

Pastoralism Under Pressure: Savannas, Societies, and Sustainability in East Africa

Spring 2020

Meeting Time and Place	Tues/Thurs <i>TBD</i> <i>TBD</i>
Instructor	Dr. Catherine Markham <i>Email:</i> catherine.markham@stonybrook.edu <i>Phone:</i> (631) 632-5755 <i>Office:</i> Social and Behavioral Sciences Building, Room North-533 <i>Office hours:</i> <i>TBD</i>
Course Attributes	STAS, ESI
Prerequisites	One ANT/ANP/EBH/BIO course at the 300-level or higher with grade of C or better <i>or</i> instructor permission

Course Description

An in-depth examination of the linkages and feedbacks that connect water to vegetation production, animal movement, and the economy and health of traditionally pastoralist societies in East Africa. Integrating the fields of ecology, hydrology, biological and cultural anthropology, and sustainability studies, this course challenges students to develop innovative approaches to promote resilience and sustainability in savanna ecosystems and societies. Student-driven discussion and independent research are emphasized.

Course Learning Objectives

1. **Learn** about the complex webs of ecological, hydrological, and social dynamics that characterize the social-ecological systems of African pastoralists in water-limited landscapes.
2. **Use** critical thinking skills to integrate concepts from a broad reach of disciplines, drawing most heavily upon the fields of ecology, hydrology, biological and cultural anthropology, and sustainability studies.
3. **Demonstrate** the ability to solve contemporary problems promoting sustainability and resilience in linked social-ecological systems by applying and extending established principles, skills, concepts, and theories.
4. **Gain intellectual independence** by debating primary literature, interpreting data, critiquing experimental design, and developing novel solutions to modern-day social and environmental challenges.

Learning Objectives Specific to STAS and ESI:

1. Use critical thinking skills to **apply and integrate** concepts from a broad reach of disciplines, drawing most heavily upon the fields of ecology, hydrology, biological and cultural anthropology, and sustainability studies (*STAS Learning Outcome 1*).
2. **Synthesize** quantitative and technical information and qualitative information to make informed judgements about the reciprocal relationship between science and technology and humanities and social sciences pertaining to savanna ecosystems and societies (*STAS Learning Outcome 2*).

3. **Locate and organize** information about topics related to the social-ecological systems of African pastoralists from a variety of appropriate sources, emphasizing the primary literature (*ESI Learning Outcome 1*).
4. **Analyze** the accuracy of information and the credibility of sources about topics related to the social-ecological systems of African pastoralists; topics of primary importance will include ecological assessments, sustainability models, and measures of economic growth and capacity (*ESI Learning Outcome 2*).
5. **Determine the relevance of information** about topics related to the social-ecological systems of African pastoralists; topics of primary importance will include ecological assessments, sustainability models, and measures of economic growth and capacity (*ESI Learning Outcome 3*).
6. **Use biological and cultural information ethically and responsibly** to discuss the current ecological and social challenges facing African pastoralists (*ESI Learning Outcome 4*).

Course Delivery Mode and Structure

This course includes two seminar sessions each week. PowerPoint slides, when used to launch discussion, will be posted on Blackboard *after* each seminar.

How We Will Communicate

I cannot always recognize the confused, frustrated, or unhappy expressions on your face if you encounter problems, so you must communicate with me so that I can help! To make the experience go smoothly, remember that you're responsible for initiating contact and being direct, persistent, and vocal when you don't understand something.

For personal/private issues, my preferred method of contact is via email at catherine.markham@stonybrook.edu. If you would like to talk on the phone or meet, email me so that we can set up a mutually agreeable time. I will reply to your emails as soon as possible, but please allow between 24-48 hours for a response. Also, please use your Stony Brook University email when getting in touch with me as that is the preferred method of contact from the institution.

Blackboard and Technical Assistance

This course uses Blackboard to facilitate communication between the instructor and students, taking quizzes, assignment submission, and grade posting. The Blackboard course site can be accessed at <https://blackboard.stonybrook.edu>. If you are unsure of your NetID, visit <https://it.stonybrook.edu/help/kb/finding-your-netid-and-password> for more information.

It is your responsibility to secure use of a reliable computer and internet connection throughout the term. Note that you will be at a disadvantage if you attempt to complete all coursework on a smart phone or tablet and it may in fact be impossible to submit the files required for your assignments. The following list details a minimum recommended computer set-up and the software packages you will need: PC with Windows 8 or Macintosh with OS 10.11; Intel Core i5; 250 GB hard drive; 8 GB RAM; high speed internet connection; word processing software; speakers (either internal or external) or headphones; and Adobe Flash player with the latest update.

If you need technical assistance at any time during the course or to report a problem with Blackboard you can call Stony Brook University Client Support at (631) 632-9800. You can also submit a help request ticket online at <https://it.stonybrook.edu/services/itsm> and/or you can visit Stony Brook University's Walk-Up Tech Support Station in the Educational Communications Center Building.

Required Readings

In addition to attending class, you are expected to keep up with the assigned readings. A list of assigned readings and the date of their in-class discussion is presented in the course calendar at the end of this document. Note that there is one required book; all other readings will be posted as pdfs on Blackboard. Readings from the book below are concentrated in the second half of the semester.

Catley A, Lind J, Scoones I (eds.). 2012. *Pastoralism and Development in Africa: Dynamic Change at the Margins*. Routledge: London, UK.

Assessment and Evaluation

Attendance: You are expected to attend each class and you are expected to arrive on time. Students arriving late to lecture will be marked as absent. If an absence is planned, you must notify me before the day of the missed class. If the absence is not planned, you must contact me (preferably by email) on the day of the absence before 5:30pm and be prepared to follow-up with written evidence justifying the absence (e.g. a doctor's note). I will verify your documentation with the provider. Unexcused absences will result in points deducted from your class attendance and participation grade.

Participation: I expect you to demonstrate your understanding of the material by responding to questions I ask during class or by asking relevant questions yourself (particularly if you do not understand the material). You should be prepared to discuss the readings assigned for that day, meaning you must complete those readings *before* class. You should work with your fellow students during in-class assignments.

Research Proposal: Students will prepare a short (2-3 pages, single spaced, 1-inch margins, 12-point font) proposal requesting funding for a hypothetical study on a topic of the student's choosing. The proposal should focus on critically evaluating gaps in our knowledge of savanna wildlife ecology and proposing a research project to address those gaps. Proposals will thus test novel ideas, synthesize current knowledge on the chosen topic, address its significance in a broader context, and make the case for a specific research project. The proposal must include the following sections: Introduction, Hypotheses and Predictions, Objectives/Study Questions, Methods, and Broader Significance. Each proposal will be subject to a double-blind peer review. The reviews will provide detailed discussion, critique, and a hypothetical funding decision. After receiving reviews, each student will revise his/her proposal based on the committee's comments and turn in a final draft and a "Response to Reviewers". Students will be graded on (a) the quality of their proposal, (b) their critical review of 3 proposals written by peers, and (c) their written response to the reviews of their own proposal. Additional details on this assignment will be discussed in class and posted on Blackboard. A grading rubric for these discussions is provided on Blackboard.

Oral "TEDTalk" presentation: Students will make an in-class oral presentation on the sustainability of pastoralism in the modern world. The specific presentation focus should either add depth to the course by providing a more advanced exploration of a topic covered in class, or it should add breadth to the course by covering a topic not otherwise addressed. In either case, the presentation must be based on a new idea, invention, or approach that the student develops independently. Each presentation should last 6 minutes, which will be followed by 2 minutes for questions from fellow students. Presentations will be evaluated on delivery, organization, content, and enthusiasm/audience awareness. In addition, students will also be evaluated on the thoughtful, constructive, and anonymous critique of 3 talks given by their peers. Lastly, students must submit an annotated bibliography of at least 5 primary literature

articles that influenced their presentation. Additional details on this assignment will be discussed in class and posted on Blackboard. A grading rubric for these discussions is provided on Blackboard.

Midterm Exam: The midterm exam will be held during class on **Feb 27**. The exam will be comprised of definition, fill-in-the-blank, and short-answer questions. Any questions concerning your exam grade must be brought to the instructor's attention within *one week* of the graded exam's return. After one week, we can discuss your exam but re-grades will not be considered. *Note that there is no final exam for this course.*

On the exam day, students are not permitted to wear hats or use electronic devices. Any use of a cell phone or other unauthorized electronic device during an examination will lead to an accusation of scholastic dishonesty. Also note that all backpacks, book bags, purses, etc. must be left at the front of the classroom during exams. You need only a pen or pencil to take an exam. If you're worried that someone might take your bag by mistake, don't bring it to class on an exam day.

Students seeking exam accommodations through the Student Accessibility Support Center (SASC) are responsible for coordinating taking the exam at SASC at least one full week prior to the exam date. To avoid confusion, students should email me to confirm that I am aware of this testing location. For more information on SASC, visit them online at <https://www.stonybrook.edu/dss/>

Make-up Exams: Make-up exams will be given only under exceptional circumstances and only if the student can provide written evidence for the cause of their absence. For planned absences, you must provide this documentation in advance of the exam date and time. For unplanned absences, students must contact me (either by email or voicemail) no later than the 5:30pm on the date of the exam. Make-up exams will be given for students missing the exam for official University functions. *The make-up exam will be different from the regular exam with increased emphasis on short answer and essay questions.*

Grading: This course is a 3-credit course. Students will receive a grade between A and F based on their class attendance/participation, two writing assignments, and two exams (a midterm and a final exam) according to the following calculations:

Attendance	10%
Participation	10%
Midterm Exam	20%
Research Proposal	20%
Review of Research Proposals	10%
Oral "TEDTalk" Presentation	20%
Review of oral "TEDTalk" Presentation	10%

Your final letter grade for the semester will be assigned based on the following ranges. Note that there is no "extra credit" offered for this course and that grades are not curved.

A	93 to 100	B+	87 to <90	C+	77 to <80	D+	67 to <70
A-	90 to <93	B	83 to <87	C	73 to <77	D	63 to <67
		B-	80 to <83	C-	70 to <73	F	0 to <63

Struggling students: If you are struggling in class, please come to me *during* the semester. Do not wait until the end of the semester to ask for help! By then it is too late for me to help you. If your performance during the semester is adversely affected by personal problems (death of a family

member, mental health issues, etc.), contact your dean's office as soon as possible to discuss your options. Other available resources for academic help include Student Success Resources (<http://www.stonybrook.edu/for-students/> and <http://www.stonybrook.edu/due>) as well as the Academic Success and Tutoring Center (http://www.stonybrook.edu/commcms/academic_success/).

Use of Electronics

Ringling phones, texting, etc. are disruptive so remember to turn off your phone before you come to class. You can use your computers in class for note-taking and other purposes related to this class. However, you will lose that privilege if you use your computer for other purposes during class.

Student Accessibility Support Center Statement

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Student Accessibility Support Center, ECC (Educational Communications Center) Building, Room 128, (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

Academic Integrity Statement

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

Critical Incident Management

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

Course Evaluations

Each semester, Stony Brook University asks students to provide feedback on their courses and instructors through an online course evaluation system. The course evaluation results are used by the individual faculty, department chairs and deans to help the faculty enhance their teaching skills and are used as part of the personnel decision for faculty promotion and tenure.

Stony Brook contracts with an outside vendor to administer the surveys and all results are completely anonymous. No individually identifiable data are ever reported back to the university or instructor. Students who have completed previous evaluations can view all faculty ratings at <https://www.stonybrook.edu/celt/services/assessment/course/course-evaluations>

Copyright Notice

Unless otherwise noted, all materials in this course are the intellectual property of the professor and you may not reuse and/or duplicate the material in printed or electronic form without prior written permission from the owner. The University requires all members of the University Community to

familiarize themselves and to follow copyright and fair use requirements. YOU ARE INDIVIDUALLY AND SOLELY RESPONSIBLE FOR VIOLATIONS OF COPYRIGHT AND FAIR USE LAWS. THE UNIVERSITY WILL NEITHER PROTECT NOR DEFEND YOU NOR ASSUME ANY RESPONSIBILITY FOR EMPLOYEE OR STUDENT VIOLATIONS OF COPYRIGHT AND FAIR USE LAWS. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability as well as disciplinary action under University policies.

Course Schedule

See below for key dates. Note that dates are subject to change!

JANUARY

- Jan 28 **Introduction**
No reading
- Jan 30 **Savanna vegetation**
Shorrocks B, Bates W. 2014. The vegetation. *In: The Biology of African Savannahs*, 2nd edition. Oxford University Press: Oxford, UK. Pp. 27-64.

FEBRUARY

- Feb 4 **Population dynamics: Part 1**
Shorrocks B, Bates W. 2014. Species interactions. *In: The Biology of African Savannahs*, 2nd edition. Oxford University Press: Oxford, UK. Pp. 182-236.
- Feb 6 **Population dynamics: Part 2**
Beehner JC, Onderdonk DA, Alberts SC, Altmann J. 2006. The ecology of conception and pregnancy failure in wild baboons. *Behavioral Ecology* 17:741-750.
- Feb 11 **Population dynamics: Part 3**
Hopcraft JGC, Olff H, Sinclair ARE. 2010. Herbivores, resources and risks: Alternating regulation along primary environmental gradients in savannas. *Trends in Ecology and Evolution* 25:119-128.
- Feb 13 **Resilience in savanna ecosystems**
Gunderson LH. 2000. Ecological resilience – in theory and application. *Annual Review of Ecological Systems* 31:425-439.
Scheffer M, Carpenter S, Foley JA, Folke C, Walker B. 2001. Catastrophic shifts in ecosystems. *Nature* 413:591-596.
- Feb 18 **Water cycle and dryland ecohydrology**
Ludwig JA, Wilcox BP, Breshears DD, Tongway DJ, Imeson AC. 2005. Vegetation patches and runoff-erosion as interacting ecohydrological processes in semiarid landscapes. *Ecology* 86:288-297.
Wilcox BP, Breshears DD, Seyfried MS. 2003. Water balance on rangelands. *In: Trimble SW et al. (eds.), Encyclopedia of Water Science*. Marcel Dekker: New York, NY. Pp. 791-794.
- Feb 20 **Applied ecohydrology and dealing with drought**
Falkenmark M, Rockstrom J. 2008. Building resilience to drought in desertification-prone savannas in Sub-Saharan African: The water perspective. *Natural Resources Forum* 32:93-102.

Feb 25 TBD

Feb 27 Midterm Exam

MARCH

Mar 3 **The ecology of African pastoralists**

Marshall F, Reid REB, Goldstein S, Storzum M, Wreschnig A, Hu L, Kiura P, Shahack-Gross R, Ambrose SH. 2018. Ancient herders enriched and restructured African grasslands. *Nature* 561:387-390.

Optional:

<https://natureecoevocommunity.nature.com/users/175450-fiona-marshall/posts/38272-ancient-herders-enriched-and-restructured-african-grasslands>

Mar 5 **Pastoralist environments, constraints, and strategies**

Homewood K. 2009. Ecology of African Pastoralist Societies. Oxford, UK: James Currey Ltd. pp. 50-93.

Russell S, Tyrell P, Wester D. 2018. Seasonal interactions of pastoralists and wildlife in relation to pasture in an African savanna ecosystem. *Journal of Arid Environments* 154:70-81.

Mar 6 **Research proposal due by 5pm**

Mar 10 **Traditional pastoralist livelihoods and economy**

Homewood K. 2009. Ecology of African Pastoralist Societies. James Currey Ltd.: Oxford, UK. Pp. 132-157.

Mar 12 **Case study: The Maasai**

Mar 17 Spring Break

Mar 19 Spring Break

Mar 24 **Pastoralism in the modern world: An introduction**

Fratkin E. 2001. East African pastoralism in transition: Maasai, Boran, and Rendille cases. *African Studies Review* 44:1-25.

Mar 26 **Human-wildlife conflicts**

Dublin HT, Hoare RE. 2004. Searching for solutions: The evolution of an integrated approach to understanding and mitigating human-elephant conflict in Africa. *Human Dimensions of Wildlife* 9:271-278.

Du Toit JT, Cumming DHM. 1999. Functional significance of ungulate diversity in African savannas and the ecological implications of the spread of pastoralism. *Biodiversity and Conservation* 8:1643-1661.

Mar 27 Research proposal critiques due by 5pm

APRIL

Apr 2 **Commercialization**

Catley A, Akilu Y. 2013. Moving up or moving out? Commercialization, growth and destitution in pastoralist areas. In: Catley A et al. (eds.), *Pastoralism and Development in Africa: Dynamic Change at the Margins*. Routledge: London, UK. Pp. 85-97.

Apr 7 Conflict over land

Goldsmith P. 2013. The future of pastoralist conflict in the Horn of Africa. *In: Catley A et al. (eds.), Pastoralism and Development in Africa: Dynamic Change at the Margins.* Routledge: London, UK. Pp. 131-142.

Galaty JG. 2013. Land grabbing in the Eastern African rangelands. *In: Catley A et al. (eds.), Pastoralism and Development in Africa: Dynamic Change at the Margins.* Routledge: London, UK Pp. 143-153.

Apr 9 Water wars

Omosa EK. 2005. The impact of water conflicts on pastoral livelihoods. Manitoba, Canada: International Institute for Sustainable Development.
The Why Factor Podcast: [On Tap](#) (18 min)

Apr 10 Final research proposals due by 5pm**Apr 14 Livestock diversification**

Watson DJ, van Binsbergen J. 2008. Livelihood diversification opportunities for pastoralists in Turkana, Kenya. International Livestock Research Institute Research Report 5. Nairobi, Kenya: International Livestock Research Institute. Pp. 1-15, 19-24, 31-34.

Apr 16 Alternative livelihoods

Behnke R, Kerven C. 2013. Counting the costs: Replacing pastoralism with irrigated agriculture in the Awash Valley. *In: Catley A et al. (eds.), Pastoralism and Development in Africa: Dynamic Change at the Margins.* London: Routledge. pp. 57-70.

Fratkin E. 2013. Seeking alternative livelihoods in pastoral areas. *In: Catley A et al. (eds.), Pastoralism and Development in Africa: Dynamic change at the margins.* Routledge: London, UK. Pp. 197-205.

Apr 21 Social changes

Devereux S, Tibbo K. 2013. Social protection for pastoralists. *In: Catley A et al. (eds.), Pastoralism and Development in Africa: Dynamic Change at the Margins.* London: Routledge. Pp. 215-230.

Apr 23 Novel ecosystems

Hobbs RJ, Higgs E, Harris JA. 2009. Novel ecosystems: Implications for conservation and restoration. *Trends in Ecology and Evolution* 24:599-605.

Hobbs RJ, Higgs E, Hall CM, Bridgewater P, Chapin FS, Ellis, EC, Ewel JJ, Hallett LM, Harris J, Hulvey KB, et al. 2014. Managing the whole landscape: Historical, hybrid, and novel ecosystems. *Frontiers in Ecology and the Environment* 12:557-564.

Apr 28 Crafting sustainable environmental institutions

Siele D, Swift J, Krätli S. 2013. Reaching pastoralists with formal education: A distance-learning strategy for Kenya. *In: Catley A et al. (eds.), Pastoralism and Development in Africa: Dynamic Change at the Margins.* Routledge: London, UK. Pp. 206-214.

Apr 30 Oral presentations: Group 1**MAY****May 5 Oral presentations: Group 2****May 7 Final wrap-up**