Instructions for the Qualifying Exam in
Ecology & Evolutionary Biology -- August 2013

The goals of the qualifying exam in this cluster are to address the fundamental concepts underlying Ecology and Evolutionary Biology, evaluate the student's knowledge of these concepts in written and oral forms, and assess the student's research potential in these fields.

Requirements:

1. Passing BIOL 65200 and BIOL 65300 with a grade of B (3.0 on the grade point scale) or better in each course. These two courses will expose students to all faculty members in the Ecology and Evolutionary Biology cluster.

2. Obtaining a grade of B (3.0) or better on a critical review (written and oral presentations).

Course requirement: BIOL 65200/65300

BIOL 65200 -- Advanced Ecology Discussion

Offered in the fall semester, 1 credit. Weekly meetings will evaluate and discuss topical papers in the field. Each participating faculty member will be responsible for one or two meetings during the semester. The faculty member organizing each week’s discussion will determine the readings. As in any discussion class, the students must participate rather than just attend for the experience.

On the last class meeting, students will be given an assignment to critically evaluate one paper from a selection of additional articles provided by the faculty. Each participating faculty member will supply one paper. The students will complete their critiques within one week of receiving the assignment. Critiques will be assessed on writing quality, content, originality, rigor, and clarity.

The student's final grade for the course will be based on seminar participation (50%) and paper critique (50%).

BIOL 65300 -- Advanced Evolution Discussion

Offered in the spring semester, 1 credit. Weekly meetings will evaluate and discuss topical papers in the field. Each participating faculty member will be responsible for one or two meetings during the semester. As in Biol 65200, the faculty member organizing each week’s discussion will determine the readings.

On the last class meeting, students will be given an assignment to critically evaluate one paper from a selection of additional articles provided by the faculty. Each participating faculty member will supply one paper. The students will complete their critiques within one week of
receiving the assignment. Critiques will be assessed on writing quality, content, originality, rigor, and clarity.

The student's final grade for the course will be based on seminar participation (50%) and paper critique (50%).

**Qualifier: paper and oral presentation**

Students must write and orally present a critical review of a topic of his/her choice. A grade of B (3.0) or better must be obtained to satisfy the qualifier requirements, with 30% of the grade determined from the quality of the oral presentation and 70% from the quality of the manuscript.

The qualifier paper should be a *critical* review of a fundamental idea (rather than a compendium of descriptions of studies) that is *forward-looking*. The goal is for the student (rather than the research advisor) to provide a thorough review with an emphasis on:

- explaining the state of the knowledge in one or more subdisciplines associated with the topic of the review,
- identifying where the gaps in knowledge are,
- proposing novel questions or novel approaches to address an existing broad question, and
- suggesting how novel questions should be investigated.

A good critical review will both identify the scientific problems and outline ways we can address them.


"TREE Reviews are concise reviews of recent research in rapidly progressing or emerging areas. They should briefly set the background and then concentrate on setting recent findings in context. They should provide a balanced view of developments, even in fields that are controversial, and authors must never concentrate unduly on their own research. Our audience ranges from student to professor, and so articles must be accessible to a wide readership. Please avoid jargon, but do not oversimplify: be accurate and precise throughout. Although Reviews do allow room for some speculation and debate, it should be made clear where the authors’ own opinions are being presented."

The goal for the qualifier is to produce a review of sufficient depth and reasoning, with sufficiently broad potential impact, that it would be reasonable to submit it to TREE.

Students should make sure that the length of their critical review paper is within the TREE word limit for review articles (currently 3000-3500 words).

Students are **greatly** encouraged to read examples of TREE review papers to get a sense of the scope, style, and degree of specificity involved.

The qualifier may even be within the general realm of the students’ intended thesis research area.
However, the scope of the qualifier must be significantly broader than the student’s dissertation topic, and the qualifier must aim to merge at least one other subfield in ecology and evolutionary biology with any discussion related to the thesis topic. For instance, if the intended thesis topic is “mechanisms antbirds use to exchange information about ant colonies”, the qualifier might review mechanisms of cooperation and reciprocity across taxa.

We encourage students to consider the qualifier as an opportunity to expand their thinking on a biological issue and to integrate novel ideas that may potentially influence their dissertation (i.e., think outside of the box). The qualifier paper may also serve as the foundation for a publishable manuscript.

**Qualifier exam steps and benchmarks:**

**Fall semester 2013**

1. **By August 30, 2013. Each student is assigned a review panel by the qualifying exam convener.** The review panel consists of four faculty members who will evaluate the paper and the oral presentation. Each review panel, including the (intended) research advisor, will select its own chair (not the intended research advisor). The review panel will meet with the student at least twice (fall and spring, see below), but can also be convened for additional meetings at the student’s or panel’s request. Students are strongly encouraged to meet with their panel, as a group or individually, frequently while developing their ideas.

2. **By September 30, 2013: Each student must schedule the qualifier oral presentation for the following spring semester.** Students will present their qualifier in one of the Ecolunch slots in the following spring semester. This presentation should be scheduled with the faculty member organizing the Ecolunch series (Dr. Nancy Emery).

3. **By October 12, 2013: Each student schedules an initial meeting with his or her panel.** A preliminary prospectus which is a properly referenced summary of the proposed qualifier topic is submitted by the student to the panel a week prior to this initial meeting. It is the student’s responsibility to arrange the place and time for this initial meeting. The preliminary prospectus maximum length is 1,000 words; references are not counted as part of the word limit.

4. **By October 12th, 2013: Each student meets with his or her review panel to present and discuss the preliminary prospectus.** During this meeting, students are expected to describe the rationale for their qualifier, the explicit subtopics that their qualifier will integrate, and plausible novel research directions. The intent of the meeting is to provide students with insightful feedback early in the qualifier exam process and to ensure that the committee is in agreement about the direction of the student’s qualifier. The presentation should be short (maximum 15 min) with or without PowerPoint. The student should expect a question and answer session with the review panel during this meeting.

5. **By November 12, 2013: Each student must submit a final prospectus to the review panel.** The final referenced prospectus (maximum length of 1,000 words not counting references)
outlines the student’s proposed qualifier. Each member of the review panel will evaluate the student’s prospectus. The topic of the qualifier must not be merely an extension or restatement of previous work done by the student (e.g., the student's master’s degree or undergraduate honors thesis research). The following additional criteria will be used to evaluate the qualifier, so the prospectus should address them:

1. Clarity and logic of the rationale and theoretical concepts important for the topic (e.g., http://undsci.berkeley.edu/lessons/pdfs/how_science_works_p7.pdf).
2. Comprehensiveness of the literature review (the prospectus should provide a strategy).
3. Novelty of the questions or conceptual approaches to answer an existing question.
4. Logic of the proposed route from “where the field is now” to “where the field is suggested to go”.

6. By November 26, 2013: Each review panel member will approve or disapprove the topic. There must be a consensus among the faculty members of the panel that the prospectus reflects the student's independent achievement. If the topic is not judged suitable by the panel faculty members who reviewed it, the review panel will advise the student on modifications needed for approval. This may require an additional meeting with the student, who is expected to arrange it. Students are encouraged to wait until the prospectus has been approved before developing the rest of the paper.

7. By December 1, 2013: The review panel provides its evaluation to the qualifying exam convener. If the panel does not unanimously approve the final prospectus, they will provide written comments and suggestions to the student. The chair of the review panel will also send these comments to the qualifier convener. The student will be allowed to revise the prospectus to address these comments.

8. By December 8, 2013: Students must give their final prospectus to the review panel for approval. After the prospectus is approved, students are expected to submit the final version of the prospectus to the review panel and the qualifier convener by December 17, 2013. Any additional comments from the review panel for the student to focus on during the preparation of the paper are communicated to the student and the qualifier convener by the chair of the review panel.

**Spring semester, 2014**

9. By February 10, 2014: Students are expected to meet with the qualifier convener. The purpose of this meeting is to discuss the plans and timeline to successfully prepare the written and oral presentations based on the comments provided by the review panel. Students are free to request further meetings with the review panel, and that panel can also decide that further meetings would be useful.

10. In the spring semester: Students prepare oral and written reports based on the approved prospectus. Good ideas can be transformed into excellent ideas by sharing them with the scientific community and receiving constructive criticism. Consequently, consultation with peers (grad students/ postdocs) is encouraged. Consultation with faculty (not only the research
advisors, but also other faculty within the cluster and elsewhere, even other departments on campus) is also strongly encouraged. Such consultations will likely provide the student with a diversity of views and suggestions, some even contradicting others. It is the student’s responsibility to consider these suggestions and meld them with their own views on the subject to produce a paper that is the student’s own work. NOTE: The written version should not be edited by the (intended) research advisor.

11. One week prior to the scheduled oral presentation: Each student provides a draft of the written review paper to both the qualifier convener and the review panel. No grade will be given on this draft.

12. No later than one day before the oral presentation: Each student provides a copy of his/her powerpoints to qualifier convener before the oral presentation. The convener will distribute the presentation to all faculty in the cluster, who will be encouraged to provide feedback and a grade to the convener within a week of the oral presentation. The convener will relay feedback to the student as quickly as possible.

13. At Ecolunch: Each student presents an oral presentation of their review. The qualifier oral presentation (40-45 min presentation, 15-20 min questions) has two functions. First, the student is expected to provide a reasonably detailed overview of his/her ideas. The quality of presentation (clarity, organization, review quality, novelty of future directions, and ability to answer questions) will be considered in the overall grade. All faculty members in the cluster present at the seminar may submit a grade for the presentation. Second, students should see this as a good mechanism for getting additional feedback on their project, which they can incorporate into the final paper.

14. Immediately after their oral presentation, each student meets privately with their review panel. The purpose of this meeting is for the review panel to provide feedback to the student based on the written draft and the oral presentation.

15. By May 7, 2014: Each student submits their final review paper to both the review panel and the qualifier convener. Within one week, the review panel will evaluate and critique the oral and written versions of the qualifier, providing written comments and a grade for both the oral presentation (30% of total grade) and the written paper (70% of total grade). The oral grade is the average of all grades from faculty who submitted one. The written paper grade is the average of grades from faculty in the student’s review panel. These grades will be submitted to the qualifier convener, who will calculate the final grade.

Each student’s panel will meet to review the final grade. If the student does not obtain a passing grade (B or 3.0), the review panel will provide written comments to the convener summarizing the changes required for a passing grade. The convener will pass these comments to the student, and the student will have the opportunity for one more round of revisions.

16. By June 4, 2014, paper revisions are due (if applicable). If a revised paper is submitted, the student must submit the revision to the qualifier convenor and the review panel, attaching the critiques that they received from the faculty on their initial version along with point-by-point
responses explaining how they addressed the particular concerns (as is done when revising a manuscript for publication). The grade given by review panel members on the revised version will replace the previous grade for the written portion of the paper.

If a student fails to obtain a B or better grade in any of the requirements (discussion courses or qualifier), the student must retake and pass the relevant part(s) of the qualifying exam in the subsequent year to remain in the Ph.D. program.

The qualifier convener in 2013-2014 is Nancy Pelaez.