Systems Conservation of Animal Populations

Spring 2015 | FIW 5984/19850 SS:Systm Conserv Animal Poplns

Instructor: Leandro Castello

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Course description

Systems Conservation of Animal Populations adopts an integrative approach to understanding problems of sustainable management and conservation of animals in natural landscapes. The course is founded on the idea that effective conservation of animal populations can only be achieved through consideration and management of broader, multifaceted factors related to natural ecosystems and human societies. The course seeks to help students conceptualize and articulate their own problems of study within an interdisciplinary framework.

The course introduces students to approaches to understanding biological conservation problems as integrated systems by reviewing the literature of Systems Ecology and Social-Ecological Systems. It reviews key concepts and papers on ecosystem-based management, resource economics, user participation, policy, and governance. Attention is paid to the diversity of social-ecological settings across the globe and the role of rural communities in animal management and conservation. The course concludes with presentations and discussions led by the students of research projects analyzing animal conservations problems from a systems perspective.

Classes are based on discussions of readings led jointly by students and instructor.

Class time, location, and communication

Lecture: Wednesdays & Fridays 2:30 - 3:45 pm, room 133 Cheatham Hall All communication will be done via Scholar, which is based on VT's email system.

Course textbooks

Odum, Howard T. 2007. *Environment, power, and society*. Vol. 130. New York: Wiley-Interscience.

Berkes, Fikret, Carl Folke. 1998. Linking social and ecological systems: management practices and social mechanisms for building resilience. Cambridge University Press.

Grading

Grading is based on three research assignments, as follows:

- 1. *Definition of the problem of study and system boundaries*: This first version of a research paper must define the problem of study and the boundaries of the system of study; 500 words, 20 points.
- 2. *Discussion of key interdisciplinary issues*: This follow-up analysis to the problem of study chosen must advance a preliminary analysis of key interdisciplinary issues involved; 1250 words, 30 points words.
- 3. *Final research paper*: The final research paper must perform a complete analysis of the problem of study based on a systems perspective; 3000 words, 50 points.

Week	Topic	Readings
1	Introduction to	Tuesday: Introductions and course structure
	Systems Ecology	Thursday: Odum (2007): Chap 1. This world system; Chapt 2.
		System networks and metabolism
2	Systems Ecology	Tuesday: Odum (2007), Chapt 3. Energy laws and Maximum
		power, Chapter 4. Energy hierarchy and natural value
		Thursday: Odum (2007), Chapt. 5. Energy and planet earth,
	I	Chapt 6. Energy and ecosystems
3	Social-	Tuesday: Berkes & Folke (1998): Chapt I. Linking social and
	Ecological	ecological systems for resilience
	Systems	I nursday: Berkes & Folke (1998): Chapt 2. People, refugia, and
		resilience, Chapt 5. Learning by fishing: practical engagement
4	Social	Tuesday: Two abarters to be determined from Part II of Parkes &
4	Ecological	Folke (1998)
	Systems	Thursday: Two chapters to be determined from Part III of Berkes
	by sterns	& Folke (1998)
5	Applying	Tuesday: Student presentations and discussions of their
	systems thinking	'Definition of the problem of study and system boundaries' I
	to animal	Thursday: Student presentations and discussions of their
	conservation	'Definition of the problem of study and system boundaries' II
6	Ecosystem-based	Tuesday: Grumbine (1994), What is ecosystem management?
	management	Thursday: Pikitch et al. (2004), Ecosystem-based fisheries
		management
7	Resource	Tuesday: Clark (1973), The economics of overexploitation
	economics	Thursday: Grafton et al. (2007) Economics of overexploitation
		revisited, Branch et al (2013), Opportunistic exploitation: an
0	TT	overlooked pathway to extinction
8	User	and methodological implications
	participation and	Thursday: Pomerov & Berkes (1007) Two to tango: the role of
	poncy	government in fisheries co-management
9	Governance and	Tuesday: Barret et al (2001) Conserving Tropical Biodiversity
	community-	amid Weak Institutions
	based	Thursday: Folke et al (2005). Adaptive governance of social-
	management	ecological systems
10	Designing new	Tuesday: Berkes & Folke (1998), Chapt 13. Science,
	approaches to	sustainability, and resource management
	management I	Thursday: Berkes & Folke (1998), Chapt 14. Integrated
		management of a temperate montane forest ecosystem through
		wholistic forestry
11	Designing new	Tuesday: Berkes & Folke (1998), Chapt 15. Managing chaotic
	approaches to	fisheries
	management II	Thursday: Berkes & Folke (1998), Chapt. 16 Ecological practices
		and social mechanisms for building resilience and sustainability

12	Case studies I	Tuesday: Analysis of case study to be jointly determined of systems conservation of fish or fisheries
		Thursday: Analysis of case study to be jointly determined of
		systems conservation of wildlife
13	Case studies II	Tuesday: Analysis of case study to be jointly determined of
		systems conservation of fish or fisheries
		Thursday: Analysis of case study to be jointly determined of
		systems conservation of wildlife
14	Applying	Tuesday: Student presentations of "key interdisciplinary issues"
	systems thinking	in their research assignments I
	to animal	Thursday: Student presentations of "key interdisciplinary issues"
	conservation	in their research assignments II
15	Course wrap-up	Tuesday: Topic to be determined
		Thursday: Synthesis