



**SHE Conference 2018**

**Lisbon**  
**July 7-10**

## PROGRAM AND ABSTRACT BOOK



### **XXIII International Conference Society for Human Ecology**

**"Navigating complexity: human-environmental  
solutions for a challenging future"**

Hosted by:



Av. de Berna, 26-C, Lisbon, 1069-061 Portugal

**FCT**  
Fundação  
para a Ciência  
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1 160»

## SPONSORS

The board and members of the Society for Human Ecology acknowledge the support and cooperation of:



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## COOPERATING ORGANIZATIONS



Symposium 1 – The Human Ecology of environmental Hazards

Symposium 2 – Garden Therapy

Symposium 3 – Another Decade of SHE: an updated History of the Society for Human Ecology

Symposium 4.1 - A European College of Human Ecology – New Directions in Higher Education

Symposium 4.2 - A European College of Human Ecology – New Directions in Higher Education

Symposium 5 - Generating knowledge on networks in environmental governance

Symposium 6 - How and how not to achieve effective interdisciplinarity in environmental-change studies

Symposium 7 – Project of Atherosclerosis among Indigenous populations – PAI: Urbanization and Ecology of Health of Traditional Peoples

Symposium 8 - Environmental Health in Human Ecological Perspective

Symposium 9 - Wet Ecologies: Politics, Science, and Water in the Anthropocene

Symposium 10 - Human Ecology and Systems Theory: Principles and Methods of Integration

Symposium 11 - Integrating different knowledge systems to understand socio-ecological

Symposium 12 - Modifying nutritional behavior towards sustainable nutrition: potentials and barriers from a systems perspective

Symposium 13 - Urban Ecology

Symposium 14 – Human Ecology in the Philippines: Research and Practice for Food and Nutrition Security

Symposium 15 - Human Ecology in the Philippines: Research and Practice for Sustainability

Symposium 16.1 - Sustainable Fisheries and Local Knowledge

Symposium 16.2 - Sustainable Fisheries and Local Knowledge

Symposium 17 - The Politics of Rewilding

CP1 Social and Ecological Responses to Changing Climates

CP2.1 Human Ecology: Human Economy

CP2.2 Human Ecology: Human Economy

CP4 Valuing Ecosystem Services

CP5.1 Human Ecology Teaching and Research Methods

CP5.2 Human Ecology Teaching and Research Methods Chair

CP6.1 Food System and Food Security

CP6.2 Food System and Food Security

CP7 Philosophy of Human Ecology

CP8.1 Human Health and Wellbeing

CP8.2 Human Health and Wellbeing

CP8.3 Human Health and Wellbeing

CP9 Human-Animal Relations

CP10.1 Human-Nature Relations

CP10.2 Human-Nature Relations

CP11 Socio-cultural Adaptation

CP12.1 Sustainable Rural Communities and Landscapes

CP12.2 Sustainable Rural Communities and Landscapes

CP13 Tourism, Ecotourism, and Biodiversity Impacts

CP14 Urban Ecology

CP15 Changing Drivers of Water Security

CP16 Research on Sustainability Issues

Poster 1: A glimpse behind the scenes: Assessing ecosystem services based on statistical data and expert evaluation

Poster 2: Ação antrópica no povoado Cruz, município de Delmiro Gouveia – Al, Baixo de São Francisco

Poster 3: Art and education in the conservation of a giant of the seas: The acting of the cultural troupe Arte Manha and the Meros do Brasil Project

Poster 4: Associations of Temperature Variation and Mortality in 47 Japanese Prefectures

Poster 5: Brazilian semiarid residents representation regarding the use and availability of water

Poster 6: Combining qualitative and quantitative methods to evaluate the ecological integrity and ecosystem derived values on a regional scale

Poster 7: Erosion of medicinal and food biodiversity: the emergence of intercultural dialogue

Poster 8: Evaluation of ecological integrity in landscape context based on remote sensing data

Poster 9: Indigenous peoples of the São Francisco Sertão: dynamics of occupation and uses of natural resources

Poster 10 Mulheres na Pesca Artesanal: uma percepção sobre saúde e segurança das marisqueiras do Guaibim – Valença-BA

Poster 11: Patterns of water depuration in Alto Vinalopó County (SE. Spain). Evaluating new environmental designs that reduce their ecological footprint

Poster 12: Shipwrecks as substrate for artificial reefs: representations of biology and history undergraduate students and the cultural heritage and marine biodiversity imaginary

Poster 13: Sustainability challenges for small-scale fisheries in the Azorean islands: Local conflicts, social actors and the opportunities of a new ecosystemic local management approach

Poster 14: The Effects of Scale on the Management of Private Rangelands and Grasslands through Cost-Share Programs

Poster 15: Trends in the urban developments of the coastal area of the province of Alicante (SE Spain). How to improve ecologically the human-nature systems that we create?

Poster 16: Uso dos recursos naturais e conflitos socioambientais na região Nordeste do Brasil

Poster 17: Sustainability challenges for artisanal fisheries in the Azorean islands part of UNESCO's Biosphere Reserves: What happens when fisher's resist complying with legal protective rules and daily illegal fishing practices stand as an obstacle to the success of the regional environmental policy?

Poster 18: Food Insecurity and its Implication on Rural Homemakers in Osun state, Nigeria

Poster 19: Análisis del Sistema Ganadero Ovino en Comunidades Indígenas Mapuche de la Norpatagonia de Chile



## PRESENTATION

Dear Colleagues, welcome. It is a great pleasure to receive you in our University. The opportunity to organize this Conference with Society of Human Ecology (SHE Conference 2018, Lisbon 7-10 July) opens a new cycle for human ecology studies in our country. This is only the third time this conference comes to Europe, after Sweden and UK, and it is indeed a very important moment for our human ecology researchers and all those who share the debates promoted by this interdisciplinary perspective. The chance to join colleagues from all over the world discussing and suggesting new ideas and new solutions for a challenging future is an extraordinary breakthrough for a stimulating reflection.

This international Conference is an opportunity to rethink the work already done. I was lucky enough to belong to the first teaching staff of the Master in Human Ecology in NOVA University of Lisbon more than 20 years ago. During this period, we had the best students and the cooperation of colleagues from different European and American countries. This experience allowed us to create the Human Ecology PhD program, unique in Portugal and in Europe with the best results. Now we open a new page of Human Ecology in our University thanks to the SHE initiative and to all of you.

my best regards

Luís Baptista

Urban sociologist

Head for CICS.NOVA, Interdisciplinary Centre of Social Sciences



## Message from Dr Robert Dyball, President of the Society for Human Ecology

Welcome delegates and guests to Lisbon and the XXIII conference of the Society for Human Ecology. Congratulations to conference organizer Iva Pires and her team for putting together a packed program with an exciting range of keynote speakers, and symposia and contributed papers on all facets of human ecology research, teaching, and learning. I am sure our next days together will be full of interesting exchange of ideas and the forging of new partnerships and the continuation of ongoing collaborations. Outside of the academic forums I hope these exchanges continue in informal gatherings at bars, cafes, restaurants and other venues around this city – including, of course, the Gala dinner on Monday. You may know that the word symposium is from the Greek for 'fellow drinker', and we should respect our academic origins.

At the close of this conference I will stand down as SHE President and hand over to Iva. I am certain that the future of the society is well assured in her capable hands, as her organization of this conference attests. I am particularly interested in the direction her formidable networking capabilities might take us. As she sets challenges for the society going forward I ask that you all lend what support that you can. There are a great many ways for you to involve yourselves with the society, including running for office, volunteering to join the editorial board of Human Ecology Review, or agreeing to be ad hoc reviewers, and participating in social networking and promotion of the society generally, including helping with membership recruitment. I have enjoyed my time as president and warmly welcome Iva to the role.



## KEYNOTE SPEAKERS



### **Livia Tirone**

Collaborating in co-design the future  
REBUNDANCE

Innovator, pioneer, architect, promoter, consultant, moderator, writer, editor – mother of two - exploring a full, fun, healthy life. A believer in perpetual learning and walking the talk of her passion and purpose.

Passionate about unraveling the potential of Renewable Prosperity in the Mediterranean Region - contributing to a society where everyone has access to what they need and all resources are renewable.

Spear headed sustainable construction in Portugal and Europe (25 years), structured and directed the Lisbon Energy and Environment Agency (5 years), acted as elected councillor for the opposition in Lisbon Municipality (2,5 years), devoted to mainstreaming sustainable construction and urban resilience in Portugal and the Mediterranean. Coordinated the Sustainable Construction Initiative (10 years) and the Sustainable Construction Living Lab (5 years) and editor of the Portuguese periodical Sustainable Construction (3 years). Hosted the Human Habitat Lecture Series in Partnership with the Oceanário de Lisboa (8 years). Volunteered with Santa Casa da Misericórdia de Lisboa to create the social innovation Hub MITRA (3 years), facilitating the working group Critical Friends of MITRA.

Fellow at THINK, the Amsterdam School of Creative Leadership (participant 2013). Collaborated in creating THINK's Lisbon Home and is the curator for THINK Lisbon. Curator of this school.

Currently launching the REBUNDANCE initiative which aims to identify common ground on future visions, among broad stakeholder groups on relevant topics such as water, food, materials and energy.

High lights: Author of the book CONSTRUÇÃO SUSTENTÁVEL (2007) that reached 10.000 readers, co-author of Efficient Roofs publication for ADENE, co-author of the THINK Food Manifesto.

Promoter of Stakeholder alignment and engagement on topics relevant to Renewable Prosperity. Facilitator of transdisciplinary working groups working on innovative visions.



### **Bernardo Salce**

Photographer and Environmentalist.

Bernardo Salce is a Brazilian photographer whose work seeks to celebrate cultural diversity and raise social-environmental awareness. He has a background in Law (Bachelor's) and Human Ecology (Master of Arts, MA), and he has been investigating our environmental crisis for over twelve years, with a special attention to International Humanitarian Law and Environmental Education. He has worked for a variety of local and international NGOs across the globe, covering issues such as climate change, social-economic inequalities, human trafficking, education and environmental justice. Since 2014 he has also been working as an independent travel consultant who promotes responsible and sustainable tourism. He has been traveling the world for almost ten years and in the first half of 2016 he completed a 5,000 miles bicycle journey from Bogotá (Colombia) to Lima (Peru). He is currently writing a novel that chronicles the story of a small town whose fate is terribly affected by a mining operation. It is inspired by true events in Brazil and Colombia, and also by everything he has been seeing and experiencing on the road. Having lived in South Africa, Portugal, Cambodia and Colombia over the last decade, he is currently based in San Diego, California.



### **Prue Taylor**

Senior Lecturer at The University of Auckland.

Prue Taylor teaches environmental law to graduate and undergraduate planning and architecture students at the School of Architecture and Planning, University of Auckland, NZ. She is the Deputy Director of the New Zealand Centre for Environmental Law and a long-standing member of the IUCN Commission of Environmental Law and its Ethics Specialist Group. Her specialist research interests are in the areas of climate change, human rights, environmental and commons governance, ocean law and policy, property rights and environmental ethics. She has authored numerous books and articles in these areas. In recent years she has developed a particular expertise in relation to the law and governance concept; the common heritage of mankind'. Her work has focused on revealing and developing the potential of this concept for the governance of the global commons. Her current focus is on the use of 'common heritage' as the normative concept for a new legal regime creating marine protected areas on the high seas. Prue lives with her family in on a small Island off the coast of New Zealand and is very privileged to have the Pacific Ocean at the bottom of the garden. It is a constant reminder of both the power and vulnerability of the ocean environment.



### **Luísa Schmidt**

Principal researcher at the Institute of Social Sciences of the University of Lisbon (ICS-UL).

Luísa Schmidt is a sociologist (PhD, 1999 - ISCTE) and a principal researcher at the Institute of Social Sciences of the University of Lisbon (ICS-UL). In Portugal, she was a pioneer of environmental sociology teaching, research and outreach. In 1996, she co-founded and set-up OBSERVA - the Observatory for the Environment, Territory and Society - that she currently coordinates. Via OBSERVA she developed, in the early 2000s, the first large on surveys about environmental values and practices in Portugal; she carried out the first large temporal scope Portuguese environmental media analysis; and she created a pioneering outreach tool "Ecoline - Know More to Change Better" (funded by POSI-UMIC), bridging environmental knowledge and citizens. Between 2013 and 2017 through OBSERVA Luísa Schmidt lead (June 2015) the international public consultation on 'Climate and Energy' (100 citizens in 100 countries) to prepare the COP21 in Paris and, in its aftermath, she coordinated the EXPO 360° in collaboration with the French Embassy in Portugal. Research-wise she has coordinated multiple research projects that articulate social sciences and environmental issues.

As scientific networks are concerned Luísa Schmidt is member of the Board on Environment and Society (RN12) at the European Sociological Association (ESA), and of the Research Committee for Environment and Society (RC24) at the International Sociological Association (ISA). She is a member of CNADS (National Council of the Environment and the Sustainable Development); of the working group on Sustainability of the EEAC (European Environment and Sustainable Development Advisory Councils).





### **Michael Chappell**

Senior Research Fellow Agroecology and Agricultural Policy,  
Centre for Agroecology, Water and Resilience.

Dr. Michael Chappell has worked across several disciplines and sectors in his career. After an undergraduate degree in chemical engineering and a stint as a formulator for a consumer products company, he returned to graduate school and completed a PhD in Ecology and Evolutionary Biology at the University of Michigan. He was subsequently a postdoctoral associate at Cornell University's Department of Science and Technology Studies, followed by three years as an assistant professor of environmental science and justice at Washington State University Vancouver. From 2012-2013, he additionally served as the Associate Director of the WSU Vancouver's Center for Social and Environmental Research. In 2013, he left WSU to serve as Director of Agroecology and Agricultural Policy and then Senior Staff Scientist at an NGO, the Institute for Agriculture and Trade Policy. During his time there, he spearheaded an open letter to the Secretary-General of the Food and Agriculture Organization of the United Nations that helped to solidify the FAO's commitment to agroecology. He has consulted for the La Vía Campesina, the FAO, and the World Future Council. His first book, *Beginning to end hunger: Food and the environment in Brazil and beyond* was published in January 2018 by the University of California Press.



### **Wendy Gunn**

Senior Research Fellow, Research Design Research Group,  
Faculty of Engineering Science, Department of Architecture, KU  
Leuven, Belgium.

Wendy Gunn was awarded a Senior Research Fellowship from KU Leuven Research Council to collaborate with Prof Ann Heylighen (architecture) and Prof Dirk Saelens (building physics). The research seeks to leverage scientific research involving patients' sensorial experience and perceptual acuity to inform future design of measurement experiments towards improving indoor air quality within hospital healthcare settings. Her research has involved the co-design of the research framework for the wider research project: *An Anthropological Inquiry by Means of Design Towards Improving Indoor Air Quality Within Hospital Settings*, and a pilot study *Combining Quantitative and Qualitative Methodologies and Methods in Data Collection of Air Quality (Measured and Perceived) within Hospital Healthcare Settings*. As a researcher, she has cross-disciplinary expertise in architecture, anthropology and design and significant experience of conducting collaborative research as part of interdisciplinary and multidisciplinary design teams involving both the private and public sectors. Central to her research is a close connection between theory and practice, research and teaching.

PROGRAM OVERVIEW

JULY 7

18:00-  
19:30

Opening Session

Prof. Cat. Mário Avelar, Vice-Presidente Sociedade de Geografia de Lisboa  
 Prof. Francisco Caramelo, Dean of NOVA School of Social Sciences and Humanities  
 Prof. Lufs Baptista, Head of CICS.NOVA, Interdisciplinary Centre of Social Sciences, NOVA School of Social Sciences and Humanities  
 Prof. Robert Dyball, Australian National University and President of the Society for Human Ecology (SHE)  
 Prof. Iva Pires, SHE President-Elect and Program Chair SHE-XXIII, NOVA School of Social Sciences and Humanities

Keynote Speaker

Duarte d'Araújo Mata  
 Landscape Architect

Environment, Green Structure, Climate and Energy Deputy Mayor's Office  
 Lisbon Municipality, Portugal

*Think Nature in Cities: NBS as keys tools to tackle climate change*

Venue: Sociedade de Geografia de Lisboa, Rua Portas de Santo Antão, 100  
 Lisboa Phone +351 21 342 5401

20:00-  
20:45

Welcome Reception

Venue: Casa do Alentejo, Rua Portas de Sto. Antão, 58  
 Lisboa Phone +351 21 340 5140

JULY 8

8:30-  
10:30

Room Aud. 001 (TA)	Room Aud. 002 (TA)	Room 104 (TA)	Room 0.09 (B1)	Room 0.05 (B1)	Room 0.06 (B1)
Symposium 14	Symposium 5	Contributed Papers 2.1	Contributed Papers 5.1	Contributed Papers 8.1	Posters
Human Ecology in the Philippines: Research and Practice for Food and Nutrition Security	Generating knowledge on networks in environmental governance	Human Ecology: Human Economy	Human Ecology Teaching and Research Methods	Human Health and Wellbeing	Poster exhibition

Coffee-break

11:00-12:30	Plenary Session - Aud. 1 (TB)					
	Livia Tirone, REBUBINDANCE <i>Future Cities - our role in the system</i>	Bernardo Salce, Photographer – Environmentalist <i>Environmental Education through ethical photography: creative and participatory paths towards sustainability</i>				

13:30-15:30	Lunch						
	Room - Aud. 001 (TA)	Room - Aud. 002 (TA)	Room 0.05 (B1)	Room 0.09 (B1)	Room 104 (TA)	Room 103 (TA)	Room 0.06 (B1)
	Symposium 11	Symposium 1	Symposium 7	Contributed Papers 5.2	Contributed Papers 2.2	Contributed Papers 6.1	Posters
	Integrating different knowledge systems to understand socio-ecological issues	The human ecology of environmental hazards	PAI: Urbanization and Ecology of Health of Traditional Peoples	Human Ecology Teaching and Research Methods	Human Ecology: Human Economy Security	Food System and Food Security	Poster exhibition

16:00-18:00	Coffee-break						
	Room Aud. 001 (TA)	Room Aud. 002 (TA)	Room 0.05 (B1)	Room 0.09 (B1)	Room 104 (TA)	Room 103 (TA)	Room 0.06 (B1)
	Symposium 6	Symposium 13	Contributed Papers 13	Contributed Papers 3	Contributed Papers 8.2	Contributed Papers 6.2	Posters
	How and how not to achieve effective interdisciplinarity in environmental-change studies	Urban Ecology	Tourism, Ecotourism, and Biodiversity Impacts	Enhancing Ecological Health and Resilience	Human Health and Wellbeing	Food System and Food Security	Poster exhibition

18:00-20:00	Room Aud. 001 (TA)	Room Aud. 002 (TA)
	Meeting of the Human Ecology Associations	PhD Workshop
	Moderated by Robert Dyball	Moderated by Sónia Nobre and Kira West

**JULY 9**

8:30-10:30	Room - Aud. 001 (TA)	Room 0.05 (B1)	Room 103 (TA)	Room 104 (TA)	Room 0.09 (B1)	Room 0.03 (B1)	Room 0.06 (B1)
	Symposium 3	Symposium 8	Contributed Papers 9	Contributed Papers 16	Contributed Papers 1	Contributed Papers 1d	Posters
	Another Decade of SHE: An Updated History of the Society for Human Ecology	Environmental Health in Human Ecological Perspective	Human-Animal Relations	Research on Sustainability Issues	Social and Ecological Responses to Changing Climates	Socio-cultural Adaptation	Poster exhibition
11:00-12:30	Coffee-break						
	Plenary Session - Aud. 1 (TB)						
	Prue Taylor, Senior Lecturer at The University of Auckland, Deputy Director of the New Zealand Centre for Environmental Law 'Common heritage' as a concept for commons governance?						
	Lufsa Schmidt, Principal researcher at the Institute of Social Sciences of the University of Lisbon (ICS-UL) <i>Climate and Social Changes: narratives for sustainability</i>						
13:30-15:30	Lunch						
	Room - Aud. 001 (TA)	Room 0.05 (B1)	Room 103 (TA)	Room 104 (TA)	Room 0.06 (B1)		
	Symposium 4.1	Symposium 10	Contributed Papers 10.1	Contributed Papers 12.1	Posters		
	A European College of Human Ecology - New Directions in Higher Education	Human Ecology and Systems Theory: Principles and Methods of Integration	Human-Nature Relations	Sustainable Rural Communities and Landscapes	Poster presentations		
16:00-18:00	Coffee-break						
	Room - Aud. 001 (TA)	Room 0.05 (B1)	Room 103 (TA)	Room 104 (TA)	Room 0.09 (B1)	Room 0.06 (B1)	
	Symposium 4.2	Symposium 2	Contributed Papers 10.2	Contributed Papers 12.2	Contributed Papers 14	Posters	
	A European College of Human Ecology - New Directions in Higher Education	Garden Therapy	Human-Nature Relations	Sustainable Rural Communities and Landscapes	Urban Ecology	Poster exhibition	
18:00-20:00	Free time						
20:00	Gala Dinner						



Venue: Associação Naval de Lisboa (Naval Association of Lisbon)  
 Address: Avenida Brasília - Doca de Belém 1400-083 Lisbon  
 Phone: +351 21 363 5329

**JULY 10**

8:30-10:30	Room - Aud. 001 (TA)	Room - Aud. 002 (TA)	Room 0.05 (B1)	Room 103 (TA)	Room 104 (TA)	Room 0.06 (B1)
	Symposium 15 Human Ecology in the Philippines: Research and Practice for Sustainability	Symposium 16.1 Sustainable Fisheries and Local Knowledge	Symposium 9 Wet Ecologies: Politics, Science, and Water in the Anthropocene	Contributed Papers 15 Changing Drivers of Water Security and Wellbeing	Contributed Papers 8.3 Human Health and Wellbeing	Posters Poster exhibition
11:00-12:30	Coffee-break					
	Plenary Session - Aud. 1 (TB)					
	<b>Michael Chappell</b> , Centre for Agroecology, Water and Resilience, Coventry University, UK <i>"Beginning to end hunger: lessons from ecological, political economy and solidarity in Belo Horizonte, Brazil and beyond."</i> <b>Wendy Gunn</b> , Faculty of Engineering Science, Department of Architecture, KU Leuven, Belgium <i>Moving collaborative research on indoor air quality into architectural and engineering design processes and practices of future making</i>					
13:30-15:30	Lunch					
	Room - Aud. 001 (TA)	Room - Aud. 002 (TA)	Room 0.05 (B1)	Room 103 (TA)	Room 104 (TA)	Room 0.06 (B1)
	Symposium 12 Modifying nutritional behavior towards sustainable nutrition: potentials and barriers from a systems perspective	Symposium 16.2 Sustainable Fisheries and Local Knowledge	Symposium 17 The Politics of Rewilding	Contributed Papers 4 Valuing Ecosystem Services	Contributed Papers 7 Philosophy of Human Ecology	Posters Poster exhibition
16:00-18:00	Coffee-break					
	Closing Session and SHE Meeting Room Aud 1 (TB)					



LIST OF ABSTRACTS (SIMPOSIA, PAPERS AND POSTERS)

Symposia

**Symposium 1 The human ecology of environmental hazards**

Organizer: Ian Douglas	July 9 Room: Aud 002 (TA) 13.30-15.30
Ian Douglas	Responsibilities for overcoming inequities linked to urban flooding
Celeste Oliveira Alves Coelho	Forest Fires in Portugal: How can we adapt to disaster?
Donnell Davis	
Ana Monteiro and H. Madureira	Climate Risks – a syndrome with an inappropriate therapy
Ana Monteiro, H. Madureira, L. Fonseca, C. Sousa	Porto Metropolitan Climate Change Adaptation Plans – coping with uneven understanding of climate among the affected urban population
Cristina Ribeiro, Celeste Coelho, Sandra Valente, Luuk Fleskens, Jacob Keizer	What is post-fire management? Views of Portuguese stakeholders

**Symposium 2 Garden Therapy**

Organizers: Jana Dvořáčková and Dana Křivánková	July 9 Room: 0.05 (B1) 16.00-18.00
Petra Juvan, Špela Novak, Zorica Zrim, Jana Cunder and Melita Miš Strgar	The examples of horticulture therapy and other horticulture activities with therapeutic effect in Slovenia
Dana Křivánková	Garden therapy at Lipka in Brno, the Czech Republic
Štefan Szabó	Let's go to the forest!
Jana Dvořáčková	With nature to mutual understanding - Erasmus+ and Garden therapy at Foundation Seiler, Switzerland
Janka Horváth	Nature inspired Therapy – Preliminary results from a participatory research agenda setting in Hungary
Ajay Rastogi and Tanya Kim Grassley	"Naturalness Orientation" as a pathway to better health and happiness

**Symposium 3 Another Decade of SHE: An Updated History of the Society for Human Ecology**

Organizers: Richard J. Borden, Kenneth E. Hill and Robert Dyball	July 9 Room: Aud 001 (TA) 8.30-10.30
Richard J. Borden; Robert Dyball; Kenneth E. Hill; Blake Cass; Bronwyn Wilkes	

**Symposium 4.1 A European College of Human Ecology – New Directions in Higher Education**

Organizer: Wolfgang Serbser	July 9 Room: Aud 001 (TA) 13.30-15.30
Harry Weekes	Field Notes from an Accidental Teacher: On Adolescent Education, Human Ecology, and the Future of Humanity
Ian Douglas	Teaching the human ecology of the urban environment
Jay Friedlander	Expanding the Bounds of Human Ecology: A Case Study
Andreas Nebelung	

**Symposium 4.2 A European College of Human Ecology – New Directions in Higher Education**

Organizer: Wolfgang Serbser	July 9 Room: Aud 001 (TA) 16.00-18.00
Richard Borden	Experiments in Interdisciplinary Pedagogy: Building the Foundation for Human Ecology Education
Parto Teherani-Krönner	Agriculture and our Everyday Meal Culture
Markus Hofmann	<i>The Good Road</i> towards a Sustainable Mobility-Culture – Effective Transition path without shortcuts?
Wolfgang Serbser	The European College of Human Ecology Emmendingen – A Prospect of a Human Ecology Program for Agents of Transition

**Symposium 5 Generating knowledge on networks in environmental governance**

Organizers: Marion Glaser and Barbara Schröter

July 8 Room: Aud 002 (TA) 8.30-10.30

PD Marion Glaser and Barbara Schröter

Generating knowledge on networks in environmental governance

María Mancilla-García and Örjan Bodin

Networks and influence across forums: actors' strategies in water governance in Brazil

Eike Holzkämper

Empowering stakeholders through participatory network analysis: a Net-Map case study from Brazil

Theresa Schwenke

Social and social-ecological networks in coastal marine social ecological systems conservation management and governance – Where are we and what are the potentials?

Mira Freiermuth

The transfer of knowledge and the resulting power in Community supported Agriculture (CSA)

Marco Scotti, Daniel Filipe da Silva Pereira, Antonio Bodini

LevinsAnalysis: a package for loop analysis in R

**Symposium 6 How and how not to achieve effective interdisciplinarity in environmental-change studies**

Organizers: Bradley Walters and Andrew Vayda

July 8 Room: Aud 001 (TA) 16.00-18.00

Bradley B. Walters

Doing interdisciplinary environmental change research solo

Andrew P. Vayda and Timothy C. Jessup

Wildfire Research in Indonesia and Dubious Assumptions About Interdisciplinarity

Cecilie Friis and Jonas Østergaard Nielsen

Productive tensions: The potentials and challenges of the telecoupling framework in interdisciplinary human-environment systems research

Simon Pooley

Algorithms, anecdotes and conflicts over animals

Martin Lukas

Beyond the trap of disciplinary research and political framings: Integrating approaches, methods and scales in human-environment research

**Symposium 7 Project of Atherosclerosis among Indigenous populations – PAI: Urbanization and Ecology of Health of Traditional Peoples**

Organizers: Dinani Armstrong

July 8 Room: 0.05 (B1) 13.30-15.30

Anderson da Costa Armstrong

Cardiovascular Health of Indigenous Peoples

Pedro Patriota

Relation between Urbanization and Health of Traditional Peoples

Dayvison Ruan

Indigenous Peoples in urbanized areas and health problems

Thuanny Campos

Participation of Indigenous peoples in research on Human Health

Nayanne Salvioni

Results of a Research on Cardiovascular Health in Indigenous

**Symposium 8 Environmental Health in Human Ecological Perspective**

Organizers: Kazuhiko Moji and Chiho Watanabe

July 9 Room: 0.05 (B1) 8.30-10.30

Chiho Watanabe

Introduction: Planetary boundaries and health

Taro Yamauchi

Co-Creating the Sanitation Value Chain: Designing Sanitation Systems as Eco-Community-Value Systems

Masahiro Hashizume

Adaptation to Global warming observed as mortality response

Kyi Mar Wai

Environmental contamination by heavy metals and its impact on maternal and child health in Myanmar

Kazuhiko Moji

Trends of Environmental Health and Human Ecology in Japan

### **Symposium 9 Wet Ecologies: Politics, Science, and Water in the Anthropocene**

Organizers: Irus Braverman and Jordan Besek

July 10 Room: 0.05 (B1) 8.30-10.30

Jordan Besek	Flying Fish and Mechanistic Explanation: Bringing Social Science and Biology Together on Shared Ground
Irus Braverman	Living on Coral Time: Debating Conservation in the Anthropocene
Yvonne Braun	Seeing through Water: Local Narratives of Gender, Environmental Change, and Development in Lesotho, Southern Africa
Christina Ergas	Holistic Systems Approach to Agriculture and Water in an Ecovillage
Carmel Price	"We're Just Sitting Ducks": Recurrent Household Flooding in Detroit as a Public Health, Social Justice, and Climate Change Issue

### **Symposium 10 Human Ecology and Systems Theory: Principles and Methods of Integration**

Organizers: Felix Tretter and Karl-Heinz Simon

July 9 Room: 0.05 (B1) 13.30-15.30

Felix Tretter	Introduction
Karl-Heinz Simon	Systems Paradigms as Useful for Human Ecology
Rob Dyball	Human Ecology in a System Dynamics Framework
Eva Hummel and Ingrid Hoffmann	Tackling Complexity of Nutritional Behaviour as an Example for a Human Ecological Topic: Application of Instruments from Systems Sciences
Pedro Escriche and Patricia E. Almaguer-Kalixto	A Complex System Approach of the Human Ecology of Oasis. A Case Study in Southern Morocco Communities

### **Symposium 11 Integrating different knowledge systems to understand socio-ecological issues**

Organizers: Mar Cartró Sabaté, Victoria Reyes García and David Garcia-del-Amo

July 8 Room: Aud 0.01(TA) 13.30-15.30

Mar Cartró Sabaté, P. Mayor, V. Reyes-García, A. Rosell-Melé, M. Orta-Martínez	Combining different types of participation to understand and fight oil extraction impacts: from community-based monitoring in the Amazon to worldwide digital citizen science
David Garcia del Amo, V. Reyes-García, and P. G. Mortyn	Climate Change, Local Rural Communities and Citizen Science in Sierra Nevada, Spain
T. Rojo and O. Diallo	Participatory methodologies to manage conflict and consensus within communities around environmental options.
M.L. Tano and L.A. Shanley	Why it should be about integrating western science into traditional knowledge systems and not the other way around?
A. Sourdil, E. Andrieu, L. Barbaro, C. Barnaud, M. Deconchat, J. Wencélius	Bringing together local ecological knowledge, environmental anthropology and landscape ecology to understand the impacts of socio-ecological changes on rural communities in South-Western France

### **Symposium 12 Modifying nutritional behavior towards sustainable nutrition: potentials and barriers from a systems perspective**

Organizers: Tobias Gaugler and Felix Tretter

July 10 Room: Aud 001 (TA) 13.30-15.30

Felix Tretter	A systemic framework for social nutrition ecology
Tobias Gaugler	Closing the gap between market prices of foods and their true costs
Christine Tretter	Health and environment: nutrition preferences - burden for health and ecology
Eva Hummel and Ingrid Hoffmann	Nutritional behaviour as a complex phenomenon: Identification of starting points for modifying food consumption
Karl-Heinz Simon	On system representation paradigms, applied to an ecology of nutrition



Uta Schmidt

NGO's contribution to reduced animal product consumption in Germany – An assessment of congruency between aims, knowledge and action

### **Symposium 13 Urban Ecology**

Organizer: Ajibola Isau Badiru July 8 Room: Aud 002 (TA) 16.00-18.00

Ajibola Isau Badiru, Addressa Basilio Britto Cardoso, Ana Dayse Dorea, Rosana de Oliveira Santos Batista, Viviane da Silva Romão and Luciana Anna Longo

Urban School Development in Perspective

Addressa Basilio Britto Cardoso and Rodrigo Vanderlan do Nascimento

School development: an urban deviation by the Federal Housing Program (Minha Casa Minha Vida) in Maceió-AL, Brazil

Lourival Teixeira de Assunção Filho, Rodrigo Vanderlan do Nascimento and Ajibola Isau Badiru

Space Segregation and the Mobility Environment

Núbia Dias dos Santos

Interdisciplinarity, environmental sciences and the social function of the public school in Brazil: interaction of knowledge and human development

Rita Ippolito, Luciana Anna Longo and Ajibola Isau Badiru

Educational organization: the case of the Maceió-AL Municipal Education Network, Brazil

Rita Ippolito, Paola Barbieri and Ana Dayse Dorea

Regional image of the Municipal Schools of Maceió / AL

Rosana de Oliveira Santos Batista

Environmental Sciences and Ecosophy: the Training of the Ecological Subject

### **Symposium 14 Human Ecology in the Philippines: Research and Practice for Food and Nutrition Security**

Organizer: College of Human Ecology, University of the Philippines Los Baños July 8 Room: Aud 001 (TA) 8.30-10.30

Angelina dR. Felix and Melanie H. Narciso

The Changing Landscape of Rice Preference in the Philippines: A Threat to Food and Nutrition Security?

Clarissa B. Juanico, Liezl M. Atienza, Valerie C. Acayen and Wilma A. Hurtada

Effect of Single Meal Replacement with White Corn Grits on the Nutritional Status of Type 2 Diabetic Individuals

Carla G. Jimena, Virginia Cuevas, Maria Emilinda T. Mendoza, Kristopher Costales and Patricia Naredo

Social impact of a Science Based Intervention on coffee and cacao farming of the Ayta Magbukun tribe, Morong, Bataan, Philippines

### **Symposium 15 Human Ecology in the Philippines: Research and Practice for Sustainability**

Organizer: College of Human Ecology, University of the Philippines Los Baños July 10 Room: Aud 001 (TA) 8.30-10.30

Edgar M. Reyes, Jr.

Problem Analysis of Small Island Ecosystems: the case of Camiguin and Siquijor Islands, the Philippines

Maria Emilinda T. Mendoza, David Joseph De Dios, Larah Ibanez and Carla G. Jimena

Exploring the Pollution: Poverty Link in Iloilo City, Visayas Islands, Philippines: some Preliminary Findings

Carla G. Jimena, Danilo Songco, Clarice Pulumbarit, Emilia S. Visco, Nimfa Montes and Jewel Cabardo

An Examination of Key Institutional Players in the Quest for Inclusive Value Chains of Agro enterprises in the Philippines

**Symposium 16.1 Sustainable Fisheries and Local Knowledge**

Organizer: Yorgos Stratoudakis

July 10 Room: Aud 002 (TA) 8.30-10.30

Amanda B. M. Fadigas

Factors favoring the risk perception of oil spill in coastal areas: a case study of shellfisherwomen in Galicia, Spain

Ana Cristina Carvalho and Igor d'Angelis

Sesimbra and its fishermen: from literary pictures to the 21st Century reality

Andrea Leme da Silva; Daiana I. Schneider, Gustavo Hallwass, Priscila Lopes, Renato A. M. Silvano

Fishers' perceptions about fisheries co-management rules inside and outside protected areas in Amazonian rivers

Lol Dahlet

Building public policy for artisanal fisheries: recent changes and persistent shortcomings in Brazil

Maíra Borgonha, Áthila A. Bertoncini, Cassiano Monteiro-Neto

Game Over? Investigating artisanal fisheries sustainability in Brazil

Ana Rita Jordão Fraga and Marc Larose

Sustainability challenges for small-scale fisheries in the Azorean Islands: Local conflicts, social actors and the opportunities of a new ecosystemic local management approach.

**Symposium 16.2 Sustainable Fisheries and Local Knowledge**

Organizer: Yorgos Stratoudakis

July 10 Room: Aud 002 (TA) 13.30-15.30

Yorgos Stratoudakis, Flávio Fernandez, Rogelia Martins, Miguel Carneiro, João Pereira

Experimenting adaptable operational rules and participated collective-choice rules in the management of a gill-net fishery for red mullet (*Mullus surmuletus*) in SW Portugal

Angie Elwin

Shrimp farming strategies and social-ecological transitions in Thailand.

Igor d'Angelis, Yorgos Stratoudakis, Iva Pires

Fishermen's perception and attitude in face of the decline of fishing

Karl Bruckmeier

Participatory fisheries management in Europe - the dilemmas

Alpina Begossi

Ethnonoecology and ecology of groupers

Renato A. M. Silvano, Gustavo Hallwass, Josele T. Silva, Mariana Clauzet, Daiana Inês Schneider and Alpina Begossi

Fishers knowledge indicates temporal changes and influence of protected areas on fishing resources in two tropical rivers.

Ana Rita Jordão Fraga

Sustainability challenges for artisanal fisheries in the Azorean Islands part of UNESCO's Biosphere Reserves: What happens when fisher's resist complying with legal protective rules and daily illegal fishing practices stand as an obstacle to the success of the regional environmental policy?

**Symposium 17 The Politics of Rewilding**

Organizer: Mihnea Tanasescu

July 10 Room: 0.05 (B1) 13.30-15.30

Mihnea Tanasescu

Restorative Ecological Practice

Filipa F. Soares

The biopolitics of rewilding: on the governance of disturbance regimes in England

Martin Drenthen

The hermeneutics of rewilding conflicts

Tiago Shizen Pacheco Toma and Elise Buisson

Challenges of including the cultural landscapes concept in ecological restoration: how can it be useful in Latin America?



Contributed Papers

**CP1 Social and Ecological Responses to Changing Climates**

Chair: Bernhard Glaeser	July 9 Room: 0.09 (B1) 8.30-10.30
Ana Claudia de Almeida	Linking climate, migrations and social protection in the case of Brazilian Northeast
Kali Lamont	Case Studies in Climate Action: U.S. Community-based Responses to Climate Change
Lilliana Piedra Castro, Maikol Castillo Chinchilla, Luis Manuel Sierra Sierra, Vanessa Morales Cerdas, José Miguel Pereira Chávez, Rodrigo Méndez Solano, Roger Ríos Duarte, Katherine Sánchez Paniagua, Alexander Araya Vargas	Characterization of the response of local communities to the direct effects of climate variability on the South Caribbean coast of Costa Rica
Luísa Schmidt, Carla Gomes, João Mourato, Adriana Alves	Adaptive Governance: co-creating adaptation strategies with local communities
Bernhard Glaeser	Navigating Towards Sustainable Human Nature Relations—Coastal Management Revisited
Ricardo da Cruz e Sousa	A participatory landscape design strategy to climate change in Latin America

**CP2.1 Human Ecology: Human Economy**

Chair: Phillip J Stewart	July 8 Room: 104 (TA) 8.30-10.30
Phillip J Stewart	Against growth
Bridget Itunu Awosika	Transition through Resilience for Sustainable Livelihood by Low Income Families in Nigeria
Clodoaldo Ribeiro Santos and Ricardo José Rocha Amorim	Green it as a proposal for the reduction of business costs in companies of the São Francisco Valley
Cristina Pinto-Coelho	Determinants of Green Purchase Intention (GPI) - Implications for Marketing Communication
Elizabeth Ann Whitaker and Janet L. Bokemeier	Understanding savings activity in the U.S. through a human ecological lens

**CP2.2 Human Ecology: Human Economy**

Chair: Andrew Jorgensen	July 8 Room: 104 (TA) 13.30-15.30
Manuel Berrio	Questioning the International Structure of the World with Structural Human Ecology-StIrPAT's use of Ecological Footprints
Xiaorui Huang and Andrew K. Jorgenson	The Asymmetrical Effects of Economic Development on Consumption-Based and Production-Based Carbon Dioxide Emissions, 1990-2014
Maria Cleonice de Souza Vergne, Salomão David Vergne Cardoso, Manuella Maria Vergne Cardoso and Caio Humberto Ferreira Dória de Souza	Paulo Afonso Archaeological Complex as a promoter of economic and social development
Jay Friedlander	Bridging the Skills - Passion Gap: Providing Human Ecologist with the Skills to Create Impact

**CP3 Enhancing Ecological Health and Resilience**

Chair: Arnald Puy	July 8 Room: 0.09 (B1) 16.00-18.00
Alexandre Marco da Silva, Karen Regina Castelli, Ludmila Araujo Bortoleto, Rosiane Argenton e Silva, Pablo Bettio Mendes, Kristiane Ramos Primo	Integrating human and ecological perspectives in a multi-scale project of environmental recovering: challenges, successes, and failures
Anna Bettini	Sense of place in a fractured land: Exploring the socio cultural impacts of hydraulic fracturing and people's relationships with the landscape in Taranaki, New Zealand.
Arnald Puy, Manuel Herzog, Pedro Escriche, Amou Marouche, Yousef Oubana, Olaf Bubenzer	How to better protect oases against sand encroachment? Insights from Erg Chebbi (Morocco)
João Francisco Alves Mendes	Latin American Political Ecology and mining: contributions to a reflection of the tragedy in Mariana.
Sarah Wheeler and Jivan Sobrinho-Wheeler	The Emergence of Private and Civic-Sector Land Conservation in Latin America
Jakub Zelený	Evaluation of ecological integrity in landscape context based on remote sensing data

#### CP4 Valuing Ecosystem Services

Chair: Tom Burns

July 10 Room: 103 (TA) 13.30-15.30

Jakub Zelený, Sabine Bicking, Dang Kinh Bac, Felix Müller

Combining methods to estimate ecosystem service potentials for crop and fodder production in Schleswig-Holstein, Germany

Joana F. Viana Canelas

Tales of Coexistence: Assessing Cultural Ecosystem Services in a Storied Landscape

Tim Davidson and Thomas J. Burns

The Wounded Hero's Quest in the Anthropocene Era: Reconnecting with the Ecosystem and Healing Within

Carina Belén Báez Martínez, María José Aparicio Meza, Amado Insfrán Ortiz, Lucía Janet Villalba Marín, Stella Mary Amarilla Rodríguez

Ecosystem cultural services of the riparian forest in the Ybycuí Creek micro-basin, Ybycuí National Park, Paraguay

Yorgos Stratoudakis, Helena Farrall, Lia Vasconcelos

Stakeholder network dynamics towards MPA governance

Flávia Silva, José Carlos Ferrelra, Lia Vasconcelos, Renato Monteiro, Cláudio Macedo Duarte

The involvement of the local community in the preservation of coastal and ocean resources - the case study of "Ambassadors for Biodiversity"

#### GP5.1 Human Ecology Teaching and Research Methods

Chair: Ricardo Amorim

July 8 Room: 009 (B1) 8.30-10.30

Alexandre Junior de Souza Menezes and Ricardo Jose Rocha de Amorim

The Theoretical and Methodological Construction of the Everyday Daily of Youth Training Experience

Daniela Santos Silva and Juracy Marques dos Santos

The Human Nature of Children: Eco-perceptions in the School Spaces

Maria Ilhéu and Mariana Valente

Coming to age - experiences in (environmental) education

Núbia Dias dos Santos, Ajibola Isau Badiru, Rosana de Oliveira Santos Batista

Educação em ciências ambientais: da interdisciplinaridade a ecologia humana decolonial.

#### GP5.2 Human Ecology Teaching and Research Methods

Chair: Paul Ofel-Manu

July 8 Room 0.09 (B1) 13.30-15.30

Pablo Fredy de Araújo Souza, Ricardo José Rocha Amorim, Dinani Gomes Amorim

T-ISO: a proposal for standardization by green IT indicators in higher education institutions

Kira West

Place-based, outdoor, and community education in Maine: Four case studies

Paul Ofel-Manu and Robert James Didham

Collaborative Partnerships for Education Policy Research: Stakeholder participation in M&E of ESD research in Asia

#### GP6.1 Food System and Food Security

Chair: Masahiro Umezaki

July 8 Room: 103 (TA) 13.30-15.30

Bronwyn Wilkes

Cultivating support for a biosensitive food system

Cate Makwena Molotja

The contribution of school feeding programmes to the development of rural communities of Limpopo Province, South Africa

Masahiro Umezaki, Kazumi Natsuhara, Shuji Sueyoshi, Chiho Goto, Kiyoshi Tadokoro, Fumihiro Yagyu, Shingo Odani Iva Miranda Pires and Carlos Jesus

Association between neighborhood food environments and nutrients intake among elderly people in five rural regions in Japan

Fruta Feia: A Portuguese cooperative saving "ugly fruit" from waste

#### GP6.2 Food System and Food Security

Chair: Jennifer Givens

July 8 Room: 103 (TA) 16.00-18.00

Mosima Masekoameng

Indigenous Knowledge Systems and Food Security: A Case Study from South Africa

Jennifer E. Givens

Incorporating Social Factors into Research on the Food-Energy-Water Nexus and Sustainability

Satoko Kosaka, Kazuhiro Suda, Budhi Gunawan, Ardini Raksanagara, Chiho Watanabe, Masahiro Umezaki

Urban-rural difference in the determinants of dietary and energy intake patterns: A case study in West Java, Indonesia

Kourtney Collum

Teaching Food Systems in the Age of Consumer-Based Alternative Food Movements

**CP7 Philosophy of Human Ecology**

Chair: Felix Tretter	July 10 Room: 104 (TA) 13.30-15.30
Aizen de Freitas Tomáz, Juracy Marques	The Right to the Sacred Territory: a Rhizomatic Perspective in Human Ecology
Michael J. Kimball	Contemplative Human Ecologies
John Schooneveldt	Human Ecology: the Science of Experience
Juracy Marques	The human ecology of the future: epistemology and metamorphoses of the human species in this new century
Luciano Sérgio Ventim Bomfim	The inviability to the human ecology be a science: about the paradigmatic nature of Human Ecology
Morteza Honari	The Seventh Sense: Sense of Ecological Belonging

**CP8.1 Human Health and Wellbeing**

Chair: Marcia Grisotti	July 8 Room: 005 (B1) 8.30-10.30
Anna Siniarska, Joanna Nieczuja-Dwojcka, Alicja Budnik, Justyna Marchewka, Edyta Godlewska	Changes in body build and age at menarche in Warsaw girls between 2003-2012
Julie Caissie	Overview of the Newborn Behavioral Observation Training System
Sara Esseffar, S. Rkha, M. Loukid	Attitudes, practices and information sources of Doctors in Morocco facing menopause, a choice between hormonal treatment and non-hormonal treatment.
Manoel Messias Alves de Souza, Maria Elizabeth Souza Gonçalves, Luciano Sérgio Ventim Bomfim	Ecology in Health: decolonizing knowledge and experiences
Marcia Grisotti	Global health governance in the context of risks and uncertainties
Reuber Rosendo Costa Macêdo dos Santos	The sacred plants used in traditional communities of the north-eastern semi-arid region, Brazil

**CP8.2 Human Health and Wellbeing**

Chair: Pedro Patriota	July 8 Room: 104 (TA) 16.00-18.00
Deyvison Rhuane Vasco dos Santos, Artur Gomes Dias Lima, Anderson da Costa Armstrong	Indigenous Health: the Perception Study as a Risk Indicator for Parasitosis
Pedro Patriota, Dinani M. F. Armstrong, Henrique Dória de Vasconcelos, Joao A. C. Lima, Ana Marice T. Ladeia, Anderson C. Armstrong	Urbanization and cardiovascular risk in indigenous people: a systematic review
Thuanny Ferrer Saraiva Rodrigues Campos, Nayane Carolina Pertile Salvioni, Leela Morená, Hildene Carneiro de Castro Melo, Dinani Matoso Fialho de Oliveira Armstrong, Anderson da Costa Armstrong	The impact of spirituality on blood pressure control among the Truká people - The Project of Atherosclerosis among Indigenous populations (PAI)
Nayane Carolina Pertile Salvioni, Lara Sodré Cardoso, Lucas Ribeiro Almeida, Larissa Harue Nonobe de Araújo, Oderci Messias de Lima Filho, Leela Morená, Carla Santos Araújo, Thuanny Ferrer Saraiva Rodrigues Campos, Dinani Matoso Fialho de Oliveira Armstrong	Living a week in the Truká tribe (Island of Assumcao, Brazil) for the Project of Atherosclerosis among Indigenous populations (PAI) - A medical student experience report

**CP8.3 Human Health and Wellbeing**

Chair: ZHANG Liqing	July 10 Room: 104 (TA) 8.30-10.30
Bridget Itunu Awosika	Tackling the Challenges of Landscaping and Home Interior for Sustainable Housing Safety in Nigerian Coastal Communities
Marcia Grisotti	The Construction of Health Causal Relations in the Belo Monte Dam context/Brazil
Mary Abimbola Akinkuolere, Bridget Itunu Awosika	Family Health and Sustainable National Development: Case of Rural Dwellers in Ondo State Nigeria
ZHANG Liqing, TAN Puay Yok, Marta BOTTERO, Marco SANTANGELO	A comparative study of the effects of green space on self-reported health for university students in Singapore and Turin



**CP9 Human-Animal Relations**

Chair: Diana Stuart

July 9 Room: 103 (TA) 8.30-10.30

Diana Stuart

Human-Interspecies Relations in the Anthropocene

Eileen O'Rourke

Human-Animal Interactions: The raptor and the lamb

Marie Opplert, Carine Pachoud, Rafaela Vendruscolo, Doris Sayago, Rogerio Mauricio, P. D. Waquil, J. F. Tourrand

The Huge Challenge to Start the New Human-Animal Relationship

Cristina Lopes and Elsa Canelo

Affiliation with nature: learning to read with dogs in the school ecosystem in Portugal

**GP10.1 Human-Nature Relations**

Chair: Manuela Caballero Guisado

July 9 Room: 103 (TA) 13.30-15.30

Caroline Vieira Ruschel

Living Earth: the use of systemic constellation technique on proving the Gaia hypothesis

Ernani Machado de Freitas Lins Neto and Ulysses Paulino de Albuquerque

Debating the weaknesses and virtues of Theories of Niche Construction and Optimal Foraging in understanding the early stages of domestication of plants

Gyöngyvér Gyene, Tamás Régheny

Whose Complexity? Reflections on Studying the Psychology of Nature

Kenneth S. Cline

Does giving nature legal personhood help integrate humans and nature?

Laurent Cilia

Environmental Sociology, Capitalism, and the Plight of the Honeybee

Manuela Caballero Guisado and Artemio Baigorri Agoiz

Changes of environmental attitudes in the Spanish population. A generational analysis.

Thomas Burns

Eco sapiens: Master Keys to Understanding and Healing the Relationship between Humankind and the Natural Environment in the Anthropocene

**GP10.2 Human-Nature Relations**

Chair: Luciano Bomfim

July 9 Room: 103 (TA) 16.00-18.00

Luciano Sérgio Ventim Bonfim and Luís Eduardo Gomes Do Nascimento

The quilombolas formations as the nomos of the land

Maria Rosa Almeida Alves and Daniela Santos Silva

Yorubá: língua de santo e de resistência no sertão da Bahia

Robson Marques dos Santos, Luciano Bomfim, Marcelo Ribeiro

Small Leaves: Children in the Landscapes of Candomblé in the Backwoods of Brazil

Rosana de Oliveira Santos Batista and Núbia Dias dos Santos

Territórios de Vida nas Ciências Ambientais

**GP11 Socio-cultural Adaptation**

Chair: Thomas Burns

July 9 Room: 0.03 (B1) 8.30-10.30

Emeline Gougeon

Cross-cutting artistic creations, between science, humanities and technology: towards a meta-vision of sensitive data and dialogical spaces?

Julia Watson

Ancient Innovations

M. Udugama and G. Holloway

Understanding movement patterns: Implications for spatial patterns of land management

Maria Alice Amorim

Poetic Battles in Network /Pelejas em Rede

Thomas Burns

Anti-Environmentalism in the Anthropocene Age: The Paradox of Runaway Cultural Lag

**CP12.1 Sustainable Rural Communities and Landscapes**

Chair: Eduardo Seva-Román

July 9 Room: 104 (TA) 13.30-15.30

Albertina Raposo, Lia Vasconcelos, Ursula Caser, S. Fragoso, N. Silva, Sueli Ventura, R. Alcazar

Stakeholders sustainable management in agriculture - lessons from participatory processes

Ana Cristina Carvalho and Ana Luísa Luz

Communitarian Features in Portuguese Alto Barroso Region: from Ferreira de Castro's and Bento da Cruz Literary Images to the 20th Century Reality

Eduardo Seva-Román, Antonio Pastor-López, Joaquín Martín-Martín

Archeo-Landscapes of the Spanish Levante and Ecological Consequences of Agricultural Abandonment of Mountain Landscapes

Fernando Sousa, Gian Nicolay, Christoph Spurk, Noah Adamtey, Andreas Fließbach

Sostenibilidad de la Agricultura Familiar paraguaya de cuatro distritos de la Región Oriental. Una mirada desde la Ecología Humana

Federico Vargas L. and Emilio Aquino

**CP12.2 Sustainable Rural Communities and Landscapes**

Chair: Yi Yi Cho July 9 Room: 104 (TA) 16.00-18.00

Fernando Sousa, Gian Nicolay, Christoph Spurk, Noah Adamtey, Andreas Fliessbach Dissemination and adoption of bottom-up agricultural innovations to improve soil fertility in Africa: An interdisciplinary approach

Rufino Acosta-Naranjo, Antonio J. Guzmán-Troncoso, José L. Gómez-Melara Human and asparagus: coevolution and symmetry in Southern Extremadura (Spain)

Viviane dos Santos Carvalho and Georgina Negrão Kalife Cordeiro Juventude do Campo, Pesca, Expectativa de Vida: um estudo na comunidade de Bacuriteua-Bragança- Pará-Amazônia

Yi Yi Cho Rice Production in Flood Prone Ecosystem: A Case of Patanaw Township, Ayeyarwady Region, Myanmar

**CP13 Tourism, Ecotourism, and Biodiversity Impacts**

Chair: Thomas Meredith July 8 Room: 0.05 (B1) 16.00-18.00

Andres Jennings Sustainable Tourism – managing mass tourism

Bin Liu, Jinping Lin, Liangkun Cao Research on the Demand of Winter Resort Travel Brought by the Trend of an Aging Population in China

Charlie V. Balagtas Reconciling Sustainable Mining and Tourism in Partido District: Do the Twain Meet?

Thomas Meredith Socio-ecological approaches to assessing the paradoxes of linking tourism and biodiversity conservation

Yanqin Guo and Jinping Lin Rural Ecotourism and Ecological Cultural Tradition in China's Winter Resort Travel Destination

Yumei Luo and Jinping Lin The Research on the Tourists' Environment-Friendly Intention of Rural Eco-Tourism

**CP14 Urban Ecology**

Chair: Ian Douglas July 9 Room: 0.09 (B1) 16.00-18.00

Clare Cannon Learning on a Dump: A Case Study into Environmental Inequality and Urban Growth Dynamics

Emilio Padoa-Schioppa and Claudia Canedoli Cultural benefits provided by urban green areas: comparison of people, park management and cultural association perspectives.

Flávia Silva, L. Vasconcelos, F.Ferreira, J.C.Ferreira, G. Martinho Collaborative Community Engagement for urban waste management - UrbanWINS

J. Dostalík, R. Krylová, V. Pelikán, L. Sovová, Z. Ulčák Gardens, cities and people - How to assess urban gardening

Sunanda Uday Chande A study of peoples' participation in garbage disposal in selected parts of Mumbai

**CP15 Changing Drivers of Water Security**

Chair: Gustavo Hees de Negreiros July 10 Room: 103 (TA) 8.30-10.30

Antonio Pastor-López Ecological Footprint of the Changes in the Patterns of Water Use in the Mediterranean Semiarid Landscapes in Alto Vinalopó

Cristina Madrid-López The butterfly Effect: Local water metabolism of the globalization of energy resources

Gustavo Hees de Negreiros Water where there is no water: the human and political ecology of water management in a semi-arid region of northeast Brazil.

Pedro J. Escriche and Patricia E. Almaguer-Kalixto A Complex system approach of the human ecology of Oasis. A case study in Southern Morocco

Maria Torres Bagur, Josep Vila Subirós, Anna Ribas Palom Incentives and barriers on implementation of water-saving measures in lodging industry in the Mediterranean. The case of Muga basin (Girona, Spain)



**CP16 Research on Sustainability Issues**

Chair: Sandra Idrovo Carlier

July 9 Room: 104 (TA) 8.30-10.30

Ana Ferreira

Looking through the semi-periphery of scientific research: people, practices and culture across centre/periphery borders

Cody Ross

Ecological modeling of racial bias in police use-of-force: A theoretical and empirical approach to resolving disparate findings in the recent literature

Cristina Bernis and C. Varea

Lights and shadows for evaluating progress in the UN 2030 Agenda: Lack of gender indicators on [social and productive] time use

Manuel Berrio

A Sustainability International Development Classification Based on the Trajectories of the Components of the National Footprint Accounts (1961-2013)

Sandra Idrovo Carlier, Belén Mesurado, Patricia Debeljuh

Sustainability and the home: A perspective from 20 countries

Posters

Posters	
Authors	Title
Sabine Bicking and Felix Müller	A glimpse behind the scenes: Assessing ecosystem services based on statistical data and expert evaluation
Adriana Maria Cunha da Silva, Janniera Mariana dos Anjos Lima, Maria Leonalda Nunes Lima, Wilma Amâncio da Silva	Ação antrópica no Povoado Cruz, município de Delmiro Gouveia – AL, baixo são francisco
Jorge Galdino, Máira Borgonha, Jonas Rodrigues Leite, Matheus O. Freitas, Áthila A. Bertoncini	Art and education in the conservation of a giant of the seas: The acting of the cultural troupe Arte Manha and the Meros do Brasil Project
Chaochen Ma, Daisuke Onozuka, Yasushi Honda	Associations of Temperature Variation and Mortality in 47 Japanese Prefectures
Eliane Maria Souza Nogueira, Deyvison Rhuan Vasco dos Santos, Luene Melo da Silva, Tiago Shizen Pacheco Toma & Heide Vanessa Souza Santos	Brazilian semiarid residents representation regarding the use and availability of water
Jakub Zelený	Combining qualitative and quantitative methods to evaluate the ecological integrity and ecosystem derived values on a regional scale
Deyvison Rhuan Vasco dos Santos, Heide Vanessa Souza Santos, Aline Franco Sampaio Brito, Tiago Shizen Pacheco Toma, Eliane Maria Souza Nogueira	Erosion of medicinal and food biodiversity: the emergence of intercultural dialogue
Jakub Zelený	Evaluation of ecological integrity in landscape context based on remote sensing data
Edivania Granja da Silva Oliveira, Roberto Remígio Florêncio, Carlos Alberto Batista dos Santos	Indigenous peoples of the São Francisco Sertão: dynamics of occupation and uses of natural resources
Lirane Rocha Borges, Lucemário Xavier Batista, Tâmara de Almeida e Silva	Mulheres na Pesca Artesanal: uma percepção sobre saúde e segurança das marisqueiras do Guaibim – Valença-BA
Antonio Pastor-López and José Antonio Perez-Lahiguera	Patterns of water depuration in alto Vinalopó County (se. Spain). Evaluating new environmental designs that reduce their ecological footprint
Giulianna Saggiolo Loffredo, Luiz Afonso V. Figueiredo, Amanda Gomes Alves	Shipwrecks as substrate for artificial reefs: representations of biology and history undergraduate students and the cultural heritage and marine biodiversity imaginary
Marc Larose and Ana Rita Jordão Fraga	Sustainability challenges for small-scale fisheries in the Azorean islands: local conflicts, social actors and the opportunities of a new ecosystemic local management approach
Brittany Dueker	The Effects of Scale on the Management of Private Rangelands and Grasslands through Cost-Share Programs
Antonio Pastor-López, José Emilio Martínez-Perez, José Antonio Perez-Lahiguera, Eduardo Seva-Román	Trends in the urban developments of the coastal area of the province of Alicante (SE Spain). How to improve ecologically the human-nature systems that we create?
Adriana Maria Cunha da Silva, Denise Vieira Lopes, Maristela Casé Costa Cunha	Uso dos recursos naturais e conflitos socioambientais na região nordeste do Brasil
Ana Rita Jordão Fraga	Sustainability challenges for artisanal fisheries in the Azorean islands part of UNESCO's Biosphere Reserves: What happens when fisher's resist complying with legal protective rules and daily illegal fishing practices stand as an obstacle to the success of the regional environmental policy?
Ebun Daropale Adeyanju and A. O. Loto	Food Insecurity and its Implication on Rural Homemakers in Osun state, Nigeria
Gustavo Aravena Paillalef, Claudia Barchiesi Ferrari, Luis Torralbo Barría, Ana Soto Acuña	Análisis del Sistema Ganadero Ovino en Comunidades Indígenas Mapuche de la Norpatagonia de Chile

Note: The posters will be on permanent display in **Room 0.06 (B1)**. Authors should be present to discuss their work on **July 9th 13.30-15.30**

PARALLEL SESSIONS

July 8th – 8:30-10:30

Room Aud. 001 (TA)	Room Aud. 002 (TA)	Room 0.09 (B1)	Room 104 (TA)	Room 0.05 (B1)
Symposium 14 Human Ecology in the Philippines: Research and Practice for Food and Nutrition Security	Symposium 5 Generating knowledge on networks in environmental governance	Contributed Papers 5.1 Human Ecology Teaching and Research Methods	Contributed Papers 2.1 Human Ecology: Human Economy	Contributed Papers 8.1 Human Health and Wellbeing
<b>The Changing Landscape of Rice Preference in the Philippines: A Threat to Food and Nutrition Security?</b> Angelina dr. Felix and Melanie H. Narciso	<b>Generating knowledge on networks in environmental governance</b> Marion Glaser and Barbara Schröter	<b>The Theoretical and Methodological Construction of the Everyday Daily of Youth Training Experience</b> Alexandre Menezes and Ricardo Amorim	<b>Against growth</b> Philip J Stewart	<b>Changes in body build and age at menarche in Warsaw girls between 2003-2012</b> Anna Siniarska; Joanna Nleczuja-Dwojicka; Alkja Budnik; Justyna Marchewka; Edyta Godlewska
<b>Effect of Single Meal Replacement with White Corn Grits on the Nutritional Status of Type 2 Diabetic Individuals</b> Clarissa B. Juanico, Liezi M. Atienza, Valerie C. Acayen and Wilma A. Hurtada	<b>Networks and influence across forums: actors' strategies in water governance in Brazil</b> Mária Mancilla-García and Örjan Bodin	<b>The Human Nature of Children: Eco-perceptions in the School Spaces</b> Daniela Silva and Juracy dos Santos	<b>Transition through Resilience for Sustainable Livelihood by Low Income Families in Nigeria</b> Itunu Awosika	<b>Overview of the Newborn Behavioral Observation Training System</b> Julie Caisie
<b>Social Impact of a Science Based Intervention on coffee and cacao farming of the Ayta Magbukun tribe, Morong, Bataan, Philippines</b> Carla Jimena, Virginia Cuevas, Maria Mendoza, Kristopher Costales and Patricia Naredo	<b>Empowering stakeholders through participatory network analysis: a Net-Map case study from Brazil</b> Elke Holzländer	<b>Coming to age – experiences in (environmental) education</b> Mária Ilhéu and Mariana Valente	<b>Green it as a proposal for the reduction of business costs in companies of the São Francisco Valley</b> Clodoaldo Santos and Ricardo Amorim	<b>Attitudes, practices and information sources of Doctors in Morocco facing menopause; a choice between hormonal treatment and non-hormonal treatment</b> Sara Esseffar, S. Rkha, M. Loukid
<b>Social and social-ecological networks in coastal marine social ecological systems conservation management and governance – Where are we and what are the potentials?</b> Theresa Schwenke	<b>Social and social-ecological networks in coastal marine social ecological systems conservation management and governance – Where are we and what are the potentials?</b> Theresa Schwenke	<b>Educação em ciências ambientais: da interdisciplinaridade a ecologia humana decolonial</b> Núbia dos Santos, Aijbola Badiru, Rosana Batista	<b>Determinants of Green Purchase Intention (GPI) - Implications for Marketing Communication</b> Cristina Pinto-Coelho	<b>Ecology in Health: decolonizing knowledge and experiences</b> Manoel Messias Alves de Souza, Maria Elizabeth Souza Gonçalves, Luciano Sérgio Ventim Bonfim
<b>The transfer of knowledge and the resulting power in Community supported Agriculture (CSA)</b> M.A. Mira Freiermuth LevinsAnalysis: a package for loop analysis in R Marco Scotti, Daniel Filipe da Silva Pereira, Antonio Bodini	<b>The transfer of knowledge and the resulting power in Community supported Agriculture (CSA)</b> M.A. Mira Freiermuth LevinsAnalysis: a package for loop analysis in R Marco Scotti, Daniel Filipe da Silva Pereira, Antonio Bodini		<b>Understanding savings activity in the U.S. through a human ecological lens</b> Elizabeth Ann Whitaker And Janet Bokemeier	<b>Global health governance in the context of risks and uncertainties</b> Marcia Grisotti
				<b>The sacred plants used in traditional communities of the north-eastern semi-arid region, Brazil</b> Reuber Rosendo dos Santos

Room - Aud. 001 (TA)	Room - Aud. 002 (TA)	Room 0.05 (B1)	Room 0.09 (B1)	Room 104 (TA)	Room 103 (TA)
Symposium 11 Integrating different knowledge systems to understand socio-ecological issues	Symposium 1 The human ecology of environmental hazards	Symposium 7 PAI: Urbanization and Ecology of Health of Traditional Peoples	Contributed Papers 5.2 Human Ecology Teaching and Research Methods	Contributed Papers 2.2 Human Ecology: Human Economy	Contributed Papers 6.1 Food System and Food Security
Combining different types of participation to understand and fight oil extraction impacts: from community-based monitoring in the Amazon to worldwide digital citizen science Mar Cartró Sabaté, P. Mayor, V. Reyes-García, A. Rosell-Melé, M. Orta-Marínez	Responsibilities for overcoming inequities linked to urban flooding Ian Douglas	Cardiovascular Health of Indigenous Peoples Anderson da Costa Armstrong	T-ISO: a proposal for standardization by green IT indicators in higher education institutions Pablo Frey de Araújo Souza, Ricardo José Rocha Amorim, Dimani Gomes Amorim	Questioning the International Structure of the World with Structural Human Ecology-StirPAT's use of Ecological Footprints Manuel Berrio	Cultivating support for a biosensitive food system Bronwyn Wilkes
Climate Change, Local Rural Communities and Citizen Science in Sierra Nevada, Spain David García del Amo, V. Reyes-García, and P. G. Mortyn	Forest Fires in Portugal: How can we adapt to disaster? Celeste Oliveira Alves Coelho	Relation between Urbanization and Health of Traditional Peoples Pedro Patriota	Place-based, outdoor, and community education in Maine- Four case studies Kira West	The Asymmetrical Effects of Economic Development on Consumption-Based and Production-Based Carbon Dioxide Emissions, 1990-2014 Xiaorui Huang and Andrew K. Jorgenson	The contribution of school feeding programmes to the development of rural communities of Limpopo Province, South Africa Cate Makwena Molotja
Participatory methodologies to manage conflict and consensus within communities around environmental options T. Rojo and O. Diallo	Climate Risks – a syndrome with an inappropriate therapy Ana Monteiro and H. Madureira	Indigenous Peoples in urbanized areas and health problems Dayvison Ruan	Collaborative Partnerships for Education Policy Research: Stakeholder participation in M&E of ESD research in Asia Paul Ofei-Manu and Robert James Didham	Paulo Afonso Archaeological Complex as a promoter of economic and social development Mária Cleonice de Souza Vergne, Salomão David Vergne Cardoso and Manuella Maria Vergne Cardoso and Celso Humberto Ferreira Dória de Souza	Association between neighborhood food environments and nutrients intake among elderly people in five rural regions in Japan Masahiro Umezaki, Kazumi Natsuhara, Shuji Sueyoshi, Chiho Goto, Kiyoshi Tadokoro, Fumihiko Yagyu, Shingo Odani
Why it should be about integrating western science into traditional knowledge systems and not the other way around? M.L. Tano and L.A. Shanley	Porto Metropolitan Climate Change Adaptation Plans – coping with uneven understanding of climate among the affected urban population Ana Monteiro, H. Madureira, L. Fonseca, C. Sousa	Participation of Indigenous peoples in research on Human Health Thuanny Campos	Bridging the Skills - Passion Gap: Providing Human Ecologist with the Skills to Create Impact Jay Friedlander	Fruta Feia: A Portuguese cooperative saving "ugly fruit" from waste Iva Miranda Pires and Carlos Jesus	
Bringing together local ecological knowledge, environmental anthropology and landscape ecology to understand the impacts of socio-ecological changes on rural communities in South-Western France A. Sourdriil, E. Andrieu, L. Barbaro, C. Barnaud, M. Deconchat, J. Wencélius	What is post-fire management? Views of Portuguese stakeholders Cristina Ribeiro, Celeste Coelho, Sandra Valente, Luuk Fleskens, Jacob Keizer	Results of a Research on Cardiovascular Health in Indigenous Nayanne Salvioni			

Donnell Davis



Room Aud. 001 (TA)	Room Aud. 002 (TA)	Room 104 (TA)	Room 0.09 (B1)	Room 103 (TA)	Room 0.05 (B1)
Symposium 6 How and how not to achieve effective interdisciplinarity in environmental-change studies	Symposium 13 Urban Ecology	Contributed Papers 8.2 Human Health and Wellbeing	Contributed Papers 3 Enhancing Ecological Health and Resilience	Contributed Papers 6.2 Food System and Food Security	Contributed Papers 13 Tourism, Ecotourism, and Biodiversity Impacts
Doing interdisciplinary environmental change research solo Bradley B. Walters	Urban School Development in Perspective Aijibola Badiru, Andressa Cardoso, Ana Dorea, Rosana Batista, Viviane Romão and Luciana Longo	Indigenous Health: the Perception Study as a Risk Indicator for Parasitosis Deywison dos Santos, Artur Lima, Anderson Armstrong	Integrating human and ecological perspectives in a multi-scale project of environmental recovering: challenges, successes, and failures Alexandre da Silva, Karen Castell, Ludmila Bortoleto, Rosiane Silva, Pablo Mendes, Kristiane Primo	Indigenous Knowledge Systems and Food Security: A Case Study from South Africa Mosima Masekoameng	Sustainable Tourism – managing mass tourism Andres Jennings
Wildfire Research in Indonesia and Dubious Assumptions About Interdisciplinarity Andrew P. Vayda and Timothy C. Jessup	School development: an urban deviation by the Federal Housing Program (Minha Casa Minha Vida) in Maceió-AL, Brazil Andressa Cardoso and Rodrigo do Nascimento	Urbanization and cardiovascular risk in indigenous people: a systematic review Pedro Patriota, Dinani Armstrong, Henrique de Vasconcelos, Joao Lima, Ana Ladeia, Anderson Armstrong	Sense of place in a fractured land: Exploring the socio cultural impacts of hydraulic fracturing and people's relationships with the landscape in Taranaki, New Zealand Anna Bettini	Incorporating Social Factors into Research on the Food-Energy-Water Nexus and Sustainability Jennifer E. Givens	Research on the Demand of Winter Resort Travel Brought by the Trend of an Aging Population in China Bin Liu, Jinping Lin, Liangkun Cao
The potentials and challenges of the telecoupling framework in interdisciplinary human-environment systems research Cecille Friis and Jonas Østergaard Nielsen	Space Segregation and the Mobility Environment Lourival de Assunção Filho, Rodrigo do Nascimento and Aijibola Badiru	The impact of spirituality on blood pressure control among the Truká people - The Project of Atherosclerosis among Indigenous populations (PAI) Thuanny Campos, Nayane Salvioni, Leela Morená, Hildene Melo, Dinani Armstrong, Anderson Armstrong	How to better protect oases against sand encroachment? Insights from Erg Chebbi (Morocco) Arnald Puy, Manuel Herzog, Pedro Escriche, Amou Marouche, Yousef Oubana, Olaf Bubenzer	Urban-rural difference in the determinants of dietary and energy intake patterns: A case study in West Java, Indonesia Satoko Kosaka, Kazuhiro Suda, Budhi Gunawan, Ardini Raksanagara, Chihho Watanabe, Masahiro Umezaki	Reconciling Sustainable Mining and Tourism in Partido District: Do the Twain Meet? Charlie V. Balagtas
Algorithms, anecdotes and conflicts over animals Simon Pooley	Interdisciplinarity, environmental sciences and the social function of the public school in Brazil: Interaction of knowledge and human development Núbia Dias dos Santos	Living a week in the Truká tribe (Island of Assumcao, Brazil) for the Project of Atherosclerosis among Indigenous populations (PAI) - A medical student experience report Nayane Salvioni, Lara Cardoso, Lucas Almeida, Larissa de Araújo, Oderci de Lima Filho, Leela Morená, Carla Araújo, Thuanny Campos, Dinani Armstrong	Latin American Political Ecology and mining: contributions to a reflection of the tragedy in Mariana João Francisco Alves Mendes	Teaching Food Systems in the Age of Consumer-Based Alternative Food Movements Kourtney Collum	Socio-ecological approaches to assessing the paradoxes of linking tourism and biodiversity conservation Thomas Meredith
Beyond the trap of disciplinary research and political framings: Integrating approaches, methods and scales in human-environment research Martin Lukas	Educational organization: the case of the Maceió-AL Municipal Education Network, Brazil Rita Ippolito, Luciana Longo and Aijibola Badiru	Regional image of the Municipal Schools of Maceió / AL Rita Ippolito, Paola Barbieri and Ana Dorea	The Emergence of Private and Civic Sector Land Conservation in Latin America Sarah Wheeler and Jivan Sobrinho-Wheeler	Rural Ecotourism and Ecological Cultural Tradition in China's Winter Resort Travel Destination Yanqin Guo and Jinping Lin	Rural Ecotourism and Ecological Cultural Tradition in China's Winter Resort Travel Destination Yanqin Guo and Jinping Lin
	Environmental Sciences and Ecology: the Training of the Ecological Subject Rosana Batista	Evaluation of ecological integrity in landscape context based on remote sensing data Jakub Zelený	Evaluation of ecological integrity in landscape context based on remote sensing data Jakub Zelený	The Research on the Tourists' Environment-Friendly Intention of Rural Eco-Tourism Yumei Luo and Jinping Lin	The Research on the Tourists' Environment-Friendly Intention of Rural Eco-Tourism Yumei Luo and Jinping Lin



July 9th – 8:30-10:30

Room 0.05 (B1)	Room - Aud. 001 (TA)	Room 103 (TA)	Room 104 (TA)	Room 0.09 (B1)	Room 0.03 (B1)
Symposium 8 Environmental Health in Human Ecological Perspective	Symposium 3 Another Decade of SHE: An Updated History of the Society for Human Ecology	Contributed Papers 9 Human-Animal Relations	Contributed Papers 16 Research on Sustainability Issues	Contributed Papers 1 Social and Ecological Responses to Changing Climates	Contributed Papers 11 Socio-cultural Adaptation
<b>Introduction: Planetary boundaries and health</b> Chiho Watanabe	Richard J. Borden	<b>Human-Interspecies Relations in the Anthropocene</b> Diana Stuart	<b>Looking through the semi-periphery of scientific research: people, practices and culture across centre/periphery borders</b> Ana Ferreira	<b>Linking climate, migrations and social protection in the case of Brazilian Northeast</b> Ana Claudia de Almeida	<b>Cross-cutting artistic creations, between science, humanities and technology: towards a meta-vision of sensitive data and dialogical spaces?</b> Emeline Gougeon
<b>Co-Creating the Sanitation Value Chain: Designing Sanitation Systems as Eco-Community-Value Systems</b> Taro Yamauchi	Robert Dyball	<b>Human-Animal Interactions: The raptor and the lamb</b> Eileen O'Rourke	<b>Ecological modelling of racial bias in police use-of-force: A theoretical and empirical approach to resolving disparate findings in the recent literature</b> Cody Ross	<b>Case Studies in Climate Action: U.S. Community-based Responses to Climate Change</b> Kall Lamont	<b>Ancient Innovations</b> Julia Watson
<b>Adaptation to Global warming observed as mortality response</b> Masahiro Hashizume	Kenneth E. Hill	<b>The Huge Challenge to Start the New Human-Animal Relationship</b> Marie Opplert, Carine Pachoud, Rafaela Vendruscolo, Doris Sayago, Rogerio Mauricio, P. D. Waquil, J. F. Tourrand	<b>Lights and shadows for evaluating progress in the UN 2030 Agenda: Lack of gender indicators on [social and productive] time use</b> Cristina Bernis and C. Varea	<b>Characterization of the response of local communities to the direct effects of climate variability on the South Caribbean coast of Costa Rica</b> Lilliana P. Castro, Maikol C. Chinchilla, Luis M. Sierra Sierra, Vanessa M. Cerdas, José M. P. Chávez, Rodrigo M. Solano, Roger R. Duarte, Katherine S. Paniagua, Alexander A. Vargas	<b>Understanding movement patterns: Implications for spatial patterns of land management</b> M. Udugama and G. Holloway
<b>Environmental contamination by heavy metals and its impact on maternal and child health in Myanmar</b> Kyí Mar Wai	Blake Cass	<b>Affiliation with nature: learning to read with dogs in the school ecosystem in Portugal</b> Cristina Lopes and Elsa Canelo	<b>A Sustainability International Development Classification Based on the Trajectories of the Components of the National Footprint Accounts (1961-2013)</b> Manuel Berrío	<b>Adaptive Governance: co-creating adaptation strategies with local communities</b> Luisa Schmidt, Carla Gomes, João Mourato, Adriana Alves	<b>Poetic Battles in Network /Pelejas em Rede</b> Maria Alice Amorim
<b>Trends of Environmental Health and Human Ecology in Japan</b> Kazuhiko Moji	Bronwyn Wilkes	<b>Sustainability and the home: A perspective from 20 countries</b> Sandra Idrovo Carlier, Belén Mesurado, Patricia Debeljuh	<b>Navigating Towards Sustainable Human Nature Relations—Coastal Management Revisited</b> Bernhard Glaeser	<b>Adaptive Governance: co-creating adaptation strategies with local communities</b> Luisa Schmidt, Carla Gomes, João Mourato, Adriana Alves	<b>Anti-Environmentalism in the Anthropocene Age: The Paradox of Runaway Cultural Lag</b> Thomas Burns
			<b>A participatory landscape design strategy to climate change in Latin America</b> Ricardo da Cruz e Sousa		

July 9th – 13:30-15:30

Room - Aud. 001 (TA)	Room 0.05 (B1)	Room 103 (TA)	Room 104 (TA)	Room 0.06 (B1)
Symposium 4.1 A European College of Human Ecology – New Directions in Higher Education	Symposium 10 Human Ecology and Systems Theory: Principles and Methods of Integration	Contributed Papers 10.1 Human-Nature Relations	Contributed Papers 12.1 Sustainable Rural Communities and Landscapes	Poster Presentation
<b>Field Notes from an Accidental Teacher: On Adolescent Education, Human Ecology, and the Future of Humanity</b> Harry Weekes	<b>Introduction</b> Felix Tretter	<b>Living Earth: the use of systemic constellation technique on proving the Gaia hypothesis</b> Caroline Vieira Ruschel	<b>Stakeholders sustainable management in agriculture - lessons from participatory processes</b> A. Raposo, L. Vasconcelos, U. Caser, S. Fragoso, N. Silva, S. Ventura, R. Alcazar	
<b>Teaching the human ecology of the urban environment</b> Ian Douglas	<b>Systems Paradigms as Useful for Human Ecology</b> Karl-Heinz Simon	<b>Debating the weaknesses and virtues of Theories of Niche Construction and Optimal Foraging in understanding the early stages of domestication of plants</b> Ernani Machado de Freitas Lins Neto and Ulysses Paulino de Albuquerque	<b>Communitarian Features in Portuguese Alto Barroso Region: from Ferreira de Castro's and Bento da Cruz Literary Images to the 20th Century Reality</b> Ana C. Carvalho and Ana L. Luz	
<b>Expanding the Bounds of Human Ecology: A Case Study</b> Jay Friedlander	<b>Human Ecology in a System Dynamics Framework</b> Rob Dyball	<b>Whose Complexity? Reflections on Studying the Psychology of Nature</b> Gyöngyvér Gyene, Tamás Réghenyi	<b>Archeo-Landscapes of the Spanish Levante and Ecological Consequences of Agricultural Abandonment of Mountain Landscapes</b> Eduardo Seva-Román, Antonio Pastor-López, Joaquín Martín-Martín	
<b>Andreas Nebelung</b>	<b>Tackling Complexity of Nutritional Behaviour as an Example for a Human Ecological Topic: Application of Instruments from Systems Sciences</b> Eva Hummel and Ingrid Hoffmann	<b>Does giving nature legal personhood help integrate humans and nature?</b> Kenneth S. Cline	<b>Sostenibilidad de la Agricultura Familiar paraguaya de cuatro distritos de la Región Oriental. Una mirada desde la Ecología Humana</b> Federico Vargas L. and Emilio Aquino	
	<b>A Complex System Approach of the Human Ecology of Oasis. A Case Study in Southern Morocco Communities</b> Pedro Escriche and Patricia Almager-Kalixto	<b>Environmental Sociology, Capitalism, and the Plight of the Honeybee</b> Laurent Cilla		
		<b>Changes of environmental attitudes in the Spanish population. A generational analysis</b> Manuela Caballero Guisado and Artemio Baigorri Agoiz		
		<b>Eco sapiens: Master Keys to Understanding and Healing the Relationship between Humankind and the Natural Environment in the Anthropocene</b> Thomas Burns		

July 9th – 16:00-18:00

Room - Aud. 001 (TA)	Room 103 (TA)	Room 104 (TA)	Room 0.09 (B1)
Symposium 4.2 A European College of Human Ecology – New Directions in Higher Education	Contributed Papers 10.2 Human-Nature Relations	Contributed Papers 12.2 Sustainable Rural Communities and Landscapes	None Contributed Papers 14 Urban Ecology
Room 0.05 (B1) Symposium 2 Garden Therapy	Contributed Papers 10.2 Human-Nature Relations	Contributed Papers 12.2 Sustainable Rural Communities and Landscapes	None Contributed Papers 14 Urban Ecology
Experiments in interdisciplinary Pedagogy: Building the Foundation for Human Ecology Education Richard Borden	As formações quilombolas como nomos da terra Luciano Sérgio Ventim Bonfim and Luis Eduardo Gomes Do Nascimento	Dissemination and adoption of bottom-up agricultural innovations to improve soil fertility in Africa: An interdisciplinary approach F. Sousa, G. Nicolay, C. Spurk, N. Adamtey, A. Fliessbach	Learning on a Dump: A Case Study into Environmental Inequality and Urban Growth Dynamics Clare Cannon
Agriculture and our Everyday Meal Culture Parto Teherani-Krönner	Yorubá: língua de santo e de resistência no sertão da Bahia Mária Rosa Almeida Alves and Daniela Santos Silva	Human and asparagus: coevolution and symmetry in Southern Extremadura (Spain) Rufino Acosta-Naranjo, Antonio J. Guzmán- Troncoso, José L. Gómez-Melara	Cultural benefits provided by urban green areas: comparison of people, park management and cultural association perspectives Emilio Padoa-Schioppa and Claudia Canedoli
The Good Road towards a Sustainable Mobility-Culture – Effective Transition path without shortcuts? Markus Hofmann	Small Leaves: Children in the Landscapes of Candomble in the Backwoods of Brazil Robson Marques dos Santos, Luciano Bonfim, Marcelo Ribeiro	Juventude do Campo, Pesca, Expectativa de Vida: um estudo na comunidade de Bacuriteua-Bragança- Pará-Amazônia Viviane dos Santos Carvalho and Georgina Negrão Kalife Cordeiro	Collaborative Community Engagement for urban waste management – UrbanWINS Flávia Silva, L. Vasconcelos, F.Ferreira, J.C.Ferreira, G. Martinho
The European College of Human Ecology Emmendingen – A Prospect of a Human Ecology Program for Agents of Transition Wolfgang Serbser	Territórios de Vida nas Ciências Ambientais Rosana de Oliveira Santos Batista and Núbia Dias dos Santos	Rice Production in Flood Prone Ecosystem: A Case of Patanaw Township, Ayeayawady Region, Myanmar Yi Yi Cho	Gardens, cities and people - How to assess urban gardening J. Dostalík, R. Krylová, V. Peilíkán, L. Sovová, Z. Uličák
Nature Inspired Therapy – Preliminary results from a participatory research agenda setting in Hungary Janka Horváth	With nature to mutual understanding - Erasmus+ and Garden therapy at Foundation Seiler, Switzerland Jana Dvořáčková		
"Naturalness Orientation" as a pathway to better health and happiness Ajay Rastogi and Tanya Kim Grassley			

July 10th – 8:30-10:00

Room - Aud. 001 (TA)	Room - Aud. 002 (TA)	Room 0.05 (BT)	Room 104 (TA)	Room 103 (TA)
Symposium 15 Human Ecology in the Philippines: Research and Practice for Sustainability	Symposium 16.1 Sustainable Fisheries and Local Knowledge	Symposium 9 Wet Ecologies: Politics, Science, and Water in the Anthropocene	Contributed Papers 8.3 Human Health and Wellbeing	Contributed Papers 15 Changing Drivers of Water Security
<b>Problem Analysis of Small Island Ecosystems: the case of Camiguin and Siquijor Islands, the Philippines</b> Edgar M. Reyes, Jr.	<b>Factors favoring the risk perception of oil spill in coastal areas: a case study of shellfisherwomen in Galicia, Spain</b> Amanda B. M. Fadigas	<b>Flying Fish and Mechanismic Explanation: Bringing Social Science and Biology Together on Shared Ground</b> Jordan Besek	<b>Tackling the Challenges of Landscaping and Home Interior for Sustainable Housing Safety in Nigerian Coastal Communities</b> Bridget Itunu Awosika	<b>Ecological Footprint of the Changes in the Patterns of Water Use in the Mediterranean Semiarid Landscapes in Alto Vinalopó</b> Antonio Pastor-López
<b>Exploring the Pollution: Poverty Link in Iloilo City, Visayas Islands, Philippines: some Preliminary Findings</b> Maria Emilinda T. Mendoza, David Joseph De Dios, Larah Ibanez and Carla G. Jimena	<b>Sesimbra and its fishermen: from literary pictures to the 21st Century reality</b> Ana Cristina Carvalho and Igor d'Angelis	<b>Living on Coral Time: Debating Conservation in the Anthropocene</b> Irus Braverman	<b>The Construction of Health Causal Relations in the Belo Monte Dam context/Brazil</b> Marcia Grisotti	<b>The butterfly Effect: Local water metabolism of the globalization of energy resources</b> Cristina Madrid-López
<b>An Examination of Key Institutional Players in the Quest for Inclusive Value Chains of Agro enterprises in the Philippines</b> Carla G. Jimena, Danilo Songco, Clarice Pulumbarit, Emilia S. Visco, Nimfa Montes and Jewel Cabardo	<b>Fishers' perceptions about fisheries co-management rules inside and outside protected areas in Amazonian rivers</b> Andrea Leme da Silva, Daiana I. Schneider, Gustavo Halliwass, Priscila Lopes, Renato A. M. Silvano	<b>Seeing through Water: Local Narratives of Gender, Environmental Change, and Development in Lesotho, Southern Africa</b> Yvonne Braun	<b>Family Health and Sustainable National Development: Case of Rural Dwellers in Ondo State Nigeria</b> Mary Abimbola Akinkuolere and Bridget Itunu Awosika	<b>Water where there is no water: the human and political ecology of water management in a semi-arid region of northeast Brazil</b> Gustavo Hees de Negreiros
<b>Learning for sustainability: Avoiding the traps of mariculture development for small-scale fishers</b> Jennifer Marie S. Amparo	<b>Building public policy for artisanal fisheries: recent changes and persistent shortcomings in Brazil</b> Lol Dahlet	<b>Holistic Systems Approach to Agriculture and Water in an Ecovillage</b> Christina Ergas	<b>A comparative study of the effects of green space on self-reported health for university students in Singapore and Turin</b> ZHANG Liqing, TAN Puay Yok, Marta BOTTERO, Marco SANTANGELO	<b>A Complex system approach of the human ecology of Oasis. A case study in Southern Morocco</b> Pedro J. Escriche and Patricia E. Almagueer-Kalixto
<b>Comparative Characterization of the Water, Sanitation and Hygiene Facilities in the Eco-zones of Abra de Ilog, Philippines</b> Fevi Rose Paro; Victorio B. Molina; Bonifacio B. Magtibay; Vivien Fe Fadrilan F. Camacho; Marian Fe Theresa C. Lomboy; Hygeia Grace Agosto	<b>Game Over? Investigating artisanal fisheries sustainability in Brazil</b> Maíra Borgonha, Áthila A. Bertoncini, Cassiano Monteiro-Neto	<b>"We're Just Sitting Ducks": Recurrent Household Flooding in Detroit as a Public Health, Social Justice, and Climate Change Issue</b> Carmel Price		<b>Incentives and barriers on implementation of water-saving measures in lodging industry in the Mediterranean. The case of Muga basin (Girona, Spain)</b> Maria Torres Bagur, Josep Vila Subirós, Anna Ribas Palom
	<b>Sustainability challenges for small-scale fisheries in the Azorean Islands: Local conflicts, social actors and the opportunities of a new ecosystemic local management approach</b> Ana Rita Jordão Fraga and Marc Larose			



Room - Aud. 001 (TA)	Room 0.05 (B1)	Room 103 (TA)	Room 104 (TA)
Symposium 12 Modifying nutritional behavior towards sustainable nutrition: potentials and barriers from a systems perspective	Symposium 17 The Politics of Rewilding	Contributed Papers 4 Valuing Ecosystem Services	Contributed Papers 7 Philosophy of Human Ecology
Room - Aud. 002 (TA)	Room 0.05 (B1)	Room 103 (TA)	Room 104 (TA)
Symposium 16.2 Sustainable Fisheries and Local Knowledge	Symposium 17 The Politics of Rewilding	Contributed Papers 4 Valuing Ecosystem Services	Contributed Papers 7 Philosophy of Human Ecology
<b>A systemic framework for social nutrition ecology</b> Felix Tretter	<b>Restorative Ecological Practice</b> Mihnea Tanasescu	<b>Combining methods to estimate ecosystem service potentials for crop and fodder production in Schleswig-Holstein, Germany</b> Jakub Zeleňý, Sabine Bicking, Dang Kinh Bac, Felix Müller	<b>The Right to the Sacred Territory: a Rhizomatic Perspective in Human Ecology</b> Alzeni de Freitas Tomáz, Juracy Marques
<b>Closing the gap between market prices of foods and their true costs</b> Tobias Gaugler	<b>The biopolitics of rewilding: on the governance of disturbance regimes in England</b> Filipa F. Soares	<b>Tales of Coexistence: Assessing Cultural Ecosystem Services in a Storied Landscape</b> Joana F. Viana Canelas	<b>Contemplative Human Ecologies</b> Michael J. Kimball
<b>Health and environment: nutrition preferences - burden for health and ecology</b> Christine Tretter	<b>The hermeneutics of rewilding conflicts</b> Martin Drenthen	<b>The Wounded Hero's Quest in the Anthropocene Era: Reconnecting with the Ecosystem and Healing Within</b> Tim Davidson and Thomas J. Burns	<b>Human Ecology: the Science of Experience</b> John Schooneveldt
<b>Nutritional behaviour as a complex phenomenon: identification of starting points for modifying food consumption</b> Eva Hummel and Ingrid Hoffmann	<b>Challenges of including the cultural landscapes concept in ecological restoration: how can it be useful in Latin America?</b> Tiago Shiizen Pacheco Toma and Elise Buisson	<b>Ecosystem cultural services of the riparian forest in the Ybycuí Creek micro-basin, Ybycuí National Park, Paraguay</b> Carina Belén Báez Martínez, María José Aparicio Meza, Amado Insfrán Ortíz, Lucía Janet Villalba Marín, Stella Mary Amarilla Rodríguez	<b>The human ecology of the future: epistemology and metamorphoses of the human species in this new century</b> Juracy Marques
<b>On system representation paradigms, applied to an ecology of nutrition</b> Karl-Heinz Simon	<b>Ethnocoecology and ecology of groupers</b> Alpina Begossi	<b>Stakeholder network dynamics towards MPA governance</b> Yorgos Stratoudakis, Helena Farrall, Lia Vasconcelos	<b>The invariability to the human ecology be a science: about the paradigmatic nature of Human Ecology</b> Luciano Sérgio Ventin Bomfim
<b>NGO's contribution to reduced animal product consumption in Germany – An assessment of congruency between aims, knowledge and action</b> Uta Schmidt	<b>Fishers knowledge indicates temporal changes and influence of protected areas on fishing resources in two tropical rivers</b> Renato Silvano, G. Hallwass, J. Silva, M. Clauzet, D. Schneider and A. Begossi	<b>The involvement of the local community in the preservation of coastal and ocean resources - the case study of "Ambassadors for Biodiversity"</b> Flávia Silva, José Carlos Ferreira, Lia Vasconcelos, Renato Monteiro, Cláudio Macedo Duarte	<b>The Seventh Sense: Sense of Ecological Belonging</b> Morteza Honari
	<b>Sustainability challenges for artisanal fisheries in the Azorean islands part of UNESCO's Biosphere Reserves: What happens when fisher's resist complying with legal protective rules and daily illegal fishing practices stand as an obstacle to the success of the regional environmental policy?</b> Ana Rita Jordão Fraga		

# ABSTRACT BOOK

## SYMPOSIA

### Symposium 1 – The Human Ecology of environmental Hazards

Organizer: Ian Douglas

#### **Responsibilities for overcoming inequities linked to urban flooding**

Ian Douglas, School of Environment, Education and Development, University of Manchester, UK

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The causes and impacts of floods, human vulnerability, possibilities of risk reduction and political and management responsibilities vary from the household and community levels up to sub-continental hydrologic systems and the global climate system. Co-ordinated action needs to be taken at all these scales to reduce urban flood risks to reduce the aggravation of floods hazards caused by individual actions that avoid local flooding by pushing water elsewhere. All too often urban development upstream leads to ever more serious flooding downstream. Well-drained affluent suburbs often contribute greatly to flooding of poor neighbourhoods further downriver. To overcome such inequities, urban flood management needs local, regional or national action at appropriate scales, with communities dealing with problems entirely with their areas, local governments acting on issues that are totally within their boundaries and national governments or international river basin organizations dealing with problems across many administrations.

*Keywords: vulnerability, inequity, responsibility, flooding, urban areas*

#### **Forest Fires in Portugal: How can we adapt to disaster?**

Celeste Oliveira Alves Coelho

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The current extent and number of forest fires are amongst the most serious environmental problems in the Mediterranean region. Forest fires affect Portugal and other southern European countries to a greater or lesser extent every year. Since the 1980's, large fires have occurred in association with extreme climatic conditions, land use change and human activities. Large fires are a threat, and cause significant annual losses in terms of human lives, environmental and economic damages (examples fires in 2003, 2005, 2011, 2017). In the light of global warming with temperature increases, drought, lower humidity, change in rainfall patterns, large fires are expected to be recurrent. A short reflection on some adaptation strategies is presented, based on the work carried out at the University of Aveiro over the last 30 years.

*Keywords: Forest fires; effects, adaptation strategies, Portugal*

#### **Climate Risks – a syndrome with an inappropriate therapy**

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The global scale climate change debate has weakened awareness of the *mechanics* of the climate system and, consequently, the readiness of people and institutions to adopt new attitudes. Adaptation and mitigation proposals have not motivated political decision-makers to try other ways of planning the spatial distribution of people, activities, industry, housing and infrastructure. Energy consumption and scientific and technological innovation led to some severe impacts on ecosystems and human beings even though there has also been an increase in social, economic and environmental inequities. However, the severity of climate change impacts on health, with a huge rise in respiratory and circulatory excess-morbidity, call for attention to the serious need of a local scale approach in this issues.

*Key words: Local response, adaptation, health impacts, climate change*

#### **Porto Metropolitan Climate Change Adaptation Plans – coping with uneven understanding of climate among the affected urban population**

Monteiro, A.; Madureira, H.; Fonseca, L.; Sousa, C. Geography Department - Porto University, Porto, Portugal,

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The lack of individual and institutional engagement in developing a climatic risks adaptation plan for the Oporto Metropolitan Area (OMA) in 2018, even though the subject has been constantly featured in the news, public debates, and both scientific and popular articles, was the biggest constraint encountered by the team that working on the plan. The results of an six-month long online survey reaching out to citizens and institutional representatives and of interviews

conducted with environmental officers from the 17 towns in the OMA showed a good deal of concern about heat waves, cold spells, droughts, heavy rainfall or strong winds, but much misunderstanding as to "what to do". So, lack of potential adaptation strategies is the major constraint hampering improvement of resilience to climate risks in urban areas.

*Key words: climate risks, adaptation, public awareness, institutional response*

### **What is post-fire management? Views of Portuguese stakeholders**

Cristina Ribeiro <sup>(1)</sup>, Celeste Coelho <sup>(1)</sup>, Sandra Valente <sup>(1)</sup>, Luuk Fleskens <sup>(2)</sup>, Jacob Keizer <sup>(1)</sup>

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This communication presents the views of stakeholders related to the forest sector about post-fire management concept and operationalization in Portugal.

The importance of post fire management strategies for minimizing the impacts of fire can change the frequency and / or severity of future fires, and promote the recovery of the conditions of the pre-fire landscape situation. Post-fire management can be seen as a short, medium and long term process directed to different scales (e.g local scale, scale of landscape), and should include different, but complementary interventions.

Based on 28 semi-structured interviews, the views of local, regional and national stakeholders, involved in forest management and post fire management, about the concept of post-fire management and its operationalization were analyzed. Despite the high frequency and severity of forest fires and the importance of post-fire management in the Mediterranean region, stakeholders in Portugal demonstrated to have limited knowledge about the aims and actions needed for a successful post-fire management process.

*Keywords: Post-fire management; forest, stakeholder's perception, Portugal*

## Symposium 2 – Garden Therapy

Organizers: Jana Dvořáčková and Dana Křivánková

### **The examples of horticulture therapy and other horticulture activities with therapeutic effect in Slovenia**

Petra Juvan, Špela Novak, Zorica Zrim, Jana Cunder, Melita Miš Strgar Arboretum Volčji Potok

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Arboretum Volčji Potok is an arboretum and a botanic garden in Slovenia, with the status of a cultural heritage site, which has been recognized as having valuable natural features of national importance. Considering the fact that the natural landscapes of the Arboretum are annually visited by more than 170,000 visitors, the Arboretum was happy to join the ongoing With nature towards mutual understanding (2016-2019; <http://www.lipka.cz/projekty?idc=3793>) Erasmus+ project, which reflects on topics of the garden/horticulture therapy and how it is practised in the countries, involved in the project. The aim of this presentation is to show the good practices of garden therapy in Slovenia (practised by Slovene organizations: CUDV Draga, Cirius Kamnik and Korenika Eco Social Farm) and examples of various sensory stimulating activities in the Volčji Potok Arboretum.

A question regarding the effect of the different activities in nature will be addressed, as provided by the mentioned Slovenian organizations.

*Key words: therapeutic nature, horticulture therapy, Arboretum Volčji Potok*

### **Garden therapy at Lipka in Brno, the Czech Republic**

Dana Křivánková

Lipka is a school facility for environmental education located in the Czech Republic. We have more than 25 years of experience with education of different target groups, from school children to seniors. Some of our clients are also disadvantaged (physically, mentally, or socially). During our history we used natural landscape as a classroom for our programmes. Since we work in the second largest city in the Czech Republic, we were thinking about how to bring nature closer to city people. So we started to develop the concepts of natural gardens and horticultural therapy. Currently, we have five natural gardens located nearby the city centre. We use them during our educational programmes and leisure time activities (such as kids clubs or senior clubs). These gardens proved to be the best classroom for work with disadvantaged people, as well. Through learning new skills, getting new social contacts and finding new stimuli, the quality of their life improves noticeably. We would like to present all the activities within our horticultural therapy.

### **Let's go to the forest!**

Štefan Szabó, Silvia Szabóová, Daniel Szabó

Physical activity of children in nature is an absolutely vital component of their healthy development and education.

In 2016, SOSNA started its new programme, focused on connecting children with authentic natural world. This programme, called "Let's go to the forest!", aims to balance the dominance of over-computerisation, where children stay without a real contact with the wilderness. The programme's target group are children from 7 to 13 years old. It is based on reinvention of traditional games that children have been playing in forests and on meadows, in rivers, streams and on their banks. To play these games, children rely only on natural materials and objects, like grass blades, tree branches and leaves, stones, trunks, rocks and water. An interesting fact is, that these games have been identical around the Europe – and that daisy chains, snow plays, explorations inside hollow trees, grass trumpets or small „dams“ on streams have been once popular not only in Central Europe, but even in UK or Scandinavia.

A booklet for children, with selected games and their descriptions is available for download on our web page, which contains also a notebook for children to take notes, stories and illustrations of their adventures:  
<http://www.sosna.sk/content/pr-ru-ka-ide-sa-do-les>



### **With nature to mutual understanding – Erasmus+ and Garden Therapy at Foundation Seller, Switzerland**

Jana Dvořáčková

Lipka as a leader organization would like to present a project within Erasmus+ called With Nature to Mutual Understanding. In this project we focus on networking organizations that use nature (especially gardens) as a communication tool when working with socially, mentally or physically disadvantaged target groups. With partner organizations from the United Kingdom, Slovakia, Italy, Portugal, Slovenia and Switzerland we organize meetings, each time in different country, where we are learning about different approaches towards horticultural therapy and the use of nature in the education. The main focus is on working with disadvantaged groups of people. In future, we would like to establish a united European educational platform for garden/nature therapists.

### **Nature inspired Therapy – Preliminary results form a participatory research agenda setting in Hungary**

Janka Horváth, Science Shop Coordinator at ESSRG Ltd.

At ESSRG in the frame of our Science Shop project our overwhelming objective is to generate dialogue among the relevant sectors and prepare research proposals related to the field of green care services. In Western and Northern Europe green care is an emerging topic, in Hungary this concept is nearly unknown though some health and social care providers have already been offering this kind of services.

At the first stage of the process, we attempt to map those Hungarian initiatives, organisations and experts who apply alternative, green care services to people who struggle with mental health challenges. We have been conducting semi-structured interviews with knowledge holders. During this process we found unique initiatives for instance a psychopedagogue who developed connection-centred animal assisted therapy, a clinical psychologist who invented herding-therapy or a group of professional cavers who have been holding cave therapy sessions to children with special needs for almost 20 years. In parallel with this, we have been organising Science Cafés in order to introduce these initiatives to a wider audience, to identify the relevant stakeholders and to formulate research questions in a participatory way. At the second stage, we aim to prioritise the research questions with the representatives of civil society organisations, users, health care providers, research and education community and policy makers.

*Key words: green care services, nature-inspired therapeutic approaches, Science Shop*

### **“Naturalness Orientation” as a pathway to better health and happiness**

Ajan Rastogi and Tanya Kim Grassley

The continued growth of megacities and the ongoing urbanisation of second tier cities across the world is resulting in increasingly more people living in densely packed urban areas and smaller living spaces. One of the side effects of global macro-trends is an increasing lack of connection with the natural world. The contemplation of nature has already gained some recognition as a pathway to nurture mindful living. Subtle positive emotions are amplified with first-hand experiences of nature and community. These are proven to be of vital importance in increasing self-awareness, empathy and compassion. These experiences enrich an individual's outlook on life, increase their sense of care for themselves and others, and nurture a heightened awareness of their own internal and external 'naturalness'. Our proposed paper elaborates on the overall approach of The Contemplation of Nature, its potential benefits and scientific outcomes, and its ability to open up new ways to connect with nature in urban environments for “naturalness orientation.” The aim of Naturalness Orientation is for subjects to experience 3 key principles of resilience and learn a simple 3 step mindfulness meditation technique. Together these open new possibilities for personal development.

### **Symposium 3 – Another Decade of SHE: an updated History of the Society for Human Ecology**

Organizers: Richard J. Borden, Kenneth E. Hill and Robert Dyball

#### **Another Decade of SHE: An Updated History of the Society for Human Ecology**

Richard J. Borden | College of the Atlantic, Bar Harbor, Maine USA

Kenneth E. Hill | College of the Atlantic, Bar Harbor, Maine USA

Robert Dyball | Australian National University, Canberra, AUSTRALIA

Blake Cass | College of the Atlantic, Bar Harbor, Maine USA

Bronwyn Wilkes | Australian National University, Canberra, AUSTRALIA

This session presents the recent history of Society for Human Ecology activities over the past decade, from the 2007 SHE-XV (Rio de Janeiro) conference to the current SHE-XXIII (Lisbon) conference. It builds on a former historical review of the Society – “A Brief History of SHE: Reflections on the Founding and First Twenty-Five Years of the Society for Human Ecology” – published in Human Ecology Review (HER). In addition to recounting highlights of the intervening eight international conferences, we will also review: the growing scope and impact of HER; SHE’s partnerships with the Ecological Society of America (ESA) and other organizations; the Society’s growing web presence and use of social media; and on-going expansion of international networking among institutions and individuals. This part of the session will be presented from the perspective of the Society’s former president/executive director (Borden), the current executive director (Hill) and current president (Dyball). The second part of the session will be guided by two current graduate students in human ecology (Cass and Wilkes). They offer their own student-centered perspectives – along with some thoughts and hopes for the future of human ecology. An end-of-session opportunity for open dialog with attendees to explore further issues will also be included.

*Keywords: History of SHE, Current ‘State of the Society’, Prospects for the Future*

#### **Symposium 4.1 - A European College of Human Ecology – New Directions in Higher Education**

Organizers: Wolfgang Serbser

#### **Field Notes from an Accidental Teacher: On Adolescent Education, Human Ecology, and the Future of Humanity**

Harry Weekes, Head of School, The Sage School, Hailey, ID, USA | [harry@thesageschool.org](mailto:harry@thesageschool.org)

As we fully recognize and embrace the Anthropocene, we understand that humans are coming to the end of the age of “We Went Too Far.” The decades ahead will continue to define the trajectory of the human endeavor. How we teach our children will determine this future as much as anything. Adolescence is a critical and essential window for redefining our relationship with the natural world, for building a hopeful and constructive identity around the social, natural, and built challenges humanity faces, and for creating long-term, systemic change.

The Mission of The Sage School: “We honor adolescence as a critical developmental window for learning essential academic, cognitive, social, and emotional skills.

The Sage School creates a thriving environment for students through a challenging, authentic curriculum centered on human ecology and engaging experiences designed specifically to promote self-awareness, community responsibility, and a sense of place.”

Our Vision: “To help create sustainable and thriving human and ecological communities.”

*Key words: The Sage School, adolescent education, the future of humanity*

#### **Teaching the human ecology of the urban environment**

Ian Douglas | School of Environment, Education and Development, University of Manchester, UK, retired  
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People: environment interactions are most intense in urban areas. Here the most extreme environmental modifications are found, but also there is a huge diversity of habitats for organisms, especially inside buildings and on their exteriors. Much urban infrastructure modifies natural flows of energy water and materials. Such changes have left both beneficial and harmful consequences for present and future generations. Rectification of one set of problems can lead to new hazards and risks, particularly because different communities and groups of people interpret and value sectors of the urban environment in different ways. Teaching about urban environmental problems has to take an integrated approach, through field classes, to create awareness and sensitivity to both the perturbation of natural systems and the diverse social implications of urban change.

*Key words: Urban areas, environmental modifications, habitats, values, integrated approach to teaching*

#### **Expanding the Bounds of Human Ecology: A Case Study**

Jay Friedlander, College of the Atlantic, Bar Harbor, ME, [jfriedlander@coa.edu](mailto:jfriedlander@coa.edu)

In 2008, College of the Atlantic introduced one the first undergraduate sustainable business programs in the United States. Adding this new area into the mix of Human Ecology was not without its challenges. Despite business being one of the most ubiquitous and influential activities on the planet, some faculty opposed its inclusion within Human Ecology. Worries included a perceived departure from theoretical study toward “professionalization” and a historical animosity towards

business. Nine years into the introduction of sustainable business, how has this impacted College of the Atlantic and human ecology? Did the initial concerns come to pass? What are the implications from this experience for the future expansion and relevance of human ecology.

*Key words: College of the Atlantic, sustainable business, implications for human ecology*

#### **Symposium 4.2 - A European College of Human Ecology – New Directions in Higher Education**

Organizers: Wolfgang Serbser

#### **Experiments in Interdisciplinary Pedagogy: Building the Foundation for Human Ecology Education**

Richard Borden, Rachel Carson Chair in Human Ecology, College of the Atlantic (COA), Bar Harbor, ME  
[rborden@coa.edu](mailto:rborden@coa.edu)

This presentation outlines the philosophical and pedagogical model of College of the Atlantic's student-directed curriculum for the Bachelor of Arts in Human Ecology. The college's four-year program is a combination of common degree requirements (e.g. a workplace internship, a third-year human ecology essay, a capstone senior project, etc.) around which each student designs their own interdisciplinary curriculum. While all students receive the same degree – the B. A. in Human Ecology – no two students follow the same educational path. The special focus of this session is on the design and execution of the college's first-term, first-year class: '*the human ecology core course*'. It is a team-taught course offered to the entire incoming class, usually by 7 - 8 faculty members from different background areas (e.g. sciences, human studies, arts and design). The core course 'experiment' has been repeated every fall term for more than 25 years, in multiple formats. Examples of various approaches from over the years will be described, compared and evaluated.

*Keywords: College of the Atlantic, Human Ecology Education, Interdisciplinary Team-Teaching, Curriculum and Instruction*

#### **Agriculture and our Everyday Meal Culture**

Parto Teherani-Krönner, Research area "Gender and Globalisation", Institute of Agricultural and Horticultural Sciences, Humboldt University, Berlin, retired, but still active as scientific consultant for „Hortinlea“, an interdisciplinary research project addressing food security in East Africa

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As we already have some practical experiences with our two summer universities in Emmendingen during these last years on the topics of: „The Future of Food Sustainability“ and „The Future of Sustainable Food Business“, I will first report and evaluate what we gained from these two cases. Then I will introduce some ideas about the production of our daily meals as an example of a holistic approach in human ecology. It will become relevant to the conceptual framework and the structure of a European College with ideas of liberal arts. It will include challenges in agricultural development, debates on food security on a global level as well as our meal culture on an everyday basis. The purity of water and the combination of health issues and environmental responsibility will contribute to the concepts in sustainable transition.

*Key words: European College of Human Ecology, holistic approach, agricultural development, food security, meal culture*

#### **The Good Road towards a Sustainable Mobility-Culture – Effective Transition path without shortcuts?**

Markus Hofmann, CEO, European College of Human Ecology (COHE), Lörrach office

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The Rhine valley has been a cultural and economic lifeline in central Europe for more than 2.000 years. The European College of Human Ecology, located in the Upper Rhine valley between France, Switzerland and Germany, is faced with multiple challenges to the basic functions of mobility caused through increasing agglomeration, emission goals to decrease effects of climate change, and acceleration of digitalisation. COHE is presently participating in a European research projects, focused on fostering sustainable mobility culture in the upper rhine valley from 2018 - 2021, a EU/Interreg funded research program by the universities of Karlsruhe (KIT), Freiburg, Landau, Strasbourg, Mulhouse and Bale to create *real-world lab* situations with local administrative bodies and communities to develop, calibrate and implement a *sustainable mobility management system (SMMS)*.

From the outset it was evident, that change in mobility patterns towards more sustainability will not be reached by clean fuels or innovative technologies alone but does require a reorientation of mobility culture regarding spaces and settlements, global and modern commons as well as labour, health and societal challenges. Following a comprehensive analysis of surrounding conditions, goals and policies in this trinational region and local mobility requirements the SMMS identifies possible axes of action and evaluates impacts of potential measures to decrease transport-volumes and resulting emissions. To better understand infracultural decision making and behavioural choices the project will conduct transdisciplinary workshops, use traffic-simulation and apply incentives to stimulate transition.

The session will offer an insight into project design and methodology, the partners and COHE contribution to the expected outcomes.

*Key words: European College of Human Ecology, sustainable mobility culture, transdisciplinary workshops, stimulation of transition*

### **The European College of Human Ecology Emmendingen - A Prospect of a Human Ecology Program for Agents of Transition**

Wolfgang Serbser: CEO, European College of Human Ecology (COHE), Berlin office  
[serbser@coh-europe.de](mailto:serbser@coh-europe.de)

Seven years ago the initiative to found a college of human ecology started with a public workshop in the city hall of Emmendingen. The results encouraged us to focus on this little town in the south of Baden in Germany in the upper Rhine valley near France and Switzerland. From 2015 onwards, we successfully offered a summer program to test and evaluate our concept for the education of agents of transition inspired and modeled by program of the College of the Atlantic.

It is now time to move on, to build the European College of Human Ecology within the next two years and to open the first program in the fall of 2019. The outlook presented is an invitation to all European and overseas human ecologists to step in, to teach, to do research, to learn and study at the European college in Emmendingen.

*Key words: European College of Human Ecology, agents of transition, real world lab, summer program*

### **Symposium 5 - Generating knowledge on networks in environmental governance**

Organizers: Marion Glaser and Barbara Schröter

#### **Generating knowledge on networks in environmental governance**

PD Dr. Marion Glaser, Dr. Barbara Schröter

Understanding the interactions of actors and organisations with each other and with the natural environment is important for the successful governance of human-nature relations. This is especially so where objectives include integrating actors from different sectors and system levels, creating instruments for sustainable environmental management or policy implementation. Despite some advances, the scarcity of methods for the analysis of social ecological systems that was diagnosed at a SHE conference a decade ago (Glaeser et al., 2009) persists today. We therefore invite contributors to explore different methodological approaches to analyzing social and socialecological networks in ways that inform the governance and management of social-ecological systems. In social research, Social Network Analysis (SNA) captures governance and management interactions as a point-in-time status of actors' relations. This enables the empirical investigation of theoretical concepts such as multilevel governance, and of the role intermediaries/brokers/institutional entrepreneurs play in environmental governance and social learning. Classical SNA translates responses to questionnaire into standardized network data to generate quantitative measures that assess the relations of one actor (ego network) or of a set of actors with all others in a conceptualized closed universe. Other innovative methodological approaches and tools that might be combined with this are agent-based modelling of social or social-ecological networks, participatory modelling, Net-Mapping and the modelling of social-ecological networks based on the building-block approach. This symposium invites short presentations on innovative methods for collecting, visualizing and modelling data on social and social-ecological networks in environmental governance and management. Presentation may relate to:

- an analysis of quantitative, qualitative and mixed methods and their synergies
- approaches that foster stakeholder participation
- empirical case studies on the application of SNA tools
- comparative studies of different SNA tools or concepts



- experiences of translate network knowledge into action/practice on the science-policy-society interface It is our objective to assess different methods' strengths, weaknesses and complementarities for environmental governance in sustainability science and action.

The symposium will be organized in world café style. After a plenary "speed talk" backed up by a poster/printed handout, each of the 4-8 presenters will depict the strengths and weaknesses of their approach, and the main thesis of their research, at one of 3-6 presenter-specific tables where rotating subgroups of symposium participants will discuss the central findings and/or hypotheses proposed by presenters. The symposium will reconvene in plenary to explore trajectories for the further development of methods for analysing the governance and management of human-ecological relations. We will prepare a Special Issue of the Journal Human Ecology Review in which contributors are invited to submit papers, and in which the symposium plenary outcomes with also feature as a joint article.

Contributors to the session are (abstracts attached): 1. Maria Mancilla Garcia, Stockholm University 2. Theresa Schwenke, ZMT Bremen 3. Eike Holzkämper, ZMT Bremen 4. Mira Freiermuth, Chemnitz University of Technology 5. Marco Scotti, GEOMAR Helmholtz Centre for Ocean Research Kiel 2 References Glaeser, B., Bruckmeier, K., Glaser, M. & Krause, G. (2009) 'Social-ecological systems analysis in coastal and marine areas: A path toward integration of interdisciplinary knowledge', In: Lopes P. and Begossi, A. (eds), *Current Trends in Human Ecology*, (183-203), Cambridge, UK: Cambridge Scholars Publishing

### **Networks and influence across forums: actors' strategies in water governance in Brazil**

María Mancilla-García and Örjan Bodin, Stockholm Resilience Centre, University of Stockholm.

Current environmental governance is characterized by its fragmented character, a multiplicity of forums come to constitute a complex web of competencies and management interventions. The case of integrated water management is paradigmatic in this sense since the implementation of basin-based governance arenas inevitably crosses pre-existing administrative divisions. The resuscitated Ecology of Games framework has called further attention to the intertwined character of different venues. Departing from the Ecology of Games framework, this paper seeks to explore how actors struggle to advance their interests through strategically investing their engagement (or lack thereof) across different scales of decision-making venues for water management and use. In particular, the paper empirically focuses on the case of the water basin council of the Médio Paraíba do Sul river in the state of Rio de Janeiro (Brazil) and the relations of its members with the federal council of the Paraíba do Sul. The paper develops a social network analysis to explore actors'

collaborations with other actors in their own council and with actors in the other council. The model is used to empirically investigate actors' engagements in networks across forums and if and how those engagements relate to their position in the forum-based collaborative (social) networks. Further, by drawing on extensive semi-structured interviews with these actors, the paper explores actors' intentions and rationales behind their strategic choices in terms of together with whom to engage. Preliminary findings indicate that actors skillful in maneuvering this Ecology of Games have indeed been able to exert influence in decision-making processes that seemingly go above and beyond what could be expected given their more 'traditional' capacities in terms of available funding and formal authority.

### **Empowering stakeholders through participatory network analysis: a Net-Map case study from Brazil**

Eike Holzkämper, Leibniz Centre for Tropical Marine Research (ZMT), Bremen, Germany

Social network analysis (SNA) is a tool to examine the structure of the web of connections in which environmental governance actors are embedded. SNA can help to view a conservation or resource management issue from a new angle. One of the main challenges for environmental governance today is the linking of various stakeholders across levels and scales. By applying a social network perspective on the governance system, managers and other decision-makers are able to identify and find solutions for pressing issues such as stakeholder integration and the coordination of stakeholder activities.

Net-Map, a pen-and-paper based social network mapping tool, was developed by Schiffer and Hauck (2010) as a group-dynamic participative research method. Stakeholders create – facilitated by the researcher – maps of the social network they perceive themselves embedded in. Net-Map brings stakeholders together to reach a consensus of the state of the network, thus enabling them to apply a network perspective to governance issues in the first place. The method directly benefits the participating network actors by enabling discussion on network structures and thus improves the

understanding of the respective network. The Net-Map method can be taken as a form of capacitation on network and networking with the result that stakeholders are able to envision the opportunities of strategic networking for themselves. With the goal to stimulate network alteration from the inside rather than to impose regulations, recommendations for better management adapted to the needs of the network can be developed in cooperation between stakeholders, scholars and decision-makers.

Net-Map "empowers" the participants; nevertheless, there are some methodological issues. I will present a case study from Brazil where the Net-Map method was applied to map the governance network of an MPA. I will point out the lessons learned in terms of capacity-building on networks and discussing desirable network structures with participants, and also concerning the limitations and biases of the Net-Map method.

References: Schiffer E, Hauck J (2010) Net-Map: collecting social network data and facilitating network learning through participatory influence network mapping. *Field Methods* 22(3):231–249

### **Social and social - ecological networks in coastal marine social ecological systems conservation management and governance – Where are we and what are the potentials?**

Theresa Schwenke Leibniz , Centre for Tropical Marine Research (ZMT), Bremen, Germany

During the Anthropocene, the growing impact of human activities leads to challenges like climate change, ecosystem and resource degradation and results in increased vulnerability of the coastal poor. These challenges, which will intensify over the upcoming decades, have to be accounted for in management and governance of natural resources. The salient question is how human activities can be steered towards more socially, ecologically and economically sustainable practices. One method increasingly gaining attention is Social Network Analysis (SNA), a tool developed to investigate the structure of social systems rather than the attributes of their components. SNA has been "booming" for nearly three decades by now (Freeman 2004) and was adopted in many fields. During the process of method development an area of network science emerged that includes ecological entities. The analysis of social and social ecological networks (SEN) contributed to improve knowledge on human –nature interactions with some intriguing discoveries during the past decades. In this article, we investigate how SNA and SENA became a tool for analyzing the management and governance of coastal and marine social ecological systems (CM-SES) conservation and how they are applied today. Which methods are used and what kind of methodological issues (data collection strategies, accounting for biases) have to be considered in addressing human - nature systems? We document the growth of SNA and SENA in CM - SES by counting the number of published articles between the earliest record (1992) and today (2018). By employing a citation network analysis, we examine which studies are central within this field of research, which are the "hubs" and "authorities" (review papers and highly cited papers). Additionally, we identify the milestones that have been achieved so far regarding the question how SNA can inform environmental governance.

In conclusion, we provide a research agenda addressing the following questions: 1) Which themes in environmental governance can SNA and SENA help to explore? 2) How could SNA and SENA be further developed and adapted to the particularities of CM-SES management and governance issues?

### **The transfer of knowledge and the resulting power in Community supported Agriculture (CSA) "**

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For knowledge itself is power", Francis Bacon said at the end of the 16<sup>th</sup> century and meant the connection between knowledge and power in science. While investigating about the transfer of knowledge on a farm in Germany, which follows the idea of community supported agriculture (CSA), the importance of knowledge emerged as an issue for governing, managing and organizing the CSA community. With the help of NetMap (Schiffer/Hauck 2010) as a tool of participatory social network analysis we can explore hierarchy and non-flow of knowledge in a community which explicitly aims to be non-hierarchical in terms of power as well as knowledge. Based on an evaluation of 16 visualized social networks and qualitative interviews with all persons living and working on that farm in summer 2017 and four additional persons who had lived and worked there some time before, I would like to show the visual differences of the maps and the structural characteristics of the social network(s) according to each CSA-member's position and power on the farm.

Keywords: NetMap, Community Supported Agriculture, Transfer of Knowledge, Hierarchy

### **LevinsAnalysis: a package for loop analysis in R**

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Loop analysis is a qualitative technique for modelling complex systems as signed, directed graphs. Interactions are depicted as either positive or negative effects but their strength is not specified. Loop analysis allows predicting how the system responds to press perturbations that target specific variables by identifying the net effect that spread through the architecture of signed interactions. It was conceived and first applied by Richard Levins and represents a useful tool for the integrative investigation of ecological and socio-economic processes. This is because it permits including variables and relationships that are difficult or even impossible to measure, and does not impose restrictions on the use of specific currencies. If the direction of the effect of one variable on another is known, precise measurements and even the mathematical form of the effect are not required. However, loop analysis applications that transgress the disciplinary boundaries are rare. This could be due to the lack of tools that, besides performing loop analysis, also investigate which pathways contribute the most to predicted changes in the system. Here we present LevinsAnalysis, an R package for loop analysis that includes novel functionalities compared to existing software programs. First, it executes simulations by making use of various distributions to randomly assign interaction strengths. Second, it gives the users the chance of constraining the strength of specific interactions to perform simulations. Third, it validates the results with null models (i.e. random counterparts of the system under investigation). Fourth, it returns the total number of pathways between any pair of variables and their strength. Loop analysis consists of a powerful tool for modelling the three main pillars of sustainability, but some limits exist: (1) difficulties in defining the timing of changing conditions and their impact; (2) issues in the identification of the variables exposed to press perturbations (i.e. impacts of overfishing vs. Climate Change); (3) problematic for assessing nonlinear relationships. However, loop analysis remains an ideal tool for studying ecological systems and their relationships with social and economic domains. It requires simple information (i.e. presence/absence of interactions and their sign) and is suitable in the context of poor data availability, being thus useful to move the first steps for the integration of the three dimensions of sustainability.

### **Symposium 6 - How and how not to achieve effective interdisciplinarity in environmental-change studies**

Organizers: Bradley Walters and Andrew Vayda

#### **Doing interdisciplinary environmental change research solo**

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Interdisciplinary research on environmental change is generally assumed to require collaboration among different experts, each one bringing specialized knowledge and skills to bear on the research questions at hand. As such, the benefits and challenges of interdisciplinary research *in principle* are confounded by the dynamics of researcher collaboration *in practice*. However, broadly-trained researchers sometimes do interdisciplinary environmental research with little or no need of fellow collaborators. For them, collaborative concerns may be negligible, but others arise. What are some of the upsides and downsides of going it alone when doing interdisciplinary environmental research? Are there valuable insights about interdisciplinary thought and practice that emerge from doing so? In this presentation, I will reflect on experiences doing (mostly) solo interdisciplinary environmental change research in the Philippines and Caribbean. This approach has practical benefits in terms of focus and information coordination, but obvious drawbacks given that even a broadly-educated investigator possesses a limited range of research skills. In fact, I will argue that the biggest upside of doing interdisciplinary research solo is the epistemological humility it instills. Multi-disciplinary collaborations are often plagued with problems of communication, theoretical disagreement, and methodological incompatibility because the habits and conceits of a rigorous disciplinary education are difficult to undo. These are problems that many assume are resolvable through development of novel interdisciplinary theory and concepts, such as 'resilience'. But ambiguous concepts like resilience will not resolve the methodological challenges of doing interdisciplinary research. For that, researchers need to use theory 'modestly' while deploying clear concepts and precise analyses of the kind readily grasped by natural and social scientists alike.

**Key words:** *interdisciplinary, resilience, research methodology, tropical forests, Caribbean, Philippines.*



## **Wildfire Research in Indonesia and Dubious Assumptions About Interdisciplinarity**

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Achieving effective interdisciplinarity in environmental-change studies can mean effectively combining methods, concepts, and knowledge from different disciplines to answer questions either about what the environmental changes are ("what-questions") or about why they occur ("why-questions"). Our focus here is on the latter. Four dubious assumptions about interdisciplinarity that were considered in a 2013 publication in the context of our research on why extensive and destructive fires occur in the tropical moist forests of Indonesia are re-visited here and then reconsidered in the challengingly different context of our recent research on causes of prodigiously carbon-emitting subterranean peat fires in Indonesia. The assumptions concern such matters as the sequencing of interdisciplinary research (e.g., for getting the what-question answers that are needed for answering why-questions), the levels of detail at which effective interdisciplinarity can be achieved, the extent to which such interdisciplinarity is constrained by conceptual or epistemological differences, and the purported value of remaining true to one's discipline in interdisciplinary projects. An additional assumption now also regarded as dubious and therefore being reconsidered here is one that we ourselves put forward in 2013 concerning the kind of agreement on research goals that is needed for effective interdisciplinarity.

*Keywords: forest fires, peat fires, Indonesia, interdisciplinarity, dubious assumptions*

## **Productive tensions: The potentials and challenges of the telecoupling framework in interdisciplinary human-environment systems research**

Dr. Cecilie Friis & Prof. Jonas Østergaard Nielsen, IRI THESys & the Geography Department, Humboldt-Universität zu Berlin, Unter den Linden 6, 10099 Berlin, Germany.

Within the field of land system science, the *telecoupling framework* is gaining momentum for capturing the social, economic and environmental cross-scalar processes, flows and feedbacks that characterise contemporary land-use change. As an analytical framework, telecoupling builds on the coupled human-environment systems approach with its legacy in ecology and integrative human-environment research, while explicitly seeking to incorporate the more networked and relational understandings of human-environment interactions found in the social sciences. This entails, for example, an attempt to bring together different understandings of space, so that distance is measured spatially and geographically, as well as in social, political and institutional terms. As such, distance is neither reducible to a social nor a natural science definition. The fundamental conceptual and analytical tensions that arise from such attempts challenge the mode and logic through which interdisciplinary collaboration can take place. In particular, a mere integration or synthesis of different (disciplinary) concepts and methods becomes difficult and perhaps even undesirable. Instead, interdisciplinarity should take the form of a process that depends on scientific differences, where the goal is to find ways of exploring productive tensions rather than of levelling them. Drawing on an empirical case study of the land-use change from rice fields to banana plantations in northern Laos, I discuss the potential and challenges of the telecoupling research for fostering such productive interdisciplinary exchanges.

*Key words: telecoupling, interdisciplinarity, human-environment research, land-use change analysis.*

## **Algorithms, anecdotes and conflicts over animals**

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Conservation is as much a social as an ecological endeavor which can be regarded as seeking to keep certain environmental changes from happening. The success of this endeavour therefore depends on being able to link social and ecological understanding. However, we argue that much of the research done by conservation scientists presented as interdisciplinary and 'social-ecological' is not in fact 'social-ecological' in a way that a social scientists or humanities scholar would accept. It would be easy to critique and dismiss this research, but it is preferable to constructively engage with this failure. These problems are especially evident in the field of "human-wildlife conflict" (HWC) research. Here, engagement with social sciences remains at the level of tools rather than theories. There is resistance to epistemological discussion and self-reflexivity about the limits of quantitative, empirical approaches. This paper will explore four main reasons for this reluctance, revolving around distrust of apparent theoretical incoherence in the social sciences, cultural relativism, anecdotes and qualitative methods, and avoidance of the complications which ensue if conservationists are included as



role-players in conflicts. The author will draw on his research on conflicts over crocodiles to illustrate some limitations of current approaches, and suggest some possible ways forward.

*Key words: conservation, interdisciplinary, social-ecological, human-wildlife conflict*

### **Beyond the trap of disciplinary research and political framings: Integrating approaches, methods and scales in human-environment research**

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Disciplines and theories can narrow the view and obscure understanding of social-ecological dynamics. This is especially true when research is linked with political interests and framings. It can result in misleading conclusions, inappropriate recommendations and ineffective management interventions. Complex social-ecological dynamics that involve a large range of drivers and processes and unfold across various scales are especially prone to this. Inter- or non-disciplinary empirical research that analyses both material environmental and social dynamics across various scales with adequate depth is crucial in such contexts. I illustrate this with my research on land use change and watershed governance in Indonesia. This research combined and developed a diverse range of approaches and methods rooted in different disciplines. These ranged from remote sensing, historical cartographic analyses, and the mapping of land use and other landscape features, to social-scientific research, with ethnographic case studies, interviews across all political levels, and focus groups. I also integrated fractured knowledge from different disciplines. The research challenges long-standing assumptions about social-ecological dynamics and questions ineffective modes of environmental management. It generated new insights that would have remained hidden if the inquiry adhered to one particular research field or theory. I generated many of the most insightful findings only through the combination and at the intersection of the different themes, approaches and methods.

*Key words: Interdisciplinarity, mixed methods, land use change, environmental history, political ecology*

### **Symposium 7 – Project of Atherosclerosis among Indigenous populations – PAI: Urbanization and Ecology of Health of Traditional Peoples**

Organizer: Dra. Dinani Armstrong

**Cardiovascular Health of Indigenous Peoples** | Anderson da Costa Armstrong

**Relation between Urbanization and Health of Traditional Peoples** | Pedro Patriota

**Indigenous Peoples in urbanized areas and health problems** | Dayvison Ruan

**Participation of Indigenous peoples in reseach on Human Health** | Thuanny Campos

**Results of a Research on Cardiovascular Health in Indigenous** | Nyanne Salvioni

### **Symposium 8 - Environmental Health in Human Ecological Perspective**

Organizers: Kazuhiko Moji and Chiho Watanabe

#### **Introduction: Planetary boundaries and health**

Dr. Chiho Watanabe

#### **Co-Creating the Sanitation Value Chain: Designing Sanitation Systems as Eco-Community-Value Systems**

Dr. Taro Yamauchi, Hokkaido University

#### **Adaptation to Global warming observed as mortality response**

Prof. Masahiro Hashizume, Nagasaki University

#### **Environmental contamination by heavy metals and its impact on maternal and child health in Myanmar**

Dr. Kyi Mar Wai, University of Tokyo

#### **Trends of Environmental Health and Human Ecology in Japan**

Dr. Kazuhiko Moji.

Environmental health has been traditionally focusing on agent-outcome consequences, mainly motivated by environmental pollutions observed many places in the world in the past century. Today, many effects of environment on health are not so simply identified as they used to be, and we need to identify the effects not merely in dose-response term but in more holistic context. With this view in the mind, contemporary environmental health issues ranging from local environmental pollution to adaptation to climate change will be discussed.

#### **Symposium 9 - Wet Ecologies: Politics, Science, and Water in the Anthropocene**

Organizers: Irus Braverman and Jordan Besek

#### **Flying Fish and Mechanismic Explanation: Bringing Social Science and Biology Together on Shared Ground**

Jordan Fox Besek

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From increases in invasive species events to global warming, scientists expect that over the course of this century humans' relationships with the planet's aquatic systems will be progressively defined by crises. In what ways can social scientists better embrace interdisciplinarity to understand and incorporate progressively inconsistent aquatic processes as they enable and constrain novel social developments? In this presentation, I synthesize work in historical sociology, environmental sociology, and biology to develop an approach focused on the role of and historical relationships between aquatic and social mechanisms. A specifically mechanismic approach can, I demonstrate, offer a useful strategy for achieving an interdisciplinarity in which separate fields of knowledge production are respected while their fruits are shared, all in the service of best engaging contemporary problems. I build this approach through critically analyzing recent scholarship and debates about mechanismic explanation in sociology and with careful engagement with relevant work in the philosophy of biology. I then illustrate the potential of this approach through an extended case study of the interplay between social and biophysical mechanisms related to the introduction of Asian carp, a potentially destructive set of invasive species that threatens to significantly disrupt social life in the American Midwest.

Keywords: Mechanisms; Water; Social Science: Biology; Environmental History

#### **Living on Coral Time: Debating Conservation in the Anthropocene**

Irus Braverman | Professor of Law, University at Buffalo, SUNY

Between 2015 and 2017, the world's largest coral reef system, the Great Barrier Reef, experienced the longest and most extreme coral bleaching on record. During this event, huge tracts of coral colonies lost their symbiotic algae and have thereby embarked on a quick and whitened path toward death. The unfolding coral disaster has become a symbol of the Anthropocene. Corals are a bellwether of this new era, their alarming status both reflecting and representing the deteriorating health of the oceans. The corals' sensitivity to heat and their acutely visible bleaching responses in particular make them into model species for what climate change has in store for the rest of us. As several scientists put it, corals are canaries in a coal mine. If reef building corals disappear – if the canary dies, so to speak – other marine life will soon follow, and human life will be severely impacted. The way we manage the current coral crisis may teach us about humanity's capacity to face the much larger crises to come. How, then, does one face a disaster of such unimaginable scale to an entire ecosystem that has existed for 250 million years? How do coral scientists – the students of these unique algae-animal-bacteria holobionts, who are finding themselves facing the task of saving these organisms from massive death in a matter of decades – how are they negotiating these challenges?

Keywords: coral reefs, Anthropocene, scientists, holobionts, climate change

#### **Seeing through Water: Gender, Environmental Change, and Development in Lesotho, Southern Africa**

Yvonne A. Braun

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Large dams are, perhaps, the epic example of a utilitarian and market approach to the environment, generally valuing rivers and river basins through the exclusive lens of technical and market based development. While dams are being de-commissioned in the United States, dam building continues to be promoted in developing countries, with estimates of 40-80 million people being affected by large dams worldwide. In Lesotho, the commodification of water and the building of large dams in the Lesotho Highlands Water Project (LHWP) were the center of an extractive, export-oriented strategy to

generate national revenues by selling water transnationally to the Republic of South Africa and are, as critics feared, affecting tens of thousands of Basotho for over 30 years.

I take a narrative approach to document and analyze the gendered and classed social and socio-ecological consequences of globalized river basin development using water as the lens to understand the depth and breadth of the social and environmental changes, and to reveal how it brings remote, rural affected communities under the regulation of new institutional and national policy domains. Drawing on over 300 interviews conducted during 16 months of fieldwork in the remote highlands of Lesotho, I focus my analysis on people's narratives about water both because of its centrality to the extractive logic of this \$8 billion dollar transnational project and its centrality to the lives of those who live most proximate to the dams and reservoirs - indeed, water is inarguably central to all of our lives. Considering the importance of water to the future stability of the region, the sale of water as the keystone of Lesotho's national development plans, and water as a life-giving necessity for highlands residents proximate to the LHWP, seeing through water reveals multi-layered, complex, embodied experiences of policy and its consequences.

Keywords: water, gender, environment, development, Africa

### **Holistic Systems Approach to Agriculture and Water in an Ecovillage**

Christina Ergas | The University of Tennessee

In the United States, agricultural irrigation accounts for 80 percent of the nation's total freshwater consumption and up to 90 percent in Western states (USDA 2017). Globally, the number is about 70 percent (World Bank 2017). Only about half of irrigation water is reusable, as much of it is lost in evaporation, evapotranspiration, or in transit (USGS 2017). In addition, industrial agricultural practices pollute much of this water with pesticides, salts, and excess nutrients (OECD 2018). Developing effective means of water management in agriculture is imperative as water scarcity and competition for water is growing globally due to pollution, climate change, and growing demand. The United Nations reports that over 2 billion people lack access to safe drinking water and that water demand is expected to increase by one-third mid-century (UN-Water 2018). Under business as usual conditions, 40 of 50 US states expect water shortages into the coming decade (EPA 2018). There are competing theories on how we will emerge from our concurrent soil, water, and climate challenges with growing populations. One set of theories, generally from industries, suggests we further develop genetically modified organism (GMO) crops that require less soil nutrients and water while increasing yields per acre and further modernizing irrigation technologies (Modern Agriculture 2017; Monsanto 2018). Other theories suggest that we must revive ecologically restorative agricultural practices that work with nature and are based on ecological principles (Basche & Edelson 2017; UN-Water 2018). Some newly emerging policy and research promote what Levidow et al (2014) call a neo-productivist paradigm that seeks integration of modern technologies, such as GMOs, with more ecologically interdependent practices. Water is an important component of a holistic approach as soil moisture, droughts, and flooding all have implications for food security. Research suggests that regenerative agroecology and permaculture approaches to agriculture significantly enhance soils' ability to retain water moisture, necessitating less irrigation and losing less water in the process. Specifically, "continuous living cover" agricultural approaches, that employ perennial grasses, agroforestry, and cover crops, can improve soil water retention and prevent runoff (Basche & Edelson 2017). In my research, I generally investigate instances of non-exploitative, regenerative agriculture. I ask, what holistic designs are people currently experimenting with that can provide lessons for a more resilient and sustainable agriculture to meet the needs of growing human populations while also maintaining ecological integrity? Regenerative agriculture integrates holistic approaches that work with local ecologies, communities, and economies. To understand these relationships and to evaluate what can be scaled up from these experiments in community and environmental living, I study urban agriculture and ecovillages—intentional communities holistically designed to incorporate permaculture, or sustainable agriculture, community, and cottage industries. I conducted participant observation over the course of 6 months and interviewed 27 ecovillagers in order to observe the connections they make between community, ecology, and economy. The ecovillage that I studied incorporated permaculture techniques, which seek to reduce human energy by engaging ecosystem dynamics to manage and conserve water resources and grow food (Holmgren 2004). By building food-forests, they simultaneously enrich the soil, retain moisture, provide pollinator habitat, resist plant diseases, and grow nourishing food. Further, they employ rainwater harvesting through capture and swales in order to minimize watering needs. They do this while also nourishing community and individual emotional wellbeing. Indeed, their approach to sustainability is holistic, articulating ecological and community health as mutually reinforcing.

## **“We’re Just Sitting Ducks”: Recurrent Household Flooding in Detroit as a Public Health, Social Justice, and Climate Change issue**

Carmel Price | University of Michigan – Dearborn

On August 11, 2014, Metro Detroit experienced record-breaking rainfall—more than 6” in 4 hours—which resulted in a federal disaster declaration and 1000’s of household claims to FEMA for recovery funds. In addition to this extreme event, however, we note that recurrent household flooding is an underreported phenomenon that is particularly overlooked in non-coastal cities and may worsen with climate change. We conducted 20 qualitative in-depth interviews with residents experiencing repeated basement flooding throughout Detroit. We worked with community leaders to recruit residents that had severe household flooding during the 2014 event and in other instances since. We conducted thematic analyses in which two researchers coded each transcript. We found that snowball sampling yielded interviewees across the city in several neighborhoods not deemed high risk for flood events. Residents’ reported concerns related to chronic and infectious diseases, particularly for seniors and young children, as well as the long-term stress of repeated economic loss. Our results suggest ways for public health, emergency preparedness, urban planners and community leaders to work towards prevention (e.g., storm water management through green infrastructure, backflow devices) and adaptation to mitigate further health inequities. Climate change models project increasing frequency, duration and severity of precipitation events over the next thirty years in the Midwest U.S., as well as other global regions. Our findings are critical for cities as they manage the intersecting issues of climate change, aging infrastructure, and vacant land reuse.

## **Symposium 10 - Human Ecology and Systems Theory: Principles and Methods of Integration**

Organizers: Felix Tretter and Karl-Heinz Simon

**Outline:** Starting point for our discussions is the fact that in Human Ecology problem situations are to be approached that consist of various diverse driving forces and actors. In most cases, the situation is of high complexity, complexity not only because of the number of possible relations but also because of the manifold sources of information to be considered.

Many studies have shown that systems approaches are the adequate means to deal with such a complexity. Those approaches provide frameworks for analysis, for understanding, in some cases, for the design of problem solutions. However, there exists – beyond the general systems concept itself – a variety of partly competing, partly complementary methods and system philosophies. Some of these offerings are discussed in the session aiming at their power for knowledge integration. Discussions about that have been started in the annual meetings of the German Society for Human Ecology and are should be introduced to a broader international community.

**Introduction** | Felix Tretter (BCSSS, Vienna)

**Systems Paradigms as Useful for Human Ecology** | Karl-Heinz Simon (CESR, Kassel)

**Human Ecology in a System Dynamics Framework** | Rob Dyball (ANU)

**Tackling Complexity of Nutritional Behaviour as an Example for a Human Ecological Topic: Application of Instruments from Systems Sciences** | Eva Hummel (Max-Rubner-Institut, Karlsruhe)

**A Complex System Approach of the Human Ecology of Oasis. A Case Study in Southern Morocco Communities** | Pedro Escriche (INTERHES, Zaragossa)

## **Symposium 11 - Integrating different knowledge systems to understand socio-ecological**

Organizers: Mar Cartró Sabaté, Victoria Reyes García and David Garcia-del-Amo

### **Combining different types of participation to understand and fight oil extraction impacts: from community-based monitoring in the Amazon to worldwide digital citizen science**

Cartró-Sabaté, M.<sup>1</sup>; Mayor, P.<sup>2,3,4</sup>; Reyes-García, V.<sup>1,5</sup>; Rosell-Melé, A.<sup>1,5</sup> and Orta-Martínez, M.<sup>1,6,7,8</sup>

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Oil extraction activities in tropical rainforests overlap with the most biodiverse regions of the planet and cover ancestral territories of Indigenous Peoples, but their environmental and health impacts are largely unknown. Here we document the methods used in a study on the impacts of one of the largest oil projects in the Peruvian Amazon, where indigenous organizations work in close collaboration with scientists and worldwide volunteers to identify oil extraction impacts on the environment and its potential implications for public health. As a result of a community-based programme, Indigenous People in the Corrientes and Pastaza basins reported wild animals ingesting oil-polluted soil and water, a behaviour that might expose the whole ecosystem and the local population to toxic pollutants. In collaboration with scientists, thousands

of videos were collected to document the extent of this behaviour. Nowadays, these videos are being analysed by worldwide volunteers through a digital interactive platform, called *Amazo'n'oil*, which allows for a quick and efficient analysis of a large amount of data. We explore how combining different stakeholders' strengths in reporting and understanding oil impacts create synergies that might help understand oil extraction activities impacts and prompt the industry to take the adequate steps to mitigate them.

*Keywords: Citizen Science, Community-Based Monitoring, Participatory Action Research, Amazon, Oil Industry Impacts*

### **Climate Change, Local Rural Communities and Citizen Science in Sierra Nevada, Spain**

García-del-Amo, D.<sup>1</sup>; Reyes-García, V.<sup>1,2</sup> and Mortyn, P.G.<sup>1,3</sup>

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Climate Change is a reality accepted by the vast majority of the scientific community. Current climate model predictions have improved enormously in recent years, but they still remain imprecise to detect local impacts. During the last decades, the scientific community has been arguing for the integration of new knowledge sources to expand current knowledge regarding climate change. The perceptions of local communities regarding climate change impacts have been studied for decades, most studies showing the importance of traditional ecological knowledge (TEK) systems to help detect changes and impacts in climatic, physical, biological and socioeconomic systems. We discuss the application of a citizen science methodology to incorporate traditional ecological knowledge regarding climate change impacts from a multi-evidence based (MEB) approach. We created an on-line platform, called CONECT-e, where users can submit their observations regarding climate change impacts. While the platform favors the collection of a large number of data, we have also invested in creating a collaborative network between scientific research groups and social actors in the study area. The information collected will foster more precise local climate models to understand the future threats that local communities will face, and to which they will have to adapt.

*Keywords: Citizen science; Climate change; Local impacts, Traditional ecological knowledge.*

### **Participatory methodologies to manage conflict and consensus within communities around environmental options.**

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Social conflicts in relation to the use of resources and environmental deterioration divide social communities. Entities and social sectors show disagreement regarding interests, risk visions and support for proposals on the management of their community environmental resources. In recent years, multiple cases of these conflicts and their evolution have been studied and published by researchers in fields such as political ecology, public opinion, anthropology or the sociology of social change. Most qualitative research techniques are applied and participatory approaches are adopted. But the theoretical framework responding to the selection of informants or the analysis procedure of confronted discourses are scarcely explicit.

The objective of this research is to analyze the methodological weaknesses of research on community conflicts in the use of environmental resources and to explore solutions in this regard. The methodology used is descriptive. It is based on cases

of scientific publications on environmental conflicts, which are discussed in the light of the theoretical debate on participatory methodologies.

*Key words: community leaders, conflict resolution, environmental awareness, participatory approach, qualitative analysis.*

### **Why it should be about integrating western science into traditional knowledge systems and not the other way around?**

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Conversations about socio-ecological research with indigenous peoples were about validating traditional knowledge or using traditional knowledge to validate "western" science. Currently, researchers working on conservation and development issues try to bring Indigenous Peoples and local communities into research design and implementation. However, these efforts generally assume and impose a hierarchical framework.

These conversations should be about integrating western science into traditional knowledge systems. There are four important reasons for taking this approach—first, Article 31.1 of UNDRIP states: "Indigenous peoples have the right to maintain, control, protect and develop their . . . traditional knowledge . . . as well as the manifestations of their sciences, technologies and cultures, including . . . knowledge of the properties of fauna and flora"; second, to contest claims to cultural supremacy; third, to evince a long-term commitment to a trusting relationship; and fourth, to delineate the liminal spaces wherein traditional knowledge systems and mainstream science can be synthesized or hybridized.

But if these liminal spaces are to be seen as interstitial passageways between fixed states that present opportunities for scientific synthesis and hybridity, this presentation argues that adopting the UNDRIP framework assures that the ambiguity and uncertainty is shared by both knowledge systems.

*Key words: U.N. Declaration on the Rights of Indigenous Peoples; Traditional Knowledge Systems; Liminality.*

### **Bringing together local ecological knowledge, environmental anthropology and landscape ecology to understand the impacts of socio-ecological changes on rural communities in South-Western France**

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Rural and periurban areas of European temperate countries are affected by socio-ecological changes, including climate change, that are not always perceived by local communities. We investigate how local discourses on biodiversity provide insights on the changes people notice in their environment. We show how local ecological knowledge combined with scientific knowledge can help social scientists and ecologists to understand the local effects of socio-ecological changes. We conducted ethnographic investigations using a participatory method of bird freelisting in South-Western France. Using joint analyses led by anthropologists and ecologists, we demonstrate that local stakeholders and bird ecologists pay attention to different groups of bird species (as defined by their specific life traits such as exotic or native origin, migratory strategies or body mass) as indicators of changes. We also show that while indicator species that interest ecologists point to the effects of global climate changes, those mentioned by local communities reveal patterns of seasonal variations affected by social rather than climatic changes. Our project focuses on analyzing different types of interpretations of socio-ecological changes, providing a better understanding of socio-ecosystems' dynamics and allowing for the better implementation of concerted conservation policies.

*Key words: Birds as local indicators, interpretations of socio-ecological changes, South-Western France*

## **Symposium 12 - Modifying nutritional behavior towards sustainable nutrition: potentials and barriers from a systems perspective**

Organizers: Tobias Gaugler and Felix Tretter

### **A systemic framework for social nutrition ecology**

Felix Tretter, Bertalanffy Center for the Study of Systems Science, Vienna, Austria

The basic model of nutrition ecology of Hummel and Hoffmann is centered around the food supply chain concept with the dimensions society, economy, environment and people. This concept provides research with a conceptual orientation that enables to develop qualitative systemic models to study dynamic properties of socio-ecological system like urban regions and their food consumption and production. In this context, strategies to combine systems science and human ecology on a conceptual level are proposed.

### **Closing the gap between market prices of foods and their true costs**

Dr. Tobias Gaugler, University of Augsburg, Germany

In order to change nutritional behavior towards sustainability, the integration of different scientific disciplines is required. Contributing to this, we focus on the economic pillar of sustainability. Therefore, current food prices are the starting point of our investigation. Cost-benefit analyzes show that food production has a strong impact on climate, biodiversity and human health. These negative externalities are currently not reflected in prices. As a result, current market prices for foods are far below their true costs. When quantifying the gap between market prices and true costs, it becomes evident that, on average, foods of animal origin show far higher follow-up costs than vegetable foods. If environmental follow-up costs (e.g. resulting from nitrogen deposits, CO<sub>2</sub>eq-emissions, (in)direct energy demand, pesticide use) were added to the current market prices, particularly meat from factory farming would have to become more expensive. Only the internalization of nitrogen's follow-up cost would result in a price increase of app. 10% for this food category. Given a price elasticity of demand of app. -1, this would result in a decrease in demand by the same scale. (Resource-)Economic approaches which help to internalize agricultural follow-up costs can thus contribute to a price-driven change in nutritional behavior.

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### **Health and environment: nutrition preferences - burden for health and ecology**

Dr. Christine Tretter, Origo Health Center, Vienna, Austria

Population health is directly and strongly influenced by environmental factors like air pollution, water contamination, noise etc. In contrast, widely distributed risky health issues like overweight and obesity are primarily self-induced by individual life styles such as nutrition behavior. About 50 % of the population of most industrialized and some threshold countries have overweight. It implicates a strong risk for diabetes, coronary heart diseases, etc. Not only heavy consumption of sugar but also of meat contributes strongly to overweight. Regarding meat production also severe environmental problems have to be taken into account. From a systemic view, it might be useful to enforce change of individual nutrition behavior not only by health arguments but also by integration of arguments for environmental protection and even for animal ethics (s. paper U. Schmidt).

### **Nutritional behaviour as a complex phenomenon: Identification of starting points for modifying food consumption**

Dr. Eva Hummel, Prof. Dr. Ingrid Hoffmann Department of Nutritional Behaviour, Max Rubner-Institut, Federal Research Institute of Nutrition and Food, Germany, [eva.hummel@mri.bund.de](mailto:eva.hummel@mri.bund.de)

As nutritional behaviour is a complex phenomenon, starting points for successful modification must be deduced from a systems perspective.

A cause-effect model was developed by identifying factors directly or indirectly influencing the core factor food consumption and causal relationships between all factors on basis of current literature and expert consultation.

The relationships were specified by strength (weak, medium, strong) and type (promoting, restricting). For model development and subsequent analyses, elements of three instruments were combined: Nutrition-ecological Modelling (NutriMod, Schneider and Hoffmann 2011), further developed to NutriMod+ST (Hummel and Hoffmann 2016); Sensitivity Model (Vester 2007); Cross-Impact Balance Analysis (Weimer-Jehle 2013).

The model consists of nineteen factors, each aggregating several aspects of nutritional behaviour. Mainly four of these were identified as promising starting points to modify food consumption: family as agent of socialization, socio-economic status, social identity, and psychological resources. Additional analytical results show that it is not sufficient to consider one isolated factor. Instead, the relevant factors need to be considered in parallel (Hummel 2017).

Based on these results, more targeted measures can be planned which prioritize and combine the identified starting points. The complexity of nutritional behaviour is considered and dealt with to be more successful in modifying food consumption.

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#### **On system representation paradigms, applied to an ecology of nutrition**

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Ecology of Nutrition is a field of research in Human Ecology that deals with a highly complex problem area of societal and political relevance. Physical, energetic, institutional, and social factors are part of the system. In order to structure and evaluate models in a controlled and systemic way, systems paradigms could be helpful.

Different types of models are used to analyse the system and its components. There is, firstly, the whole production sector, beginning with agricultural production (plants and animals) and the associated production factors (land requirements, chemical nutrients, and pesticides), transportation and food processing industries. There, models are based mainly on process chains analysis, lifecycle assessment and eco balances. Secondly, the impact of agriculture and the food system is an important issue, especially in the context of climate change. Thirdly, there is a focus on health aspects, e.g. on the consumer side. Finally, closely related to the nutrition styles, the behavioral aspects are under investigation, e.g. using system dynamics for understanding.

Interestingly only a small fraction of system paradigms are applied so far. Some ideas are presented how these forms of systems representation could improve modelling practice in that field of application.

#### **NGO's contribution to reduced animal product consumption in Germany – An assessment of congruency between aims, knowledge and action**

Uta Schmidt MSc., Ernst-Moritz-Arndt University Greifswald, Chair of Sustainability Science and Applied Geography

Besides politics and economy, non-governmental organizations (NGOs) as part of the so called Third Sector are a vital player in earth system governance. NGOs targeting to protect the environment, improve the world nutrition situation, care for animal ethics and enhance the health status have in common, that they should be interested in reducing animal product consumption in industrialized countries. This is because of its multidimensional consequences reaching from climate impacts and biodiversity loss to land scarcity and competition between food and fodder, as well as inhumane treatment of animals and threats to human health.

The analysis of the engagement of those NGOs included the material analysis of 34 German NGOs, 22 expert interviews with NGO staff and a focus group discussion testing the preliminary results of the interviews.

Results indicate that animal welfare organizations are most active in encouraging a reduced consumption of animal products and most environmental NGOs also plead for more sustainable nutrition habits. However NGOs working in the



field of food security and health are restrained in this topic, mainly due to the dependence on financial means from the government, donors and members as well as due to the division of responsibility and the competition between NGOs.

### Symposium 13 - Urban Ecology

Organizer: Ajibola Isau Badiru

#### URBAN SCHOOL DEVELOPMENT IN PERSPECTIVES TOWARDS: equity, inclusion, quality and innovation

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The urban schools are obscured by locational dynamics, socioenvironmental and economic perceptions and other dimensions relating spatial settings. City studies suggest a deep knowledge about school image as collective resources. The social and environmental scenario of urban vulnerability is a collective challenge about how school network can be set in harmony with society. We discuss a comprehensive educational perceptible involving various segments: graduate and undergraduate students, scholars, legal practitioners, civil servants, and consultants of the United Nations Program (UNDP) among others. Local technologies and educational policies is the central issues while we reflect on: equity, inclusion, quality and innovation of schools. We argue that school's images may contribute towards the achievement of the 4th Objective of Agenda 2030 by the set of themes that will be discussed. There is need to strengthen the local infrastructures as institutional agencies, so essential for collective mobilization. The discussion between scholars, managers and agents is vital on educational development that may provide a strong opportunity to perceive a more participatory and strategic role of urban schools.

*Keywords: mobilization, public policies, collective resources, education.*

#### School development: an urban deviation by the Federal Housing Program (Minha Casa Minha Vida) in Maceió-AL, Brazil

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Economy and policies are spatial dimensions naturally embedded in city structures, even in many Brazilian city capitals, where social standard of communities have contrasted over time. The case of Maceio city is outstanding for its linear urban structure and expansion over what is called *grotas* (urban cliffs). We discuss the impact of the Federal Housing Program popularly referred to in Brazil as *Minha casa Minha* (My House My Life). Established to provide housing facilities for many Brazilians with low financial condition. Many people residences are historical city structure by locating building along several valleys, however the new policy have raised evasion and more difficulties for poor population to attend secondary schools. We argue that the Housing Program is not integrated planning by the same Ministry of Cities created earlier. Spatially, urban deviations imply in both residences and colleges, normally, the educational admissions are not

recommended after the start of period. Urban and school development should be interconnected for adequate planning. The oath of some social rights has to be more effective while those applicable ones more useful. Strong interdisciplinary understandings are needed to integrate human and social development by complementary program or proceedings.

*Keywords: spatial dimension, secondary school, integrated planning, Maceio.*

### **A Segregação Espacial e a Conjuntura da Mobilidade**

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O presente trabalho tem como objetivo discutir sobre as inter-relações existentes entre a segregação espacial, formação territorial e a mobilidade urbana. Visto que a sociedade tem sua conjuntura dentro do modo de produção capitalista, de forma que à classe dominante, visa e deseja o enriquecimento individual em prol de um avanço coletivo. Configura-se assim, uma distribuição territorial, pensando em prol de âmbitos econômicos, e isso fica bem mais nítido após a revolução de 1848, quando há um acordo entre a classe dominante e o Estado, cada proprietário poderá dar a finalidade da terra e o Estado irá gerir o mínimo para as Cidades funcionarem. Desta forma que se apresenta a especulação imobiliária, a segregação espacial, a deficiência na infraestrutura urbana, o aumento populacional em favelas e morros, e o deslocamento do homem, preso nesse impasse, em que acarreta aumento de tarifas no transporte público coletivo, índice de automóveis e motos na rua, cresce com a facilidade de financiamentos e para o Estado a resposta está em alargamento de vias, viadutos. É necessário, um estudo afundo de como esse problemática será solucionada, como a raiz da problemática está clara e ao mesmo tempo mascarada.

*Palavras-chaves: Mobilidade Urbana, Segregação Espacial, Capitalismo, Transporte.*

### **Interdisciplinaridade, ciências ambientais e a função social da escola pública no Brasil: interação de saberes e desenvolvimento humano**

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Parte-se da concepção do conhecimento humano na perspectiva antro-po-sócio-histórica da espécie humana. Tem-se a pessoa humana como um ser de conhecimentos múltiplos os quais vinculam-se ao reconhecimento de si, de suas habilidades/competências como da sua condição em relação aos demais componentes da espécie e/ou sociedade. O reconhecimento do sujeito enquanto ser no mundo, que pensa, sente, chora, ri, tem sentimentos e emoções é imperativo para se conceber uma proposta de educação formal e de escola cidadã a qual rompa a ideia estigmatizada e historicamente concebida no Brasil, de que os alunos inseridos nas escolas públicas e advindos das classes populares, não pensam por si mesmos, não tem capacidade de elaborar conhecimento autônomo. Se o pensamento é múltiplo, está em todos os lugares, faz parte de todos os diferentes povos e suas culturas, logicamente o estudante do ensino básico também pensa. O que se questiona é se a escola pública consegue ser espaço de diálogo e de interação de saberes. Até que ponto a interdisciplinaridade, o ensino das ciências ambientais requalifica a função social da escola e contribui para que esse espaço seja ambiente de construção da diferença, da cidadania, da democracia, onde uma ecologia humana de significados seja ingrediente basilar do desenvolvimento escolar como sinônimo de respeito, ética, vida, de desenvolvimento humano.

*Palavras-chave: Interdisciplinaridade; ciências ambientais; desenvolvimento humano; escola pública; Brasil.*

## **Organização educacional: caso da Rede Municipal de Ensino de Maceió-AL, Brasil**

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A gestão escolar enfrenta uma série de desafios relacionados ao planejamento e condições ambientais que envolvem alguns atores. Ela pressupõe o estabelecimento de relações positivas quando as metas e objetivos são democrático, portanto, viável com instrumentos e condições adequadas, o que não sempre ocorre de forma homogêneo. Explora-se o histórico de uma rede de escolas para discutir o sistema de organização educativa, tendo a escola como um marco contemporâneo sobre a realidade cultural, pela modalidade de uma gestão municipal. Em sua abrangência o município de Maceió envolve uma dinâmica das relações sócio espaciais pelos organismos democráticos. Neles, os Projeto Político Pedagógico (PPP) representa um forte instrumento para guiar o planejamento organizacional, junto aos objetivos e as metas, por eles debatidos e, a serem alcançados. O fenômeno da violência neste município, conduz a uma realidade de vulnerabilidade da rede, considerando a fragilidade econômica, afastamento dos bairros e a falta de equipamentos culturais, dentre outros fatores da rede escolar. Embora o sistema de gestão com a principal missão voltada a aprendizagem, em sua essência, a organização escolar avança com o papel transformador de resgate cultural pelos valores positivos, voltados a interconexão, colaboração, empatia, respeito, solidariedade, tolerância, responsabilidade e autodisciplina.

### **Imagem regional das Escolas Municipais de Maceió/AL**

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O desenvolvimento da educação é até certo point do próprio reflexo da sociedade, que merece ser balanceada entre a realidade e sonhos, podendo ser ancorado na percepção da diversidade cultural e a vitalidade relacional. Esta contribuição busca ampliar entendimento com o intuito de reforçar a relevância de planejamento, monitoramento e, sobretudo da governança social do ambiente escolar pela imagem. A imagem escolar é um instrumento perfeito para discutir a transformação e a vivência das pessoas. Tem-se como função, articular as prospecções sobre o sistema de educação. Debate-se a estrutura escolar pautados em marcos legais e conceituais, dos instrumentos e padrões atravessados em oito aspectos espaciais. O geoprocessamento como técnico se deu a partir do registro cartográfico aplicado sobre a rede municipal de escolas em Maceió, com vários mapas para visualizar a distribuição espacial das escolas quanto a compreensão da realidade ambiental. O mapeamento ambiental atendeu um projeto institucional da MEC/PNUD/SEMED, desenvolvido por meio de múltiplas observações *in sitio* no ano de 2017. *Forum* avaliados as oito Regiões Administrativas que contemplam a distribuição total de 93 escolas municipais de ensino fundamental. Este documento técnico oferece a imagem sobre a localização das escolas municipais de Maceió e sua qualidade socioambiental.

Palavras-chaves:distribuição espacial, imagem escolar; registro cartográfico.

## Ciências Ambientais e Ecosofia: a Formação do Sujeito Ecológico

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As preocupações que abarcam, no âmbito das ciências ambientais, o social, humano, político e econômico na formação de um novo sujeito, está atrelada a condição humana na Terra, em virtude de nossas ações que promovem graves desequilíbrios ecológicos. A possibilidade de construir um percurso trilhado na articulação entre ética e política é descortinada pela proposta da Ecosofia, que tem como modelo prático e especulativo, ético-político e estético a relação entre homem/tecnologia/meio ambiente, com base nas três ecologias (meio ambiente, relações sociais e a subjetividade do ser humano). As ciências ambientais trazem à tona uma reflexão acerca da necessidade de mudanças no tema do imaginário, em busca de compreendermos quem somos e que faz sermos o que somos. É possível perceber que com a grande mutação Societal e/ou Crise ambiental, torna-se imprescindível a formação do sujeito ecológico, que pense na cultura não como algo resumido em habitar, vestir e morar, mas num território fértil em que podemos desenvolver um "viver no coletivo" e, para além, compreender o tipo de sociedade insustentável que nos tornamos.

*Palavras-chaves: Ciências Ambientais, Sujeito Ecológico, Subjetividade, Ético-Política.*

## Symposium 14 – Human Ecology in the Philippines: Research and Practice for Food and Nutrition Security

Organizer: College of Human Ecology, University of the Philippines Los Baños

### The Changing Landscape of Rice Preference in the Philippines: A Threat for Food and Nutrition Security?

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Rice (*Oryza sativa* L.) is the staple food in the Philippines. Rice quality tests through the years have woven an unelaborated story of changing rice preference in the country: from chewy to tender then softer cooked rice texture. The blurring of distinct rice preferences across rice agroecological systems steered rice breeding objectives towards lower amylose content (AC) at the national scale. AC is the fraction of starch in milled rice associated with cooked rice texture, and human metabolic effects.

In this paper, we use a biocultural lens to explore how rice preference brings anew a dialectical issue to the food and nutrition security discourse in the Philippines. We draw insights from a recently completed in-vivo feeding trial and years of consumer sensory evaluations of rice. We propose the prevailing preference for softer cooked rice contributes to meal security mediated by various concepts of satiation.

However, the softening of rice preference may aggravate the prevailing national problem of Type 2 diabetes (T2D) evidenced by the relationship of AC in rice varieties with biomarkers associated with T2D. We conclude with a biocultural sensitive rice research agenda for navigating this tension.

*Key words: rice, quality preferences, apparent amylose content, type 2 Diabetes, satiation.*

### Effect of Single Meal Replacement with White Corn Grits on the Nutritional Status of Type 2 Diabetic Individuals

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Philippines now ranks 11th in the world with the highest prevalence of Type 2 diabetes and predicted to be in the top 10 in 2030. Quality protein maize (QPM), white IPB Var 6 corn, has moderate glycemic index, higher amylose, and high fiber content compared to well-milled rice, hence, could be a better alternative staple for Type 2 diabetics. This randomized controlled feeding trial investigated the effect of IPB Var 6 corn grits on the nutritional status of diabetic individuals. Fifty-one individuals with T2DM were randomized into three groups: rice, corn or rice-corn mix (RCM) and lunch feeding trial was



done for 12 weeks. Results showed that rice group had the highest weight reduction and percent body fat, RCM group had highest WC reduction and corn group had 1.2% weight reduction and 1% decrease in WC. Improvements in nutritional status were not treatment-specific but could be due to other factors such as reduction in dietary intakes and saturated fats, and increased dietary fibre in test meals. Further studies using higher amounts of IPB Var 6 corn grits on longer duration is therefore suggested.

*Key words: anthropometric measurement, diabetes, nutritional status, IPB Var 6 corn, randomized controlled trial*

### **Social impact of a Science Based Intervention on coffee and cacao farming of the Ayta Magbukun tribe, Morong, Bataan, Philippines**

Carla G. Jimena, Virginia Cuevas, Maria Emilinda T. Mendoza, Kristopher Costales and Patricia Naredo

### **Symposium 15 - Human Ecology in the Philippines: Research and Practice for Sustainability**

Organizer: College of Human Ecology, University of the Philippines Los Baños

### **Problem Analysis of Small Island Ecosystems: the case of Camiguin and Siquijor Islands, the Philippines**

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Small islands are fragile and among the most vulnerable ecosystems. With its unique characteristics (biophysical, socio-cultural and economic) and species diversity it boasts, amidst the human communities that depend on its resources, problems and expected to arise. Two island provinces in the Philippines were considered in this study where application of problem analysis as a participatory planning tool showed that small island ecosystems post a problem scenario that merit attention. Through community identified problems in series of workshops and KIIs, results show that island ecosystems experience almost similar situations as other rapidly urbanizing areas, however, the severe extent of damage in small island ecosystems is caused by its innate fragility induced by increase demand on resources use and climate change. Actions and recommendations for conserving the quality of small island ecosystems lie on effective regional spatial integration coupled with workable sustainable small ecotown projects that highlights conservation efforts and local community empowerment.

*Keywords: Small Islands, Problem Analysis, Ecotown, Regional Spatial Integration*

### **Exploring the Pollution: Poverty Link in Iloilo City, Visayas Islands, Philippines: some Preliminary Findings**

Maria Emilinda T.Mendoza, David Joseph De Dios, Larah Ibanez and Carla G. Jimena

### **An Examination of Key Institutional Players in the Quest for Inclusive Value Chains of Agro enterprises in the Philippines**

Carla G. Jimena, Danilo Songco, Clarice Pulumbarit, Emilia S. Visco, Nimfa Montes and Jewel Cabardo

### **Learning for sustainability: Avoiding the traps of mariculture development for small-scale fishers**

Jennifer Marie S. Amparo | Assistant Professor, Department of Social Development Services, College of Human Ecology University of the Philippines Los Banos / PhD Scholar, Fenner School of Environment and Society, Australian National University

Mariculture is heavily promoted in developing countries for food security, livelihood diversification and conservation of dwindling capture fishery resources. Studies on mariculture tend to (1) focus on production-related concerns; (2) conflate the food security and economic benefits to the fishery sector, failing to highlight its impact on small-scale fishers. We argue that failure to learn from the past experiences of earlier mariculture initiatives and integrate the complex dynamics of the current mariculture embedded in the social-ecological system could lead to a trap - a system that is unsustainable and undesirable, that escape could be difficult.

We used a systems approach to integratively analyse the economic, ecological, multi-dimensional wellbeing, and institutional dynamics of the current mariculture development initiatives using the case of Northern Mindanao mariculture parks (MPs), Philippines. Literature review, key informant interviews and focus group discussions on the current MP

dynamics were utilized to highlight the drivers of change, critical feedbacks in the MP system dynamics to identify its possible traps, opportunities and risks for small-scale fishers.

The drivers of MP development and dynamics include external institutional support, quality of inputs, and extreme weather conditions. MP expansion is limited by multiple coastal use, and ecosystem's assimilative capacity. Critical feedbacks for small-scale fishers are the multi-dimensional wellbeing drivers to shift to fish farming; access and equitable distribution of benefits to investors and small-scale fish cage workers; fish health risks from intensive fish farming. These critical feedbacks result to limits and traps to achieve a desirable and sustainable mariculture development. Although, there are institutional fisheries management arrangements that are in place, implementation and enforcement should be strengthened, informed by this more integrated and multi-dimensional wellbeing benefits of MPs.

### **Symposium 16.1 - Sustainable Fisheries and Local Knowledge**

Organizer: Yorgos Stratoudakis

#### **Factors Favoring the Risk Perception of Oil Spill in Coastal Areas: A Case Study of Shellfisherwomen in Galicia, Spain.**

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'Gender' should be applied as an analytical perspective to observe the interaction of social groups with the environment. In this context, it is not yet widely known what leads women's groups to a specific perception of an environment exposed to risk. Therefore, the objectives of this study are to analyze the elements that favor the oil risk perception of the Galician shellfisherwomen, in Spain, after the Prestige disaster in 2002, and understand how this could contribute to the oil risk management. Data were collected through in-deep interviews with 11 shellfisherwomen, considering their leadership role, expertise in the marine environment and testimony of the Prestige disaster.

Results showed that the way shellfisherwomen perceive risk is related to a greater dependence on specific natural resources; territorial immobility; peer commitment and family care; representativeness in the sociocultural environment; importance in the fishing productive chain; autonomy and recognition of the group in the public sphere. This indicates four main groups of factors that interfere in their risk perception: Natural resources management; Territory; Social networks, culture and economy; and Governance. The shellfisherwomen's experience broadens the view on the perception of risk and suggests the importance of their inclusion in the management of oil risk.

*Keywords: gender; coastal risk; oil disaster; artisanal fishing*

#### **Sesimbra and its fishermen: from literary pictures to the 21<sup>st</sup> Century reality**

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By revealing the potential of literary text as a source of historical knowledge about Nature and Human – Nature interdependence, interdisciplinary Ecocriticism has become a creative and fundamental tool to assess the challenges of 21st century society.

Several writers portrayed the multiple aspects of Portuguese territory's humanization, particularly the organic link between seaside populations, the sea and marine resources. Two main examples are Raúl Brandão and Vergílio Ferreira, through their books *Os Pescadores* (1923) and *Cântico Final* (1960), both partially focused on Sesimbra village.

This work aims to find to what extent Portuguese literature contains useful information to understand the evolution of Sesimbra's fishing community, its practices and its public perception of the marine ecosystem, from early 20th century to the present.

A combined methodology was followed, based on literary sources and original field data. It included a thematic text analysis and an ethnographic field research inside present-day Sesimbra's community.

Our results are expected to contribute to Portuguese Environmental and coastal Human Ecology, and to help contemporary fishermen in their con

*Keywords: Human Ecology, Ecocriticism, Sesimbra, Sustainability, Fishermen perception*

**Fishers' perceptions about fisheries co-management rules inside and outside protected areas in Amazonian rivers**  
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Protected areas including local communities are an alternative to match fisheries sustainability with conservation in the Amazon. We compared fisher's perceptions on fisheries co-management rules between communities located inside and outside Extractive Reserves (RESEXs) in the Tapajós and Negro rivers, in the Brazilian Amazon. We interviewed 267 fishers (156 in the Tapajós and 111 in the Negro) individually in eight communities in each river, four inside and four outside RESEXs. We analyzed three indicators of fishers' perception regarding management rules: 1) proportion of fishers that knows management rules, 2) average number of rules reported, and 3) proportion of people who respect rules according to fishers. The proportion of fishers who knew management rules and the average number of rules reported did not differ between the two rivers nor between inside and outside the RESEX. The proportion of fishers that respect rules within the community was higher in the Negro than in the Tapajós, but did not differ between inside and outside the RESEX.

The proportion of respect by outside fishers did not differ between rivers but was higher outside than inside the RESEX.

The fishers' management perception was not higher inside RESEXs, indicating a need to reinforce fisheries co-management.

Keywords: fishery management, Extractive Reserves, artisanal fishing, fisheries sustainability, compliance.

### **Building public policy for artisanal fisheries: recent changes and persistent shortcomings in Brazil**

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In Brazil, fisheries have guaranteed subsistence during the past 6000 years, all along its 8400 km of coastline. In 2015, approximately 1 million artisanal fishermen were accounted, mainly concentrated in the Northeast (NE) region.

At the other extremity of the country, Southeast and Southern (SSE) regions host the main financial urban cores -among them the cities São Paulo, Rio de Janeiro, and Curitiba-; as well as the industrial fleets and industries.

This essay traces a critical panorama of the institutions and public policies related to fisheries management in Brazil, from the second half of the 20<sup>th</sup> century until today, arguing that it contributed to maintain the uneven socio-economic development between NE and SSE regions. During Luis Inácio Lula da Silva first presidential term (2003-2006), artisanal fishermen have seen an increase in their livelihood conditions, mainly in the NE. But the initiatives supported by the posterior governors lead fishermen rights and participation in the political scene to regress.

The management of the fishing sector in Brazil has historically been, and keeps being, institutionally top-down and geographically bottom-up exerted, under the yoke of the agriculture sector.

*Key words: fisheries, Brazil, public policy, regional disparities, social development.*

### **Game Over? Investigating artisanal fisheries sustainability in Brazil**

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Enseada and Caponga are two traditional fishery communities along the southern and northeastern coast of Brazil.

For at least four generations, the marine small-scale fishery has granted the sociocultural and economic reproduction of these communities. Nonetheless, data collected between 2005 and 2016 pointed out to a risk of collapse in the traditional fishery practices seriously jeopardizing their livelihoods. In order to assess the indicators of the declines in the fisheries at Caponga and Enseada, the RAPFISH method was applied to evaluate their sustainability. A total of eight Fishery Production Systems were identified and 43 attributes (indicators) were ranked (from 0-10), distributed in six dimensions (ecological, technological, economic, social, ethic and institutional). The most sustainable systems were the catch of fish

with line and hook at Caponga, followed by the catch of mullets with beach seine at Enseada. The fishery with the lowest score in the ordination analysis of RAPFISH was the lobster fishery with traps in Caponga. The RAPFISH analysis turned out to be an interesting tool to perceive the aspects that guide the sustainability of the small-scale fisheries in the Brazilian context at both regional and national scale.

*Key-words: RAPFISH; small-scale fisheries; interdisciplinary analysis; multidimensional scaling.*

### **Sustainability challenges for small-scale fisheries in the Azorean islands: Local conflicts, social actors and the opportunities of a new ecosystemic local management approach.**

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Having assumed the challenge of promoting sustainable fisheries in this outermost European region (ORs), the Azorean Regional Government has been 'reinforcing' new rules and legislations. The daily social impacts of these changes, for fishermen, are important and not necessarily taken in account in policy-making. Therefore, we stand the questions: Does the fishery activity in the Region comply with the new policy for the protection of marine resources and habitats? Do we achieve responsible fishing operations (sustainability) by introducing new legal rules? Whose voices are being heard? Do we have conflicts in our local fisheries management? A new interdisciplinary approach should be focusing on understanding the social impacts within each island's fishing community. To manage challenges and interactions between social and ecological systems, including conflict prevention and management of biodiversity, a new scientific-based management approach is necessary to improve responsible fishing and manage fishing operations. Management is about people and resources: is rather an attitude than procedures. A high level of Transparency and Imputability is essential, without forgetting that management decisions are for human, not for fishes. Co-Management, by involving local actors (sea users), new tools and approaches allows to understand obstacles in fisheries and behaviours at sea.

*Keywords: Social Actors, Public Policies, Social-ecological Systems, Small-scale Fisheries, Co-management*

### **Symposium 16.2 - Sustainable Fisheries and Local Knowledge**

Organizer: Yorgos Stratoudakis

#### **Experimenting adaptable operational rules and participated collective-choice rules in the management of a gill-net fishery for red mullet (*Mullus surmuletus*) in SW Portugal**

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Fisheries management based on regular monitoring, stock assessment, and adaptation of fishing opportunities are more effective for target species of large-scale fisheries with well-defined harvest strategies. This is impractical in most small-scale fisheries, where data are few and of doubtful quality, resources allocated to management scarce, and opportunities to build intellectual, social and political capital with the participation of fishers rare. Here, we present collaborative work among fisheries administration, scientists and fisher organizations carried out since 2010 with the objective to legalize a traditional fishery in SW Portugal. Legalization provided an incentive for fisher participation during a period of experimental licensing that led to the collection of data and opinions about the effectiveness of management and the introduction of new rules. At the end of this phase, results were made available to the fisheries administration in the form of a proposal for an alternative system of rights allocation in this fishery. This new system was presented to the three communities in SW Portugal during 2017, entering in 2018 in the first year of a triennial experimental implementation.

*Keywords: Adaptive management; Participation; Small-scale fisheries; Monitoring; Harvest rules.*



## **Shrimp farming strategies and social-ecological transitions in Thailand.**

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Shrimp farming along the Gulf of Thailand coastline has undergone significant ecological, social, and economic change in recent years. What is left is a landscape with persisting environmental issues and a diversity of farming intensities and corresponding livelihood strategies. Given that shrimp production is important for economic development in Thailand, and the demand for shrimp from international markets is projected to increase, policy makers are now confronted with the challenge of directing shrimp farmers away from environmental destruction, and towards more sustainable production systems. To be able to attempt to steer the sector towards environmentally, economically and socially sustainable configurations, it is important to understand not only the decisions behind the diversity of farm intensities, but also whether and how distinct farming intensities and livelihood strategies represent different responses to the observed 'social-ecological transitions'. This study uses a conceptual tool, the Integrative agent-centred (IAC) framework, to provide insight into shrimp farming diversity along the Gulf of Thailand coast. Our study explored the response dynamics and strategies of shrimp farmers, of different production intensities, to these social-ecological transitions. Empirical evidence from this study shows that shrimp farmers employ two main strategies to respond to social-ecological change; they either scale down their production intensity or diversify and increase production. Within this complex social-ecological system, a number of contextual and behavioral factors were found to be driving the decisions of shrimp farmers to take either strategy.

*Key words: aquaculture, farming intensity, farmer decision-making.*

## **Fishermen's perception and attitude in face of the decline of fishing activities**

Igor d'Angelis<sup>1\*</sup>, Yorgos Stratoudakis<sup>2</sup>, Iva Miranda Pires<sup>1</sup>

Over time, some fishing activities have ceased for several reasons, as technological development, legal prohibition or fishery resources decline. The sudden cessation of fishing activities can have severe negative impacts on coastal populations, especially those that depend exclusively (or heavily) on one or a few activities. Studies on fisheries that are no longer practiced, comparing with the current practices of fishermen, can provide information to identify and understand changes in fishers' attitudes towards the sustainability of fishing.

Two fishing activities were identified that ascended and extinguished during the second half of the 20th century in Sesimbra, Portugal: the silver scabbard fish (SSF) fishing and the algae harvest. The aim of this work was to understand what led to the end of these activities. Also, to identify changes in the practices and perceptions of fishermen in the fishing activity currently practiced. Interviews and surveys have been carried out on fishermen who have been worked in at least one of this two fisheries and who are still engaged in some fishing activity.

SSF fishing by the fishermen of Sesimbra faced two moments of end. First in the Portuguese seas (1980s), by the depletion of the fish stocks, and then in the Moroccan seas due the end of the fisheries agreements between the EU and Morocco (in 1999). Although no reason can be determined to algae decline, there is a strong indication that environmental changes in the marine coastal ecosystem have led to their depletion, regardless of harvesting effort. Fishermen in both groups demonstrate a greater perception of fisheries sustainable practices, despite the fact this is suppressed by the logic of profit.

*Keywords: fishery sustainability; Sesimbra; fishermen; attitude*

## **Participatory fisheries management in Europe – the dilemmas**

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After many years of attempts to build more regionally adapted, participatory and sustainable management systems for fisheries in Europe, the success is limited. The overarching sustainability goal of the Common Fisheries Policy of the EU, with participation of stakeholders as one of several means, is not achieved. Management failures, institutional weaknesses, and vested interests of powerful economic actors are blocking institutional change and socio-ecological transformation of fisheries. The World Ocean Review has assessed the policy with the dominant principles of "Totally Allowable Catch" and "Maximum Sustainable Yield" as a failure. To overcome the deadlock, additional and further institutional changes and

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innovations are required. Presently discussed approaches to socio-ecological transformation should be adapted to fisheries management: transformation actions groups, strengthening of institutions for Earth System Governance, and a renewal of the sustainability process that is stuck in old ideas that do no longer reflect the social, economic and ecological realities and conditions of global environmental change.

*Keywords: fisheries management; participation; sustainability; socio-ecological transformation; transformation action groups*

### **Ethnoecology and Ecology of Groupers**

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Groupers are a common reef species in the Adriatic and Mediterranean; they also occur in the SE Atlantic, among other areas. Groupers are important species in the livelihoods of the small-scale fisheries located in the coastal areas of different continents. In the coast of Brazil, in particular, they acquire a particular importance due to their ecological, economic, and cultural importance. This importance is represented by many aspects, such as because it is a preferred food fish at several coastal communities, a fish recommended to be given to convalescents or to ill persons, and because it is a 'noble' fish (high market value). In spite of its importance, it is endangered. We studied groupers from different Brazilian coastal communities since 2004. We studied its landings, the fishing spots used by fishers, its diet, and their reproductive period (mature gonads). Our studies counted with the collaboration of some fishers at some areas of the Brazilian coast (ethnoecology, fishing spots, observing fish gonads).

We show a review on the data available from our results for two species from two genera, *Epinephelus marginatus* (dusky grouper) and *Mycteroperca acutirostris* (comb grouper). We reinforce the importance of collaborative research, in this case with fishers, in order to: a) turn research as a positive interaction for local people; b) acquire data that are difficult to obtain without the help of fishers; c) produce data to enhance the food security of local people; and finally, to contribute to the management of important food species that are currently at risk.

### **Fishers' knowledge indicates temporal changes and influence of protected areas on fishing resources in two tropical rivers**

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Broad scale data about temporal changes on fish abundance are lacking for most tropical fisheries. Fishers' knowledge could help to fill such knowledge gap. We compared quantitative indicators from fishers' knowledge on the status of fishing resources between two timeframes (actually and 20 years ago) and between protected areas (Extractive Reserves) and outside, to evaluate temporal changes and the potential influence of protected areas in two rivers of the Brazilian Amazon. We interviewed 281 fishers in the Tapajos (n = 161) and Negro (n = 120) rivers about the most caught fish (common names), the amount of fish caught and effort, to analyze five indicators: 1) catch composition; 2) fish size (cm); 3) temporal trends on fish abundance; 4) biomass (kg); 5) catch per unit of effort (CPUE). All indicators, except for fish composition, indicated temporal changes (declines) on fish along the last 20 years in both rivers. Although it had no effect on fish in the Tapajos, the protected area showed positive effects on abundance trends, biomass and CPUE in the Negro River, where rules are more restrictive. Fishers' knowledge provided useful information to track temporal changes on fish and to check the performance of protected areas.

*Key-words: fisheries management, monitoring, overfishing, shifting baselines, Brazilian Amazon*

**Sustainability challenges for artisanal fisheries in the Azorean islands part of UNESCO's Biosphere Reserves: What happens when fisher's resist complying with legal protective rules and daily illegal fishing practices stand as an obstacle to the success of the regional environmental policy?**

Ana Rita Jordao Fraga

Azores is one outermost European region composed by nine islands, which belong to the Macaronesia. Four islands are UNESCO's Biosphere Reserves, where solutions reconciling the conservation of biodiversity with its sustainable use are being promoted. As 'Science for Sustainability support sites', interdisciplinary approaches should focus on understanding and helping to manage changes and interactions between social and ecological systems, including conflict prevention and management of biodiversity, namely by reinforcing scientific research.

Nowadays, 'Biosphere islands' fisheries face a peculiar set of problems and challenges. To accomplish an effective sustainable use of these islands coastal ecosystems, a new legal framework brought the awareness of the need to promote a responsible fishing to ensure both environmental balance and sustainable development of the professional activity, which has a very significant role in these islands social-economic situation. However, daily illegal fishing practices threaten this strategy. Based on a larger investigation about social representations of fishermen about environmental public, we propose an ecosystemic approach on the issue of fisheries sustainable management and governance, by focusing on understanding the genesis of human action and stating the importance of a comprehensive approach to fisheries' practices and illegal fishing behaviours (sign of local conflicts and obstacles to promote sustainable fisheries).

**Symposium 17 - The Politics of Rewilding**

Organizer: Mihnea Tanasescu

**Restorative Ecological Practice**

Dr. Mihnea Tanasescu | Fellow of the Research Foundation - Flanders (FWO) - Political Science Department, Vrije Universiteit Brussel (VUB), Belgium | Email: Mihnea.tanasescu@vub.be

This paper conceptualizes conservation in the Anthropocene as necessarily a form of restoration. Taking inspiration from William Jordan's concept of restoration, it theorizes a restorative practice whose goal is to create mutually beneficial ecological relationships. By restoring beneficial relationships to the natural world, humans are able to reinsert themselves within a conception of natural community. The paper complements the concept of restoration with that of multi-species spatiality and with examples from field studies of contemporary rewilding. It suggests that in order to build mutually beneficial ecological relationships, conservation efforts need to start with the deep participation of local communities involved in a conservation space. It gives reasons for doing this and suggests ways of achieving it, exemplifying with restorative practices in the Romanian Southern Carpathians and the Danube Delta.

**The biopolitics of rewilding: on the governance of disturbance regimes in England**

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Ecological disturbances are increasingly being acknowledged as key ecological processes. Once considered a threat to the 'balance of nature' and economically valuable resources, they have come to the forefront of discussions around forest management, particularly through current enthusiasms for rewilding. Understood here in the sense of a desire to restore and enhance ecological processes and functions, rewilding departs from and contrasts with conventional modes of forest governance, like conservation, forestry, and biosecurity. To explore some of these obstacles and continuities, this paper investigates the changing understandings, management practices and controversies associated with governing large herbivores as ecological components of the forest's disturbance regimes. It is empirically grounded in the New Forest (Southern England, UK), a public forest that is often presented as analogue for rewilding, and its deer populations. By bringing a biopolitical angle to the historical geographies of forest management, it focuses on how deer have been conceived and governed throughout the New Forest's history, the spaces and roles historically allocated to them, and how these have sometimes been disrupted by their unruly agencies. It concludes by assaying the implications of disturbances for thinking about the governance of uncertain, 'wild' and challenging ecological futures.

### **The hermeneutics of rewilding conflicts**

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### **Challenges of including the cultural landscapes concept in ecological restoration: how can it be useful in Latin America?**

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Ecological restoration (ER) is "the process of helping the restoration of an ecosystem that has been degraded, damaged or destroyed". Cultural landscapes (CL), broadly defined, are regions that reflect the long-term interactions between people and their environment. Global initiatives have been recently developed to promote ER worldwide and on large scales. However, research is biased towards northern countries and is mainly ecological, although ER depends on various factors. Therefore, it seems challenging to achieve restoration goals in Latin America (LA), as in other regions, with its environmental and cultural plurality. Yet, humans have been modifying Earth for millennia, so human presence and relationship with nature should be considered. We evaluated CL integration in ER through a literature survey in Web of Science (1993-2016), selecting 99 papers. Studies have increased in number, but biased towards Europe and North America; only four papers in LA. Studies were mostly theoretical or proposed baselines; only a few showed results of ER evaluation. More research is needed in LA and surveys covering ER in the field would greatly benefit from CL integration which we believe can help accounting for the various LA historical and current aspects in order to successfully achieve large-scale and long-term restoration.

*Key words: global initiatives, human influence, socioeconomic context, traditional practices, review*

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## CONTRIBUTED PAPERS SESSIONS

### CP1 Social and Ecological Responses to Changing Climates

Chair: Bernhard Glaeser

#### **Linking climate, migrations and social protection in the case of Brazilian Northeast**

Ana Claudia de Almeida | Universidade de Brasília

Given the scenarios of climate change, the intensification of mobility flows could be one of the most important faces of the climate impacts in the human system. Human impacts to be felt depend largely on the livelihood conditions of a community, as it shapes vulnerabilities. In this sense, academic researches, as well as policy making debates, are considering Social Protection Floors as means of improving communities' capacities of coping with present and future weather stresses. In the same way, some migration theories point to the context role in fostering or constraining migratory movements. Therefore, there are links between coping with climate change and variability, migratory flows and social protection measures that need to be more deeply investigated. This paper aims to elucidate the connection among these concepts. To this purpose, the concepts in literature are discussed and a case study is used to illustrate the connection. The link appears to be relevant in the case of Brazilian semi-arid region, where climate variability have historically fostered migratory movement and social protection have deeply changed the social dynamics in recent years. Consequently, the migratory response to the climate have been modified.

*Keywords: Climate Change; Environmental Migrations; Social Protection*

#### **Case Studies in Climate Action: U.S. Community-based Responses to Climate Change**

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This presentation examines three community-based responses to climate change in the U.S. to better understand how people in different geographic areas, with varying backgrounds and amounts of resources take action to sustain their livelihoods in a changing climate. It highlights the issues and strategies communities use to respond and become more resilient, which is a point of hope in times of such uncertainty. Cities, neighborhoods, counties, and states are taking a collaborative approach to ensure they make a strong attempt to adapt to the present and anticipated challenges in their communities. These case studies include a rural non-profit organization, a medium sized municipality, and a citizen response collective. Each community's specific ideas and tactics reflect the challenges and successes of tackling climate change at the local level. In addition, numerous in-person stakeholder interviews offer insight through diverse perspectives. This study is intended to further increase awareness of the impacts communities in the U.S. are experiencing as a result of climate change, offer case studies for others to use as a resource, and inspire more communities to take action.

*Keywords: Community-based response, climate change, collaborative action, resilient strategies*

#### **Characterization of the response of local communities to the direct effects of climate variability on the South Caribbean coast of Costa Rica**

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Climate variability has had impacts on ecosystems, including coastal seamen. Where changes occur in the natural resources and landscapes that are employed by coastal communities to sustain their livelihoods. These communities have the possibility to adapt to these changes or to become climate migrants. This study aimed to evaluate the adaptation mechanisms of the coastal communities of the South Coast Caribbean to the impacts of climate variability on marine and coastal ecosystems to reduce their vulnerability. For which a bibliographic review was carried out, techniques of non-participant observation and surveys were applied, the latter being validated before its application. A total of 65 surveys were carried out on local residents of the communities of Manzanillo, Cahuita, Puerto Viejo, Gandoca and Limón aged 18 or over. The main economic activities were subsistence agriculture, fishing, tourism, trade, coconut harvesting, among others. The main fishing gear used is snorkeling to apnea or lung, fishing pole with lures and hooks, pots, long line fishing and nylon fishing net. Effects of climate variability and the affected element were identified. Among them is the rise in sea level that has affected infrastructure such as houses, roads, bridges, pipelines. Likewise, the increase in atmospheric

temperature has impacted the distribution of fish species, favored exotic species, among others. But local communities have adapted to the new conditions, despite not having a government plan. Among the actions implemented are the diversification of volunteering, infrastructure transfer, organic agriculture, fishing as complementary economic activity, reforestation of the coastline etc. It is concluded that the communities of the South Caribbean have adapted to the various conditions that climate variability has presented to them, but it has been deployed, which requires urgent attention by the authorities in order to define future actions.

*Key words: South Caribbean, Costa Rica, human communities, adaptation, climate change*

#### **Adaptive Governance: co-creating adaptation strategies with local communities**

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The challenge of climate adaptation has brought to the fore governance hurdles that have long plagued public institutions. Lack of cross-sectoral communication, ineffective implementation, and weak engagement of citizens are some of the most critical, which have been recurrently highlighted in policy reports. This presentation discusses the results of two projects that contributed to launch a climate-induced institutional change in Portugal, based on the co-production of adaptation strategies with local stakeholders. From 2010 to 2014, "Change" initiated a process of adaptive governance in three coastal areas vulnerable to the impacts of climate change. This project engaged public officers across the national, regional and local scales, in a combined effort to envision future scenarios (2025, 2050, and 2100) and develop adaptation strategies. In 2015-2016, the project ClimAdaPT.Local pioneered the creation of Municipal Adaptation Strategies in Portugal, in close collaboration with 26 municipalities across the country. Both research projects involved an interdisciplinary team from the University of Lisbon, combining the approach of natural and social sciences. This paper will discuss how "Change" and ClimAdaPT.Local have broken new ground in stakeholder engagement, contributing for a shift in how institutions cooperate and manage the territory.

*Keywords: climate change; stakeholders; interdisciplinarity; engagement; municipalities*

#### **Navigating Towards Sustainable Human Nature Relations—Coastal Management Revisited**

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The presentation departs from human-nature relations and interlinks changing approaches to integrated and sustainable coastal and ocean management. I review two decades of interdisciplinary research, 1996-2016. In hindsight, I discovered an amazing change of focus, adapting to changing societal needs and scientific outlooks: from conflict resolution to governance issues, disaster management, eventually to linking social and ecological factors via typologies of coastal and marine social-ecological systems. Theoretical aspects are embedded and grounded in empirical case studies, taken from economically developed areas (high per capita GDP level) in temperate zones (Sweden, Germany) and from economically developing areas (intermediate per capita GDP level with significant incidence of poverty) in tropical zones (Indonesia). Eventually, the maturation of a field may be witnessed.

*Keywords: Coastal and ocean management, social-ecological integration, historic issues, interdisciplinarity, science-policy interaction*

#### **A participatory landscape design strategy to climate change in Latin America.**

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Latin America is the fastest urbanizing region in the world. Unfortunately, most of these urbanization processes are unplanned and tend to occupy risk-prone areas. This study addresses the characteristic urban growth patterns of Latin America's informal and semi-informal settlements and the most frequent natural disasters occurring in the region, floods and landslides.

The objective is to propose a participatory landscape design strategy for vulnerable communities of Latin America to floods and landslides provoked or enhanced by climate change. The results are a set of guidelines from a suitable combination of tested participatory design methods that serve to enrich the scientific knowledge and the discussion about the importance of landscape architecture in decision making at urban and regional level. This study will also justify further investment in participatory landscape architecture projects that present greater effectiveness in protection and community resilience building.

The results are in the interest of academia, consultants, local governments, non-governmental organizations and community organizations that live and/or work in risk-prone areas of urban Latin America.

*Keywords: Climate change; community participation; floods; landslides; landscape architecture.*

## **CP2.1 Human Ecology: Human Economy**

Chair: Philip J. Stewart

### **Against Growth**

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Many planetary variables have been growing at alarming rates in the past two centuries with detrimental ecological effects, but at the root of all of them is growth in the human population, which has tripled in the past 80 years. The impact of population growth is magnified by the growth in average rates of consumption of material goods. The capitalist system requires economic growth even in countries where income has passed a satisfactory level, while others languish in poverty. There is no clear solution to the problems of capitalism, but we cannot wait for one before tackling the urgent problem of population growth. Biological and cultural factors affecting fertility are discussed, and it is suggested that the education of girls and the freedom of women are the key to lowering birth rates. Peace and prosperity in the poorer countries are the necessary precondition, and it may be that the best contribution that richer countries can make is to reduce arms sales and to cease to involve themselves in wars within and between poor countries.

*Keywords: growth, population, women, poverty, religion.*

### **Transition through Resilience for Sustainable Livelihood by Low Income Families in Nigeria**

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Families in contemporary Nigeria face serious threats from unemployment, low income, and other livelihood challenges. This paper investigated the resilient strategies employed by families in South Western Nigeria. Four Hundred and Twenty - 420 Public Servants (210 males and 210 females) were selected through stratified random sampling to respond to a 20 item questionnaire demography, income, family size and survival strategies. Results of analysed data confirmed 24%, 18%, 22%, 28% and 16.5% of the respondents practiced home gardening, food preservation, co-operative buying, renovation/simple mending and poultry farming respectively. It also revealed that 26% had acquired skills, while 74% agreed to embrace same if the opportunity was available. The Paper concluded that Sustainable Learning Approach (SLA) could help families' resilience and sustainable livelihoods. It recommended the establishment of adequately funded skill acquisition centres at the grassroots by government, Non-Governmental Organizations and good spirited individuals as viable tools towards resilience sustainability of families in economic tough times.

*Keywords: Adaptation and Resiliency, Economic Downturn, Family, Skill acquisition.*

### **Green it as a proposal for the reduction of business costs in companies of the São Francisco Valley**

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Today, every manager should be aware of strategies to reduce maintenance costs. That is the only way to keep your company competitive in the market. In this context, this article points out how Green IT, a set of sustainable standards for working with IT, guides to helping a company reduce maintenance costs. The main objective here was to analyze and present the most important Green IT techniques or tools used to reduce costs. For that, a bibliographic review and a case study were made. The case study was carried out in the São Francisco Valley, after a questionnaire application, where it

was researched to identify how much Green IT is implemented, while the literature review investigated the most important Green IT techniques to reduce costs. The results of this study showed that companies in the San Francisco Valley lack the Green IT techniques to reach this conclusion was based on the comparison with a classified list elaborated by the authors of this article. Thus, the authors argue that when this gap was met, firms could capitalize for better results.

*Keywords: Green IT, operational costs, sustainability*

### **Determinants of green purchase intention (gpi) - implications for marketing communication**

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In the conference we will present the main results of a research about the determinants of green purchase intention and the implications for marketing communication.

This research aimed to measure consumers' ecological consciousness, perceptions, attitudes and behavioral intentions towards the purchase of green products and to develop an explanatory model for green purchase intention based on the theory of the planned behavior (Ajzen, 1991; Fishbein & Ajzen, 2010).

A set of indicators was used to form multiple item scales to measure the variables of the model: ecological consciousness, perceived consumer efficacy, quality perception, price perception, attitude, perceived behavioral control, social pressure and green purchase intention. To test the causal relationships between the variables, structural equation modelling was used. The data was obtained through a questionnaire applied to a representative sample of the population aged eighteen and over resident in the Lisbon Metropolitan Area (AML) with secondary, post-secondary and higher education levels.

The results allow us to establish an order of importance of the main determinants of green purchase intention, to understand the interactions between the variables of the model and to propose environmental marketing communication strategies.

*Keywords: environmental marketing communication, green purchase intention; green products, theory of planned behavior, sustainable consumption.*

### **Understanding savings activity in the U.S. through a human ecological lens**

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Dr. Janet L. Bokemeier, Sociology Department, Michigan State University East Lansing, MI, U.S.

Social safety nets in the United States have become weaker in recent decades. As a result, individual savings activity has become more important to economic well-being. Liquid savings can sustain an individual or family in the face of emergencies or income shocks and retirement savings accounts are critical for economic survival for people no longer in the paid labor force. In spite its importance, not all individuals in the U.S. can and do engage in individual savings activity. It is important for researchers, policy makers, and financial advisors to know the dynamics behind savings activity so that systems can best facilitate the likelihood of saving. This research investigates correlates to the two distinct types of saving activity, liquid and retirement savings. In keeping with a human ecological approach that sees human behavior as occurring within complex and embedded environments, our investigation will consider multiple categories of social context variables to see how they relate to and predict savings behavior. The research will use 2014 telephone survey research data with adults in the state of Michigan, U.S. to develop logistic models to predict how saving behavior relates to community environments, family environments, individual characteristics, economic environments, and economic attitudes.

### **CP2.2 Human Ecology: Human Economy**

Chair: Andrew Jorgensen

### **Questioning the International Structure of the World with Structural Human Ecology-StlrPAT's use of Ecological Footprints**

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On one hand, Stochastic Impacts by regression of Population, Affluence, and Technology (StlrPAT) is arguably one of the most effective analytical tools that have emerged from Human Ecology and Environmental Sociology to probe the drivers of anthropogenic global environmental change. On the other hand, global environmental change is unevenly distributed in



space and time, and Comparative Sociology has long debated the existence and characteristics of an emerging political-economic structure among nations, that is, differing political-economic positions given material and ideological international relations. In this paper, 1) I critically review the application of the StlrPAT analytical approach to National Ecological Footprints by the intellectual leaders of the Structural Human Ecology –SHE–StlrPAT research program; 2) I discuss the program's empirical engagement and the political stance that emerges from it, focusing on international structure and, 3) I formulate a proposal to further empirical engagement to advance macro-sociological comparisons, and the goal of SHE-StlrPAT's critical commitment to understanding and addressing global environmental change.

Keywords: Structural Human Ecology, StlrPAT, global environmental change, Ecological Footprint

### **The Asymmetrical Effects of Economic Development on Consumption-Based and Production-Based Carbon Dioxide Emissions, 1990-2014**

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This study examines the potentially asymmetrical relationship between economic development and consumption-based and production-based carbon dioxide emissions for 118 nations from 1990 to 2014. We decompose economic development into economic expansions and contractions, measured separately as increases and decreases in Gross Domestic Product (GDP) per capita, and examine their unique effects on emissions for the overall sample as well as reduced samples of nations with relatively larger populations. Using cross-national time-series regression analysis techniques, we find no statistically significant evidence of asymmetry for the overall sample. However, for a sample restricted to nations with populations larger than 10 million, we observe a contraction-leaning asymmetrical relationship between development and emissions, where the effects of economic contraction on both emissions outcomes are larger in magnitude than the effects of economic expansion. This difference in magnitude between the effects of economic expansion and economic contraction is more pronounced for consumption-based emissions than for production-based emissions. We provide tentative explanations for the variations in results across different samples and emissions measures, and conclude by underscoring the need for further research and theorization on potential asymmetry in the relationship between development and anthropogenic emissions.

Keywords: *Asymmetry, Carbon Dioxide Emissions, Economic Development, Climate Change*

### **Paulo Afonso Archaeological Complex and its Complexities**

Prof. Dr. Maria Cleonice de Souza

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Cardoso\*<sup>2</sup> Prof. Ma. Manuella Maria

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This article covers the Archaeological Complex of Paulo Afonso located in the municipality of Paulo Afonso, Bahia, Brazil, with an Academic-Scientific focus related to Research and Management of the Archaeological Heritage, in this territory there are granite blocks, with more than a hundred Sites of Rupestrian records, from the Geometric Tradition, Paulo Afonso Sub-Tradition, they constitute an unquestionable Landscape-Environmental Archaeological Heritage. However, this archaeological territory was for five decades the object of breaking stones, the only mean of survival, for the current local community, with the identification of this archaeological context, the Brazilian Federal Public Ministry, determined the paralyzation of the breaking stones activities, thus being able to safeguard the remaining sites.

The methodology used was the implantation of a Scientific-Academic Project to strengthen the Archaeological Research in the area, which would become the Field Laboratory of the Bachelor's Degree in Archeology of the State University of Bahia /UNEB, Campus VIII / Paulo Afonso, as well as a proposal to create the Open Sky Museum. The results are linked to the conservation of an area of incalculable environmental, cultural and historical value, but above all, to integrate the local

community, guaranteeing conditions for socio-economic and cultural development, as well as the practice of promoting cultural tourism, patrimonial education and the activity of academic research.

### **Bridging the Skills - Passion Gap: Providing Human Ecologist with the Skills to Create Impact**

Jay Friedlander, College of the Atlantic, Sharpe-McNally Chair of Green and Socially Responsible Business

Impact investors at the Skoll World Forum frequently lamented that they had capital to deploy to solve urgent sustainability problem, however they more often than not found passionate and inspired social entrepreneurs lacking the skills they needed to build their organization and scale impact. Like many students of human ecology, these social entrepreneurs were long on passion, but short on fundamental skills needed to run any type of organization.

What are these essential skills? How should they be taught? Moving beyond theory of change, design thinking and other "standard practices" of social entrepreneurship curricula how do you embed hard business skills into a human ecology curriculum to accelerate venture growth? Building on experiences both inside and outside the classroom, I have built a program providing essential skills with remarkable results. Enterprises that have gone through the program are growing a six times the national rates and raised on average nearly \$300,000.

Learn how this program is structured inside and outside academia to accelerate ventures, fill the skills/passion gap and give human ecologists the essential skills they need to create real and substantive positive change.

KeyWords: social enterprise, sustainable business, human ecology education

### **CP3 Enhancing Ecological Health and Resilience**

Chair: Arnald Puy

### **Integrating human and ecological perspectives in a multi-scale project of environmental recovering: challenges, successes, and failures.**

Alexandre Marco da Silva\*<sup>1</sup>, Karen Regina Castelli\*, Ludmila Araujo Bortoleto\*, Rosiane Argenton e Silva\*, Pablo Bettio Mendes\*, Kristiane Ramos Primo\*

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Fragmentation of landscapes is a kind of degradation that has us led to having two complementary choices: developing solutions to conserving the healthy remaining forest fragments and to restoring degraded places. The option number two may be conducted by projects that focus on recover the degraded environment. We elaborated and tested model by a set of pilot-scale projects in a highly urbanized municipality of the southeastern Brazilian region. Four projects were carried out in order to evaluate the effectiveness of techniques dedicated to solving diverse problems of environmental degradation (isolation of fragments, loss of biodiversity, soil erosion and bioinvasion) in distinct environments (forest, soil, and rivers) through the acceleration and orientation of the process of restoration. The projects were organized considering techniques and approaches that are all cheap, naturally-based and easy to be implemented and with a high probability of social comprehension and acceptance. In each one project, we got interesting outcomes, considering all successes and limitations. This study might be useful for both researchers and technicians and policymakers who search for feasible and realistic projects that embrace the main aspects of environmental recovering through an ecological approach.

*Keywords: ecological restoration, urban environment, natural-based solutions.*

### **Sense of place in a fractured land: Exploring the socio cultural impacts of hydraulic fracturing and people's relationships with the landscape in Taranaki, New Zealand.**

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Taranaki represents a place charged with Maori cultural history and values and the centre of oil and gas production in New Zealand. In the last few decades, hydraulic fracturing has been used extensively in the region, allowing oil and gas industry to access more and larger oil and gas deposits. With a total of 65 hydraulic fracking operations conducted in 39 different wells, companies have established their presence with production stations and well sites, sharing land with dairy farms and residential neighbourhoods. A growing body of research has explored the potential impacts of this controversial practice, focusing on the ecological and human health concerns, such as water quality, discharges of toxic substances, and air

emissions released during processing (Adagate et al. 2014; Perry 2013). However, the associated risks and impacts are still unclear and need to be thoroughly investigated. Fewer studies have considered the changes that fracking causes on how people relate to their landscape and experience their sense of place (Sangaramoorthy et al. 2016). This paper explores these changes, focusing on how this extractive process impacts the relationship people have established with their landscape, and how their notion of belonging and sense of place have been shaped by it.

*Keywords: community-based research; human-landscape dynamics; hydraulic fracturing; sense of place*

### **How to better protect oases against sand encroachment? Insights from Erg Chebbi (Morocco)**

Amald Puy, Manuel Herzog, Pedro Escriche, Amou Marouche, Yousef Oubana, Olaf Bubenzer

Oases agroecosystems are highly relevant from both a social and environmental standpoint. However, due to their location in or nearby deserts, they are vulnerable to sand encroachment, e.g. the accumulation of wind-blown sand or silt grains, a phenomenon that threatens their sustainability. Increasing our understanding of sand encroachment patterns in desert oases is thus key for developing effective initiatives for their conservation.

Here we show how to rank sedimentary sources in terms of their contribution to sand encroachment in desert oases, as well as to identify the spatial distribution of sand within irrigated plots. We exemplify our approach using the case study of the Hassilabiad and Merzouga oases (Erg Chebbi, SE Morocco). The method can be exported to any oasian environment worldwide, and allows to define on scientific grounds 1) which sand source areas should be stabilized first in order to obtain the greatest reduction in sand encroachment, and 2) determine the most appropriate design and location for sand-protection structures.

### **Latin American Political Ecology and mining: contributions to a reflection of the tragedy in Mariana**

João Francisco Alves Mendes | Federal University of Santa Catarina / Post-Graduation Program Interdisciplinary Doctorate in Human Sciences (UFSC/PPGICH)  
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The contemporary world undergoes profound and accelerated transformations. The society - nature relationship entered the global debates from the 1970s as an attempt to respond to the unsustainability of the capitalist model of production. The complexity of the phenomena that constitute the environmental issue also points to the need for a complex thinking, and in this sense, Latin American Political Ecology has been elaborated as a strategy for coping with global socio-environmental inequalities. It is an interdisciplinary perspective that elaborates the visions of reality from an alternative way, dealing with ecological, environmental and power relations issues. From a very emblematic case of the recent history of Brazil, which was the rupture of the iron ore tailings dam at Fundão, located in the district of Bento Gonçalves, in the city of Mariana - MG, under the responsibility of the companies SAMARCO and BHP Billiton, aims to articulate the theoretical perspective of Latin American Political Ecology and extractivist development as a model of this complex approach to socio-environmental studies.

*Keywords: Latin American Political Ecology; complexity; mining.*

### **The Emergence of Private and Civic-Sector Land Conservation in Latin America**

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Jivan Sobrinho-Wheeler, Project Coordinator - Land Conservation Program Lincoln Institute of Land Policy, Cambridge, MA

While government-sponsored conservation in the form of national parks and reserves has had a great deal of success in Latin America, in the past few decades private land conservation by individuals, non-governmental organizations, churches, and indigenous groups has also begun to play a major role in the preservation of biodiversity and the stewardship of natural and cultural resources. In this paper, We will explore the emergence of a private and civic-sector land conservation movement in Latin America and the role it has played in complementing public conservation in the region. This will include analyses of how different countries' political histories and institutional memories have influenced their attitudes towards conservation as well as how colonial legacies continue to shape both the policy and perception of land conservation in Latin America, especially as it relates to indigenous peoples. This comparative investigation of land conservation in the region will be grounded in its historical context and include examinations of tax policy, legal codes, resource regimes and the impact of sociopolitical movements on conservation.

*Key words: Land conservation, Latin America, biodiversity stewardship*

## Evaluation of ecological integrity in landscape context based on remote sensing data

Zelený, Jakub · Charles University, Environment Centre, José Martího 2/407, 162 00 Prague 6, Czech Republic

Maintenance of ecological integrity on global as well as regional scale is the prerequisite for sustainability as well as beneficial ecosystem services. Ecological integrity is a globally acknowledged concept (Paris Agreement, 2015), although there is a no consensus on a generally accepted theory or a unified measurement method to evaluate integrity. This contribution presents a novel method of integrity assessment on a regional level, based on freely available data from remote sensing (Landsat 8, Sentinel-2), and applied in the state of Schleswig-Holstein, northern Germany. The results of measurements, based on three variables (photosynthetic potential, evapotranspiration potential and texture heterogeneity), provide a simple and consistent method for identification, assessment and quantification of the integrity gradient in a regional context. An integrative Regional Index of Ecological Integrity (RIEI [%]) is derived as an estimate of the relative distance between potential top and bottom performance in regional context. The explanatory power of the tested method can be used in nature conservation, ecosystem management as well as setting ecological targets and goals for policy makers.

## CP4 Valuing Ecosystem Services

Chair: Tom Burns

## Combining methods to estimate ecosystem service potentials for crop and fodder production in Schleswig-Holstein, Germany

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Human well-being is strongly dependent on the benefits of nature, especially in food provision. This study aims to identify the suitability of different methods in ecosystem service assessments for crop and fodder provision in relation to primary production and ecosystem temperature regulation. The spatial distribution of these ecosystem services is investigated in the state of Schleswig-Holstein, northern Germany. Three quantitative methods are used, including (i) a satellite image time series analysis (estimating ecological integrity, NDVI and temperature differences), (ii) a statistical inference method based on Bayesian approaches (assessing the crop suitability areas) and (iii) a statistical analysis of official data (related to actual yield and biomass). Additionally, (iv) a qualitative spreadsheet method, which is based on expert evaluation, is used to identify exergy capture and respective ecosystem services. The methods are introduced, the resulting maps are presented and the outcomes of the approaches are compared and interpreted with respect to distinct methodological demands and utilities.

**Keywords:** *Ecosystem services, Crop provision, Ecological integrity, Quantitative mapping, Expert evaluation*

## Tales of Coexistence: Assessing Cultural Ecosystem Services in a Storied Landscape

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Landscapes are the product of fundamental entanglements between humans and the beyond-human, mutually shaping each other and their environment. Disregarding the subjective and relational dimensions of human:environment interactions, through the objectification of nature, legitimises both the appropriation and commodification of resources as well as a protectionist approach to the environment that does not necessarily epitomise such relationships. This argument will be developed on the context of the assessment of cultural ecosystem services (CES) within and across cultures; highlighting the importance of addressing the multilayered meaning of 'culture', by engaging with the cultural and political landscape as well as different dimensions of local ecological knowledge (LEK). Focusing on the transmission of storied knowledge, through participant observation, informal and semi-structured interviews, this research assesses the dynamics of LEK re/produced by situated narratives and landscape management practices, aiming at identifying the main drivers of change and impacts upon CES amongst both mestizo and indigenous communities in the Peruvian Amazon. In particular, here I propose a conceptual framework and methodology to embrace a new inclusive paradigm in conservation initiatives, justifying the need of such approach within the context of forests perceived as part of dynamical social relationships.



*Keywords: Cultural Ecosystem Services, TEK, Storied Knowledge, Cultural Landscape, Political Landscape*

### **The Wounded Hero's Quest in the Anthropocene Era: Reconnecting with the Ecosystem and Healing Within**

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The negative technological impact of human beings on the planet in the Anthropocene Era introduces an ecological challenge characterized by two levels of alienation. The one alienation is distinguished by separation from the natural order, as the planet is objectified and treated with indifference or contempt. The other alienation is within human nature itself - on a social, physical, psychological and spiritual dimension-typified by a species either increasingly artificially separated from its natural surroundings, with ill effects, and/or devastatingly exposed to the ravages of nature triggered by damaging, planet-wide human influence. We identify reflexive processes, in which alienation from nature tends to build on itself through self-reinforcing feedback loops, offering some ways in which these processes can instead be turned towards healing. This paper explores how reconnecting with the ecosystem can be one path of an important "quest", to commune with nature as a way of healing on a personal level, while promoting ecological regeneration on a larger, ecological, global scale.

*KeyWords: Transcendence, Nature Deficit, Alienation, Well-being, Confucian Ethic, Hermeneutics, Commodification of nature*

### **Ecosystem cultural services of the riparian forest in the Ybycuí Creek micro-basin; Ybycuí National Park, Paraguay**

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The study describes the importance attributed to cultural water ecosystem services in the Ybycuí Creek micro-watershed in its route within the Ybycuí National Park and its buffer zone. This protected area is one of the oldest and most stable in the country about its management, with high visitation in summer time for tourism and recreation. The study population was identified through key informants, includes all key social actors from government, private institutions and local organizations that have an impact on water resources management. The research is qualitative and quantitative with a sequential transformative design. Semi-structured interview, key informants and focus group were used with non-probabilistic and directed sampling. The actors recognized nine water ecosystem services: existence value, aesthetic, spiritual/religious/ethical, historical, cultural knowledge, research, tourism and environmental education. The attitudes and perceptions of the key social actors are strongly linked to their link with the park and the buffer area. The aesthetic value obtained the highest priority regarding the relevance of the service, as it is the main reason for the high visitation that generates income for the community and a sense of pride among the residents. Cultural knowledge was the least priority ecosystem service.

*Key words: ecosystem services, key social actors, culture, protected wild areas.*

### **Stakeholder network dynamics towards MPA governance**

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Protected areas constitute complex social-ecological systems where the success of conservation efforts will depend to a large extent on the capacity to prevent, address and mitigate conflicts. This capacity may depend on the density and quality of relationships established between the managing authority and local stakeholders and can be reflected in the networks and opportunities for consultation and debate. Here, we review the governance structure, both formal and informal, in a protected area in SW Portugal (Natural Park of Arrábida) over three periods in the past 20 years. For that we rely on documental review and personal experience, validated with interviews to key participants to construct three snapshots describing the form of consultative networks. We use social network analysis to characterize and summarize these networks and discuss network dynamics in the context of the progressive emergence of a specific governance framework for the marine component of the protected area.

*Keywords: Protected areas; Stakeholders; Social network analysis; Marine Park prof. Luiz Saldanha; SW Portugal*

## **The involvement of the local community in the preservation of coastal and ocean resources - the case study of "Ambassadors for Biodiversity"**

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The project "Conhecer para Preservar – Embaixadores pela Biodiversidade" (Know to Protect - Ambassadors for Biodiversity) is an oceanic and coastal literacy project that emerges as part of the joint application of the Portuguese municipalities of Torres Vedras and Lourinhã to the Operational Program for Sustainability and Efficiency in the Use of Resources (PO SEUR) and it is being developed by a team of researchers from MARE NOVA. The project aims to involve the communities of both municipalities in the conservation of local biodiversity, with a special focus on the school community, but also with widespread dissemination and involvement of community members in an intergenerational approach, through a set of actions - an itinerant exhibition, a guide to educational activities and awareness actions. Throughout the project, 17 local associations were involved in the developed activities, counting with more than 500 participants. In addition, contests were launched with the participation of more than 150 students, as well as the exhibition, which covered almost two dozen of schools and a shopping centre, reached more than 180 000 people in the first four months of iteration. Through the involvement of the local inhabitants it is possible to preserve and protect local habitats and biodiversity, since only those who know can preserve it.

*Key-words: Oceanic literacy, environmental education, coastal areas, local community*

## **CP5.1 Human Ecology Teaching and Research Methods**

Chair: Ricardo Amorim

### **The Theoretical and Methodological Construction of the Every Daily of Youth Training Experience**

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This text has as centrality the theoretical and methodological discussion in which the journals autobiographical formation are being constituted. Being configured as a collection device within a research dimension with youngsters from the field technical training students and at the same time affirming itself as a methodological tool in the field of research in Human Ecology, standing out as a differential and innovative element in this field of studies : Discussion about human subjectivity - in this case young - in the universe of Human Ecology. It is structured in a dimension of theoretical revision - with emphasis on the conceptual discussion of biography, autobiography and the dimension of subjectivity within the field of Human Ecology - and experiential, starting from the narrative principle of the applicability of the device to the young. It is from this perspective that the development of the diary of youth training experience was based, both theoretically and methodologically, on the unification of the principles of two diaries, being that of the training journal (ZABALZA), which is based on the proposal of a "resource for reflection on the practice itself and mechanism for personal and professional development and the diary of moments (HESS), which arise from the theory of moments and has the function of reporting them. It is possible to verify that the use of the diary as a research device among young people is a relevant element that allows the registration and dense analysis of the universe of experience and consolidation of the research. The primary results were that of the six young participants, only four completed the writing process; the others have argued that they do not have the habit of writing and mainly dealing with themselves.

*Keywords: Diary - Research device - Training - Youth of the field - Human Subjectivity*

### **The human nature of children: ecoperceptions in the school spaces**

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The Human Ecology thinks about the interaction of the human species with the natural and social world, involves multidimensional factors of this universe (MACHADO, 1984). The core of this study was analyzed aspects of the childlike nature. The center of this study meets results partial of investigation degree in the masters in Human Ecology and socio-environmental management – PPGecoH/UNEB. This objective was investigate the representations of Nature, starting of perception childlike environmental in the school context in the city of Juazeiro/BA, Brazil, starting of analytical-descriptive framework of representations childlike, have as base the social representations (MOSCOVICI, 1978). The methodology used was the participant observation, notes in the diary field, design workshops and semi-structured interviews. The partial results evidence the forms who the childrens come into the model of Nature, excluded the humans of integrate parts. In Human Ecology, childhood be can to *locus* to more important in the sace of knowledge.

**Keywords:** *Nature; Human Ecology; Children; Mental Maps; Social representation.*

### **Coming to age – experiences in (environmental) education**

Maria Ilhéu<sup>1,2</sup> and Mariana Valente<sup>3,4</sup>, with the project team of "ID-Natura: the river of my village"

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In this time of ours we definitely need to multiply the approaches, linkages, connectedness, cross-boundaries gatherings and holistic views as soon as we talk about environmental education. To call this age Anthropocene brings the illusion of a global world that does not help to understand the patchwork of the real world where we live. This has been stressed by thinkers as Donna Haraway, Bruno Latour, Anna Tsing, Natasha Myers among others.

Environmental education came to age integrating diversity and complexity, promoting meetings in multilevel ways, namely with others species, weaving bonds of communication and pushing thought in direct experience with the natural world.

Replying to that challenges, the ID-Natura project promote multi-meetings between students of all school levels (kindergarten, elementary, secondary), teachers and researchers from different disciplinary areas and among those and the "river of my village...". This romance begins with the direct and delicate experience in the natural world (a village river) articulating subjectivity of knowing with the scientific objectivity, and in consequence allowing to catch the meaning (s) of experience (s) and of knowledge. In this project we are inspired by J. W. Goethe where *delicate empiricism*, that is to say learning and knowing being the result from active observation of nature, rather than the fragmentary analytical method in which our educational systems have invested last centuries.

**Keywords:** *nature connectedness, education sustainability, delicate empiricism*

### **Educação em ciências ambientais: da interdisciplinaridade a ecologia humana decolonial.**

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A imagem distorcida do mundo, forjada nos pressupostos da ciência moderna, produz a fragmentação racional do entendimento sobre o que seja a realidade vivida pela sociedade global com seus desafios e contradições. A lógica cartesiana consolidou um padrão de desenvolvimento centrado na visão europeia de sociedade, de relação homem natureza, de produção dicotômica do conhecimento. No âmbito acadêmico o fracionamento do conhecimento e a institucionalização das disciplinas contribui para sedimentar a visão parcial da realidade. No ambiente escolar os estudantes do ensino formal se deparam com conteúdo que expõem fragmentos do mundo, os quais pouco dialogam ou



fazem sentido para a sua realidade ou a da sua comunidade. Tem-se uma inteligência colonizada, parcelada, reducionista, num mundo que se quer simplificado, homogêneo, unidimensional, para forjar a ideia de uma sociedade sem conflitos, nem contradições. Esse contexto impõe desafios para a educação em ciências ambientais. A prática e a atitude interdisciplinar são apresentadas como necessidade histórica para a multi e a transdisciplinaridade e princípio base para se construir um conhecimento significativo a partir da complexidade do mundo, das incertezas, da multidimensionalidade da realidade do espaço humano, como caminho para uma ecologia humana decolonial.

*Palavras-chave: Educação; ciências ambientais; interdisciplinaridade; ecologia humana; desenvolvimento humano*

#### **CP5.2 Human Ecology Teaching and Research Methods Chair:**

Chair: Paul Ofei-Manu

#### **T-ISO: a proposal for standardization by green IT indicators in higher education institutions**

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The main purpose of this work was evaluate the Green IT implementation level of the higher education institutions of the São Francisco Valley, Brazil, through a proposed standard model of indicators. Through an in-depth bibliographic review, we have identified the most important aspects of IT fragility related to environmental sustainability. These aspects were organized into a list, which we propose as a standard model for Green IT analysis (T-ISO). We established scores according status of the indicator: (0) Absence; (1) started, when it is in the implantation phase; (3) partially, when it is present but not yet fully functioning; and (5) fully, when it is being used in its entirety. Then, we conducted interviews with the IT managers of the studied institutions. As results, none of the institutions present an effective implementation of Green IT practices even though recognizing the benefits that this can bring. In general, they run into internal rules and regulations of their respective headquarters or other general regulatory milestones even if they are oblivious to public standards. This standard model of indicators helped us to define some policies of actions and good practices for these organizations to get oriented and achieve excellence in IT sustainability.

*Key Words: Green IT, Sustainability, IT Standard.*

#### **Place-based, outdoor, and community education in Maine: Four case studies**

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The system of compulsory education in the United States currently shapes our society and often dictates our daily lives. In the US, we depend on our k-12 education system to educate our children in a myriad of ways including: 1) workforce readiness; 2) preparing students for post-secondary education; 3) to instill civic/moral responsibility; to teach healthy lifestyle skills; and 4) to make a better informed population. Although there are strengths within both public and private systems of education – many private schools are on the cutting edge incorporating nature-based approaches to education. A 2017 National Survey done by the North American Association of Environmental Education found a 900% increase in nature-based preschools and forest kindergartens in the last six years within the US. Currently, most of these schools are located on the West Coast of the United States and in the New England region of the East Coast. This session will detail the results found from an ethnographic study of four different schools in Downeast Maine, attempting to learn: 1) how they implement place-based and outdoor education; 2) how they find ways of integrating themselves within their communities; and 3) how these types of alternative schools might continue to influence education in the United States.

*Keywords: education, experiential, place-based, community*

#### **Collaborative Partnerships for Education Policy Research: Stakeholder participation in M&E of ESD research in Asia**

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Collaborative participation of policymakers, education-related government officers, curriculum developers, and education practitioners in research efforts to advance policies and agendas on education for sustainable development is crucial in



achieving effective knowledge co-production. Monitoring and evaluation (M&E) is an important policy tool for strengthening the implementation of sustainability education and ensuring that it is achieving the expected objectives. However, the effectiveness of M&E in identifying existing gaps for improvements cannot be ensured without the involvement of researchers, relevant government officers, and practitioners in collaborative research. The paper presents an example of a research process on M&E of education for sustainable development (ESD) conducted in Asia (with participants from seven Asian countries) as an example of how collaboration between researchers and multi-stakeholders can influence research findings and support their relevance for evidence-based policymaking. Emphasising mutual learning and knowledge co-generation, the paper firstly strengthens the theoretical and empirical links to wider debates on the 'research-policy relationship' both within and beyond ESD; after which it provides an overview of the research including the methodology, results and findings. Finally, the paper focuses on the challenges and issues M&E raises about the relationship between research and policy in ESD as well as the ways forward.

*Keywords: monitoring and evaluation; Education for Sustainable Development (ESD); Asia; collaborative partnerships; policy research*

### **CP6.1 Food System and Food Security**

Chair: Masahiro Umezak

#### **Cultivating support for a biosensitive food system**

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Central to human health and wellbeing is the consumption of nutritious food, for which we are entirely dependent on the natural resources of the Earth. However, humans are currently consuming planetary resources at a rate that outstrips their capacity to renew, thereby undermining our ability to feed ourselves into the future. Calls for transformative change abound in relation to agricultural and consumption practices as well as the exchange relationships that connect them.

An underpinning theme of many such calls is the need for greater biosensitivity: being in tune with, sensitive to, and respectful of the life processes on which we depend.

This paper outlines proposed research seeking to explore food-provisioning systems that have potential to support enhanced biosensitivity and co-benefits for human and ecosystem health. Using exchange models based on Community Supported Agriculture (CSA) as case studies, the project aims to understand how, and for whom, participation in such systems could influence change in practices, values, paradigms, and sense of wellbeing, for both producers and consumers. It seeks to elucidate the lived experiences of participants, particularly the processes of transition that are involved, and how people reconfigure their expectations of consumption, livelihood and what it means to live well.

*Keywords: sustainable production and consumption; food systems; biosensitivity; community supported agriculture.*

#### **The contribution of school feeding programmes to the development of rural communities of Limpopo Province, South Africa**

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School feeding programmes (SFPs) have always been linked to educational outcomes with little or no attention to other possibilities such as rural development. Despite the many opportunities that the SFPs may bring to rural communities, the potential for linking SFPs to rural development has not received much attention in South Africa. The existing SFPs in some schools of Limpopo Province, South Africa are rarely linked to local food production activities such as school and community food gardens to supply some of the food to learners. This presentation is based on data collected through focus group discussions with learners and parents as well as individual interviews with educators from 11 selected primary schools in Limpopo Province, South Africa. The results revealed that SFPs offered benefits such as hunger alleviation, education, nutrition, health, time-saving and financial benefits. In addition to these benefits, the parents strongly believe that SFPs could promote local food production, skills development and create more job opportunities for rural communities and thereby boost the local rural economy. It is therefore recommended that local community members receive support in terms of resources, training and finances to promote local food production, create jobs and ultimately contribute to rural development.

## **Association between neighborhood food environments and nutrients intake among elderly people in five rural regions in Japan**

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Several environmental problems, including water contamination and hazardous chemicals in food, have arisen as a consequence of industrialization. Because the adverse impact of such environmental problems on health was predictable, the issue has attracted considerable public attention. There is also a different type of environmental problem: those that may have a potentially significant impact on human health, but have not been recognized as such. An example of this kind of issue is the so-called "food environment". Studies have shown that in Western countries, people who live near fast food outlets and/or far from fresh food markets are at higher risk of obesity. In Japan, aging and depopulation have harmed the food environment in rural communities, such that more people are living in areas with few or no fresh food markets and those individuals are expected to consume less protein and more salt, which are risk factors for sarcopenia and hypertension, respectively. I have investigated the relationship between the food environment and dietary/nutritional intake in five municipalities in Japan. In this presentation, I will report the latest findings from my research and discuss the connection between food environmental and health in depopulation setting.

## **Fruta Feia: A Portuguese cooperative saving "ugly fruit" from waste**

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Developing and implementing better systems that reduce wastefulness is a cornerstone of any transition to a more sustainable world. In Europe estimates say that up to 50% of wealthy edible food is lost along the entire food supply chain. Massive waste occurs in the field and at large groceries if products fail to reach pre-defined marketing standards that include rules establishing what products should look like (not related to health issues) in terms of size and shape and so are considered "ugly" and unsellable. Grocers argue that they have to follow strict cosmetic standards for fruit and vegetables since otherwise consumers will not buy them. The consequence is that tons of edible food is thrown away every year in the most developed countries.

But nowadays there is a growing movement to promote and sell 'ugly' products and even large groceries are changing their practices and creating areas dedicated to the sale of out-of-size products at lower prices.

In Portugal, the idea of thwarting the dictatorship of aesthetics in fruits and vegetables and, at the same time, building a fairer model for all - the environment, farmers, consumers and employees - lead to the creation of the cooperative Fruta Feia. Under the motto "Pretty People eat Ugly Fruit", the cooperative was created in Lisbon in 2013, by a young environmentalist. The rapid growth of the cooperative moving from an idea to a successful business that has 14,000 people on the waiting list shows that a lot of people review themselves in this more sustainable consumption model which helps to rescue 15 tons of potential food waste per week.

The aim of this paper is to discuss food waste in Portugal and creative ideas to fight it.

*Key words: food waste, food supply chain, sustainability, Portugal*

## **CP6.2 Food System and Food Security**

Chair: Jennifer Givens

### **Indigenous Knowledge Systems and Food Security: A Case Study from South Africa**

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The presentation will explore how indigenous knowledge systems within the human environment can contribute to the achievement of household food security. With examples drawn from South Africa, the presentation illustrates the way in which indigenous knowledge systems (IKS) can assist in food gathering, production, processing, preservation, storages and utilization patterns. Data was collected from scale-scale farming households in seven villages of Sekhukhune district South

Africa. Participatory Rural Appraisal (PRA) and Rapid Rural Appraisal (RRA) were used to collect the data. The following tools were used to collect the data: focus group interviews; semi-structures interviews, direct observations, note taking, photographs, village resource mapping, village social mapping, and seasonal calendars. The results highlighted the role of women in food gathering, production, processing, preservation, storage and utilization using indigenous knowledge system to ensure household food security. The presentation conclude by demonstrating the importance of utilizing indigenous food in areas where the natural environment still provide them, as they contribute to nutrition security. The presentation recommend the promotion of the use of indigenous foods (wild and cultivated) through education and the extension systems. It also recommend the integration of IKS into the modern knowledge so that the two complement each other in ensuring food and nutrition security.

*Keywords: Indigenous Knowledge Systems; Food Security; Human Environment*

### **Incorporating Social Factors into Research on the Food-Energy-Water Nexus and Sustainability**

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Addressing complex environmental problems with social causes and social consequences often requires interdisciplinary research. Social and natural sciences, however, have developed independently with their own epistemologies and methods, and this can impede collaboration. For example, social science tells us context matters, yet disciplines may conceptualize and model contexts such as system boundaries and components, and interactions between components such as stocks, flows, and feedbacks, quite differently. Research on resilience, coupled human and natural systems, and structural human ecology of well-being are three complementary approaches that enable cross-discipline collaborative thinking. I apply these three approaches to an examination of the food-energy-water (FEW) nexus in the Columbia River Basin (CRB) in the United States. Applying these approaches to the FEW nexus in the CRB provides ways to conceptualize and better understand environmental and social change in the region and advances each of the three approaches via application.

*Keywords: resilience, structural human ecology, well-being, coupled human and natural systems (CHANS), food-energy-water (FEW) nexus*

### **Urban-rural difference in the determinants of dietary and energy intake patterns: A case study in West Java, Indonesia**

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**Background:** Few studies have explored differences in the determinants of individual dietary/energy intake patterns between urban and rural areas.

**Objective:** To examine whether the associations between individual characteristics and dietary/energy intake patterns differ between urban and rural areas in West Java, Indonesia.

**Methods:** A 3-day weighed food record, interviews, and anthropometric measurements were conducted in Bandung (urban area; n = 85) and Sumedang (rural area; n = 201). Total energy intake and intake from protein, fat, and carbohydrates were calculated. Food items were grouped into dietary categories based on the main ingredients to calculate their share of total energy intake. The associations between individual characteristics and dietary/energy intake were examined by fitting regression models. Models that also included education and body mass index (BMI) were fitted to adult samples only. **Results:** In Sumedang, the total energy intake and energy intake from carbohydrates, fat, and grain/tubers were significantly associated with age and occupation. In Bandung, energy intake from grain/tubers and vegetables/legumes was related to sex and occupation, while other indicators showed no associations. Among adults, BMI was associated with the total energy intake and educational level was associated with energy intake from vegetables/legumes (both only in Sumedang).

## **Teaching Food Systems in the Age of Consumer-Based Alternative Food Movements**

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The last three decades have witnessed a proliferation of consumer-based alternative food movements. Calls for "ethical" and "sustainable" consumption are everywhere, from restaurants and farmers markets to cookbooks, blogs, and documentaries. Popular food movements have sparked increased academic interest in food and agriculture, as evidenced by the emergence of new college majors, minors, and academic programs in sustainable agriculture and food systems. The popularity of alternative food movements creates exciting opportunities for food systems education, but also poses serious challenges. This paper examines the following questions regarding these challenges: (1) what does critical pedagogy look like in the context of food systems education, and what insights can human ecology offer; (2) as educators, how do we challenge the notion that individual choice has the power to solve some of our most complex issues, from hunger and obesity to worker exploitation and environmental degradation; (3) how do we facilitate critical thinking and bring analyses of power and politics to the forefront of classroom discussions; and (4) how do we teach civic engagement in a time of heightened distrust in governments? In addition to food systems scholars, this session should be of interest to all educators grappling with teaching in the age of neoliberalism.

food systems; food studies; interdisciplinary education; critical pedagogy; neoliberalism

## **CP7 Philosophy of Human Ecology**

Chair: Felix Tretter

### **The Right to the Sacred Territory: a Rhizomatic Perspective in Human Ecology**

Alzení de Freitas Tomáz<sup>1</sup> Juracy Marques<sup>2</sup>

This is an investigation on the Sacred Territory on the basis of the cosmology of Traditional Populations and Communities (PCTs) in the Northeast Brazil, Latin America and other continents. Based on an ethnographic perspective, the study allowed to identify occupations, retakings of territories of belonging, selfdemarcations and legal actions that concern the recognition of these sacred territories for the PCTs, for which, the nature, as well as the humans, are the holder of rights. It is estimated that there are sacred places in all Traditional People's cultures around the world, and in most of them, these places are considered, worshiped, classified as dwellings of ancestors, gods, spirits or enchanted, and they are permeated by customs, traditions and senses that, as a rhizome, support ethnic identities and systemic connections with the nature. In Latin America, the people of the Amazon defend the concept of Well-Being, as the premise for the rights of these places. In Brazil and in some other places around the world, there are propositions of actions aimed at the protection of sites intrinsically associated with the sacred field. Yet in the context of the globalization of capital, developed and developing countries historically engage in actions that place the sacred territories and their People under threat.

*Keyword: Well-Being. Cosmology. Nature. Belonging. Sacred Territory.*

## **Contemplative Human Ecologies**

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Human ecology recognizes complex and interdependent relations between humans and their natural, social, built, and imagined environments. Despite this holistic orientation, most human ecological investigations rely on 3<sup>rd</sup> person inquiries alone, that is, those that study phenomena through a lens of "subjectless objectivity." This lens is integral to a Western scientific paradigm, which strives to minimize subjective bias by cultivating subject-object distance. Paradoxically, exclusively 3<sup>rd</sup> person approaches can invite implicit and even intentional bias and bypass potentially significant insights into reality and solutions to human-environment challenges that might arise from critical examination of subjective, i.e., 1<sup>st</sup> person, experience and subject-object relations. This shortcoming is not only paradigmatic, but also arises from unfamiliarity with sound methods for conducting critical 1<sup>st</sup> person inquiry. Fortunately, these methods are increasingly being recognized and integrated. Ancient techniques for metacognitive monitoring (mindfulness meditation), for example, have been adapted for 21<sup>st</sup> century needs and secular applications. Thus, it is now possible to conceive of and develop *contemplative human ecologies*, those that heal the rift between subject and object and facilitate a fully ecological understanding of complex human-environment relations and identification of effective and sustainable solutions to human ecological problems.

*Keywords: contemplative, first-person inquiry, subjectivity, objectivity, mindfulness*



## **Human Ecology: the Science of Experience**

John Schooneveldt, Australian National University, This presentation explores the following propositions:

1. Ecology (including human ecology) is about *interactions* between organisms and between organisms and their environment.
2. An interaction is an *event*: not a *thing* and not a *process*. Examples of events include the conception, birth, and death of an organism and the decisions it makes while alive.
3. Events take place in specific *definable* and, for living organisms, *meaningful*, contexts
4. Living organisms have evolved specific tools that facilitate their interactions (specialised languages including chemical (pheromones) electrical, visual and sonic signalling systems and in the case of humans, natural and artificial languages.
5. Events are the units of evolution (not, species, populations or genes). Events create new things and new processes.
6. Darwinian evolution is a sequence of events: not a *mechanism*, and not a *process*. An event orientation for human ecology offers a *conceptual frame* for thinking about technical and cultural evolution as well as biological evolution.

The presentation will illustrate the application of these propositions and offer a new way of thinking about agency, subjective experience and especially properties by analysing contexts using semantic analysis. If we think of physics as the science of *things* (substantives, or nouns), and general systems theory as the science of processes (actions or verbs), then ecology is the science of properties (the *experience* of things and processes).

## **The Human Ecology of the Future: Epistemology and Metamorphoses of The Human Species in this New Century**

Dr. Juracy Marques | Professor at the State University of Bahia, [juracymarquespshy@gmail.com](mailto:juracymarquespshy@gmail.com)

The scientific basis of human ecology is the behavior of our species. The hominidevolution of seven million years, from *Sahelanthropustchadensis* (Neves, 2018), passing through extinct species - *Orroriontugenensis*, *Ardipithecuskadabba*, *Australopithecus*, *Homo rudolfensis*, *Homo habilis*, *Homo ergaster*, *Homo heidelbergensis*, *Homo erectus*, *Homo neanderthalensis* - (KLEIN, 2005) up to *Homo sapiens* is the web where the sciences of humanity are rooted. We are seven billion individuals, and despite the advances, we have created the possibilities of our self-destruction – climate threats, nuclear threats, and genetic editing - (Chomsky, 2016, Al Gore, 2015). We went from animality to humanity, in a period known as the "creative revolution", estimated between 70,000 and 30,000 years ago (Harari, 2016; Patesnark, 2007), marked by bipedalism, cerebral increase and language development. In the near future we will imitate the gods: "the making of immortal humans" (Kurzweil, 2011). So what would the future humanity look like? The transhumanism (Leonhard, 2017) and the Singularity (Ganascia, 2017) support the hypothesis of the emergence of an increased hybrid species and the inevitable extinction of sapiens. It reminds us the question where are we going? These questions are decisive to build an epistemology for the Human Ecology of the future.

**Keywords:** *Singularity, Transhumanism, HumanEcology, Future, Sapiens.*

## **THE INVIABILITY TO THE HUMAN ECOLOGY BE A SCIENCE: about the paradigmatic nature of Human Ecology**

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This work is the third stage of a research project I'm developing on the epistemological status of Human Ecology. At Santa Ana, during the XXIst Conference on Human Ecology I presented this research question and diagnosed the Human Ecology conception of some Brazilian authors, reaching the conclusion that most consider it as much a science as a paradigm, excepting Machado, who considers it a paradigm. In an International Seminary which occurred on September 07th, 2017 in Maceió, Alagoas, Brazil the research advanced the foundation of the hypothesis, that is, Human Ecology cannot be a science or be treated as a science, but rather as a paradigm, because the conception of it as a science would obstruct its biggest goal, that is, being assumed and practiced by all scientific fields, thus overcoming the environment-culture dichotomy. During this current stage of research, I traced the reason that it cannot be a science to the root of its genesis, seeing that Human Ecology emerged as a perspective to think sociologically about social problems which plagued

American metropolises, like Chicago, after the First World War. So, Human Ecology is presented more as due to a way of doing sociological empirical research, than properly a new science, whose major project was to create a North-American conception of sociology. So much so that in the written work of its authors (Park, Burgess, Mackensie and others) almost

nothing was researched or written about the concept and the epistemology of Human Ecology. I thus conclude that Human Ecology was born to justify the North-American conception of sociology, founded on a methodology of empirical research, which conceived that urban problems could only be understood and faced by considering the way individuals conceived and related to their environment. Ultimately, the Human Ecology founded by Park and Burgess arose as a compass to orient a new methodology of empirical research in social science.

*Key-Words: Human Ecology. Science. Paradigm.*

### **The Seventh Sense: Sense of Ecological Belonging**

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As human beings we continuously receive data and information which forms our perception. This information comes from our surroundings: close / very close and far / very far, and in between. Family ecosystem, culture, community ecosystems, and the universe.

It is basically our five senses that receives this data: vision, hearing, taste, smell and touch. We see things with eyes; hear sounds with ears; taste with mouth; smell with nose; and touch mainly with our hands.

Through a complex system we organize and comprehend data and information; which within our cultural ecosystems forms our behavior and character.

Although it was known in other cultures, the sixth sense came to the academic arena in 1930. It is traditionally defined when we see things not with eyes, hear sounds not with ears, and also feel taste, smell and touch not with related organs; in the Persian language called insight.

I would like to discuss here the Seventh Sense - the sense of belonging to a spot on the surface of the earth, the sense of ecological belonging.

In my view the Seventh Sense of Ecological Belonging has an important role in forming our perception, character, behavior and our functionality throughout life. Awareness of this has implications for people and their environment.

The purpose of this paper is to present further description of the ecological sense, a framework for understanding and the implications of it.

### **CP8.1 Human Health and Wellbeing**

Chair: Marcia Grisotti

#### **Changes in body build and age at menarche in Warsaw girls between 2003-2012**

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The purpose was to assess changes in body build and age of maturation of Warsaw girls during 2003-2012 and to evaluate the impact of socio-economic factors on the biological properties of girls. The material consisted of 830 girls in 2003 and 381 girls in 2012, aged 9-19 years. Girls attended elementary, middle and high schools which were selected randomly. The questionnaire included parental education and profession, number of children, assessment of physical activity (low, medium, high), playing sports (yes, no), stress at home and at work (low, medium, high), number of daily meals. Age at menarche was noted using retrospective method. Measurements included: height, weight and BMI, arm circumference (AC), subcutaneous fat folds on arm, subscapular and abdominal (SFT). Appropriate statistical tests have been applied: T-Student, Mann-Whitney U test, Chi-squared test, principal component analysis and regression analysis. Girls examined in 2013 had greater BMI, arm circumference and consumed less daily meals than girls studied in 2003. Characteristics of living conditions were grouped into 4 factors: parental education and profession (F1), physical activity (F2), stress (F3) and family size (F4). In 2003 girls had lower weight and smaller AC in bigger families; less BMI when parents had better education and profession and smaller AC when the stress was greater. In 2012 girls were taller when parents had better education and occupation and girls had less SFT being more physically active and living in grater families. There was no relationship of 4 factors with age of maturation.

*Key words: secular changes, living conditions*

## **Overview of the Newborn Behavioral Observation Training System (level 1 certification)**

Julie Caissie, Ph.D, Assistant Professor in Family Studies, Baxter and Alma Ricard Scholar, Université de Moncton, Moncton, New-Brunswick, Canada.

During this session, you will learn about the Newborn Behavioral Observation (NBO) Training System (level 1) inspired by Dr. Terry Brazelton and developed to help parents become more aware of their newborn's unique competencies and vulnerabilities. You will be exposed to the NBO's content and uses. The NBO consists of 18 neurobehavioral observations in relation to the baby's autonomic, motor, state and social interactive behavior, key indicators that help describe the newborn's capacities and behavioral adaptation to ensure successful growth and development from birth to three months

of age. The NBO is focused mainly on relationship building between parents and baby and less utilized for assessment purposes; it is widely used across the globe to study newborn development. Session participants will be exposed to research findings obtained during the level 1 certification process.

*Key words: home visiting, infant, intervention, relationship-based, Newborn Behavioral Observations.*

## **Attitudes, practices and information sources of Doctors in Morocco facing menopause; a choice between hormonal treatment and non-hormonal treatment**

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**Context:** The majority of menopausal women suffer from climacteric symptoms because of hormonal deficiency. The World Health Organization has recognized on 2014 the interest of hormone therapy in case of important gene that alters the quality of life of menopausal women with an evaluation of benefit/risk of hormonal treatment. There are many alternatives to hormone therapy to treat and relieves menopause symptoms, which makes very difficult the choice between these treatments for doctors and patients.

**Objective:** the purpose of this study was to understand the attitudes and practices of physicians regard menopause and the different treatments. Also we wanted to find out their opinion towards the hormonal treatment, the arguments of their prescription or non-prescription and what are the alternatives treatments that prove to be effective, as well as the factors that influence the prescribing. In addition to that it seems important to know the level of knowledge of physicians about menopause and its management and what sources of information they use to stay informed. **Methods:** A hundred physician gynecologist and general practitioner took part this study. The data were collected using a questionnaire containing general information about doctors, attitudes and practices regarding menopause and perceptions.

**Results:** The sample consists 67% of general practitioners and 33% of gynecologists. 16% of them are very knowledgeable about menopause, 52% are rather informed. Very few physicians follow continuous training only 4%, the main sources of information are the internet, medical journals, and scientific articles. 65% of doctors prefer handle with the alternative treatment which according to them gives a satisfactory results. They consider that hormonal treatment is a risk for some women with 48% and others consider that it's a risk for all women with 29% and just 6% think that is a blessing for some women.

**Conclusion:** the most of our practitioners consider themselves well informed about menopause. The hormonal treatment is not always the solution proposed by them to treat uncomfortable symptoms of menopause, they prefer to prescribe non hormonal treatment and advise women to change bad daily habits to relieve symptoms.

## **Ecology in Health: decolonizing knowledge and experiences**

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This paper discusses the interconnections between the strengthening of health conception and the Ecology in Health conception, recognizing the pluridisciplinarity that health-illness-environment phenomenon homes and considering that social and environmental justice are related to cognitive justice. It was considered health as right of all people who have been fighting for the right to life in their communities, against the impacts of agribusiness, the exploitation of natural resources, and all the oppressions caused by the capitalism, the colonialism and the patriarchy. In doing so, we considered the integral vision of Human Being in his physical, biological, symbolic, social and economical environment. This research pointed that there are several academic productions in collective health, Preventive Medicine, Health

Promotion, Education in Health, Environmental Education, produced by different health professionals that can strengthen the Human Ecology production, enlarging the comprehension of health as nature, life, culture and fundamental human rights access, under the decolonial perspective of the ecology of knowledge, where different research fields not only dialogue among

themselves, and they allow themselves to meet with other knowledge produced beyond the university walls, looking for human emancipation and environmental justice.

*Key-words: Ecology in Health. Health as right. Ecology of knowledge.*

### **Global health governance in the context of risks and uncertainties**

Marcia Grisotti

The impacts caused by the concept of emerging infectious diseases (science) and the entry of new actors and alliances at the core of World Health Organization strategic coordination (power) - which culminated in the revision of the International Health Regulations (normatives) - brought new challenges to the security system of global health in the face of threats that spread beyond the borders of nation-states. Global health security implies a break with the traditional devices by enhancing the role of agencies and transnational actors, but the surveillance system (recording and reporting of diseases) is dependent on the specific interests of national (and local) spheres.

In this paper we analyze the socio-political factors for the weaknesses of the institutional process of registering diseases at the local level; the applicability of the governmental recommendations (or campaigns) of prevention and the social groups to which they are directed, having as case studies the Zika virus epidemic (especially due to the social consequences related to the zika virus congenital syndrome) and the outbreaks of visceral leishmaniasis in Brazil.

*Keywords: Global health; public health policies; epidemics; Brazil*

### **The sacred plants used in traditional communities of the north-eastern semi-arid region, Brazil**

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This article aims to analyze the sacred plants used in traditional communities of the north-eastern semi - arid region of Brazil. A brief analysis of the "Jurema" and "Ayahuasca" plants, used in religious rituals, is necessary. A literature review was done in order to know more about these plants, as well as their use in traditional communities, with emphasis on the "Kariri-Xocó". Due to the scarce scientific knowledge on the therapeutic properties of these plants Indigenous knowledge is essential in providing valuable information. In this sense, it becomes imperative to deepen studies on how these communities use sacred plants, their connection with the Divine, though always respecting their traditions.

*Keywords: Traditional communities, sacred plants, semi-arid region of north-eastern Brazil.*

### **CP8.2 Human Health and Wellbeing**

Chair: Pedro Patriota

#### **Indigenous Health: the Perception Study as A Risk Indicator for Parasitosis**

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We evaluated the perception of leaders of the indigenous community Fulni-ô (NE-Brazil) about parasitosis vectors and the facilitators present in the village for their occurrence. Participants were accessed by snowball and data were collected through non - participant observation, interviews and visual stimulus with images of Anopheles sp., Biomphalaria sp., Culex quinquefasciatus and Triatoma infestans, responsible for the transmission of malaria, schistosomiasis, elephantiasis and Chagas disease, respectively.



In total, ten leaders were interviewed. Most of them are unaware of the eating habits of the vectors and only 20% cited hematophagy for *T. infestans*. All the leaders stated that they did not know the habitat of *Anopheles* sp. and *C. quinquefasciatus*, while 70% know where *Biomphalaria* sp. and *T. infestans* live. No preventive measures against insects and snails were cited. Regarding to the diseases transmitted by them, only Chagas disease (50%) and schistosomiasis (20%) were mentioned. The lack of knowledge about the biology of the vectors and forms of prevention combined with the presence of debris, animal breeding, houses with no plaster and open sewage observed in the community, are facilitators for the acquisition of parasitosis. Therefore, it is necessary to carry out health education actions developed in the community to mitigate the risks found.

*Key-Words: Ethnomedicine; Indigenous communities; Brazilian semi-arid; Human parasitology.*

### **Urbanization and Cardiovascular Risk in Indigenous People: a Systematic Review**

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Indigenous peoples are generally not included in large clinical studies to evaluate cardiovascular (CV) risk factors. Urbanization may influence lifestyle and epidemiological profile of this populations. Searches using terms urbanization, cardiovascular and indigenous were carried out in 4 databases: Pubmed, BVS, IME-ISOC and JSTOR. Preliminary screening of titles/abstracts was performed according to the following strategy: period from 2000 – 2018, restricted to adults, full texts, language in English, Portuguese or Spanish. The general objective of this study is to review the literature related to urbanization in indigenous communities and its association with cardiovascular risk factors. Additionally, identify definitions used to delimit the concept of urbanization in scientific publications, the degrees of epidemiological transition in indigenous peoples and prevalence of CV risk factors among indigenous peoples. Data from 34 studies were selected. The definitions of urbanization are diverse and without standardization, in many cases poorly adapted to the complexity of indigenous populations. Specific attention to different degrees of urbanization in indigenous was identified in only one paper. Evidence showed an increase in the prevalence of CV risk factors in indigenous peoples and mortality associated with urbanization. But little data is available and more research is needed.

*Key-words: Indigenous people; Urbanization; Cardiovascular risk*

### **The impact of spirituality on blood pressure control among the Truká people - The Project of Atherosclerosis among Indigenous populations (PAI).**

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**Introduction:** Little is known about the effect of spirituality in the treatment of chronic diseases among indigenous people in Brazil.

**Aim:** Evaluate the association between use of traditional indigenous spirituality with blood pressure control among the Truká people.

**Methods:** Cross-sectional study, which included 350 indigenous, living in tribes at the Assumpção Island/Brazil, aged 30-70 years, of both sexes, without known cardiovascular disease. Data on spirituality was collected from indigenous people self-declared as having hypertension and those in use of blood pressure medication.

**Results:** We included 84 indigenous, mean age 52,38 years, 63% women. Of these, 44% reported seeking help from traditional spiritual leaders for blood pressure control purposes. The mean systolic blood pressure was 148.6+-22,25 mmHg and 148.7+-22,65 mmHg ( $p > 0.05$ ) and mean diastolic was 84.0+-13,34 mmHg and 84.2+-13,39 mmHg ( $p > 0.05$ ), respectively for those that seek spiritual help and those that did not use spiritual help.

Conclusion: We found high mean blood pressure levels among Truka people with hipertension. There was no difference in blood pressure levels for indigenous that seek traditional spirituality and those that do not. Apparently the traditional indigenous treatment is harmless to blood pressure levels, therefore, should not be discouraged by conventional medicine.  
*Key Words: Indigenous, PAI Study, spirituality, hypertension, conventional medicine*

### **Living a week in the Truká tribe (Island of Assumcao, Brazil) for the Project of Atherosclerosis among Indigenous populations (PAI) - A medical student experience report.**

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Introduction: Brazilian indigenous have been neglected by academic studies and government programs. Moreover, indigenous health aren't included as teaching activities in most of medical schools. This arm of the PAI study aims to introduce medical students into the indigenous reality, in the context of Medical Ecology.

Methodology: Descriptive study, in the form of experience report, developed during 7 days in the Truká tribe. We assessed 350 indigenous, between 30-70 years old, of both sexes, without clinically manifest cardiovascular disease. Clinical, laboratory and imaging data were collected from each participant to evaluate their cardiovascular health. Meetings were conducted with staffs of the PAI study, discussing Medical Ecology aspects of the study.

Results: During the Truká experience, medical students were able to witness the process of transculturation through the observation of both behavioral and alimentary changes, besides knowing the precarious reality of this population's access to health.

Conclusion: The permanence in this multicultural territory brought a major impact in the medical student learning process, evidencing the need for a humanized and qualified care for indigenous. Moreover, there is a need for use of Medical Ecology knowledge in Brazil Medical Schools, in order to allow for a better understanding of local population health.

*Key Words: Indigenous, PAI Study, Medical Ecology, Cardiovascular Health and Medical Students.*

### **CP8.3 Human Health and Wellbeing**

Chair: Zhang Liqing

### **Tackling the Challenges of Landscaping and Home Interior for Sustainable Housing Safety in Nigerian Coastal Communities**

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Comfortable home and interior which are desirable after a tedious day at work have been mere illusions to families living in coastal areas of Nigeria who battle with- intensity of storms and coastal erosion due to poor housing conditions. This study looked into the interior design and waste management of vulnerable families to find out the implications and proffer appropriate mitigations. Interviews were conducted in the local dialects on 140 samples: 35 respondents from four communities in the study area. Descriptive statistics were used to analyze data and make deductions. Results showed only 25% and 18% of had Primary school and basic education respectively, 57% had no formal education, 88% were into fish and peasant farming, while 97% lived in 'stilt' houses with no building plans but doors and windows made of woven raffia. None of the houses had potable neither water supply nor toilet facilities, nor the fire-places used for fish roasting at the bank of the river doubled as kitchen/relaxation arena at daytime. There were up 7children and above born in 72% of the families living within room spaces that were less than the 23 cubic meter standard requirement for fresh air per person, hence 97% experienced frequent outbreak of diseases and infections, The paper recommended the establishment of a National Council for Coastal Housing Development and provision adequate and well-funded schools, hospitals, safe water supply and power supply.

*Key Words: Coastal Areas, Environmental Safety, Housing Design*

## **The Construction of Health Causal Relations in the Belo Monte Dam Context/Brazil**

Márcia Grisotti

Hydroelectric dams are examples of large-scale development projects that lead to a sudden inflow of people and capital. They represent an event of great magnitude that affects in the short and long term the trajectory of a region, whose specificities and depth are still not fully understood.

This paper discusses the poor attention given to health-related aspects in social and environmental impact assessments and examines the problems related to the construction of causal relations in the emergence (or reduction) of diseases or injuries, when the data are uncertain, having as examples the relationship between migration and workers' diseases (brought or acquired), cases of syphilis in pregnant women, violence-related deaths (homicides) and traffic accidents in the context of construction of the Belo Monte dam (Brazilian Amazon). Going beyond the deterministic view of the causes of diseases, we will discuss the challenges of building a complex network of causal relations (based on a conception of multifactorial disease causes) that incorporate the bio-physiological causes with others deriving from human actions or political decisions (or omissions), and rank the degree of influence of these causal factors in this specific context.

The present analysis is part of the research project "Health and Environment: a study on the social and epidemiological processes that follow the construction of Belo Melo/PA hydroelectric dam"

*Keywords: Dam; health impact; Belo Monte, Brazil.*

### **Family Health and Sustainable National Development: Case of Rural Dwellers in Ondo State Nigeria**

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The family as a basic social unit of human development has vital roles to play in sustainable development through healthy living. This paper observed that rural dwellers in Ondo State exhibit lackadaisical attitudes towards the environmental conditions and health which could undermine desirable and sustained development. Using an Interview Schedule, data were collected from 160 randomly selected rural dwellers in 5 cluster communities in Ondo State. Items on the Interview Schedule sought to know the demographic situations of respondents, income, feeding pattern, water supply, frequency and type of ailments common in families and available health care facilities. Data collected from the study were subjected to descriptive statistics and the results showed that: majority of the samples 84% lived in environments that lacked adequate sanitation, a greater number of the samples 88% were peasant farmers, food consumption pattern revealed that more than 80% ate food rich in very high calories from cassava, yam with grossly inadequate protein, ailments like diarrhea, anemia and cold were commonplace in families and only one basic health was available to the cluster communities. The study concluded that sporadic health orientation programs and empowerment activities would be urgently needed for the population to live worthwhile lives and contribute to sustainable national development. It recommended improved health facilities and trainings in skill acquisition for improved income and livelihoods for the population.

*Keywords: Family Health, Sustainable Development, Rural Farmers, Ondo State, Nigeria*

### **A comparative study of the effects of green space on self-reported health for university students in Singapore and Turin**

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Numerous studies have supported that green spaces can promote human health. However, given that human's response to the environment is known to be context dependent (e.g. socio-cultural context, climatic conditions, stage of economic development, etc.), the extent to which health-urban green space relationships is also shaped by socio-cultural context is currently unknown. Conversely, is there a set of patterns in health-urban green space relationships which are universal? To investigate this question, this study aims to compare the relationship between green space quantity and self-reported health for university students in Turin and Singapore, two high density cities with different social-cultural and climatic context. Students from National University of Singapore and Politecnico di Torino were involved in an online survey to report their self-reported health, use of green spaces, and other confounding factors. About 400 respondents in each

university have been collected. Through geocoding the postcodes of respondents' residence, green space quantity within 400-meter radius buffer surrounding the residence was calculated for each respondent. Through statistical analysis, the association between green space quantity and self-reported health will be revealed for both cities. The results from this work can enhance the knowledge regarding the dependence of green space health relationship on social-cultural context.  
*Keywords: Green space, self-reported health, Singapore, Turin*

#### **CP9 Human-Animal Relations**

Chair: Diana Stuart

#### **Human-Interspecies Relations in the Anthropocene**

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Throughout our evolution, humans have interacted with other species. However, these human-interspecies relationships have changed in unprecedented ways in the Anthropocene. This paper examines two examples of changes in human-non-human animal relationships. The first example is industrial animal agriculture, where humans now maintain over 70 billion animals in captivity for food production. In addition to mechanizing and normalizing animal suffering, industrial production methods have pushed biochemical cycles out of balance contributing to pollution in water and air, including a significant contribution to climate change. The second example is how humans are causing a massive global extinction event. Scientists estimate that 30-50% of all species will be facing extinction by mid-century and that 99% of extinctions are human caused through habitat loss, invasive species, and climate change. The second half of the paper examines two drivers of these relationships: 1) domination ideology that has shaped the ethics of relationships with other species, and 2) capitalist economic systems that prioritize profits at the expense of social and ecological welfare. While anthropogenic climate change increasingly represents a threat to all species on Earth, there are a number of ways forward where alternative ideologies and priorities could better support (co)existence.

*Keywords: Animal agriculture, extinction, climate change, domination, capitalism*

#### **Human-Animal Interactions: The raptor and the lamb**

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The animal is the ultimate other. The ethical debate on the human-animal relationship has shifted from seeing animals as devoid of rationality and morality, to a contemporary perspective which argue that animals are sentient beings with inherent worth. Society's current treatment of animals, strongly differentiates between domestic and wild animals. Biotechnological manipulation and factory farming may be the fate of the majority of domestic animals, but certain enigmatic wild animals are seen to embody symbols of freedom and majesty to the extent that the rewilding of the landscape has become a major conservation objective. This case-study research presents the conflict between the domestic and the wild – the lamb and the raptor – centred on the reintroduction of the sea eagle to Ireland. The major threat to the project proved to be sheep farmers and their livelihood fears, the major supporters were the tourism sector and urban recreation users. The paper is concerned with changing social representations of both the 'wild' and the 'domestic', which we argue may well be important indicators of changes in the social representation of nature.

*Keywords: Animals, society, wild, domestic, re-wilding.*

#### **The Huge Challenge to Start the New Human-Animal Relationship**

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Critics regarding livestock are strong over the beginning of the 3<sup>rd</sup> Millennium. From the past decade, research showed animal production is responsible for 15-20% of greenhouse gases emissions (GGE), mainly due to rumination process. More recently, veganism is boosting some people wanting a new human – animal relationship, above all getting out the logic of breeding animals to kill and eat them. The research on values of rangeland was launched to demonstrate that livestock has other functions than production of meat. Focus on rangeland comes from this socio-ecosystem is, widely represented at world scale with one third of the earth's land, and valorized by extensive land-uses less criticized than intensive ones. A participatory approach allowed better understanding the diverse values of rangeland and their valorization by livestock. After a large review of literature, a 4-day workshop joining 25 young researchers and 10 experts from ten livestock countries reached to build a conceptual model. Then a 1-week fieldwork of debates with local stakeholders and visits of ten contrasted farms in France helped to have a more "realistic" model. Then this model was debated with local stakeholders in five contrasted rangeland areas in China, Uruguay, Egypt, Canada and Brazil. In parallel the model has been discussed with around fifty rangeland scientists during the LIFLOD side event of the *X International Rangeland Congress* (IRC). The iterative approach reached to an ontology of livestock grazing system (LGG) based on the four following interacting dimensions: production, social, local development and environment. All the stakeholders recognized the new vegan demand, but most of them think it is just a fashion process which will not strengthen in the future. However, animal production sector has to reduce major impacts, especially the greenhouse gases emissions, and improve some actions as for example the ecosystems services. In the same way, it has to take some significant measures in order to stop or reduce practices discrediting the entire sector, such as killing young dairy male calf because raising them is no business.

#### **Affiliation with nature: learning to read with dogs in the school ecosystem in Portugal**

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Our studies intends to contribute to the understanding of how the Biophilia hypothesis can improve the learning outcomes of reading in a school context, through the presence of a dog. It is a fact that Humans have an innate attraction towards animals as an intrinsic part of nature. Literature also refers that engaging a dog in schools settings can foster motivation and improve students' performance with challenging tasks. Therefore, one of the studies intends to assess how an Animal

Assisted Education (AAE) program would benefit children between 8 to 10 years providing from Portuguese-speaking African countries (PALOP), through the acquisition of the Portuguese language. Reading sessions will be conducted to test the hypotheses that AAE will contribute to a smoother integration of the same children by promoting an increase in self-esteem and a decrease in anxiety with the help of a therapy dog. The other study proposes to understand how AAE contributes to overcome reading difficulties in children of the 2nd year, in an early stage of the acquisition of this skill. According to the bioecological theory of Bronfenbrenner there are 4 systems in which human development is the result of complex interactions between the individual and various systemic factors that influence each other. This theoretical approach allows a holistic view on the factors that facilitate or hinder students' evolution.

*Keywords: Animal Assisted Education, Animal Assisted Therapy, Biophilia hypothesis, Bronfenbrenner bioecological system.*

#### **CP10.1 Human-Nature Relations**

Chair: Manuela Caballero Guisado

#### **LIVING EARTH: THE USE OF SYSTEMIC CONSTELLATION TECHNIQUE ON PROVING THE GAIA HYPOTHESIS**

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This paper is a result of a transdisciplinary legal research, which sought to respond the following question: could the Systemic Constellations (Hellinger) help in the resolution of environmental conflicts?

The case study revealed a deviant aspect. Nonetheless, it was able to prove a hypothesis that has long been debated, in an interdisciplinary manner, within different branches of science: the Gaia hypothesis (Lovelock), which detected that the planet Earth is self-organized and that it only maintains its balance because it is a living system.

This hypothesis is viewed differently by various scientists. However, using new scientific paradigms, such as the uncertainty principle and the observer's influence on the observed object (Heisenberg), the autopoiesis (Maturana; Varela), the morphic fields (Sheldrake) and the phenomenological research developed by Hellinger, it is perceived that, through systemic constellations, the human being can access the morphic field of planet Earth. That result can prove the Gaia hypothesis. This paper sought, therefore, to investigate if the "self-organizing Earth" theory could be proven through the Systematic Constellation technique. The method used was the abductive (Peirce), with hypothetical inference that by proving that something can be, creates new explanatory hypotheses, not previously contained in the premises.

*Keywords: Gaia Hypothesis. Systematic Constellation. New scientific paradigms.*

### **Debating the weaknesses and virtues of Theories of Niche Construction and Optimal Foraging in understanding the early stages of domestication of plants.**

**Emani Machado de Freitas Lins Neto and Ulysses Paulino de Albuquerque**

The transition from hunter-gatherer condition to the development of agricultural practices has provided one of the greatest technological advances of humanity. In view of the importance of this phenomenon and still persistent gaps, theoretical models emerge to elucidate issues related to the beginning of the domestication of animals and plants, a crucial moment for understanding socioecological and evolutionary factors that are determinant for environmental manipulation. Two theoretical models are relevant in this discussion: theories of optimal foraging and niche construction. In this sense, this discussion highlights the debate of these two perspectives on the beginning of domestication highlighting weaknesses and virtues of each proposal. It is concluded that domestication is a co-evolutionary phenomenon that enables a more detailed understanding of the role of acquired knowledge and its inheritance as modeling and maintainers of the landscape. However, it is necessary to intensify the studies about the two theoretical models, applying them in the most varied ecosystemic and cultural conditions, in order to elucidate the questions related to the beginning of the domestication process.

*Keywords: Diet breadth - evolutionary ethnobiology – domestication of plants.*

### **Whose Complexity? Reflections on Studying the Psychology of Nature**

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A substantial body of research has been conducted on the psychological impact of nature on people. They cover a wide variety of themes ranging from research on how properties of nature such as temperature, humidity, colour, pattern, sound, and space influence cognitive and affective functions, to studies into how attitudes and behaviour varies or changes in different natural settings.

Less attention has been devoted to the methodological challenges researchers face when conducting such studies, namely, of having to conceptualise nature through the double, or multiple, layers of their own previous concepts of nature, while having to decipher responses to research questions or experimental settings that are formulated and filtered through the respondents' own perceptions and concepts.

This paper is intended to contribute to a dialogue on this topic by offering a discussion of typical ways researchers choose to deal with this challenge.

In particular, the issue of working with implicit nature conceptions; the methodological considerations of choosing between the use of imaging techniques or exposing study subjects to real world situations; and finally, the potential of a closer dialogue between the sciences of ecology and social psychology on how to approach the diversity and complexity of nature are discussed.

### **Does giving nature legal personhood help integrate humans and nature?**

**Kenneth S. Cline**, College of the Atlantic | [kcline@coa.edu](mailto:kcline@coa.edu)

There has been a recent movement by several nations to grant legal status to natural features such as rivers and parks. Whether done through legislation or by judicial decree, many see this development as a promising new way to protect nature. Although it is still too early to tell what the legal impact of these designations will be, the mechanisms for

implementing a "right of nature" are varied and worth examining to assess likely effectiveness. In addition, the context of the decisions to grant legal rights to nature also matters. In this vein, the talk will focus on the recent New Zealand decision to grant legal personhood to the Whanganui River and a former national park, Te Urewera.

*Keywords: "rights of nature"; "nature as a legal person"; "legal personhood"*

### **Environmental sociology, capitalism, and the plight of the honeybee**

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For a decade now honeybees have been chronically sick. The sole extant sociological work assessing the issue has mostly focused on the technical and epistemological limitations of contemporary entomology and epidemiology and the role of regulatory agencies. This paper explores the benefits of combining the three neo-Marxist models central to environmental sociology and typically used separately in order to explain the root causes of the plight of honeybees. Combined in an integrative framework the Treadmill of Production, the Second Contradiction of Capitalism, and the Ecological Rift model explain some of the structural and ideational logics at play that generate and perpetuate the fundamentally inhospitable agricultural landscape and mindscape that harm bee health and impede the implementation of substantive improvements. The paper is based qualitative data collected over the past four years in the United States including thirty five in-depth semistructured interviews with large-scale beekeepers and scientists working on the declining bee health. I conclude that the integrative neo-Marxist model is useful in addressing this specific case. Nevertheless, I point out that the model does not sufficiently address the ideational roots of the problem and would benefit from a complimentary critique of the ideological dynamics at play.

*Keywords: Environmental sociology; capitalism; honeybees*

### **Changes of environmental attitudes in the Spanish population. A generational analysis.**

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This article is an attempt to use the concept of generation, as a variable that helps to explain certain environmental behaviors, with the Inglehart's theory on intergenerational changes. This theory predicts an increase in post-materialistic values in more developed societies, with environmental being one of these values. According to these forecasts, a greater environmental commitment should be expected from younger generations in developed societies, where material needs are covered. However, our data did not fit into predictions of this theory. On the contrary, there is evidence of an increase in values which could, in a certain way, be called low-cost post-materialistic, applying the term proposed by Diekmann and Preisendörfer

*Keywords: environmental attitudes, intergenerational change, post-materialistic values*

### **Eco sapiens: Master Keys to Understanding and Healing the Relationship between Humankind and the Natural Environment in the Anthropocene**

Thomas J. Burns, University of Oklahoma, [tburns@ou.edu](mailto:tburns@ou.edu)

Using the acronym *Eco sapiens*, the paper explores ten master keys (Ecology; Culture; Organizations & institutions; Space & time; Affluence; Population; Illness & health; Externalities; Natural technological constraints; and Solutions to wicked problems), all of which are necessary to understand and appreciate humankind's relationship with the natural environment. Each of these master keys represent collections of related variables, or factors, and each can be conceptualized and operationalized in numerous ways (e.g. Population as total numbers of people, density, urban/rural ratios, age pyramids and sex-ratios; Technology as leading-edge, subsistence technology as the main arbiter of ultimate social organization, Jevons Paradox, tech as solution vs. tech as problem, lags between various technologies and outcomes, etc.). In addition to looking at their main effects, it is crucial, particularly from a broader ecological view, to consider many of the interactions among these factors. Building on earlier models (e.g. POET, IPAT, STIRPAT, ImPACT, POETICAS), I make a case that this broader and more robust model can offer a comprehensible roadmap for civil discussions of the human-environment interface that is useable to a wide array of audiences, including civic groups, academics, political leaders, social movement organizations, and citizens wishing a balance between a deep dive into something narrowly focused and the broader view.

*Keywords: Eco sapiens; natural technological constraints; environmental health; cultural lag; civil discourse*

## CP10.2 Human-Nature Relations

Chair: Luciano Bomfim

### **The quilombolas formations as the nomos of the land**

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This paper analyzes the social formations known as peripheral modernity, unraveling the pattern of power that defines and characterizes them. Coloniality of power as substance is developed as a category in the structural sense, whose extensions influence economic, political, and ideological planes. Coloniality is not reduced to an ideology; it pervades the structure of institutions, constituting a pattern of power that operates by naturalizing hierarchies among humans beings, engendering the idea of a superior and an inferior race, which is articulated to legitimate forms of exploitation, the extraction of surplus work. Starting, therefore, from the structural method, the aim was to overcome the linearity that marks vulgar Marxism, as well as to demonstrate that, in peripheral modernity, proletarian and racial questions are intertwined. In this context, the emancipatory struggles of slaves have the connotation of resistance to capitalism, pointing to the creation of new nomos, that is, new autonomous spaces for the construction of full citizenship. Resistance, formerly posed only as an escape, arises as the production of a communal form consisting of the gathering of free human beings.

*Keywords: Peripheric modernity; Coloniality of Power; Value form; Nomos; Community form*

### **Yorubá: língua de santo e de resistência no sertão da Bahia**

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Este trabalho apresenta uma discussão sobre a importância da língua yorubá como mecanismo de manutenção da memória e fortalecimento das identidades dos sujeitos afro-descendentes. O objetivo é trazer o yorubá à tona nas discussões sobre pertencimento e africanidade, como língua de empoderamento para negros e negras. A partir de experiências com povos de terreiros no Semiárido baiano (Juazeiro – Bahia - Brasil), foi possível recolher informações e impressões de como a língua é vital para que esses homens e mulheres possam exercer o seu pertencimento étnico racial e assim constituírem de forma continuada seus vínculos identitários que têm início na comunidade do terreiro, mas não se esgotam nela. O yorubá é uma das mais importantes línguas africanas, a mais falada fora da África e reivindicada como a primeira língua da humanidade. Entendemos que essa língua constitui-se como importante patrimônio imaterial da humanidade e devido à sua relevância para o pertencimento étnico dos afro-descendentes precisa ser pautada de várias maneiras na academia.

*PALAVRAS-CHAVE: Identidade; Cultura; Pertencimento étnico; Religiosidade.*

### **Small Leaves: childrens in the temples of candomblé in the backwoods of Brazil**

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Study of the realities experienced by three children and a teenager in Afro-Brazilian religion in northeastern brazilian sertão, whose objective was to describe how are they established their relationships in these spaces. Through the ethnographic research, two children were interviewed in the Temple Bandalcôngo, in Juazeiro/BA; a child in the Terreiro Ilé Dará Axé Omo Logum Edé, in Petrolina/PE; and a teenager in the Temple Abassá of the Goddess Oxum of Idjemim, in Paulo Afonso / BA. The method was the Analysis of Contents according to Bardin (2016). It was concluded that their relations involving religion, family and community are fundamental for the construction and (re) elaboration of knowledge and knowledge in the teaching and learning process within the terreiros.

*Keywords: Children. Candomblé. Backwoods of Brazil.*



## **Territórios de Vida nas Ciências Ambientais**

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A ideia de Territórios de Vida é um tema que emerge no pensamento ambiental, mediante um repensar acerca da (re)apropriação social da natureza, pelos "povos da terra/povos da Terra", na dimensão da alteridade e da diferença das populações originárias. A questão ambiental tem engendrado discussões acerca da crise civilizacional, a qual deve ser repensada numa escala planetária no plano de ação política, social, cultural e educacional. As ciências ambientais vêm promovendo reflexões sobre rupturas e continuidades no/do pensamento científico pela discussão decolonial, os quais colocam como ponto de pauta o diálogo paradigmático, retomado pela teoria da complexidade, numa perspectiva de se repensar um "novo senso comum" para uma "nova ciência", em busca de compreender os limites e possibilidades do debate da produção dos territórios de vida na educação ambiental. Entende-se que o diálogo com outras formas de conhecimento é uma atitude mais fecunda e reconhecidamente aceita pela nova visão de ciência. Portanto, a razão não está limitada em sua caixinha sem conexão extracorpórea e, nesse sentido, as ciências ambientais vão repensar as formas de ver o Mundo e os sujeitos que nele residem.

*Palavras-Chaves: Ciências Ambientais, Territórios de Vida, Sociedade, Natureza*

## **CP11 Socio-cultural Adaptation**

Chair: Thomas Burns

### **Cross-cutting artistic creations, between science, humanities and technology: towards a meta- vision of sensitive data and dialogical spaces?**

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Although full of unknowns, nowadays neurosciences consider consciousness as a communication network between different brain areas, rather than a specific and singular cerebral region. Wouldn't it be the same for the mind? On many other aspects of our hypermodern societies, a transition from a culture of object to a culture of flux takes place; or aren't we in an in-between? Eco-psychological approach, philosophy of mind through the notion of extended cognition, artistic perspectives, and relevant knowledge through different cultures teach us that it is necessary nay vital to (re)develop and fix integrative connections with the living, human and non-human. Inseparable from the body and an ecological environment, made up of conscious and unconscious mechanisms, the mind is itself an integrative and complex system of information. It is the process by which we give meaning; we produce forms; we communicate with ourselves and others, with the world in its richness and complexity. Beyond visible spectrum in a dominant techno-symbiotic configuration, cross-cutting artistic creations may help to approach these hypotheses of the mind as a flow and a more sensitive dialogue within human beings, and with their environment.

*Keywords: Sensitive dialogue, mind, environment, coupled system, communication network*

## **Ancient Innovations**

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Ancient Innovations is a lecture introducing a global study of ecological technologies that thrive in the landscapes of our Fourth World people. These landscapes, still largely considered "untouched," have in reality been successfully occupied, adapted and managed for millennia by local communities. The cultures and spiritual beliefs that have formed with these landscapes demonstrate complex and unprecedented technologies developed in conjunction with local environs. This project reveals how a deeper understanding of traditional ecological knowledge is tantamount to progressing contemporary ecological design.

In this project, indigenous infrastructures are studied for the first time through an architectural lens and documented using conventional drawings techniques. Inverting the modernist paradigm of the *tabula rasa* promoted by Le Corbusier and his understanding of the vernacular as primitive, this work seeks to reveal indigenous ingenuity. The project will culminate in a publication in which the diversity of local ancient innovations from across the globe are studied at the material, structural and systems scale, from floating islands in Southern Iraq to forest agriculture in Brazil. This compendium will showcase the complex, thriving environments humankind is capable of creating, reframing the paradigm of the primitive. Through this investigation, these ancient innovations demonstrate the potential thriving environments mankind is capable of creating.

### **Understanding movement patterns: Implications for spatial patterns of land management**

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The optimal management of landscapes shared by human and animal populations requires an explicitly spatial perspective. The spatial-dynamics of movement behaviour and the spread process of species are still under-studied and remain somewhat less understood than desired. Exploration of these phenomena can have important natural-resource policy management implications. One of the impediments conjectured to limit the exploration of bio-economic modelling is the lack of incisive mathematical models embracing modelling movement. This investigation utilises an innovative Bayesian-model-selection approach that aims to improve understanding of species movement, particularly when empirical data are hard to come by. More specifically, we investigate fishermen foraging behaviour in the sea as well as reindeer foraging behaviour in the mountains. The study thus contributes to ecological literature that focuses on optimal management of landscapes shared by human and animal populations. We conclude with some thoughts on the applicability of our methods to fisheries and habitat management in which data are typically scarce and how this framework compares and complements other methods such as rational choice models or ethnographic studies.

### **Poetic battles in network/Pelejas em rede**

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The Cordel Literature constitutes one of the traditional poetical verses of Northeast Brazil, characterized by the written production and specific typographic records. The communicational processes occupy, hence, a privileged position. In the last two decades, the cordelists have started performing through poetic contests by means of e-mail or chat communities on social networks, publishing what is called "virtual battles", battles based on the cordel's imaginary battles, which can already be seen in titles of the 20th century. Thus, these written contests tradition harks back to the poetic challenges between two improvisers who would perform before an enthralled audience. The contests of cordelists and improvisers safe guard several codes and simultaneously interweave poetical elements which have been updated for centuries. Combining fixed forms, rhythm, themes, verbal duels, be they improvised or not, are recurrent in this poetry. Face to face challenges, printed challenges, web-mediated challenges pave the way for the articulation of these expressions into a great poetical, oral text going through a continuous process in updating the virtual matrices. The research corpus harbors battle booklets (virtual and fictional); face-to-face challenges; poetry performing events; recorded virtual battles; duels on whatsapp, twitter, msn, facebook, orkut, sites, portals, email, and so forth. Pursuant to the interdisciplinary concepts of communication and cyberculture; tradition, performance and movement; great oral text and virtual matrices, I propose to investigate memories confluence and combination in the articulation of this large communication text in an ever adapting process, and also to speculate to what extent one can define such poetry as a recognizable cultural series.

**KEYWORDS:** *Communication; Cyberculture; Orality; Traditional Poetry; Semiotic Culture*

### **Anti-Environmentalism in the Anthropocene Age: The Paradox of Runaway Cultural Lag**

Thomas J. Burns, University of Oklahoma, [tburns@ou.edu](mailto:tburns@ou.edu)

Rapid environmental change renders many aspects of the natural environment appreciably different from what was the case a generation or more ago. Yet many of the ideas and ways of relating to the environment have become part of the ethos of a socially constructed rugged individualism based in a time when environmental resources were seen as virtually endless. Arguably the most powerful institution ever witnessed in human history has come into its own with the global market, and this has been closely followed with a steady increase over time, particularly in the most developed countries, but also in developing countries, of the ecological "footprint" of consumption (Jorgenson and Burns 2007). In this paper, I develop a theory drawing on work from behavioral ecology, cultural theory and environmental sociology, making a case for "runaway niche construction" (Boyd and Richerson 2005), and "cultural lag" (Ogburn 1932/1961) in which ethics that were normative in a prior time are likely to persist, even though they may be increasingly maladaptive in the current time and problematic at best, moving into the future. The paper concludes with a discussion of the larger ecological, policy and cultural implications.

**Keywords:** *runaway niche; cultural lag; anti-environmental; environmental ethics*

## CP12.1 Sustainable Rural Communities and Landscapes

Chair: Eduardo Seva-Román

### Stakeholders sustainable management in agriculture - lessons from participatory processes

Raposo, A., Vasconcelos, L., Caser, U., Fragoso, S., Silva, N., Ventura, S. and Alcazar, R.

Stakeholders are nowadays encouraged to become actively involved in the sustainable management of the territory and, in rural areas such as CastroVerde which is Natura 2000 Special Protection Area and nowadays a UNESCO Biosphere Reserve, as well as in the all country, equilibrium between nature conservation and farm production systems is a key factor for sustainability. This paper focuses on the contribution of local actors to evaluate the agro-environmental commitments applied during the last Portuguese Rural Development Program (PRODER/2007-2013). It aims to propose adjustments and new ideas to improve agricultural sustainable practices by assessing the existing commitments and supporting new public strategies regarding the new 2014-2020 programming cycle of the European Agricultural Fund for Rural Development. This was accomplished through the participation of local stakeholders in a set of five workshops, each one in different agricultural region of Portugal. The three-hour workshops were based on interactive techniques as drivers to generate debate, promote knowledge exchanges and produce new knowledge to be presented to policy makers.

*Keywords: Active Public participation, Stakeholders, Interactive techniques*

### Communitary features in Portuguese Alto Barroso Region: from Ferreira de Castro's and Bento da Cruz literary images to the 20th Century reality

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Human ecology's "adoption" of the ecocritical dialogue between Literature and the Environment was a sign of its epistemological flexibility. Ecocriticism sees the literary text as a source of historical knowledge about Nature, environmental issues and human impact on landscapes.

Many Portuguese fictional works portray the dynamics of the humanization of our territory, in close interdependence with natural resources. A good example is the secular agriculture production system of Alto Barroso's region in the NE of Portugal, based in the regulated sharing of resources. The use of common lands, mostly for pastures, should be the most emblematic and persistent practice. Ferreira de Castro's novel *Terra Fria* (1940) and Bento da Cruz's *Planalto em Chamas* (1963) pay them special attention.

This work aims to assess the evolution of Barroso's communitarianism between the first half of the twentieth century and the present, combining two sources of information: literary fiction and current real data. Thus, a mixed methodology was followed, namely a thematic text analysis applied to the novels and ethnographic field research in a northeastern village.

The results will contribute to enrich research data on the History of environmental and human-land relations in Portugal, thereby substantiating a more informed strategy on the conservation of natural resources. Furthermore, the information gathered may become a support to eco-literary tourism activities.

*Keywords: Human Ecology, Ecocriticism, Alto Barroso, Communitarianism*

### Archeo-landscapes of the Spanish levante and ecological consequences of agricultural abandonment of mountain landscapes

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Several archaeological sites in the Spanish Levante show that terracing is an architectural practice linked to human settlements and agriculture in spaces with a significant topographic slope.

The model of this type of agricultural practices has been secularly maintained throughout the different cultures that have settled in: the territory of eastern Iberia, islands in the Mediterranean and the Middle East. Without having been neglected at any time, it was considered a great way to avoid erosion and establish a soil in biologically effective conditions.

The terraces maintain the natural vegetation, without solution of continuity, by means of the vegetation fringes that remain established in the vertical panels of the slopes. It is a land-use design of the territory for the agricultural space without apparent loss of biodiversity in the horizontal gradient.

The intensification of tree crops in some productive areas with high demand and high price, as well as the use of xenobiotics for flora and faunas unrelated to the traditional agricultural production, break the ecological balance hitherto maintained. On the other hand, the abandonment of the terraces, favor of the rapid colonization by invasive species, leading to: the homogenization of the landscapes, living species monotony and the decline of the biodiversity derived from the secondary ecological succession.

*Keywords: Agroecology, Land-use changes, Historical landscapes, GIS analysis.*

## **Sostenibilidad de la Agricultura Familiar paraguaya de cuatro distritos dela Región Oriental. Una mirada desde la Ecología Humana**

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Desde la perspectiva de la Ecología Humana siempre se da una interacción entre el sistema social humano y el resto del ecosistema; este sistema social es uno de los determinantes en el nivel de impacto de las actividades humanas en este ecosistema (Marten, 2001). La investigación fue realizada en cuatro distritos con el objeto de entender la sostenibilidad de la agricultura familiar desde la perspectiva de la ecología humana, con una población de 120 sistemas y una muestra no probabilística de 50. La caracterización se realizó por medio del análisis estadístico multivariado y la sostenibilidad fue determinada a través de la metodología Biograma. Los sistemas están conformados por 4 a 5 personas, el tamaño varía de entre 2 a 9,59 ha de superficie, en promedio, es utilizado el 50% para la producción de maíz (*Zea Mays L.*), mandioca (*Manihot esculenta Crantz*) y yerba mate (*Ilex paraguariensis A.St-Hil.*) combinados con la cría de animales y pequeñas huertas; en su mayoría utilizan sistemas de manejos orgánicos y el ingreso económico depende de actividades extra prediales. En los cuatro territorios la dimensión más crítica es la económica productiva; en cuanto al Índice Integrado de Desarrollo Sostenible el promedio es de 0,51.

*Palabras clave: agricultura familiar, sostenibilidad, ecología humana*

## **CP12.2 Sustainable Rural Communities and Landscapes**

Chair: Yi Yi Cho

### **Dissemination and adoption of bottom-up agricultural innovations to improve soil fertility in Africa: An interdisciplinary approach**

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Soil fertility is at stake at a global scale, putting pressure on food security, poverty alleviation and environmental protection, under a scenario of climate change. In sub-Saharan Africa, a combination of depleted soils and population growth adds particular pressure to smallholder farmers. Their innovative capacity and motivation is decisive to reverse the trend of declining soil fertility. Exploring and understanding the constraints and complexity of the social systems interacting with the implied ecological dynamics are essential steps in designing appropriate agricultural innovations that are scalable and adoptable. The focus of inter- and transdisciplinary approaches applied in the project ORM4Soil (Organic Resource Management for Soil Fertility; [www.orm4soil.net](http://www.orm4soil.net)) lies at the heart of this multiple challenge context. We are combining qualitative and quantitative methods from agronomy, sociology and communication sciences in order to bring soil fertility enhancing technologies to the center of the decision making process of both farmers' and national institutions. At local and national innovation platforms, stakeholders from farmer organizations, trade, extension, and research are analyzing the outcomes of agronomic trials and socio-economic facts. We are expecting to create bridges between food systems, farmers, media, society and policymaking, with the aim to enhance soil fertility through better adoption of best practices.

*Keywords: Soil Fertility; sub-Saharan Africa; Innovation Adoption; Transdisciplinary Research; Innovation Platforms*



### **Human and asparagus: coevolution and symmetry in Southern Extremadura (Spain)**

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According to data obtained through survey and fieldwork, asparagus is culturally the most prevailing wild edible plant in southern Extremadura, standing above other plants surveyed in Spain. This can be explained by the mutual benefits, for both plant and humans, resulting from the historical interaction in this socio-ecological system. Despite its negative energetic balance at the point of digestion if consumed on its own, asparagus has been historically used for its nutraceutical properties. Nowadays its consumption is reinforced by territoriality, moral economy and local and gender identity. Asparagus has been benefited by anthropic activities on the environment, the human making of the agroecosystems, and the local gathering practices that foster their reproduction dynamics. As thus, both human and asparagus reproduction (biological and cultural) is linked in a symbiotic and symmetric relation.

*Keywords: Ethnobotany, Asparagus, Biotic and Social Coevolution, Symmetrical Anthropology, Socio-Ecological Systems.*

### **Juventude do campo, pesca, expectativa de vida: um estudo na comunidade de Bacuriteua-Bragança- Pará- Amazônia.**

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Esse trabalho reflete o resultado de uma pesquisa de mestrado sobre as expectativas de vida da juventude do campo, na maioria filhos de pescadores e pescadoras da Comunidade de Bacuriteua, Bragança – PA. A pesquisa teve como objetivo investigar o que os jovens pensam sobre questões de educação, trabalho, lazer, saúde, a pesca e a influência da escola, da família e da sociedade em suas escolhas, no intuito de contribuir para ampliar políticas públicas voltadas para a juventude do campo. Utilizou-se da pesquisa participante, além de aspectos da etnografia; além de traços da história oral. As informações foram coletadas pelas técnicas de observação participante, entrevista, questionário semi-aberto e análise de documentos. Referenciamos em Arroyo (2012), Freire (2005), Fernandes (2006), Molina (2010), Diegues (2004), Marx (1996), Bourdieu (2007; 2003), Abramo (2008), Guimarães (2008), Carneiro (2008), entre outros. Concluímos que as expectativas de vida da juventude do campo retratam a busca por direitos negados. Constata-se ainda a luta na superação de problemas como a droga, exploração sexual e posto de trabalho. Essas situações levam os jovens a desejarem cursos ou profissões urbanocêntricos e morarem em áreas urbanas, enfraquecem o território dos pescadores artesanais, com o incentivo da escola e da família.

*Palavras-chave: Juventude; Pesca; Políticas públicas.*

### **Rice Production in Flood Prone Ecosystem: A Case of Patanaw Township, Ayeyarwady Region, Myanmar**

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A large area of the region faces flood submergence which creates an unfavorable environment for crop production in monsoon season. This region produces most of the rice requirements of the country. However, the area is flooded each year from July to October by flow from the Ayeyarwady river system. Therefore, most areas are favorable for rice cultivation while some are prone to flooding in the monsoon. In this ecosystem flood prone rice is grown whose cultivation is entirely different than normal rice crop. Managing the flood prone ecosystem for rice production needs to evaluate the reasons and a comprehensive appropriate technology through research efforts for better rice production under such harsh ecology. Focus group discussion, in-depth interviews, and field observations are the key techniques for this research. An attempt was made to highlight a suitable agronomic package for rice cultivation during and after flooding in flood prone area of the study.

*Keywords: rice, flood prone ecosystem, flood prone area*

### **CP13 Tourism, Ecotourism, and Biodiversity Impacts**

Chair: Thomas Meredith

### **Sustainable Tourism – managing mass tourism**

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The ability to travel has never been more accessible to people as it is now in the 21<sup>st</sup> century. Every year, more and more people travel to places they have always dreamed of seeing, and new industries are created and enhanced to accommodate travelers. However, growing tourism can have negative impacts when too many people come to a place, and increasing prices force locals out of their living areas. Damage to local environments, culture, and social interaction are just some of the consequences of mass tourism. Innovative ideas and services can serve a demand that may not be covered by the traditional services in some cities and towns (such as Air BnB), but poor regulation and control can result in devastating consequences for local communities. People should always be able to travel, but the impacts must be weighed when regulating capacity and costs. Ecological impacts are often overlooked, and what may start as a nice vacation destination can turn into an overcrowded, and overpriced home.

**Keywords:** Overcrowding, Damage to local communities, Overpricing, Poor regulations, sustainable tourism.

### **Research on the Demand of Winter Resort Travel Brought by the Trend of an Aging Population in China**

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As one of the countries with the largest aging population in the world, China is also the country with the fastest growth rate of aging population in the world. It is estimated that by 2016, the population of and over 60 years old has reached 222 million, accounting for 16.7% of the total population in China. According to the current trend, it is estimated that by the middle of this century, the population of and over 60 years old in China will reach 450-470 million. In recent years, winter extreme weather such as cold, smog, snowstorms and freezing rain has caused respiratory, cardiovascular and gastrointestinal diseases in middle-aged and elderly population and doubled the rate of hospital admission and death. With the increase of pension in our country, consumption demand in avoiding winter is also increasing sharply, and the elderly tourist population has accounted for more than 20% of the total number of tourists in the country, and it has become the main force in the tourism consumer market. Starting from the winter resort travel demand of the elderly people in China, this article attempts to learn the rules, characteristics and levels of the consumption demand of the elderly in winter resort travel. By analyzing and researching these rules, characteristics and levels, this article will provide operational decision-making theoretical basis for winter resort tourism in order to realize sustainable winter resort ecotourism.

**Key Words:** *aging population; winter resort travel; consumption demand of tourism*

### **Reconciling Sustainable Mining and Tourism in Partido District:**

#### ***Do the Twain Meet?***

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This paper has examined the potentials of mining and tourism within the study area and their respective environmental impacts. Partido district, in the Province of Camarines Sur, boasts landscapes and seascapes of exceptional beauty and is, at the same time, richly endowed with mineral deposits. With the huge amount of mineral deposits, the area's natural splendor is threatened by the extractive industry. This study was an attempt to find a middle ground for these industries to allow them both to serve their common purpose - furtherance of human life - and flourish in concert with each other with Partido district as a precedent case.

**Keywords:** *Tourism, Mining, Sustainable development, environment*

### **Socio-ecological approaches to assessing the paradoxes of linking tourism and biodiversity conservation.**

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Biodiversity loss, like global climate change, is recognized as a crisis that requires urgent action. And, in both cases, it is unclear how the immediate costs of remedial action can be balanced equitably against the long term consequences of inaction. Biodiversity conservation initiatives are often led by the scientific community or by international conservation organizations, but generally require restrictions on local land use and livelihood opportunities. This has led to an ostensible roll for tourism as a means of reconciling conservation interests with local economic aspirations. Understanding the socio-

ecological dynamics of conservation areas is essential to identifying opportunities for, or barriers to, this reconciliation. The East African savanna and the Galapagos Islands are iconic, globally important, biodiversity conservation areas. In both cases, policies, regulations, institutional structures, and environmental monitoring have been put in place to protect ecological resources, and regulators have committed to processes that support public consultation and participatory decision-making. This research explores the success of these processes and compares responses and outcomes from these two conservation areas. In neither case is it clear that tourism will provide a sustainable balance between ecological protection and community well-being.

*Keywords: East Africa, Galapagos, Tourism, Biodiversity Conservation, Resource-based Livelihoods*

### **Rural Ecotourism and Ecological Culture Tradition in China's Winter Resort Travel Destination**

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Xishuangbanna is located in tropical-subtropical transition zone, at latitude 21° 08' ~ 22° 36', longitude 99° 56' ~ 101° 50', to the south of the Tropic of Cancer. It is one of the world's biodiversity hotspots. The abundant sunshine, abundant rainfall, the average temperature, and moderate human comfort index, make Xishuangbanna a popular winter resort. By choosing 9 Dai villages in winter resort Xishuangbanna as its research areas, taking the heritage of Dai people's ecological cultural tradition as a highlight and using questionnaires and interviews as its research methods, this paper attempts to analyze villagers' environmental knowledge, attitudes, comments and anticipatory behavior, and thus penetrate into the ecosystem of "harmony between man and nature" and "reverence for life" formed by Dai people's ecological views which are contained in their traditional culture including their religion, production and life, and language culture. Dai people's unique ecological cultural tradition and the coupling effect brought by the winter resort climate resources in Xishuangbanna will cater for the dramatic increase in the tourist needs for winter resort caused by extreme weather, and promote the sustainable development of ecological tourism in Xishuangbanna.

*Keywords: winter resort; Dai people in Xishuangbanna; the heritage of ecological cultural tradition; coupling effect*

### **The Research on the Tourists' Environment-Friendly Intention of Rural Eco-Tourism**

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Rural eco-tourism is the tourist activity of recognizing nature and experiencing nature based on the original ecological and cultural landscape. Its ecological concept plays a positive role in the protection of the natural and human environment and the interests of community residents. In the sustainable development of rural eco-tourism, the environment-friendly concept of tourists is very important in that it directly influences their decisions of how they should interact with the environment. From the perspective of tourist, and based on the basic six elements in tourism, the paper constructs six dimensions of environment-friendly intention of tourists, namely catering, accommodation, transportation, sightseeing, shopping and entertainment and empirically analyzes the samples of 652 tourists to compare these dimensions. The results show that tourists show the friendliest intention in sightseeing, second friendly intention in entertainment, and the worst intention in transportation and accommodation. The paper is beneficial for understanding the extent of the tourist's environment-friendly intention and is going to provide valuable reference and basis for the sustainable development of rural eco-tourism.

*Keywords: Rural eco-tourism; tourist; environment-friendly intention; sustainable development*

### **CP14 Urban Ecology**

Chair: Ian Douglas

### **Learning on a Dump: A Case Study into Environmental Inequality and Urban Growth Dynamics**

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The purpose of this paper is to theoretically develop and analyze the ways in which mid-term rebuilding and recovery rhetoric is used post-disaster to promote growth machine initiatives, even those that bring significant risks to end-users. In particular, I focus on the proposal to rebuild a public school in New Orleans that is highly contested due to environmental assessments that confirm worrisome concentrations of highly toxic and carcinogenic elements and the associated health risks conferred to the minority children who will attend. Long-term rebuilding in the wake of disasters stimulates not only the local economy but also determines where people will live, work, and go to school, and by extension what resources will be available to them. It is important to ascertain the social and environmental mechanisms that shape the rebuilding process and subsequent landscape 10 years after the disaster. To do this, I conduct a case study of the rebuilding process of Booker T. Washington High School in the heart of New Orleans. I find that in the wake of disaster, even after 10 years, it is a political untenable position to be against pro-growth agenda even in the face of environmental hazards.

*Keywords: Environmental Inequality, Environmental History, Urban Ecology, Human-Nature Systems Resilience, Disasters*

### **Cultural benefits provided by urban green areas: comparison of people, park management and cultural association perspectives.**

Emilio PADOA-SCHIOPPA, Claudia CANEDOLI

Both cultural and biological diversities underpin resilience and sustainability of cities. Human health and well-being, and the amenity values of most cities are strongly related to the quantity and quality of urban green areas. Within these areas, the assessment of cultural ecosystem services (CES) is less frequent than other ES assessment, in part because of methodological constraints and conventional biophysical and economic assessments that often resulted not adequate to capture cultural values. As a consequence, they may be underestimated and threatened, when land-use planning and management decisions are based on inadequate information. This study aimed to present a methodology to integrate cultural benefits with decision support using public participatory GIS techniques (PPGIS) and comparison analysis. Mapping cultural benefits was informative to detect conflicts or not between nature conservation and recreation that happen in particular around densely populated areas. Moreover, comparison analysis informed about matches or mismatches between different actors' perception of cultural benefits (citizens, cultural associations, park management) resulting in spatially explicit data informative for park planning. The methodology was also proposed as a monitoring tool to investigate changes on cultural benefits perception over time. Finally, the study discussed the utility of the data acquired to effectively implement urban parks planning.

*Keywords: cultural ecosystem services, urban parks, public participatory mapping*

### **Collaborative Community Engagement for urban waste management - UrbanWINS**

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Growing consumption of resources generate waste. Its management is key for the resilience of the urban ecosystem. In the search for tools able to support and guide the decision-making process towards a more efficient waste management, contributing for more inclusive and sustainable cities, emerges the involvement of the civil society as a crucial factor. It is in this context that the project UrbanWINS (UW) acts ([www.urbanwins.eu](http://www.urbanwins.eu)) through assuring the inclusion and involvement of the stakeholders, promoting their direct voice in the development of Strategic Plans for the management of waste. These Plans, developed within UW, will lead to three specific actions to be implemented in the 8 pilot cities with different socio-economic, demographic and political characteristics. In the process, UW will study how these cities consume the resources and dispose the waste. This will inform how to prevent, reduce and reuse the waste. In this way, the UW methodology aims to become a step for the building up of tools that promote a better dialogue among stakeholders and their direct involvement in the decisions. Simultaneously, it will contribute to improve the capacity of cities to plan and evaluate innovative actions aiming to the betterment of sustainability of the urban ecosystems.

*Keywords: Collaborative processes, Community engagement, Stakeholders, Waste Prevention and Management, Urban ecosystem*



## **Gardens, cities and people - How to assess urban gardening**

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The current urban gardening trends in Europe rather rarely follow their historical roots – improving peoples livelihoods through food self-provisioning and providing occupation for their free time. It may be notably seen that their so called “social” features are emphasized by both scholars and practitioners, who praise urban/community gardens for being places of community empowerment, social cohesion, inclusion and integration. Also environmental functions of urban gardens are of importance. Nevertheless, in the discussions about the purpose and meaning of urban gardens there are also arguments against their existence and they are related not only to pressure from the developers. Urbanists often view these territories as areas without the necessary infrastructure, aesthetic values, without a clear purpose. They are also referred to as having exclusive character - they allow recreation only for a limited group of inhabitants and thus represent a privatized public space.

This paper presents a methodology tool that standardizes the assessment of gardening sites and, at the same time, aims at representing the most user-friendly approach to easily assess a wide range of these specific areas. This methodology is based on a multidisciplinary approach and evaluates territory in three perspectives. The first looks at urban gardening in urban planning. The second perspective analyses the social benefits of gardening community and the economic aspects of urban gardening including its contribution to food security. The third aspect examines the environmental aspects of gardening sites, including their contribution to biodiversity support.

## **A study of peoples' participation in garbage disposal in selected parts of Mumbai.**

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### Introduction:

Humans have prospered through development. There are positive and negative effects of development. One of the negative effects is environmental degradation. We must work to control it and make development sustainable. UN has adopted 17 Sustainable Development Goals (SDGs) for sustainable development. Indian Government has launched several programmes for implementing the SDG agenda,

Objectives of Research study:

1. To comprehend the issue/subject of garbage disposal in Mumbai
2. To study schemes of municipal corporation of Mumbai for solid waste management.
3. To examine participation of Co-operative Housing Societies and Advance Locality Management (ALMs) bodies in garbage disposal.

### Plan of work:

Collect data from secondary source and interview 5 Government officers for objectives 1 and 2.

For objective 3, data will be collected from at least 10 Co-operative Housing societies (CHSs) and 10 Advance Locality Management (ALMs) bodies.

Data from secondary source will be collated. Data from primary source will be tabulated; conclusions will be drawn for success and failure.

*Keywords: Sustainable development, Garbage disposal, ALMs, CHSs.*

## **CP15 Changing Drivers of Water Security**

Chair: Gustavo Hees de Negreiros

### **Ecological footprint of the changes in the patterns of water use in the Mediterranean semiarid landscapes in Alto Vinalopó (SE. Spain)**

Dr. Antonio Pastor-López (Antonio.Pastor@ua.es)

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The Alto Vinalopó county in the northwestern corner of the province of Alicante represents a typical landscape of the Spanish Southeast. Mountain chains alternate with valleys dedicated to extensive and intensive agriculture. With apparently

similar spatial patterns since the beginning of the 20th century present strong environmental and ecological changes linked to changes in water management practices used in agriculture.

This contribution analyzed in a qualitative way the changes in water use patterns for the whole county since the end of the 19th century. The spatial expression of such changes in the use of water, on land uses was analyzed through the use of Geographic Information Systems. The consequences of both, in the associated ecological processes were evaluated for the municipality of Villena. This city includes the greater municipality surface of the county with some 360 square kilometers of extension, and presents the greater environmental heterogeneity in it.

Priorities for the most relevant land-use planning criteria and for the measures to better achieve an integration between the new water demands that minimize the negative ecological effects were screened and evaluated.

*Keywords: GIS analysis, Agroecology, Water Demand Integration, Land-use planning.*

### **The butterfly Effect: Local water metabolism of the globalization of energy resources**

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In this work, I assess how household energy consumption patterns in a region are responsible for the use and pollution of water in another far away region. A number of studies focus on the interactions between water and energy metabolism at local, regional or global level in what is called the study of the Water-Energy(-Food) nexus. However, there are very few assessments about how local water metabolism influences global energy metabolism and vice versa.

Using MuSIASEM (Multi-Scale Integrated Analysis of Societal and Ecosystem Metabolism), I relate heating natural gas use in a typical household in Spain with the water-related issues of the fracking extracted shale gas in Pennsylvania, US. I connect the societal metabolism of different regions and, consequently, the biophysical flows that affect their ecosystems. After an integrated analysis of the water and energy metabolism of the two regions and their connections, I analyze the centrality, recurrence and robustness of the metabolic network.

Preliminary results show to what point water and energy must be jointly managed, how the “drag” effect is stronger the higher we move in the hierarchy and why it will be difficult to achieve a sustainable use of water or energy while policy making obviates this relation.

*KEYWORDS: Globalization, Integrated Resource Management, Metabolic Networks, Shale gas, Water-Energy Nexus.*

### **Water where there is no water: the human and political ecology of water management in a semi-arid region of northeast Brazil.**

Gustavo Hees de Negreiros Ph.D. | Universidade Federal do Vale do São Francisco – UNIVASF

In the semi-arid landscapes of central northeast region of Brazil, local populations are used to walk significant distances across dry Caatinga vegetation to find water for consumption. Localized geological features, like the Serra da Jacobina (Jacobina Hills) in central north part of Bahia State, usually presents wetter and cooler environments than the surroundings due to the higher altitudes that they reach. The higher availability of water makes those areas more suitable to human settlements and agriculture. Dams are found everywhere, collecting water for human consumption (rural and urban), agriculture and mining. Conflicts over the increasing demands for water are growing in frequency and seriousness, what makes water management an important political topic regionally. Nevertheless, the possibility to bath in a waterfall or swim in dam, or enjoy the day in a cooler and wetter environment, with greener vegetation is been every day more sought and valued by locals. That local “eco water tourism” is introducing new perspectives, values and voices to water management in the region. Local social organizations and municipal governments are getting actively involved in discussing water issues seeking and proposing conservations units combining the ideas of conservation for water with the sustainable tourism perspectives.

*Keywords: water management, water conflicts, sustainable tourism, semi-arid, northeast Brazil*

### **A Complex system approach of the human ecology of Oasis. A case study in Southern Morocco communities**

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The paper presents an analysis of how oasian communities decide upon socio-environmental problems, in specific, water management. It studies the case of the oasis of Hassi Labied (Morocco) as a complex system, integrating a human ecology perspective. The paper discusses the results of a project that improved its water infrastructure and analysed with a participatory action research approach the socio-environmental system of the Oasis and its current challenges.

This complex system has traditionally been managed by a traditional institution: the Jamaa in Arab or Takhabilt in Amazigh, guardian of traditions. The Jamaa takes decisions on the management of communal infrastructures (khetaras), however, it does not intervene when the infrastructures are private, like wells, or when the problems are being originated in a private property, like garbage or sewage disposal even if it affects the communal water table.

In recent years, the survival of the oasian communities has being endangered by the breaking off of systemic imbalances. Particularly, international tourism has put an increasing pressure to the sustainability between oasian economy and its natural environment, but also, it has made evident the traditional institutions' challenge to give an answer to emerging complex problems within the community.

**KEYWORDS:** *sustainability, decision making, tourism, tradition, khetara.*

### **Incentives and barriers on implementation of water-saving measures in lodging industry in the Mediterranean. The case of Muga basin (Girona, Spain)**

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The Mediterranean basin, one of the most important tourist destinations in the world, might suffer water stress and loss of water availability due to the negative consequences of climate change and rising of water demand. Future climate scenarios have predicted more frequent and long drought periods and rising of temperatures, so, water availability and natural resources will decrease. Taking into consideration these trends, lodging industry needs to be adapted to these limitations.

Main aim of the study is analyse which water-saving measures are implemented in lodging industry (hotels, campings and rural accommodation) on Muga basin (Girona, Spain). It is important to know which incentives, barriers and motivations owners have to implement these measures. Methodology relies on literature review and interviews to owners of accommodation establishments.

Results show that most of interviewed perceive that incentives are inexistent, and there are lot of barriers to implement water-saving measures, which are mainly economic and technical. Most of studied establishments are small and medium enterprises and do not have economical resources, technical knowledge or environmental awareness to implement this kind of measures.

**Key words:** *water-saving measures, climate change, lodging industry, Mediterranean basin.*

### **CP16 Research on Sustainability Issues**

Chair: Sandra Idrovo Carlier

### **Looking through the semi-periphery of scientific research: people, practices and culture across centre/periphery borders**

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With almost half of the world's population at risk of developing malaria today, this pathology is a major threat for public health, particularly in endemic areas, mostly poor countries and regions. Still, malaria was only the focus of 0.4% of all biomedical research, mainly developed in North America and Europe. In Portugal, scientists have long contributed to malaria research, a feature attributed to malaria's endemicity in Portugal until 1973, and the relations with its former territories, where malaria remains endemic. However, it was never addressed whether the organization, practices and culture of malaria research are framed by Portugal's relations with its former territories or, rather, by the relations with more developed S&T systems.

This study addresses these issues through the characterization of malaria research in all indexed publications involving Portuguese organizations (1900-2014; n=467). First, data was systematized by content and bibliometric analyses. Next,

multiple correspondence analysis revealed a bi-dimensional landscape (who's publishing; what's published) and cluster analysis identified three profiles (beginners; local appropriations; global patterns).

These profiles unveil Portugal's participation in a world system where it assumes a semi-peripheral role, embodying application and performance-driven modes of production from the centre, and reinforcing them, by imposing these features in the periphery.

*Keywords: Malaria; Scientific practices; Semi-periphery; Portugal*

### **Title: Ecological modeling of racial bias in police use-of-force: A theoretical and empirical approach to resolving disparate findings in the recent literature**

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Analyses of racial disparities in police use-of-force against unarmed individuals are central to public policy interventions; however, recent studies have come to apparently paradoxical findings concerning their existence and form. Although anti-black racial disparities in U.S. police shootings have been consistently documented at the population level, new work has suggested that racial disparities in encounter-conditional use of lethal force by police are reversed relative to expectations, with police being more likely to: 1) shoot white relative to black individuals, and 2) use non-lethal as opposed to lethal force on black relative to white individuals. In this talk, I use a generative stochastic model of encounters and use-of-force conditional on encounter to demonstrate that if even a small subset of police more frequently encounter and use non-lethal force against black individuals than white individuals, then analyses of pooled encounter-conditional data can fail to correctly detect racial disparities in the use of lethal force. In more technical terms, statistical assessments of racial disparities conditioned on problematic intermediate variables, such as encounters, which might themselves be a causal outcome of racial bias, can produce misleading inferences. Population-level measures of use-of-force by police are more robust indicators of the overall severity of racial disparities than encounter-conditional measures—since the later neglect the differential morbidity and mortality arising from differential encounter rates—and should be used when evaluating the local-level public health implications of racial disparities in police use-of-force.

### **Lights and shadows for evaluating progress in the UN 2030 Agenda: Lack of gender indicators on [social and productive] time use**

Bernis C, Varea C., | Department of Biology, Faculty of Sciences, c/Darwin, 2, Madrid Autonomous University, Madrid, Spain, [cristina.bernis@uam.es](mailto:cristina.bernis@uam.es)

Gender inequalities manifest themselves in each and every dimension of sustainable development. The UN 2030 Agenda for Sustainable Development proposed 223 indicators, 54 of which were specific to evaluate the gender gap in each dimension, including 14 in 17 Sustainable Development Goal 5 (SDG5), specifically for gender equality. However, the first documents evaluating the situation done by experts and institutions related with NU, warned about the lack of gender data, and the absence of gender specific indicators, which precludes to establish gender equality baselines and assessing the direction and pace of progress.

This paper a) compares the information on the gender gap provided by the SDG5 with that provided by other composite gender indexes—previously proposed and used by the UN—for which trend data are available, b) discusses the different results depending on the indicators included in each index, and c) reflects about the urgency of having specific indicators to measure essential aspects of the gender gap, specifically those related with the use of social and productive time.

### **A Sustainability International Development Classification Based on the Trajectories of the Components of the National Footprint Accounts (1961-2013)**

Manuel Berrio | PhD Student Cornell University, Department of Natural Resources [mab624@cornell.edu](mailto:mab624@cornell.edu)

The project of international development has been extensively and profoundly questioned. A fixation on economic growth, narrowly represented by income per capita metrics (e.g.: GDP), has been the focus of particularly astringent criticism. Nevertheless, taxonomies distinguishing developed, developing, and underdeveloped countries (or similar categories), based on income per capita metrics, are still prevalent analytical tools in the realm of international discussions about social progress and in lay discourse. In order to contribute to the creation of a “dashboard” of indicators reflective of a multidimensional notion of social progress, I introduce a novel sustainability taxonomy. I track changes over a 52-year



period (1961-2013) in the two components of the National Footprint Accounts, Biocapacity and Ecological Footprint. I perform cluster analysis of 130 nations using a simplified description of the joint trajectories of these components. The patterns that emerge allow me to develop and critically assess an international taxonomy of socio-ecological change. This research contributes to expand and improve our understanding of social progress from the point of view of sustainability. The taxonomy that I introduce, contributes to re-framing social progress from a notion of unbounded accumulation of wealth to a notion of political, uneven stewardship of human and natural resources.

*Key words: sustainability, cluster analysis, development, uneven, National Footprint Accounts –NFA*

### **Sustainability and the home: A perspective from 20 countries**

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Patricia Debeljuh | Centro Walmart CONFYE, IAE Business School, Universidad Austral, Argentina

Home dynamics play a major role in raising sustainable awareness and teaching sustainable consumption to the youngsters (Collin, 2015). As Segev (2015) suggests pro environmental attitudes, need a set of factors that aid in transferring values to actual household conservation behaviors, because they are not automatically translated into corresponding pro-environmental behaviors. Researchers have recently begun to look at the role of the norms of the household in energy-efficiency decisions for example. However, cross-country data about how these home dynamics actually take place in relationship to household tasks, maintenance and conservation of natural resources are scarce. The present exploratory study looks at how household dynamics: Organization and coordination of the home (preparing homemade food; frequency of having meals together, personally undertaking the cleaning and tidying of the home and the maintenance tasks; organize and do the shopping, time spend on training for running the household); and, Teaching values to children (frequency with which domestic tasks are distributed among them; frequency with which family members are taught to look after the material details of the home; frequency with which family members are taught to take care of natural resources) interrelate in 20 countries. Preliminary results suggests differences among the countries due to their HDI and Gender Gap Index.

*Keywords: Sustainable consumption; household; cross-country*

## POSTERS

### Poster Abstracts:

**Poster 1: A glimpse behind the scenes: Assessing ecosystem services based on statistical data and expert evaluation**  
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**Abstract:** Many different methods can be used for assessing and mapping of ecosystem services. The poster presents two methods applied for evaluating and mapping the ecosystem service potential for crop and fodder production in the federal state of Schleswig-Holstein, Germany. As quantitative method, the evaluation of data from statistical reports is selected. Yield and/or total biomass production for grassland, cropland and forests are calculated for the study area. As qualitative method, the spreadsheet assessment is introduced. The spreadsheet method is based upon expert evaluation and distinguishes the ecosystem service potentials with regard to the different land use/ land cover types. The focus of the poster lies on the description of the two different methods in general, their application and practicalities and a comparison between them. However, also the respective results of the two methods in the study area, the federal state of Schleswig-Holstein, are presented, compared and interpreted with regard to land management practices.

**Keywords:** *Ecosystem service assessment, spreadsheet method, statistical data, expert evaluation*

**Poster 2: Ação antrópica no povoado Cruz, município de Delmiro Gouveia – Al, Baixo de São Francisco**

Adriana Maria Cunha da Silva<sup>1</sup>, Janniera Mariana dos Anjos Lima<sup>1</sup>, Maria Leonalda Nunes Lima<sup>1</sup> & Wilma Amâncio da Silva<sup>1</sup>

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### **Abstract**

The village Cruz is located in the city of Delmiro Gouveia-AL, which is part of the Low São Francisco. Because it is a beach resort frequented by the population, the goal of the study was to survey the impacts on this recreational area through the checklist method. The following impacts were listed: disturbed riparian vegetation due to the construction of small houses (huts), the proliferation of aquatic weeds in the river, the garbage in the margins or near the river, coming probably from the local regulars and tourists, swimmers and owners of small shacks present in place, the presence of pets and droppings of other animals, car wash and the presence of a fish farm, with over 40 cages approximately. If these impacts are occurring alone does not affect the balance of the environment. The human action generates the cycle of cause and effect which man himself suffers the consequences with other living beings.

It is suggested that the municipal authorities do campaigns of education and environmental monitoring more often.

**Keywords:** *Beach resort. Checklist. Impacts. Environment. São Francisco River.*

**Poster 3: Art and education in the conservation of a giant of the seas: The acting of the cultural troupe Arte Manha and the Meros do Brasil Project**

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The Meros do Brasil Project aims the conservation of the goliath grouper (*Epinephelus itajara*), a Critically Endangered fish species in the Brazilian coast, and the coastal marine environments it inhabits. The project acts through a network that involves more than 50 institutions in three main fields: (a) research and conservation of the species; (b) environmental

management and eco-development; (c) education and environmental communication. The activities developed in the focal point of Bahia, by the Cultural Movement Arte Manha in the scope of the Meros do Brasil Project, aims to popularize the

scientific practices, along with the local communities proposing the building up of strategies for the auto-management of the natural resources. This initiative, from 2007 to 2013, involved circa 15 thousand from different ages in the Performing arts, Music and Art-education workshops. The project has in these artistic expressions, a set o fabulous tools to reach the

social transformation. The continuous exercise of the traditional and contemporary practices not dissociated from the environmental issues brings citizens light to the critical thought and consciousness in the daily practice of sustainability.

*Keywords: cultural manifestations; goliath grouper; social mobilization*

#### **Poster 4: Associations of Temperature Variation and Mortality in 47 Japanese Prefectures**

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Japan Yasushi Honda, Faculty of Health and Sport Sciences, University of Tsukuba, Ibaraki, Japan

*Keywords: temperature variation, temperature, mortality*

**Background / Aim:** Few studies have investigated the mortality effects of temperature variation (TV) in Japan. In this study, we employed the newly proposed indicators of inter- and intra-day TVs computed separately using daily mean temperatures above or below the minimum mortality temperature to assess the TV-mortality associations and their relative contribution in comparison to daily mean temperature across Japan.

**Methods:** We collected daily data on temperature and mortality during 1972-2012 from 47 Japanese prefectures. We performed a quasi-Poisson regression analysis incorporating a distributed-lag non-linear model to estimate associations of daily mean temperature, inter- and intra-day TVs with mortality in each prefecture.

**Results:** Most prefectures showed a significant increase in mortality risk associated with daily mean temperature, with relative risks (RRs) reaching 1.236 (95% confidence interval (CI): 1.163, 1.313) for heat in Aomori, and 1.676 (95% CI: 1.313, 2.138) for cold in Wakayama. Inconsistent results for inter- / intra-day TVs were found, except for some protective associations between intra-day TV and mortality in Kochi (RR 0.979; 95% CI: 0.965, 0.993) and Gifu (RR 0.988; 95% CI: 0.98, 0.996) on cold days.

**Conclusion:** We found that the association between mortality and TV was generally small compared with daily mean temperature in Japan.

#### **Poster 5: Brazilian semiarid residents representation regarding the use and availability of water**

Eliane Maria Souza Nogueira<sup>1</sup> ; Deyvison Rhuan Vasco dos Santos<sup>2</sup> ; Luene Melo da Silva<sup>3</sup> ; Tiago Shizen Pacheco Toma<sup>4</sup> ; Heide Vanessa Souza Santos<sup>5</sup> <sup>1</sup>Universidade do Estado da Bahia (UNEB), Brasil. E-mail: emsnogueira@gmail.com;

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This study aimed to access the cultural memory of rural area residents from the Brazilian semiarid region about the use and availability of water in past and present times. We used the technique of focus groups with 31 participants, divided into 4 groups, who were invited to graphically represent the stimulus question: "What is the difference between access and use of water today and in the past?". All groups represented access to water as an important social, economic and cultural factor. In the past, water scarcity was highlighted, with access marked by "barreiros" and small streams, made with cans over their heads. In addition, we also represented the supply of water through water tankers. Nowadays, the graphic elements show advances with the presence of piped water, which facilitated domestic use, agriculture, as well as animal breeding. In spite of these advances, it was portrayed the transformation of streams into open air sewers with the presence of insects, probably evidencing disease transmission by vectors such as viruses and verminoses. Hence, we conclude that the access to piped water in the locality was paramount for changes in these people's life habits.

*Keywords: water resource, rural communities, cultural memory*

**Poster 6: Combining qualitative and quantitative methods to evaluate the ecological integrity and ecosystem derived values on a regional scale**

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**Abstract:**

Employment of interdisciplinary approaches stands as a challenge for future environmental research and methodology, and the ambitions to grasp the complexity of the human-environmental systems. This contribution presents combination of two methods, connecting inputs from a sociological stakeholder survey and a biophysical measurement based on remote sensing data, to obtain a dense description of a case study area (Protected landscape area Třeboňsko, Czech Republic). The stakeholder survey describes and maps ecosystem-derived values, specifically economic, non-economic values and threats. A parallel quantitative measurement of ecological integrity is performed to visualize and evaluate ecological integrity based on remote sensing data (Sentinel-2, Landsat 8) and three indicators: Exergy Capture, Biotic Water Flows and Abiotic Heterogeneity. A spatial analysis is performed to answer the following research question: What is the spatial relation between ecological integrity and ecosystem-derived values?

**Poster 7: Erosion of medicinal and food biodiversity: the emergence of intercultural dialogue**

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We evaluated the representation of plant diversity and use in a Brazilian semi-arid rural community in relation to urbanization process and possible consequences for sociobiodiversity. Data were collected through four focal groups (total: 31 participants), guided by the following questions: a) "Which plants existed here before? And what about today?"; b) "What are their possible usages?". Regarding the past context, 39 ethnospecies were cited as healing and food sources, highlighting Algodoeiro, Cajueiro, Imbuzeiro, Juazeiro and Quixabeira plants, mentioned by three groups. Regarding the current context, 14 plants were represented. Only three were common to both contexts (Catingueira, Juazeiro and Tamarinzeiro), pointing to a reduction of plant diversity. Lines from participants indicate that medicinal and food potential stimulated plant use and conservation: "Cure was obtained with home medicines"; "Today they do not survive from the farm"; "Today people have no sense of preservation." Urbanization process, with the creation of a health center and subsistence improvements facilitated access to biomedical treatment and industrialized foods. This may have resulted in the erosion of biodiversity observed here. Such erosion can be avoided by articulating local and external knowledge, generating an improvement in life quality, preserving local flora and ensuring cultural identity continuity. Key-Words: Urbanization, Rural Communities, Traditional knowledge, Plants of the Caatinga. F

**Poster 8: Evaluation of ecological integrity in landscape context based on remote sensing data**

*Jakub Zelený | Charles University, Environment Centre, José Martího 2/407, 162 00 Prague 6, Czech Republic*

Maintenance of ecological integrity on global as well as regional scale is the prerequisite for sustainability as well as beneficial ecosystem services. Ecological integrity is a globally acknowledged concept (Paris Agreement, 2015), although there is a no consensus on a generally accepted theory or a unified measurement method to evaluate integrity. This contribution presents a novel method of integrity assessment on a regional level, based on freely available data from remote sensing (Landsat 8, Sentinel-2), and applied in the state of Schleswig-Holstein, northern Germany. The results of measurements, based on three variables (photosynthetic potential, evapotranspiration potential and texture heterogeneity), provide a simple and consistent method for identification, assessment and quantification of the integrity



gradient in a regional context. An integrative Regional Index of Ecological Integrity (RIEI [%]) is derived as an estimate of the relative distance between potential top and bottom performance in regional context. The explanatory power of the tested method can be used in nature conservation, ecosystem management as well as setting ecological targets and goals for policy makers.

**Poster 9: Indigenous peoples of the São Francisco Sertão: dynamics of occupation and uses of natural resources**  
Edivania Granja da Silva Oliveira (1), Roberto Remígio Florêncio (2), Carlos Alberto Batista dos Santos (3)

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**Abstract:**

It is intended to present the processes of ethnic mobilization related to socio-environmental issues, in the São Francisco River Basin, sertão of Pernambuco. To do so, we chose the disciplinary fields of Environmental History and Human Ecology with the intention of making reflections based on the relations of human beings with the environments they inhabited, involving the understanding of the physical and symbolic dimensions of humans in relation to Nature. We clarify that the sertão was a space of intense human occupation from the colonial period, place of enterprise of the agricultural activities and of the livestock, generating intense conflicts with diverse indigenous populations that lived on the banks of the San Francisco River. Currently, most of the indigenous population of Pernambuco inhabits the area of the São Francisco Franciscan sertão. And, finally, we will try to understand the dynamics of occupation and the uses of natural resources by the Indians, in an attempt to highlight social and environmental continuities and discontinuities, specifically the Pankará and Truká Indians, in their physical and symbolic territories: the Serra do Arapuá, an high swamp area, in the city of Carnaubeira da Penha and the Island of Assunção, in the city of Cabrobó, respectively, both in the state of Pernambuco.

*Palavras-Chave: Natives, Territorialidade, Socio-environmental conflicts.*

**Poster 10 Mulheres na Pesca Artesanal: uma percepção sobre saúde e segurança das marisqueiras do Guaibim – Valença-BA**

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**Resumo**

A mariscagem é uma atividade desenvolvida predominantemente por mulheres em um ambiente permeado dos mais variados riscos, inserindo as marisqueiras em um crescente estado de vulnerabilidade, interferindo na saúde dessas trabalhadoras que contribuem significativamente para a produção no setor pesqueiro. Assim, o objetivo desse trabalho foi caracterizar a atividade laboral das marisqueiras do Guaibim – BA. Para tanto foram aplicados questionários semi estruturados, somado a registros fotográficos e observações de campo. Os resultados refletiram as precárias condições de trabalho diretamente associados aos riscos ambientais encontrados, cujo tempo prolongado de exposição esteve relacionado com a precocidade do início do desenvolvimento de suas atividades. Quanto às doenças o maior destaque foi atribuído as de cunho osteomuscular (dores na coluna e articular), em decorrência do surgimento de lesões do tipo LER/DORT. Medidas efetivas de promoção do restabelecimento da qualidade de vida das marisqueiras são cada vez mais necessárias, podendo ser fundamentadas na realização de campanhas que possibilitem a geração de conhecimento que resultem em conscientização quanto aos riscos de suas funções e os direitos inerentes à profissão.

*Palavras-chave: Mariscagem. Riscos ocupacionais. Atividade laboral*

**Poster 11: Patterns of water depuration in Alto Vinalopó County (SE. Spain). Evaluating new environmental designs that reduce their ecological footprint**

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**Keywords:** *Ecohydrology, Land-use changes, Land-use planning, Constructed Wetlands, GIS analysis.*

Since the beginning of the 1990s, important changes have occurred in the management of wastewater in many areas of Spain. Alto Vinalopó county, with dominance of semi-arid mesomediterranean climate, is representative of a type of these management strategies. The number and magnitude of these water treatment plants (WTPs), as well as the alternatives to reuse their effluents must be reviewed given the negative ecological footprint generated during the last 25 years. This contribution compared the WTPs designs, used for the different populations of the county with other alternatives. The possible environmental designs were evaluated from the perspective of their benefits in the maintenance or generation of new habitats and for the conservation of biodiversity. Using GIS, Villena's WTP, receiving water from three other much smaller cities Cañada, Campo de Mirra and Benejama was studied and new alternatives quantified. The need to implement small-size designs, in terms of the amount of reused water was highlighted. Using low-cost constructed wetlands, as the first measure to adopt in order to achieve a qualitatively relevant change that significantly increases the potential for ecological rehabilitation.

**Poster 12: Shipwrecks as substrate for artificial reefs: representations of biology and history undergraduate students and the cultural heritage and marine biodiversity imaginary**

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Artificial reefs, such as wrecks, either intentional or accidental, have biological characteristics similar to the natural reefs environments, serving as substrate for many species. Our goal was to identify and analyze the social representations on the relationships between shipwrecks, marine biodiversity and cultural heritage among Biology's and History's students from an university in the São Paulo State, Brazil, comprising a sample of 53 individuals, beginners and graduating, 36 being from Biology course and 17 from History. The Free Word Evocation technique was applied, asking the interviewees three words that came to mind when they thought about the term "shipwreck", and, finally, complementary questions addressing more specific knowledge about shipwreck's benefits and harms to marine ecosystems. An analysis was performed about the representativeness of the words, and the most cited words were: "Sea, Titanic, Accident, Contamination, Disaster and Water". We found no significant differences between undergraduate student's answers, which can be justified by the fact that the subject is not properly addressed in the curriculum and receives little attention in the training of these students or even in the media and publications.

**Keywords:** *Marine biodiversity, Shipwrecks, Artificial reefs, Social representations, Undergraduate students (São Paulo, Brazil)*

**Poster 13: Sustainability challenges for small-scale fisheries in the Azorean islands: Local conflicts, social actors and the opportunities of a new ecosystemic local management approach.**

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Having assumed the challenge of promoting sustainable fisheries in this outermost European region (ORs), the Azorean Regional Government has been 'reinforcing' new rules and legislations. The daily social impacts of these changes, for fishermen, are important and not necessarily taken in account in policy-making. Therefore, we stand the questions: Does the fishery activity in the Region comply with the new policy for the protection of marine resources and habitats? Do we achieve responsible fishing operations (sustainability) by introducing new legal rules? Whose voices are being heard? Do we have conflicts in our local fisheries management? A new interdisciplinary approach should be focusing on understanding the social impacts within each island's fishing community. To manage challenges and interactions between social and ecological systems, including conflict prevention and management of biodiversity, a new scientific-based

management approach is necessary to improve responsible fishing and manage fishing operations. Management is about people and resources: is rather an attitude than procedures. A high level of Transparency and Imputability is essential, without forgetting that management decisions are for human, not for fishes. Co-Management, by involving local actors (sea users), new tools and approaches allows to understand obstacles in fisheries and behaviours at sea.

**KEYWORDS:** *Social Actors, Public Policies, Social-ecological Systems, Small-scale Fisheries, Co-management.*

#### **Poster 14: The Effects of Scale on the Management of Private Rangelands and Grasslands through Cost-Share Programs**

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Scale is an issue found throughout social and ecological studies, both spatially and temporally. In ecology the extent and duration of sampling, as well as the variables being sampled, can affect how a system is realized. Similarly, in the social sciences, the scale at which people perceive themselves and the effects of their actions can influence responses and decision-making. This study was implemented in order to understand the scale at which Nebraska landowners are willing to manage their rangelands and grasslands for the native-invasive species *Juniperus virginiana* through cost-share programs. To do this, we mailed an eight-page survey with questions about land management preferences to a random selection of 2262 rural landowners in five of Nebraska's Biologically Unique Landscapes. The results of this survey, along with information from the agencies that support cost-share programs, highlight the importance of scale in ecological management programs, particularly in voluntary public programs, and demonstrate a continuing need for the integration of social and ecological research in the field of natural resource management.

*keywords: scale, grasslands, cost-share, natural resource management*

#### **Poster 15: Trends in the urban developments of the coastal area of the province of Alicante (SE Spain). How to improve ecologically the human-nature systems that we create?**

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*Keywords: Urban Ecology, Land-use changes, Land-use planning, GIS analysis.*

Most coastal areas of the Earth are very attractive to human populations. The coast of the province of Alicante is paradigmatic in the patterns of occupation by urbanizations and other urban developments in the Mediterranean. Tourism and second residences are the main drivers of change in land use near the coastline, both in emerged and submerged lands.

This contribution analyzed, quantitatively, using GIS, The changes suffered in the coast of Alicante in seven municipalities representative of several types of coastal profiles (Teulada, Calpe, Altea, Alicante, Santa Pola, Guardamar and Torre Vieja).

We compared the changes in the last sixty years identifying the natural habitats lost and the types of new habitats.

The analysis showed that ecological sustainability was strongly dependent on keystone landscape features on which relevant ecological processes are based. We suggest reconciliation ecology proposals for each site, as a basic new design criteria, for the human-nature systems to create.

#### **Poster 16: Uso dos recursos naturais e conflitos socioambientais na região Nordeste do Brasil**

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O contexto socioeconômico e qualidade de vida das populações têm forte dependência do acesso aos recursos hídricos. Assim, a indisponibilidade de acesso à água potável, resultante da diversidade de usos das águas e as formas inadequadas do solo, podem trazer à tona o desenvolvimento de tensões socioambientais entre os diversos seguimentos da sociedade e em diferentes territórios. Portanto, este trabalho teve como objetivo, registrar casos de situações problemas associado a produção social do espaço e a degradação dos múltiplos usos dos recursos hídricos do Nordeste, Brasil, sob o enfoque da injustiça ambiental. O estudo foi realizado no período de janeiro a março de 2015, por meio de buscas *online* no Mapa da Injustiça Ambiental e Saúde no Brasil. No total foram registrados 27 casos de conflitos oriundos de 12 atividades humanas e com ocorrência de 20 danos socioambientais. Da população, os pescadores artesanais foram os mais atingidos diretamente, predominando em 33% do total de atores sociais envolvidos (nº total= 83). Neste contexto, iniciativas coletivas (sociedade, Estado e empreendedores) voltadas para garantir o uso sustentável dos mananciais e demais cursos d' água, bem como o uso e ocupação do solo, constituem em medidas primordiais. Considerando que os embates socioambientais identificados foram desencadeados por insatisfação e descontentamento de povos e comunidades atingidas diretamente e injustamente por impactos negativos advindos do desenvolvimento econômico nacional, e que afetam a continuação do seu modo de vida.

*Palavras-chave: Tensões socioambientais, Recursos hídricos, Sociedade, Uso do solo, Degradação.*

**Poster 17: Sustainability challenges for artisanal fisheries in the Azorean islands part of UNESCO's Biosphere Reserves: What happens when fisher's resist complying with legal protective rules and daily illegal fishing practices stand as an obstacle to the success of the regional environmental policy?**

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Azores is one outermost European region composed by nine islands, which belong to the Macaronesia. Four islands are UNESCO's Biosphere Reserves, where solutions reconciling the conservation of biodiversity with its sustainable use are being promoted. As 'Science for Sustainability support sites', interdisciplinary approaches should focus on understanding and helping to manage changes and interactions between social and ecological systems, including conflict prevention and management of biodiversity, namely by reinforcing scientific research.

Nowadays, 'Biosphere islands' fisheries face a peculiar set of problems and challenges. To accomplish an effective sustainable use of these islands coastal ecosystems, a new legal framework brought the awareness of the need to promote a responsible fishing to ensure both environmental balance and sustainable development of the professional activity, which has a very significant role in these islands social-economic situation. However, daily illegal fishing practices threaten this strategy. Based on a larger investigation about social representations of fishermen about environmental public, we propose an ecosystemic approach on the issue of fisheries sustainable management and governance, by focusing on understanding the genesis of human action and stating the importance of a comprehensive approach to fisheries' practices and illegal fishing behaviours (sign of local conflicts and obstacles to promote sustainable fisheries).

**KEYWORDS:** *Social Representations, Public Policies, Small-scale Fisheries, Illegal fishing, Sustainability.*

**Poster 18: Food Insecurity and its Implication on Rural Homemakers in Osun state, Nigeria**

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This study investigated food insecurity and its implication on rural homemakers in Ifetedo town in OSUN STATE. The research design adopted for the study was descriptive survey design while random sampling techniques was used to select one hundred and twenty participants from six areas in Ifetedo town. The research instrument was questionnaire which was administered to the respondents. Mean was used to analyze the data. Findings show that prolonged droughts and unpredictable rainfall, uncertainty of overall crop prospects, civil insecurity, geometric increase in size of population compared to food produced, increasing rural –urban migration due to urbanization play key roles in emerging food



insecurity in Ifetedo town. The study recommends that sustainable technology improvements in agriculture can increase productivity of food thereby improving household access to enough food.

**KEYWORDS:** *Food insecurity, homemakers, population, agriculture.*

#### **Poster 19: Análisis del Sistema Ganadero Ovino en Comunidades Indígenas Mapuche de la Norpatagonia de Chile**

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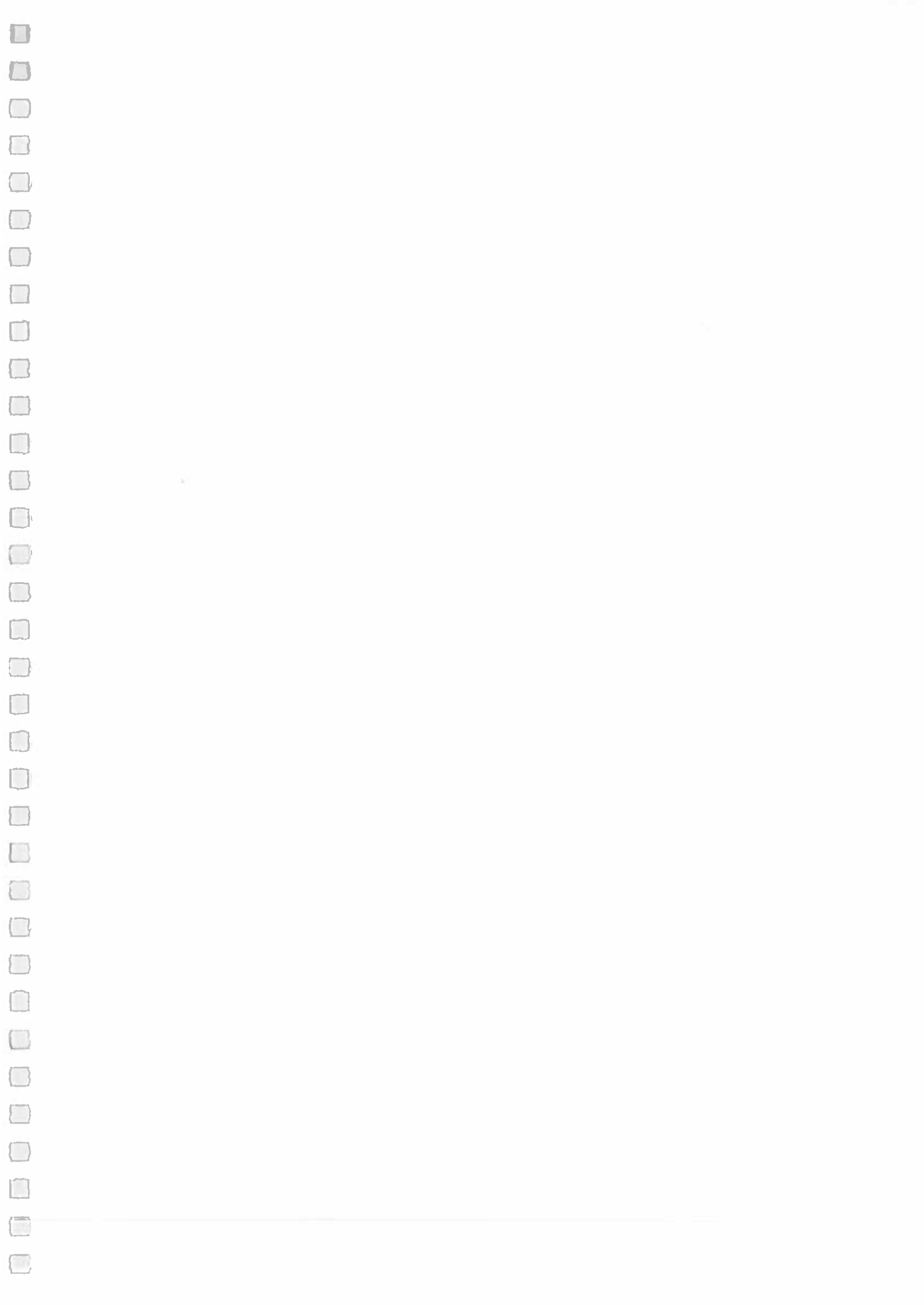
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Las comunidades indígenas y los campesinos Mapuche de Chile, son considerados grupos vulnerables, puesto que enfrentan diferentes problemáticas que les impiden incorporarse efectivamente al actual modelo de desarrollo económico chileno. Este trabajo tiene como objetivo general, analizar el sistema ganadero ovino de los productores indígenas, de la

norpatagonia de Chile, localizados en la Región de la Araucanía, identificando además los principales desafíos derivados de tal contexto para lograr una producción sostenible y culturalmente pertinente . Considerando la pregunta de investigación ¿Cuáles son las características compartidas de los productores indígenas de ovinos en la Región de la Araucanía?. Al respecto se optó por una metodología de enfoque cuantitativo, de profundidad descriptiva, temporalidad seccional, con un muestreo por conveniencia de 293 productores mapuche de ovinos. Se elaboró y piloteó una encuesta de diseño propio con preguntas referidas a sus características sociodemográficas, productivas y de comercialización. Los datos fueron analizados mediante estadística descriptiva identificando valores agrupados y desviaciones relevantes para interpretar el fenómeno. Entre los resultados destaca que los productores son en su mayoría minifundistas mapuche, donde la producción es principalmente familiar, para venta no formalizada, con escaso acceso a tecnología productiva y escasos conocimientos sobre técnicas y manejo de recursos de forma eficiente, pero que sin embargo considera en sus manejos conocimientos indígenas tradicionales. En este contexto, los principales desafíos apuntan a gestionar asesorías técnicas, capacitaciones financieras y evaluación permanente de la actividad productiva, bajo un contexto de desarrollo productivo apropiado, donde se consideren aspectos ambientales, económicos, sociales y culturales.

**Palabras clave:** *producción ovina, comunidades mapuche, sociología rural*





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