

People & Ecosystems - intro

CLUSTER LEADER: LÁSZLÓ PINTÉR

CORE FACULTY: BRANDON P. ANTHONY, TIZIANA CENTOFANTI

SEPTEMBER 2025



People & Ecosystems (P&E)

(Pintér, Anthony, Centofanti)

For the purposes of this collaborative area, **People & Ecosystems** are understood as socio-ecological systems (SES), which are defined as **spatial and/or functional units** with **closely integrated ecological, economic, socio-cultural and governance components**.

The area covers and studies systemic properties and management of SES in diverse place-based contexts to understand their complex **structures** and **functions**, non-linear and emergent **behavior** and ability to **maintain resilience and integrity** while delivering **goods and services** necessary to meet both human and non-human needs.

SES are studied on multiple **scales** in diverse geographic, political and ecosystem contexts using **quantitative and qualitative**, including **participatory, methods** and with an emphasis on using multiple lines of evidence to support decision-making.

Thematic foci include **biodiversity conservation, SDG implementation, adaptive management and resilience, circular economy**, and **resilient cities and communities**. **Interlinkages between spatial and temporal scales** will be considered as applicable.

P&E cluster structure (Fall Term)

Section within *Environmental Keywords: Foundations & Debates*

- ▶ Keywords:
 - ▶ **'BIOSPHERE'** (Anthony)
 - ▶ **'RESILIENCE'** (Pintér)
 - ▶ **'THRESHOLD'** (Centofanti)
- ▶ Debates:
 - ▶ **'Adaptations to life in varying environments'** (Anthony)
 - ▶ **'Reorganization to maintain integrity when encountering systemic disruption'** (Pintér)
 - ▶ **'Thresholds: Understanding human impact on Earth and health'** (Centofanti)
- ▶ Student Conference: individual and/or group consultations
- ▶ 4/8 credits

SES: Sustainable Management of Socio-Ecological Systems (2/4)

- B.P. Anthony, L. Pinter

- course introduces students to understanding SES, and using SES frameworks to explore environmental and associated sustainability issues
- attention will be given to understanding how SES are structured, function and interact as an integrated whole and what happens when they don't (biodiversity crisis, breakdown of ecosystem services and functions). The behavior of SES will be viewed through the lens of ecological principles and guidelines and the approaches of social institutions to translate them into resource management practice.
- course will emphasize the importance of socio-ecological context and draw upon a field trip and case studies. Students will also explore the behavior of SES through a simulation game.
- Field trip + 4 blogs/reflections (10%) + exam (30% + 30%)



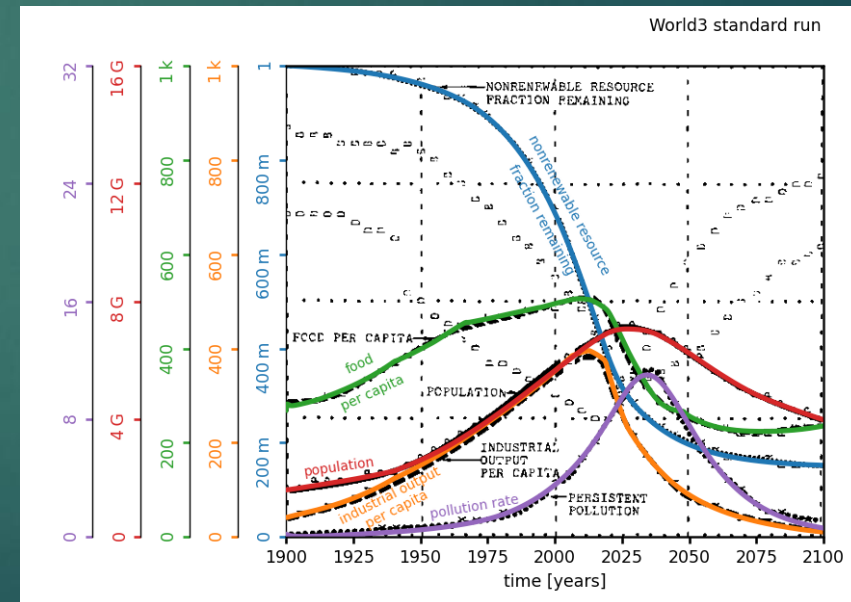
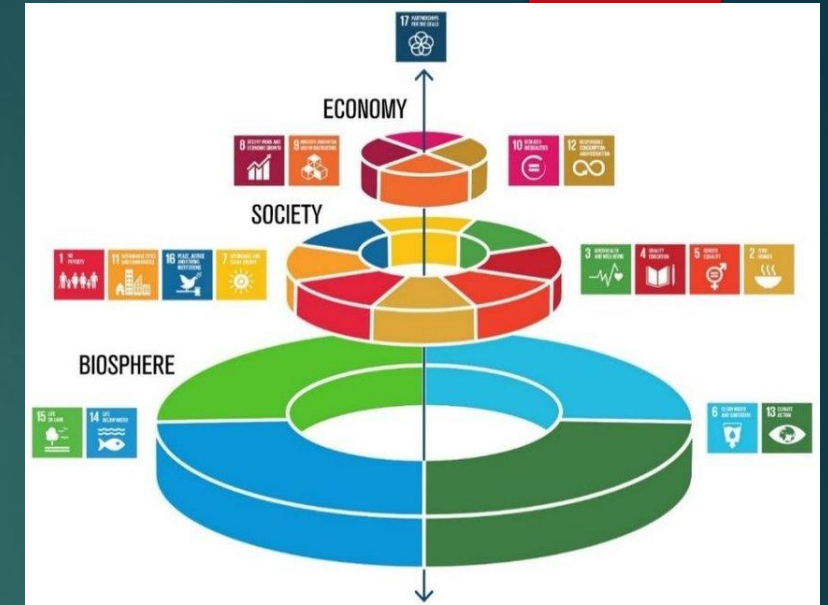
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SDGT: Sustainable Development and Global Transitions (2/4)

- L. Pintér

- ▶ Review the idea of un/sustainable development, its practice, manifestation in policy, science, contestation and future.
- ▶ We will read about how the concept emerged and evolved, formulate questions about what we learnt and play a simulation game.
- ▶ Hear from guest speakers involved in ongoing policy work and research.



AOGS: Agroecology & Organic Gardening Systems (2/4)

- G. Aistara, L. Strenchock

- ▶ Agroecology is an integrative approach to the study of agriculture that encompasses interactions between agricultural systems and their associated ecosystems, as well as the complexity of the entire food system, including ecological, economic, and social dimensions.
- ▶ course includes a theoretical and practical introduction to agroecology and to organic farming
- ▶ Learning Outcomes:
 - ▶ Understand foundational agroecological principles, including relationships between agricultural systems and surrounding ecosystems, and analyze how they are applied in different settings
 - ▶ Integrate and synthesize knowledge of agroecology systems to inform organic garden design, including crop selection, crop rotation, and soil, weed, and insect management elements
 - ▶ Explain and/or apply basic practical organic gardening techniques, and reflect on the complexities and challenges of managing an organic garden



P&E cluster structure (Winter Term)

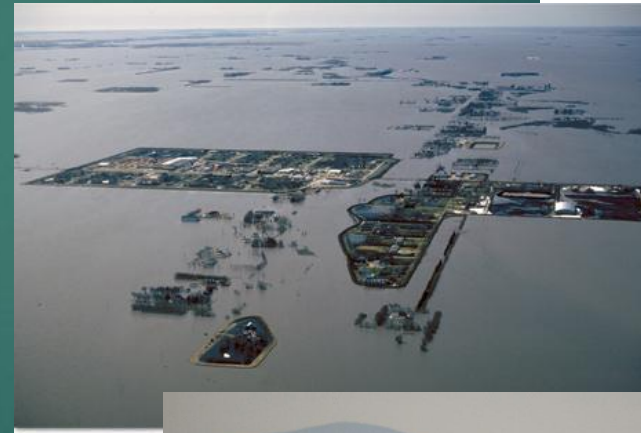
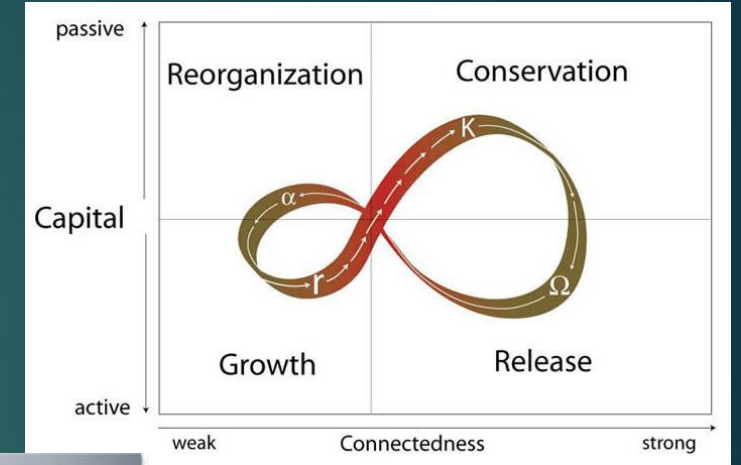
- ▶ 4 courses; 11/22 credits

| Winter Term | | |
|------------------------------------|---|-------------------------|
| Cluster | Courses (CEU/ECTS credits) | Instructor(s) |
| People and Ecosystems L. Pintér | AMR: Adaptive Management and Resilience of Socio-ecological Systems (2/4) | L. Pintér |
| | BC: Biodiversity & Conservation (4/8) | B. P. Anthony |
| | ICE: Introduction to Circular Economy (2/4) | Z. Illés, T. Centofanti |
| | RCC1: Resilient Cities and Communities I (3/6) | L. Pintér |

AMR: Adaptive Management and Resilience of Socio-Ecological Systems (2/4)

- L. Pintér, J. Sendzimir, J. Jager

- ▶ Theory and practice of resilience, adaptation and adaptive management in SES
- ▶ Includes but not limited to climate change
- ▶ Review specific examples from around the world involving adaptive (co-management) of natural resources
- ▶ Hear from recent graduates with careers related to resilience and adaptation



BC: Biodiversity & Conservation (4/8)

- B. Anthony

- ▶ focuses on biodiversity loss and the importance of biodiversity conservation
- ▶ students will survey the patterns of global diversity within various biomes and learn the most pressing threats leading to declines in biodiversity
- ▶ students will be introduced to the theory and principles involved in conservation and learn about governmental and non-government efforts to protect natural environments and develop sustainable practices to meet human needs
- ▶ 6 guest lecturers (practitioners!), and 2 field trips to view conservation in practice, namely the Schönbrunn Zoo (ex-situ) and Wienerwald Biosphere Reserve (in-situ).
- ▶ Indiv. assn. (40%) + group/indiv. assn. (60%) - **NO EXAM!!**



Lebensregion
Biosphärenpark
Wienerwald



Forst- und
Landwirtschaftsbetrieb



Introduction to Circular Economy (ICE)

From Linear to Circular: Rethinking How We Make, Use, and Reuse

Why Take This Course?



Tackle Real-World Challenges:
Climate change, waste, and
resource scarcity



Learn by Doing: Case studies,
debates, and real-life examples



Interdisciplinary Approach,
Policy, design, business, and
science combined

Course Highlights



Interactive sessions
(debates, group work)



Student-driven projects
(choose your topic!)

What You'll Gain



Understand linear vs circular
systems



Apply 3 core principles:

- Eliminate waste & pollution
- Circulate products & materials
- Regenerate nature



Explore circular strategies in food,
textiles, plastics, cities, and mobility



Learn about policies, business
models, and innovation

Lecturers: Tiziana Centofanti
& Zoltán Illés



RCC: Resilient Cities and Communities I (3/6)

- L. Pintér

- ▶ How do cities and communities contribute to un/sustainability problems and solutions.
- ▶ 3-day field trip to the ecovillage of Gyűrűfű in Hungary
- ▶ Recommended for students interested in summer (MESPOM) or post-graduation (MESP) internships in the NATURESCAPES project



Recent P&E projects by L. Pintér

- ▶ **Systematic assessment of NAPs and development of guidelines for NAP enhancement**
 - ▶ Review and analysis of selected NAPs from around the world
 - ▶ Led by GGGI
- ▶ **Participatory exploration of climate-related security risks through integrated scenarios**
 - ▶ Development and delivery of capacity building module for CSM-linked UN field staff
 - ▶ UNDP and Climate Security Mechanism
- ▶ **Framework and approaches for sustainability assessment and measurement**
 - ▶ Contribution to the conceptual and methodological underpinnings of the EU's 2025 SoE assessment and report
 - ▶ Integrated Environmental Assessment Programme, European Environment Agency
- ▶ **NATURVATION**
 - ▶ Use and impacts of nature-based solutions (NBS) to address urban sustainability issues
 - ▶ Case studies, Urban Nature Atlas, Urban Nature Explorer
 - ▶ Collaboration with CEU's iLab, involvement in Vienna (Stadt Wien, new CEU campus)
- ▶ **Climate Resilient Development Pathways**

Integrated assessment of large-scale hydraulic infrastructure development project scenarios

 - ▶ Focus on Okavango and Orange/Senqu river-basins in Southern Africa
 - ▶ Climate Resilient Infrastructure Development Facility and pathways

Recent P&E-related publications by L. Pintér

- ▶ **Lazurko, A., V. Schweizer, L. Pinter and D. Ferguson.** *Boundaries of the future: A framework for reflexive scenario practice in sustainability science.* *Forthcoming in OneEarth.*
- ▶ **Pinter, L., André C. S. Batalhão, Federico Olivieri, Ingeborg Niestroy.** (2020) In-depth evaluation of a core set of measurement and assessment approaches for consideration in SOER 2025. Brussels: PS4SD.
- ▶ **Frantzeskaki, N., T. McPhearson, M.J. Collier, D. Kendal, H. Bulkeley, A. Dumitru, C. Walsh, K. Noble, E. van Wyk, C. Ordonez, C. Oke and L. Pinter.** (2019) Nature-based solutions for urban climate change adaptation: Linking science, policy, and practice communities for evidence-based decision-making. *BioScience* <https://doi.org/10.1093/biosci/biz042>
- ▶ **Denisov, N. and L. Pinter.** (2019) *Road Map for the next edition of the State of the Environment report and longer-term development of environmental reporting in the Islamic Republic of Afghanistan.* Geneva: Zoi Environment Network for UNEP.
- ▶ **Pinter, L.** (2018) *Assessing Climate Change in the Orange-Senqu Riverbasin: Review and Guidance for Assessment.* Pretoria: Climate Resilient Infrastructure Development Facility.
- ▶ **Pinter, L., P. Hardi, A. Martinuzzi and J. Hall.** (2018) BellagioSTAMP: principles for sustainability assessment and measurement. In S. Bell and S. Morse, eds: *Routledge Handbook of Sustainability Indicators*, pp. 21-40. London: Routledge.
- ▶ **Climate Resilient Infrastructure Development Facility** (2017) *Climate Resilient Development Pathways: CRDP Pilot Report.* Pretoria: CRIDF. (team leader and lead writer)
- ▶ **Pinter, L., M. Kok and D. Almassy.** (2017) Implementing sustainable development goals and measuring progress: A governance perspective. In F. Biermann and N. Kanie, editors. *Governing through Goals: Sustainable Development Goals as Governance Innovation.* Cambridge, MA: MIT Press.
- ▶ **Kowarsch, M., Jabbour, J., Flachsland, C., Kok, M.T.J., Watson, Sir R., Haas, P.M., Minx, J.C., Alcamo, J., Garard, J., Rioussel, P., Pintér, L., Langford, C., Yamineva, Y., von Stechow, C., O'Reilly, J. and Edenhofer, O.** (2017). A road map for global environmental assessments. *Nature Climate Change* 7(6), pp.379-382. doi:10.1038/nclimate3307
- ▶ **Li, S., L. Juhasz-Horvath, S. Pedde, L. Pinter, M.D.A. Rounsevell and P.A. Harrison.** (2017) Integrated modelling of urban spatial development under uncertain climate future: A case study in Hungary. *Environmental Modelling and Software* 96: 251-264.
- ▶ **Khan, F. and L. Pinter.** (2016) Scaling indicator and planning plane: An indicator and a visual tool for exploring the relationship between urban form, energy efficiency and carbon emissions. *Ecological Indicators* 67: 183-192.
- ▶ **Özkaynak, B. and L. Pintér et al.** (2016) Outlooks and emerging issues. In *UNEP, Global Environment Outlook-6 Assessment for the Pan-European Region.* Nairobi: UNEP. And Geneva: UNECE, pp. 158-181.

‘Parks & People’ (B.P. Anthony)

1. human-nature relationships
 - interactions, values, attitudes
 - qualitative & quantitative methods (focus groups , surveys, PDM)
2. human-wildlife conflict
 - manifestations, taxa, communities
 - spatial & temporal dimensions
 - direct and indirect drivers
 - conflict mitigation & resolution
3. protected area management effectiveness
 - tools (METT, RAPPAM, mTRA, BREMi, etc.)
 - PA typologies and governance structures
 - regional (e.g. BR) tools to build coherence
 - improving management for multiple objectives



'Parks & People' Theses

An Ecological Coherence Assessment of the Wider Caribbean Region MPA Network (2024)

Assessing the ecological effectiveness of protected areas in Cambodia: A quasi-experimental counterfactual estimation of avoided deforestation (2022)

The effects of cannabis legalization on forest management and conservation efforts in U.S. national forests in the Pacific Northwest (2019)

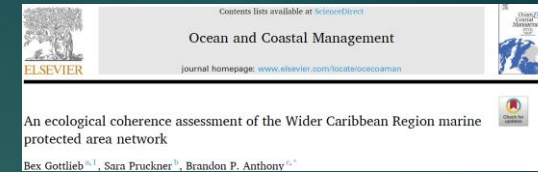
Use of Modified Threat Reduction Assessment to Estimate the Conservation Effectiveness of Protected Areas in Limpopo Province, South Africa (2019)

Local attitudes toward wolves and wolf management in/around Bükk National Park, Hungary (2019)

Community attitudes toward bears, bear bile use and bear conservation in Luang Prabang, Lao PDR (2019)

Mapping the Conflict of Raptor Conservation and Recreational Shooting in the Batumi Bottleneck, Georgia (2018)

New insights into monitoring protected area management in Lebanon (2010)



Recent P&E projects by B.P. Anthony

- ▶ Amphibian Monitoring in the Pilis-Visegrad Hills, Hungary
- ▶ CORUSUS: CEU + Wits + AUCA + AUB (internships, student & faculty mobility, research)
- ▶ RESILIM-O: Resilience in the Limpopo Basin Program - Olifants River, a programme which reduces the vulnerability of people and ecosystems through improved transboundary governance and management of natural resources in the Limpopo Basin in South Africa and Mozambique
- ▶ local and regional projects in evaluating and improving protected area management of Biosphere Reserves in the Middle East/North Africa region, and South Africa (from 2019 – K2C Biosphere Reserve)
- ▶ measuring management effectiveness of both private and public protected areas in Siberia, and South Africa
- ▶ research and practice on people-parks relationships and human-wildlife conflict mitigation in Hungary, Romania, Ghana, Malawi, South Africa, Mozambique, and Lao PDR.

Recent P&E publications by B.P. Anthony

- ▶ **Anthony, B.P.** & Kovács, T. 2025. Is the Common Frog, *Rana temporaria* (Linnaeus, 1758) becoming uncommon? Evidence from 23 years of monitoring brown frogs in the Pilis-Visegrád Hills, Hungary. *Herpetology Notes* 18:235-245. <https://www.biotaxa.org/hn/article/view/86348>
- ▶ van Megen, L. & **Anthony, B.P.** 2024. Exploring Community-Based Wildlife Tourism from an Environmental Justice Perspective: A Case Study of the Wild Olive Tree Camp in South Africa. *Human Ecology* 52:1187-1201. <https://doi.org/10.1007/s10745-025-00575-z>
- ▶ Galley, W. & **Anthony, B.P.** 2024. Beyond Crop-Raiding: Unravelling the Broader Impacts of Human-Wildlife Conflict on Rural Communities. *Environmental Management* 74: 590-608. <https://doi.org/10.1007/s00267-024-02018-9>
- ▶ Gottlieb, R., Pruckner, S., & **Anthony, B.P.** 2024. An Ecological Coherence Assessment of the Wider Caribbean Region MPA Network. *Ocean & Coastal Management* 255: 107249. <https://doi.org/10.1016/j.ocecoaman.2024.107249>
- ▶ Wilson, G. & **Anthony, B.P.** 2023 Opportunities and barriers in monitoring and evaluation of management effectiveness in protected areas within the Kruger to Canyons Biosphere Region. *Sustainability* 15(7), 5838; <https://doi.org/10.3390/su15075838>
- ▶ Awoyemi, S., Thomas-Walter, L., **Anthony, B.P.**, Vyas, D., Buij, R., & Amusa, T. 2023. Culture and the Illegal Trade in Vultures in Southwestern Nigeria: Conundrums and Recommendations. *Vulture News* 83: <https://www.ajol.info/index.php/vulnew/article/view/247276>
- ▶ Matar, DA & **Anthony, B.P.** 2022. BREMi - A new tool for the evaluation of UNESCO Biosphere Reserve Management Effectiveness: Case-study in the Arab Man and Biosphere (ArabMAB) regional network. *Environmental Management* 70: 730–745. <https://doi.org/10.1007/s00267-022-01711-x>
- ▶ Black, B & **Anthony, B.P.** 2022. Counterfactual assessment of protected area avoided deforestation in Cambodia: Trends in effectiveness, spillover effects and the influence of establishment date. *Global Ecology & Conservation* 8: e02228
- ▶ **Anthony, B.P.** 2021. Paying for the Past: The Importance of Fulfilling Promises as a Key Component to Resolving Human-Wildlife Conflict. *Sustainability* 13(13): 7407
- ▶ Milatovic, L., **Anthony, B.P.**, & Swemmer, A. 2019. Estimating conservation effectiveness across protected areas in Limpopo Province, South Africa. *Koedoe* 61(1): a1530.
- ▶ Klassen, M. & **Anthony, B.P.** 2019. The effects of recreational cannabis legalization on forest management and conservation efforts in U.S. national forests in the Pacific Northwest. *Ecological Economics* 162:39-48
- ▶ **Anthony, B.P.** & Tarr, K. 2019. The wolves are back! Local attitudes towards the recently re-populated grey wolf and wolf management in Bükk National Park, Hungary. *Acta Zoologica* 65(2): 195-214
- ▶ Sukanan, D. & **Anthony, B.P.** 2019. Community attitudes towards bears, bear bile use and bear conservation in Luang Prabang, Lao PDR. *Journal of Ethnobiology and Ethnomedicine* 15: 15 pp.
- ▶ Matar, D. & **Anthony, B.P.** 2019. Sense and Sustainability: The Story of Biosphere Reserves in Lebanon. In *UNESCO Biosphere Reserves: Supporting Biocultural Diversity, Sustainability and Society*. London, UK: Earthscan.
- ▶ **Anthony, B.P.**, Tatayah, V., & de Chazal, D. 2018. Taking the first steps: Initial mapping of human-wildlife interaction of the Mauritius Fruit Bat *Pteropus niger* (Mammalia: Chiroptera: Pteropodidae) in Mauritius by conservation organizations. *Journal of Threatened Taxa* 10(8): 12073-12081

Recent P&E Projects and papers by T. Centofanti

Projects

- ▶ Symbiotic, circular bioremediation systems and biotechnology solutions for improved environmental, economic and social sustainability in pollution control
- ▶ DIVAGRI Revenue diversification pathways in Africa through bio-based and circular agricultural innovations

Publications

- ▶ Bañuelos, G.S., Centofanti, T., Zambrano, M.C., Arroyo, I. and Wang, D. (2025). Selenium biofortification and growth of onions as affected by Se application, biochar and irrigation. Journal of Food Composition and Analysis, 140, 107217. [DOI: 10.1016/j.jfca.2025.107217](https://doi.org/10.1016/j.jfca.2025.107217)
- ▶ Centofanti, T., Murugesan A. (2022). Leader and citizens participation for the environment. Experimental evidence from communities in Eastern Europe. Journal of Behavioral and Experimental Economics, 100, 101915. [DOI: 10.1016/j.socec.2022.101915](https://doi.org/10.1016/j.socec.2022.101915)
- ▶ Balasz, B., Kelemen, E., Centofanti, T., Vasconcelos, M. W., Ianetta, P. M. (2021). Integrated policy analysis to identify transformation paths to more-sustainable legume-based food and feed value-chains in Europe. Agroecology and Sustainable Food Systems, 45(6), 931–953. [DOI: 10.1080/21683565.2021.1884165](https://doi.org/10.1080/21683565.2021.1884165)





Thank you!

Questions?