Bio 106, Spring 2020: Essay 1, Urban Evolution.

Essay due date: This essay is due at your Week #6 laboratory session. Prepare and submit a hard copy to your instructor, but before the time of your scheduled lab session, submit your essay file into the "SafeAssignment" folder designated for your lab section on Blackboard.

General introduction and background: There is an increasing emphasis on study of ecology and evolution in urban ecosystems. This is due to the increasing proportion of human population and land area devoted to cities, and likely to the ease of studying local populations. Recognizing evolutionary change first requires recognizing that a diversity of animals and plants are present. Evolutionary changes include genetic changes in behavior, form phenology (life cycle timing) or physiology in response to the urban environment. A difference in form or behavior may reflect genetic change, but it may also reflect flexible developmental responses to new environments (plasticity).

Your objective in developing this essay: Write a full two-page essay (three page maximum), not including bibliography, focusing on the question of how a single species has evolved in an urban ecosystem. I have uploaded a list of species that have been studied for evolutionary change in urban environments. Feel free to choose one from the list or choose another with confirmation from your instructor. Each species should be used no more than once within a lab section, so your instructor will distribute a signup sheet in week 2, or a signup on your blackboard section.

Developing your topic: The following is a guide of questions to answer, you won't be able to address all of them in this paper. Sometimes, traits already present in a taxon pre-adapt them to thrive in a novel setting. How is your species pre-adapted to living in cities? How long has your species been associated with cities? Is your species a commensal (sharing our bed and board) or simply adapting to the changes in landscape in cities? Evolution can happen surprisingly quickly. If the information is available, how recently did these changes take place? I want you to critically evaluate the evidence for evolutionary change (changes in genes). There are different ways of showing evolution, which we will go over in lecture, including common garden experiments, selection experiments, and documenting changes in gene sequences. How was evolution shown in your species? Many of these organisms will have their evolutionary changes described in both primary literature and secondary literature. Primary literature includes articles in edited journals, where the article has been "peer-reviewed." Google Scholar is a good place to start, but be careful because it picks up both peer-reviewed and non-peer reviewed literature. Web of Science (qc library\databases) is the search engine used by most organismal biologists to search the primary literature. One interesting question in any of these analyses is if there are differences between how the study was actually reported by the researchers vs how it was described in the secondary (newspapers, magazines, video clips) literature. Finally, think of a question you would like to see addressed experimentally in this species.

Developing the story for your essay: Look over the "rubric" that is posted to Blackboard and use it as a guide as to how the essay will be graded.

The essay is to be written in grammatically correct English, with complete sentences, proper punctuation and correct spelling. Be sure to use your word processor's spell and grammar checker. In the first paragraph, briefly introduce and describe the issue of primary concern, in this case, the potential climate effect. This should be followed by a brief description of your species; its biology and ecological role, perhaps its notoriety as a pest or beneficial organism.

Develop your thoughts logically and lead to a clear statement of your conclusions. The essay, being of limited length, should develop and tell a story while being concise. Have the article's authors presented

ideas or hypotheses relevant to the particular situation you are exploring? Are there conflicts of opinion expressed by different authors? Do not be repetitive! Remember to cite references within the text (See below). Be careful not to plagiarize (Follow the guidelines of the file "How to use outside literature" on Blackboard.

Technical details in preparing the essay: Write a *minimum of two full-pages (maximum of three pages)* excluding references.

- References are cited, using proper formatting, within the text as appropriate and that same reference must be fully cited on a separate page titled "References Cited." (See below).

- The essay is to be printed in 12 point Times or New Times Roman font, double-spaced, on standard 8.5" X 11" paper. Margins are to be 1" (top, bottom and sides).

- Place your name, the title (write only "Essay #1"), lab section code and due date on a single, uppermost line of the first page, then skip one line and begin your essay. Number your pages and place one staple in the upper left corner. Do not prepare a separate cover page or use a folder or plastic cover.

Citing references in the text and in the "References Cited" final page: Be consistent and use "The Chicago Manual of Style" format (Refer to one or more of the following for details)
http://library.williams.edu/citing/styles/chicago2.php
http://www.chicagomanualofstyle.org/tools_citationguide.html

In your text, any direct quotation or original/new concept taken from another's work must be set within quotation marks and the citation placed at the end of the sentence. But basically, **don't quote**. See the file "Using outside sources" for guidance on citing sources.

All electronic resources must be cited, giving the author, article title, web site address and date on which it was accessed. Simply citing a URL is not acceptable. Refer to the above links for instructions.

How to earn a failing grade for this assignment/and perhaps the entire course:

- Plagiarize: Be sure that you know the definition of plagiarism.
- Do not submit on time. You will lose one letter grade (10 points) per day of lateness.

How to get an A, or at least gain something from the assignment.

The challenge for this assignment is to read at least one primary literature paper critically. This means you can explain at least part of it in your own words (not quotes, not even a tight paraphrase, but clearly in your own words), understand the question, explain why it's important, and, do either or both of the following

i) Find weaknesses in the study, or the interpretation of the data
ii) Think of an interesting question, or follow-up study, based on the results of what you have read.

Good luck!

Biology 106: Rubric for essay evaluation

Student name _____ Section _____

	1	2	3	4	Score
Topic 15%	Not relevant to the assignment- 0 - 2%	Marginally relevant to the assigned topic - 3 - 5%	A response to the assigned topic - 6-11%	Inventive and a precise response to the topic assigned - 12-15%	Almost free pts!
Content – Describing species role in urban ecosystem 20 %	Frequent factual errors, misuse of terms -0 -10%	Some factual errors, repetitive information – 11-14%	Most of the information presented and correctly described 15-18%	Described ecology well, explained whether commensal or not. 19-20%	
Content – Described evolved trait 20 %	Didn't describe any trait that changed-0 -10%	Described the trait 11-14%	Described what the trait was and what changed 15-18%	Described how trait changed, the function/selective pressure and what changed in response 19-20%	
Content – Describing How trait was studied 15 %	No discussion of methods 0 -9%	Described the study but didn't really show understanding of methods 9-11%	Described methods pretty well 12-13%	Was able to clearly describe the experiment and how it shows evolution 15%	
Format/style 10%	Illegible or aimless; dull disorganized writing; too long or too short – 0%	Poor story development; lack of an integration of ideas and concepts; length questionable– 1-3 %	Good, length, organization, occasional difficulty distinguishing key facts from less significant information 4-7%	Easy and enjoyable to read, important information obvious; may include data, tables or figures; appropriate length 8-10%	
Topic sentences 10%	What's a topic sentence?	Occasionally topic sentence by chance 4-5%	Weak topic sentences just announce the topic 6-8%	Great topic sentences present the take home of the paragraph, like an abstract 9-10%	
Sources 10%	Evidence of plagiarism, lack of reference to sources – -50-0%	Minimal research, reliance on internet non-science sources 1-3%	Assorted sources, such as reference books and/or articles, textbook – 4-7%	Excellent sources, including at least one primary scientific literature – 8-10%	
Total					