

Coastal Ecology and Natural Resource Management Seminar

ENVI-3050 (3 credits)

Tanzania: Ecology, Wildlife & Natural Resource Management

Course Description

The Coastal Ecology and Natural Resource Management Seminar is an interdisciplinary course that examines coastal ecosystems, wildlife, and natural resource management in the Zanzibar Archipelago and proximal mainland coast of Tanzania. Lectures, discussions, and activities engage the natural and social sciences. In the course, students study ecology, coastal marine environments, coastal forests, wildlife, and the human-environment challenges of the people who live in the Zanzibar Archipelago. Through four complimentary modules - delivered by in-country faculty, researchers, and park custodians - students achieve a comprehensive familiarity with coastal ecology, wildlife, and the management of natural resources in the cosmopolitan world of East Africa and the western Indian Ocean.

Course Learning Outcomes

The Coastal Ecology and Natural Resource Management Seminar comprises 45 hours of academic study and activities (3 credits). At the completion of the course, students will:

- Understand “nature” as a complex concept;
- Understand ecology and natural resource management as critical practices;
- Demonstrate familiarity with coastal marine environments, coastal forests, and wildlife in Zanzibar, and key cases;
- Demonstrate mastery of the basic natural history, biology, and ecology of select invertebrates, fish, mammals, and other animal life in Zanzibar and the western Indian Ocean;
- Comprehend present challenges to environments, species, and human communities in coastal Tanzania; and
- Show an in-depth understanding of nature conservation, natural resource management, and sustainability in the region.

Course Requirements

Lectures, field trips, excursions, and reflexive discussions help students to learn about coastal ecology, wildlife, and natural resource management in Zanzibar. The Academic Directors evaluate student participation and assignments based on timeliness, completeness, seriousness of purpose, and, when relevant, the demonstration of cooperative teamwork among group members. The evaluation of assignments further accounts for their clarity of organization, accurate background, supportive data, appropriate analysis, coherence and depth of argument, and the quality of written, visual, and/or oral presentation.

Course Program

This course takes the form of interrelated modules that incorporate lectures, readings, discussions, activities, and assignments:

Module I: Ecology, and the Historical and Social Context of Zanzibar

This five-day module introduces key concepts of ecology and the defining background traits of Zanzibar and its people. Students engage “nature” as a multifaceted concept understood somewhat differently by scientists, different publics, and the state. Field trips and discussions introduce Zanzibar’s ecosystems, wildlife, and the politics, religion, and lifeways of its people. This module helps students to grasp the intellectual and social context, human practices, and institutions relevant to ecological study and natural resource management in coastal East Africa and the western Indian Ocean.

- Kueffer, C. and K. Kinney 2017. “What is the Importance of Islands to Environmental Conservation?,” *Environmental Conservation* 44.
- Prendergrast, M. et al. 2016. “Continental Island Formation and the Archaeology of Defaunation on Zanzibar, Eastern Africa.” *PLoS ONE* 11.
- Sheriff, A. 2010. *Dhow Cultures of the Indian Ocean: Cosmopolitanism, Commerce and Islam*. Columbia University Press. (excerpts)
- Walley, C. 2010. “Where there is no Nature.” In *Rough Waters: Nature and Development in an East African Marine Park*. Princeton University Press.

Module II: Coastal Marine Environments in Tanzania-Zanzibar

This ten-day module emphasizes the region’s physical oceanography, marine environments, and key animals and plants. Field trips on Unguja Island and excursions to Chumbe Island and to Zanzibar’s fish market reinforce classroom learning. Presentations by faculty at the Institute for Marine Sciences in Stone Town introduce the intertidal zone and coral reefs. Activities highlight the characteristics and behaviors of select animal species - corals and other invertebrates, bony fishes, dolphins, sharks, and sea turtles - and the various anthropogenic threats posed to marine ecosystems in the Zanzibar Archipelago.

- Kiilu, B. et al. 2019. “Spatial Distribution, Seasonal Abundance and Exploitation Status of Shark Species in Kenyan Coastal Waters,” *African Journal of Marine Science*.
- McClanahan, C. et al., eds. 2000. *Coral Reefs of the Indian Ocean: Their Ecology and Conservation*. Oxford. (excerpts)
- Nesbitt, K. and M. Richmond. 2015. “A Preliminary Assessment of the Status and Habitat Preference of the Grouper (Serranidae) Population of Chumbe Island Coral Park, Zanzibar, Tanzania,” *Western Indian Ocean Journal of Marine Science* 14.
- Reymont, R. 2008. “A Review of the Post-mortem Dispersal of Cephalopod Shells,” *Palaeontologia Electronica* 11.
- Richmond, M. 2002. *A Field Guide to the Seashores of Eastern Africa and the Western Indian Ocean Islands*. SAREC. (excerpts)
- Roman, J. and J. McCarthy. 2010. “The Whale Pump: Marine Mammals Enhance Primary Productivity in a Coastal Basin,” *PLoS ONE* 5.

Module III: Coastal Forests in Tanzania-Zanzibar

This five-day module emphasizes the region’s coastal forests and key animals and plants. Field trips on Unguja and to Misali Island reinforce classroom learning. Presentations by park custodians at Jozani-Chwaka Bay National Park, park rangers at Misali Island Marine Park, and faculty from the University of Dar es Salaam introduce mangrove and terrestrial forests. Lectures on diurnal and nocturnal wildlife highlight the characteristics and behaviors of the Red Colobus monkey (*Procolobus kirkii*) and coconut crab (*Birgus latro*). Group

discussions engage the various threats posed to forest wildlife, including bats, amphibians, and understory birds.

- Davenport, T. et al. 2017. "Zanzibar's Endemic Red Colobus *Procolobus kirkii*: First Systematic and Total Assessment of Population, Demography and Distribution," *Orxy*.
- Drew, M. et al. 2010. "A Review of the Biology and Ecology of the Robber Crab, *Birgus latro*," *Zoologischer Anzeiger* 249.
- Saunders, F. 2011 "It's Like Herding Monkeys into a Conservation Enclosure: The Formation and Establishment of the Jozani-Chwaka Bay National Park, Zanzibar, Tanzania," *Conservation and Society* 9.
- Rödder, D et al. 2010. "Environmental Niche Plasticity of the Endemic Gecko *Phelsuma parkeri* Loveridge 1941 from Pemba Island, Tanzania: A Case Study of Extinction Risk on Flat Islands by Climate Change," *Tropical Zoology* 23.
- Walsh, M. 2007. "Island Subsistence: Hunting, Trapping and the Translocation of Wildlife in the Western Indian Ocean," *Azania* 42.

Module IV: Complexities of Conservation and Natural Resource Management in Tanzania-Zanzibar

This six-day module provides a critical introduction to the complexities of conservation and natural resource management in Zanzibar. Cases from Unguja and Pemba islands address a range of issues: park management, eco-tourism, habitat destruction, biodiversity loss, human-wildlife conflict, climate change, and the spread of disease. Students consider the complexities and outcomes of case studies in natural resource management from multiple standpoints, including those of African communities. Students further learn about and discuss laws, the role of scientists, the inner workings and politics of park development, and how specific challenges are being addressed in East African and the Indian Ocean.

- Darling, E., et al. 2019. "Socio-environmental Drivers Inform Strategic Management of Coral Reefs in the Anthropocene." *Nature Ecology & Evolution*.
- Myers, G. 2016. "The Cityscape" [and, reference to 'The Trees are Yours']. In *Urban Environments in Africa*. Policy Press.
- Walsh, M. and H. Goldman. 2012. "Chasing Leopards: Science, Witchcraft, and the Politics of Conservation in Zanzibar," *Journal of Eastern African Studies* 6.

Course Readings

Reference articles and books (see above) are available from the program library and through SIT's electronic library database. (NOTE: COURSE CONTENT, LECTURERS, READINGS, AND ASSIGNMENTS MAY BE MODIFIED. STUDENTS WILL BE NOTIFIED PROMPTLY OF ANY CHANGES.)

Course Grading Distribution

Quizzes and Participation in Readings and Discussions	20%
Coastal Species Assignment	15%
Coral Reef Conservation Plan and Presentation	30%
Final Exam	35%

Course Grading Scale

94-100%	A
90-93%	A-
87-89%	B+
84-86%	B
80-83%	B-

77-79%	C+	
74-76%	C	
70-73%	C-	
67-69%	D+	
64-66%		D
Below 64%	F	

Course Grading Criteria

All assigned grades take into account the students' special circumstances and challenges as foreigner. An "A" grade entails superior (not just "very good") performance in terms of accuracy, structure, and organization for assignments. An "A" grade refers to full attendance, punctuality, attentive listening, and active engagement in all language classes, field exercises, and other activities. It also means polite and respectful behavior. The frequency and quality of the students' participation is monitored and taken into account.

Disability Services: Students with disabilities are encouraged to contact Disability Services at disabilityservices@sit.edu for information and support in facilitating an accessible educational experience. Additional information regarding SIT Disability Services, including a link to the online request form, can be found on the Disability Services website at <http://studyabroad.sit.edu/disabilityservices>.

Student Expectations

Please refer to the SIT Study Abroad handbook for policies on academic integrity, ethics, warnings, probations, diversity, disability, sexual harassment, and the academic appeals process. In addition, students should refer to information in the Student Handbook and the Program Dossier distributed during orientation.