



APPLICATIONS OPEN



[Three \(3\) science research interns](#)

[One \(1\) education intern](#)

Application Deadline

Applications must be received by March 20th, 2020.

Term of Internship

The internship runs for approximately 12 weeks during the summer time: June – August, 2020. Exact start and end time of internship will vary depending on research project and intern's availability.

Background

Jug Bay Wetlands Sanctuary (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 2020 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:

Enhancing Jug Bay Trail Monitoring Program to Assess the Stability of Archaeological Resources:

This project will build from the project conducted by a research intern in 2019, who developed a Jug Bay archaeological resource management plan. For this project, the intern will hike all of Jug Bay trails and (1) assess any change on sites identified in 2019 as being sensitive to erosion and (2) identify and record the location and condition of new sites. Results will be documented in a status report. The intern would also take a lead role in training and organizing Jug Bay trail monitors to document/monitor for archaeological resources along their trails. Training will be hands-on and done while hiking/monitoring the trail.

Mentor: Ph.D. Candidate. Andrew Webster, Anne Arundel County Archaeologist.

Analyzing Long-Term Box Turtle Home Range and Telemetry Data: Since 1995, Jug Bay Wetlands Sanctuary's citizen scientists have marked individual box turtles with a notched code along the edge of their shell as part of a home range study. Over this period they have identified over 600 individuals within a 300-acre area of the Sanctuary, for which they have also documented measurements on weight and size. In addition to this mark-recapture study they also conduct radio telemetry on various individuals per year; tracking their movements weekly. The intern who chooses to work on this project has to have an interest in long-term data analyses, but field work will also be part of the project. Different questions could be asked and answered from this rich data set, and it would be up to the intern, with the advice of his/her mentors, to decide which those questions would be.

Mentors: Dr. Patricia Delgado, Wetland Ecologist (JBWS) and Mike Quinlan, Citizen Scientist and lead of the Box Turtle Project.

Developing a Bathymetry Map and Coastline Change Analysis of a Section of the Patuxent River:

The intern will research 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 a 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).

Characterizing Inundation Patterns of Jug Bay Tidal Freshwater Marshes: The intern will develop a project to quantify and map the frequency and duration of inundation in four different long-term marsh

monitoring sites established along the Patuxent River. This study will help to better characterize marsh inundation patterns along an elevation gradient, important in evaluating their resilience to sea level rise.

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

Evaluating Forest Regeneration Post-Fire Management: The intern will survey existing plots to evaluate and compare forest regeneration between an area burned by fire and a control site. This study will provide the baseline for a long-term Jug Bay citizen science program to evaluate the value of using controlled fire as a forest management technique to enhance regeneration and tree diversity.

Mentors: Dr. Patricia Delgado, Wetland Ecologist (JBWS) and Liana Vitali, Stewardship and Citizen Science Coordinator (JBWS).

Choose Your Own Research Topic: The intern is encouraged to visit Jug Bay Wetlands Sanctuary before developing the proposal so she/he 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 410.222.7818 or via email at rpdelg88@aacounty.org

Qualifications

Internships are open to qualified undergraduate and graduate students who are capable of working independently with 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:

- 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;**
- One-page resume;
- Copies of unofficial transcripts;
- Two letters of recommendation.

Applications must be received by midnight on March 20th, 2020. Qualified applicants will be contacted for an interview by March 30th, 2020.

Internship Requirements

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

- Develop an expanded, detailed research project;
- Conduct independent research with support from the project mentor;
- Develop a final report;
- Give a presentation at the Jug Bay's Annual Volunteer Picnic at the end of August, 2018;
- 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 \$1000 is made upon 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 two 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 410.222.7818 or rpdelg88@aacounty.org

Topic for Education Internship

Internship Experience and Expectations

This 12-week, 32 hour/week internship will focus on enhancing Jug Bay's educational programs by creating new program/materials/curriculum to enhance our experiential outdoor education programs and assisting with and providing leadership to the summer camps provided at Jug Bay. The intern will also work with staff to enhance participation of volunteer naturalist educators throughout the year.

Outcomes of this internship will include:

- Create new environmental education curriculum to support Sanctuary field trips and camps that extend student learning and appreciation of nature.
- Gain firsthand experience in managing and leading summer camp activities for school age children.
- Create ways to enhance volunteer participation in Jug Bay field trips and other environmental education experiences.
- Other projects may be developed based on intern's interests and Sanctuary needs.
- Give a presentation at the Jug Bay's Annual Volunteer Picnic on August 16th, 2020.
- Write an article for Jug Bay's newsletter, "Marsh Notes," or our website summarizing research findings.

Qualifications

Internships are open to people who are capable of working independently with mentor guidance as well as in a team with patience and flexibility. Interns should be self-motivated, have good communication and writing skills, and be comfortable in a leadership position with adults and children. Applicants must have the ability to exercise patience, flexibility, courtesy and tact when working with campers, parents, volunteers and fellow employees. The successful applicant will have a demonstrated interest and passion for environmental education and the natural world. An educational background in environmental education, biology, environmental science or related field is preferred. Must be able to help launch and paddle canoes, walk several miles, perform light manual labor, and camp out. Current First Aid and CPR certification and Canoe Safety certification is preferred. A love for the natural world is a must!

Application Requirements

Qualified applicants should submit the following:

- A letter of interest detailing the applicants current skills set that would meet the internship requirement and an explanation of how the internship could help the applicant meet his/her personal and professional goals;
- One-page resume;
- Copies of unofficial transcripts;
- Two letters of recommendation.

Applications must be received by midnight on March 20th, 2019. Qualified applicants will be contacted for an interview by March 30th, 2019. The position start date will be on or about June 1, 2020.

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 \$1000 is made upon 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 two of the interns.

Transportation: Applicant must provide his/her own transportation.

Email completed applications to:

Sarah Kempfer

Jug Bay Wetlands Sanctuary

rpkemp00@aacounty.org

For more information contact:

Sarah Kempfer at 410.222.7811 or rpkemp00@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.