

Department of Biology Newsletter

State University of New York at Potsdam

Department of Biology

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THIS ISSUE (the Great Potoo issue)

Fall 2023

- **\$1000 scholarship**
- Registration info
- Declaring Biology as a Major or Minor
- Transitions in the Biology Department -
- Potsdam General Education
- **New and improved courses** for the upcoming term
- Marine Biology at SUNY Potsdam
- Profile of a Potsdam Biology grad: Lucas Hanss-Collins
- WISER Center News
- Health Professions
- Work study
- Teaching assistantships – Earn credit and beef up your résumé
- Beta Beta Beta
- **NEWEST MAJOR!!:** Environmental Science Major (Spring 2022) and Revised Minor
- Internships
- Research with Profs
- Looking Ahead – Travel Courses: Belize 2025?
- B.S. checklist/ B.A. checklist/ Bio. specialization checklist

BOB CERWONKA MEMORIAL SCHOLARSHIP

The Biology Department at SUNY Potsdam invites all Biology Majors to apply for the Bob Cerwonka Memorial Scholarship. This scholarship was made possible from a generous donation from department alumnus **Mr. Robert E. Wagner '75**. Dr. Cerwonka, a former faculty member in the department, was a Limnologist and Ecologist and also founder of our Lambda Xi Chapter of the Beta Beta Beta Biological Honors Society. **Please note:** You must be a matriculated student in the Fall following the award given in January to receive the funds!!!

The successful candidate will:

1. Be a student who has declared Biology as their major;
2. Be in good academic standing at SUNY Potsdam, maintaining a minimum of a 2.5 GPA.
3. Preference shall be given to students that demonstrate an interest and appreciation of nature and the environment.
4. The applicant will be required to submit an essay that incorporates their understanding of ecology and natural history with their goals for a career in the life sciences.

The successful applicant will receive a **\$1,000 award**. Students can apply for this scholarship multiple times. To apply, submit a typed essay of between 250 and 500 words to Dr. Glenn Johnson by **December 1st**.

Comments or suggestions about the newsletter?

Contact Dr. Glenn Johnson, Newsletter Editor, in Timerman 231, x2710, johnsong@potdam.edu

REGISTRATION

Advising begins Wednesday October 19. *The spring schedule will be available online this day*
Registration begins:

- **Seniors – November 8**
- **Juniors – November 9**
- **Sophomores – November 10**
- **Freshmen – November 14**
- **Transfer Students – November 21**

Students may adjust their schedules on BearPAWS until midnight, Sunday, Jan. 22th, 2023, which is the day before Spring classes begin.

Registration instructions can be found at this link:

<http://www.potsdam.edu/offices/registrar/registration/index.cfm>

Students should consult with their advisor to make sure that they have completed the appropriate prerequisites and cognates before choosing electives. Some course descriptions and B.S. and B.A. checklists are included in this newsletter.

DECLARING BIOLOGY AS YOUR MAJOR OR MINOR

Students are strongly encouraged to declare their biology major as early as possible.

Declaring your major or minor early will help you obtain a biology faculty advisor and help you select the best courses toward your degree. It is our wish to match students with advisors with shared interests within life sciences. To declare biology as your major or minor, either see **Glenn Johnson**, the Department Chair; (Timerman 231) or email onestop@potsdam.edu. Just fill out one form. The entire process takes less than three-minutes, but it can save you a semester or more by ensuring that you receive an advisor who understands our program.



Above: Back from a whale watch in 2018 on our Cape Cod trip – At right, a group of SUNY Potsdam students in Belize for Tropical Ecology and Conservation...some of the cool things about being a bio major!

TRANSITIONS – NEW DEVELOPMENTS IN THE BIOLOGY DEPARTMENT

Reminder: Biology 151 and 152 changes

Biology 151 and 152 will each be taught both semesters, a change we made beginning back in Fall 2020. We will continue using the Open Stax textbook, which is free to download. Summer Plans? **Biology 151 will be offered this summer during Summer Session I.** The Lab portion of the course will not be offered during the Summer Session. Contact Prof Ewy for more information.

Administrative Assistant Changes

As some of you now know, the Biology Department no longer has an Administrative Assistant (Department Secretary); in fact, no department does. Instead, the School of Arts and Sciences went to a Hub system, where several Administrative Assistants are grouped together and divide up the tasks in a different way than they did before, where one person did all the work for one or a few departments. There is one person whose assignment is to work with most of the STEM disciplines, including Anthropology, Biology, Chemistry, Physics, Computer Science, Earth & Environmental Science and Math. Her name is **Helen Bush**, and she is located in **206 Timerman**. Stop by and say hello!

Dr. Bridget Amulike is now Assistant Professor!!



After spending 2 years as a PRODiG fellow, Dr. Amulike joins us full-time as a new Assistant Professor. She received her PhD in Environmental Conservation with the focus on Wildlife Ecology and Conservation at the University of Massachusetts, Amherst. She obtained her Master of Science degree in Wildlife Fisheries/ Biology from Frostburg State University in Maryland and a Diploma and Advanced Diploma in Wildlife Management from College of African Wildlife Management (CAWM) Mweka in Tanzania. Bridget is highly passionate about the wildlife conservation, ecology and human dimensions of wildlife and she is looking forward to sharing her knowledge with students and the general audience.



The Fall Biology Seminar Series (Noon in Stowell 211)!

Sep 13: Cristina Macklem, DEC - Hellbender Research at the Saint Louis Zoo

Sep 20: Maria Vittoria Mazzamuto, University of Wyoming - Individual Behavior Differences in Applied Wildlife Research

Oct 4: Austin Garner, Syracuse University - Sticky Situations and Clinging Conundrums: Form, Function, and Environment Interactions in Animal Attachment Systems

Nov 8: Saikat Chakraborty, Paul Smith's College - Chemical ecology

Nov 29: Nana Anrah, SUNY Plattsburgh - Microbiology

Dec 6: Michelle Mi-Jeong Yoo, Clarkson University - Molecular botany

NEW AND IMPROVED COURSES

BIOL 483 – Current Topics: The Biology of Invasions - SI

Dr. Glenn Johnson

Tuesday 5:00PM–7:50 PM

Please Note: This course can be taken for elective credit!!!

In the form of bacteria, small arthropods and tiny plants, life first invaded the land from the sea in the Silurian, about 450 million years ago. Vertebrates followed about 70 million years later, probably from freshwater environments. Since then, living things have moved around the planet, entering and occupying new habitats, expanding their range as they evolve and adapt to changing conditions. It has only been relatively recently, however, that the magnitude and pace of these invasions has been ramped up as human beings now move with relative ease to all corners of the Earth. Some of the worst offenders are those species, like rats and cockroaches, that are commensal with humans, travelling with us as we populate the globe. Others get scooped up in our ballast water or hitchhike on our clothing. Many (most?) are deliberately or through ignorance moved about for agricultural purposes, for their beauty, for novelty or to control another, earlier exotic import. Many of these have become invasive and can drastically alter natural ecosystems, often with grave consequences. In this Current Topics, we will drill deep into the ever-growing body of literature on Biological Invasions.



A case of Invasional

Meltdown: The native red land crab, whose overland migrations are legendary, being attacked by the invasive yellow crazy ant...leading to alterations of the native vegetation on Christmas Island in the Indian Ocean

ESCI 200 – Environmental Science

Drs. Jessica Pearson

Lecture: TuTh 1100AM–1215PM, Lab: Tu 200PM– 450PM

Since most of us understand that the environment controls many aspects of our way of life (e.g. food and fiber production, water supplies, resources for shelter and infrastructure), it is clear that the adverse impacts to the environment affect the well-being of humans and other living organisms. Therefore, this course is designed to introduce students to the basic scientific methods, tools and techniques needed to understand and analyze environmental issues using an earth systems (air, water, soil, life and solid earth) approach. Topics covered include ecosystem structure and function, population dynamics and regulation, earth's resources and resource management and pollution. This course is also intended to help Environmental Science majors determine where they would like to specialize within the major, for example: land management, water or air quality, conservation science. **This course is required for the new Environmental Science Major!**

NEW AND IMPROVED COURSES

BIOL 301 – Communicating in Biology - CM

Dr. Sarah Sirsat

MWF 1000AM–1050AM

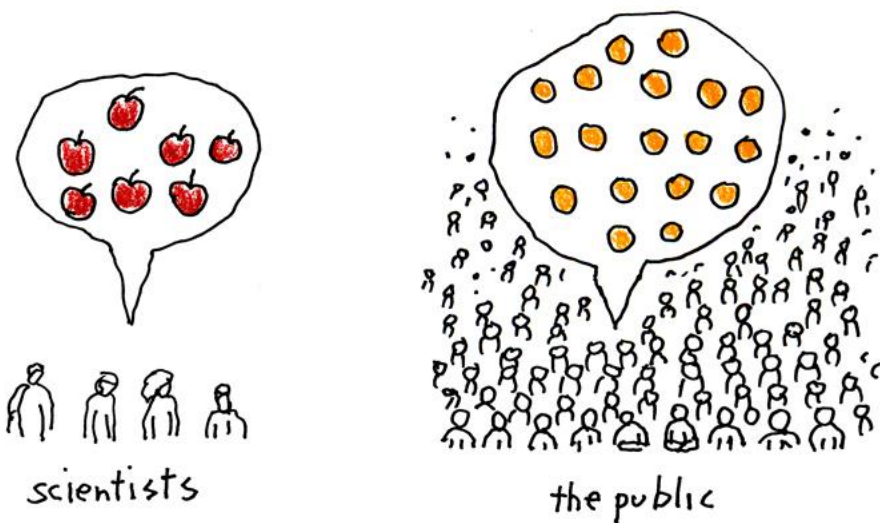
Prerequisites: BIOL 151 & 152, WAYS 101, 102, and 103

This course carries the Pathways CM (Communication in the Major) designator!

“Nothing in science has any value to society if it is not communicated, and scientists are beginning to learn their social obligations.” – Anne Roe, 20th century American psychologist and writer

Communication is a key component of our daily lives and in an ever-increasingly connected world, knowing *how* to communicate has become an imperative life skill. Such an important skill is even more crucial for scientists, upon whose shoulders the burden of sharing our knowledge with the world, falls. BIOL 301, which fulfills the Communicating in the Major (CM) designator of the Potsdam Pathways Program, is a newly offered course which introduces students to the numerous, discipline-specific modes of oral and written communication utilized in the biological sciences and provide a “communication toolbox” useful for future endeavors. Reading, discussion, and critique of peer-reviewed publications will provide students with an understanding of the principles and conventions of scientific writing while equipping students with skills to analyze the effectiveness of other modes of communication. Students will refine their speaking and writing skills through a series of writing assignments, class discussions, and visual and oral presentations throughout the semester while developing skills needed to communicate effectively and share biological concepts concisely and accurately in their future STEM courses and chosen profession.

science communication



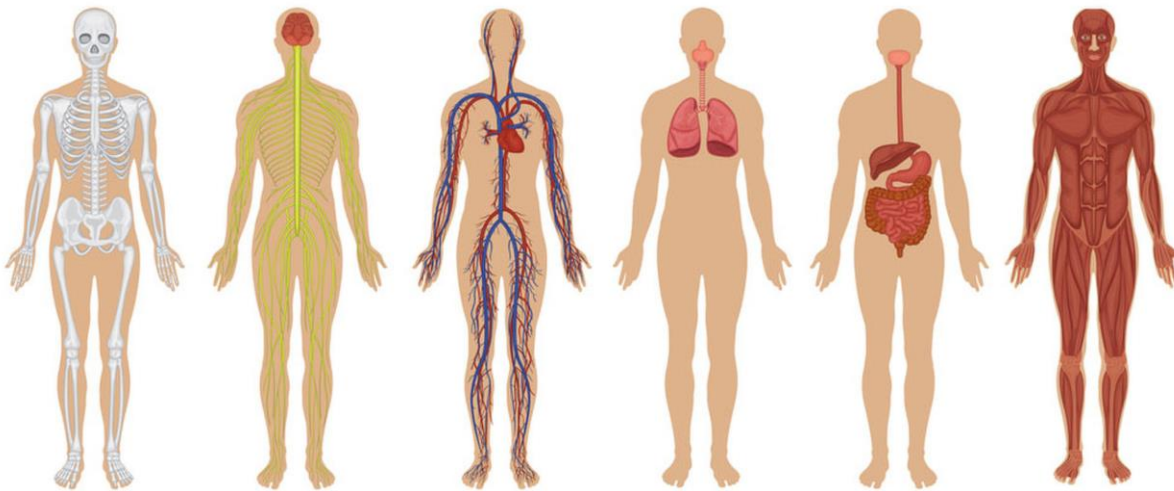
BIOL 404 – Human Anatomy and Physiology II

Dr. Sirsat

Lecture Tues, Thurs 11:00-12:15am, Lab Tuesday 2:00-4:50pm.

Human Anatomy & Physiology II (BIOL 404) is the second half of a 2-term course (1st term is BIOL 403 offered in the fall) in which students are introduced to different levels of human life: from cells to tissues to organ systems with a special emphasis on preparation for careers in the medical field.

Organ systems are explored in detail so that students will be able to recognize and identify key structure as well as discuss function and role of those structures in respect to the human body as a whole. Throughout the course, students will be challenged to integrate all the information and systems into a holistic approach of what makes a human being and how humans work. The laboratory component of the course provides hands on experiences in physiological experiments and anatomical identification.



BIOL/HLTH 270 – Health Coaches I

Dr. Ewy

Meets Mondays 530PM– 710PM

Looking for experience working with patients? SUNY Potsdam has teamed with Canton Potsdam Hospital (CPH) to train students to work with community members who have chronic conditions such as diabetes, COPD, or heart disease. Health Coaches I is a seminar course where health care professionals and community organizations give presentations on the US health care system, rural medicine, chronic diseases, and techniques to work with patients. In HLTH 370 "Health Coaches II" (offered during Fall Semester 2021) students are paired with a community member who has a chronic condition. Together the health coach and patient will work to develop small patient-centered goals to improve quality of health. This kind of experience looks great on an application to a health professions program such as MD, DO, PA, and PT, and will give you valuable experience in working with patients and first-hand insights into our health care system. You will learn more than you can imagine about working with patients! See Prof Ewy for more questions. An informational session will be scheduled soon.

BIOL 402 – Conservation and Wildlife Management

Dr. Bridget Amulike

Lecture: MWF 9:00 - 9:50 Lab Tu 2:00 – 4:50

**This course has the CT, Connecting Theory to Practice, designator.
Counts as an Environmental Science Elective**

Conservation biology is relatively new as an intellectual endeavor in biology. The central goal of this science is to maintain the planet's biological diversity. It attempts to apply scientific principles to understanding and solving the problems facing most of the Earth's ecosystems and species. It is both derived from and nested within such areas of biological science as ecology, wildlife and fisheries management, zoology and botany and draws heavily on expertise from physiologists, microbiologists, molecular biologists and population geneticists. It contains elements of many other disciplines including economics, political science, biogeochemistry, public health law, veterinary science, sociology and environmental engineering. Indeed, the question may be what is not within the domain of Conservation Biology?

Raccoon sniffing around nesting snapping turtle



Releasing spruce grouse captured in Ontario into the Adirondacks to augment bolster (and increase the genetic diversity of) NY populations of this endangered species. Photo: Jason Hunter.

Note that the course name has changed from Conservation Biology to **Conservation and Wildlife Management**. While the content will be similar, this was done so that the course is now eligible for inclusion as a required course for Biologist positions with the New York State Department of Environmental Conservation.

BIOL 413 – Neurophysiology

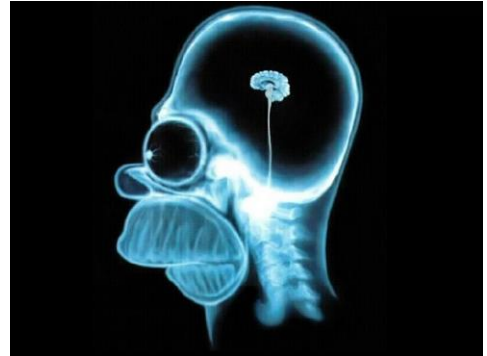
Dr. Schreer

Neurophysiology is a 4-credit lecture and lab course.

Lecture: Tues, Thurs 9:30-10:45

Lab: Wednesday: 2:00-4:50.

Those of you that have already fulfilled their physiology lab requirement can opt out of the 1 credit lab (contact me for an override). But even if you have taken a physiology lab, you are welcome and encouraged to take the neurophysiology lab as we will have many new labs on the brain and behavior.



This course will focus on the structure and function of the nervous system including neural transmission, neurotransmitters, sensory and motor systems, the brain, behavior, and memory. Compared to my other physiology courses, we will go into much more detail on how signals move through the nervous system and the different parts and functions of the brain. Additionally, we will delve deeply into several aspects of behavior including, motivation, emotion, rhythms and sleep, language, mental illness, and how we learn and remember. Throughout the course, we will explore the physiology of consciousness. I do not mean just being awake, but our ability to have thoughts of thoughts.

BIOL 151 – Gen Bio: Cells & Genetics and BIOL 152 – Organisms & Ecology

Dr. Snyder

BIOL 151: MWF 9-9:50 Labs: M 2-4:50 or T 9-11:50

BIOL 152: MWE 10-10:50 Labs: W 2-4:50 or R 2-4:50



This foundational general biology course is aimed at STEM majors looking to develop their understanding of the natural sciences. Typically, students take this course after completing one semester of General Chemistry. As part of a two-semester sequence, this course is often taken after Gen Bio: Organisms & Ecology. However, the order of these courses is flexible. You can take BIOL 151 before BIOL 152.



TA's needed

Gen Bio: I am looking for 2 TA's for BIOL 151 and 152 TA's must have taken BIOL 151 BIOL 311 (preferable) and/or BIOL 152 (BIOL 300 preferable). TA's will attend all meetings of their assigned section. Please contact Dr. Snyder (snyderrl@potdam.edu) if interested.

BIOL 311 – Genetics

Dr. Trybula

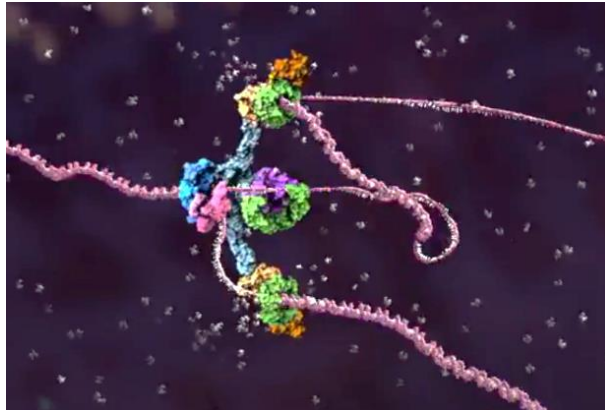
Prerequisites: BIOL 125 or 151, and BIOL 152. Lab optional*

Lecture: MWF 100PM– 150PM, Lab Wednesday 2:00 to 4:50

*Biology majors have the option to take either Ecology (BIOL 300) lab or Genetics (BIOL 311) lab. Students should consult with their Biology advisor to determine which option is best. Students can take both labs, with the additional lab counted as Biology Elective credit.

From early history, humans used genetics without knowing what was happening behind the scenes. We've seen this in the domestication of food crops and animal, with evidence going back to at least 10,000 BCE. Much later in the 1850s, Mendel figured out the movement of traits from one generation to the next, but it was 100 years later that we finally figured out what DNA even looked like. Today, knowledge of genetics is progressing rapidly, with so much more to know.

At its core, genetics is about heredity, the passing of traits from parents to offspring. Genetics is concerned with 1) how traits are coded, 2) how they normally remain stable from one generation to the next, 3) how new variants of traits arise, and 4) how some variant traits in organisms are related to their health and adaptability. Genetics is used to study molecular, organismal, and population levels of biological complexity, all with overtones of the evolutionary importance of genetics. As such, genetics is central to all of biology.



Animation still of DNA replication from WEHI Medical Research University. You can view the animation at: <https://www.wehi.edu.au/molecular-visualisations-dna>

Genetics TAs needed

Genetics Lab: We can accommodate up to 2 undergraduate teaching assistants for the Genetics Lab. One upper division credit through BIOL 475. TAs must have taken BIOL 311 lab or equivalent. Please contact Dr. Trybula (trybulj@potdam.edu) if interested.

Don't pay extra! If your required textbook is an "Open Educational Resource" book, you do not need to pay a fee to get it. This past fall, there was a \$7 optional fee listed on the College's bookstore website for "Open Stax" Texts (Biol 100, 151, 152, and 403). You do not need to pay this fee. Simply get the URL from the professor teaching your course.

Marine Biology for Summer 2024

SUNY Potsdam offers a field intensive Marine Biology concentration at our affiliate institution, the Gulf Coast Research Laboratory (GCRL) on the ocean in Ocean Springs Mississippi. Many students from our College have traveled to the GCRL to participate in our Marine Biology Program. Representative courses include Marine Biology, Marine Mammals, Shark Biology, Ichthyology, and Marine Ecology. There are also research opportunities. As members of the consortium, Potsdam students only pay instate tuition, room, and board. Students may complete three courses at the laboratory and fulfill their elective requirements, graduating a semester early. With this option, there is no additional cost within a four-year curriculum. For complete details, please visit the GCRL website (<http://www.usm.edu/gcrl/>) and under “Academics,” select —GCRL Summer Field Program. Interested students should also contact our GCRL advisor, Dr. Conley.

These six Potsdam students enjoyed the facilities and field experiences offered at GCRL, many completing multiple courses. From left to right; Alyssa Navilio, Alison Brown, Megan Jubert, Alex Matte, Dr. Conley, Justin Williams, and Amanda Blackburn.



These SUNY Potsdam students completed undergraduate and graduate courses at the Gulf Coast Research Laboratory, on the Gulf of Mexico in Ocean Springs Mississippi. The courses have a heavy field-based laboratory utilizing the many research vessels owned by the laboratory.

Profile of a Bio Graduate: Lucas Hanss-Collins

My name is Lucas Hanss-Collins. I graduated from SUNY Potsdam in January of 2022 with a Bachelor of Arts in



Lucas in front of a sculpture at The Wild Center in Tupper Lake, NY.

Environmental Studies. I grew up locally in Hannawa Falls and went to Potsdam High. Before college, I spent my summers outside fishing, hiking, and exploring the great outdoors. Freshman year, while I was roaming around campus as an undeclared student, I stumbled upon the WISER Center. After speaking to Ray Bowdish, he asked in typical Ray fashion, “Hey do you like cacti?” After mumbling that I thought they were neat, I was instantly a volunteer. The WISER Center was then my home for the next four years of my student career, spending hours taking care of the plants there.

During this time I learned the ropes of plant care. I learned how to propagate the giant jade plant and other succulents, the best practices of plant care, and how the WISER Center operated. I was the plant doctor, and I took care of plants around campus, provided treatments for mealy bugs, and even doctored plants in the New York State Capitol Building! I became an intern studying the principles of IPM (integrated pest management), a mode of thinking that emphasizes the management of pests through biological controls. I learned about pest life cycles in depth, parasitoid wasps, and greenhouse climate conditions. By the end of that internship I could fully operate the WISER Center greenhouses, I knew how to manage nearly every greenhouse pest, and the indoor climate conditions best suited to the pest’s control. It gave me time management skills, the ability to think critically, and a very green thumb.

Working alongside Ray and the many volunteers and interns gave me much needed stability at SUNY Potsdam. During the especially trying years of COVID-19 I was able to go into the greenhouses and prune plants and do other stress relieving work.

Originally my plan was to get my general education classes done at SUNY Potsdam and transfer to some other school to get my degree elsewhere. After finding the WISER Center I knew I wouldn’t find anything like it anywhere else.



Lucas running a honey-tasting exhibit at Nicandri Nature



Lucas during Swamp Class at Nicandri Nature Center.

Soon after graduating I was hired at the Nicandri Nature Center in Massena NY. My job title is “Naturalist,” which is a catch all for every job you could expect. I do things such as trail maintenance, animal care, public education, and program design. At the Nature Center we have eight turtles, seven of which are native to New York. We have a 1,500 gallon fish tank dubbed “the pond” and a 1,200 gallon cold water fish tank. We have various species of sunfish, shiners, two bowfin, two longnose gar, and three lake sturgeon.

The work we do at the Nature Center is largely based on the season. During summer there are many visitors due to the fact that we’re located in Robert Moses State Park. During the school year we often have field trips every weekday, which keeps the staff very busy with programs. In winter, we shift to skiing and snowshoeing. We loan out the needed

gear and provide lessons on how to cross country ski. We also groom our trails pulled by a very large ATV on all season tracks. Last winter we had over 3,000 snowshoers

and skiers! During the work day I manage our system of trail cameras, provide care for our various animals, and design programming for the public. Two programs I am especially proud of are “Ice Age New York” and “Growing Oyster Mushrooms.” In “Ice Age New York,” the public learns about the natural history of the state during the Last Glacial Maximum (which happened about 20,000

years ago) to 10,000 years ago. We explore the paleobiogeography of the area with three life sized models of skulls; those being a smilodon, a castoroides (giant beaver), and a beluga whale. We end with a toy Ice Age fossil dig for younger children. In “Growing Oyster Mushrooms” participants learn about the edible oyster mushroom. They are instructed through a hands-on learning approach on preparing the mushroom substrate, optimal growing conditions, and “seeding” the substrate. They are allowed to take home their mushroom containers, which produce around a pound of mushrooms in three weeks.

The Nicandri Nature Center is a non-profit and completely free to enjoy. It is a great way to learn about the ecology of the area, and



Lucas holding a replica *Smilodon* skull during “Ice Age New York.”



Lucas leading a school group during a field trip.

is also a fantastic way to get into skiing or snowshoeing, as the gear is loaned out for free and lessons are provided. If you have free time, treat your family or friends with a visit!



Lucas and his wife Mary Kate at their wedding.

In my free time I am part of the St. Lawrence County Environmental Management Council, and I have joined NYSOEA, the New York State Outdoor Educators Association, of which I am currently the head of our 2023 conference committee. It currently has over 170 participants! These committees have introduced me to many interesting people in the outdoor education field. NYSOEA is a great way to make connections and I highly encourage anyone who is interested to reachout. And on a personal note, after graduation I married my lovely partner Mary Kate, who is also a SUNY Potsdam Alumni from the Training and Human Capital Development graduate program. She is currently earning her second graduate degree in Adolescent Education focusing in English from SUNY Potsdam.



Rachel Carson, 1907 to 1964
Marine Biologist

This is an era of specialists, each of whom sees his own problem and is unaware of or intolerant of the larger frame into which it fits.

Science is beautiful when it makes simple explanations of phenomena or connections between different observations. Examples include the double helix in biology and the fundamental equations of physics.

Stephen Hawking

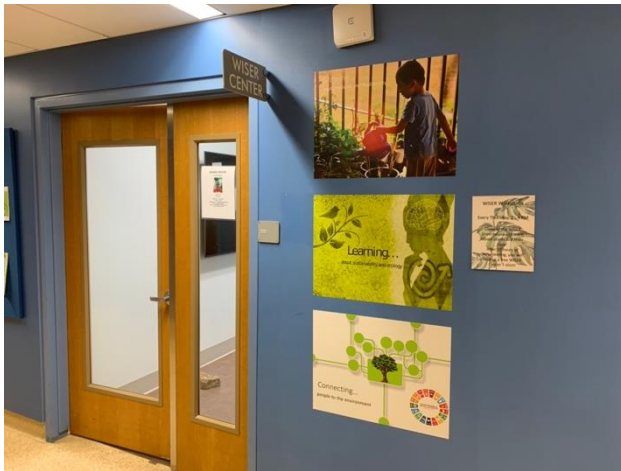
WISER Center News

What *is* the WISER Center?

WISER stands for *Wagner Institute for Sustainability and Ecological Research Center*. It's an outreach and research Center run by students!

Where's the WISER Center?

Located at 205 Stowell Hall we are in the Biology Department



What's *in* the WISER Center?

- Computer classroom
- Public greenhouse
- Research and classroom learning greenhouse.
- Tower Garden® aeroponic food garden
- Plants of all kinds!
 - Decorative
 - Herbs
 - Food
 - Medicinal
 - Poisonous

What goes on in the WISER?

The WISER is an institute with spaces on campus outside of the Center where there are...

- **Campus and community events**
 - Hosting school trips
 - WISER Open Houses
 - Yoga in the Greenhouse



Join the WISER Staff?

Please consider becoming a WISER volunteer, intern, or researcher.

- Positions are granted on a semester-by-semester basis.
- A total of 4 volunteers, 4 interns, and 6 research positions are available.
- Staff positions are filled according to program needs and the strength of applications for positions.

Even if you aren't a member of our WISER Staff, we hope you will visit the public greenhouse via Stowell 205. When you are here, feel free to ask questions of staff members or else learn more by visiting the WISER Coordinator, Ray Bowdish at Timerman 232, calling 315-267-2276, or emailing wiser@potdam.edu for more information.

Who coordinates the WISER Center?



Harper Barrett – Urban Farmer, Spring 2023

- **Internships*** –
 - Urban Farmer – Grow plants for food in the Tower Gardens and greenhouses.
 - Plant Doctor – Help keep campus plants healthy and handsome.
 - Community Farmer – Farm in campus gardens and greenhouse, for food justice!
 - Campus Beekeeper
 - WISER Wellness coordinator



Ray Bowdish
Hours in the WISER
MONDAY - FRIDAY:
9 AM - 2PM
EMAIL - WISER@POTSDAM.EDU
CALL 315-267-2276



Toni Wahl and Sydney LaPlant, Campus Beekeepers

- **Student research –**
 - Crop production and protection
 - Biological controls
 - Integrated Pest Management
 - Genomics

- **WISER Workshops –**
 - Join the WISER Staff!
 - Meet **Thursday from 2-4 PM** or arrange for custom volunteer times.
 - Volunteer and **learn horticulture** (how to grow and maintain plants).
 - **Earn a WISER T-shirt** after 5 sessions.
 - Have fun and beautify campus too!!



WISER Volunteer Staff at the WISER Workshop – Every Th. 2-4



POTSDAM GENERAL EDUCATION

Beginning in **Fall 2020**, SUNY Potsdam began the process of transitioning away from the old General Education Program and begin moving toward a new one. Next spring (see below) and in future years, several Biology Faculty will be participating in this and developing new and innovative courses to meet the general education needs of SUNY Potsdam students.

WAYS 102 WORLD WITHOUT WOLVES TuTh 200PM– 315PM **Dr. Kate Cleary**

WAYS 103 BIOLOGY OF SEX AND GENDER MWF 1000AM–1050AM **Dr. Jan Trybula**

The Biology Department will be offering more Pathways Courses starting this coming Spring, including:

BIOL 107 and BIOL 125 both carry the Natural World (NW) designator

BIOL 301 Communicating in Biology – CM (Communication in the Major)

BIOL 402 Conservation and Wildlife Management) – CT (Connecting Theory to Practice)

Health Professions

If you are interested in a health profession, enroll in the "Health Professions" Moodle course. You will find information on various careers, how to prepare for such a career, and what exam you may need to prepare for. Send Prof Ewy an email: ewyrg@potsgdam.edu and include the following information:

Your name

What career you want to pursue (dental, medicine, veterinary, etc.)

Your year classification (1st, 2nd, 3rd, 4th)

If you are interested in taking a practice MCAT this spring, or other exam needed for professional admission, let Prof Ewy know. There will be a modest cost to you, but the experience of taking a full-length exam under exam conditions will help you as you prepare to take your exam when it counts.

Preparing for MCATs or another exam that will test your Biology knowledge? The best way to really know Biology is to teach it! The Department is looking for TAs to help with Biology 152 labs. This is an excellent way to review your Biology and help out the Intro class.

Committee Letters of Recommendation

Applying to Medical School (or any other program that requires a committee letter) for the upcoming cycle? HPAC interviews will be done in March or early April. Please have your letters of recommendation to Prof Ewy by the first of March. For more information, contact Prof Ewy.

WORK STUDY

If you are interested in and eligible for the federal work study program please see either **Rachel Wallace** (wallacrm@potsgdam.edu, Ph 267-4814), or the department secretary, **Sara Peabody** (peabodsr@potsgdam.edu, Ph 267-2264). Responsibilities include laboratory setup and cleanup, plant and animal care and a variety of secretarial work.

TEACHING ASSISTANTSHIPS

See the world from our side. Most professors are looking for motivated students to be teacher assistants for their courses. This is a great way to get some teaching experience and an opportunity to work more closely with one of your profs. This also counts as a 1 credit upper division bio course. Contact your Profs before the end of the semester if you are interested and see some possibilities below.

Preparing for MCATs or another exam that will test your Biology knowledge? The best way to really know Biology is to teach it! The Department is looking for TAs to help with Biology 152 labs. This is an excellent way to review your Biology and help out the Intro class.



As a lab TA you will be helping to prepare and teach the General Biology II labs. This is a great way to reinforce your knowledge and to learn how things are done “behind the scenes” of lab. Upon successful completion of a TA position, students earn 1 credit and no monetary compensation.

Teaching assistants for General Biology Labs

If you would like to gain some teaching experience and encourage first year Biology students, this is a good opportunity. It is also useful for those students going on to graduate school or to teaching careers. This course, Biology laboratory techniques, counts as a 1 credit upper division biology course. You must have successfully (3.0 or higher) completed Biology 151 and/or BIOL 152 lecture and lab.

If interested contact Rachel Wallace; wallacrm@potdam.edu or; Glenn Johnson johnsong@potdam.edu Biology Laboratory Techniques; BIOL 475, sec 0001; CRN 80520

Teaching assistants for Principles of Biology (BIOL 100) Labs

I am looking for TAs for Biology100 (non–majors Biology). Bio 100 lab has (2) two-hour sections, both on Thursdays. See Prof Ewy for more details.

BIOL 311 – up to 2 Teaching Assistants for Genetics labs

Lab: Wednesday 2:00-4:50p.m. Pre-requisite: BIOL 311 lab or permission of instructor

Teaching Assistants needed for lab. Duties include lab prep, lab breakdown, and attending one of the lab sections to assist the instructor and students. It is preferred that TA applicants have prior experience working with chemicals (e.g. CHEM 105) and willingness to learn lab and chemical safety regulations. Contact Dr. Jan Trybula; trybulj@potdam.edu

BETA BETA BETA



SUNY Potsdam Lambda Xi Chapter Beta Beta Beta National Biological Honors Society

Beta Beta Beta (TriBeta) is a society for students, particularly undergraduates, dedicated to improving the understanding and appreciation of biological study and extending boundaries of human knowledge through scientific research. Since its founding in 1922, more than 200,000 persons have been accepted into lifetime membership, and more than 670 chapters have been established throughout the United States and Puerto Rico.

New member candidates are invited to join BBB every year. Invitations are sent out in March and a new member induction ceremony is in late April.

The membership shall be divided into six classes: regular, associate, graduate, honorary, alumna/ us and corporate. Beta Beta Beta is a non-discriminating organization that does not consider age, race, color, creed, sex, national origin or sexual preference.

Regular members shall be:

- Undergraduate biology majors (BS or BA) at SUNY Potsdam.
- Shall have completed at least 3 semesters of a four-year curriculum.
- Shall have completed at least three term courses in biology (BIOL), of which at least one must be upper division (300 or 400 level), with an average 3.25 GPA in those biology courses.
- Shall have a 3.25 GPA in all courses, and in good academic standing

**Only regular members may hold the constitutionally specified chapter offices, vote on chapter membership nominations and national questions, and represent the chapter or vote at national conventions.

Associate members shall:

- Shall have completed at least 3 semesters of a four-year curriculum.
- Shall have completed at least three term courses in biology (BIOL), of which at least one must be upper division (300 or 400 level), with an average 3.25 GPA in those biology courses.
- Shall have a 3.25 GPA in all courses, and in good academic standing.

Any questions about BBB membership should be sent to the advisor Dr. Snyder snyderrl@potsdam.edu



The Great Potoo, (*Nyctibius griseus*), a South and Central American relative of whip-poor-wills and frogmouths, often positions itself either along a branch or at a branch's end, mimicking a dead piece of wood. This one is doing this while incubating its single egg.

New Major in Environmental Science!

Notice: Faculty in Biology, Geology, Physics, Chemistry and Environmental Studies have developed a brand- new **Major and Minor in Environmental Science**. The fruits of this effort will be on the books beginning **Spring 2023**. **Here's a first look**, however, if you are interested in exploring this exciting new major, email or stop by and chat with Drs Johnson, Rygel and/or Rogers to hear more!

Required Courses			
Cognates Classes (30 credits)			
Course Title	Credits	Course Title	Credits
<i>BIOL 151, General Biology I + Lab</i>	4	<i>ENVR 110, Intro to Environmental Studies</i>	3
<i>BIOL 152, General Biology II + Lab</i>	4	<i>GEOL 101, Environmental Geology + Lab</i>	4
<i>CHEM 105, General Chemistry I + Lab</i>	4	<i>MATH 151, Calculus I</i>	4
<i>CHEM 106, General Chemistry II + Lab</i>	4	<i>STAT 100, Probability and Statistics</i>	3
Core Environmental Science Classes (28 credits)			
Course Title	Credits	Course Title	Credits
<i>BIOL 300, Ecology + Lab</i>	4	<i>GEOL 410, Hydrogeology + Lab</i>	3
<i>ESCI 200, Environmental Science</i>	4	<i>CHEM 320, Environmental Analysis</i>	4
<i>ESCI 301, Soil Science + Lab</i>	4	<i>GEOL 425, Scientific Communication or ENVR 490 Senior Seminar</i>	3
<i>GEOL 320, Geochemistry</i>	3	<i>POLS 414, Environmental Law</i>	4
Elective Courses (14 credits from the following)			
Course Title	Credits	Course Title	Credits
<i>BIOL 310, Marine Biology</i>	3	<i>ENVR 391, Field Project¹</i>	1-6
<i>BIOL 312, Insect Ecology</i>	4	<i>ESCI 495, Env. Science Research¹</i>	1-3
<i>BIOL 334, Biology of Woody Plants</i>	3	<i>GEOL 350, Geomorphology</i>	4
<i>BIOL 400, Field Ecology</i>	4	<i>GEOL 380, Climate Change: Past & Present</i>	3
<i>BIOL 402, Conservation and Wildlife Management</i>	3	<i>GEOL 407, Applied Geophysics</i>	3
<i>BIOL 408, Wetland Ecology</i>	3	<i>GEOL 440, Economic Geology</i>	3
<i>BIOL 409, Freshwater Biology</i>	4	<i>GISC 101, Intro. to GIS</i>	4
<i>CHEM 311, Quantitative Analysis</i>	4	<i>GISC 302, Remote Sensing</i>	3
<i>CHEM 321, The Sustainable World or ENVR 120, Intro. To Sustainability</i>	3	<i>SOCI 340, Environment and Society or SOCI 341, Environmental Justice</i>	3
<i>CHEM 341, Organic Chemistry I</i>	4		
<i>CHEM 342, Organic Chemistry II</i>	4	<i>PHIL 330, Environmental Ethics</i>	3
<i>CHEM 415, Instrumental Analysis</i>	2	<i>PHYS 325, Energy and the Environment</i>	3
<i>ECON 320, Economy and the Environment</i>	3	<i>PHYS 330, Meteorology²</i>	3
¹ Students can count a total of no more than three credits toward the electives		² Highly recommended for all students	

Within the Environmental Science Major, students could elect to take one of the following concentrations through their elective choices. If a student double majors or declares a minor, they cannot do a concentration that is the same as their major/minor.

Biology concentration (15 cr. from the following): BIOL 312 - Insect Ecology (4 cr), BIOL 334 – Biology of Woody Plants (3 cr), BIOL 400 - Field Ecology (4 cr), BIOL 409 - Freshwater Biology (4 cr), BIOL 402 - Conservation and Wildlife Mgmt. (3 cr), BIOL 483 – Agroecology (3 cr)

Geology/GIS concentration (14 cr): GEOL 350 - Geomorphology (4 cr), GEOL 380 - Climate Change: Past & Present (3 cr), GEOL 407 - Applied Geophysics (3 cr) or GEOL 440 - Economic Geology (3 cr), GISC 101 - Introduction to Geographic Information Systems (4 cr)

Chemistry concentration (14 cr): CHEM 311 – Quantitative Analysis (4 cr), CHEM 341 - Organic Chemistry I (4 cr), CHEM 342 - Organic Chemistry II (4 cr), CHEM 415 - Instrumental Analysis (2 cr)

Policy and sustainability concentration (15 cr. from the following): ENVR 120 – Intro. To Sustainability (3 cr) or CHEM 321 - The Sustainable World (3 cr), ECON 320 - Economy and the Environment, SOCI 340 - Environment and Society (3 cr) or SOCI 341 - Environmental Justice (3 cr), PHIL 330 - Environmental Ethics (3 cr), PHYS 325 - Energy and the Environment (3 cr)

Beginning Fall 2015, the Environmental Science Minor was revised in an effort to shift the focus of the Environmental Science Minor to the natural sciences in order to give students the knowledge and technical skills they need to get jobs in the environmental science sector. The number of credits is largely unchanged, and the number of uncounted prerequisite courses has been greatly decreased. Most scientists who focus on environmental issues end up functioning primarily as either biologists (plants, animals, and ecosystems) or geologists (water, soil, and pollution); a minor that gives them interdisciplinary training will improve their marketability. Common tasks like wetland delineation can be done more effectively by a biologist if they have had a few classes on soil and water; geologists can do it more effectively if they have had formal coursework on ecology and plant biology. See it below!

Revised Environmental Science Minor (24 credits)				
Level	Course	Credits	Required for:	Prerequisites
Required courses: 6 credits	ENVR 110: Introduction to Environmental Studies	3	all	none
	Choose one			
	CHEM 301: Fundamentals of Environmental Science	3	All majors except GEOL and BIOL	one semester of college-level science
	PHYS 325: Energy and the Environment	3	GEOL and BIOL majors	one semester of college-level science
Prerequisite courses: 3-4 credits for BIOL/GEOL majors, 7 credits for others	GEOL 101: Environmental Geology	3	non-GEOL majors	none
	BIOL 152: General Biology II	4	non-BIOL majors	none
Advanced Courses: 14 credits for BIOL/GEOL majors, 11 credits for all others. Advanced courses must be taken outside of the student's major	BIOL 300: Ecology + Lab	4	non-BIOL majors	BIOL 152
	BIOL 312: Insect Ecology	4		BIOL 152
	BIOL 326: Morphology of Higher Land Plants	3		BIOL 152
	BIOL 330: Natural History of Lower Vertebrates	4		BIOL 152
	BIOL 331: Natural History of Higher Vertebrates	4		BIOL 152
	BIOL 334: Biology of Woody Plants	3		BIOL 152
	BIOL 355: Invertebrate Biology	4		BIOL 152
	BIOL 402: Conservation Biology	3		BIOL 300 or permission of instructor
	CHEM 311: Quantitative Analysis	4		CHEM 106
	GEOL 340: Geographic Information Systems	4		Sophomore standing
	GEOL 310: Hydrology and Hydrogeology	4	non-GEOL majors	100-level geology class + either CHEM 105 or MATH 125 or MATH 151 or STAT 100
	GEOL 406: Geomorphology	4		100-level geology class + junior standing
	PHYS 330: Meteorology	3		
CONS 314: Soil Mechanics (SUNY Canton)	3		GEOL 101	
CONS 386: Water Quality (SUNY Canton)	4		GEOL 310	

INTERNSHIPS

INTERNSHIPS

& Biology Department Applied Learning Opportunities

Learn how to apply for an internship with this link to the [Experiential Education Office \(EEO\)](#).

Wagner Institute for Sustainability and Agricultural Research (WISER) Internship, in the Biology Department at SUNY Potsdam

You get to:

- Manage the Healthy Plant Initiative (HPI) program
- Grow microgreens for PACES
- Help Develop our campus composting initiative
- Learn horticultural technique
- Practice Integrated Pest Management
- Report your achievements to the campus at the Learning and Research Fair

Off-Campus Internship Opportunity

Study Horticulture from Never Tire Farm

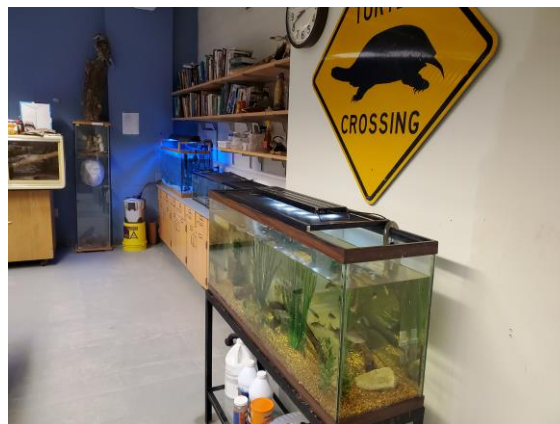
Each spring, Never Tire Farm (Lisbon, NY) seeks motivated students of junior status or higher, for a unique and valuable experience, working in a modern greenhouse operation. Students who qualify for the internship will be actively learning about all aspects of greenhouse production including sowing, transplanting, fertilizing, watering, and propagation of various annuals, perennials, vegetables, and herbs. Interns learn about the business of growing plants and will be exposed to maintenance and labor issues facing modern growers. Qualifying interns should have experience as a WISER intern be trained in Integrated Pest Management (IPM) techniques and participate in the Never Tire Farm's biological control program.



Care and Handling of Display Animals in the Biology Department at SUNY Potsdam

Help care for animals (amphibians, reptiles and fish) in the department

Create learning materials and provide outreach to help others discover the animals in the department



and Research Fair

Report your work to the campus at the Learning

Please see Dr. Johnson johnsong@potsdam.edu or Rachel Wallace wallacrm@potsdam.edu about Animal Room or Diversity House opportunities

Biology Technician Internship Techniques in the Biology Department at SUNY Potsdam

You get to:

- Help create and maintain chemical inventory lists
- Learn to prepare lab materials for biology labs
- Develop skills in lab instrument care and maintenance
- Maintain the lab materials inventory
- Learn various lab protocols and skills for working in a biology research lab
- Get trained in chemical safety.

Please see Rachel Wallace wallacrm@potsdam.edu about opportunities

RESEARCH WITH PROFS

Drs Kate Cleary, Glenn Johnson, Bridget Amulike and Jessica Rogers

Last Summer (2023), Drs. Johnson and Amulike from Biology joined forces with Drs. Cleary and Rogers from Environmental Studies and started a new research project that would be long-term and could involve many students interested in environmental science, wildlife ecology and human-wildlife dimensions.

We investigated the diversity of wildlife species that are found in proximity to and within the Wildland/Urban Interface (WUI), that zone of transition between areas of anthropogenic development and natural ecosystems; it is sometimes defined more precisely as an area with at least one housing unit per 40 acres. We will use the Village of Potsdam to represent the “urban” zone and use Geographic Information System methods to delineate the WUI and adjacent rural wildlands. The initial focus will be on a representative group of mammals, particularly 1) small mammals (rodents and shrews), 2) larger rodents and rabbits, 3) mesocarnivores (raccoons, fox, skunks) and 4) white-tailed deer. We hope future efforts will expand to include collecting information on bats, birds, amphibians, reptiles and invertebrates. We are also investigating the incidence and abundance of disease-causing black-legged ticks along WUI.



Dr. Glenn Johnson – Conservation of Threatened Species

231 Timerman Hall, 267-2710, johnsong@potdam.edu

I have a continuing project initiated during the beginning of the pandemic that brings many years of research on the conservation of the threatened Blanding's Turtle to the applied management stage. Perhaps the biggest threat to this species in the North Country, which is a stronghold in New York, is the high mortality to both adult and offspring during the annual nesting season. Females often have to cross roads to get to favored nesting areas (direct mortality threat), or they nest in row crop fields, which look great early in the season (open sites exposed to the sun), but become ecological traps as the corn grows and shades the site, resulting in much reduced nest success (indirect mortality threat). Because predation on nests is so high (90%!), this species needs every opportunity for a successful nest just to replace themselves in a long lifetime of breeding. So, we are constructing large potential nesting areas where turtles do not have to cross roads AND that are maintained as open sandy



places protected from nest predators by electric fences. To determine success, we are also trapping and tracking many turtles of multiple species and tracking their movements with radiotelemetry and GPS systems. If this sounds interesting to you, please contact Dr. Johnson for details about participating.



Robert Ewy - Research experience on environmental effects on plants

The two primary projects in my lab are sustainable energy production and herbal medicines, both from shrub willow. Yes, you can get research credit for making energy! If you are at all interested in graduate school, research experience during your undergraduate education is becoming a must. But the most important point is that research is fun! I work with all levels of students, from first year students to seniors. The only requirements to work in my lab are curiosity, a willingness to solve problems, and the desire to learn outside of a book.

You can earn research credit via Biology 485 or an internship.

Guess where this picture was taken. Correct guesses get a free pen. Drop your answers in the box on Prof Ewy's door.



Dr. Sarah Sirsat

Physiology encompasses all biological levels from molecular to whole organism; as a physiologist I have an interest in the how and why at all of these levels. I am especially fascinated by the interplay of avian biological systems and the role phenotype, the outward manifestation of an organism's genetic makeup, plays in physiological responses. My research explores the relationship of phenotype and physiology using a small, precocial bird known as the Chinese Painted Quail or King Quail. Numerous pattern and color mutations have been developed in captivity for this species. I am currently focused on examining physiological differences related to a recessive white pattern

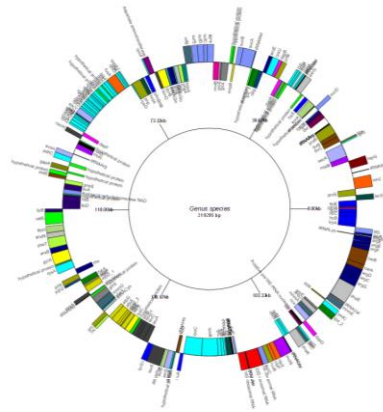


that my students and I have successfully developed into a pure-breeding lineage. These spotted white birds show different growth rates, organ masses, and morphological measurements than the wild type color. My research aims to determine the physiological mechanisms behind these differences, such as changes in metabolism and differences in mitochondrial function of various tissue types.

Dr. Rob Snyder

Dr. Rob Snyder

My main project is looking at the role of primary gut symbionts, in plant feeding insect speciation. Basically, gut bacteria provide the insect essential amino acids synthesis pathways. Closely related species have different diets and require different pathways. This research is interested in explaining how insects adapt and diverge to new diets, which leads to speciation. To date we have sequenced the genomes of two co-symbionts and are using that information to look for patterns in the amino acid pathways between 9 closely related species.



Other projects include egg laying behavior of the Two-spotted treehopper, and the effect of the invasive Viburnum leaf beetle on Two-spotted treehopper habitat.



Interested in independent research? I'm willing to mentor undergraduate research in genomics / bioinformatics and phylogenetics, as well as, behavioral ecology. Don't know what you want to do? Stop by my office (307 Stowell).

Dr. Jan Trybula Molecular Ecotoxicology & Population Genetics

My research is tied to many aspects of genetics and biodiversity. I'm interested in molecular ecotoxicology, how toxins in the environment affect the genetics of various organisms. I'm also interested in the biodiversity of emergent aquatic insects. Worldwide insect numbers and diversity are in decline and pollutants of various sorts are thought to be one of the greatest contributing factors.

Students in my lab examine a wide variety of ways to determine genetic damage caused by a wide variety of pollutants. My most current work is investigating genetic variants of insect chloride ion molecular pore proteins and the effect they may have on susceptibility or resilience to road salt runoff. If you're interested in learning more, please contact me.

Dr. Jessica Pearson - Purple Loosestrife Biological Control Research Project

Dr. Jess Pearson (formerly Rogers) will be starting a sustainability project in the spring, after purchasing new garbage bins for the Union – these will have compost sections as well as landfill and recycling. We will need someone to help with educating students about their use and working with PACES and facilities to make sure they are implemented correctly. This is a great hands-on experience to create lasting change on our campus. Last spring, 4 sustainability interns did a food audit on campus looking at how much food is wasted each week. This was the result of their efforts and now we can start to collect more information about how the food waste is disposed of at nearby compost farms.

Dr. Pearson also has funding for 2-3 projects over the summer, depending on successful grant funding. The first project will just be a few days in May, likely during or just after final exams. This will involve setting up a beetle hatchery at the St. Regis Mohawk Tribe’s Environmental Division Headquarters at Akwesasne. We’ll be building on work we did in 2022 monitoring purple loosestrife there, and distributing beetles throughout the main highways. In addition, we’ll be repeating the monitoring for a 1-2 weeks at the beginning of August. The second project that has funding already is looking a how mowing influences the spread of purple loosestrife. Purple loosestrife is generally a wetland plant, but it can grow well along roadsides and spreads slowly to new wetlands along the road, and through culverts. We’ll be working with staff at Fort Drum to deploy a dye on known plants, mow the plants, and then track the dye on the mowers and across the landscape looking to see how far the pieces spread through mowing. This work will be done when the plants are in bloom, likely the week before classes start.



Another project that is getting going is looking at Eurasian milfoil in Norwood Pond in cooperation with Clarkson University. We’ll be attempting to establish a breeding facility for weevils that prey upon this aquatic plant. In addition, we’ll be working to follow plants and determine where to best deploy the biological controls.



Applications for all these projects will be due the first week of April, 2024. Watch for a specific announcement with details for each project.

Looking Ahead

January 2025!

Tropical Ecology and Conservation

(BIOL 352, 3 upper division credits! Prerequisites BIOL 300 OR permission of instructor!)

Travel to Belize

Please see Dr. Johnson in 231 Timerman
to sign up **AND** leave message at johnsong@potsgdam.edu

This course involves a trip **over Winterim 2022-23** to a variety of field sites across Belize, including a Mayan Ruin, a remote Biological Field Station in the Maya Mountain rainforests and several days on a Caribbean island. If you are interested in this course, you will need to register by early September and attend several meetings prior to the official start of Winterim. Check out this website for information about the BFREE Bio Station: <http://www.bfreebz.org>



Requirements for Graduation

Biology (BS)

Required Biology Courses: 23
 Biology Electives: 16
 Chemistry Courses: 12
 Math and Physics: 15-16
 Total Hours Required: 66-67

Name: _____

Student ID No: _____

Expected Graduation Date: _____

REQUIRED BIOLOGY COURSES

(23 hours)

Course	Title	Hours	Grade
151	Biology I Lecture	3	_____
151	Biology I Lab	1	_____
152	Biology II Lecture	3	_____
152	Biology II Lab	1	_____
300	Ecology Lecture	3	_____
300	Ecology Lab	1	_____
311	Genetics Lecture	3	_____
311	Genetics Lab	1	_____
	Physiology Lecture	3	_____
	Physiology Lab	1	_____
483	Current Topics	3	_____

REQUIRED PHYSICS COURSES

(8 hours)

Course	Title	Hours	Grade
101	College Physics I	4	_____
	AND		
202	College Physics II	4	_____
	OR		
103	University Physics I	4	_____
	AND		
104	University Physics II	4	_____

BIOLOGY ELECTIVES

(16 hours)

Course	Title	Hours	Grade

CHEM 342 (Organic Chemistry II) is highly recommended for Biology Majors seeking careers in health sciences, molecular biology, or physiology.

MATH 151 and 152 (Calculus I and II) are co requisites for the University Physics sequence.

* Ecology is only offered in the Fall semester.

Requirements for Graduation

Biology (BA)

Name: _____

Student ID No: _____

Expected Graduation Date: _____

Required Biology Courses:	22
Biology Electives:	14
Chemistry Courses:	12
<hr/>	
Total Hours Required:	48

REQUIRED BIOLOGY COURSES

(22 hours)

Course	Title	Hours	Grade
151	Biology I Lecture	3	_____
151	Biology I Lab	1	_____
152	Biology II Lecture	3	_____
152	Biology II Lab	1	_____
300	Ecology Lecture	3	_____
300	Ecology Lab	1	_____
311	Genetics Lecture	3	_____
311	Genetics Lab	1	_____
	Physiology Lecture	3	_____
	Physiology Lab	1	_____
483	Current Topics	3	_____

REQUIRED CHEMISTRY COURSES

(12 hours)

Course	Title	Hours	Grade
105	General Chemistry I	3	_____
105	General Chemistry I Lab	1	_____
106	General Chemistry II	3	_____
106	General Chemistry II Lab	1	_____
341	Organic Chemistry I	3	_____
341	Organic Chemistry I Lab	1	_____

BIOLOGY ELECTIVES

(14 hours)

Course	Title	Hours	Grade

* Ecology is only offered in the Fall semester.

* Genetics is only offered in the Spring semester.

Must have a 2.0 GPA or higher in all major courses.

BIOLOGY SPECIALIZATION REQUIREMENTS

Biology Required Courses (13-15 hours)

Biology Electives (4-6 hours)

Course Number	Title	Hrs.	Grade	Course Number	Title	Hrs	Grade
125 125L	Biological Concepts	3		300+			
152	Biology II	3		300+			
152	Biology II Lab	1					
300	Ecology Fall Only	3					
300	Ecology Lab (Optional)	1					
311	Genetics Spring Only	3					
311	Genetics Lab (optional)	1					

College requirements are 16 hours in the Specialization. This does not include the hours for Biology 125 (or equivalent). All electives after the first-year sequence must be 300 or higher.