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ECOSYSTEMS, WILDLIFE

and One Health

The ultimate challenge of the 21st century is to protect biodiversity and ecological services through proper resource management while meeting the needs of people and safeguarding their health; this is a significant global challenge in light of the increasing global demographics, resource consumption, and the proposal to provide food security and nutrition through further expansion, intensification and increased efficiencies of farming systems. Other areas of importance and relevance, also associated with driving disease emergence and spread include communities and settlements encroaching on natural habitats, development, construction, extractive industries, water management (dams, inland and coastal-run-off, etc), deforestation, habitat fragmentation, loss of biodiversity, waste and garbage management, climate change, to name a few. Unless human activities are carefully planned and managed, valuable ecosystems will continue to be impaired or destroyed and disease will continue to jump species, expand geographically, or become entrenched in animal populations which have significant implications to the health and survival of all creatures on the planet, including humans.

MODERATOR

Scott NEWMAN

Wildlife Health &
Ecology Unit Coordinator
and Co-Convener of the
Scientific Task Force on
Wildlife & Ecosystem
Health

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To date, among the global community, One Health efforts to combat infectious diseases has primarily engaged medics and veterinarians with limited inputs from the wildlife and ecology experts, and limited discussion of biodiversity conservation and ecosystem services. This gap in the One Health approach can be attributed to multiple factors that include, but are not limited to: 1) a platform not being in place to encourage and facilitate exchange of information across disciplines; 2) a lack of understanding the mutual benefits of collaborating on health and disease issues; 3) and a lack of understanding what each discipline needs from the other. Further to this is a basic training and “language” issue. Biomedically trained people

refer to health and disease when referring to patients or populations of animals while natural resource managers refer to services and function when referring to ecosystems. In the One Health context, we often refer to healthy livestock, wildlife, people and ecosystems and in general, ecologists and natural resource managers would not use the terminology “healthy ecosystem” but instead, “ecosystem resiliency” or ecosystems providing optimal services.

Ecosystem services are the processes by which the environment produces resources that we often take for granted such as clean water and air, pollination of crops, fruits, and native plants, production of medicinal plants, regulating disease carrying organisms, and timber production. Whether people live in urban, rural, agricultural, or natural places, the ecosystems in which humans live provide goods and services that are essential to their health.

This session will be dedicated to broadening the discussion around One Health and creating an opportunity to hear perspectives from ecologists, biologists, and the conservation or natural resource management community, as well as gaining further insights from the food security and biomedical perspective. The session will serve as an opportunity for the biomedical One Health community to share with ecologists and the natural resource community, how their contributions can significantly improve efforts to address infectious disease management and prevention.

OBJECTIVES

- Provide a better understanding to biologists, ecologists, and natural resource managers on how they can contribute to One Health efforts focused on infectious diseases;
- Provide a better understanding to medics and veterinarians on how biodiversity conservation and ecosystem services ensure human health & contribute to One Health;
- Develop a statement that can be included in the definition of One Health, reflecting the interests and perspectives of biologists, ecologists, and natural resource managers.

PANELISTS

- **United Nations Environmental Program - Convention on Migratory Species**
Borja Heredia, Head of the Scientific and Technical Unit, Secretariat of the Convention on Migratory Species, United Nations Environment Program, Germany
- **The Convention on Biological Diversity**
David Coates, Environmental Affairs Officer, Inland Waters, Secretariat of the Convention on Biological Diversity, Canada
- **The Convention on Wetlands (Ramsar)**
Ruth Cromie, Head of Wildlife Health, Wildfowl & Wetlands Trust, United Kingdom
- **The International Union for Conservation of Nature (IUCN)**
Scott Perkin, Head, Regional Biodiversity Conservation Programme, Asia, IUCN Asia Regional Office, Thailand
- **Biomedical and Veterinary Perspective**
William Karesh, Executive Vice President for Health, EcoHealth Alliance, USA
- **The Food & Agriculture Organization of the United Nations**
Juan Lubroth, Chief Veterinary Officer, Food and Agriculture Organization of the United Nations, Italy



Immediately after completing a biology degree, and subsequent Masters in tropical marine ecology, in the U.K., David embarked on a long career overseas involving teaching, research and development project management. Interests in coral-reefs continued but were gradually overtaken by involvement in freshwater-related issues. This started with work on the biological control of vectors of water-borne diseases in the Sudan, leading into inland fisheries related work in Papua New Guinea. After 6 years working for the PNG Government, culminating a position as Chief Fisheries Scientist, he joined the FAO, remaining in PNG, where he spent 11 years as working on the management of large river fisheries. By this time emphasis shifted to managing the environment upon which fisheries depend.

He spent four years as Chief Technical Adviser for the Mekong River Commission, working in Cambodia, Laos, Thailand and Viet Nam, assessing the regional impacts of water management on fisheries. This was followed by a period working in the Lower Ganges River Basin (Bangladesh) as manager of a project mainstreaming biodiversity into the fisheries, agriculture and water resources sectors. He earned his PhD in 1986 as an external student of the Open University, UK, based on field work on the applied biology of tropical freshwater fish faunas in Africa and Oceania.

David joined the Secretariat of the Convention on Biological Diversity, based in Montreal, in August 2003. He is currently responsible for freshwater biodiversity, water resources and agriculture.

His interests remain broad but centre on the role of biodiversity and ecosystems in water resources management.

DAVID COATES

Environmental Affairs
Officer, Inland Waters

*Secretariat of the
Convention on Biological
Diversity
Canada*



Dr. Ruth Cromie, Head of Wildlife Health for the Wildfowl & Wetlands Trust (WWT), began her career in wildlife health by gaining a PhD for vaccine development in wildfowl from University College, London, in 1991. Since then she has worked on various aspects of disease control from diagnostic technologies to environmental management in both wild and captive animals. She has worked on numerous health and welfare projects of primarily birds and marsupials in a number of organisations including Smithsonian Institution's National Zoological Park, Washington DC, USA; Hong Kong University; National Birds of Prey Centre, Gloucestershire; UK, and Durrell Institute of Conservation and Ecology, Canterbury, Kent, UK.

Ruth is responsible for WWT's Wildlife Health programme which includes surveillance, research, advocacy, capacity building and policy work, as well as health management as part of WWT's species recovery programmes. Ruth has played a key role in the formation and implementation of WWT's Animal Welfare and Ethics Committee to ensure high welfare standards in all WWT's animal-related operations. Ruth regularly teaches wildlife health and conservation biology on a number of post-graduate programmes and co-directed Durrell Wildlife Conservation Trust's Summer School in Endangered Species Conservation and Management. She is also external examiner for the Royal Veterinary College and Zoological Society of London's M.Sc. programmes in Wild Animal Health and Wild Animal Biology.

Ruth has worked extensively on issues such as tuberculosis, lead poisoning and avian influenza. With respect to H5N1 HPAI she has experience of national and international surveillance programmes and projects, organisational preparation and resilience, working with public and veterinary health sectors, policy, public relations and the media.

RUTH CROMIE

Head of Wildlife Health

*Wildfowl & Wetlands Trust
United Kingdom*

In recent times she has worked extensively on integrating wildlife health into multilateral environmental agreements for, amongst others, the Convention of Migratory Species (CMS) and the Ramsar Convention, being involved, most recently, in writing a resolution on ecosystem approaches to health in wetlands together with production of the recently launched substantive animal disease management resource for wetland habitats: the Ramsar Wetland Disease Manual.

Ruth also sits on the UN Scientific Task Force on Avian Influenza and Wild Birds and the Scientific Task Force on Wildlife and Ecosystem Health, both CMS and FAO co-convened entities.



Dr Borja Heredia was appointed Scientific and Technical Officer at the Secretariat of the Convention on Migratory Species (CMS) in January 2010. Borja is well known to many in CMS circles as he has been Spain's representative on the Scientific Council, and has participated in several CMS COPs and MOU meetings, as well as being involved in other MEAs such as CBD and CITES.

Borja is a biologist with a PhD in Ecology from the University of Madrid. Since 1986 he has worked at the Spanish Ministry of Environment focussing on the conservation of threatened species, planning research, drawing up strategies and organising projects in the field. He has been involved in the conservation of several CMS Appendix I species including the Spanish Imperial Eagle, the White-headed Duck and the Mediterranean Monk Seal. The recovery of the Iberian Lynx has also been one of his main occupations in recent years, with a special emphasis on diseases that affect the Lynx and its main prey, the Mediterranean Rabbit. He also has experience of conflict resolution among different interest groups and has addressed many other factors affecting migratory species such as electrocution and invasive alien species.

From 1992 to 1995 he worked for BirdLife International in Cambridge, developing action plans for globally threatened birds in Europe.

At the CMS Secretariat Borja is responsible of the Science Unit where he deals with a number of cross cutting issues that affect migratory species, including climate change. Together with FAO he is co-convenor of the Task Force on Wildlife and Ecosystem Health that was created at the CMS Conference of the Parties in 2010, as an extension of the very successful Scientific Task Force on Avian Influenza that CMS and other partners established in 2005.

BORJA HEREDIA

Head of the Scientific
and Technical Unit

*Secretariat of the
Convention on
Migratory Species
United Nations
Environment Program
Germany*



Dr. William Karesh is the Executive Vice President for Health and Policy for EcoHealth Alliance. He serves as the President of the World Organisation for Animal Health (OIE) Working Group on Wildlife Diseases and also chairs the International Union for the Conservation of Nature (IUCN) Species Survival Commission's Wildlife Health Specialist Group, a network of hundreds of wildlife and health experts around the world. Currently, Dr. Karesh is the Technical Director for the USAID Emerging Pandemic Threats PREDICT program, a \$75 million effort focused on predicting and preventing pandemic diseases.

Dr. Karesh has pioneered initiatives focusing attention and resources on solving problems created by the interactions among wildlife, people, and their animals and created the "One World – One Health" initiative linking public health, agriculture and environmental health agencies and organizations around the world. International programs under his direction have covered terrain from Argentina to Zambia and include efforts in the Congo Basin to reduce the impact of diseases such as Ebola, measles, and tuberculosis on humans and endangered species such as gorillas and chimpanzees, to global surveillance systems for emerging diseases. In addition to his work in the private sector, Dr. Karesh has also worked for the USDA, DOD, DOI and the Food and Agriculture Organization of the U.N. Dr. Karesh is internationally recognized as an authority on the subject of animal and human health linkages and wildlife. He has published over one hundred and fifty scientific papers and numerous book chapters, and written for journals such as Foreign Affairs.

WILLIAM KARESH

Executive Vice President
for Health

EcoHealth Alliance
USA



JUAN LUBROTH

Chief Veterinary Officer

*Food and Agriculture
Organization of the
United Nations (FAO)
Italy*

Dr Juan Lubroth is the Chief of the Animal Health Service and Chief Veterinary Officer of the Food and Agriculture Organization of the United Nations (FAO). Dr Lubroth previously served for seven years as the senior officer of FAO's Animal Health Service and head of the Infectious Diseases Group/ Emergency Prevention System in charge of worldwide surveillance, capacity building, and progressive control of transboundary animal diseases (2002-2009).

Born and raised in Spain, Dr Lubroth received his bachelor's degree (biology) from Whitman College in Washington State and worked as a wildlife biologist before continuing studies at the University of Georgia, where he earned both a master's degree in medical microbiology and DVM in 1985. After a stint with the Southeastern Cooperative Wildlife Disease Study, Dr Lubroth joined the diagnostic services section of the Foreign Animal Disease Diagnostic Laboratory, Plum Island Animal Disease Center, USDA. In Mexico he served as a technical officer for the Mexico-US Commission for the Prevention of Foot-and-Mouth Disease and other Foreign Animal Diseases, returning for advanced studies in the United States. In 1995, he received both a M Phil (arbovirology) and PhD (epidemiology and public health) from the School of Epidemiology and Public Health at the Yale University, School of Medicine. Dr Lubroth returned to USDA and was posted at the Panatosa Center in Brazil as research epidemiologist before being named head of Diagnostic Services at Plum Island, where among other duties managed the North American Foot-and-Mouth Disease Bank.

In 2002, Dr Lubroth joined the Animal Health Service of FAO. He has worked extensively throughout Latin America, North Africa and the Middle East. He has initiated several major initiatives for the control of transboundary animal diseases in Central Asia, South Asia, southern Africa, and served on the Pan African Programme for the Control of Epizootics Advisory Committee. He was the driving force behind several key cooperative initiatives of FAO with the World Health Organization (WHO) and World Organisation for Animal Health (OIE), including the Global Framework for the Progressive Control of Transboundary Animal Diseases, the Global Early Warning System for major animal diseases including zoonoses (GLEWS), and the establishment of the Crisis Management Centre for Animal Health. As an expert on animal health and infectious disease transmission, Dr Lubroth is often called to assist in bringing animal production and health perspectives to the work of the WHO on issues related to "One Health" zoonoses, biological safety of laboratories, and matters regarding bioterrorism and agroterrorism.

On 1 October 2009, Dr Lubroth was appointed as Chief of the Animal Health Service and Chief Veterinary Officer of FAO, headquartered in Rome, Italy, where he now resides with his wife, Adriana, a journalist, and a coterie of dogs and cats of all sizes.



Scott Newman recently took up the position as the Food and Agriculture Organization of the United Nations (FAO) Senior Technical Coordinator for the Emergency Center for Transboundary Animal Diseases (ECTAD) in Vietnam.

Scott is a veterinarian, wildlife epidemiologist and biologist receiving his Doctor of Veterinary Medicine from Cummings School of Veterinary Medicine at Tufts University (Massachusetts) in 1992, and his PhD from the University of California Davis in 1998 where he studied disease ecology, ecotoxicology and comparative pathology. Between 1998 and 2007 Scott has worked at the Wildlife Health Center and Oiled Wildlife Care Network in California, Wildlife Trust (now called Ecohealth Alliance) in New York as Senior Conservation Medicine Scientist, and as the Liaison to the United Nations and Wildlife Health Specialist for the Wildlife Conservation Society. Since 2007, Scott has worked as an Animal Health Officer in the Animal Production & Health Division where he developed and led the EMPRES Animal Health - Wildlife Health & Ecology Unit. Scott has extensive international experience working on more than 40 countries focused on One Health, disease ecology and disease management at the livestock-wildlife-human-environment interfaces.

Scott will lead the FAO Country ECTAD Team in Vietnam supporting the HPAI and other zoonotic and non-zoonotic diseases, and facilitate a One Health approach to agriculture, public health, forestry, fisheries and natural resource management issues, as well as supporting broader mandates of FAO including food safety, food security, and sustainable development.

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SCOTT PERKIN

Head

*Regional Biodiversity
Conservation Programme,
Asia, IUCN Asia Regional
Office
Thailand*

Scott Perkin has been engaged in biodiversity conservation for nearly 30 years. He has worked in the field, in programme management and development, and in strategic planning. His different postings have given him the opportunity to engage at regional, national and local levels and have included East Africa, South Asia, South-east Asia and Europe.

Scott started his career in 1983 with the WWF/IUCN Eastern Africa Regional Office in Nairobi, where he handled project design and management. He then moved into a field-based position in Tanzania, where he worked with the Government to develop a new management strategy for the Ngorongoro Conservation Area (a World Heritage Site), aimed at reconciling the interests of resident Maasai pastoralists and conservation.

In 1994, having completed his PhD, he moved to Asia, taking up the post of Director of IUCN-Pakistan's Programme Support Unit in Karachi. Three years later, he became the Co-ordinator of IUCN's first Regional Biodiversity Programme for Asia, before taking on the role of Acting Country Representative for IUCN-Lao PDR, based in Vientiane.

From 2005 to 2011, Scott gained experience of working at the local level in Europe, serving as the Co-ordinator of the Norfolk Biodiversity Partnership in the UK, a unique consortium of 21 government agencies and NGOs established to deliver the Norfolk Biodiversity Action Plan. During this period, he also played a central role in developing and launching the Norfolk Non-native Species Initiative, one of the first county-level programmes in England aimed at preventing, controlling and eradicating invasive alien species.

In 2012, Scott returned to Asia, where he is currently the Head of IUCN's Regional Biodiversity Conservation Programme, based in Bangkok. The programme spans 24 countries in Asia, and addresses protected areas, species and implementation of the Convention on Biological Diversity. Recent assignments have included work on the development of the South Asia Vulture Recovery Programme, which is seeking to rebuild the populations of three, Critically Endangered vulture species following their precipitous decline over the last two decades (brought about by the use of diclofenac, a non-steroidal anti-inflammatory drug used in the treatment of livestock).

Scott Perkin has dual Canadian and British citizenship. He holds a Bachelor's degree in biology and environmental studies from Dartmouth College, USA, and a PhD in international development from the University of East Anglia, UK. He is married to Mary Pipes, a British counselor and psychotherapist.