Instructions for the Qualifying Exam in Ecology & Evolutionary Biology -- June 2015

The goals of the qualifying exam in the EEB 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 EEB cluster and a broad range of topics in organismal biology.

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

If a student fails to obtain at least a B (3.0) in any of the requirements (discussion courses or qualifier), the student must retake and pass (with at least a 3.0) the relevant component(s) in the subsequent year to remain in the Ph.D. program.

Course requirement: BIOL 65200/65300

BIOL 65200 -- Advanced Ecology Discussion

*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 class will provide the readings (and possibly a small assignment) that will serve as the basis for each discussion. As in any discussion class, students must prepare and participate to receive full credit for the discussion (attendance alone is insufficient).

On the last class meeting of the semester, 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 and any associated instructions for the critique of that paper to the instructor in charge of the course that semester, and the instructor will circulate the assignments to the students. The students will complete their critiques within one week of receiving the assignment. Critiques will be evaluated by two different faculty members and assessed on writing quality, content, originality, rigor, and clarity. The grade for the critique will be the average score provided by the two instructors that evaluate the paper.

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

BIOL 65300 -- Advanced Evolution Discussion

*Spring semester, 1 credit.* The format and expectations are the same as those described above for BIOL 65200, but the topics are focused on evolutionary biology rather than ecology. The student's final grade for the course will be based on seminar participation (50%) and a paper critique (50%).
Qualifier: paper and oral presentation

The EEB qualifier involves a written critical review and oral presentation on a topic selected by the student. 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.

Topic and Content

The qualifier paper should be a critical review of a fundamental idea (rather than an exhaustive review of all relevant studies) that is forward-looking. 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 may be within the general realm of the student’s intended thesis research area, but must be significantly broader in scope and merge at least one other subfield in ecology and evolutionary biology that falls outside the potential thesis topic. For instance, if the intended thesis topic is “mechanisms that antbirds use to exchange information about ant colonies,” the qualifier might review mechanisms of cooperation and reciprocity across taxa. The review should accomplish the following:

- explain the state of the knowledge in one or more subdisciplines associated with the topic of the review,
- identify gaps in knowledge,
- propose novel questions or approaches to address an existing broad question, and
- suggest how novel questions should be investigated.

A strong critical review will both identify the scientific problems and outline ways they can be addressed. Several qualifier papers have served as foundations for publishable manuscripts.

Formatting and Scope

In preparing the paper, students are encouraged to follow guidelines from the journal Trends in Ecology and Evolution (TREE): http://www.sciencedirect.com/science/journal/01695347, and specifically the instructions for TREE review papers, which are available at: http://download.cell.com/images/edimages/Trends/ecologyevolution/TREE_Review_Author_Guidelines_Feb_2009.pdf. Students should pay particular attention to the following statement in the guidelines: “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 qualifier review should be of sufficient depth, reasoning, and potential breadth of impact, to be reasonably appropriate for submission to TREE. Students are strongly encouraged to read examples of TREE review papers to get a sense of the scope, style, and degree of specificity involved. 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).
Evaluation
The qualifier grade is based on and oral presentation (30%) and a written document (70%). The overarching criteria by which the qualifier will be evaluated include the following:

1. 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), and must be broader than the student’s anticipated thesis research.
2. 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).
3. Comprehensiveness of the literature review (the prospectus should provide a strategy; see below).
4. Novelty of the questions or conceptual approaches to answer an existing question.
5. Logic of the proposed route from “where the field is now” to “where the field is suggested to go.”

Community Input
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 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: while the (intended) research advisor can provide feedback on the student’s qualifier throughout its development, the written version should reflect the student’s work and not be edited by the (intended) research advisor.

Benchmark and Deadlines

Fall semester 2015

1. By September 4, 2015, Each student is assigned a review panel by the qualifying exam convener. The review panel consists of four faculty members who will provide feedback to the student throughout the qualifier process and ultimately evaluate the final review paper. This review panel will meet with the student at least three times (twice in the fall and once in the spring, see #4, #6, and #13 below), but can also be convened for additional meetings at the student’s or panel’s request. Students are encouraged to meet frequently with their panel, as a group or individually, while developing their ideas.

2. By September 30, 2015: Reserve an EcoLunch slot for their qualifier oral presentation. This presentation should be scheduled with the faculty member organizing the Ecolunch series (currently Dr. Mark Christy). All qualifier presentations will be scheduled to take place by the end of March (2016).

3. By October 2, 2015: (1) Submit the preliminary prospectus to the qualifier review panel and (2) schedule an initial meeting with the panel. The student is responsible for arranging the place and time this (and any other) meeting with the panel, and for notifying the convener when the meeting has been scheduled and the preliminary prospectus has been circulated. The preliminary
prospectus is a properly referenced summary of the proposed qualifier topic that should include the following: (1) the rationale for the topic, (2) the subtopics that the qualifier will integrate, (3) the student’s strategy for reviewing the literature, and (4) plausible novel research directions. *It should not exceed 1000 words* (references are not included in the word limit). The preliminary prospectus is not graded, but is thoroughly evaluated by the student’s review panel to determine if the proposed topic and scope of the review satisfies the requirements for the qualifier (see above).

4. **October 9, 2015**: Last day to hold an initial meeting with the qualifier review panel. The intent of this initial meeting is to provide students with early feedback on their qualifier topic and to determine if the committee approves of the direction and scope of the student’s qualifier. The following should be accomplished in this meeting: (i) Students should provide a brief oral presentation (~15 minutes) of their preliminary prospectus (slides are optional). The panel will ask questions and provide feedback to the student on the proposed topic and preliminary prospectus document. (ii) The panel should identify a faculty member on the panel that will serve as the chair of the panel (this cannot be the intended research advisor). (iii) The student and the panel should identify a date for the second qualifier meeting (see #6 below).

5. **By November 13, 2015**: Submit a revised prospectus to the review panel. The revised prospectus should incorporate the feedback provided to the student during the initial meeting with the qualifier panel. The maximum length of the revised prospectus is still 1,000 words (not including references).

6. **November 25, 2015**: Last day to hold a second meeting with the qualifier review panel. At this meeting, the review panel provides (i) their approval or disapproval of the qualifier topic, and (ii) comments on the revised prospectus. There must be a consensus among the faculty members on the panel that the prospectus reflects the student's independent achievement. If the topic is not approved, the review panel will advise the student on the modifications that are required for approval. Finally, the panel may approve the topic but still recommend revisions to the prospectus before providing final approval of the prospectus document. The chair of the panel will send a summary of the panel’s decision to the qualifier convener immediately following the meeting.

7. **December 11, 2015**: Final prospectus is due to the review panel and the qualifier convener.

8. **By December 18, 2015**: The review panel provides its evaluation of the final prospectus to the qualifying exam convener. The chair of the review panel will send its evaluation to the student and the qualifier convener, as well as additional comments to help the student as s/he moves forward with the full qualifier document. At this time, the student is encouraged to send a title for the qualifier presentation to the EcoLunch organizer so that it can be included on the spring seminar schedule (this is not required).

Spring Semester, 2016

9. **By January 31, 2016**: Each student meets with the convener to discuss progress and timeline. The students are responsible for arranging this meeting with the convener.

10. **March 15, 2016**: Last day to hold a meeting with the qualifier review panel in the spring. At this meeting, the student provides an update of the progress he/she is making towards
developing the review. There must be a consensus among the faculty members on the panel that the student is making satisfactory progress. The chair of the panel will send a summary of the panel’s appraisal to the qualifier convener immediately following the meeting.

11. One week prior to the oral presentation (date will vary by student): Full draft of review paper is due. The document should be submitted to the student’s review panel and the convener. This draft is not graded, but allows the review panel to gauge the student’s progress and provides them with an opportunity to give feedback on the developing review. At this time, students are encouraged to send an abstract of their presentation to the EcoLunch organizer to be circulated to the EcoLunch email list prior to their presentation (this is not required).

12. 24 hrs prior to the oral presentation (date will vary by student): Presentation slides are submitted to the qualifier convener. The convener will distribute the presentation to all EEB faculty.

13. By April 27, 2016 (date will vary by student): Each student presents an oral presentation of their qualifier review. The student should prepare a 40-45 minute presentation and expect 15-20 minutes of questions following the presentation. In this presentation, 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. In addition to being evaluated, the presentation provides a mechanism for providing the student with additional feedback on the review content that can be incorporated into the final paper.

   This presentation will be evaluated by all EEB faculty in attendance, who will submit a grade to the qualifier convener by the end of that week. Within one week following the presentation, the qualifier convener will compile the feedback and calculate the oral presentation grade as the average of the scores provided by EEB faculty in attendance. The qualifier convener will then share this average score and feedback with the student and chair of the review panel. This grade constitutes 30% of the total qualifier grade.

14. Immediately following the oral presentation (date will vary by student): The student meets with their review panel. The purpose of this meeting is for the panel to provide additional feedback to the student on the written draft (see #10 above) and the oral presentation.

15. May 13, 2016: Final review paper is due. The paper should be submitted to all members of the review panel and the qualifier convener. Within one week, the review panel will evaluate and critique the written qualifier document and provide written comments and a grade for the paper (70% of total grade). The panel will submit their grades to the qualifier convener, who will calculate the final grade as the average of the scores provided by each member of the panel. The convener will then calculate the total qualifier grade (30% based on the oral presentation, 70% on the written document) and circulate it to the student’s review panel. If the student does not obtain a passing grade (B or 3.0), the review panel will provide written comments to the convener that explain the changes that are 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. June 5, 2016: Revisions (if applicable) on the qualifier paper are due. If a revised paper is
required, the student must submit the revision to the qualifier convenor and the review panel, attaching the critiques that they received on their original submission along with point-by-point responses that explain 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 necessary, the review panel and the student may agree to modify the deadlines outlined in this document. Under these circumstances, the chair of the review panel should inform the qualifying exam convener at least a week before any deadline that is changed.

The qualifier convener in 2015-2016 is Dr. Ximena Bernal.