ARIZONA STATE UNIVERSITY

GENERAL STUDIES COURSE PROPOSAL COVER FORM

Course information:

*Copy and paste **current** course information from Class Search/Course Catalog.*

Academic Unit: **CLAS** Department: **School of Life Sciences**

Subject: **BIO** Number: **410** Title: Techniques in Conservation Biology and Ecology Units: 3

Is this a cross-listed course? No
If yes, please identify course(s)

Is this a shared course? No If so, list all academic units offering this course
Course description:

Requested designation: Literacy and Critical Inquiry–L

*Note- a **separate** proposal is required for each designation requested*

Eligibility:

Permanent numbered courses must have completed the university's review and approval process.
For the rules governing approval of omnibus courses, contact the General Studies Program Office at (480) 965–0739.

Area(s) proposed course will serve:

A single course may be proposed for more than one core or awareness area. A course may satisfy a core area requirement and more than one awareness area requirements concurrently, but may not satisfy requirements in two core areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirement and the major program of study.

Checklists for general studies designations:

Complete and attach the appropriate checklist

- Literacy and Critical Inquiry core courses (L)
- Mathematics core courses (MA)
- Computer/statistics/quantitative applications core courses (CS)
- Humanities, Fine Arts and Design core courses (HU)
- Social and Behavioral Sciences core courses (SB)
- Natural Sciences core courses (SQ/SG)
- Global Awareness courses (G)
- Historical Awareness courses (H)
- Cultural Diversity in the United States courses (C)

A complete proposal should include:

- ☐ Signed General Studies Program Course Proposal Cover Form
- ☒ Criteria Checklist for the area
- ☒ Course Syllabus
- ☒ Table of Contents from the textbook and list of required readings/books

Contact information:

Name: Juliet Stromberg and Miles Orchinik Phone: 480 965 0864

Mail code: 4501 E-mail: jstrom@asu.edu/m.orchinik@asu.edu

Department Chair/Director approval: *(Required)*

Chair/Director name (Typed): Date:

Chair/Director (Signature):

BIO 410 Techniques in Conservation Biology and Ecology

Lecture, field, and laboratory experience in techniques used in conservation biology and ecology. Course is modular, with each module instructed by a discipline-specific expert (e.g., plant ecologist, mammal conservationist, soil ecologist).

Allow multiple enrollments: No **Primary course component:** Lecture
Repeatable for credit: No **Grading method:** Student Option
Offered by: College of Liberal Arts and Sciences -- School of Life Sciences
Pre-requisites: ENG 101 (or 105 or 107); BIO 320; BIO 322 or BIO 323 with C or better

Arizona State University Criteria Checklist for

LITERACY AND CRITICAL INQUIRY - [L]

Rationale and Objectives

Literacy is here defined broadly as communicative competence in written and oral discourse. **Critical inquiry** involves the gathering, interpretation, and evaluation of evidence. Any field of university study may require unique critical skills which have little to do with language in the usual sense (words), but the analysis of spoken and written evidence pervades university study and everyday life. Thus, the General Studies requirements assume that all undergraduates should develop the ability to reason critically and communicate using the medium of language.

The requirement in Literacy and Critical Inquiry presumes, first, that training in literacy and critical inquiry must be sustained beyond traditional First Year English in order to create a habitual skill in every student; and, second, that the skills become more expert, as well as more secure, as the student learns challenging subject matter. Thus, the Literacy and Critical Inquiry requirement stipulates two courses beyond First Year English.

Most lower-level [L] courses are devoted primarily to the further development of critical skills in reading, writing, listening, speaking, or analysis of discourse. Upper-division [L] courses generally are courses in a particular discipline into which writing and critical thinking have been fully integrated as means of learning the content and, in most cases, demonstrating that it has been learned.

Students must complete six credit hours from courses designated as [L], at least three credit hours of which must be chosen from approved upper-division courses, preferably in their major. Students must have completed ENG 101, 107, or 105 to take an [L] course.

Notes:

1. ENG 101, 107 or ENG 105 must be prerequisites
2. Honors theses, XXX 493 meet [L] requirements
3. The list of criteria that must be satisfied for designation as a Literacy and Critical Inquiry [L] course is presented on the following page. This list will help you determine whether the current version of your course meets all of these requirements. If you decide to apply, please attach a current syllabus, or handouts, or other documentation that will provide sufficient information for the General Studies Council to make an informed decision regarding the status of your proposal.

Proposer: Please complete the following section and attach appropriate documentation.

ASU - [L] CRITERIA

TO QUALIFY FOR **[L]** DESIGNATION,THE COURSE DESIGN MUST PLACE A MAJOR EMPHASIS ON COMPLETING CRITICAL DISCOURSE--**AS EVIDENCED BY THE FOLLOWING CRITERIA:**

YES	NO		Identify Documentation Submitted
☒	☐	**CRITERION 1:** At least 50 percent of the grade in the course should depend upon writing, including prepared essays, speeches, or in-class essay examinations. *Group projects are acceptable only if each student gathers, interprets, and evaluates evidence, and prepares a summary report*	Course syllabus with yellow highlight and C-1 labelling

1. Please describe the assignments that are considered in the computation of course grades--and indicate the proportion of the final grade that is determined by each assignment.

2. **Also:**

Please **circle, underline, or otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies **this description** of the grading process--and label this information **"C-1".**

C-1

YES	NO		
☒	☐	**CRITERION 2:** The composition tasks involve the gathering, interpretation, and evaluation of evidence	Lab report format guidelines (with highlight and C-2 labelling), and two sample weekly written assignnments (with highlight and C-2 labelling)

1. Please describe the way(s) in which this criterion is addressed in the course design

2. **Also:**

Please **circle, underline,** or **otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies **this description** of the grading process--and label this information **"C-2".**

C-2

YES	NO		
☒	☐	**CRITERION 3:** The syllabus should include a minimum of two substantial writing or speaking tasks, other than or in addition to in-class essay exams	Independent research report guidelines (with highlight and C-3 labelling).

1. Please provide relatively detailed descriptions of two or more substantial writing or speaking tasks that are included in the course requirements

ASU - [L] CRITERIA

2. **Also:**

Please **circle, underline,** or **otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies **this description** of the grading process--and label this information **"C-3".**

C-3

ASU - [L] CRITERIA

YES	NO		Identify Documentation Submitted
☒	☐	**CRITERION 4:** These substantial writing or speaking assignments should be arranged so that the students will get timely feedback from the instructor on each assignment in time to help them do better on subsequent assignments. *Intervention at earlier stages in the writing process is especially welcomed*	Course syllabus-C4.

1. Please describe the sequence of course assignments--and the nature of the feedback the current (or most recent) course instructor provides to help students do better on subsequent assignments

2. **Also:**

Please **circle, underline,** or **otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies **this description** of the grading process--and label this information **"C-4".**

C-4

Course Prefix	Number	Title	Designation
BIO	410	Techniques in Conservation Biology and Ecology	L

Explain in detail which student activities correspond to the specific designation criteria. Please use the following organizer to explain how the criteria are being met.

Criteria (from checksheet)	How course meets spirit (contextualize specific examples in next column)	Please provide detailed evidence of how course meets criteria (i.e., where in syllabus)
Criterion1	92% of the course grade is based on writing assignments, including weekly writing assignments, three lab reports, and a written final exam. The weekly writing assignments include a mix of short answer questions and short essay responses	Yellow highlighted section of syllabus
Criterion 2	The three lab reports require the students to examine and analyze data and read relevant literature to address research questions. Many of the questions in the weekly assignments also call for students to form opinions and reach conclusions after reviewing information.	Documents titled Lab report fornat, Sample Assignment 1, and Sample Assignment 2
Criterion 3 Criterion 4	Criterion 3: Each of the three lab reports is a substantial writing requirement. Furthermore, for the final lab report, each student must deliver an accompanying oral presentation. Criterion 4: The first lab report is returned to the students two weeks prior to the due date of the second lab report. The lab report contains a high degree of written feedback. Students are encouraged to meet with the TA to go over the comments.	See document titled Independent Field Study Report Green highlighted section of syllabus

BIO 410 – TECHNIQUES IN CONSERVATION BIOLOGY AND ECOLOGY
Fall Semester, 2013
COURSE SYLLABUS

Instructor: Dr. Julie Stromberg; Office in LSE 717; jstrom@asu.edu; 480 965-0864; Office hours 3 pm to 5 pm Friday and by appointment (please use email to contact me)
Teaching Assistant: Lane Butler; Office in LSE 713; vallarta@asu.edu; Office hours 3 pm to 5 pm Thursday and by appointment (please use email)

Lecture: Friday 7:45-8:45am in LSA 175 unless otherwise indicated
Lab/Field: Friday 9:00am-2:45pm in LSA 175 unless otherwise indicated, + some weekends

Learning Objectives

- Become familiar with issues to consider when designing a research or monitoring plan
- Gain familiarity with techniques for field sampling a range of organisms, including plants, insects, birds, mammals, reptiles and amphibians
- Hone your ability to write clear and concise lab and research reports

Grading

Grading is based in a percentage of points earned, out of a possible 300 points. Points are allocated as follows:

11 written assignments, each worth 15 points (lowest score dropped) = 150 points;
3 written lab reports, each worth 25 points = 75 points
Class participation = 25 points
Final examination = 50 possible points. **C-1**

Grading Scale**: A:** ≥90%; **B**: 81-90%; **C**: 71-80%; **D:** 61-70%; **E:** ≤60%

If you have questions on any of your assignment grades, please contact the TA no more than 2 weeks after your assignment has been returned to you.

Textbook and Materials

Sutherland, W. J., editor. 2006. Ecological Census Techniques. Second Edition. Cambridge University Press.
"Pdf" files and links to web sites posted in the class Blackboard site

Attendance/Participation

Preparation for class means reading the assigned readings and reviewing all information required for that week. *Attendance* means attending the lectures and labs. *Participation* means asking questions and engaging in hands-on activities,

Excused absences will be granted in the following cases: 1) Illness or accident, accompanied by a doctor's note. 2) To accommodate religious observances/practices that are in accord with ACD 304–04, "Accommodation for Religious Practices"; 3) To avoid Conflicts with university sanctioned events/activities that are in accord with ACD 304–02, "Missed Classes Due to University-Sanctioned Activities". Please inform one of the course instructors in advance if you

are aware of a conflict. Important note: Please turn in lab reports even if you have an excused absence.

DATE	TOPIC	Location	Preparation	Assignments
August 23	The Scientific Method in Field Biology	7:45 AM in LSA 175	Text Chapters 1, 2, 12; Blackboard postings	Writing Assignment #1
August 30	Identification of Birds	7:00 AM at LSE stairway	Text Chapter 9; Blackboard postings	Writing Assignment #2
Sept. 8 (Sunday)	Bird Banding Techniques	6 am at Hassayampa River Preserve	Text Chapter 9, Blackboard postings	Writing Assignment #3
Sept. 13	Censusing of Birds	7 AM at Rio Salado	Text Chapter 9; Blackboard postings	Writing Assignment #4
Sept. 21 (Saturday)	Bat Mist Netting	TBA	Text Chapter 10; Blackboard postings	Writing Assignment #5
Sept. 28 (Saturday)	Spring Ecosystem Assessment	9 AM at Seven Springs	Text Chapter 11; Blackboard postings	Writing Assignment #6
Oct. 4	Field Experiment: Birds and People	9:00 AM at LSE stairway	Blackboard postings	Lab Report #1
Oct. 11	No Class, Fall Break			
Oct. 18	Stream Water Quality & Macroinvertebrates	9 AM at Indian Bend Wash	Text Chapters 5 and 11; Blackboard postings	Writing Assignment #7
Oct. 25 & 26 (Sat. & Sunday)	Small Mammal Trapping	4 PM Sat and 6:30 PM Sun at Granite Mountain	Text Chapter 10; Blackboard postings	Writing Assignment #8
Nov. 1	Limnology Techniques	9 AM at Tempe Town Lake	Text Chapter 11; Blackboard postings	Writing Assignment #9
Nov. 8	Plant Conservation at a Botanical Garden	8:30 AM at Desert Botanical Garden	Blackboard postings	Writing Assignment #10
Nov. 15	Vegetation Sampling	9 AM at South Mountain Park	Text chapter 4, Blackboard postings	Lab Report #2 C-4
Nov. 22	Behind the Scenes Conservation	9 AM at Phoenix Zoo	Blackboard postings	Writing Assignment #11
Dec. 6	Individual Presentations	9 am in LSA 275		Lab report #3 (due Dec. 13)

Field Trips

Much of this course will be conducted outside. For lab field trips, wear appropriate field gear (e.g. hats for sun protection, closed-toed shoes for foot protection). Bring sufficient water to drink. See these relevant ASU Risk Management Web Pages:

- Hanta virus: http://www.cdc.gov/ncidod/diseases/hanta/hps/
- Field trip guidelines: http://www.asu.edu/studentaffairs/risk/travel.htm

Transportation

The field sites for labs vary in their distance from campus. For the off-campus field trips, we are requesting that you car pool to the sites.

E-mail and Internet

You must have an active ASU e-mail account and access to the internet. All instructor correspondence will be sent to your ASU e-mail account. This course uses Blackboard for the posting of readings, assignments, hand-outs in support of lab, submission of assignments, and posting of grades.

Submitting Assignments

Submit assignments via Blackboard. Each assignment will have a designated place to submit the assignment (a dropbox). Submit your assignments as Word documents or pdf documents. Please don't type or paste your assignments directly into the dropbox.
Each **assignment i**s due by 11:59 PM Thursday evening the week following the activity.
Each **lab report** is due by 11:59 PM Thursday evening two weeks after the lab activity.

Missed Assignments

Unless an instructor is notified before an assignment is due and you are provided an opportunity to submit your assignment late, points will be taken off for assignments turned in late (5%/day).

Academic Integrity

Academic dishonesty will not be tolerated. There will be severe sanctions for plagiarizing and for any other form of dishonesty such as cheating on reports or exams. That said: we encourage you to work and study together. Please see http://provost.asu.edu/academicintegrity.

Responsible Behavior

Each student is expected to participate fully in all lab/field activities; irresponsible behavior or failure to participate will result in zero points being awarded for that week's activity. Should threatening or disruptive activities arise, actions will be taken consistent with the section of the *Student Services Manual*, SSM 104–02, "Handling Disruptive, Threatening, or Violent Individuals on Campus"

Subject to Change Notice

The information in this syllabus, other than grade and absence policies, is subject to change with reasonable advance notice. Please review the course Blackboard site regularly; any changes will be communicated during class and via the Blackboard announcement feature.

Week #5 Bat Mist Netting

Saturday September 21

Meet at 4:45 pm at Florence Junction (junction of Highway 60 & 79). Specifically, take Highway 60 east to Florence Junction then go north about ¼ mile, under the highway to the T-junction (see map below). Approximate UTMs are WGS84, 12S, 468678E, 3679966N. It is about 50 miles and 50 minutes from ASU to Florence Junction We will then hike about one mile to the site. We will take the nets down at 9 pm, and depart the site by about 9:30 pm.

Bring water and snacks, and warm clothes. We will be netting over a stock tank; if you want to help set up the net bring waders. We will have two pairs available.
Bring a headlamp if you have one; we will have extras available.

Activities: Bill Burger, a wildlife biologist with Arizona Game and Fish Department, will demonstrate bat mist netting techniques..

Learning objectives:

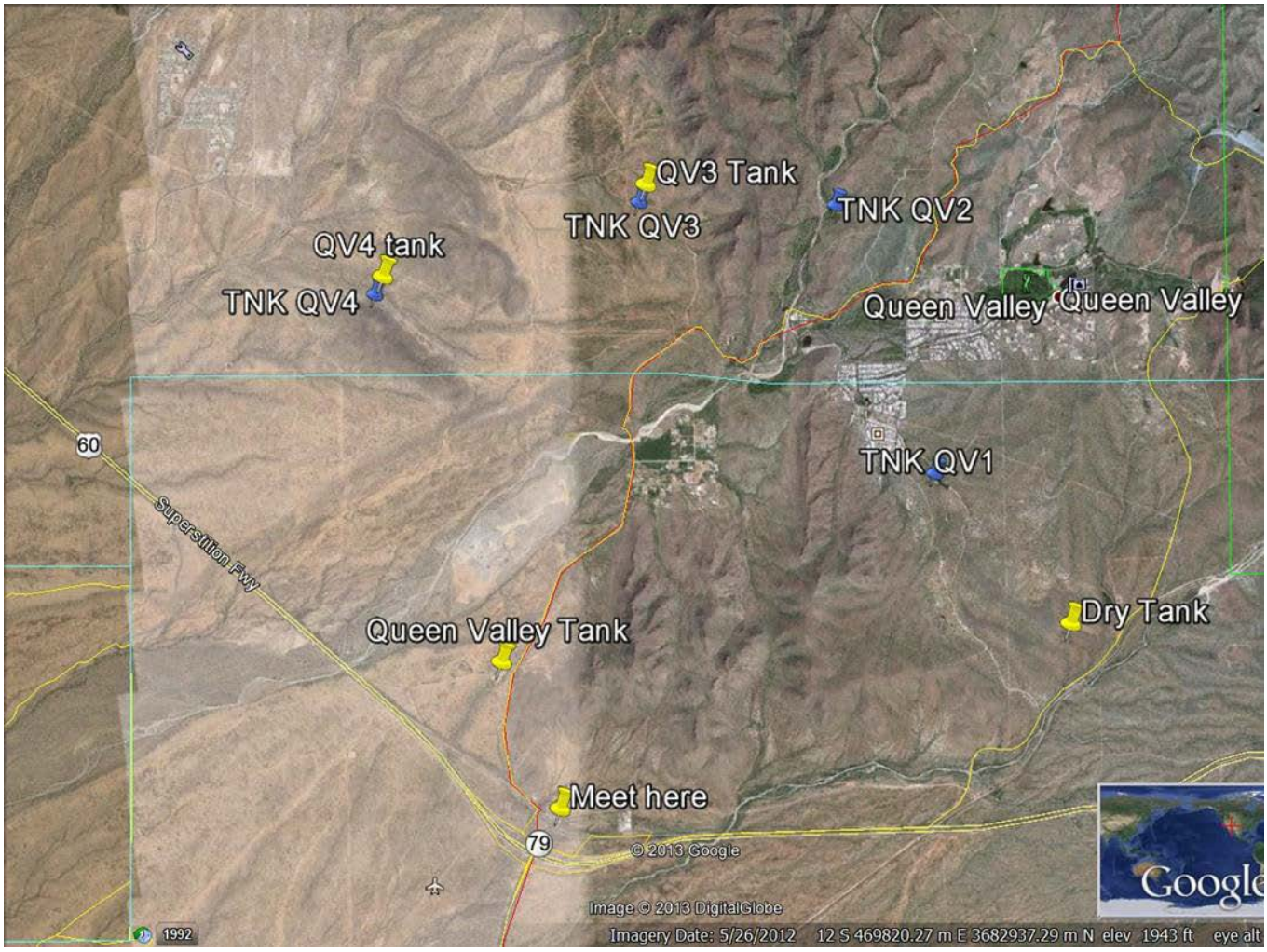
1. Learn the techniques that are used for capturing and identifying bats.
2. Become familiar with mist netting techniques.
3. Understand the basics about bats- their habitats, population trends.
4. Become aware of the various groups involved with bat conservation.

Readings:

1. http://www.azgfd.gov/w_c/bat_conservation.shtml
2. Rabe, MJ. 2005. Influence of water size and type on bat captures in the Lower Sonoran Desert. Western North American Naturalist 65:87-90.
3. O'Shea, TJ; Vaughan, TA. 1999. Population changes in bats from central Arizona: 1972 and 1997. Southwestern Naturalist 44:495-500.
4. Chapter 9 of textbook.

Assignment #5: Please answer the following questions, based on your experiences today, your readings, and any necessary independent research: C-2

1. (3 points). Have bat populations been declining or increasing in abundance in Arizona? What are the suspected causes of this change?
2. (5 points). In one or two well written paragraphs, explain how data from mist netting can be used to inform bat conservation. Provide specific examples from the assigned readings or other sources you wish to use.
3. (4 points) In one or two well written paragraphs, describe the techniques demonstrated in todays lab.
4. (2 points). Provide the common and scientific names of two bat species that were captured in the mist nests during the field trip.
5. (1 point) What is a main goal of the North American Bat Conservation Partnership?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Conservation at the Phoenix Zoo
November 22

Combined lecture and lab period: Meet at 9 am at entrance to Phoenix Zoo, in the middle of the entrance bridge. Expected return time is noon.

Readings: **http://phoenixzoo.org/conservation/**
http://phoenixzoo.org/conservation/local-conservation/

Activities, Lecture, and/or Demonstrations: Stuart Wells, Director of Conservation, will discuss endangered species conservation activities taking place at the Phoenix Zoo. Note-taking will be helpful. Please ask questions during the tour!

Learning objectives:

1. Understand the importance of zoological parks to animal conservation.
2. Understand the collaborations needed to successfully implement conservation initiatives.
3. Understand the techniques used in captive breeding programs, and the challenges of ex-situ conservation techniques

Assignment 11: Answer the following questions, based on your experiences today, your readings, and any necessary independent research: C-2 documentation

1. (5 points) Highlight one of the conservation initiatives of the Phoenix Zoo in 1-2 well-written paragraphs. In your answer provide the conservation objective, how this problem is being addressed, and the success of the initiative to date.

2. (5 points) In 1-2 well-written paragraphs discuss some of the challenges associated with captive breeding and release programs. Do you think these are an effective use of limited "conservation dollars"?

3. (5 points).
   3a. Define ex-situ conservation.
   3b.The Phoenix zoo has conservation programs on several local endangered animal species. Approximately what percent of these species depend on aquatic or wetland habitats?
   3c. Does the year in which the Gila topminnow was listed as an endangered species under the Endangered Species Act predate or postdate your own birth?
   3d. Of the 36 fish species that historically occurred in Arizona, how many are threatened, endangered, or extinct?
   3e. What organisms are common *vectors* for sylvatic plague?

Looking for volunteer opportunities? Please visit the zoo volunteer page.

FORMAT FOR LAB REPORT C-2

Title—The title should be a succinct sentence or a question (sometimes your research question will work well here).

Abstract—Write this LAST, after everything else is written, in order to concisely summarize your objectives, hypotheses, methods, results, and conclusions AFTER you've worked out what they are and have written them. This will be a short paragraph, not more than 300 words.

Introduction

- State the purpose of the study and enough background material to demonstrate the significance of the study.
- Write out your research question(s), and also write out your predictions for what you expect to find.
- Refer to two relevant published research articles from scholarly peer-reviewed science journals. What have other researchers learned regarding this topic? Why is your study needed?

Methods

- Summary of setting of study (date, location, season, etc.), equipment and materials used, experimental design and procedures used, and how you analyzed your data—for this lab, analysis does not need to be statistical.
- Provide enough information to allow other researchers to repeat your experiment

Results

- Tables, numbered consecutively—this means your table has a title (Table 1)
- Figures, numbered consecutively, separate from tables
- Make sure you adequately explain your results table and figure in the TEXT of your results section: Refer to the table and figure within a narrative, describing the trends. Walk your reader through your results.
- Because you're not conducting statistical analysis, you're not allowed to say "significant difference"

Discussion

- Interpret your results; compare your results to your hypotheses.
- Write about possible errors in the design and implementation of the study;
- Consider alternate explanations for your results, and any alternate hypotheses that these explanations might provoke.
- Compare your results to the work of the scientists whose papers you cited in your introduction.

Conclusion

- One-paragraph summary highlighting the main findings of your research—these are the main points you want the reader to understand.
- If you wish, conclude with management recommendations.

Literature Cited

- Every article cited in the body of the paper should appear here, in alphabetical order by the last name of the first author listed in each paper, and following this format for consistency:

Juenger, T and J Bergelson (1997) Pollen and resource limitation of compensation to herbivory in scarlet gilia, *Ipomopsis aggregata*. Ecology 78: 1684-1695.

Note about Citations—Citation of sources should take place within the body of the paper, right after the information cited from that source. In science, it is important to know WHO said it and WHEN it was said, so put the author and year in parentheses (Parrish 2004).

Independent Field Research Report

Assignment: During the semester you will carry out an independent research project, summarize the project in a written lab report, and present the study to the class.

Research question: Your research question is up to you – it can be on any topic that relates to the content of this class. By October 4, email your instructor your potential research question, methods, and study area, for approval. Some questions students have asked in the past are "How does time of day influence detection of urban birds?" and "Are bird abundance and diversity in urban areas influenced both by human food sources and by crowd density?".

While we are on our weekly field trips, be thinking about your final project. Observe your surroundings and ask questions. What is a question you would like to know the answer to? Try and design your research based on the opportunities that present themselves. You can focus on birds, plants, herpetofauna, or any other organisms you feel prepared to study, subject to instructor approval. Let your TA know of any equipment you need to borrow (e.g., meter tape, dbh tape, binoculars).

Field methods: You will be conducting a field study. Some potential locations to address your research questions are the ASU campus (including the Arboretum), the Phoenix Rio Salado riparian area, and South Mountain Park.

Partner with a fellow student to help you collect data, as it is a good idea to have a partner with you in the field. Plan on spending several hours collecting your data. Record your data on datasheets that you have prepared before your field excursion.

Remember to take pictures of your study area and research subjects while you are in the field, to include in your presentation.

Data summary: Once you have collected your field data, enter it into an Excel spreadsheet. Include one data table and one figure in your report. You can generate the figure using Excel. You are encouraged (but not required) to conduct statistical analysis, such as using a Student's t-test to compare two population means. Make sure you have adequate sample size to allow for the statistical analysis.

Written report: Follow the format detailed in the document "Format for Research Report" as posted on Blackboard. Your written report is due on December 13.

Presentation to class: In addition to submitting a written report, you will give a PowerPoint presentation to the class on December 6. Your presentation should have no more than 6 slides: (1) Title; (2) Research Question; (3) Study area (this can be a photo or a map); (4) Methods; (5) Results (table or figure here); (6) Conclusion. C-3 documentation

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