**Research Paper (Life Tables Write-Up) Guidelines**

**Due: TBD by TA**

Assignments will need to be submitted to <http://www.turnitin.com> to check for plagiarism. If your paper is 30% similar to other papers, academic articles, websites, *etc*. you will receive **NO CREDIT** for this assignment. Remember that this research paper is **20% of your total grade**!

**Objective:**

This report will be formatted like a real scientific paper in writing style and content. That means all seven components of a scientific paper that we learned about in Week 1 (Title, Abstract, Introduction, Methods, Results, Discussion, References) will be present in this report. It also means that someone who has no idea what we did in lab that day should be able to read this report and understand it. We recommend you give this report to someone else (a parent, a friend not in Ecology lab) to make sure that you accomplished this objective.

In the report, you’ll be comparing the data that you collected in class to data from a previous semester. The data from a previous semester and the raw data that you collected this semester are in an Excel spreadsheet. This Excel spreadsheet will be sent to you by email after class.

**Requirements:**

* Cover page with **Title** of your research article, **your name**, & the **date**
* **Minimum 3 pages of** **text** (not including the literature cited, figures, or tables)
* Your paper must have the following sections in order: **Title, Abstract, Introduction, Methods, Results, Discussion,** and **Literature Cited**.
  + See specifics for some sections below.
* Times New Roman, 12 pt font
* Double-spaced
* 1-inch (2.54 cm) margins on all sides
* **In-text citations** required
* You must include at least 3 references (primary & secondary literature) in the Introduction & at least 3 references in the Discussion (**minimum 6 TOTAL references**)
* NO WEB PAGES!

**At *minimum*, your report must address the following:**

**Title**

**Abstract** (Include the major results for population structure, even if no difference is found!)

**Introduction**

* Importance of your project
* Background information on your knowledge gap/problem & question
* Background information on *Gambusia holbrooki* reproduction and population structure
* Knowledge gap/problem & question
* State your research objectives and biological hypotheses

**Methods**

* In **paragraph** form, describe your **field sampling** methods, including study area, study organisms, and all procedures
* Describe **all the equations used to calculate and build your life history tables** (including how you calculated the **age of the fish**). These calculations are considered “Data Analysis.” You do not have to perform statistical analysis for this write-up.
* Make sure to tell your reader **what kind of life table** you constructed **and why**
* Act as if our class is a research team. Do not refer to “different groups” or “the TA”.

**Results**

* Provide a **table summarizing the length data by age class** for *Gambusia holbrooki* collected at Hennington Pond (only for the raw data that you collected, i.e., this semester only). Use the age classes from Example 2 of the Life Table reading. **Do not show raw data** – **summary tables only!**
* Provide the **life table from the previous semester** (it’s OK to re-create this table)as a reference for your reader.
* Generate a **life table** for the population of *Gambusia holbrooki* that we sampled in **this semester**. Use the **fecundity estimates shown in Example 2** of the Life Tables class information handout. Be sure to calculate the **net reproductive rate (R0), the mean generation time (G), the intrinsic population growth rate (r),** and **the optimal age for sexual maturity**.
* Include **at least one paragraph** of text highlighting **key points of comparison between the life tables**. Include the major results for population structure, even if no difference is found! Do these populations differ with respect to optimal age of sexual maturity, R0, G, and r?

**Discussion**

* You should interpret what the **net reproductive rate (R0), the mean generation time (G), the intrinsic population growth rate (r),** and **the optimal age for sexual maturity** tells us about mosquitofish populations. (*Hint:**This part is a good place for references!)*
* Discuss the **similarities and/or differences** between the *Gambusia* population that you sampled and the other two populations. What might cause these similarities and differences? Discuss and provide **biological explanations (interpretations).**
* Provide **future directions** *based on YOUR results from THIS experiment*.
* Discuss the **importance of your results**. (*Hint:**This part is a good place for references!)*

**Literature Cited/References:**

You will have to cite **at least 6 total references** from scientific journals (peer-reviewed primary and secondary literature) or college level textbooks.  You must include **at least 3 references in the “Introduction” and at least 3 references in the “Discussion”**. Additionally, while you may use Internet search engines to locate and download research articles, you may **NOT** cite Internet websites (including Wikipedia) and encyclopedias.

**Where to find references:**

*Google Scholar* <http://www.scholar.google.com/>

*Web of Science* (FIU Library) <http://medlib.fiu.edu/research-and-resources/databases/index.html>

**How to Format Your Citations**

Always put your Literature Cited list in **alphabetic order**.

Use a **hanging indent** (i.e., all lines after the first line in a reference should be indented.)

**I. Article with 1 author:**

**In-text:** (Last name, year)

**Literature Cited:** Last name Initials. Year of publication. Title of paper. Name of journal volume number: pp-pp

**Example**

(Alves-Gomes, 2001)

Alves-Gomes JA. 2001. The evolution of electroreception and bioelectrogenesis in teleost fish: a phylogenetic perspective. Journal of Fish Biology 58:1489-1511.

**II. Article with many (2 or more) authors:**

**In-text**

**2 authors:** (Author 1 last name 1 & author 2 last name, year)

**3 authors:** (Author 1 last name *et al.*, year)

**Literature Cited:** Author 1 last name Author 1 initials, author 2 initials author 2 last name, …,final author initials final author last name. Year. Paper Title. Journal Name. Volume: start page-last page.

**Example - two authors:**

(Rypel & Layman, 2008)

Rypel AL and CA Layman. 2008. Degree of aquatic ecosystem fragmentation predicts population characteristics of gray snapper (Lutjanus griseus) in Caribbean tidal creeks. Canadian Journal of Fisheries and Aquatic Sciences 65:335-339.

**Example - three or more authors:**

(Archer *et al.*, 2012)

Archer SK, SA Heppell, BX Semmens, CV Pattengill-Semmens, PG Bush, CM McCoy, BC Johnson. 2012. Patterns of color phase indicate spawn timing at a Nassau grouper (*Epinephelus striatus*) spawning aggregation. Current Zoology 58:70-80.

**III. Book**

**In-text:** (Last name, year)

**Literature Cited:** Last name Initials. Year of publication. Title of book. City of publication: Name of press.

**Example**

(Maynard-Smith & Harper, 2003)

Maynard-Smith J and D Harper. 2003. Animal Signals. Oxford: University Press.

**IV. Chapter/Section in a book**

Last name Initials. Year of publication. Title of chapter. In: Title of Book (Last name of editors, Initials, eds), pp-pp of chapter. City of publication: Name of Press.

**Example**

(McGregor & Dabelsteen, 1996)

McGregor PK and T Dabelsteen. 1996. Communication Networks. In: Ecology and evolution of acoustic communication in birds (Kroodsma DE, Miller EH, eds), pp 401-425. Ithaca: Cornell University Press.

**Rules for In-Text Citations**

While citing references in the text, **do not use footnotes**. Refer to articles by the author’s last name and year of publication. Follow the examples above for specific instructions.

**General format**:

Once you explained an idea, finish your sentence with an in-text citation.

Example: Seagrasses have been found growing at depths up to 90 meters (Duarte, 1990).

**Multiple sources**

If you are **citing more than one reference**, then include each reference in the same citation, but **separate them with a semicolon** (Last name, Year; Last name *et al*., Year; Last name and Last name, Year). So, if I was talking about electric fish and wanted to cite the sources from examples below my in-text citation would look like this (Alves-Gomez, 2001; Bernal *et al*., 2007; Maynard-Smith and Harper, 2003).