
Description: Mechanisms and hypotheses to explain biological invasions. Impacts of invasions on communities and ecosystems, management approaches, design and analysis of experiments. Offered spring term in even-numbered years.

Biological invasions are second only to habitat destruction in causing declines in native species and are currently cited as one of the primary drivers of global environmental change. However, species invasions also provide unique opportunities for testing basic theories in ecology and evolution. In this course we will review the process and underlying mechanisms of invasions, effects of invasions on communities and ecosystems, and management techniques. The focus will be on conceptual frameworks, research approaches, and the overall process of 'doing' science.

Time and Location: Tuesdays 10:40-11:30, McCarty B 2102
Thursdays 10:40-12:35, McCarty A 2186

Instructor:	S. Luke Flory Assistant Professor Invasion Ecology Agronomy Department, IFAS University of Florida Gainesville, FL 32611 Email: flory@ufl.edu	Office location: McCarty B 3125 * office hours by appointment Cell: 352-231-2376 Office: 352-392-1117 Skype: luke.flory
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Suggested Texts: Lockwood, J.L, M.F. Hoopes, and M.P. Marchetti (2007). *Invasion Ecology*. Malden, MA: Blackwell Publishing. ISBN: 1405114185
(on reserve)

Davis, M.A. (2009). *Invasion Biology*. Oxford, UK: Oxford. ISBN: 0199218757

Fifty Years of Invasion Ecology: The Legacy of Charles Elton. (2011). Edited by D.M. Richardson. Oxford, UK: Wiley-Blackwell. ISBN: 1444335863

Conceptual ecology and invasion biology: reciprocal approaches to nature. (2006). Edited by M.W. Cadotte, S.M. McMahon, and T. Fukami. ISBN: 1402041586

Course Objectives: Upon completion of this course, students should be able to:

1. Explain the history of invasion ecology.
2. Outline the stages of the invasion process.
3. Describe and critically evaluate the hypotheses to explain biological invasions.
4. Summarize the effects of invasions on communities and ecosystems.
5. List the possible management strategies for invasions and their pros and cons.
6. Design experiments to test mechanisms and impacts of invasions.
7. Synthesize, critique, and write about primary literature.
8. Discuss literature with fellow scientists and orally present to a group.
9. Prepare a paper for publication in a peer-reviewed journal.

Attendance: You are expected to attend all classes and arrive on time. Your participation is part of your grade. Please discuss planned absences with me ahead of time.

Grades: Your grade will be based on presentation of a mini-lecture, literature discussions and written synopses, participation in writing a review paper, and a semester-long experiment. There will be no exams. Discuss with me ahead of time any anticipated problems with meeting deadlines.

Task	Description	Points	Total
Student-led mini-lecture	Outline and meeting with instructor Presentation of lecture	5 20	25
Literature discussions (10 total)	Synopses Participation	4 x 5 pts 15 pts	35
Review paper	Participation in review paper	15	15
Experiment	Prospectus Analysis plan Presentation	5 5 15	25
Class total : 100			

Grades will be assigned using the standard scale:

94-100 = A; 90-93 = A-; 87-89 B+; 83-86 = B; 80-82 = B-; 77-79 = C+; 73-76 = C;
70-72 = C-; 67-69 = D+; 63-66 = D; 60-62 = D-; < 60 = F.

Tentative Schedule *potential mini-lecture topics

Wk	Date	Topic	Assignment due
1	1/10	Introduction of class, instructor, and participants; form groups	
	1/12	Experimental design, group work on project, discussion of projects	
2	1/17	How to give a lecture and lead discussion (guest Dr. Grady Roberts)	
	1/19	History of invasion ecology, terminology, definitions	
3	1/24	Stages of the invasion process, literature discussion	
	1/26	Literature discussion, presentation & discussion of ideas for projects	Project proposals (oral, 5 min)
4	1/31	Project work day	Prospectus (written, 2-3 pgs)
	2/2	Project work day	
5	2/7	*Dispersal – vectors, pathways,	
	2/9	Literature discussion – review paper	
6	2/14	*Establishment, abiotic factors – disturbance, heterogeneity	
	2/16	Literature discussion – review paper	
7	2/21	*Establishment, biotic factors – diversity, enemies	
	2/23	Literature discussion – review paper	
8	2/28	*Spread of invasions	
	3/1	Literature discussion – review paper	Class evaluation (written)
9	3/13	*Evolution	
	3/15	Literature discussion – review paper	
10	3/20	*Impacts of invasions - communities	
	3/22	Literature discussion – review paper	
11	3/27	*Impacts of invasions – ecosystem processes	Analysis plan (written)
	3/29	Literature discussion – review paper	
12	4/3	*Predicting invasions, early detection, rapid response	
	4/5	Literature discussion – review paper	
13	4/10	Project work day	
	4/12	Project work day	
14	4/17	Finalize review paper	
	4/19	Management of invasions/Moving forward in invasion ecology	
15	4/24	Project presentations	Presentation (oral)

Assignments:

Mini-lectures & discussions: Each class member will lead one mini-lecture and discussion and write synopses for 4 of the discussion articles for the course. One of these synopses should be on one of the article(s) for which you are leading discussion, the other 3 synopses may be for any of the remaining literature discussion articles. Mini-lecture and discussion leaders will need to select 1-3 articles from the recent literature on their topic for the whole class to read. Send me a pdf file or url link to the article at least one week in advance for posting on Sakai. Leaders will also want to select additional readings on their topic as background for preparing the mini-lecture and leading discussion. Feel free to see me for mini-lecture and article ideas and/or use the ISI Web of Science database or Google Scholar. Further instructions will be provided in class.

Review paper: As a class we will prepare a review paper for publication in a peer-reviewed journal. Together, we will formulate the idea, outline the manuscript, conduct a literature review, and write the paper. The goals are for you to gain a deeper understanding of the invasion ecology literature, to work collaboratively, to practice writing, and to experience submitting a manuscript for review.

Experiment: Instead of exams, group experiments are included in this course as an opportunity for exploration of special areas of interest, reinforcement of principles in invasion ecology, and honing of skills in experimental design, data collection, analysis and interpretation, working collaboratively, and presentation of results. These experiments have the potential to produce publishable work and may result in presentations at scientific meetings. Together we will decide on groups of 2-4 students with mutual interests. Working in groups will keep everyone's time investment down and is great training in working collaboratively, an increasing trend in ecological science. Further details will be provided in class.

Missed Assignments: Please contact me as soon as possible if you do not expect to complete assignments on time so that we can agree on a revised due date or schedule make-up work.

Grading policy: Information on current UF grading policies for assigning grade points can be found here: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Academic Honesty: In 1995 the UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied: **"On my honor, I have neither given nor received unauthorized aid in doing this assignment."**

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and Conflict Resolution in the Dean of Students Office.

(Source: 2011-2012 Undergraduate Catalog)

It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor.

This policy will be vigorously upheld at all times in this course.

Software Use: All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Campus Helping Resources: Resources are available on-campus for students having personal problems or Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

1. *University Counseling & Wellness Center*, 3190 Radio Road, 352-392-1575, **www.counseling.ufl.edu/cwcl/**, Counseling Services, Groups and Workshops, Outreach and Consultation, Self-Help Library, Training Programs, Community Provider Database
2. *Career Resource Center*, First Floor JWRU, 392-1601, **www.crc.ufl.edu/**

Students with Disabilities: The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. 0001 Reid Hall, 352-392-8565, **www.dso.ufl.edu/drc/**