

## Field Behavioral Ecology UCLA Field Biology Quarter, Fall 2007

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Welcome to FBQ! This quarter we will be learning how to ask theoretically-driven questions in behavior and ecology by focusing on some of the many birds or mammals that live around the Mpala field station in Kenya.

Required equipment:

- Binoculars. There will be a few pairs of binoculars available for sign-out from the Life Sciences storeroom. Ideally, you should own your binoculars. A good pair of 7 x 35 or 8 x 40 binoculars can be purchased mail order from Astronomics ([www.astronomics.com](http://www.astronomics.com)) for ca. \$100.

- Laboratory notebook. All of your lab notes and field observations must be recorded at the time you collect them in a laboratory notebook. Data sheets (if any) should be fastened into your laboratory notebook when you collect data. Your laboratory notebook must be handed in with your final written report.

Expectations: This will be unlike any other class at UCLA you have ever taken: it will be an intense bout of learning and research. During the first phase of the course lectures will be between 9 AM-noon; labs start at 1 PM and continue to 5 PM (we may be creative on some days to ensure you've got time to complete the lab). Extra time can be used to work on projects and talk with the instructors. You will be expected to come to class prepared to discuss assigned readings, and to then apply some of what we discussed in the afternoon labs. *If you are unprepared, this will detract from your participation grade.*

Collaborative work: Unlike most other classes you will be expected to work in small teams. Science is not conducted in a vacuum and much work is conducted collaboratively. This will be an opportunity to learn to work collaboratively and, by doing so, hopefully learn more and produce a better final product. Collaborative work is symbiotic and synergistic, it does not mean that one person does all the work and others benefit from it (that's parasitism). Moreover, we hope to create an atmosphere where you all can share in each others successes and failures (yes, not all field experiments work the first time...) and help each other out all along. Doing science with your friends is fun!

Grading: The grade will be based on five components.

- 1) Attendance, participation, and effort—10%
- 2) Proposal—20%
- 3) Final written project—35%
- 4) Oral presentation—20%
- 5) Individual oral interview and the instructors' assessment of your contribution to the group project—15%

There will be no written tests. You will work together in teams of three on all formal assignments, except the individual oral examination. Each member of your group

will receive the same grade for your proposal, final written project, and oral presentation. You will be graded individually for your participation and on the final individual oral interview. Ultimately, it does not matter whether your project 'works' or not. It does matter that it is theoretically well conceived, and well executed. It matters *very much* that you worked hard.

Proposal: This is worth 20% of your final grade. Together, and with our help, you will come up with a theoretically-interesting question and write a proposal to conduct this work in Kenya. At the proposal stage you are expected to provide background information on the question (by citing relevant primary literature), clearly state your hypotheses, describe your methods (you may wish to describe several alternative methods to answer your question in case the primary method does not work), and suggest suitable species at Mpala on which this work could be conducted.

**This proposal is due on 9 October at 9 AM.** Late proposals will not be accepted. Before then you will need to specify exactly what equipment and supplies you will need to conduct your research. You will have feedback on the written proposal before we arrive in Kenya. We will purchase consumable supplies (e.g., bird seed) before going to Mpala.

We suggest that all group members brainstorm the proposal, find, read, and discuss relevant literature, and together outline the proposal. Then, each of you should focus on writing the first draft of one of the sections. Together, you should then edit the entire document and ensure it is complete and well presented. Proposals must be typed and should be 5-10 double-spaced pages. The citation 'style' should follow the guidelines from a current issue of the journal *Animal Behaviour*. Note: this is your chance to develop an excellent understanding of the literature and methodology you will be using. The better developed your proposal, the easier it will be for you to hit the ground running at Mpala and to write your final paper.

Field research: Upon arriving at Mpala, you will determine whether and if the species you proposed to work with are in fact possible to work with. If so, begin research; if not, we'll re-focus on other species to ask the salient questions. We will have no assessable presentations during this phase, but we will have informal meetings where each group shares findings and experiences with other groups. We strongly encourage you to keep up with data entry and management in the field. In some cases, it will be possible to analyze your data while at Mpala, however, please note that we will have limited access to electricity at the field station. The more 'up on your data' you are, the more time you have to think clearly about the results and place them into their proper context. Additionally, if you are analyzing data as you go along, you may be able to modify your research plans accordingly if one experiment does not work out.

The final paper: Research is not completed until it is published. The final paper (35% of your grade) is due on **Saturday, 17 November at noon** (you will lose 10% of your final paper grade for each day that the paper is not handed in). (Please note that Dan will be gone attending a meeting in Canada from late morning 16 November to the evening of 18 November). The paper should be written in a format suitable for publication in *Animal Behaviour* (the instructions for authors are available at:

[http://www.elsevier.com/wps/find/journaldescription.cws\\_home/622782/authorinstructions](http://www.elsevier.com/wps/find/journaldescription.cws_home/622782/authorinstructions)) and have the following sections: Abstract, Introduction, Materials and Methods, Results, Discussion, Acknowledgements, Literature Cited. Depending on

the details contained in your proposal, it may be possible to incorporate some, or all, of your proposal into your final paper. Once again, everyone should be involved in collecting and analyzing the data, discussing the results, and outlining the final paper. All of you are responsible for understanding all aspects of the project and being able to individually answer questions on any aspect of the project. It might work best if each of you is primarily responsible for one or two sections. However, be sure that the paper reads coherently. Spelling and presentation count. In the 'real' world, sloppy manuscripts may be sent back without review! The body of the paper will likely be 15-20 double-spaced pages long (plus references, figures, tables, etc.). In addition to the hardcopy, please submit a copy on diskette or CD. We will collate these and publish a final report.

The final presentation: The final oral presentation will share your findings with the rest of the class. It will be worth 20% of your grade and will occur on **Tuesday morning, the 20th of November**. There will be 3 parts, each of you will be responsible for presenting one part: 1) Introduction, Justification and Hypotheses to be tested, 2) Materials and Methods, 3) Results and Discussion. Each part should be 4-5 min long. The entire talk should be 15 min long and there will be 5 min for questions from the class. You may use PowerPoint or overheads to help present your talk. Be sure to load the PowerPoint version of your talk onto the presentation computer before class begins.

The individual oral interview: Each of you will be individually interviewed for 15 min to evaluate your mastery of all aspects of your group project. This is worth 15% of your grade. Oral interviews will be conducted the afternoon of **Tuesday, the 20th of November**.

We are here to help you get the most out of your research experience. You should feel free to ask us for help whenever you need it.

### Class Schedule

Class	AM-'lecture'	PM-'lab'
26 Sept.	<ul style="list-style-type: none"> <li>•Class and FBQ overview</li> <li>•Overview of possible research projects</li> </ul>	<ul style="list-style-type: none"> <li>•An introduction to field guides</li> <li>•Brainstorming research ideas and finding literature in the library</li> </ul>
28 Sept.	<ul style="list-style-type: none"> <li>•Observing and quantifying behavior</li> <li>•Field notes</li> </ul>	<ul style="list-style-type: none"> <li>•Using JWatcher to quantify behavior (Young Hall Computer Labs)</li> </ul>
2 October	<ul style="list-style-type: none"> <li>•Bird identification</li> <li>•Experimental methods to study antipredator behavior</li> </ul>	<ul style="list-style-type: none"> <li>•Bird identification</li> <li>•Using FID to quantify predation risk</li> </ul>
4 October	<ul style="list-style-type: none"> <li>•Experimental methods to study antipredator behavior</li> </ul>	<ul style="list-style-type: none"> <li>•Methods to study the perception of predation risk</li> </ul>
8 October	<ul style="list-style-type: none"> <li>•Avian communication and bioacoustics</li> <li>•<b>Need to specify what supplies and equipment are required for your research project</b></li> </ul>	<ul style="list-style-type: none"> <li>•Using Canary to study acoustic degradation</li> </ul>
9 October		<ul style="list-style-type: none"> <li>•<b>Proposals due at 9 AM</b></li> </ul>
10 October	<ul style="list-style-type: none"> <li>•Group Packing—all must bring packed bags to campus for inspection and communal gear issuing</li> </ul>	<ul style="list-style-type: none"> <li>•Fly to Nairobi via London</li> </ul>
12 October	<ul style="list-style-type: none"> <li>•Arrive in Nairobi</li> <li>•Drive to Mpala (about a 4-hour drive)</li> </ul>	
13 – 31 October	<ul style="list-style-type: none"> <li>•Field work at Mpala</li> </ul>	
1 Nov.	<ul style="list-style-type: none"> <li>•Drive Nairobi</li> </ul>	<ul style="list-style-type: none"> <li>•Fly to LA, via London</li> </ul>
2 Nov.	<ul style="list-style-type: none"> <li>•Arrive LAX</li> </ul>	
5 Nov.	<ul style="list-style-type: none"> <li>•9AM meeting in UCLA Classroom</li> </ul>	
5-17 Nov.	<ul style="list-style-type: none"> <li>•Analyze data, write up final report</li> </ul>	
17 Nov.	<ul style="list-style-type: none"> <li>•<b>Final reports due at noon</b></li> </ul>	
20 Nov.	<ul style="list-style-type: none"> <li>•<b>Oral presentations begin at 8:00 AM</b></li> </ul>	<ul style="list-style-type: none"> <li>•<b>15-minute oral evaluations begin at 1:00 PM</b></li> <li>•<b>6 PM: End of class party at casa Blumstein (in Westwood)</b></li> </ul>

## **List of supplies and equipment you will need to bring to Mpala**

We will be staying in a series of shared tents in a campsite. The tents are supposed to have mosquito nets. While simple, it's supposed to be a pretty nice field station. We will have a cook and will have to plan meals. There is no electricity at the campsite and thus no reliable refrigeration. Water is very scarce: wash water is river water and drinking water is rain-water. You will be expected to conserve water.

It will be Spring and the temperatures will be warming up while we are there. Plan for day temperatures between 60-80°F and night-time temperatures between 40-50°F. Dressing in layers is always a good idea. Equatorial sun is strong, intense, and dangerous. Don't plan to tan; bring sunblock and wear sun-blocking clothes. In addition to your personal equipment, you may be issued a container with communal equipment and/or you will be asked to pack communal equipment/supplies in your personal baggage, and/or carry sensitive equipment (computers/recorders) with you on the planes.

### **Personal equipment**

**NOTE:** We will examine your personal equipment before the trip to ensure you are not bringing too little or too much.

- 1 large back pack or duffle bag that holds all your personal equipment and hopefully has room for communal equipment.
- 1 smaller back pack suitable for use as a carry-on bag and for use to carry your supplies and equipment around in the field.
- Some sort of passport/money pouch/belt that can be worn under your clothes.
- 1 sleeping bag—mid-weight
- 1 towel
- 1 small pile or wool hat
- 1 thin pile or lightweight cotton glove liners: be sure that you can write with them on
- 1 thin polypro or long lycra tights
- 1 thin, long-sleeve polypro top (zip t-necks are great) OR a cotton turtleneck
- 1 mid-weight pile jacket or wool sweater or heavy-weight sweatshirt (avoid bringing both a cotton turtleneck and a cotton sweatshirt because cotton does not insulate well if wet)
- 1 rain jacket
- 1 sun hat
- 1 pair of sunglasses
- 1 back up pair of prescription glasses and/or contact lenses
- 1 sun shirt (a light colored, long sleeve, loose fitting, button shirt that you can wear over a t-shirt to keep the sun off your arms)
- 3 -4 shirts (t-shirts/button down shirts/polo shirts) suitable for traveling and/or field work
- 1 pair of 'field' shorts
- 1 pair of 'field' long pants (these should be sturdy and quiet: loud plastic running pants are not optimal)
- 1 pair of 'traveling' long pants or skirt (pants are probably better because they can be used as a back up set of field clothes)
- 4-5 pairs of socks (figure two for 'city use'/traveling, and three for field use)
- 5-6 pairs of underwear

- 1 pair of field shoes. These should be reasonably sturdy 'hiking' sneakers or boots.  
 They should be broken in before the trip. Leather is fine, but hotter and heavier.  
 Wear the heaviest pair of shoes while traveling to cut down on excess baggage.  
 1 pair tennis/running shoes

Toiletries: *keep them to a minimum*—soap, shampoo, tooth paste, tooth brush, deodorant, non-aerosol insect repellent, comb, brush, tampons, etc. Bring a sufficient supply of consumables to last the entire trip. Bring sunblock and lip balm with sunscreen in it. NOTE: Mpala has a laundry service and provides towels and linens. Also note that Nanyuki is reasonably close and is large enough to have a lot of supplies that might be needed.

Medicine: make sure any/all prescription drugs are in their original containers and have evidence of the prescription on them. Carry these with you in your carry-on luggage. Aspirin/ibuprofen are OK to bring along. Do not bring any opiates or synthetic opiates. Do not bring any illegal drugs or 'gear'.

If you are allergic to bee stings or other insect bites you must carry an epi-pen with you. You should put this in your checked luggage so that it is not confiscated by the airport security.

Optional:

- 1 pair of sandals (Texas/flip-flops/etc.)  
 1 very light weight pair of rain pants...if it rains while we're in the field, it may be too muddy to work while it is raining.  
 A few paper back books/magazines  
 Personal MP3 or CD player/CDs: remember, electricity is limited and re-charging things may be difficult.  
 Camera/video/film/batteries

**Field equipment**

- Small first aid kit and compass that will fit in your day pack  
 Ball point pens, mechanical pencils, field note books, small pocket knife  
 A few plastic (e.g., zip lock) bags to keep your field notes/equipment dry and dust-free.  
 Scientific papers that are relevant to your group project  
 Binoculars  
 Small, bright flashlight (e.g., mini-mag-light) OR a small headlamp (e.g., Petzel) with replacement batteries.  
 1 plastic, 1 liter water bottle  
 'field' watch: simple, yet something you're willing to get dirty. It needs to have report seconds.

A note on airport security. Airport security is tight these days and in Kenya, bags will be inspected both ways.

- Do not carry on any sharp items (such as knives), or any items that could be viewed as sharp (e.g., nail-clippers are being confiscated) with you on the plane.  
 Do not bring any flammable or explosive materials with you.

## **Understanding methods to quantify behavior**

Over the next 2 weeks, we are going to be reading primary literature, reviews, and chapters from books. And, you will be reading a considerable amount of primary literature in order to write your proposal. As you read this literature pay particular attention to the methods and analyses. Think critically about how the authors used their methods to answer their questions. Could any of these methods be useful to you?

Ask yourself the following questions about the Methods and Results.

Are the study species and location appropriate for the goals of the study? Is sufficient information provided on the study system for you to determine this?

Are the methods described clearly? What was actually done?

Do all of the methods seem appropriate?

Is this study purely experimental, purely observational, or somewhere in between?

Are the experiments (if any) well designed? Do they include all of the necessary controls?

Can you think of any potentially confounding factors that were not taken into consideration in the design of the study? Do uncontrolled variables make the results difficult to interpret?

Were appropriate precautions taken to avoid influencing the behavior of the animals observed?

What precautions were taken to avoid observer bias? Were observers aware of the treatment groups of the animals and the hypotheses being tested, or were observations done "blindly"?

Were the animals marked for individual recognition? If not, could this compromise the interpretation of the results?

Were precautions taken to minimize suffering of the animals? Do you think the methods were ethically justified?

Are the results presented clearly? Can you determine what was actually shown?

Is it clear what statistical tests were used for analyzing the data? Do you see any problems with the statistics used? Do you understand the statistics used?

What do the sample sizes actually refer to? Are the sampling units appropriate for the questions addressed?

Is there a discrepancy between how the results are described and what was actually shown?

Are the results complete or only a subset of what could have been examined with the data the authors collected? If the latter, does this concern you?

In the case of statistically nonsignificant results, do the sample sizes seem sufficient to justify the conclusions reached by the authors? Was there a discussion of power analysis or effect size?

Do the statistically significant results seem large enough in magnitude to be *biologically* significant?