



DETAILS OF SUMMER RESEARCH AND EDUCATION INTERNSHIPS FOR UNDERGRADUATE AND GRADUATE STUDENTS

RESEARCH INTERNSHIPS

Application Deadline

Applications must be received by March 15th, 2019.

Term of Internship

The internship runs for approximately 12 weeks during the summer time: June – August, 2019. Exact start and end time of internship will vary depending on research project and intern's availability.

Background

Jug Bay Wetlands Sanctuary (<http://www.jugbay.org>) is one of ten parks operated by the Anne Arundel County Department of Recreation and Parks. It is also one of three sites that comprise the Maryland Chesapeake Bay National Estuarine Research Reserve (<http://www.dnr.state.md.us/waters/CBNERR/index.asp>). It contains 1,700 acres of open water, tidal freshwater marshes, forested wetlands, upland and riparian forest, creeks, meadows, pine and sand barrens, and fields. Jug Bay is located in the tidal reaches of the Patuxent River (about 45 miles from the river's mouth at Solomons Island). *The*

Sanctuary's mission is to increase awareness, understanding, and appreciation of estuarine ecosystems through outdoor education, research, stewardship, and volunteerism.

The Friends of Jug Bay (FOJB) is a non-profit organization that supports education, stewardship, and research programs at the Sanctuary. FOJB annually funds two research and one education/outreach undergraduate/graduate summer research internships to advance the Sanctuary's knowledge on topics of interest regarding its natural resources and social history.

Internships are open to qualified undergraduate and graduate students who will conduct a summer research project within Sanctuary grounds under the mentorship of a staff member or an associated researcher. Students are encouraged to work with staff to coordinate the use of office and laboratory space, field equipment, and other amenities (canoes, boats, storage space, etc.) to support their research project.

Topics for Research Internships

Students applying for the 2019 research internships will submit a short proposal (five pages or less) on **one** of the topics/questions listed below, which were selected from a list of projects of interest to the Sanctuary:

1. Archaeological Resource Management Plan for Jug Bay Wetland Sanctuary: The intern will create a management plan for the preservation of cultural resources in the Jug Bay Wetland Sanctuary. The creation of the management plan will require the intern to investigate archaeological sites through studying archaeology site files and reassessing the condition of the sites through field surveys and reanalysis of archaeological collections.
Mentor: Dr. Zachary Singer, Archaeological Research (Anne Arundel County).
2. Developing a Bathymetry Map and Coastline Change Analysis of a Section of the Patuxent River: The intern will develop the methodology to survey and create a bathymetry map for a section of the Patuxent River (and associated channels) around the Jug Bay area. In addition, the intern will conduct a coastline change analysis using imagery from two different time periods to determine any major changes as result of erosion, sediment deposition or other mechanisms. This study will help to better characterize the depth and dynamic nature of the Patuxent River around the Jug Bay area.
Mentor: Dr. Patricia Delgado, Wetland Ecologist (JBWS).
3. Is Marsh Migration at Jug Bay an Option? The intern will develop the sampling protocol to determine the possibility Jug Bay marshes have for upland migration under current conditions of increased flooding due to sea level rise. A characterization of slopes along the marsh and upland transition zone (ecotone) and the development of a map identifying potential areas for marsh migration are expected results of this research project. Information about the potential for

marsh migration is of great importance as we try to better understand the resiliency of Jug Bay marshes to sea level rise.

Mentor: Dr. Patricia Delgado, Wetland Ecologist (JBWS).

4. The Value of Pollinators to a fresh Tidal Estuary? The intern will propose a study to 1) characterize the potential value of bee pollinators to a tidal fresh estuary and 2) compare bee species presence and abundance among existing foraging space in high marsh, low marsh, transitional marsh-upland, and upland sampling transects. This proposal should anticipate using the 2018/2019 Jug Bay tidal fresh estuary pollinator inventory data to compare bee species occurrence against plant species presence along the inventory transects, plant bloom times, and means of pollination.

Mentor: M.S. Melinda Fegler (JBWS).

5. Choose Your Own Research Topic: The intern is encouraged to visit Jug Bay Wetlands Sanctuary before developing the proposal so they can learn about what we do and our research needs. With this information on hand, the intern will develop her/his own research project based on personal interest, experience, and Sanctuary needs. The proposed research question would have to be approved by Dr. Patricia Delgado before moving forward with writing the proposal. This is an open opportunity to develop your own research question!

Mentor: Dr. Patricia Delgado, Wetland Ecologist (JBWS).

For more information regarding project topics/questions, please contact Patricia Delgado at 410.741.9330 or via email at rpdelg88@aacounty.org

Qualifications

Internships are open to all qualified undergraduate and graduate students who are capable of working independently with limited mentor guidance. Students should be self-motivated, have good communication and writing skills, and be comfortable working in physically challenging environments.

Application Requirements

Qualified applicants should submit the following:

1. A short proposal (five single spaced pages or less that include a title, introduction, literature review, methodology, and cited literature). **See proposal template at the end of this document.**
2. One-page resume.
3. Copies of unofficial transcripts.
4. Two letters of recommendation; which can be sent directly by the student or the person writing the letter to Patricia Delgado at rpdelg88@aacounty.org
5. **Applications must be received by midnight of March 15th, 2019. Qualified applicants will be contacted for an interview by March 22nd, 2019.**

Internship Requirements

The successful applicant is expected to fulfill the following requirements during the time of the internship:

1. Develop an expanded, detailed research project.
2. Conduct independent research with support from the project mentor.
3. Develop a final report.
4. Give a presentation at the Jug Bay's Annual Volunteer Picnic at the end of August, 2019.
5. Write an article for Jug Bay's newsletter, "Marsh Notes," or our website summarizing research findings.

Financial Support

The Friends of Jug Bay will provide a stipend totaling \$4,000; two equal installments of \$1,500 will be given during the first two months of the internship. A final payment of \$1,000 is made upon the receipt of the final report. Interns should expect to work approximately 12 weeks during the summer (June through August).

Housing: If needed, housing at the residence of a FOJB member and volunteer will be available at no cost for **one** of the interns.

Transportation: Applicant must provide his/her own transportation.

Send complete applications to:

Dr. Patricia Delgado
Jug Bay Wetlands Sanctuary
rpdelg88@aacounty.org

For more information contact:

Patricia Delgado at 410.741.9330 or rpdelg88@aacounty.org

EDUCATION INTERNSHIP

This 12-week, 32 hour/week internship will focus on promoting Jug Bay's education goals through the development of new nature engagement curriculum primarily for school holidays and summer youth camps. Specifically, we are seeking candidates who will dedicate their time and talents towards building immersive and innovative outdoor activities that support personal growth, self-confidence, and that foster a strong connection between humans and nature. The successful applicant will have a demonstrated interest and passion in environmental education and the natural world.

Outcomes

- Conduct a needs assessment targeting existing Jug Bay user groups along with target groups to identify school year and summer youth program themes and appropriate costs;
- Create four (4) substantive and robust day-long school year programs and week-long summer youth program curriculums for Pre-K through 12th grade including participant development outcomes, schedule of activities, materials list, etc.;
- When possible, field-test conceptual activities during existing 2019 summer camp itineraries;
- Join the summer camp director in leading existing summer programs and camps;
- Write a summary report with recommendations for future school year and summer youth camp programs;
- Other projects may be developed based on intern's interests and Sanctuary needs.

Candidates Should Have

- Exceptional writing, editing and communication skills;
- Be very comfortable sending emails and making phone calls to potential Jug Bay partners;
- An educational background in environmental education, marketing, or communications is a plus;
- High proficiency in the Microsoft Office Suite and photo/video editing softwares;

- Outstanding attention to detail and ability to manage time effectively;
- A love for the natural world is a must!

Application Instructions

Qualified applicants should submit the following in their application package:

- A one page statement of interest demonstrating the applicant's qualifications for the position;
- A one-page resume;
- Copies of transcripts (unofficial copies are acceptable);
- Two letters of recommendation.

Applications must be received by midnight of March 15th, 2019. Qualified applicants will be contacted for an interview by March 22nd, 2019.

Financial Support

The Friends of Jug Bay will provide an internship stipend totaling \$4,000; one installment of \$1,500 will be given during each of the first two months of the internship. A final payment of \$1000 will be made upon the receipt of internship deliverables. Interns must provide their own transportation.

Email completed applications to:

Liana Vitali

Jug Bay Wetlands Sanctuary

rpvita23@aacounty.org

For more information contact:

Liana Vitali at 410.741.9330 or rpvita23@aacounty.org

We look forward to hearing from you!

RESEARCH PROPOSAL TEMPLATE

Summer Undergraduate / Graduate Research Internship

Jug Bay Wetlands Sanctuary

Name:
Address:
Phone:
Email:

TITLE

A good title will clue the reader into the topic.

INTRODUCTION

Topic Area: Follow the title with a strong introduction. The introduction provides a brief overview telling a fairly well informed, but non-specialist reader what the proposal is about. It might be short, but it should be very clearly written.

Question(s)/Hypothesis(es): Once the topic is established, come right to the point. What are you doing? What specific issue/question/hypothesis will your work address? Very briefly (remember, this is still the introduction), say how you will approach the work and what we will learn from your work.

Significance: Why is this work important? Show why it is important to answer this particular question. What are the implications of researching this topic? How does it link to other knowledge? How will it inform other research and management in this field? Why is it important to our understanding of the system being studied? It should also state why is it important to support or fund the project.

LITERATURE REVIEW

State of our knowledge: The purpose of the literature review is to situate your research in the context of what is already known about the topic. It need not be exhaustive, but it needs to show how your work will benefit the whole. It should provide the theoretical basis for your work, show what others have already done in this area, and set the stage for your work.

In a literature review, you should give the reader enough ties to the literature so that they feel confident that you have found, read, and assimilated the literature in the field. The flow should move from general to more focused studies, or perhaps use historical progression to develop the story. It need not be exhaustive; relevance is 'key'.

Outstanding questions: This is where you present the deficiencies in the knowledge already known in that area, and by doing so situate your work within that topic. It is the place where you establish that your work will fit in and be significant to the discipline.

METHODOLOGY

Overview of approach: This section should make clear to the reader the way you intend to approach the research question, and the techniques and logic you will use to address it.

Data Collection: This might include the field site description, a description of the instruments you will use, and particularly the data that you anticipate collecting. But, the emphasis in this section should be to specifically describe the parameters and type of data that you will be sampling/collecting in your study. The purpose of doing this is to detect flaws in your plan *before* they become problems in the research you propose.

Data Analysis: This should explain in some detail how you would manipulate the data that you assembled in order to get the information that you will use to answer your question. It will include the statistical or other techniques, and the tools that you will use in processing the data. It should also include the range of outcomes you could reasonably expect from your observations.

Interpretation: In this section you should indicate how the range of anticipated outcomes might be interpreted to answer the research question. It is extremely beneficial to anticipate the range of outcomes from your analysis, and to know what each might mean with regards to the answer to your question.

CITED LITERATURE

This is the list of the relevant works you cited. Use a standard format. Order the references alphabetically.