Evolutionary Ecology - PCB 4673  
Fall 2015 Syllabus

Your instructor: John Cozza  
Contact: jcozza@fiu.edu (not by Blackboard; include “EVOL ECOL” in subject line)  
Office Hours in OE 216: Mon, Tues, and most W 5-6+ & Tues 1-3:15; after class, or by appointment

Lecture and discussion time (required): MWF 4:00 – 4:50 pm  
Room: 165 Green Library

Introduction:  
We will explore the interface of ecology and evolution: how the interactions of organisms with each other and with their environment shape their change over time, and how that change in turn modifies the interactions. Some of the most basic and yet most elusive questions in biology—why are there so many kinds of organisms, how do they co-exist, what is the advantage of sex, what drives the birth and death of species—will be among our topics. We will employ active and interactive learning, and develop skills in interpreting and communicating scientific concepts.

Prerequisites:  
PCB 3043 (Ecology) and PCB 3063 (Genetics)  
Biology major distribution area: Ecology

Required materials:  
2) Selections from the scientific literature and other sources, to be posted on Blackboard.  
3) I-clicker (device only—not the app; earlier models OK), available at the bookstore.

Individual & group learning objectives: By the end of the course, you will be able to  
- Review relevant concepts from ecology and genetics, add new information, and apply to hypotheses about evolutionary ecology.  
- Read a scholarly book, and from it identify, comprehend and discuss advanced concepts in evolutionary ecology; work with colleagues to clarify difficulties for all.  
- Interpret, apply, evaluate, and synthesize results from the scientific literature, verbally and in writing—both individually and cooperatively in groups.  
- Select a relevant scientific paper, present its main results clearly, and discuss with colleagues. Formulate and ask clarifying questions about colleagues’ presentations.

Structure of the course:  
We will cover one chapter in Mayhew each week. The typical schedule will be:  
- Monday we discuss the new chapter—so you must read it before class!  
- Wednesday we discuss related papers or do an interactive activity, with some activities spanning two classes. For each discussion or activity, you will complete a 1-3 page individual or group short written assignment (9 total) due at the end of class on the day of the activity, or as announced. You must attend class
prepared, and actively participate to get credit for the assignment. Assignments will vary; we will discuss in advance what is expected for each one.

- Friday and some other days (starting Week 4) is our Evolutionary Ecology “Journal Club.” On those days, five people will each prepare a single Powerpoint slide of a relevant recent paper, present it to the class (5 min), and lead a short discussion (3 min). The paper you choose may be on any aspect of evolutionary ecology, and is not constrained by the topic of the week, but it must include results of primary research (or modeling). This will give us all a rich and varied view of the new and exciting research in the field!

Please show me (or send me the citation for) your paper one week before you will present it. Plan to arrive early on the day you are presenting to load your slide onto the classroom computer.

- There will be two midterm exams plus a final. The final will focus on the last third of the material but it will also be cumulative. Exams will be all or mostly scantron questions, but there may be some written short answers too. Questions will stress grasp of the concepts and your ability to synthesize and apply them. If you miss an exam for a university approved reason (medical emergency, death in the immediate family, jury or military duty, etc.) you must officially document it and let me know asap (beforehand if possible). This is the only way to receive any consideration other than a zero for a missed exam.

- We will use clickers to gauge your understanding of the concepts, and to stimulate discussion. You will earn extra credit by using the clickers. Clicker questions might appear in any class meeting (including Journal Club).

Grading:
Midterm exams (2@ 15%) 30%
Final exam: 20%
Short written assignments (9 @ 4%) 36%
Journal Club slide & presentation 9%
Journal Club attendance & participation 5%
Extra credit (clickers) up to 5% extra

Clicker extra credit will be calculated as follows. You will get 1 raw clicker point for participating in each question, and 1 additional point if you answer it correctly. At the end, your raw point total will be scaled to a maximum of 5% extra credit, with the highest total in the class scaling to the full 5%.

Grades: A = 93-100%, A− = 90-92%, B+ = 87-89%, B = 83-86%, B− = 80-82%, C+ = 77-79%, C = 73-76%, C− = 70-72%, D+ = 67-69%, D = 63-66, D− = 60-62%, F = 0-59%.

Grades will be rounded up or down to the nearest 1%. There will be no curving, and no unearned points will be added to anyone’s grade. The only extra credit available will be that earned by using your clicker, or by participating in and writing about selected enrichment activities announced in class.
Honor and safe place policies:
The FIU honor policy will apply fully. Any cheating or plagiarism on exams or written work will result in a grade of F for the assignment and the course. We will use turn-it-in.com to verify the originality of written work. Using more than one clicker will result in temporary confiscation of the outlaw clicker, and permanent loss of clicker points for the owner and user. Signing any name other than your own on the Journal Club sign-in sheet will result in loss of participation points for both people.

FIU does not tolerate sexual harassment or any other civil rights violation against any student or course personnel.

See the FIU Student Code of Conduct at:
http://www2.fiu.edu/~jms/standards_of_conduct.htm

FIU’s discrimination and sexual harassment policies are available at:
http://regulations.fiu.edu/regulation

General expectations and how to succeed:

- **Read the text and assigned papers** thoughtfully, before the relevant class. The material is challenging-- you will need to read most of it more than once!
- **Attend every class** and actively participate in discussions, interactive questions, and activities. Research by Dr. Helen Young (Middlebury College) showed a 2% lower grade for each missed class in a similar course. Likewise, studies show that active, social engagement with the material produces meaningful, enduring learning.
- **Ask questions**: ask for clarification. There are no stupid questions!
- **Help your neighbor** and contribute to the group. If you help each other, everyone will do better including you!
- **Review concepts** asap after class, using the book and other resources to clarify any hazy areas. Try to find answers to your questions yourself, or in a study group.
- **Come to office hours** with any questions you are still unsure about.
- **Read all course emails** and announcements on Blackboard! You are responsible for all information in them, as well as anything announced or posted in class.

**This syllabus and schedule (below) may change at any time** to better meet the needs of the group, or due to unforeseen circumstances. All changes will be announced in class or via Blackboard. The most current version will be kept updated on Blackboard, so check there if in doubt.
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic or activity</th>
<th>Reading due</th>
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<tr>
<td>1</td>
<td>24 Aug</td>
<td>Course information and introduction What is evolutionary ecology? 1) Activity: Ask 20 Qs about evol &amp; ecol</td>
<td>Mayhew ch. 1 Fox 2014; bring computer</td>
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<td>26 28 Aug</td>
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<td>2</td>
<td>31 2 Sept</td>
<td>Major evolutionary transitions + JC example 2) Discussion: How did sex evolve? Sex discussion (begin group activity)</td>
<td>Mayhew ch. 2 Hurst &amp; Peck 1996</td>
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<td>3</td>
<td>7</td>
<td>Labor Day holiday—no class</td>
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<td>9 11</td>
<td>Major ecological transitions</td>
<td>Mayhew ch. 3</td>
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<td>4</td>
<td>14 16 18</td>
<td>Life history evolution</td>
<td>Mayhew ch. 4</td>
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<td>4) Discussion: Explaining suicidal trees Journal club (#1-5)</td>
<td>J Read 2006, Poorter 2005</td>
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<td>5</td>
<td>21 23 25</td>
<td>Sex allocation</td>
<td>Mayhew ch. 5</td>
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<td>5) Discussion: Sex change Journal club (#6-10)</td>
<td>Vitt 2003, Kline 2011</td>
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<td>6</td>
<td>28 30 2 Oct</td>
<td>Dispersal</td>
<td>Mayhew ch. 6</td>
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<td>EXAM #1 on weeks 1-5 Journal club (#11-15)</td>
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<td>7</td>
<td>5 7 9</td>
<td>Behavior and plasticity</td>
<td>Mayhew ch. 7</td>
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<td>6) Activity: Invasive species assessment Invasive species activity (continued)</td>
<td>Pheluong 1999</td>
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<td>8</td>
<td>12 14 16</td>
<td>Population dynamics</td>
<td>Mayhew ch. 8</td>
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<td>Journal club (#16-20) Journal club (#21-25)</td>
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<td>9</td>
<td>19 21 23</td>
<td>Generalization vs. specialization 7) Discussion: Specialization in Nepenthes Journal club (#26-30)</td>
<td>Mayhew ch. 9</td>
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<td>ALL: Moran 2010 Divided among group: 3-4 papers you signed up to read (posted; also indicated below)</td>
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<td>10</td>
<td>26 28 30</td>
<td>Antagonism vs. cooperation</td>
<td>Mayhew ch. 10</td>
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<td>11</td>
<td>2 Nov 4 6</td>
<td>Co-evolution</td>
<td>Mayhew ch. 11</td>
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<td>EXAM #2 on weeks 6-10 Journal club (#36-40)</td>
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<td>12</td>
<td>9 11 13</td>
<td>Speciation</td>
<td>Mayhew ch. 12</td>
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<td>Veterans’ Day holiday—no class</td>
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<td>Journal club (#41-45)</td>
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<td>13</td>
<td>16 18 20</td>
<td>Extinction</td>
<td>Mayhew ch. 13</td>
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<td>14</td>
<td>23 25 27</td>
<td>Finish sustainability; Macroecology</td>
<td>Mayhew ch. 15</td>
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<td>Journal club (#51-55 Thanksgiving holiday—no class)</td>
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<td>15</td>
<td>30 2 Dec 4</td>
<td>Macroevolution</td>
<td>Mayhew ch. 14</td>
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<td>Journal club (#56-60 JC (#61-65); Wrap-up &amp; course evaluations</td>
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<td>Finals</td>
<td>7 Dec</td>
<td>FINAL EXAM on weeks 11-15 + cumulative; 2:15-4:15 PM in GL 165</td>
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Course readings and resources:


