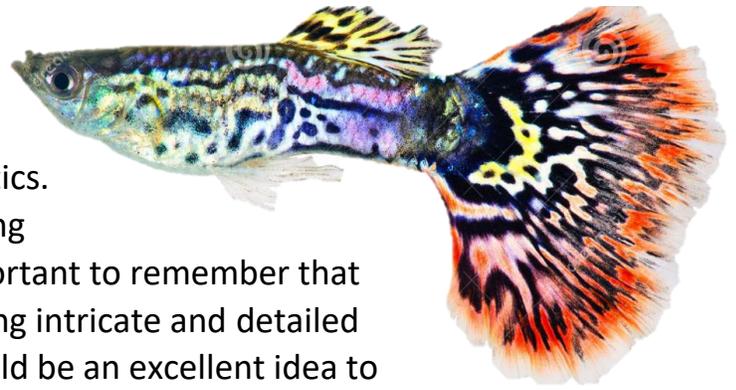


Aquaculture Habitat

<https://thumbs.dreamstime.com/z/guppy-fish-poecilia-reticulata-isolated-white-background->

For one of the laboratory grades in BI 131 (Biology of Ordinary Things) you will be using a homemade aquaculture system. The most important piece of the adventure will be to record daily requirements, changes, and statistics.



You will be creating, investigating, and recording important pieces of information. It is very important to remember that good scientists are extremely focused on making intricate and detailed reports about what they are witnessing. It would be an excellent idea to record your fish by drawing them, coloring them, and stating their gender so you can differentiate them throughout the term (you can definitely name them also). You will also be changing the habitat through several means (i.e, adding plants, moving the aquarium, adding materials, etc.). Your daily journal will start on _____.



http://i.walmartimages.com/i/6/00/04/01/46/00/0004014600015_500v

An example of what may be in a daily journal may include several things. Examples are water temperature, movement of the fish, interactions of the fish with the plants, growth of the plants (both roots and stems/leaves), offspring present, water added (exact amounts, dates, and times), modifications made, placement of the aquarium, and any other variables you might like to report on. You are actually carrying out the exact duties, and responsibilities of a zoo caretaker. Obviously, this assignment is on the lower fiscal scale of a DIY (Do it Yourself) fish owner. Remember, as with

any ethical scientist it is very important to worry about the health of the living organisms (specifically the fish) in your aquaculture habitat. If you have any concerns, please contact me ASAP via text at 319.883.6741 or email. You should not need fish food if your plants are doing well and everything looks good, but you are welcome to supplement flakes if you so choose (simply record in your journal so all data is present).

To begin, you will be responsible for any transportation/ movement of your system ... which includes the initial conveyance from the science classroom to where you will be setting up the enclosure (i.e., dorm room). My expectation is that you take extreme caution during transport, and placement, as you are dealing with living organisms. For example, a few minutes of exposure to extreme temperatures (below 32° C or above 90° C) can mean unacceptable instantaneous death. The fish MUST be transported “under coat” and insulated from variable outdoor temperatures. All organisms MUST be acclimated before introduction to their new environments (i.e., do NOT dump fish directly into the new water). Any loss needs to be recorded in your journal and directly reported to me within 24 hours.

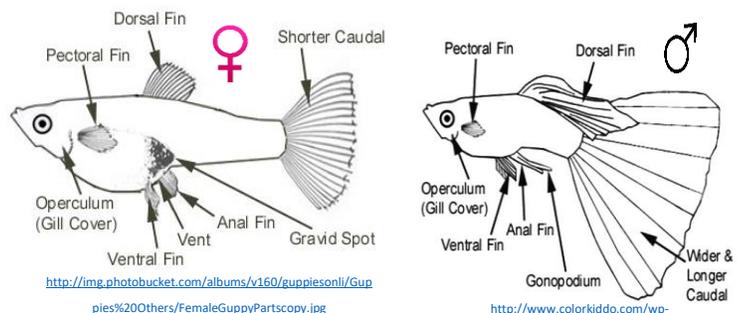
Aquaculture Habitat

You will be expected to make three modifications throughout the class. These modifications are to BETTER the system. Introduction of toxins or extreme environments will be grounds for course failure. Again, you are hold the responsibility for living organisms and my expectation is that everything will survive and flourish under your care. This expectation is not “out of line” with proper animal and plant husbandry/ maintenance. The best way to break the project into parts is to split the entire semester into four parts. Begin by keeping accurate records for the first quarter of the course. At a quarter of the way through the semester, make a change (do not forget to record in your journal). Continue with your aquarium until half way through the semester and make a second change. Again, record in your journal and continue. At three-quarters of the semester, make the last modification and continue to journal until the end of the semester.

In order to make this easier, the first day of the semester is on _____ and the last day is on _____. Find the total number of days, and divide by four. The “quarter of course” day number is _____ days. Add this number to the first day and this will be when the first modification should be made. The first modification day will be _____. Add the number again and to find the date that the second modification happens. The second modification day will be _____. Add the number again and this will be the time of the third modification. The third modification day will be _____. *To check your calculations, add the number one more time and you should get (very close to) the last day of class.*

Upon conclusion of the course, you will be asked to: turn in a copy of your daily journal and write a summary of what you learned. The summation will contain three paragraphs and three photos. The **first** paragraph will answer what you learned about ecosystems. The **second** paragraph will discuss what the modifications did to your personal aquarium. The third paragraph will contain three statements that you **can support with data**. The **last** paragraph is the most important because I will be looking for use of the scientific methods, data backed decisions, and higher-order thinking skills. The photos can be taken at any time throughout the process, but obviously, it would be pertinent to use excellent images to describe what you will be presenting in your final summation.

At the end of the experiment, the aquariums are to be returned (**cleaned**) to the classroom. Once you sign the adoption slip, you may keep the components (pot the plants, keep the rocks, add the fish to an existing aquarium, etc.), but I need the aquarium for future classes. Anything that you do not want can be returned but again you need to sign the return slip. I wish you happy guppy raising, and, hopefully, fry rearing.



Aquaculture Habitat

I have read the IACUC (Institutional Animal Care and Use Committee) statement and will be treating the organisms under my care/responsibility ethically and humanely, as explained.

Printed Student Name (legible)

Student Signature

Date

Institutional Animal Care and Use Committee (IACUC)

Wartburg College promotes and actively supports the ethical treatment of animals. As such, all learning activities associated with Wartburg College that involve the use of non-human vertebrate animals must first be submitted to the Institutional Animal Care and Use Committee (IACUC) for their review and approval. The IACUC has no official oversight role for activities that involve invertebrate animals. However, members of the Wartburg community who are planning on using invertebrates are welcome to use the committee as a sounding board to help discuss ethical considerations. (Note: The activities over which the IACUC has purview have increased compared to HARRC. Please use these new guidelines when deciding whether or not your activity requires approval by the IACUC.)

Examples of activities that would require IACUC approval:

- Vertebrate housing in the animal facility, classrooms, or public spaces
- Lab or field research involving physical interaction with vertebrates
- Course activities involving interaction with vertebrates
- Exhibiting of vertebrates off-campus while representing the college

Examples of situations that are exempt from IACUC oversight:

- Any of the above that would involve only invertebrates
- Personal pets or service animals
- Purely observational experiments of wild animals

Submission of an Animal Protocol

Regulations Protecting Vertebrate Animal Use at Wartburg

Wartburg's campus is listed with the Iowa Department of Agriculture and Land Stewardship as a licensed animal welfare facility. We are also registered with the United States Department of Agriculture's (USDA) Animal and Plant Health Inspection Services (APHIS) for all warm-blooded animals other than birds, lab mice, and lab rats. APHIS registration involves submission of annual reports and annual inspections.

In keeping with APHIS requirements, the documents that guide the committee's animal welfare decisions include:

- [Title 9, Chapter 1, Subchapter A of the Code of Federal Regulations, 2009](#)
- [The Guide for the Care and Use of Laboratory Animals, 2011](#)

The primary objectives of these documents are to ensure:

- 1) appropriate housing for animal subjects.
- 2) that researchers have carefully considered the applicability of their animal model.
- 3) that appropriate numbers of animals are used.
- 4) that animals are euthanized in an ethical manner.
- 5) that pain and distress to animal subjects is minimized.
- 6) that all research using vertebrate animals is overseen by the Institutional Animal Care and Use Committee of the researcher's institution.

Resources

In addition to the two above documents of official rules and regulations, you may find the following links useful in determining ethical logistics of your experiment.

- [Lab Mammal guidelines](#)
- [Wild mammal guidelines](#)
- [Fish guidelines \(lab and wild\)](#)
- [Reptiles and amphibian guidelines \(lab and wild\)](#)
- [Wild bird guidelines](#)
- [AVMA guidelines of euthanasia \(2013\)](#)
- Herptile husbandry resources
 - <http://www.illreptile.com/>
 - <http://www.kingsnake.com/>
 - <http://www.faunaclassifieds.com/>
 - <http://www.reptilesmagazine.com/>
 - <http://www.peteducation.com/>
 - <http://www.aszk.org.au/husbandry.reptile.ews>
 - <http://www.caudata.org/>

If you plan on working with rodents, you should also contact the animal facility manager for the standard operating procedures for rodent care that have already been approved by the committee.

Individuals with concerns about vertebrate research on campus are welcome to contact the animal facility manager (Dr. Samantha Larimer Bousquet: Samantha.Larimer@wartburg.edu), or the current chair of the IACUC (available at IACUC@wartburg.edu).

I am (returning, adopting) **CIRCLE ONE** the organisms previously under my care/responsibility. If adopted, they are no longer under the guidance of Wartburg College or IACUC.

Printed Student Name (legible)

Student Signature

Date