

ONE HEALTH IN THE AMERICAS CONFERENCE

November 15-17, 2016

ANIMALS • PEOPLE • PLACES



Hello partners in One Health, colleagues and friends,

Welcome to the first One Health in the Americas Conference in Todos Santos, Baja California Sur, Mexico. While we enjoy our time together in this special place, having many conversations and sharing our experiences, it is my sincere hope that we learn together while talking, laughing, and sharing moments and meals together. We have planned many group activities and meals simply to enjoy each other's company and continue conversations we start during the structured conference activities.

This conference will be a time for discovery and dreaming as much as it is a time for sharing knowledge and expertise. Let us come together as people with mutual interests and shared goals. We are here as learners from many disciplines, professions, and sectors. Let us celebrate what we know and open our minds to listen for new ideas.

During our time together, you'll meet people from Alaska to Brazil to many places between. This truly is a moment to celebrate relationships among One Health partners in the Americas. Together, we can create the futures we desire.

I look forward to the next few days with you, and I am excited to see what grows from our time together.

In good health,

Dr. Bruno Sobral, Director One Health Institute Colorado State University

You'll find more schedule details, speaker abstracts, and general conference information on the following pages. Should you have questions or needs, please reach out to anyone from Colorado State University or the Center staff.

ONE HEALTH IN THE AMERICAS CONFERENCE EXECUTIVE PLANNING COMMITTEE

Dr. Bruno Sobral

Head of Organizing Committee, One Health in the Americas Conference Director, One Health Institute Professor of Microbiology, Colorado State University

Dr. Aines Castro-Prieto

Director, CSU Todos Santos Center Research Scientist, Centro de Investigaciones Biológicas del Noroeste

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Claire Tucker Research Associate, One Health Institute Doctor of Veterinary Medicine Student, Colorado State University



Director of International Student Experiences, Colorado State University

ONE HEALTH INSTITUTE



TOGETHER, WE CAN CREATE A HEALTHIER TOMORROW.

WHAT IS ONE HEALTH?

It's a big idea. Global. It's a concept that is growing. Because it's something that matters. At its core, there is a simple idea that's been around for thousands of years: health for all of us — people, animals, and places — depends on thinking about all of us as a system, as one.

WE WORK TOGETHER.

The One Health Institute at CSU is growing through financial support from all eight colleges and the Office of the Vice President for Research. Land-grant roots inspire us to work hard and collaboratively toward health through interdisciplinary research, learning, and discovery that welcomes, and thrives because of, diverse ideas and talents.

OUR

the health

by collaborating across boundaries to see and integrate the whole system.

PURPOSE To benefit

of peoples, animals, and environments

movement toward a healthier tomorrow, and it takes diverse people, many new ideas, and many ways of thinking about old ideas.

WE SEE THE WHOLE PICTURE.

WE CREATE HEALTH.

We don't work to fight disease. We seek to

create health. It's a positive and proactive

Together, we can create the futures we desire. We engage our partners and vibrant academic community as they search for the relationships and outcomes that create health. When we consider and value diverse perspectives, looking across disciplines, professions, and sectors, the power of collaboration can inspire the futures we wish to birth.

We're always looking for interdisciplinary research teams and inter-sectorial and inter-professional partners. Contact us to learn more about One Health and how you can lend your time and talents.

	CONFERE			
TUESDAY, NOV. 15				
2:00 p.m.	Conference Check-In Begins			
4:30 p.m.	Center Orientation	(
5:00 p.m.	Happy Hour and Welcome	ן וו נ		
VEDNESDAY, NOV. 16				
7:30-8:30 a.m.	Arrival, Check-In, Breakfast			
3:30-9:00 a.m.	Welcome	ם 		
SESSION 1	URBANIZATION AND HEALTH			
9:10-9:30 a.m.	"Wellness-Based Development in the Bronx, New York"	E		
9:30-9:50 a.m.	"An Ecosystem Approach for the Prevention of Chagas Disease in Rural Guatemala"	נ		
9:50-10:20 a.m.	"The Salmon People, a Family of Beavers, and a Grey Whale in False Creek: Biophilic Stories in Urban Regeneration"	F		
10:20-10:45 a.m.	Mini Program Panel			
10:45-11:00 a.m.	Coffee and Snack Break			
SESSION 2	ENVIRONMENTAL CHANGE AND	•		
11:00-11:20 a.m.	"Rural Alaska Monitoring for Environmental Agents of Disease: Linking Local Residents to Disease Specialists"	ר י		
11:20-11:40 a.m.	"Research Experiences on Wildlife Hosts and Transmission Risk of Zoonotic Diseases in Yucatan, Mexico"	۱ ا		
I1:30-12:00 p.m.	Keynote Speaker	ŀ		
I2:00-12:30 p.m.	Mini Program Panel			
12:30-2:00 p.m.	Lunch and Poster Presentation	r (
SESSION 3	FOOD SYSTEMS AND HEALTH			
2:00-2:20 p.m.	"Rights-Based Management and Healthy Fisheries: The Case of Gulf Curvina"	F		
2:20-2:40 p.m.	"Tackling Challengers to Farmers' Health and Agro-Ecosystem Sustainability in Highland Ecuador"	F		

Dr. Bruno Sobral, director

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NCE SCHEDULE

(Guests arriving later will receive individual orientations)

John Spencer (Associate Professor, Department of Microbiology, Immunology, Pathology, Colorado State University, Fort Collins, Colo., USA

Claudio Salgado (Associate Professor, Instituto de Ciências Biológicas, Universidade Federal do Pará. Pará. Brazil)

Danielle Straatmann (Director of International Programs, College of Veterinary Medicine and Biomedical Sciences, CSU, Fort Collins, Colo., USA)

Alan Rudolph (Vice President for Research, Colorado State University, Fort Collins, Colo., USA)

Bruno Sobral (One Health Institute Director, Fort Collins, Colo., USA)

Katherine Mella (Program Associate, MIT Community Innovators Lab, Boston, Massachusetts, USA)

Carlota Monroy (Senior Researcher, School of Biology, San Carlos University, Guatemala City, Guatemala)

Meg Holden (Associate Professor, Urban Studies and Geography, Simon Frasier University, Vancouver, British Columbia, Canada)

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Todd O'Hara (Professor, Wildlife Toxicology Laboratory, Department of Veterinary Medicine, University of Alaska Fairbanks, Fairbanks, Alaska, USA)

Hugo A. Ruiz-Piña (Researcher, Centro de Investigaciones Regionales, Universidad Autónoma de Yucatán, Merida, Yucatán, Mexico)

Kate Huyvaert (Associate Professor, Warner College of Natural Resources, Colorado State University, Fort Collins, Colo., USA)

Mike Antolin (Department Head and Professor, Department of Biology, Colorado State University, Fort Collins, Colo., USA)

Rafael Ortiz (Senior Manager, Gulf of California Fisheries, Environmental Defense Fund de Mexico A.C., La Paz, BCS, Mexico)

Fadya Orozco (Professor and Director of Public Health Master Program, Universidad San Francisco de Quito, Quito, Ecuador)

SESSION 3	FOOD SYSTEMS AND HEALTH, CONTINUED	
2:40-3:10 p.m.	"The Food Systems Model for Equitable Development"	Philip Sambol (Director of Partnerships, Good Food Markets, Washington, DC, USA)
3:20-3:45 p.m.	Mini Program Panel	
3:45-4:00 p.m.	Break	
4:00-5:00 p.m.	Intersectoral Panel	Jorge Zavala Castro (Director, Universidad Autónoma de Yucatán, Mérida Yucatán, Mexico)
		Jane Rooney (Assistant Director, One Health Coordination Center, United States Department of Agriculture, Fort Collins, Colo., USA)
		Lucinda Kerschensteiner (Regional Director, Charity Services Center, Fort Collins, Colo., USA)
		Veronica Arroyave (Director, Corporate Responsibility and AbbVie Foundation at AbbVie, Chicago, III., USA)
		Francisco Olea-Popelka (Clinical Sciences, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, Colo., USA)
5:00-5:30 p.m.	Final Remarks	Bruno Sobral (One Health Institute Director, Fort Collins, Colo., USA)
6:00-8:00 p.m.	Community Dinner	Mark Stetter (Dean, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, Colo., USA)
THURSDAY, NOV. 17		
7:30-8:30 a.m.	Breakfast	
8:30-12:00 p.m.	Facilitated Discussion: Building an OHTA Network	Brian Dunbar (Director, Institute for the Built Environment, Colorado State University, Fort Collins, Colo., USA)
		Aines Castro Prieto (Director, CSU Todos Santos Center, Todos Santos, BCS, Mexico)
12:00-1:00 p.m.	Lunch	
12:00 p.m.	Participants Depart	

All conference activities will be centrally located at the CSU Todos Santos Center.



Happy Hour and Welcome

John Spencer (Associate Professor, Department of Microbiology, Immunology, Pathology, Colorado State University, Fort Collins, Colo., USA)

Evidence of Zoonotic Leprosy in Pará, Brazilian Amazon, and Increased Anti-PGL-I Titer in Individuals Who **Consume Armadillos in Their Diet**

John S. Spencer¹ and Claudio G. Salgado^{2,3}

- ¹ Colorado State University, Department of Microbiology, Immunology and Pathology, Fort Collins, CO U.S.A.
- ² Laboratório de Dermato-Imunologia/Universidade Federal do Pará
- ³ URE Dr. Marcelo Candia, Pará, Brazil

OBJECTIVES: Besides man, the only other known natural reservoir of *Mycobacterium leprae* are armadillos. Zoonotic infection of humans by armadillos (*Dasypus novemcinctus*) has been confirmed by SNP typing of *M. leprae* strains in the southern U.S. There are only a few reports of finding *M. leprae* DNA in armadillos in Brazil. We obtained liver and spleen samples from armadillos captured for food in the town of Belterra, western Pará state in Brazil, to determine if they were infected with *M. leprae*. We also examined the anti-PGL-I titer in residents of this town to determine if there was a relationship between activities related to hunting, handling and consumption of armadillo meat in these residents.

MATERIALS AND METHODS: With informed consent, 146 residents participated in a survey of whether they hunted armadillos; prepared armadillo meat for food; or consumed armadillo meat as part of their diet. A blood sample from each person was obtained to determine the PGL-I antibody titer by ELISA assay, a positive titer being a likely indication of *M. leprae* infection. Total DNA was extracted from armadillo spleen and liver samples, followed by amplification of M. lepraespecific RLEP sequence using PCR and performing whole genome sequencing. Histological spleen tissue sections were stained using auramine/rhodamine and SYBR gold to identify mycobacteria in situ.

RESULTS: Three cases of leprosy relapse and one new Dom Aristides, Zip Code: 67200-000, Marituba, Pará, Brazil, case were diagnosed based on clinical signs and symptoms Abstract during the visit (4/146, 2.7%). Testing for anti-PGL-I titer by ELISA showed that 92/146 (63%) of residents surveyed were Schoolchildren (SC) and leprosy household contacts (HC) living positive, indicating very high levels of *M. leprae* infection in at Pará State, northern Brazil, Amazon Region, have been the population, consistent with previously published findings in examined for leprosy signs by our group since 2009. One of this hyperendemic setting. Of the twelve armadillos sampled, the main goals was to evaluate the magnitude of the disease seven were RLEP positive (7/12, 58.3%) in both liver and spleen; in different municipalities. In a week, 2-4 teams of a leprologist animals that were negative were negative in both tissues. doctor, a physics therapist, a technician for blood and skin Three of the positive armadillos were confirmed to be *M. leprae* smear collection and an IT professional examine 600 to 1,200 infected by whole genome sequencing. Based on answers SC and HC. Based on clinical signs, patients are diagnosed to the questionnaire and the anti-PGL-I titer, there were no and classified for treatment onsite. When a child is diagnosed differences in mean titer between groups of individuals who at the school, another group goes to his/her house to examine either hunted or did not hunt armadillos (p = 0.99), handled or SC contacts and collect biological material. In 13 municipalities, did not handle armadillos to prepare the meat (p = 0.94), or among 3,705 SC we found 234 (6.2%) new cases, and other 116 between those who ate or did not eat armadillos (p = 0.82). (49.6%) in 76 families when SC houses were visited. Examining However, individuals who consumed armadillos more than once 2,513 HC of cases diagnosed on the last 10 years, we found per month had a significantly higher anti-PGL-I titer (p = 0.02) than those who consumed armadillos once per month or less.

FEATURED ABSTRACTS



CONCLUSION: There was no statistical relationship between anti-PGL-I serum titers in residents with hunting, manipulation or moderate consumption of armadillo meat. However, there was a significant increase in the titer among those individuals who consumed the most armadillos in their diet. It could be inferred that this increase in antibody titer might be related to the increased exposure to armadillos infected with M. leprae. Other behaviors, such as keeping captured live armadillos within the house for extended periods and eating raw meat, were identified as practices that would pose a higher risk of M. leprae transmission to humans.

Keywords: leprosy, anti-PGL-I, RLEP, armadillos, environmental reservoir

Claudio Salgado (Associate Professor, Instituto de Ciências Biológicas, Universidade Federal do Pará, Pará, Brazil)

Are We Really Eliminating Leprosy or is it Absence of **Diagnosis?**

Claudio Guedes Salgado1*, Moises Batista da Silva1, Josafá Gonçalves Barreto², Angélica Rita Gobbo¹, Raguel Carvalho Bouth¹, Layana de Souza Guimarães¹, Sabrina Sampaio

- Bandeira³, Artenes Nogueira⁴, Guilherme Augusto Barros Conde⁴, Fred Bernardes Filho⁵, Marco Andrey Cipriani Frade⁵, Apolônio Carvalho Nascimento³, John Stewart Spencer⁶.
 - ¹ Laboratório de Dermato-Imunologia, Universidade Federal do Pará, Marituba, Pará, Brasil.
 - ² Laboratório de Epidemiologia Espacial, Campus Castanhal, Universidade Federal do Pará.
 - ³ Unidade de Referência Especializada em Dermatologia Sanitária Dr. Marcello Candia, Marituba, Pará, Brasil.
 - ⁴ Laboratório de Suporte a Decisões, Universidade Federal do Oeste do Pará, Santarém, Pará, Brasil,
 - ⁵ Faculdade de Medicina da Universidade de São Paulo em Ribeirão Preto, USP Ribeirão, São Paulo, Brasil,
 - ⁶ Colorado State University, Department of Microbiology, Immunology and Pathology, Fort Collins, CO, U.S.A.
 - * Laboratório de Dermato-Imunologia. Av. João Paulo II, 113. Bairro

188 (7.5%) new cases in 152 families. Mosqueiro, a touristic island one hour by car from Belém, has a decreasing trend of leprosy incidence, with a new case detection rate of 1,4/10,000 people in 2013, while Pará rate was 5,07/10,000. Family health strategy covers only 50% of Pará population, and still less, 22% of Mosqueiro population. On May, 2014, we diagnosed 110 new cases on the island. The new cases were not accepted nor notified by the municipality. They decided to send another doctor there to "validate" our diagnosis. He saw only 69 (62.7%) patients and confirmed 13 (18.8%) as leprosy. While 41 (37.2%) patients were just ignored by the health authorities, 56 (50.9%) were sent to their homes with no treatment, and we were accused to inflate the numbers of leprosy in Pará

State, although our teams diagnosed less than 2% of all Pará cases from 2009-2014. RLEP PCR of skin smear of 44 cases and 77 HC randomly selected resulted in 81.8% of the cases positive, against only 23.8% of the HC. Absence of diagnosis misleadingly decreases the prevalence rate towards WHO less than one case per 10,000 people elimination target for the year 2000. This target is now worthless and must be forgotten. Grade 1 and grade 2 disabilities rates and contact tracing capabilities are amongst the most important indicators for the remaining leprosy areas worldwide.

Acknowledgments: CNPQ, CAPES, CAPES PROAMAZONIA, HEISER FOUNDATION.

SESSION 1: URBANIZATION AND HEALTH

Katherine Mella (Program Associate, MIT Community Innovators Lab, Boston, Massachusetts, USA)

Wellness-Based Development in the Bronx, New York

Katherine Mella¹

¹ MIT Community Innovators Lab, Program Associate

Healthcare is the largest industry in the Bronx, New York, accounting for nearly 30% of private sector employment and a multitude of institutions, facilities, and centers offering care. Conversely, the 2016 County Health Rankings report published by the Robert Wood Johnson Foundation and the University of Wisconsin Public Health Institute ranked the Bronx as 62nd overall in health outcomes, making it the least healthy county in New York State. We now acknowledge that access to and the provision of healthcare is not enough to narrow the gap on existing health inequities. Furthermore, we understand that the factors that most impact health outcomes are social, environmental, and economic - the social determinants of health.

In places like the Bronx, connections between poor health outcomes and the lack of opportunities for quality education, high-road jobs, and affordable housing are apparent. Fostering health in the Bronx is critical to transforming the wellbeing of the community as a whole – from improving individual health outcomes to creating safer, more environmentally sustainable, and economically prosperous neighborhoods.

MIT Community Innovators Lab and the Bronx Cooperative Development Initiative aim to build a sustainable, equitable, and democratic economy in the Bronx using a framework of economic democracy. The planning of a Bronx-wide health study and plan, and the Bronx Healthy Buildings program in the planning and implementation stages, respectively – will allow us to achieve our goals of addressing the social determinants and improving health outcomes while beginning to lay the groundwork for long-term objectives for shared wealth, ownership, and wellness.

Carlota Monroy (Senior Researcher, School of Biology, San Carlos University, Guatemala City, Guatemala)

An Ecosystem Approach for the Prevention of Chagas **Disease in Rural Guatemala**

Maria Carlota Monrov¹

¹ Laboratory of Applied Entomology and Parasitology, School of Biology, San Carlos University, Senior researcher, Ph.D.

Chagas disease is a tropical parasitic disease found in rural Latin America, spread by blood-sucking ("kissing") bugs; it is a Zoonosis that affects humans when men are in contact with the feces of bugs. Conventional methods of vector control (spraying of pesticides) are ineffective or require a continuous cycles of repeated applications since our native bugs in Central America are in constant movement due to their environment deterioration and bugs natural migration seasons.

Working with rural communities, a trans-disciplinary research group assessed and prioritized risk factors for Chagas transmission and then designed interventions to tackle the risk factors for a long time control effort. We developed house improvement interventions using local abundant materials (Volcanic ashes, sand, lime), adapting traditional practices for long lasting improvements that made house refractory to the bug's reproduction. Community participation and education were key factors for success. We also built capacity in the Ministries of Health in several Central America countries to execute house improvements, and addressed domestic animal management, e.g., by constructing wire chicken coops. Vaccination of chickens against major poultry diseases significantly decreased chicken death rates and increased the number of chickens per household, meat consumption, and generated additional income for women. Results include decreased vector infestation, a shift of vectors blood sources from humans to chickens, and relocation of domestic animals outside of houses. Home improvements and animal management proved effective in the elimination of house infestations by bugs, in reducing human-vector contact, and as an overall well-being strategy.

Meg Holden (Associate Professor, Urban Studies and Geography, Simon Frasier University, Vancouver, British Columbia, Canada)

The Salmon People, a Family of Beavers, and a Grey Whale in False Creek: Biophilic Stories in Urban Regeneration

Meg Holden¹

¹ Simon Fraser University, Associate Professor, Urban Studies and Geography

The rise of cities suggests that urbanity offers a compelling choice to the majority of the world's people. To take this urban moment seriously means to create new lifestyle choices within urbanity that offer more urban people paths to healthier, more fulfilling lives. The rise of ecourban neighbourhoods (ecobarrios, in Latin America) can be considered part of this important project. Ecourban experiments in policy, planning, and built environment forms introduce sustainable living possibilities to urbanites. Examples now exist worldwide, and trends in certification and standardization of ecourbanism are toward applying a more open-ended, encompassing system of ecological, social and economic principles in their design and implementation.

This presentation draws lessons from ecourban case studies in the Cascadian cities of Seattle, Vancouver and Victoria. In the 1990s, wild salmon decline was a lightning rod for Hugo A. Ruiz-Piña (Researcher, Centro de Investigaciones the introduction of a biophilic approach to development in Regionales, Universidad Autónoma de Yucatán, Merida, Cascadia. Biophilic design offers people a chance to connect Yucatán, Mexico) their lives to the cycle of life in the more-than-human world, made visible. As the work of regenerating cities suitable for **Research Experiences On Wildlife Hosts And** salmon people continues, new efforts to master plan ecourban Transmission Risk Of Zoonotic Diseases In Yucatan. neighbourhoods have repeatedly drawn their strongest stories of success from biophilic principles, whether in local energy Mexico production, storm and wastewater management, or recreational Hugo A. Ruiz-Piña¹, Enrique A. Reyes-Novelo¹, Francisco J. space provision. Nor is this work entirely human-driven, as other Escobedo-Ortegón¹ creatures of the city have played a significant and surprising ¹ Universidad Autónoma de Yucatá unplanned role. Examples will be used in order to reflect upon Yucatan state poses meteorological, environmental, the meaning of the experience and connection with nonhuman nature to the potential for urban regeneration.

SESSION 2: ENVIRONMENTAL **CHANGE AND HEALTH**

Todd O'Hara (Professor, Wildlife Toxicology Laboratory, Department of Veterinary Medicine, University of Alaska Fairbanks, Fairbanks, Alaska, USA)¹

Rural Alaska Monitoring for Environmental Agents of Disease: Linking Local Residents to Disease Specialists

Todd O'Hara (PI)

¹ Wildlife Toxicology Laboratory (WTL), Department of Veterinary Medicine, PO Box 757750, University of Alaska Fairbanks, Fairbanks, Alaska 99775-7750 USA

The Wildlife Toxicology Laboratory (WTL) at the University of Alaska Fairbanks (UAF) participates in the Rural Alaska

Monitoring Program (RAMP). RAMP represents a major One Health project in the Department of Veterinary Medicine. We utilize invertebrate and vertebrate sentinels to monitor environmental agents of disease. Mosquitoes and blood soaked filter papers (FP) are collected throughout Alaska by a network organized by the Alaska Native Tribal Health Consortium (ANTHC; main partner) and the WTL. Eluates from FP specimens are collected by hunters and biologists for assessing antibody titers to Toxoplasma gondi, Coxiella burnetti, and Brucella spp. Blood soaked FPs are analyzed for Hg concentrations and other contaminants as well; including chemical feeding ecology tools (C and N stable isotopes). Archiving occurs via the University of Alaska Museum of the North for future use. Mosquitos are sent to UAF and tested by PCR for presence of DNA from the bacteria *Francisella* tularensis (Ft), causes tularemia. We use three different genes (IpnA2, fopA, and iQFt1) and PCR to determine the presence of Francisella DNA in these insect pools. In a survey of pooled mosquitos from the Fairbanks area, 30% of the pools were PCR positive for Ft. For rural Alaska, 9 pools out of 56 total pools (5 mosquitoes/pool) have consistently tested positive for IpnA2 (best detection level at 36 genome copies/reaction of the three genes). We have conducted validation studies and we are analyzing samples from field efforts as part of establishing this monitoring effort.

geographical, social, historical, linguistic, vegetational, and cultural aspects that are unique in Mexico. As a consequence, structures and conditions surrounding human households conform to a singular rural landscape where some of their components play an important role in the transmission of zoonotic diseases. The current document summarizes the main evidences on circulation of zoonotic pathogens in wildlife. This knowledge is part of multidisciplinary research projects carried out in Centro de Investigaciones Regionales (Dr. Hideyo Noguchi) Universidad Autónoma de Yucatán, emphasizing on synanthropic mammal species. We analyze both anthropogenic and host ecological factors involved in endemic and emergent zoonotic transmission focus in rural households, family orchards, agricultural systems and abandoned areas. In addition, we describe those obstacles that have hindered us to directly impact on local public health policies for the benefits of local population. Finally, we concluded that at present we have accumulated epidemiological information from a multidisciplinary approach on zoonoses in Yucatan, and that "One Health" represents for our research team a promissory

stand to reach a higher level of influence on the prevention and control of local zoonotic diseases.

Kate Huyvaert (Associate Professor, Warner College of Natural Resources, Colorado State University, Fort Collins, Colo., USA)

Not Such a Bird-Brained Idea? Biodiversity, Ecosystem Integrity, and One Health

Kate Huyvaert¹

¹ Dept. of Fish, Wildlife, and Conservation Biology, Colorado State University, Fort Collins, CO, USA

The health of humans, wild animals, and domestic livestock is intrinsically linked with the health of the ecosystems that we all share. Nevertheless, metrics of ecosystem health – and the effects of a changing environment on it - often overlook important interactions among players in the system. This omission limits our ability to assess a system's response to environmental change even though this change is largely anthropogenic, increasingly common, and has health impacts that echo throughout the system. Holistic approaches to assessing the impacts of environmental change on health acknowledge the intrinsic value of biodiversity and the ecosystem services to humans that biodiversity provides. Drawing on the common thread of ecological integrity, I use several examples of studies of birds from throughout the Americas to illustrate the importance of biodiversity to a One Health-y system and to show how avian sentinels can be effective indicators of the health of a system. I then follow-up with some aspirations – and inspiration – for these sorts of studies and their role in evaluating environmental change and health.

SESSION 3: FOOD SYSTEMS AND HEALTH

Rafael Ortiz (Senior Manager, Gulf of California Fisheries, Environmental Defense Fund de Mexico A.C., La Paz, BCS, Mexico)

Rights-Based Management and Healthy Fisheries: The Case of Gulf Curvina

Rafael Ortiz-Rodríguez¹ and Laura Rodríguez¹

¹ Environmental Defense Fund de México A.C.; RO-Senior Manager, Gulf of California Fisheries; LR-Senior Director, Mexico Oceans, Revolución 345 Col. Centro La Paz BCS 23000

The world's growing demand for calories, protein and micronutrients presents a challenge to food systems, particularly to fisheries, as fish and seafood are crucial sources of these vital components. But ocean degradation due to the interaction of overfishing, habitat destruction and climate change is not helping to achieve the goal of meeting the demand. Nevertheless, there are positive achievements, many fisheries around the world are benefiting from scientifically determined catch limits and rights based approaches to fisheries management that has stopped overfishing and recovered stocks. One of the challenges to improve more fisheries is the large differential in regional governance across the globe, especially for the small-scale sector. To describe the process of a Rights Based Management implementation in a Mexican fishery, we will use the case of Gulf Curvina, an endemic croaker in the upper Gulf of California that contributes to the support of the livelihoods of 2500+ fishermen and their families in four communities. Since 2012 it has had a yearly scientifically determined catch limit, a catch accounting community program and the fishermen have organized in a regional committee to make participatory decisions, amongst other achievements. Fishery's performance has improved, the catch has been reduced, the profitability has increased as ex-vessel curvina price is higher and more stable and less accidents happen during the season, pointing towards a healthier curvina stock, ecosystem and human health. We will describe the participatory path that led to this management in the Gulf of California and the challenges ahead.

Fadya Orozco (Professor and Director of Public Health Master Program, Universidad San Francisco de Quito, Quito, Ecuador)

Tackling Challenges to Farmers' Health and Agro-Ecosystem Sustainability in Highland Ecuador

Fadya Orozco¹

¹ Universidad San Francisco de Quito, Professor and Director of Public Health Master Program Campus Cumbayá, Diego de Robles s/n, Quito 170157

Over the last half century, agricultural "modernization" has transformed small-holder potato and horticultural production systems on the once fertile slopes of the Ecuadorian Andes. Farms and fields dotted across the mountainous landscape have increasingly used external inputs: machinery, contract labour, fertilizers and pesticides, with the associated impacts of eventual production declines, pesticide neurotoxicity and poisonings. The low level of government investment in agriculture extension activities lead farmers to use highly and moderately hazardous pesticides (WHO (2005) types lb and ll) not only because they are considered more efficient but also because of their lower cost. The transition from more traditional crops and agricultural methods to market-oriented intensive production has been associated with greater pesticide-related symptoms but lower financial benefits.

Research carried out in Carchi Province between 1998 and 2002 (Ecosalud I) showed that community-based interventions and the application of alternative crop management technologies could improve understanding of ecosystem dynamics, reduce highly hazardous pesticide use and unsafe pesticide-related practices, and ultimately improve neurological functioning among farmers and their families. Running from 2004 to mid-2008, the Ecosalud II project sought to work with multiple stakeholders, which we refer to as actors to emphasize their agency. Ecosalud II's aim was to tackle the complex drivers of inappropriate use of highly hazardous pesticides, with the long term goal of greater agroecosystem sustainability, including better human health. **Philip Sambol** (Director of Partnerships, Good Food Markets, Washington, DC, USA)

The Food Systems Model for Equitable Development

Philip Sambol¹

¹ Oasis Community Partners, Founding Executive Director; Good Food Markets, Director of Partnership, 2006 Rhode Island Avenue NE, Washington, DC

Good Food Markets (GFM) is a mission driven grocer committed to developing fresh food retail solutions that work in, and for, food desert communities. Between 2014-2016, as Vice President of Operations during the launch stage of GFM's pilot location, Philip Sambol instituted sourcing, funding and pricing models to make fresh food options available, affordable and sustainable in a longstanding Washington, DC food desert. Access to a grocery store, however vital to addressing existing health disparities, alone will not solve the urban food desert problem. With this in mind, several key stakeholders in the sustainable local food movement launched Oasis Community Partners (OCP) in 2016.



OCP focuses on education, data analysis, program development, and consultation to improve food access and community health. Through multisector partnerships, OCP works with marginalized communities to match needs and assets, foster long term social coherence, create and retain wealth, and leverage political capital.

- Presentation topics will include:
- Key features of fresh food retail in (former) food deserts
- Creating pro-social spaces and sustainable businesses to support living wage jobs, workforce development, and urban agriculture
- Proposed discussion topics:
 - Engaging populations who don't have time to shop or cook at home in diet and nutrition education
 - Building a modern career training program that can provide minimum wage workers with the knowledge and skills to obtain living wage employment
 - The challenges facing sustainable local food system

FREQUENTLY ASKED QUESTIONS FOR TRAVEL TO THE ONE HEALTH IN THE AMERICAS CONFERENCE

What airport should I fly into and when?

The most convenient airport to the CSU Todos Santos Center is the Los Cabos airport (Airport code: **SJD**). The Los Cabos airport is about 1.5 hours from the Todos Santos by car. SJD is the only airport where the Conference shuttle will be available to take you to the conference.

You may also fly into the La Paz Airport (LAP), but sponsored transportation will not be available from that airport. You may rent a car or arrange your own shuttle at LAP.

We recommend you arrange your flight to arrive in Los Cabos or La Paz on **Tuesday, November 15**. Conference check-in will begin at 2 p.m. that day, and continue as long as needed. We recommend you arrange your departing flight on the afternoon of **Thursday, November 17**. The conference activities will conclude at 12 p.m.. Shuttle to the airport will start at 10 a.m. and run throughout the afternoon.

How will I get to the conference from the airport?

The One Health in the Americas Conference will sponsor shuttle transportation to/from the Los Cabos Airport (SJD) on Tuesday, November 15 and Thursday, November 17. Once you send us your flight arrangements, we will place you on the most convenient shuttle and give you information about where to catch the shuttle at the airport.

If your travel plans fall outside of this timeframe, you are welcome to arrange your own transportation. We recommend Todos Santos Private Transportation (www. tsprivatetransportation.com). Renting a private vehicle is also an option.

Can I stay longer in Todos Santos once the conference ends?

You are welcome to stay longer in Todos Santos after the conference ends, but you will need to make arrangements with a local hotel. We can recommend hotels based on your needs, so please reach out to conference organizers if you wish to stay past November 17.

Do I need transportation in Todos Santos?

You will not need a vehicle in Todos Santos for the duration of the conference. Your lodging is a very short walk from the conference and dining facilities. If you wish to explore the surrounding town, much of it is accessible on foot.

Will my meals be provided?

The following meals will be provided at the CSU Todos Santos Center:

- November 15 Happy hour and heavy appetizers
- November 16 Breakfast, lunch, dinner
- November 17 Breakfast, lunch



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