

Lab reports: The format of the lab reports will be an abbreviated version of a standard research manuscript, and will concentrate on Introduction, Methods, Results, and Discussion sections. One purpose of the lab reports is to give you practice in scientific writing, so I expect clear, concise, and succinct reports. Reports will be graded on content and style. The lab reports should typically be no more than four pages (usually three), written in first person and active voice, and must be computer word-processed, double spaced, left justified, with margins of approximately 2.5 cm, in 10 or 12 point font (preferably Arial, Georgia, Helvetica, or Times), in plain and not boldface type. Double space but do not indent new paragraphs. If you have trouble filling three pages, you are not including enough pertinent information; if you have trouble paring your report down to four pages, you are not being concise. Lab reports that do not conform to format guidelines described above (and below) will be returned without review.

There are two main kinds of information that we will generate during our lab exercises. Some of the lab exercises will generate primarily qualitative descriptions of behavior patterns of one or more species, and others will generate quantitative data about specific aspects of the behavior of a particular species or a group of species. The nature of the lab report for these two kinds of labs is somewhat different, and my plan is for everyone to get some practice with both. Most labs will generate observations or data that can be used to write a lab report. After our lab exercise, I will collect data and prepare a common summary and analysis; in some cases you will participate in this part of the lab exercise. The labs that require lab reports will be announced after the field or lab exercise, because of the uncertain nature of the outcome of our data collection. Due dates for lab reports will be determined during our discussion of data analysis and interpretation; you will have at least one week to prepare your lab report. Be sure to record complete data in the field, as well as information about methods, natural history of our study organisms, and habitat characteristics, to be used in writing your lab reports.

The format of the lab report is similar to that of the individual research project manuscript:

Center the title at the top of the first page, followed two lines below by your name, the date, and your campus box number. Left-justify everything below your campus box number. As is described in the handout on the project manuscript, titles should be assertions that tell the reader something about the results ("Common Grackles forage in the shade") as opposed to descriptions which do not ("Foraging microhabitat preferences of Common Grackles").

Begin the text of your report with a brief **Introduction** of two or three short paragraphs. Do not begin a new page for the Introduction, and do not use a heading for the Introduction. Begin the Introduction two lines below your campus box number. In the first paragraph you should describe the theoretical background of the questions addressed or hypotheses tested, using what you have learned in the course (e.g. how do time, energy, and risk considerations apply to time/activity budgets? how does divergent evolution affect the behavior of phylogenetically closely related species? how does optimal foraging theory apply to foraging by central place foragers?). Use the Introduction to set up the major points you address in the Discussion. The Introduction should begin with general statements that are applicable to most animal species, but these should not be so vague as to be irrelevant. The Introduction should proceed to more specific statements that will make clear how the purpose of the investigation addresses the more general phenomena described in the Introduction. The Introduction should end with a clear, concise statement of the purpose or goal of the investigation, and if appropriate, a statement of the hypotheses we were testing. You may mention the study organisms when describing the purpose of the investigation.

The **Methods** section should begin by specifying the date, time, and locality of our field work; remember to use first person and active voice, and to be as concise as possible. Include a precise geographic location, making reference to permanent landmarks and political designations (e.g. city, county, state). Include specific information on what we did both in the field and lab. Include a brief but

complete description of the key characteristics of the habitat in which the work was done (e.g. topography, vegetation, substrate, important geographic features). Many of our observations will be conducted in terrestrial habitats; include features of the aquatic habitat when we observe animals in or near such habitats. We will discuss features of the habitat when we are in the field, which you should record along with your data on behavior. Include a succinct description of the natural history of the study organism (e.g. geographic range, seasonal movements, preferred habitat and microhabitat, body size, color and color patterns, pelage or plumage, sexual dimorphism, communication, social behavior, other aspects of behavior that were not part of our observations, etc.).

Next present the **Results** in text; state in words the important results of our investigation. Present the most important results of an investigation as bold and forceful statements that will catch the reader's attention. DO NOT begin a Results section with statements such as "The results are summarized in Table 1" – what do such statements tell your readers about your results? DO begin a results section with statements such as "Larger males mated significantly more frequently than smaller males," then support such statements with data (means, variances, sample sizes) and results of statistical tests (e.g. F_s or t values, P values). Statements of results should be made in past tense – this is because we observed things in the past, and we cannot necessarily predict that new results would be the same as our older ones.

Qualitative results should also be a series of concise text statements that are clear descriptions of postures, movements, locomotion, vocalizations, visual displays, or other communication behaviors, social interactions and their outcomes, or any other interesting behaviors that we observe. These descriptions should be in plain English with minimal jargon or BS. The series of statements should follow some logical progression (e.g. describe postures before movements which change the postures, describe movements used in displays before describing interactions in which the displays are used). If possible (or desirable) include sketches of body postures or that indicate movement patterns. I don't expect great art, because I can't produce that myself. Do the best you can.

Usually it is best to separate results into a series of paragraphs that address each aspect of our data set or observations. It may be desirable in some instances to present results under separate subheadings (e.g. "Postures and displays," "Body size and aggression," etc.). In some cases, the Results section will be the shortest part of the report. It may be possible to have a results section that is a single sentence, which includes all of the necessary information about our results. The length of the Results section is not a reflection of its importance, or the importance of how you present results.

The **Discussion** should begin with a brief summary of our findings, but should not repeat data or statistics. This summary should also include explanations for why our data exhibit particular patterns. The Discussion should next interpret our findings with a detailed exploration of a few major points that are raised by the data. Explain our results in light of knowledge about other species; use the comparative method. Do our results make sense from the perspective of the evolution of behavior? What is the influence of the "currency" of animal behavior on our results? How do considerations of costs and benefits influence our interpretation of our results? What aspects of the morphology, physiology, or biological rhythms of our study organism might have affected its behavior during our observations? What aspects of the abiotic, biotic, and social environments affected the expression and evolution of the behavior we observed? Try not to confuse several issues; address them separately, but draw connections if they exist. Don't try to explore every possible ramification of the data set; concentrate on the most important ones. Concentrate on your story and ruthlessly eliminate everything that is superfluous. Don't speculate too wildly, but if you think some important point is raised by the data, mention it.

The end of the Discussion should not include a description of drawbacks in our data collection protocol. Focus on general statements of biologically plausible interpretation of our findings, drawing together the main points of the paragraphs of the Discussion. Your statements should be explicit and specific, rather than vague and nebulous.