Field Ecology
SNRE 556 & EEB 477

Friday September 16 to October 23 (every weekend from 7:00 pm Friday to 7:00 pm Sunday plus every Tuesday 5-7 pm)

5 credits

Instructors:
Ivette Perfecto, SNRE, perfecto@umich.edu
John Vandermeer, EEB, jvander@umich.edu
Catherine Badgley, EEB, cbadgley@umich.edu
Chris Dick, EEB, cwdick@umich.edu

GSI:
Theresa Ong, EEB, weiyingo@umich.edu

Course Description
The course runs on weekends, at the E.S. George Reserve, a biological research reserve about 40 minutes drive northwest of Ann Arbor. We leave Ann Arbor on 7:00 PM Friday and return about 7:00 PM Sunday. In addition, student groups meet Tuesday 5-7. A typical weekend includes 3 or 4 lectures, two field problems and much discussion. In addition to the four regular faculty members (Perfecto, Vandermeer, Badgley, Dick), each weekend two or more other faculty members will be visiting to lead field problems and present lectures on their research. The course is thus an excellent way to get to know several faculty members from the Department of Ecology and Evolutionary Biology (EEB) and the School of Natural Resources and Environment (SNRE) on a relatively informal basis. It is also one of the main vehicles whereby graduate students from EEB interact intensively with graduate students from SNRE.

The core of the course centers on the "field problem," a one-day group exercise led by a faculty member on some specific problem. The course is divided into field problem groups of 5-7 students who work together for an entire weekend. Each field-problem group meets with the lead faculty member the evening before the field problem itself. The faculty member presents the work plan for the next day and the group as a whole discusses the plan, sometimes making significant changes. The next day is spent in the field collecting data associated with the field problem. During the afternoon, the group either returns to the field or analyzes the data and in the late afternoon makes plans for a presentation of the results on the following weekend.

The schedule is full, but students consistently enjoy this intensive experience in field ecology. The course lasts half the semester (6 weekends), leaving the second half of the semester free of responsibilities for this course. Part of the reason for organizing the course in the first place was to provide an opportunity for an intensive intellectual experience especially aimed at new graduate students.

Course Requirements
Students are required to attend every day of the course unless special arrangements have been discussed with the instructors before the course starts. Grades will be based on participation in discussions and field problems as well as on written reports and oral presentations for group projects and the final report and the presentation for an individual project. Depending on the number of students taking the course, each student will be responsible for approximately 2 group projects (written report and oral presentation) and one individual project (written report and oral presentation).

Class Participation 20%
Written Reports 40%
Oral Presentations 40%
### Week 1

**Sept 16**
- **7:00PM** Leave for George Reserve
- **8:00** Lecture: Intro to course – Staff
- **9:00** Lecture: Geology of the Great Lakes area: setting the stage for George Reserve biodiversity -- Smith

**Sept 17**
- **6:30AM Breakfast**
- **7:30** Nature Walk I (A=Vandermeer/Badgley, B=Perfecto/Ong, C=Penskar/Dick)
- **9:30** Nature Walk II (C=Vandermeer/Badgley, A=Perfecto/Ong, B=Penskar/Dick)
- **12:00PM** Lunch
- **1:00** Field problem reports from last year (Sanchez, Schmitt, Yifan-He)
- **2:30** Nature walk III (B=Vandermeer/Badgley, C=Perfecto/Ong, A=Penskar/Dick)
- **5:00** Lecture: -- Biogeography, ecology, and conservation of Great Lakes Fishes -- Smith
- **6:00** Dinner
- **7:30** Lecture: -- Examining data and avoiding complex statistics -- Vandermeer
- **9:00** Field problem discussions (Vandermeer, Badgley, Dick)

**Sept 18**
- **6:30AM Breakfast**
- **7:00** Field problems (Vandermeer, Badgley, Dick)
- **12:00PM** Lunch
- **1:00** Field problems continue
- **5:00** Lecture: Ecological information from bone surveys -- Badgley
- **6:30** Leave for Ann Arbor

### Week 2

**Sept 23**
- **7:00PM** Leave for George Reserve
- **8:00** Field problem reports (from Week 1)
- **9:00** Lecture: Exploring the Phytochemical Landscape with Parasite - Host Interactions -- Hunter
- **10:00** Field problem discussions (Jude, Benard, Hunter)

**Sept 24**
- **6:30AM Breakfast**
- **7:00** Field problems (Jude, Benard, Hunter)
- **12:00** Lunch
- **1:00PM** Field problems continue
- **5:00** Lecture: -- The late Great Lakes -- Jude
- **6:00** Dinner
- **7:30** Lecture: -- Consequences of shifting phenology on amphibian populations and community ecology -- Benard
- **8:30** Field problem discussions (Vandermeer, Perfecto, Ong)

**Sept 25**
- **7:00** Field problems (Vandermeer, Perfecto, Ong)
- **12:00PM** Lunch
- **1:00** Field problems continue
- **5:00** Lecture – Ecological complexity and biological control in a tropical ecosystem -- Perfecto
- **6:30** Leave for Ann Arbor
**WEEK 3** (Coordinators = Badgley, Dick; Visitors = Schueler, Burnham, Thompson, Dantzer)

Sept 30  7:00PM  Leave for George Reserve
8:00  Field problem reports (from Week 2)
9:00  Lecture: Causes and consequences of physiological stress in wild animals -- Dantzer
10:00  Field problem discussions (Duda, Badgley, Dick)

Oct 1  6:30AM  Breakfast
7:00  Field Problems (Duda, Badgley, Dick)
12:00PM  Lunch
1:00  Field problems continue
5:00  Lecture: From the ESGR to Ann Arbor: Deer management in practice -- Dick/Thompson/Dantzer
6:00  Dinner
7:00  Field problem reports (from Week 2)
8:00  Lecture: Tropical Lianas -- Burnham
9:00  Field problem discussions (Schuler, Burnham, Thompson/Dantzer)

Oct 2  6:30AM  Breakfast
7:00  Field Problems (Schueler, Burnham, Thompson/Dantzer)
12:00PM  Lunch
1:00  Field Problems continue
4:30  Lecture: ???: Harris – mammal surveys????
6:30  Leave for Ann Arbor

---

**WEEK 4** (Coordinators = Perfecto, Vandermeer; Visitors, Marshall, Allen)

Oct 7  7:00PM  Leave for George Reserve
8:00  Field Problem Reports (from Week 3
9:00  Lecture: A rather unusual field ecology talk -- Allen
10:00  Field problem discussions (Marshall, Perfecto, Allen)

Oct 8  7:00AM  Breakfast
8:00  Field Problems (Marshall, Perfecto, Allen)
12:00PM  Lunch
1:00  Field problems continue
4:30  Lecture: Ecology of tropical vertebrate community: how important is competition? -- Marshall
6:00  Dinner
7:00  Field problem reports (from Week 3)
8:00  Lecture: Food sovereignty as a new paradigm for development and conservation -- Perfecto
9:00  Group Field problem discussions

Oct 9  7:00AM  Breakfast
8:00  Group Field Problems
12:00PM  Lunch
1:00  Field Problems continue
4:30  Lecture: Taylor-made landscapes in urban gardens -- Ong
6:30  Leave for Ann Arbor
### WEEK 5  (Coordinators = Badgley, Dick; Visitors = Foufopoulos, Goldberg)

<table>
<thead>
<tr>
<th>Oct 14</th>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00PM</td>
<td>Leave for George Reserve</td>
<td></td>
</tr>
<tr>
<td>8:00</td>
<td>Field Problem Reports (from Week 4)</td>
<td></td>
</tr>
<tr>
<td>9:00</td>
<td>Lecture: Reflections on the notions of Response and Effect competition -- Goldberg</td>
<td></td>
</tr>
<tr>
<td>10:00</td>
<td>Field problem discussions (Ong, Goldberg, Foufopoulos)</td>
<td></td>
</tr>
</tbody>
</table>

Oct 15 | Time   | Activity                                                                 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00AM</td>
<td>Breakfast</td>
<td></td>
</tr>
<tr>
<td>8:00</td>
<td>Field Problems (Dick, Goldberg, Foufopoulos)</td>
<td></td>
</tr>
<tr>
<td>12:00PM</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>1:00</td>
<td>Field problems continue</td>
<td></td>
</tr>
<tr>
<td>5:00</td>
<td>Lecture: Host-parasite interactions in a songbird: why disease matters in a competitive world-- Foufopoulos</td>
<td></td>
</tr>
<tr>
<td>6:00</td>
<td>Dinner</td>
<td></td>
</tr>
<tr>
<td>7:00</td>
<td>Debate: Topographic complexity -- which is cooler, the Rockies or the Andes -- Badgley versus Dick</td>
<td></td>
</tr>
<tr>
<td>9:00</td>
<td>Field problem discussions</td>
<td></td>
</tr>
</tbody>
</table>

Oct 16 | Time   | Activity                                                                 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00AM</td>
<td>Breakfast</td>
<td></td>
</tr>
<tr>
<td>7:00</td>
<td>Individual field problems</td>
<td></td>
</tr>
<tr>
<td>12:00PM</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>2:00</td>
<td>Individual field problems continue</td>
<td></td>
</tr>
<tr>
<td>5:00</td>
<td>Lecture: Historical development of Amazon biodiversity--Dick</td>
<td></td>
</tr>
<tr>
<td>6:30</td>
<td>Leave for Ann Arbor</td>
<td></td>
</tr>
</tbody>
</table>

### WEEK 6  (Coordinators = Dick, Badgley, Perfecto, Vandermeer)

<table>
<thead>
<tr>
<th>Oct 21</th>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00PM</td>
<td>Leave for George Reserve</td>
<td></td>
</tr>
<tr>
<td>8:00</td>
<td>Lecture: Newton, Darwin, Tansley, and Marx -- Vandermeer</td>
<td></td>
</tr>
<tr>
<td>9:30</td>
<td>Field problem discussions</td>
<td></td>
</tr>
</tbody>
</table>

Oct 22 | Time   | Activity                                                                 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00AM</td>
<td>Breakfast</td>
<td></td>
</tr>
<tr>
<td>8:00</td>
<td>Group field problem (all students and faculty)</td>
<td></td>
</tr>
<tr>
<td>12:00PM</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>1:00</td>
<td>Field problems continue</td>
<td></td>
</tr>
<tr>
<td>5:00</td>
<td>Field Problem Reports (from week 5)</td>
<td></td>
</tr>
<tr>
<td>6:00</td>
<td>Dinner</td>
<td></td>
</tr>
<tr>
<td>7:00</td>
<td>Debate: The importance of time: Deep time—Badgley: Recent evolutionary time – Dick: Recent ecological time – Perfecto; Now -- Vandermeer</td>
<td></td>
</tr>
<tr>
<td>8:30</td>
<td>Informal discussions</td>
<td></td>
</tr>
</tbody>
</table>

Oct 23 | Time   | Activity                                                                 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00AM</td>
<td>Breakfast</td>
<td></td>
</tr>
<tr>
<td>8:00</td>
<td>Individual project reports</td>
<td></td>
</tr>
<tr>
<td>11:00</td>
<td>Special field problem (in special groups)</td>
<td></td>
</tr>
<tr>
<td>12:00PM</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>1:00</td>
<td>Course evaluation</td>
<td></td>
</tr>
<tr>
<td>2:00</td>
<td>Field Problem Reports (from week 6)</td>
<td></td>
</tr>
<tr>
<td>3:00</td>
<td>Individual project reports</td>
<td></td>
</tr>
<tr>
<td>5:30</td>
<td>Clean and pack up</td>
<td></td>
</tr>
<tr>
<td>6:30</td>
<td>Leave for Ann Arbor</td>
<td></td>
</tr>
</tbody>
</table>