collapse—this is the challenge for all of us in how we move forwards. We are not operating in a sustainable system. Scientists working on wildlife health are feeling the pulse of the planet!

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This Workshop was designed and organized by Dr. F. A. (Ted) Leighton and Dr. Sophie Valeix on behalf of the Wildlife Disease Association (WDA) and the organizing team for its 61st Annual Scientific Meeting. Facilities and organizational support was provided by VetAgro-Sup. Facilitation and recording was provided by Dick Wall and Leanne Polachek of the Training Resources Group, Inc. The workshop was made possible by financial support from the PREDICT and RESPOND programs of the USAID initiative on Emerging Pandemic Threats, the World Organization for Animal Health (OIE – www.oie.int), in-kind contributions by the Canadian Cooperative Wildlife Health Centre. The substance of the workshop was provided by the speakers and the 60+ participants who gave freely of their time, thoughts and experience, and permitted these to be recorded in this report.

TABLE OF CONTENTS

Page | 6

Introduction	7
Presentation: Opportunities and Challenges in Capacity Development: Experiences and Observations	8
Issues in Capacity Development – Small group exercise	10
Issues in Capacity Development – General discussion	12
Presentation: My Fives Lessons in Capacity Development	14
Presentation: Partnerships for wildlife health capacity projects: lessons learned on benefits and obstacles from the HALI project, Tanzania	16
Clarification Questions asked by participants:	18
Interactive Panel Discussion with all Participants	19
Development Challenge Game	22
Other questions included:	23
Presentation: What is “Capacity for Wildlife Health Management?”	24
Clarification Questions:	24
Capacity Development in Wildlife Health Management – Small group exercise	26
Capacity Development in Wildlife Health Management – General discussion.....	28
Presentation: Wildlife health capacity building in Thailand - successes and challenges	29
Clarification Questions	30
Presentation: Surveillance network for animal diseases in the Tacana indigenous territory in Bolivia: From livestock to wildlife, communal to national	30
Clarification Questions:	32
Presentation: Capacity building in wildlife health in Africa: AU-IBAR experiences.....	32
Clarification Questions:	34
Interactive Discussion with all Participants.....	35
Presentation: Capacity development for wildlife health: Lessons from this Workshop	37
Appendix A: Workshop Program	41
Appendix B: Sample Responses in Small Group Exercises	43
Appendix C: Workshop Presentations	50

INTRODUCTION

Sophie Valeix |

Page | 7

Dr. Valeix welcomed the participants to the conference and began her welcome address with an anecdote. When her workshop co-organizer, Ted Leighton, requested that she introduce the workshop, she thought to herself, “How can I do this? I am just a student.” Dr. Leighton’s response was, “Don’t think of yourself as a category.” She urged the participants to take this same advice during the workshop, and to participate fully. The participants come from diverse backgrounds and life experiences; some have 40+ years of relevant experience, and others are just beginning their careers. From her personal experience in Sri Lanka, she learned that capacity development is based on learning and working together. The workshop is intended to be a time and place when this will happen.

When she and Ted Leighton began organizing the day, the first thing they agreed upon was that participants should have the opportunity to learn actively and directly from each other, and should not just listen to presentations. The second point of agreement was that the day would be comprised of discussions not simply of successes, but of failures and lessons learned as well.

PRESENTATION²: OPPORTUNITIES AND CHALLENGES IN CAPACITY DEVELOPMENT: EXPERIENCES AND OBSERVATIONS

Purvi Mehta-Bhatt | ILRI, New Delhi, India

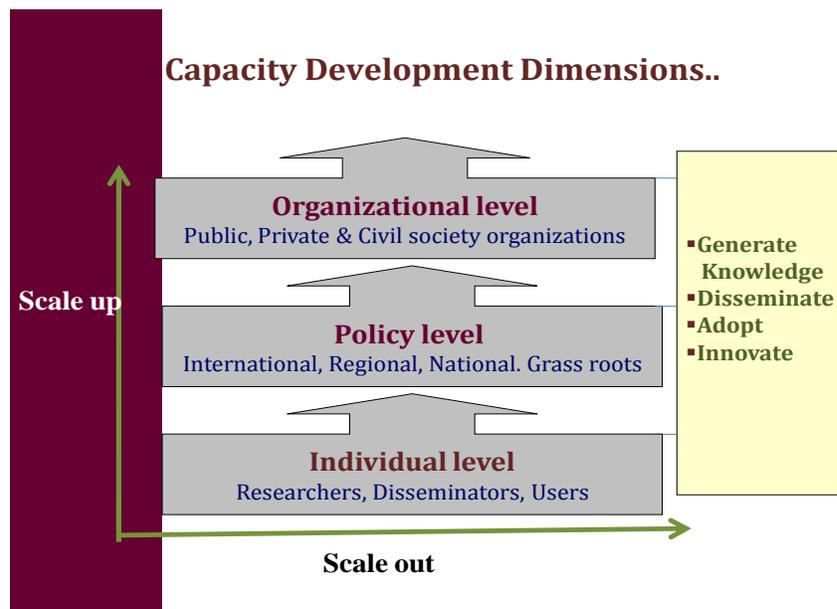
Page | 8

The purpose of Dr. Mehta-Bhatt's presentation was to give an overview of the 'big picture' of capacity building: What is 'capacity development'? What is a 'capacity'? Who are the stakeholders? She provided an overview of the key challenges and approaches to capacity development, illustrated by examples from Asia and Africa.

There are a large number of definitions of capacity development. Participants from diverse fields – human health, wildlife health, veterinarians, etc. – have varying perspectives on capacity development. Dr. Mehta-Bhatt urged the participants to look at capacity development holistically and offered the following definition, which she believes captures the essence of capacity development for wildlife health management:

Building cognizance and/or expertise about a topic or area or field [e.g. wildlife health management] as a concept and practice among a cross-section of stakeholders.

The stakeholders could be researchers, policy-makers, communities, extension workers, academia and many others. Capacity has three different levels or dimensions: (See diagram).



² Presentations slides from all speakers are in Appendix C

The purpose of building capacity on these three levels is to generate knowledge and management practices, disseminate strategies to communities, encourage adoption of those strategies in the day-to-day reality of those communities, and to encourage innovation and change.

Building capacity is important because it is the key to making projects lasting and sustainable. However, a capacity building strategy often comes as an afterthought in the design of many projects. It should not be this way; capacity development should be a key component of the initial project design – the project's most important objective.

One of the key outputs crucial for project success is defining its impact pathway: the trajectory through which the project will effect change, provide tangible benefits, improve livelihoods. Development of local capacity to meet the objectives of a project is a powerful means of achieving impact and it is critical to ensuring the impact will persist after the development project is completed because the target communities now are self-sufficient with respect to project objectives.

There are many challenges and approaches to identifying the capacities that are needed. In the developing world, often there are few or no institutional mechanisms in place to support capacity development. Therefore, the question becomes, "Do we have enough institutional development to design and implement policies?" Some of the main challenges include access to tools and resources. For example, if a project would like to communicate by means of a website, project implementers need to understand what portion of the population actually has access to the internet. Other challenges include rigid silos amongst players. Often, there is no combining of voices to advocate together, and no collective language when talking about capacity development in, for example, wildlife health management. Lastly, there is a limited number of case studies, and therefore, very little information to build upon.

There are four key approaches to capacity development:

1. Dynamism: Constantly evolving strategies, tools and approaches as the program progresses, to meet the requirements of the specific context.
2. Complementarity: Building on existing capacities, networks and infrastructure.
3. Co-learning: within and across sectors, stakeholders and regions. Promoting learning between sectors (researchers to field and vice versa.)
4. Systems Approach: Developing institutional (not just individual) capacities to carry out program.

Dr. Mehta-Bhatt illustrated her points with two case studies. The first was an ILRI EcoZD program implemented in five different countries. Two centers of excellence were set-up, and they brought together stakeholders from different sectors. The second case study was mainly a capacity-building program instituted by PENAPH (the Participatory Epidemiology Networks for Animal and Public Health) in Africa; this program now is being extended to Asia.

Dr. Mehta-Bhatt's final message was that effective capacity development cannot be achieved by a single organisation. There needs to be collective action and combined voices that extend the development agenda.

ISSUES IN CAPACITY DEVELOPMENT – SMALL GROUP EXERCISE

Participants were divided into groups of 5-8 people and each group was presented with the following scenario and associated questions. **These questions do not have right or wrong answers** but cover issues which are faced in all capacity development programs³. Groups spent 40 minutes working through the questions. The participants then re-assembled in a plenary session to discuss further some of the issues and ideas raised in the small group discussions

Planning a Capacity Development Program

Scenario – A low income country is totally dependent on its own agricultural production to feed its human and animal populations. For decades, plant diseases have caused substantial losses in food production. This problem has become more severe as new plant diseases have been observed, probably arriving through increased international trade and travel. As human and animal populations have risen, food production has increased at a much slower rate, and plant diseases are one source of production loss. Plant Pathologists International (PPI), an organization of concerned plant pathologists, made a site visit to this country and determined that the country 1) *has no capacity to identify the full range of important plant pathogens affecting its crops*, and 2) *has no capacity to use information about plant pathogens to guide disease prevention or mitigation (harm reduction) programs*. A wealthy donor has given PPI funds to address this problem in this country. It will be the first time that PPI has undertaken an international development project.

1) Setting Goals and Objectives

Here is a list of goals that PPI might set for this project:

Goals
Alleviate hunger
Increase crop production
Improve farm income
Establish plant pathology services
Eliminate or reduce some plant diseases
Eliminate Southern Corn Leaf Blight

Discuss these goals and decide which of the goals you consider to be most useful, appropriate and achievable in this PPI project.

1. Why are some goals more useful or appropriate than others?
2. What are the qualities of a useful or

appropriate capacity development goal?

³ Some of the kinds of responses to the questions in this exercise and in the second similar exercise are in Appendix B.

2) Identifying Stakeholders

“Stakeholder” has come to mean “any person, group or organization that will be affected in some way by an activity.” PPI proposes to carry out a project in this country *to identify the full range of important plant pathogens affecting crops and to use such information to guide disease prevention or mitigation (harm reduction) programs.*

Page | 11

Who are the ‘stakeholders’ in this project? Consider the full range of people, groups and organizations that might be affected in some way by this project, and make a list of them here.

3) Components of the Program-

<p>Example:</p> <p>Establish a Milk Processing Plant</p> <ul style="list-style-type: none"> • Government permissions and licenses • Contract milk producers • Establish physical facility • Train personnel at all levels • Acquire equipment • Business Plan • Secure \$ investment • Transportation of milk to facility • Product storage and distribution system • Marketing strategy • Food safety and quality management • Communications plan

To establish, in this country, the capacity to identify the full range of plant pathogens affecting crops and to use this information to guide disease prevention and mitigation (harm reduction) programs, what must PPI do?

What should be the major components of their program?

Discuss this and then list the program components you think will be essential to achieving the two main objectives of the program (underlined above).

[As an aid for thought, the text box to the right contains a list of possible ‘major components’ in a project to establish a milk processing plant]

4) What Comes First?

How should PPI implement this capacity development program? Look at your list of the major components of this program and decide the order in which these components should be implemented. Some may have to come before others, while some can perhaps be done simultaneously.

ISSUES IN CAPACITY DEVELOPMENT – GENERAL DISCUSSION

After working on the scenario and questions in small groups, the workshop participants came back together for a general discussion about ideas and issues raised during the small group discussions. The following record captures some of the points raised in discussion. This record represents neither a consensus view of the participants nor any order of importance or priority determined by the participants.

Page | 12

- The first step should be to hold an initial stakeholders meeting which would enable implementers to better understand the local conditions. The group should identify who would attend the meeting: leaders, coordinators, etc. The primary focus would be sustainability first. Such an initiative should never introduce more problems. In addition, the capacities most relevant to the real context should be considered.
- There is a need to determine a hierarchy of goals as some goals presented in the exercise were long-term, and others were short-term. The project is most likely a longer-term project spanning about 20 years; however sponsors are difficult to find and maintain for such a lengthy period of time. It would be appropriate to consider which goals would be achievable in the short term as they are the most critical and necessary. The last three goals are more achievable:
 4. Establish plant pathology services
 5. Eliminate or reduce some plant diseases
 6. Eliminate Southern Corn Leaf Blight

However, the first three goals would be nice to achieve, but they have many uncontrollable factors:

1. Alleviate hunger
2. Increase crop production
3. Improve farm income

Goals 4-6 are achievable within this particular project. If those goals are met, then they are a step at least toward achieving the longer-term goals.

- The list of goals really is an overarching goal and, within that, a series of sub-goals and mechanisms. The overall goal is to increase food security – increase crop production.
- Communication should be built-in: communication at every step.
- An action plan is needed to ensure the project is sustainable once the external money is gone.
- It is important to engage the government and policy makers as their involvement will help to develop a sustainable plan.
- Universities can fill the scientific gaps through research and education.

- There is a need for evaluation and feedback systems so success or failure can be measured and corrective steps taken when objectives are not being achieved.
- Problems should be identified by the local community. What seems to be a problem by an outsider may not be considered a problem by the local community, or they may have other concerns of higher priority to them.
- Build upon the capacities and resources that already exist in the local community.
- Local people should be empowered to build their own capacity. This can serve as proof that they can take on similar processes in the future, and implies the existence of capacity development.
- A sustainable system works in a cyclical way – the operations in the village level support the higher government levels, and back again. All of the pieces of the cycle should be in place and functioning.
- In order to understand the existing problems, all stakeholders need to be involved. One way to assess the achievements of an initiative, and understand how needs may have changed, is to interview the same stakeholders before, during and after.
- On the government level, a system for monitoring and reporting outcomes should be instituted. If this system is created from the start, implementers will have some measure of improvements that are being achieved.

PRESENTATION: MY FIVES LESSONS IN CAPACITY DEVELOPMENT

*Craig Stephen | Centre for Coastal Health and University of Calgary,
Canada*

Page | 14

Dr. Stephen began by noting that capacity development is extremely complex. At times, people become so paralyzed by the complexity that they cannot do anything; they do not know where to start. One key to successful capacity development is to understand the obstacles that inhibit people, governments or organizations from realizing goals. It boils down to understanding the obstacles, then finding a way to build capacity in consideration of those obstacles.

Dr. Stephen presented the five lessons he has learned thus far from his activities in capacity development:

Lesson #1: Get the goal right. There is a need for SMART Goals: **S**pecific, **M**easurable, **A**ttainable, **R**elevant and **T**ime-bound. The goals of the program must be the goals of the community or group or country in which the capacity will be developed. Scale also matters when developing goals; they must be of a size and number that are feasible and can be achieved. Mismatched goals must be avoided. The goals should match the needs and priorities of the people who wish to develop their capacity and not some different goals and priorities set by external groups.

Lesson #2: Nothing happens without leadership. It is essential to find passionate, committed and willing people in the place where capacity is to be developed. There can be more than one, but there must be at least one person who has vision and can energize and motivate others. This means that fostering and mentoring of leadership must be a component, often an unfunded component, of capacity development.

Lesson #3: Effective social groups are built on trusting relationships.

From Lessons 1 and 2, it is clear that capacity development is a social activity and requires effective social groups to succeed. Effective social groups rely on trust. ***We must invest in constructing trust before constructing buildings.*** To do this, we must find out how people work together, how knowledge flows and how required social connections and process can be strengthened.

Lesson #4: Capacity development must be about human capacity first. Many newly-built laboratories around the world are empty because they do not have the people to staff them. The human capacities needed are always more than just technical competences. Administrative, management, communication, marketing and social process competences always are needed in addition to technical capacities. There needs to be investment in the frontline personnel as well as in the specially-trained people in the centre.

Lesson #5: Foster a sustainable program. Capacity and the functions it supports will endure only if the people who have the capacity are willing to sustain the program. Therefore, it is essential to understand what will motivate people to continue the program when the capacity to operate it has been established and development of capacity is finished. Factors such as resources, personal reward, passion, legal requirements all may play a role, as will a need to continue evolving, to maintain excitement over further possibilities and to avoid stagnation. These components of sustainability must be studied and understood early on, and the program must firmly incorporate them if it is to have any lasting effect and merit being deemed a success.

Capacity development programs end for many reasons. Sometimes it is because they have succeeded and are no longer needed. All should end this way. However, some terminate prematurely without achieving their objectives. It is important to consider why this is so and understand these risks of failure that are inherent in all capacity development programs. Some end because the team breaks down: social cohesion fails; people accept normal opportunities to move into new positions, motivations within the program are not maintained, highly-trained people leave, funding ends and no local fiscal arrangement has been made for continuation of the program. These risks can be anticipated and managed by recognizing the need for on-going recruitment and training, monitoring, and setting objectives that can be both achieved and sustained over time with realistically anticipated resources.

The final lesson: It is about more than money. Much can be achieved with available resources. The motivations and talents of people to build capacity and effect change to achieve a better condition for themselves and their society are often extraordinary. While external resources can certainly enhance capacity development, caring people are its foundation.

PRESENTATION: PARTNERSHIPS FOR WILDLIFE HEALTH CAPACITY PROJECTS: LESSONS LEARNED ON BENEFITS AND OBSTACLES FROM THE HALI PROJECT, TANZANIA

Page | 16

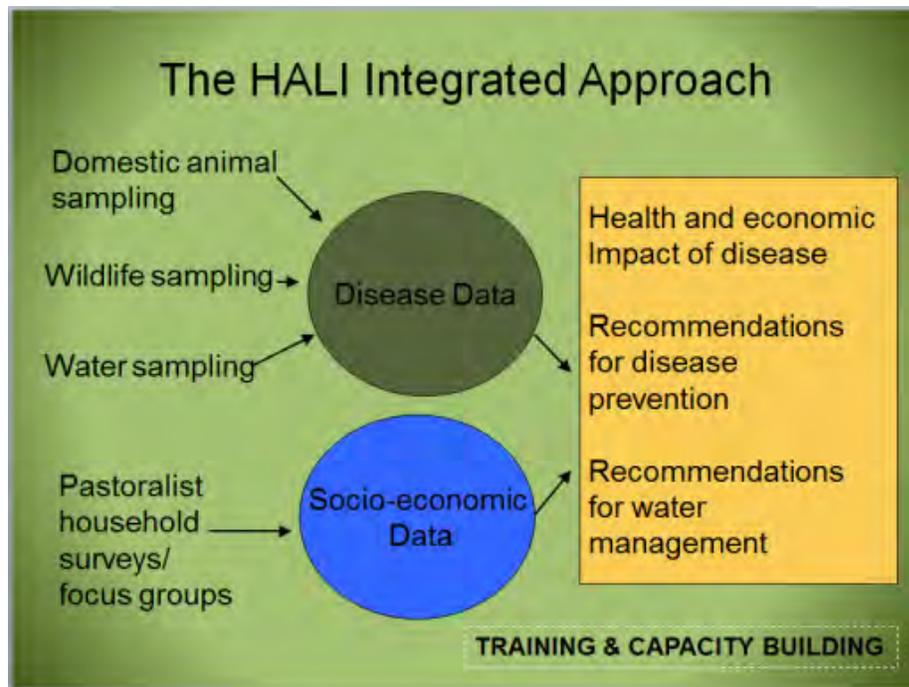
Jonna Mazet | University of California at Davis

Dr. Mazet used The HALI (Health for Animals and Livelihood Improvement) Project in the Ruaha region of Tanzania to illustrate a capacity development project's sustainability, successes and failures. The HALI project is implemented in multiple communities with the ongoing participation of 160 households. Part of the key to the project's overall success has been engagement with communities and households.

The Ruaha Region of Tanzania is an area of great biodiversity, where people and animals, both domestic and wild, interact and are interdependent in complicated ways. Dr Mazet and her group became involved in the project in 2005 because they were invited. Dr. Mazet stated that one of the main lessons she learned is that one should not attempt to implement a capacity development project in an area if not invited to do so. The support of local communities is integral to the success of such projects.

The major ecological issue in this area is water scarcity; the Great Ruaha River is drying and now ceases to flow for parts of the year. This is a major new environmental change and is having complex effects on animal and human health, wildlife populations and human livelihoods. Dr. Mazet's group brought to this multidisciplinary project specific expertise in animal health and disease ecology. Through stakeholder consultations, they established project objectives associated with reducing the impact of a small number of infectious diseases that were having a large impact on people and animals.

The general plan followed by the HALI project is illustrated in the following figure on the next page:



This project is based very much on “one health” principles, principles already well-understood by the residents of the in the project area.

The HALI project involves both assessment of the complex ecology of the animal and human health issues in the region and development of the capacities needed in the local community to manage these health risks in a self-sustaining manner. The project brought in external resources to establish certain capacities such a laboratory testing. The initial focus was on two diseases shared by wildlife, livestock and people: bovine tuberculosis and brucellosis. Several other shared pathogens have been added to the project, including *Salmonella*, *E. coli*, *Cryptosporidium* and *Giardia*.

The HALI project first established partnerships among international and national participants representing a wide range of different disciplines and knowledge. It then engaged the most affected groups of people as participants in the project to ensure that the outcomes addressed their needs and that health management capacity would be sustained. Capacity development itself involved both formal training and informal knowledge mobilization and outreach.

Cross-cultural understanding is a constant challenge in such projects and is so for the HALI project. Knowledge mobilization in all directions is heavily dependent on cultural factors that must be identified, understood and incorporated. This takes considerable time and the time required for this should be included in planning. There are cultural differences among professional colleagues and in administrative practices that also must be understood and managed.

CLARIFICATION QUESTIONS ASKED BY PARTICIPANTS:

Question: One thing that was not mentioned was the difficulty in avoiding corruption.

Page | 18

Dr. Mazet responded that ethical practices across cultures and countries can be a challenge and that her project takes all possible steps to avoid participating in practices that would be considered unethical either in Tanzania or the United States. For example, when an electricity company wanted an extra fee to quickly establish an electrical connection to a newly-built laboratory, the project elected to decline to pay the fee and instead to wait the long period required for their turn to come for regular service.

Question: You said the problem with tuberculosis turned out to be smaller than originally anticipated. There is lots of pressure to solve all of Africa's problems, but when it comes to the impact of a program, perhaps showing that a problem is smaller than anticipated is quite significant. Do you feel documenting absence of a problem is as important as discovering a new problem?

Dr. Mazet explained that education is always good for every country. Finding less of a potential problem than expected is a good sign. The group chose the sites they did because they were considered hotspots for TB. Prevalence in animals is lower than anticipated, but how much transmission to people is occurring has yet to be determined. This is an important piece of information yet to obtain.

Question: I am wondering about the policies and planning for treatment (of TB). Were policies in place, and did you work with the government?

Dr. Mazet pointed out that everything they do is in conjunction with the Tanzanian government and its policies. When the project reported its findings about the prevalence of TB in animals to the government, officials said it was the first report they had been given of bovine TB in the region. They do not have access to American journals, and no previous foreign researchers had ever reported their findings to the government. The project is now working with government agencies on sampling schemes and has a great relationship with them. This work is still in the diagnostic phase and has not yet moved into management or mitigation.

INTERACTIVE PANEL DISCUSSION WITH ALL PARTICIPANTS

Following the presentations, the speakers were asked to form a panel for a general discussion. The panellists were encouraged to address any issues raised in the presentations, and all participants were encouraged to ask questions or provide a commentary on the morning's activities.

Page | 19

Question: Where do you start developing capacity in a place where there is no capacity at all, not even the capacity to recognize that there are problems? Especially as you, Dr. Mazet, mentioned, it is important to go to places where you are invited. Where do you start?

Dr. Mazet explained that in some places there is reduced capacity, but there is nowhere with no capacity. Dr Mehta-Bhatt added that she, also, does not agree with the phrase, 'no capacity at all' in a nation. You have to recognize what capacity is there, and strengthen it and build on it. In cases where a country has very little capacity, you may be able to bring in regional capacities, such as from a neighbouring country, rather than bringing in everything in from outside the region.

Dr Stephen added that there is a need to differentiate the problem itself from recognition of the problem. A lot of initial capacity development involves helping people to recognize that there is a problem and that it is within the scope of their capabilities to work toward resolving it.

Question: In South Africa, the key is getting young people interested in wildlife health and biodiversity conservation, creating champions to make a difference. What can you do in schools to create the champions to address these issues?

Dr Stephen replied with the question, "Is a champion born or made?" Liberate the innate enthusiasm, and create opportunities that are fun and rewarding. There needs to be a local, sustained presence that young people can look up to.

Dr Mehta-Bhatt explained that in Africa, 40% of the population is less than 15 years old. In Africa or Asia, none of the agricultural extension programs, for example, is meant for non-farmers or for young people. We wait until the person is 30 years old, and then complain that they do not know enough. It is critical to start educating and getting children interested in what their parents are interested in from the beginning. This will help them take up relevant professions, and not 'run away' from the area.

Dr. Mazet also added that the last grant her project received targeted livestock specialists and school children. Both groups measure water quality, for example, as part of the program.

Question: In the past, have you had formal agreements with government in order to get resources into a country?

Dr. Mazet replied that there has to be an agreement in place. Supply chain is a real issue; a huge headache. They have gone to in-country vendors to negotiate directly, but are still bringing a lot in themselves, which is not sustainable. A major issue is convincing international vendors to do business in a country which does not represent a large market for the vendor.

Question: Do you include maintenance with vendors?

Dr Mazet explained that her group often must find equipment wherever it can and pay the cost of maintenance.

Dr Stephen mentioned that it often is necessary to think creatively about managing finances in a developing country in order to achieve project objectives without departing from ethical principles.

Comment: There is not just one model for capacity development. Someone else's failed approach to capacity development may be successful in a different context.

Question: In Uganda, we talk about holding meetings with local people, however those local people say they will not attend a workshop if we do not pay them as they are contributing to work for which we ourselves are being paid. You cannot get cooperation for free. How do you manage this situation?

Dr Stephen replied that those people are asking for a "sitting fee," payment for the time they give to the project. Funding organizations often will allow you to budget for this. The way he deals with this is to ask his local partner whether the person is critical to achieving the objectives of the meeting or workshop. If so, he will invite the person and pay the fee.

Follow-up Comment: It becomes a problem also if other projects come in and do not pay such fees.

Dr Stephen replied that he is reliant on his partners to let him know what is acceptable in the local context.

Dr Mehta-Bhatt also added that she has seen that on one hand people will complain there is not enough capacity development going on, but on the other hand they do not want to come to a training program. If by attending a program they will earn more or gain something tangible, they will see value in it and attend. You have to think of what value you are bringing them; are you making a difference in their day-to-day lives? For broad issues like climate change in places like Kenya and India, her program makes sure that a local farmer chairs the program and this often ensures that the other farmers attend.

Question: Could you comment on institutional mechanisms for some of the interventions you have accomplished in Tanzania? What are the linkages to ensure the sustainability of key elements such as the laboratories you have built?

Page | 21

Dr Mazet explained that her organization does not agree to help out with capacity development in the first place if there is not clear evidence of a long-term commitment. Government investment may decrease or disappear even if there is a commitment and a sustainability plan in place. Sometimes the best plans do not come to fruition. However, there should be real intention and a feasible plan for sustaining the capacity once it is developed.

Question: Some of these capacity development projects can take years and years. How can you keep people interested if you cannot produce immediate results?

Dr Stephen commented that the most common reason for failure is that the people who were engaged did not themselves benefit from the project. Sustainability includes understanding what the key people value and delivering value to them. Business managers know that giving someone a raise in salary is not an effective way to motivate them, but providing them with something they value, be it recognition, job satisfaction or improvement in an area of personal value to the employee, will motivate them. There are good insights in business management on how to keep people motivated, and these need to be part of sustainability planning.

DEVELOPMENT CHALLENGE GAME

To add some fun and to provide the group with an experiential view of the how the world and its resources are divided up, the group played a game, designed by Sophie Valeix and inspired by the game, "If the world were a village"⁴. In Round 1, each participant was given a colored card and stood up when the leader called for their color to stand. Each group asked to stand represented the proportion of the world's total population associated with a specified characteristic.

Page | 22

For example, "If the world were a workshop of 60 people), it would have:"

- ▶ 35 Asians (red color stand)
- ▶ 8 Africans (blue color stand)
- ▶ 8 Americans (yellow)
- ▶ 8 Europeans (green)

(4.1 billion)
China – 20% - (1.4 billion)
India – 16% - (1.1 billion)

"If the world were a workshop of 60 inhabitants, it would have also 31 women and 29 men (comparison with the real gender balance in the workshop); "If the world were a workshop, of 60 inhabitants, we would count 30 people less than 25 years old."

In Round 2, the group split into three teams. The leader announced a piece of information and the teams had to guess the right proportion and then show it by having the right proportion of people in their group stand up. The teams, for example, were asked, "How many people own 80% of the workshop and its riches? " The teams had 30 seconds to discuss and think about the right number. After the bell rang, they showed the proportion they had chosen by standing up. The judges counted and compared which team was the closest to the answer. In this case:

Answer: 20% of people,

- ▶ only 1 woman would own her land.

Enormous Resource
Disparities
20% of people use 2% of
global resources
< \$2/day buying power: 2.8
billion people (40%)
(87% in most of Africa)

⁴ <http://www.iftheworldwereavillage.com/>

OTHER QUESTIONS INCLUDED:

Questions	Answers (% of global population)
How many people would have ever used a car?	11%
How many people would know how to read, write and count?	60% , of whom 40% would be men
How many would have access to medical care?	50%
How many would have access to a computer?	20%, with only 15% connected to a network like the Internet
How many would live in an area of armed conflict?	33%, of whom 23% would be women
Now, imagine that you're animals...	
You are amphibians: How many are considered threatened or are extinct?	32 %
Now, imagine you're micro-organisms...	
How many human pathogens are of animal origin?	Over 60%
How many of those come from wildlife?	70% of the 60% (42% of total)

PRESENTATION: WHAT IS “CAPACITY FOR WILDLIFE HEALTH MANAGEMENT?”

*Ted Leighton | Canadian Cooperative Wildlife Health Centre,
Saskatoon, Canada*

Page | 24

In this session, Dr Leighton switched attention from general capacity development to capacity development specifically in wildlife health management, and explored the question: “What is capacity for wildlife health management?” He characterized “wildlife health management” as including all activities associated with reducing harm from pathogens and diseases in wild animals, including social, economic and ecological harm.

He also noted that the word “wildlife” is applied to different groups of animals in various settings: free-ranging wild animals, captive wild animal species (for example, in zoos, game farms) and feral animals (domesticated animals that have subsequently returned to live as wild populations). There is no “correct” definition, and wildlife health management programs may involve any or all of these groups in different settings.

The basic elements of a national program in wildlife health management were described as:

1. Prevention – gathering information and assessing and reducing risks
2. Early Detection – requiring on-going wildlife disease surveillance
3. Response and recovery – establishing mechanisms for evaluating wildlife disease events and planning possible responses in advance

Two additional components are required: 1) research capacity to obtain key information needed for effective management and, 2) a supportive political and administrative environment which includes national policies and legal framework, an effective governance structure, and sustained financial support.

Dr Leighton’s concluding point was that the legal responsibility for wildlife health management, in most countries, is shared, poorly defined and incomplete. Effective management of wildlife health issues nearly always requires new, high levels of collaboration and cooperation among several government ministries, universities and the private sector. Such collaboration usually does not occur easily and must be one objective of capacity development in wildlife health management.

CLARIFICATION QUESTIONS:

Question: How do you tie together the two components of wildlife health management – the disease-side and the population-side? They are looked at differently.

Dr Leighton responded that wildlife disease management is a relatively new activity invented out of need. Population biologists and animal health specialists must bring their knowledge and expertise together to understand and to solve problems.

Page | 25

Question: You mentioned emerging out of necessity. There is a heavy focus on pathogens and infectious disease. Where is toxicology?

Dr Leighton commented that there are differences between infectious disease and diseases caused by chemical toxins, but that both are important in wildlife health management. Sometimes the source of toxicological problems can be controlled while this is more difficult with living pathogens once they are released into an animal population. There are important toxicology issues as well as infectious disease issues to be managed.

CAPACITY DEVELOPMENT IN WILDLIFE HEALTH MANAGEMENT – SMALL GROUP EXERCISE

Page | 26

Participants again were divided into small groups of 5-8 and each group was presented with the following scenario and associated questions. Again, **these questions do not have right or wrong answers** but cover issues faced in establishing wildlife health management capacity⁵. Groups spent 40 minutes working through the questions. The participants then re-assembled in a plenary session to discuss some of the issues and ideas raised in the small group discussions

Planning a National Program of Wildlife Health Management

1) **“Capacities” for Disease Surveillance:** At some stage in program development, any country that wants a national program of wildlife health management will **need to establish a program of wildlife disease surveillance:** general surveillance for disease occurrences, targeted surveillance for particular pathogens, or both. In the presentation just made, disease/pathogen surveillance was described as having four broad components, as listed in the text box here on the left.

Components of Disease/Pathogen Surveillance

- **Detection of diseased or dead animals, or collecting of samples from animals**
- **Identification (diagnosis) of diseases and pathogens**
- **Information management**
- **Analysis and communication**

What are the scientific, technical or other capacities that a country needs in order to carry out disease surveillance?

Make a list of the capacities required for each for the four main activities that constitute a program of disease or pathogen surveillance.

- Capacities needed for detection /sample collection
- Capacities needed for identification of diseases and pathogens
- Capacities needed to manage surveillance information
- Capacities needed for analysis of information and communication of results

⁵ Some of the kinds of responses to the work book questions in this exercise are in Appendix A.

2) **A National Wildlife Health Management Program.** In the presentation just made, the speaker provided a list of the major components of a complete *national wildlife health management plan*. (See the text box below)

Page | 27

<ul style="list-style-type: none"> • Disease Prevention activities • Disease/pathogen detection (disease/pathogen surveillance) • Responses to important disease events • Research and training programs • Enabling environment: supportive policies and governance, and administrative competence • _____ • _____ • _____ • _____ • _____

a) Is this a complete list? Are there other components of a national wildlife health management plan or program that have not yet been considered? If you think so, add those components to the list in the text box.

b) If a low or middle income country does not have such a program, but wants to develop one, how many years do you think will be required?

(1-2 years? 5-10 years? 15-20 years? ???)

Your answer:

_____.

3) **What Capacities Should Be Developed First?** Unless it is very rich, a country without a national wildlife health management program probably will not be able to establish all of the components of such a program at the same time. Therefore, a county probably will have to decide which components of the program it will establish first, which second, which third, etc.

Does the order in which these components of wildlife health management are established matter? Will the order in which each is established affect the likelihood of overall success in establishing a complete national program? Are some components more important, or of more immediate usefulness, than others?

Propose the order of establishment which you think will produce the best long-term result and explain your choice.

CAPACITY DEVELOPMENT IN WILDLIFE HEALTH MANAGEMENT – GENERAL DISCUSSION

Page | 28

After working on the scenario and questions in small groups, the workshop participants came back together for a general discussion about ideas and issues raised during the small group discussions. The following record captures some of the points raised in discussion. This record represents neither a consensus view of the participants nor an order of importance or priority determined by the participants. Questions and comments were as follow:

- There are two categories of capacity – technical and political (partnerships, policy). Learning the technical skills is good, but not much can be done without the political capacity also.
- It is very important that the public be aware of and understands something about wildlife health management programs. The public votes and thereby can influence policies.
- Some countries are reluctant to report diseases in wild animals because of potential negative impacts on trade and their economies. How do we give them incentives to be honest?
 - Dr Leighton commented that this is a problem that has not been fully resolved. There are situations in which the occurrence of specific diseases in wild animals should not affect international trade in domestic animals or animal products according to WTO rules. However, there are other situations in which the occurrence of certain diseases in wildlife might warrant trade restrictions. The World Organisation for Animal Health (OIE) is working on developing rules and best practices here, but not all issues have yet been resolved.
- In countries with no wildlife disease surveillance, there is no international reporting of disease occurrences in wildlife. This may give the impression that certain diseases do not occur in those countries.
- Sustainability plans should be in place when capacity is developed. Once all foreign investment has been made, it is important to ensure that the system continues to work.
- In planning disease surveillance, we must include in our thinking cold-chains, labelling samples, identification, medical waste management, and having a database with quality control and software for analysis.
- Research should be performed independently, and free of government bias.
- Some issues that come to mind in developing wildlife health management capacity include validation of diagnostic tests for wild animal species; the capacity to track samples and establish disease databases, the need to set priorities for expensive testing of samples but also the great value of collecting and freezing samples at every opportunity, saving many for use at another time when the need arises or funds become available.

- It is important to network with all stakeholders and to use this network to understand the ecology of wild animal diseases. Rapid and reliable communication within this network of stakeholders is key to the success of a surveillance program.
- In developing countries, storage of samples, the logistics of collecting samples and achieving biosecurity all are challenges. It is important to have a network in the field to build awareness of what to look for, when to report, and when to collect. Funding for every step of the way is important
- Regional diagnostic laboratories can serve in the identification of diseases and pathogens. The diagnostics do not need to be very local. The capacity to manage surveillance includes clear identification of roles, the ability to process information and share it, and established policies on what can be tested and reported. The capacity for analysis includes risk assessment. Local people living in the field – residents, farmers, birdwatchers, hunters – can be the eyes and ears on the ground.

PRESENTATION: WILDLIFE HEALTH CAPACITY BUILDING IN THAILAND - SUCCESSES AND CHALLENGES

*Parntep Ratanakorn | Faculty of Veterinary Science, Mahidol
University, Bangkok, Thailand*

Dr. Ratanakorn shared his experiences with capacity development in Thailand. He presented a chronology of wildlife conservation engagement with wildlife health issues in Thailand. After World War II, wildlife numbers were reduced due to hunting, deforestation and habitat destruction. Conservation organizations emerged in the 1950's in response to these conditions and, in the 1990's, wildlife conservation developed in strength and influence, in concert with the 1992 Wildlife Preservation & Conservation Act and restrictions on wildlife trade made by CITES in that same year. Elephants are very important to Thailand and have been a focus for development both of conservation programs and of veterinary medicine associated with captive working animals. Wildlife diseases and health management issues involving wild animals did not receive much interest or recognition in Thailand until highly pathogenic avian influenza became an issue in both domestic and wild birds in 2003. Now, in 2012, veterinary specialists in wildlife health and disease work directly with the national park service on surveillance of important diseases. The Monitoring and Surveillance Centre for Zoonotic Diseases in Wildlife and Exotic Animals (MoZWE) has been established and plays a coordinating role among various government ministries, linking them together into a national program.

Dr. Ratanakorn also presented an overview of wildlife health in the Thai veterinary curriculum and of the Department of National Park's veterinary training course at his university, which incorporates four modules:

1. Orientation and Essential Core Principles and Knowledge
2. Wildlife Capture and Immobilization Techniques
3. Wildlife Veterinary Workshop : Wildlife Epidemiology
4. Wildlife Veterinary Workshop :Wildlife field practice

Dr Ratanakorn concluded with his assessment of current and future directions. He stated that research is at the heart of One Health and of wildlife health management. Supportive government policies are essential also and he is working with government ministries to set-up supporting policies. It is necessary to work with both government and local people to achieve good results. Lastly, he mentioned that the South East Asia One Health University Network (SEAHUN) has been created to link national networks in several countries. These networks have enhanced collaboration among academic, social, government and NGO groups.

CLARIFICATION QUESTIONS

Comment from participants: Dr. Ratanakorn deserves to be congratulated as he has actively engaged the private sector, and built the program of wildlife health in Thailand. In this workshop, we have heard about the importance of leadership. He is someone who acts as a 'science translator' through a weekly radio show, magazine articles and general information sharing. He has done wonderful things for wildlife education in Thailand.

PRESENTATION: SURVEILLANCE NETWORK FOR ANIMAL DISEASES IN THE TACANA INDIGENOUS TERRITORY IN BOLIVIA: FROM LIVESTOCK TO WILDLIFE, COMMUNAL TO NATIONAL

*Erika Alandia | Veterinary Science for Conservation Program, WCS,
Bolivia*

Dr. Alandia spoke about her experience establishing the Animal Health Program in the Tacana Indigenous Territory in Bolivia, a program which required development of a range of animal health capacities. The program began in 2005 and focused on improving management of domestic animal health with the goal also of reducing transmission of diseases from domestic animals to wildlife and people. The Tacana people are one of 36 indigenous groups in Bolivia. The program is aligned with the Tacana People's objective of promoting sustainable use of their natural resources.

The objectives of the program are to

- Reduce the risks of disease transmission at the domestic animal/wildlife/human interface

- Reduce hunting pressure;
- Ensure food security and;
- Support sustainable development in the area.

The main components of the program and their sequence were as follow:

- Work with local people to determine the health problems of greatest importance in local domestic animals, using participatory tools.
- Create a strategy to reduce the impact of those identified health problems.
 - Establish a training program for Community Animal Health Promoters (CAHP) which was open to everyone who was interested in learning, including both men and women and those who have limited reading and writing ability. Those who completed the program (which included evaluations of the acquired knowledge) then provided animal health services to his or her community.
 - The training program incorporated both theory and practical skills. Those who had taken the program were certified to provide technical advice to their communities. A domestic and wildlife health surveillance network was established through record-keeping and reporting by the CAHPs.
 - The results of the surveillance program then were used to identify the health issues having the greatest impacts on the community and to target health improvement programs at these problems through a mixture of education and veterinary intervention.

Dr Alandia identified both successful elements and problems associated with this program. She identified the following as “good decisions”:

- Make the program part of the Tacana People’s larger territorial strategy;
- Involve the indigenous organizations;
- Make training accessible for anyone interested in learning;
- Adapt the training topics to the local situations;
- Involve a range of different actors from the communities on the program.

One of the weaknesses of the initiative she identified was that they were not able to involve the National Veterinarian Service in the program at an early stage. Engagement of this Service is the next step the program is seeking to achieve.

CLARIFICATION QUESTIONS:

Question: Who pays the salary of the CAHPs?

Dr. Alandia responded that the promoters were not paid during the first year but subsequently were paid by the communities for their animal health work.

Page | 32

Question: Has there been a follow-up study to further examine the diseases you found?

Dr. Alandia responded that no funds are available for accurate monitoring. Reports from CAHPs seemed to indicate improvements but so far there is no opportunity to make this assessment.

Question: Did this project reduce hunting pressure?

Dr. Alandia responded that, so far, it has not been possible to monitor this either, unfortunately.

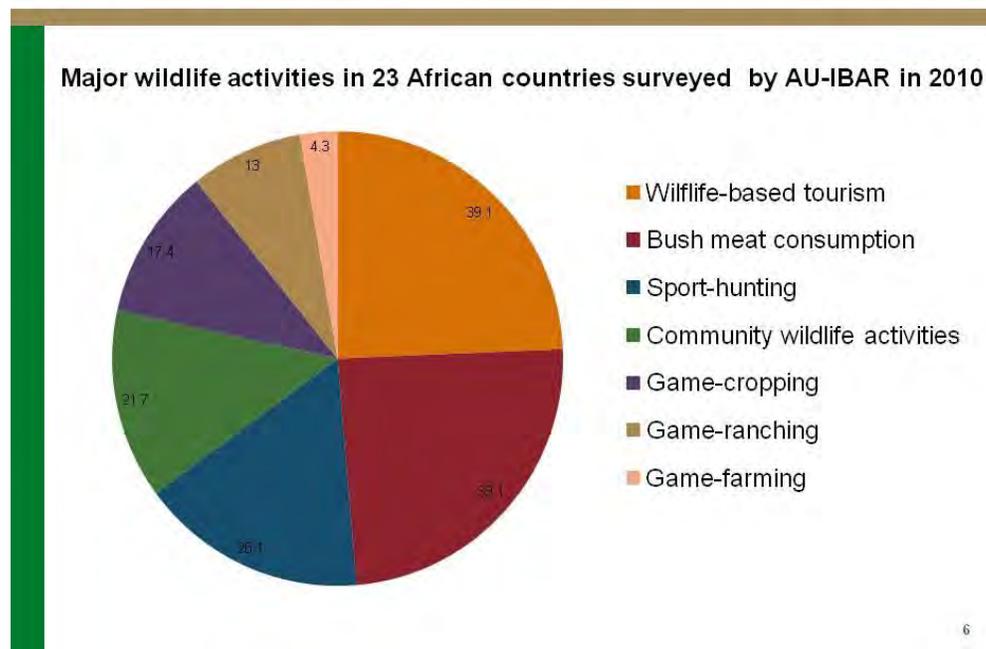
**PRESENTATION: CAPACITY BUILDING IN WILDLIFE HEALTH IN
AFRICA: AU-IBAR EXPERIENCES**

*Tom Nyariki, African Union's Inter-African Bureau for Animal
Resources, Nairobi, Kenya*

Dr Nyariki began by explaining that AU-IBAR is the African Union's technical organ for wildlife management. Livestock was initially the key focus, but in recent years, wildlife, fisheries, and other aquatic resources have become major program components.

A large proportion of global biodiversity is in Africa. Many African countries have placed 10-30 % of their total landmass under various nature protection schemes, and most countries have signed international biodiversity conservation conventions. Africa also is experiencing rapid growth in human populations and in urbanization which places extreme pressure on all resources, including wildlife and land. Wildlife is of economic importance to Africa in multiple ways, the most important being for meat consumption and for wildlife-based tourism (see figure below).

Context: Major wildlife-based activities in Africa



But wildlife health capacity in Africa is limited and is greatly constrained by the following factors:

- Low level of attention to wildlife
- Weak institutional infrastructure
- Weak collaboration between departments, ministries and other institutions
- Lack of enabling legislation
- Limited baseline knowledge on wildlife
- Limited networking among countries

Dr Nyariki then described some of AU-IBARs capacity development initiatives. Recently, AU-IBAR has created the Integrated Regional Coordination Mechanism (IRCM) for the prevention and control of transboundary animal diseases (TADs) and zoonoses. This initiative brings together various sectors to address diseases, and incorporates inter-sectoral collaboration through networking, knowledge management, and communication.

The wildlife health priorities of the IRCM include:

- Developing institutional infrastructure
- Supporting training
- Promoting information gathering and sharing
- Establishing procedures for better linkages – including veterinarians and wildlife authorities
- Strengthening networking among professionals

Some of the challenges the IRCM faces are:

- Low levels of investment in wildlife
- A weak knowledge base regarding wildlife health issues
- A mind-set among professionals that wildlife is a problem rather than a valuable natural resource
- The institutional and policy environment which is weak on health and wildlife issues

Dr Nyariki's conclusions were:

- Wildlife health capacities in Africa are very weak or non-existent in most countries.
- There is need to generate knowledge and policy-level awareness to encourage investment in wildlife health.
- Best practices in capacity development in wildlife health should be documented, piloted and expanded in different sub-regional contexts.
- Sustained effort and collaboration among global and regional actors is needed for sustainable impact.

CLARIFICATION QUESTIONS:

Question: Are the numbers of wildlife health laboratories you cited in your presentation only government labs or did you include labs of NGOs and other organizations?

Dr Nyariki explained that he referred to laboratories that work for the government and are specifically dedicated to wildlife. There are other labs that can handle wildlife samples, but are not dedicated wildlife laboratories.

INTERACTIVE DISCUSSION WITH ALL PARTICIPANTS

The presenters were asked to form a panel for a general discussion of capacity development in wildlife health management. The panellists were encouraged to address any issues they saw in the presentations, and the participants were encouraged to either ask questions or provide a commentary.

Page | 35

Question: For the African situation, are there any disease control initiatives?

Dr Nyariki explained that, at the African union level, AU-IBAR has been involved in disease control strategies that include both wildlife and livestock.

Comment: We have to be aware of communities and local knowledge. It is important that, whenever we develop projects, we think of how local communities can teach us something, so we can together bring success.

Dr Alandia add to this comment, pointing out that what she loves most about her job is learning from local people. Her project's strategy was re-oriented by local input. As outsiders, we may bring initiatives and ideas to a community but we must then learn from the community and develop a program together.

Comment: One of the participants congratulated Dr Alandia on her presentation and said that we have a tendency to think of development projects as requiring resources from large international organizations or governments. But much can be accomplished with limited resources and local engagement, as shown by the Bolivia project.

Question for all speakers – how can we assess the impact of our capacity development efforts? , How do we measure success?

Response: Measurement of success (or failure) often is difficult but it also is very important. It is easiest to measure success when the goals or objectives of a program are clearly identified at the beginning. Difficulty in measuring success at the end of a project often reflects failure to define goals and objectives clearly at the beginning. But success in capacity development often is not difficult to measure. If the objective is to establish a laboratory for animal disease diagnosis, then the key measure of success probably is the number of samples tested over a period of time by quality-assured methods. The level of education, training and performance of laboratory personnel might be another measure.

Comment: Well-qualified people in developing countries do not have access to funds for science and capacity development equivalent to those in the developed world. Part of developing capacity is training those qualified people in the developing world how to access funds for which they are eligible and the rules that come with access to such funds.

Comment: It has been difficult to sell the idea of capacity building in wild life health to people in public health. The summary of this workshop will be helpful in selling the idea to the public health sector. It is also important that each of us become a champion and inform the public of the importance of wildlife health capacity.

Page | 36

Question: How does one develop a team to respond to a national or continental wildlife health emergency or urgent situation?

Response: A “response team” implies both the existence of the required human and material capacity to respond and a mechanism to make a decision to deploy that capacity in a coordinated way. Generally this requires planning and agreements within and among governments prior to the emergency. These plans and agreements will only be made by governments when we have convinced governments that the benefits of such response teams merit the cost. This is an example of capacity development being more than just establishment of technical capacity. It also requires establishment of an enabling political environment.

Question: It was noteworthy in one presentation that there are wildlife veterinarians on staff in some national parks. In my experience, it is rare for national parks to hire veterinarians.

Comment: There sometimes is a big gap between veterinarians and wildlife biologists. There is low collaboration between the two professions.

Comment: Are we thinking about wildlife health in the most useful way? We go along with placing it somewhat apart, a special activity and concern on the edges of the environment, of conservation, of human health. Is this the right framework for thought, the right paradigm? Isn't wildlife health far more fundamental than this? Isn't it an outcome of environmental change and human activity, and a barometer to some extent of the condition of the biosphere? When it is going wrong, much, much else also is going wrong. Should we not be convincing our societies that wildlife health is a sensitive and important index of our general ecological well-being, and therefore of our real economic condition.

PRESENTATION: CAPACITY DEVELOPMENT FOR WILDLIFE HEALTH: LESSONS FROM THIS WORKSHOP

Richard Kock, Royal Veterinary College, University of London

Page | 37

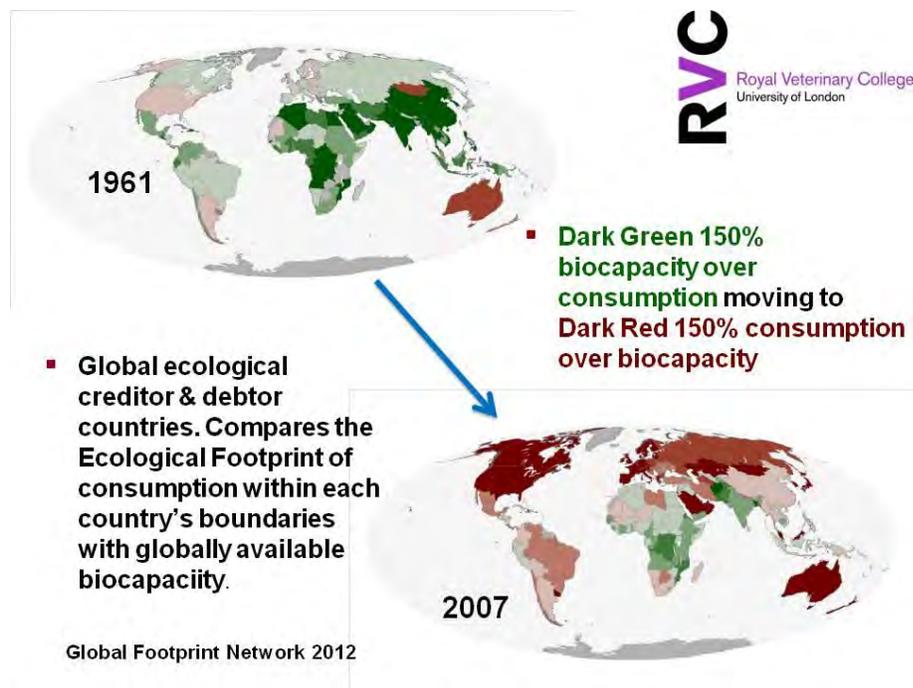
Dr Kock set aside his prepared lecture⁶ in favour of continuing the productive dialogue that was taking place among the workshop participants. He then reviewed for everyone the key messages he had received from the workshop as a whole. He summarized these messages as follows:

- This is a complex world and wildlife health management must find its niche among competing needs and demands.
- What capacities are most needed? First identify the capacity that is most needed and then spend wisely.
- A wildlife health development program must be consistent with the country's stage of development, and compatible with what else is going on in the country; otherwise it will not be welcome or possible.
- Do not impose ideas.
- Capacity development is about communities: start small and build.
- Remember that the younger generation is essential to change and get the message across to them.
- Government services are confronted by many important issues. If your program will not have a practical positive impact, you may do more harm than good. Think about outcomes; justify what you are doing.
- Make sure your evidence base is good and that communities are integrated into interdisciplinary approaches.
- Remember that money is critical; you do not need much of it, but you need to make sure you have what is needed.
- Publish, so the world knows of your successes and failures.

⁶ The slides for Dr Kock's prepared lecture, entitled "In capacity development for wildlife health, which comes first, the "Chicken" or the "Egg"?", are reproduced in Appendix C of this report, along with those of the other presenters

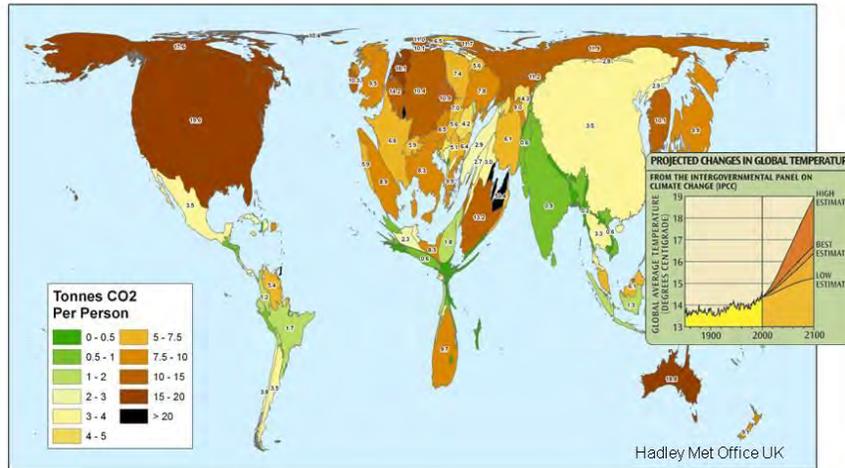
Dr Kock asked for additions to these messages, and participants noted that, in addition to educating children, one might add educating university students as well since .Wildlife health is not often reflected in university curricula, and should be.

Dr Kock finished his presentation, and the workshop, by reminding the participants of the global socio-economic and ecological context in which wildlife health management issues are framed. Wild animal populations are threatened globally because of human numbers and human activities. Currently, 75% of global primary biological production is exploited by people. Pressure on land and sea for food production, climate and other environmental changes now drive a species extinction rate that is 100 times higher than the background rate evident in the fossil record.

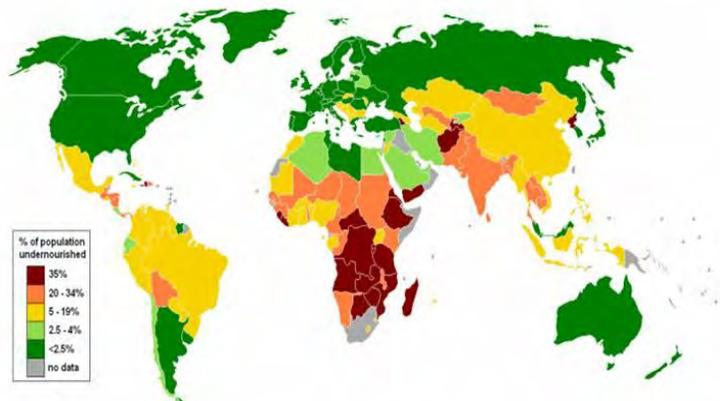


The risks and the benefits, short term and long-term, of this massive consumption of resources is not evenly distributed across the earth's human population, as these figures show.

North & South



Nourishment....



Data from FAO: <<http://www.fao.org/economic/ess/ess-fs/ess-fadata/en/>>

Dr. Kock summed up by throwing down a challenge. While we focus on our specific expertise in wildlife health issues, we must not lose sight of the driving forces behind most of the problems we are trying to manage. The ultimate issue that confronts us is how to move from our current, unsustainable use of resources to a level and a pattern of resource use that the earth can sustain in the long run. Thus, if we do not also recognize, advocate for and participate in lower per capita consumption on a global scale, all of our efforts for wildlife health will be for nothing.

Scientists working on wildlife health are feeling the pulse of the planet!

APPENDIX A: WORKSHOP PROGRAM

The organizers hope this workshop will:

Page | 41

- Be a forum at which participants share experiences and learn from one another
- Clarify the nature of “capacity development,” its components, and its challenges
- Explore the “capacities” needed to achieve “wildlife health management”
- Explore “best practices” for capacity development

07:45	Depart Lyon for Workshop location at VetAgro-Sup- Buses will depart from the Novotel/Ibis Pont Pasteur and the Ibis rue Mérieux at 07:45 (am).
08:30	Arrive at Campus – Register for Workshop
08:40	Workshop Begins
9:00	Presentation: <i>Opportunities and Challenges in Capacity Development: Experiences and Observations</i> Purvi Mehta-Bhatt, ILRI, New Delhi, India
9:20	<i>Issues in Capacity Development</i> – Small group exercise
10:00	<i>Issues in Capacity Development</i> – General discussion
10:30	BREAK – 15 minutes
10:45	Presentation: <i>My Fives Lessons in Capacity Development</i> Craig Stephen, Centre for Coastal Health and University of Calgary, Canada
11:10	Presentation: <i>Partnerships for wildlife health capacity projects: lessons learned on benefits and obstacles from the HALI project, Tanzania</i> Jonna Mazet, University of California at Davis, USA; Rudovick Kazwala, Sokoine University of Agriculture, Tanzania
11:30	<i>Interactive Panel Discussion with all Participants</i>

12:00	Development Challenge Game
12:30	LUNCH
13:20	Presentation: What is “Capacity for Wildlife Health Management?” Ted Leighton, Canadian Cooperative Wildlife Health Centre, Saskatoon, Canada
13:40	Capacity Development in Wildlife Health Management – Small group exercise Time to change rooms
14:10	Capacity Development in Wildlife Health Management – General discussion
14:40	Presentation: Wildlife health capacity building in Thailand - successes and challenge. Parntep Ratanakorn, Faculty of Veterinary Science, Mahidol University, Bangkok, Thailand
15:00	Break
15:20	Presentation: Surveillance network for animal diseases in the Tacana indigenous territory in Bolivia: From livestock to wildlife, communal to national Erika Alandia, Veterinary Science for Conservation Program, WCS, Bolivia
15:40	Presentation: Capacity building on wildlife health in Africa: AU-IBAR experiences Tom Nyariki, African Union's Inter-African Bureau for Animal Resources, Nairobi, Kenya
16:00	Interactive Panel Discussion with all Participants
16:25	Presentation: In capacity development for wildlife health, which comes first, the “Chicken” or the “Egg”? Richard Kock, Royal Veterinary College, University of London
16:45	General discussion
17:00	Closure
17:10	Depart for Lyon

APPENDIX B: EXAMPLE: RESPONSES IN SMALL GROUP EXERCISES

1. Small Group Session #1 – General Plan (09h20 to 10h00)

Planning a Capacity Development Program

[The objective of this exercise is to cause participants to think through several aspects of capacity development so that the subsequent presentations and discussions occur with minds fully oriented to the issue of capacity development]

Scenario – A low income country is totally dependent on its own agricultural production to feed its human and animal populations. For decades, plant diseases have caused substantial losses in food production.

This problem has become more severe as new plant diseases have been observed, probably arriving through increased international trade and travel. As human and animal populations have risen, food production has increased at a much slower rate, and plant diseases are one source of production loss. Plant Pathologists International (PPI), an organization of concerned plant pathologists, made a site visit to this country and determined that the country 1) *has no capacity to identify the full range of important plant pathogens affecting its crops*, and 2) *has no capacity to use information about plant pathogens to guide disease prevention or mitigation (harm reduction) programs*. A wealthy donor has given PPI funds to address this problem in this country. It will be the first time that PPI has undertaken an international development project.

1) Setting Goals and Objectives –

Here is a list of goals that PPI might set for this project:

Goals
1. Alleviate hunger
2. Increase crop production
3. Improve farm income
4. Establish plant pathology services
5. Eliminate or reduce some plant diseases
6. Eliminate Southern Corn Leaf Blight

Discuss these goals and decide which of the goals you consider to be most useful, appropriate and achievable in this PPI project.

- Why are some goals more useful or appropriate than others?
- What are the qualities of a useful or appropriate capacity development goal?

Page | 44

[Make notes here]

[Anticipated responses – 4th and 5th goals are reasonable goals and within the scope of expertise of PPI. The other goals are too broad or too narrow. A development goal should be achievable, not too ambitious and appropriate to the people undertaking the project

2) Identifying Stakeholders –

“Stakeholder” has come to mean “any person, group or organization that will be affected in some way by an activity.” PPI proposes to carry out a project in this country *to identify the full range of important plant pathogens affecting crops and to use such information to guide disease prevention or mitigation (harm reduction) programs.*

Who are the 'stakeholders' in this project? Consider the full range of people, groups and organizations that might be affected in some way by this project, and make a list of them here.

Anticipated responses:

- Farmers
- Land owners
- Politicians
- Government ministries associated with agriculture
 - Research scientists
 - Outreach/extension programs
 - Phytosanitary authorities
 - Environment
 - Forestry
 - Border Services
- Other plant scientists in the country
 - University staff
- Food industry (Local, national, export)
- Agriculture chemical industries
- Seed suppliers
- Agriculture equipment industries
- Environmental conservation agencies and NGOs]

3) Components of the Program-

To establish, in this country, the capacity to identify the full range of plant pathogens affecting crops and to use this information to guide disease prevention and mitigation (harm reduction) programs, what must PPI do?

Page | 45

Example:

Establish a Milk Processing Plant

- Government permissions and licenses
- Contract milk producers
- Establish physical facility
- Train personnel at all levels
- Acquire equipment
- Business Plan
- Secure financial investment
- Transportation of milk to facility
- Product storage and distribution system
- Marketing strategy
- Food safety and quality management
- Communications plan

What should be the major components of their program?

Discuss this and then list the program components you think will be essential to achieving the two main objectives of the program (underlined above).

[As an aid for thought, the text box to the right contains a list of possible 'major components' in a project to establish a milk processing plant]

Anticipated responses:

- Assess current capacity
- Feasibility study
- Training of plant pathologists
- Training of support staff
- Attractive employment for trained people
- Government ministry approval
- Political approval
- Industry approval
- Farmer and Landowner approval
- Business plan for sustainable program
 - Financial plan
- Legal and regulatory plan
- Infrastructure and laboratories

- Disease surveillance program
- Prevention & Mitigation programs
- Information and communications program
- Governance structure
- Administrative structure
- Other?

4) What Comes First?

- How should PPI implement this capacity development program? Look at your list of the major components of this program and decide the order in which these components should be implemented. Some may have to come before others, while some can perhaps be done simultaneously.

[A wide range of choices are possible here. There are no right or wrong answers but the many factors that might be considered in deciding the order of implementation will be highlighted in this discussion and will emphasize the importance of carefully considering this question]

2. Small Group Session #2 – General Plan 13:40h to 14:10h

Planning a National Program of Wildlife Health Management

Page | 47

[The objective of this exercise is to cause participants to reflect on the various possible components of a wildlife health management program and to consider which would be the most suitable starting point(s) for developing a national program which eventually would include all components.]

1) “Capacities” for Disease Surveillance: At some stage in program development, any country that wants a national program of wildlife health management will need to establish a

Components of Disease/Pathogen Surveillance
<ul style="list-style-type: none"> • Detection of diseased or dead animals, or collecting of samples from animals • Identification (diagnosis) of diseases and pathogens • Information management • Analysis and communication

program of wildlife disease surveillance: general surveillance for disease occurrences, targeted surveillance for particular pathogens, or both. In the presentation just made, disease/pathogen surveillance was described as having 4 broad components, as listed in the text box here on the left.

What are the scientific, technical or other capacities that a country needs in order to carry out disease surveillance?

Make a list of the capacities required for each for the four main activities that constitute a program of disease or pathogen surveillance.

➤ Capacities needed for detection /sample collection

[Examples:

- **Capacity to engage and recruit people to observe and report dead or sick wild animals**
 - **Communication at community level**
 - **Community engagement**
- **Network of people to receive or collect specimens, preserve, transport to labs**
 - **Trained people**
 - **Equipment, transportation, etc**
- **Operating funds]**

- Capacities needed for identification of diseases and pathogens

[Examples:

- Laboratories and equipment
- Trained scientists and technicians
- Safe handling and disposal of infected material
- Network of internal and external experts for referrals
- Operating funds]

Page | 48

- Capacities needed to manage surveillance information

[Examples:

- Information technologists
- Databases
- Computers
- Operating funds]

- Capacities needed for analysis of information and communication of results.

[Examples

- Epidemiology, disease ecology, quantitative analysis
 - Risk assessment
 - Communication specialists
 - Graphic/website/publication expertise
 - Operating funds]
-

2) **A National Wildlife Health Management Program.** The presentation just made by F.A. Leighton included a list of the major components of a complete *national wildlife health management plan*. (See the text box below)

Page | 49

- **Disease Prevention activities**
- **Disease/pathogen detection (disease/pathogen surveillance)**
- **Responses to important disease events**
- **Research and training programs**
- **Enabling environment: supportive policies and governance, and administrative competence**

- _____
- _____
- _____
- _____

a) Is this a complete list? Are there other components of a national wildlife health management plan or program that have not yet been considered? If you think so, add those components to the list in the text box.

b) If a low or middle income country does not have such a program, but wants to develop one, how many years do you think will be required? (1-2 years? 5-10 years? 15-20 years? ???)

Your answer: _____ [This question is just to get a time frame on the agenda for thought. Some may think all this can happen quickly, others that it will take 30 years]

3) **What Capacities Should Be Developed First?** Unless it is very rich, a country without a national wildlife health management program probably will not be able to establish all of the components of such a program at the same time. Therefore, a county probably will have to decide which components of the program it will establish first, which second, which third, etc.

Does the order in which these components of wildlife health management are established matter? Will the order in which each is established affect the likelihood of overall success in establishing a complete national program? Are some components more important, or of more immediate usefulness, than others?

Propose the order of establishment which you think will produce the best long-term result and explain your choice.

(You can write on the back of this page)

[There is no correct answer to this question. Some may feel that the enabling environment has to be created first or the other components cannot be developed. Others may feel that prevention always comes first. Others may feel that surveillance is the place to start and that the results will convince responsible authorities of the value of the program and lead to an enabling environment. Others may identify components not already listed in the text box and have arguments why those should come first. The value here is in focusing attention on the question and the range of different ways of considering the question]

APPENDIX C: WORKSHOP PRESENTATIONS

Page | 50

The slides from each presentation are included in the following pages in order in which each presentation was made. The presentation titles are as follows:

1. Opportunities and challenges in Capacity Development by Purvi Mehta-Bhatt
2. My 5 Lessons in Capacity Development by Craig Stephen
3. One Health Research, Capacity Building, and Outreach by Jonna Mazet
4. What is “Capacity for Wildlife Health Management”? by Ted Leighton
5. Wildlife Health Capacity Building in Thailand – Successes and Challenges by Parntep Ratanakorn
6. Surveillance Network for Animal Diseases at the Takana Indigenous Territory: From Domestic to Wildlife, from Local to National by Erika Alandia
7. Capacity Building in wildlife health in Africa: AU-IBAR experiences by Tom Nyariki
8. Capacity Development for wildlife health, which comes first, the “Chicken” or the “Egg”? by Richard Kock

Opportunities and Challenges in Capacity Development



Purvi Mehta-Bhatt
Head-Asia Region & Head- Capacity Development

International Livestock Research Institute

Overview

- The Big Picture-
What do we mean by Capacity Development
Why Build Capacities?
- CD in Developing world-
Key Challenges
Key approaches
- Case Study

SAT1

The big picture –



Defining Capacity Building..

 Number of Definitions available: 173
Number of Citations: 15320000

4

Defining Capacity Building..

 Number of Definitions available: 171
Number of Stations: 15320000

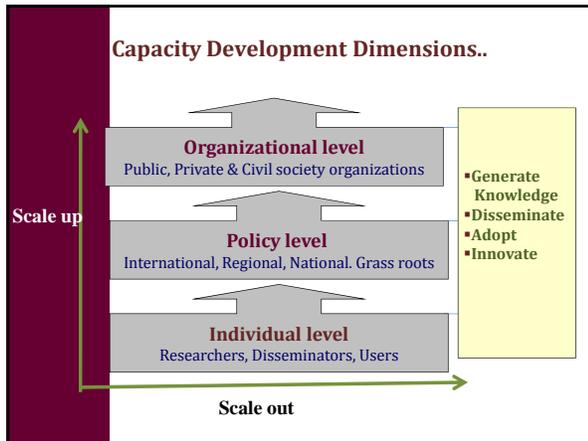


5

Defining Capacity Building..

Building cognisance and/or expertise about One Health/wildlife health management as a concept and practice among a cross section of stakeholders.

6



Why is it important to build capacities?

- An important impact pathway
- Sustainability factor
- Self sufficiency factor ('dependency on north?')



Key CD challenges in Developing world,

- Lack of institutional mechanism (extension, policy)
- Limited capacity to build capacities

Key CD challenges in Developing world,

- Lack of institutional mechanism (extension, policy)
- Infrastructure? (internet, education level)

35 % of world population has internet access
22% developed world population
13% developing world

Key CD challenges in Developing world,

- Lack of institutional mechanism (extension, policy)
- Infrastructure? (internet, education level)
- Strong 'silos'
- lack of combined voice/collective action

Key CD challenges in Developing world,

- Lack of institutional mechanism (extension, policy)
- Infrastructure? (internet, education level)
- Strong 'silos'
- lack of combined voice/collective action
- Limited case studies
- Impact assessments/evaluation

Key Approaches

- Building on existing capacities, networks and infrastructure
- Constantly evolving strategies, tools (ICT etc) and approaches
- Inter/intra sectors, stakeholders and regions (a two way arrow)
- Institutional (not just individual) capacities

ILRI



ILRI's EcoZD Project Supported by IDRC

- Ecosystem Approach to Better Management of Zoonotic EID
- 6 countries (Cambodia, Lao PDR, Indonesia, Vietnam, Thailand) Eco Health Resource Centres
- Multi stakeholder, Multi country, Multi disciplinary Capacity development project



Current Activities and Priorities

- Faculty**
 - Multi disciplinary forums
 - Training of trainers
 - Development of Training Modules
- Students**
 - Curriculum Development
 - EH workshops/Classes
 - MSc Projects
- Extension**
 - Development of communication material
 - Integration of EH in extension Programs
 - Training of Extension workers

Better Regional Capacities (Policy, Research, Response)

Outcome of Such Partnerships

- Receptivity resulting in Impact
- Need based/demand driven
- Strong Connections with national partners
- Curriculum development (trans disciplinary, multi stakeholder approach)
- Paradigm Shift



PENAPH

Participatory Epidemiology Network For
Animal & Public Health



My 5 lessons in capacity development

Craig Stephen
Centre for Coastal Health
&
Faculty of Veterinary Medicine
University of Calgary

Lessons from experiences

Capacity experiences Centre for Coastal Health

- Building the CCH
- International One Health capacity
- Vet public health in Sri Lanka
- Ecohealth in SE Asia and Nepal
- New university faculties/programs

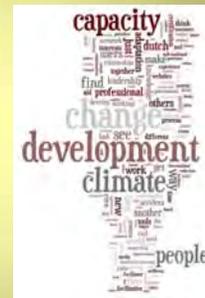


To the dictionary first

- Capacity
 - The ability to hold, **receive**, **store** or accommodate
 - Power to grasp and analyze ideas and **cope with problems**
 - Specific ability of an entity or resource measured in quantity or quality over an **extended period**

Capacity development

- Focuses on understanding the obstacles that:
 - Inhibit people, governments or organizations from realizing goals
- While enhancing the ability to achieve measurable and sustainable results



<http://beads-passionforfacilitation.ning.com/>

Lesson 1

The need for clear goals

- Invest in identifying the goal
 - Hard to fund
- Who wants to achieve this goal?
 - Engaging key people
 - Is it their priority or yours?
 - Is it possible to get there?



<http://theothercama.com/2012/02/smart-goal-setting/>

Scale matters

- Avoid generic high-level goals
 - Ex. We want to increase wildlife health capacity
 - Is that problem specific enough to resonate at the levels at which you want to affect change
 - Ex. Large scale = compensation for wildlife habitat loss when a pipeline is built
 - Who needs to care?
- Watch for mis-matched goals
 - Your goal = on-farm gender equity
 - Farmers goal = survive the production cycle

Lesson 2

Nothing happens without leadership

- Someone with passion, commitment, willingness and time
 - Need not be the boss
 - Can be more than 1 but there must be 1
- Leadership development a critical underfunded part of capacity development



http://www.1000ventures.com/business_quotes/crosscuttings/leadership_main.html

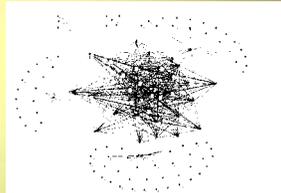
Lesson 3

- Shared problem (lesson1) + leadership (lesson 2) = capacity development is a social activity
- Lesson 3
 - Effective social groups need trusting relations
 - Investment in constructing trust before constructing buildings

Social Networks

Connections

- How do people work together?
- How does knowledge flow?
- What strengthens the connections?
- Often deal with these after we find a problem and not before



Lesson 4

- Capacity development must be about human capacity 1st
 - Many labs are empty around the world
- More than graduating MSc and PhD
 - Leadership
 - Management and governance
 - Technical personnel
 - Academic ability
 - Forming partnerships
 - Communication
 - Investment in the frontline and not just central

Academics aren't trained for management

- Who will sustain the capacity?
 - Run the organization, find the money, market the program etc etc
- Health capacity (human, wildlife or other) is not an isolated academic exercise
 - Need competent personnel
 - But competencies are more than biomedical and scientific

Many layers to get health capacity



http://www.meteora.org/ability.com.au/resources/health_functional_capacity/

Lesson 5

- Understand why/if people will want to be engaged for as long as it takes
 - Avoid “fizzle effect”
 - Many people get excited at the start
 - Need a core group to keep moving after the initial excitement
- What motivates people to sustain the program
 - Resources
 - Passion for the problem
 - Personal reward
 - Regulatory needs
- Can the capacity evolve to meet changing needs
 - Avoid being the “same old thing”

Why does capacity development stop?

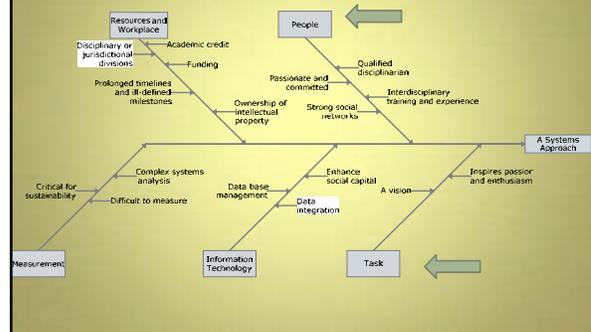
1. Problem is solved
 1. Success! Congratulations!
2. Team breaks down
 1. Need a training, recruitment, & succession plan
3. Support dries up
 1. Something more urgent comes along
 2. Don't evolve to meet changing needs
 3. Expected to transition off external support

Capacity needs care to be sustained



<http://www.sarflow.com/blog/post/444/building-resilience-and-capacity-for-organizational-change/>

The importance of people and problems



Final lesson

It is about more than \$\$

- The story of the last lamprey of its kind
- Don't assume nothing can be done without big donor money
- Caring people are the foundation
 - Getting others to care is the key



HALI
Health for Animals and Livelihood Improvement project

One Health Research, Capacity Building, and Outreach

Jonna Mazet

A collage of images showing people, a map of East Africa, and a detailed map of the Ruaha River basin.

Why the Ruaha Ecosystem?

A collage of images showing children, a savanna landscape, elephants, and a herd of cattle.

Water Scarcity and Resulting Threats:

- Livelihood impacts on pastoral communities
- Labor stress
- Livestock productivity
- Human & livestock disease
- Impaired ecosystem services
- Water quality
- Disease transmission
- Impacts on wildlife and tourism

Addressing a Complex Problem

- Develop partnerships
 - Interdisciplinary team
- Involve stakeholders
 - Most affected by outcomes
 - Ensure sustainability
- Conduct applied science
 - Objective research to address the problem
- Education & Capacity Building
 - Local expertise for sustainability
 - Informal and formal

Provide feedback

- Translational science for outreach & policy

Causal pathway diagram for bovine TB

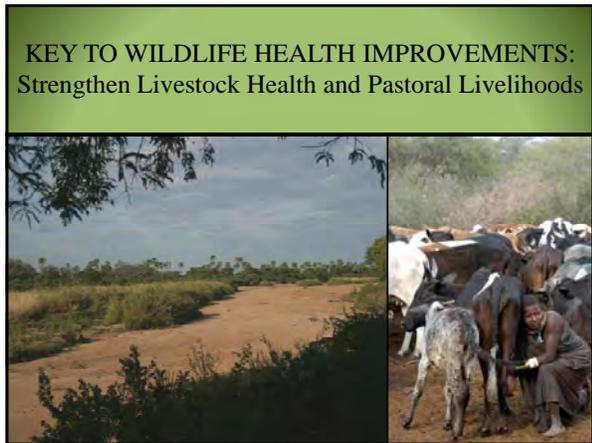
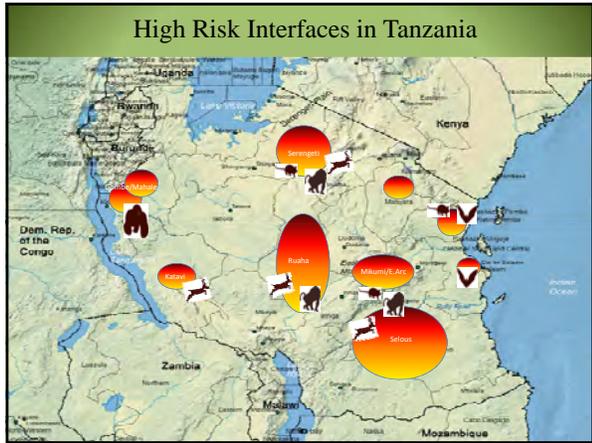
The HALI Integrated Approach

Domestic animal sampling
Wildlife sampling
Water sampling
Pastoralist household surveys/ focus groups

Disease Data
Socio-economic Data

Health and economic Impact of disease
Recommendations for disease prevention
Recommendations for water management

TRAINING & CAPACITY BUILDING





HEALTH FOR ANIMALS & LIVELIHOOD IMPROVEMENT PROJECT
HALI
UC DAVIS VETERINARY MEDICINE Wildlife Health Center

DIVERSIFIED FUNDING

- Start-up: USAID-Global Livestock CRSP & USFWS
- NIH TB
 - Expanding research on zoonotic TB in wildlife, humans, domestic animals and the environment
- USAID PREDICT
 - Exploring emerging diseases that move between wildlife and people
- Envirovet Institute
- USAID Climate Change and Livestock Systems CRSP



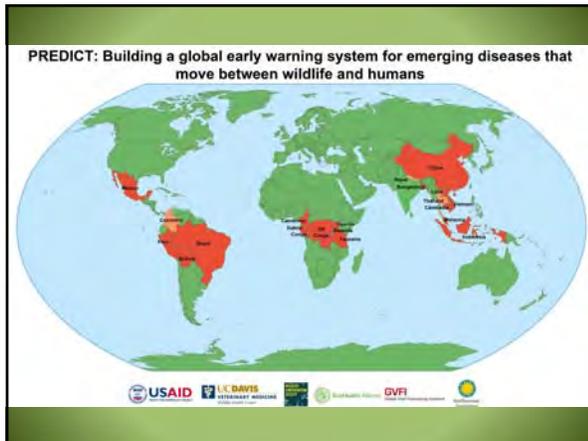
RESOURCES: Building Diagnostic Laboratory Capacity



RUAHA National Park Wildlife Health Lab

Formal and Informal Training Both Ways





Canadian Cooperative Wildlife Health Centre

What is "Capacity for Wildlife Health Management" ?

Presented by
Ted Leighton
Executive Director
CCWHC

23 July 2012 WDA Workshop on Capacity Development



Canadian Cooperative Wildlife Health Centre

"Wildlife Health Management"

- All activities associated with reducing harm caused by pathogens and diseases in wild animals
 - Social, Economic, or Ecological impacts





23 July 2012 WDA Workshop on Capacity Development



Canadian Cooperative Wildlife Health Centre

What is "Wildlife" ?

- Domestic Animals
- Feral Animals
- Captive Wild Animals
- Wild Animals





23 July 2012 WDA Workshop on Capacity Development



Canadian Cooperative Wildlife Health Centre

What is "Wildlife" ?

- Domestic Animals
- Captive Wild Animals

- Feral Animals
- Wild Animals





23 July 2012 WDA Workshop on Capacity Development



Canadian Cooperative Wildlife Health Centre

What is "Capacity for Wildlife Health Management" ?

23 July 2012 WDA Workshop on Capacity Development



Components of a National Program for Wildlife Health Management

National Program of Wildlife Health Management

Coordination & Communication

➔

Prevention

Detection & Surveillance

Response & Recovery




Wildlife Health Management Capacity

Key Components

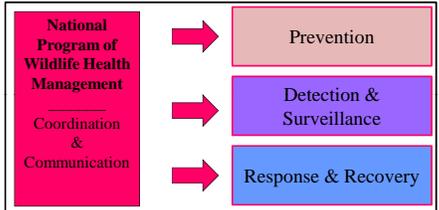
- **Prevention** of new disease problems
 - **International Intelligence**
 - **Border Controls**
 - **Risk Assessment: internal & external threats**
- Timely **detection** of disease occurrences
 - **Disease Surveillance**
- Timely **responses** to disease occurrences when required
 - **Decision-making**
 - **Response planning**



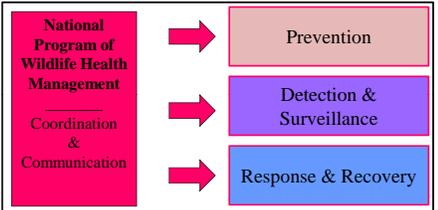
Surveillance: Four Activities



Components of a National Program for Wildlife Health Management



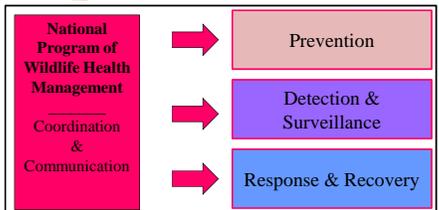
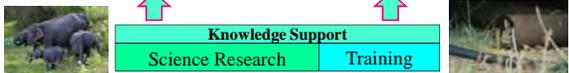

Components of a National Program for Wildlife Health Management




Supportive National Policies

Responsible Parties and Stakeholders
Government Ministries | Universities | Non-government

Governance and Finance

Canadian Cooperative Wildlife Health Centre

Governance

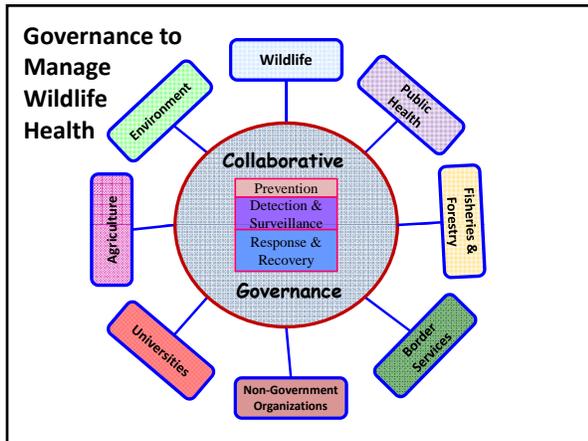
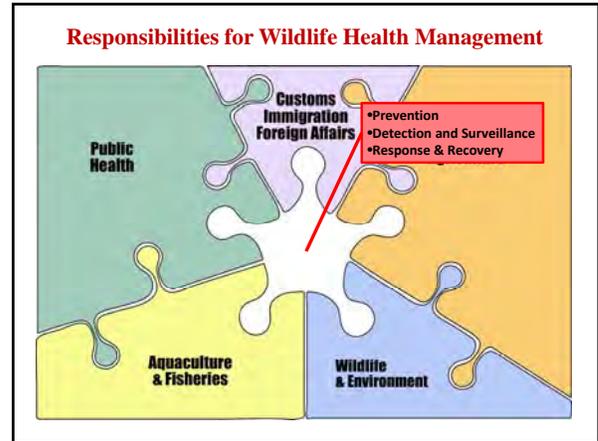
in National Programs of Wildlife Health Management

In Most Countries, Legal Responsibilities for Wildlife Health Management are:

- **Shared**
- **Poorly-defined**
- **Incomplete**

23 July 2012 WDA Workshop on Capacity Development





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WDA Workshop on Capacity Development for Wildlife Health Management in Low and Middle Income Countries

23 July 2012 VetAgro-Sup,
Marcy l'Etoile (Lyon), France

Wildlife health capacity building in Thailand
- successes and challenges

Parntep Ratanakorn
Faculty of Veterinary Science, Mahidol University
Bangkok, Thailand

Mahidol University
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Chronology of Wildlife Conservation in Thailand

- Pre WW II
- Post WW II
- 1952 Nature Conservation Club
- 1957 Conservation Alert
- 1960 Wildlife Preservation & Conservation Act
- 1973 Illegal hunting case by army & police
- 1992 CITES Ban on Wildlife trade
- 1992 Wildlife Preservation & Conservation Act
2nd Edition
- 2002 Revised Wildlife Act
-
- Future ?????

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Elephant Veterinarians

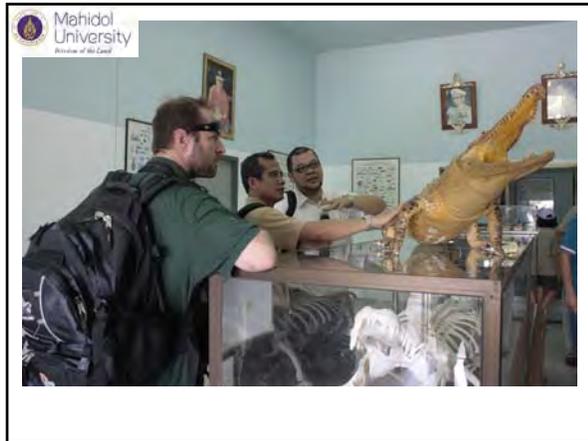
- British logging company in the North of Thailand
- Forest Industry Organization (FIO)
- Elephant nursery camp
- Elephant Conservation Center / Elephant Hospital
- Asian Elephant Foundation of Thailand (Elephant Mobile Clinic)
- Elephant Camps & in tourism
- Elephant Medicine & Training in Universities

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Zoo Veterinarians

- Zoological Park Organization (ZPO) (5 Zoos)
- Private Zoo & Safari Parks
- Species specific zoo : Crocodile Tiger
- Wildlife Farming

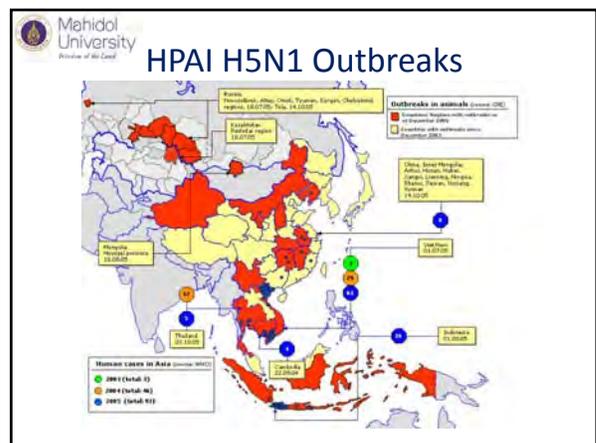




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Wildlife Veterinarians

- Avian Influenza Outbreak 2003
- MoZWE, Monitoring and Surveillance Center for Zoonotic Disease of Wildlife and Exotic Animals
- One Health
- Department of National Park, Wildlife and Plant Conservation (DNP)
- Department of Marine Coastal Resources
- DNP Wildlife Veterinarian Training Courses



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The Monitoring and Surveillance Center for Zoonotic Diseases in Wildlife and Exotic Animals (MoZWE)

Activities

- Collaborative Surveillance of HPAI in wild birds and wildlife with DNP and CDC, MOPH
- Research Activities on EID
- Zoo and wildlife veterinary service
- Public service for diagnosis of zoonotic diseases
- Educational programs

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Avian Influenza Surveillance in Thailand: Studies at Human-Animal Interface



Mahidol U.

- Fac. of Med. (Siriraj hosp.)
- Fac. of Vet. Sci. (by MoZWE)
- Fac. of Science

Thai MoPH.

- Bureau of epidemiology

Westat

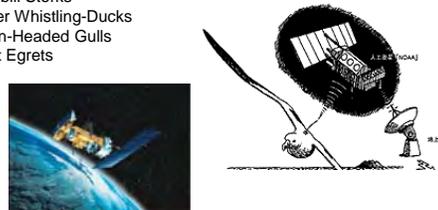
One Health approaches in AI studying. The team composed of human med. and vet med. working together.

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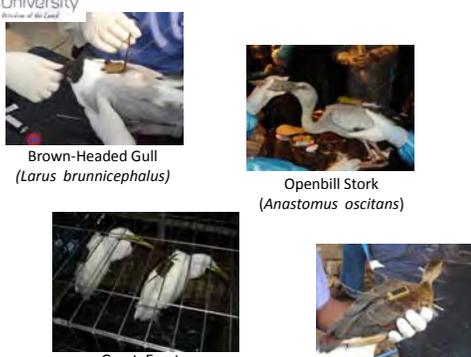
Role of MoZWE in the project: Surveillance of Avian Influenza Virus in Migratory and Domestic Bird Populations and Evaluation of Their Role in the Spread of HPAI H5N1 Virus

In 2007 - 2009, we have tagged 20 birds and follow their migrations by using satellite telemetry technique;

- 5 Openbill Storks
- 4 Lesser Whistling-Ducks
- 8 Brown-Headed Gulls
- 3 Great Egrets



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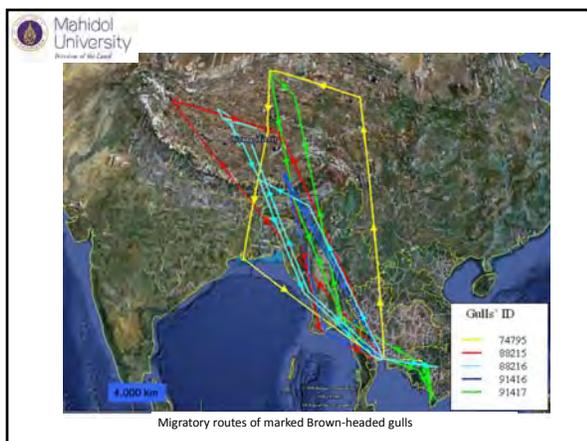


Brown-Headed Gull (*Larus brunicephalus*)

Openbill Stork (*Anastomus oscitans*)

Great Egret (*Egretta alba*)

Lesser Whistling-Duck (*Dendrocygna javanica*)



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Surveillance programs for HPAI in natural wild birds



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**Surveillance programs for HPAI in backyard chicken
(and also pets like dogs, cats and birds)**

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HPAI Prevention and Control in the zoo

H5N1 Surveillance and implementation of biosecurity measurement in the zoo

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Environmental Sample collection for AI detection

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**Outbreak investigation: result of collaboration
among teams from
DNP DLD BOE and MoZWE**

Field investigating team compose of ;

- Physician and primary health care officer
- Veterinarian
- Zoologist
- Forester
- Environmentalist
- Epidemiologist

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**Wildlife diseases surveillance
(incl. zoonoses)**

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**Surveillance of Japanese Encephalitis
in Mosquitos (in the habitats of wild bird reservoirs)**

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Surveillance of Japanese Encephalitis
in wild birds and wild boars

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Surveillance of Hepatitis E Virus in wild boars

Fecal sample collection

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Surveillance of zoonoses in bats

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Laboratory Surveillance for important
wildlife diseases and zoonoses

ABSL-3 lab.

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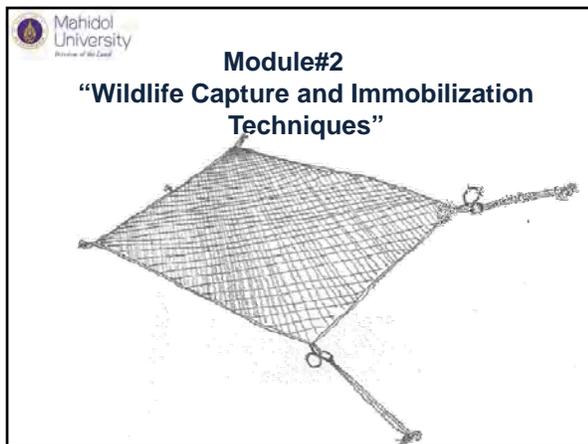
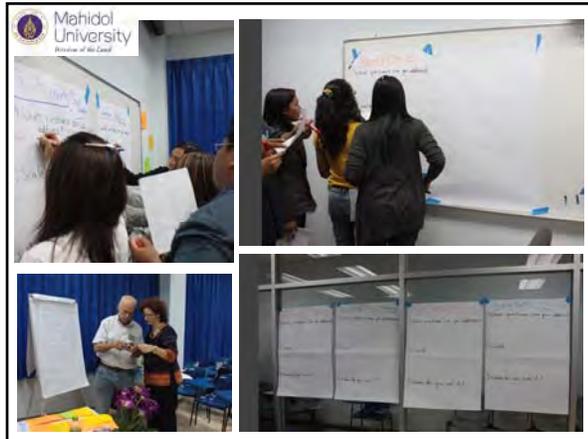
Zoo & Wildlife Medicine in Thai Vet School

Past Students visit /zoo tour, behind the scene
↓
Clinical rotation: practice with zoo vet (2-3 wks)
↓
Short course/special topics lecture in vet school
↓
Visit/ training in wildlife breeding station
↓
1993 The 1st ZWM course in vet curriculum start
at KU Vet school
↓
KKU
↓
CMU
↓
MTU
↓
2011 MU, One Health approach
↓
DNP Wildlife Vet training course

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DNP wildlife vet training course

Module#1
**“Orientation & essential core principles
& Knowledges”**



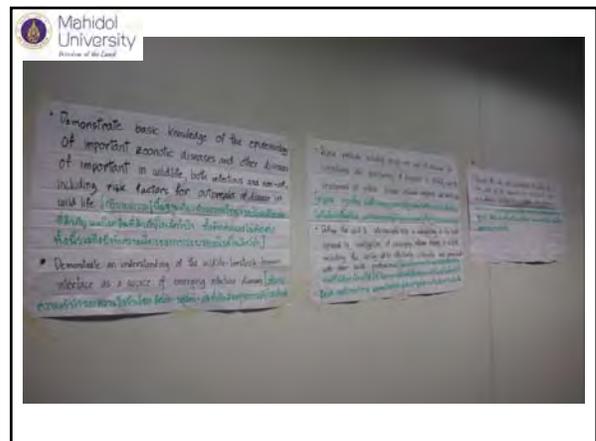
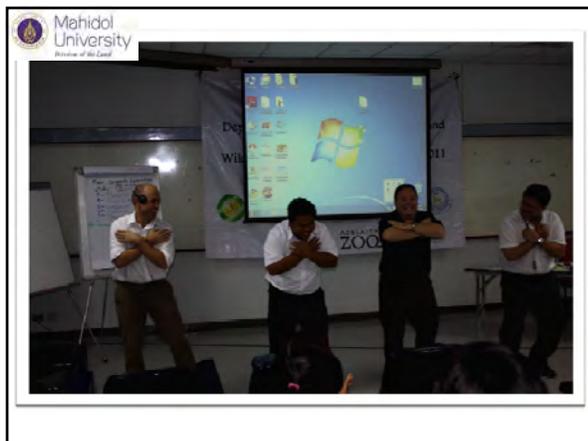


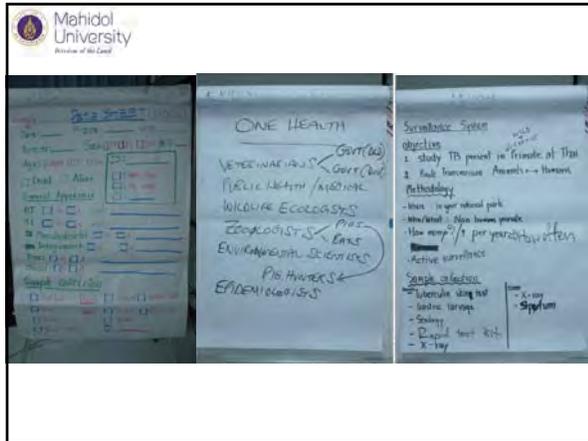


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Module#3 "Wildlife Veterinary Workshop : Wildlife Epidemiology"

To provide wildlife epidemiology, data management and related wildlife epidemiological knowledge into practice in order to go forward to One Health approach





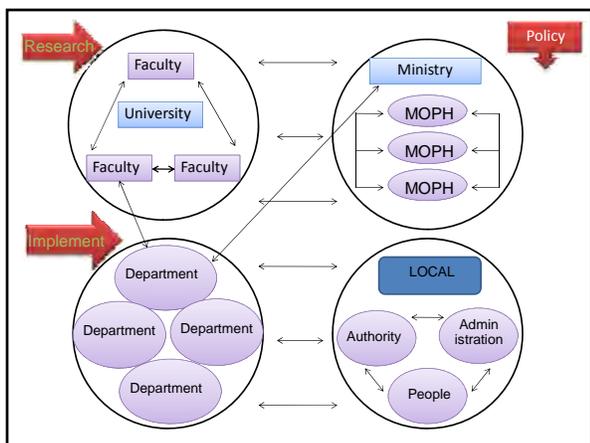
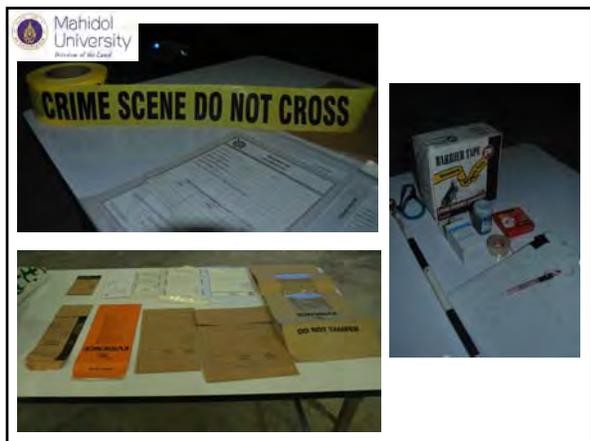
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Module#4
“Wildlife Veterinary Workshop :Wildlife field practice ”

To build capacity of Department of National Park Wildlife Veterinarians in the areas of wildlife field practice.

Huay Kakaeng Wildlife Sanctuary & Western Forest Complex





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**South East Asia One Health
University Network**

SEAOHUN

 **Mahidol University**
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Indohun

Indonesia One Health University
Network

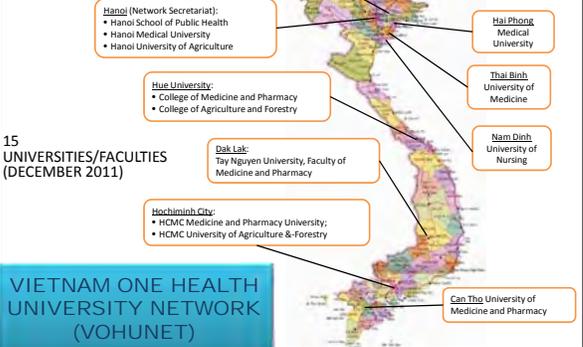
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15 UNIVERSITIES/FACULTIES (DECEMBER 2011)

VIETNAM ONE HEALTH UNIVERSITY NETWORK (VOHUNET)

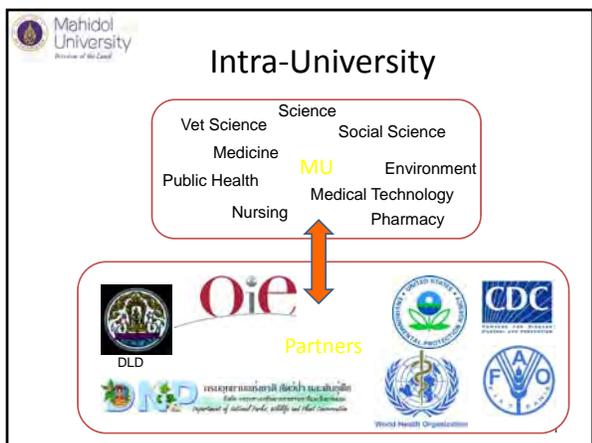
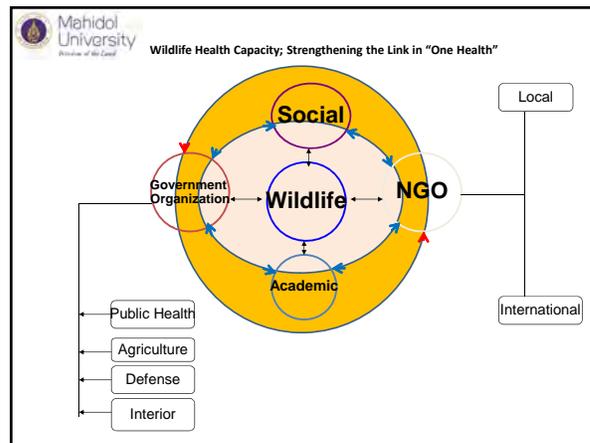
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TOHUN
Thai One Health University Network

"Thailand one health forum initiation"
October 1st, 2010





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Acknowledgement

- USAID RESPOND
- DAI
- UMN
- TU
- IDRC

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Thank you for your attention

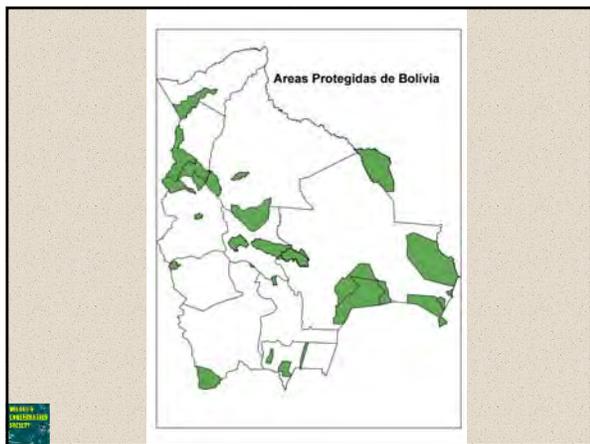


Surveillance Network for Animal Diseases at the Takana Indigenous Territory:

From Domestic to Wildlife, from Local to
National

Capacity Development for Wildlife Health
Management in Low & Middle Income Countries

France, July 2012
Erika Alandia





Objectives of the Animal Health Program at the Tacana Indigenous Territory

- Reduce the risks of diseases transmission at the domestic animals/wildlife/humans interface;
- Reduce the hunting pressure;
- Ensure the food security and;
- Support a sustainable development in the area.

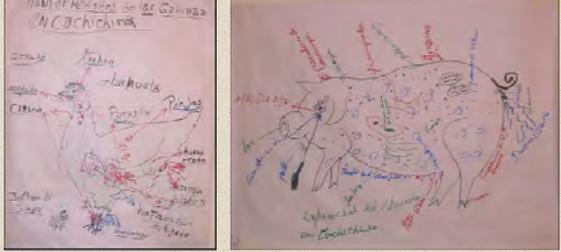


STEP 1: THE DIAGNOSIS

- Main management and health problems observed in domestic animals;
- Level of knowledge and understanding of local people.



Use of participatory tools



STEP 2: DEFINING THE STRATEGY

- Create local capacities in indigenous people to improve the animal health and animal management practices;
- Establish a domestic and wildlife health surveillance network at the indigenous territory.



STEP 3: SELECTING THE TRAINEES

Requirements to take part of the program:

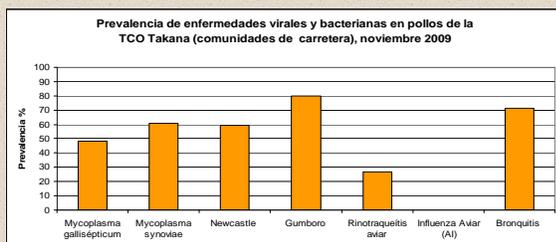
- Commitment to attend the 5 training modules;
- Accept to work for his community as CAHP after finishing.



STEP 4: THE TRAINING PROGRAM



Using the obtained results

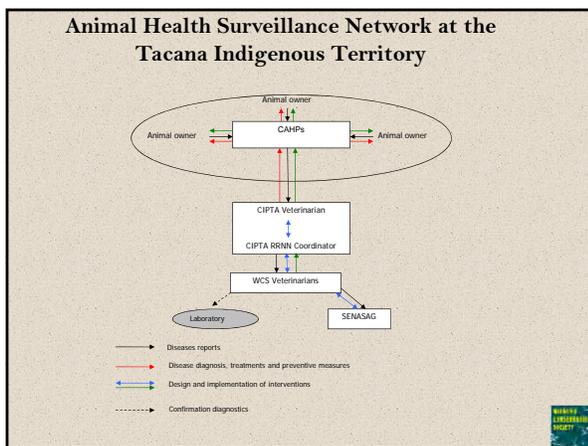
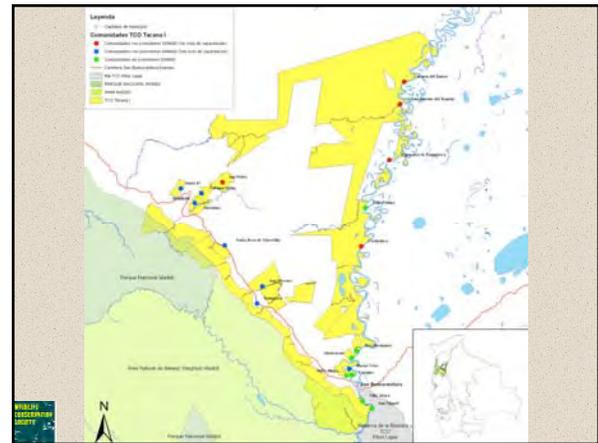


Where do diseases come from and how to prevent them?

43 Certified CAHPs from 11 Tacana communities

Communal Animal Health Promoters (CAHPs)

- Provide technical advice;
- Provide veterinary assistance;
- Keep the communal drug kit;
- Carry out preventive campaigns.





Some good decisions we made...

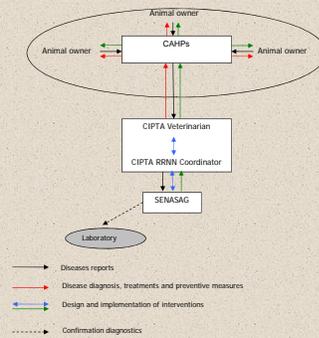
- Make the program be part of a large strategy;
- Involve the indigenous organization;
- Make training accessible for anyone interested in learning;
- Adapt the topics to the local situations;
- Involve different actors from the communities on the program.

Some bad decisions we made...

- Wait too much time before reporting SENASAG about the monitoring results...



Animal Health Surveillance Network at the Tacana Indigenous Territory (ideal model)



THANKS FOR YOUR ATENTION!!





African Union
InterAfrican Bureau for Animal Resources

Capacity building in wildlife health in Africa: AU-IBAR experiences

Tom Nyariki, AU-IBAR, Nairobi, Kenya

Outline

1. African Union's InterAfrican Bureau for Animal Resources (AU-IBAR)
2. Context
3. Wildlife Health Capacity constraints in Africa
4. AU-IBAR's initiatives on WH capacity building
5. Challenges
6. Conclusions
7. Acknowledgements

AU-IBAR-Mandate

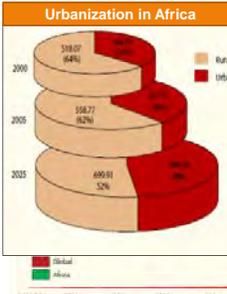
- AU-IBAR is the technical office of the African Union Commission (AUC) mandated to coordinate the development and utilization of animal resources in Africa for human well being.
- AU-IBAR focus: livestock, wildlife, fisheries and other aquatic animal resources
- The main stakeholders: 54 Member States of African Union and the 8 African Regional Economic Communities that are regarded as the building blocks for continental integration

Context: State of biodiversity in Africa

- Africa is richly endowed with wildlife biodiversity that contributes to the economies, livelihoods and food security of many countries and to essential ecosystem goods and services.
 - Of the world's 4 700 mammal species, one-quarter occur in Africa.
 - Africa also has more than 2 000 species of birds—one-fifth of the world's total
 - Africa has at least 2 000 species of fish, more than any other continent.
 - Eight of the world's 34 biodiversity hotspots are in Africa
- African countries have put 10-30% of their total landmasses under protected areas systems.
- Most countries have acceded to conventions related to wildlife conservation such as Convention on Biological Diversity (CBD)
- Biodiversity in Africa faces key threats mainly due to human encroachment, habitat degradation and loss, unsustainable exploitation, human-wildlife conflict, alien invasive species and diseases among others.

Context: Human population growth in Africa

Urbanization in Africa



Year	Total Population (millions)	Urban Population (%)
2000	538.07	64%
2005	558.77	62%
2025	690.01	52%

Africa has the fastest urban growth rate in the world

20 of the 30 fastest growing countries in the world are in Africa

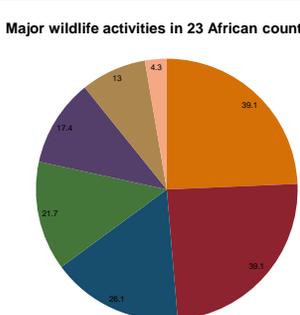
Mexico's population grew 2.12 percent annually between 2000 and 2005—nearly double the global rate of 1.04 per cent per year (UN 2002). The city of the 30 fastest growing countries in the world are in Africa, including 8 Africa cities that have highest annual growth rate of any country in the world at 8.6 per cent. (CIA 2007) & The United Nations' Population Division projects that Africa will have the fastest growth rate in the world between 2007 and 2015, twice the rate of any other region during that time (UN 2007). Sub-Saharan Africa is also rapidly urbanizing and is expected to maintain the highest rate of urban growth in the world for several decades (UNFPA 2007).

With more people in Sub-Saharan Africa than in other areas land for agriculture. However, increasing agricultural land remains

Source: Africa Atlas of our Changing Environment, UNEP 2008

Context: Major wildlife-based activities in Africa

Major wildlife activities in 23 African countries surveyed by AU-IBAR in 2010



Activity	Percentage
Wildlife-based tourism	38.1
Bush meat consumption	38.1
Sport-hunting	26.1
Community wildlife activities	21.7
Game-cropping	13
Game-ranching	4.3
Game-farming	4.3

Wildlife Health Capacity constraints in Africa

Number of wildlife veterinary units, laboratories and veterinarians in 39 countries surveyed by AU-IBAR in 2010 during SPINAP project

Region	Countries surveyed	Countries with wildlife veterinary units	Countries with dedicated laboratories	Number of wildlife vets
E. Africa	13	5	2	33
C. Africa	5	0	0	0
W. Africa	13	0	0	1
S. Africa	8	5	1	9
Total	39	10	3	43

Wildlife Health Capacity constraints in Africa

1. Low level of attention paid to wildlife in many countries, low priority given to wildlife health and low level of investment in the same
2. Weak institutional infrastructure, including lack of wildlife veterinary units and laboratories, lack of skilled personnel and lack of specialized equipment.
3. Weak collaboration between departments, ministries, institutions and professionals of wildlife, livestock, human health and other sectors on matters of health.
4. Lack of enabling legislation, policy and political environments for wildlife health programming
5. Limited baseline knowledge on wildlife (economics, disease matters)
6. Limited networking on wildlife health at supranational level

These constraints were cited by respondents from 39 African countries in survey conducted by AU-IBAR in 2010

AU-IBAR WH capacity building initiatives

During rinderpest eradication:

- AU-IBAR's capacity building efforts on wildlife health became prominent after mid 1990s necessitated by the final stages of rinderpest eradication
 - In 1997 wildlife disease surveillance become an integral part of the global rinderpest eradication strategy.
 - AU-IBAR initiated the African Wildlife Veterinary Project (AWVP) (1998-2000) for this purpose. Later, the PanAfrican Program for the Control of Epizootics (PACE) (1999-2007) continued with wildlife surveillance
 - Support was provided to existing wildlife veterinary units in East Africa (Kenya Wildlife Service, Tanzania National Parks) to procure wildlife capture and basic laboratory equipment, drugs and supplies. Personnel were trained and operational costs were provided for wildlife rinderpest sero-surveillance.
 - In western and central Africa networks were set up to enhance passive wildlife disease surveillance in addition to targeted active surveillance.

AU-IBAR WH capacity building initiatives

During the fight against HPAI:

- The global strategy for the fight against H5N1 HPAI following its resurgence in 1996 included wildlife disease surveillance.
- AU-IBAR initiated the Support Program to Integrated National Action Plans to Avian and Human Influenza (SPINAP) in 1997 which addressed wild birds, domestic birds and human health. Under SPINAP, WH capacity building was done through :
 - Regional **training** in collaboration with the FAO, ZSL and WCS, CIRAD and national institutions: 99 officers from 47 countries were trained in 2010 on wildlife capture and sampling techniques for disease surveillance.
 - **Procurement of capture and basic laboratory equipment** by countries between 2009-2011

AU-IBAR WH capacity building initiatives

Integrated Regional Coordination Mechanism (IRCM) for the prevention and control of transboundary animal diseases (TADs) and zoonoses.

- Using lessons learnt during the fight against HPAI under SPINAP AU-IBAR in collaboration with global and regional partners (FAO, OIE, WHO, Regional Economic Communities) initiated the IRCM.
- The IRCM is AU's continental mechanism for the control of TADs and zoonoses, anchored within the regional economic communities and complementary to other platforms
- Wildlife health is a pillar in the IRCM.

The Integrated Regional Coordination Mechanism



Wildlife health priorities within the IRCM

- Develop and/or strengthen institutional infrastructure for wildlife health
- Support training on wildlife health and aquatic diseases among other issues
- Promote information gathering and sharing on contribution of wildlife to livelihoods and economies and the impact of disease on biodiversity conservation.
- Establish procedures for better linkages between veterinary services and wildlife authorities
- Strengthen networking among wildlife health professionals

13

AU-IBAR WH capacity building initiatives

One Health Capacity building under IRCM

- In 2011 AU-IBAR in collaboration with USAID's RESPOND program, the FAO EMPRESS Wildlife Unit and the Royal Veterinary College (RVC) rolled out an **introductory training course in One Health** targeting all 54 AU Member States.
 - **57 senior government officers** from **wildlife, livestock and human health** departments of **20 countries** have been trained so far and more trainings are scheduled.
 - A **network (WILDHEALTH)** was set up to enable the trained personnel continue sharing knowledge and experiences.
 - AU-IBAR will conduct a moderated **One Health D-group** in August that will further enhance knowledge sharing.

14

Challenges

- **Low level of investment:** investment in wildlife health is still very low in most African countries:
- **Weak knowledge base:** Knowledge on issues such as contribution of wildlife to livelihoods and economies, ecology and impacts of wildlife diseases is weak.
- **Mind-set:** Many (among professionals, policy makers, politicians etc) still look at wildlife from a problem rather than value perspective.
- **Institutional and policy environment:** Institutions with mandate on wildlife are weak on health issues while those with mandate on health are weak on wildlife issues. Hence wildlife health is under-served

15

Conclusions

- **Wildlife health capacities in Africa are very weak and non-existent in most countries.**
- **There is need to generate knowledge and policy level awareness to encourage investment in wildlife health.**
- **Best practices in capacity development in wildlife health should be documented, piloted and expanded in different sub-regional contexts.**
- **Sustained effort and collaboration among global and regional actors is needed for sustainable impact.**

16

Acknowledgements

- I wish to thank the **RESPOND/USAID project, western Congo Basin** for sponsoring my participation in this workshop.
- Many thanks to the **Director AU-IBAR** for authorizing my participation

17

Thank You



AU-IBAR: Providing leadership in the development of animal resources for Africa

Capacity development for wildlife health, which comes first, the "Chicken" or the "Egg"?

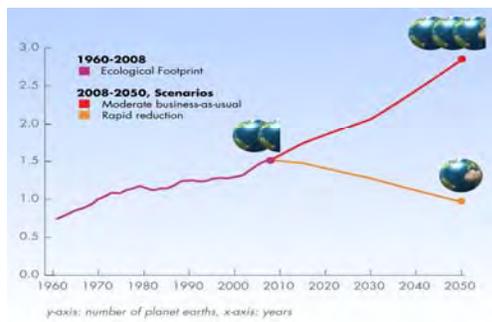
WDA Workshop on Capacity Development for Wildlife Health Management in Low & Middle Income Countries
23 July 2012 – VetAgro-Sup, Marcy l'Etoile (Lyon), France

Richard Kock – Professor of Wildlife Health & Emerging Diseases

Why do we need the capacity?

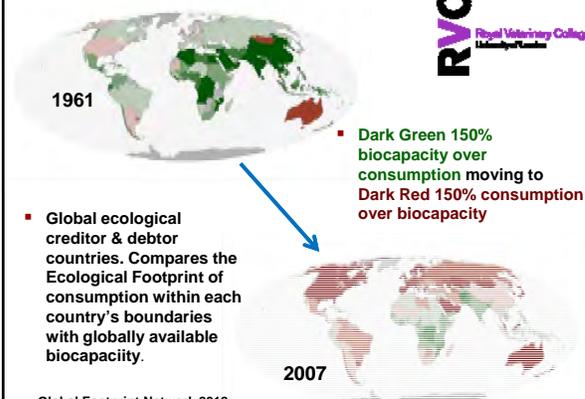
- Human footprints...
- Global inequity...
- Changing priorities....
- Development issues & health...
- Who cares?
- Pathways to capacity...chicken & egg...
- Conclusions

Indicators of Ecosystem Health



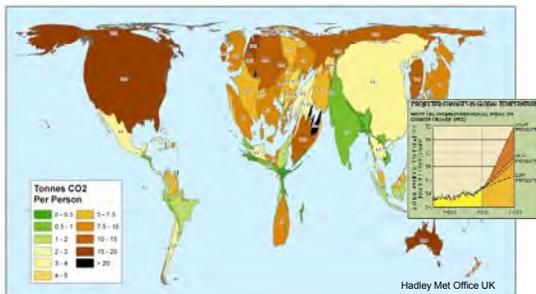
Global Footprint Network 2012

1961



Global Footprint Network 2012

North & South



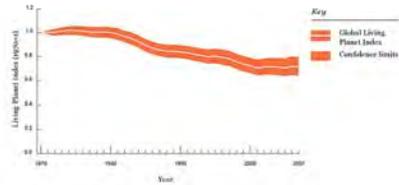
Wildlife health is Globally threatened

75% of biological primary production now exploited by humans.



Wildlife is threatened

100 x historical background extinction rate.

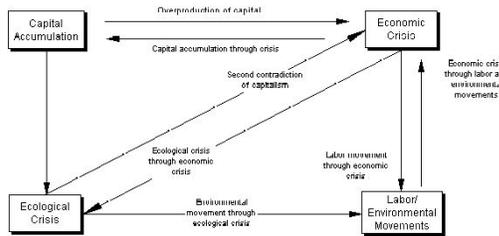


ANY GOOD NEWS?

- Increasing social & capital “value” in global economy of individual wild animals, biodiversity & natural resources (ecosystem services) & wildlife related economy.
- Understanding of ecosystems & ecological processes, biodiversity & resilience theories improving.

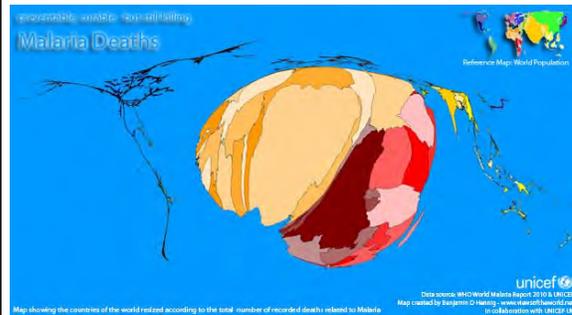
Western Capitalism under scrutiny ...

Figure 0.1: O'Connor's Crisis Typology

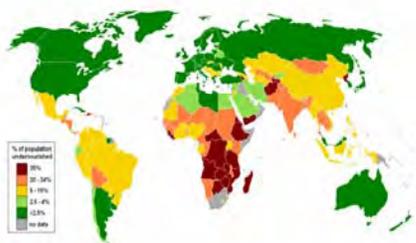


Taken from O'CONNOR, 1998, p. 194

BURDEN OF DISEASE



Nourishment....



Data from FAO: <http://www.fao.org/economic/ess/ess-fs/ess-fadata/en/>

Millennium Development Goals (MDGs)

developed out of the eight chapters of the United Nations Millennium Declaration, signed in September 2000. The goals relevant to building capacity in wildlife health are as follows:

- Goal 1: Eradicate extreme poverty and hunger**
 - Healthy wildlife population indirectly contributes to income of poor people (higher proportion of poor live in association with wildlife). True but not highly significant...
 - Healthy wildlife creates opportunity for employment Limited employment....
 - Healthy wildlife populations feed more people. Significant....
- Goal 4: Reduce child mortality rate**
 - Wildlife health research contributes to knowledge base for control of zoonotic infections. Few examples...
- Goal 5: Combat HIV/AIDS, malaria, and other diseases**
 - Wildlife disease research and wildlife management helps to combat diseases. Reservoirs and indicator species Leptospirosis, tuberculosis, SARS COV, Nipah/hendra, Ebola, hepatitis E, lassa fever, RVF, West Nile Virus, rinderpest, PPR....
- Goal 7: Ensure environmental sustainability**
 - Management for wildlife health reduces loss of natural resources.
 - Wildlife health knowledge and management contributes to reducing proportion of species threatened with extinction
- Goal 8: Develop a global partnership for development**
 - Wildlife health capacity and technology transfer helps wildlife management and wildlife economy in LMIC

Who cares about Wildlife Health?



Western Philosophy & culture?








18th Century 19th Century 20th Century 21st Century

Wildlife Health - What are we talking about?

ZOOlogical medicine? Wildlife Population?



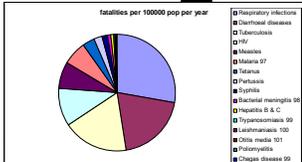
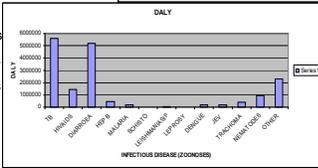
Wildlife Health

Working in wildlife health involves:

- population health,
- forensics around poaching,
- wildlife disease monitoring & surveillance,
- wild animal origin zoonoses & livestock diseases,
- individual & mass capture of wildlife,
- biological management of species population including: translocation for conservation purposes, vaccination, prophylactic treatment (rarely), disease control for zoonotics & livestock diseases.
- rare and endangered species.

Animal origin diseases of concern to humans

- WNV
- Ebola
- Rabies
- SARS CoV
- Lassa Fever
- Influenza A
- Nipah hendra
- Yersinia pestis
- Bovine Tuberculosis
- Leishmania
- RVF
- Rickettsial fevers - Borreliosis
- Toxoplasmosis
- Anthrax
- Leptospirosis
- Salmonellosis
- Echinococcosis
- Fasciola
- Cryptococcosis
- Cysticercosis
- 800+ zoonoses

Wildlife Health Practitioner Skills

- Anaesthesiology of a wide range of species. Capture & immobilisation techniques including physical & chemical means. Use of remote injection systems safely, effectively & efficiently from different platforms, foot, vehicle & helicopters.
- Biological sampling procedures from wide range of species, pathology method – necropsy, clinical skills – examination, minor surgery, treatment.
- Observational skills & field records.
- Field methods – identifying & locating species & populations safely, sample processing & storage, radio communications.
- Disease risk analysis.
- Logistics & planning.
- Basic technical skills in motor mechanics, carpentry, metal work, ropes & nets.

Key Knowledge...

- Pharmacology & anaesthetic pharmacokinetics.
- Ecology, including disease ecology.
- Entomology – disease vectors.
- Understanding of wildlife taxonomy, behaviour & animal physiology.
- Pathology & disease processes.
- Epidemiology – application of appropriate epidemiological method in wildlife disease surveillance, outbreak investigation & monitoring.
- Infection & disease (species specific & multi-host epidemiologies) – aetiologies, epidemiologies, impacts, diagnostics, treatments, control & prevention.
- Toxicology especially plant toxicoses.
- Wildlife livestock epidemiology & zoonoses.
- Field Craft

Wildlife Health Researcher skills

- Research Design
- Computer software skills.
- Statistical application.
- Data collection - Systematic sampling, processing & recording.
- Data storage & analysis
- Scientific writing.
- Modelling

Key Knowledge

- Literature review methods
- Statistics & data base management.
- Biological & scientific foundations/theory for area of research.
- Hypothesis testing & research methods.
- Analytical methods.
- Scientific reporting standards
- Field craft.

Development of wildlife health capacity in LMIC



- Take care as to who sets the agenda!
- **External** agencies with vested interests – UN (FAO WHO UNEP)?, OIE?, International Universities/Institutes with strong research programmes? IUCN? Conservation organisations? Welfare organisations?
- **Internal** agencies with vested interests – Wildlife (government) agencies, Public Health, Veterinary Services, private sector (wildlife, livestock & agricultural industry), conservation agencies (NGO, CBO), Universities & Institutes.

What about the people who live with and can benefit from wildlife health – not often involved!!

HIC vs LMIC



- **Conflicts**
 - Cultural & philosophical differences.
 - Rehabilitation & release programmes.
 - Protectionism vs community based.
 - Animal welfare.
 - Consumptive use of wildlife vs non-consumptive.
 - Science vs Spiritual.
 - Intervention vs natural processes.
 - Anthropogenic vs natural systems.
 - Agriculture vs natural harvesting systems.

“Chicken or Egg” – different approaches to capacity development in LMIC



- **Proposition 1**
 - Find the best chickens...put them in the field & the eggs will come..experiential learning..
 - Base research around these chickens..
 - Ensure enough chickens to cope with wastage...
- **Proposition 2**
 - Work on the eggs from an academic base – theory first, skills second....latter acquired in the field..
 - Build research base around the eggs
 - Provide remote professional and academic service to the sector

Advantages of proposition 1



Highly relevant

- Activities determined by practical needs of the wildlife authority involved & in specific areas of management or in response to disease threats to livestock industry or public health. Contributes more directly to MDGs.
- Research agenda set by wildlife managers & conservation, veterinary or Public Health authorities *in situ*. Skilled researchers can be brought in as & when necessary. Reduces the number of researcher tourists.

Cost efficient

- Training coincident with planned work. Not requiring elective interventions to gain experience. On-the-job training & division of responsibilities reduces need for wider practical skill base. Sharing of experience & skills creates synergies.
- Demand will be low initially & as sector grows more institutional models for training can emerge naturally.

Highly effective

- Wildlife health requires considerable field oriented practical skills not easily acquired in academic environments or through didactic means. Practitioner Trainees like apprentices gain solid practical skills
- Researchers focus on theoretical aspects, research process & design & analysis relying on practitioners to access the wildlife & provide context.

Disadvantages of proposition 1



Relatively long training periods

- Lack of predictable structure to training means full experience takes time ~ 4 years to gain field competence in wide range of wildlife species.

Lack of academic grounding or consolidated teams

- Theoretical basis for the work is not part of the training more experiential. Dependent on the quality of the mentor.
- Constrains methodical scientific approach to knowledge banking. Reliant on incoming & peripathetic research community for innovative science.
- Division between practice & research.

Career blocks

- Difficulties in shifting from practitioner to research community & vice versa as career develops. Type cast.
- Low salaries in government sector. Veterinarians seen as service not integrated in management or placed with research which is more vulnerable to financial constraints. Vet practitioner not considered research trained. Vulnerable to contracting out.

Advantages of proposition 2



Scientific method

- Solid theoretical grounding.
- Stronger links to research & academic community.
- Level of theoretical knowledge gained quicker as cover considerably more ground in virtual framework, which can be controlled & tailored.

Disadvantages of proposition 2



Practice makes perfect

- Practitioners that emerge well grounded in theory but lack practical skills (speed to graduation is countered by significant period gaining field based competence). I.e Still need experienced mentoring in the field.

Resource hungry

- Costly to society
- Not embedded in management. Culture & professional jealousies can lead to do-without mentality.

Peripathetic

- Short term activities from external base (e.g. university departments) can lack continuity necessary for effective programmes & longer term research.
- Externally driven research or interventions not consistent with wildlife authority priorities. Esoteric research for career development, academic progression.

Evidence



- Development of the vet department in Kenya Wildlife Services – experiential. Sufficient capacity to start - rapid sustained expansion.
- Split development in Tanzania – Tawiri, TANAPA, external experts and University research teams, NGOs.
- Small scale development in Uganda leads to dependence on external agencies.
- South Africa – strong wildlife economy multi-sectoral development strong community public & private.
- Botswana – split between livestock and wildlife sector.
- India Nepal – weak wildlife health sector – University based WHCs largely failed. Zoo and Rehab medicine dominates in practice.

Conclusions



- LMIC countries have considerable biodiversity and wildlife can contribute significantly to development.
- Focus on wildlife health is key to ecosystem health & services & can contribute to MDGs.
- It is proposed the focus should be on populations not individuals unless endangered species.
- The capacity should address the local needs and not be based on externally driven agendas or motivations.
- Initial capacity is best developed within the implementing agencies for wildlife management.
- This can be followed by more academic development and increasing research base.

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