

# BIOFEEDBACK

Winter 2021-2022

Newsletter of the Andrews University Department of Biology

## Greenhouse becomes the Andrews Botanical Conservatory

The greenhouse that sits atop Price Hall has traditionally been called "the greenhouse," or "the biology greenhouse," or "the Price Hall greenhouse." Over the past few years, and particularly this year, the space has seen a number of improvements that we think warrant giving the space a new name!

There are other greenhouses on campus, but none quite as tropical or diverse as our greenhouse. There are other green spaces on campus, but none that are green through the dead of a Michigan winter. Hence the transition to a botanical conservatory; the Andrews Botanical Conservatory.

If you are in town, you might stop by to visit: the Conservatory is

open Monday through Thursday when school is in session.

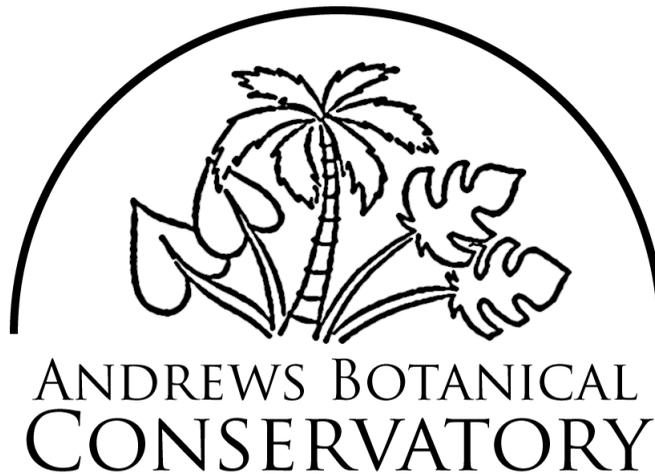
We have made some botanical additions that help to represent the diversity of the world of plants. For example

*Stapelia gigantea*, carrion flower. Not all pollinators like smells that humans like!

*Cyathea cooperi*, Australian tree fern. Yes, a fern. Yes, a tree. A beautiful addition!

*Kalanchoe pinnata*, Leaf of Life. Vegetative propagation from the leaf nodes. And possible anti-cancer properties (just ask Dr. Brian Wong...)

*Ephedra nevadensis*, Mormon Tea. A member of the gnetophyte division of plants.



## Faculty, staff, and students participate in Change Day

On Change Day this fall, students were found supporting a number of projects, on campus and off. This was the fifth annual Change Day. Projects ranged from helping at Neighbor 2 Neighbor, to spreading mulch at the Niles YMCA. A large project took place in the Johnson Gym where over 10,000 packages for local prisoners were assembled throughout the day. Closer to home (our biology home), a group of our biology students planted native grasses in a nearby bobwhite quail habitat. In addition, a small group of students, staff, and faculty spent the morning working in the botanical conservatory. Beds were weeded, glass was cleaned, and cobwebs were removed. The time was well-spent and it was great to meet new people.



Above: Professor Tom Goodwin (center) works with a group of biology students at the nearby bobwhite quail habitat. Top right: Professor Brian Wong (right), along with a number of students, faculty, and staff, worked to spruce up the botanical conservatory. Bottom right: Getting organized for Change Day, (l-r) Renato Mejia, Peter Lyons, Joshua Baltazar, and Anna Galeniece wait on the campus mall as the day's events get started.

## Exploring biology, in and out of the classroom

During the fall semester of this year, Dr. Brian Wong and Dr. Rob Zdor teamed up to teach Medical Microbiology, integrating the study of many medically-relevant microbes from bacteria to viruses and protists. An important topic considering current events in our world. Here (top left), Andras Muranyi, Andy Hernandez, and Faith Kaluba work on an antibiotic sensitivity test and cultures of their own throat swabs.



(top right) In the spring semester of 2021, Dr. Gonzalez-Socoloske brings his Principles of Biology class to a very nearby resource—our botanical conservatory on the roof of Price Hall—where they consider the diversity of plants and ecological biomes.

(bottom) In the fall semester of this year, Dr. Gonzalez-Socoloske brought his General Ecology class to Fernwood Gardens for an analysis of a tall-grass prairie.



## News and events

### Dr. Brian Wong visits Chinese fellowship at Houston International Church as speaker.

Just prior to the pandemic, a young Chinese couple attending Andrews University were called to establish a new Chinese congregation at the Houston SDA International Church. In September of this year, they welcomed Dr. Brian Wong for a series of health evangelism presentations focused on cancer prevention.

They began the series via Zoom, with a presentation entitled “Religion and Natural Science - The Power of Creation.” Dr. Wong and his wife, Teresa, then travelled to Houston for several presentations themed “Cancer Running From Me,” “Health Energizing Me,” and “Happiness Following Me.” In addition to these presentations, Teresa prepared a Chinese vegetarian cooking demonstration. Returning to Berrien Springs, the last two talks of this mini evangelistic series (“Religion & Natural Science–The Power of Life” and “The Power of Living Things”) were held by Zoom.

Brian and Teresa were refreshed by interacting with the Chinese community in Houston and sharing their cancer prevention knowledge.



### Dr. Daniel Gonzalez-Socoloske participates in survey of the Araguaian river dolphin in Brazil.

From August 24-September 5 of this year, Dr. Gonzalez-Socoloske participated in a 10-day survey for Araguaian river dolphins (*Inia araguaiaensis*) along a portion of the Araguaia River in the Cerrado ecoregion of eastern Brazil. The expedition was sponsored by the World Wildlife Fund and was part of the first river-long survey for these dolphins, just recently designated as a unique species.

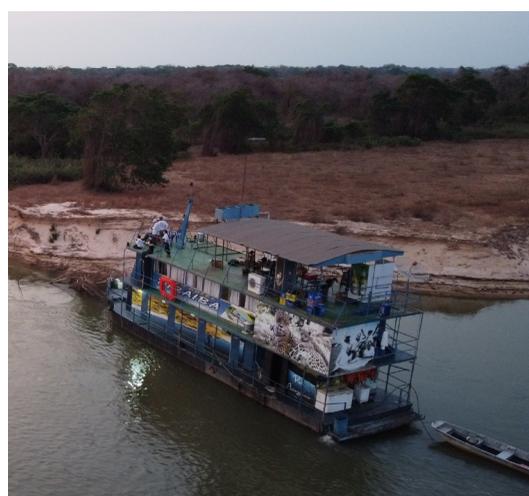
The study divided the river into three 600 km sections: the upper river, the middle river and the lower river. Dr. Gonzalez was invited to participate in the middle river section. This portion of the river was surveyed by 6 scientists, all marine mammal experts.

Surveys were conducted on a live-in riverboat that normally can house 20. Strict COVID protocols were observed including required vaccination of all participants, wearing of masks, and maintaining distance when visiting river towns. Due to the remote nature of this section of the river, which included sections with no towns for 100 km, much of the time was spent on the river boat.

The team was able to successfully survey the river and counted many dolphins, including two river dolphin carcasses. One, an adult male, was encountered in the middle portion of the river, and Dr. Gonzalez assisted in the necropsy and removal of the skull. The expedition doubled the number of skulls for this species that are now available to science. In addition to dolphins, the expedition also encountered Brazilian tapirs, capibaras, giant river otters and black caimans.



In the coming months, the team will analyze and publish the results of the survey. This will be the first estimate of abundance for the species and will provide critical information to the Brazilian government so that they can develop the best strategy going forward to save this unique species of river dolphin.



## And in research...



The Seabird Ecology Team led by James Hayward and Shandelle Henson reports the following publications (student names in bold type):

**Yosia Nurhan** and Shandelle Henson published “Cannibalism and Synchrony in Seabird Egg-laying Behavior” in *Natural Resource Modeling*; this article provides a mathematical model that explores the relationship between intraspecific predation of eggs and every-other-day egg-laying synchrony in these birds.

**Sumiko Weir**, Shandelle Henson, James Hayward, Gordon Atkins, **Ashley Polski**, **WayAnne Watson**, and **Amanda Sandler** published “Every-Other-Day Clutch-Initiation Synchrony as an Adaptive Response to Egg Cannibalism in Glaucous-winged Gulls (*Larus glaucescens*)” in *Wilson Journal of Ornithology*; this paper explores the possible adaptive function of every-other-day egg-laying synchrony in gulls.

Gordon Atkins, James Hayward, and Shandelle Henson published a paper, “How Do Gulls Synchronize Every-Other-Day Egg Laying,” in *Wilson Journal of Ornithology*; this report provides a data-based conceptual model which explains how egg-laying synchrony in gulls develops during some years.

Finally, a paper soon to appear this year by **Ashley Polski**, **Karen Osborn**, James Hayward, **Elliot Joo**, **Athena Mitchell**, **Amanda Sandler**, and Shandelle Henson is entitled “Egg Cannibalism as a Foraging Tactic by Less Fit Glaucous-winged Gulls (*Larus glaucescens*)” in *Wilson Journal of Ornithology*; this contribution provides the most detailed assessment to date of a behavior known to occur in many species of gulls.



Daniel Gonzalez-Socoloske and colleagues published a number of papers in the past year.

In late 2020, Daniel Gonzalez-Socoloske, together with Nicholas P. Tippery (University of Wisconsin-Whitewater), Nelly del Carmen Jiménez Pérez (Universidad Juárez Autónoma de Tabasco), and Donald H. Les (University of Connecticut) published “New Record of *Bacopa egensis* (Plantaginaceae) for the Flora of Mexico” in the *Journal of the Botanical Research Institute of Texas*. This was the first record of the the Brazilian waterhyssop, an aquatic plant, for the flora of Mexico, extending the natural range north from South America.

Another first was published in early 2021, when “First Report of Pygmy Killer Whales (*Feresa attenuata*) in Cuba” was published in *Aquatic Mammals*. In this study Daniel Gonzalez-Socoloske and Anmari Alvarez-Aleman (Clearwater Marine Aquarium Research Institute), together with colleagues Boris Garcia-Dulzaides and Leandro Rodriguez-Viera (University of Havana) reported the first record of Pygmy killer whales in Cuba from a

live stranding that occurred in 2016.

**Amanda Moore** and Daniel Gonzalez-Socoloske, with Adam Hartstone-Rose (North Carolina State University) published “Review of Sensory Modalities of Sirenians and the other Extant Paenungulata Clade” in *The Anatomical Record*. In this review the sensory modalities of sirenians and their relatives are compared and contrasted. This was a chapter of Amanda Moore’s (MS 2020) thesis work.

Daniel Gonzalez-Socoloske was co-author on a large collaborative study published in *Scientific Reports*, “Analysis of Body Condition Indices Reveals Different Ecotypes of the Antillean Manatee.” In this study, Castelblanco-Martínez *et al.* examined 380 wild caught Antillean manatees and showed that populations living in riverine habitats had leaner body shapes than those living in coastal habitats. This work built off of the work from two undergraduates in the Gonzalez-Socoloske lab, both of which have their honors theses cited in the publication.

## Our students are involved in research at many levels

Research is part of the DNA of the Department of Biology at Andrews. It is central to what we do, and we are always looking for ways to involve more students in this rich experience. Here are a few highlights of some research experiences in the past year, involving a sophomore (Faith), a senior (Atalia), and a graduate student (Ritchie).

(left) Faith Kaluba spent a number of weeks in the summer working with Dr. Peter Lyons in the Proteolysis Lab. She successfully expressed an atypical protease from *Agaricus bisporus* in a mammalian cell line. We were very excited to detect enzymatic activity from this unique enzyme! You should expect a publication in coming years.



(center) Atalia Atmadja (at left of photo) and other members of the spring Genomics class presented posters showing their analyses of a soil bacterium and a protein found within. This was a lab project that was ongoing throughout the semester, providing each student with a course-based research experience.



(right) Ritchie Saint Jean defended his master’s thesis in November. His research project focused on the functions of four homologous genes from the frog *Xenopus tropicalis*. These genes showed signs of originating through gene duplication, and he was interested in comparing their functions and distributions.



## Alumni calling songs



Greetings from Malawi! My name is Brent Sherwin (BS, 2011), and I am currently serving as a general surgeon along with my wife and son at

Malamulo Adventist Hospital (MAH) in the southern region of Malawi on the continent of Africa. Here are a few highlights of what brought me to Malawi.

During my time at Andrews University I spent a year as a student missionary in Peru, an experience that was instrumental in helping me decide to go into the medical field as well as to work in long-term mission service.

After graduating from Andrews in 2011, I went to Loma Linda University for medical school, which furthered my desire to work in missions. I became a part of the deferred mission appointee (DMA) program which helps support medical missionaries so that they can serve after residency. I completed my residency training in general surgery in 2020, but during my training I had the opportunity to rotate at MAH. I knew then that it was where God wanted me to go.

Currently at MAH we have a surgical training program that is part of the Pan-African Academy of Christian Surgeons (PAACS). The goal is to train surgeons from all over Africa to become competent and Christ-centered. Ultimately the goal is to have the trainees return to their home countries to improve the quality of surgical care.

I am blessed to be serving at MAH and I would encourage anyone interested in mission service to take the plunge and

get out of your comfort zone by serving others whether at home or abroad. It will change your life!



Mary Ann (Kim-mel) McNeilus (BA, 1966) obtained an MS in Microbiology from the University of Michigan and an MD from Loma Linda University School of Medicine.

After marrying Marnelle McNeilus, Mary Ann worked in Family Medicine in Rochester for some time. However, God had other plans. Mary Ann and her husband volunteered for two years in the Cambodian refugee camps along the eastern Thailand border. They then accepted a GC call to serve in Juba, Sudan, and Ghimbi Hospital in Ethiopia.

In 1986, after returning from the mission field, the family went to Uchee Pines Institute. Since then Mary Ann has practiced and lectured extensively on natural treatments and disease prevention.

Mary Ann and Marnelle have a home health retreat in southeastern Minnesota—Mercy Valley Farm—located at the edge of the Big Woods. They use practical home remedies in their work among the Amish in nearby communities.

After returning to Cambodia many times, Mary Ann saw the need for training gospel workers to more effectively minister to the physical and spiritual well-being of people. In response to that need, she compiled a simple manual entitled *God's Healing Way*. It is her desire that God's people may experience the joy and satisfaction that comes from personally ministering to others in a suffering and dying world.



Ashley Polski (BS, 2016) graduated from medical school at the University of Southern California in May 2021. Part of her medical school experience included a funded research year studying

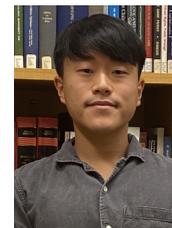
retinoblastoma (a childhood eye cancer) at Children's Hospital Los Angeles. She is now completing a residency in ophthalmology at the Moran Eye Center at the University of Utah in Salt Lake City. She was recently selected for a scholarship to support her research in this field over the next 4 years. You can find more information here: <https://utah.arcsfoundation.org/2021-arcs-scholar-awards>



Christina Mercado (BS, 2021) is a research assistant in the Meiler Lab at Vanderbilt University. Her work in the Meiler Lab involves expressing and purifying various

soluble and membrane proteins from *E. coli* to support computational studies and analysis. For example, she is currently working with the membrane protein epidermal growth factor receptor (EGFR) for structural and NMR studies. She is hoping to continue to pursue research interests in structural biology and biochemistry in graduate studies. She recently co-authored a paper published in PLoS Computational Biology: <https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1009555>.

Nate Jung (BS, 2016) and Hazel Ezeribe (BS, 2016) are both enrolled



in medical school at Loma Linda University. They recently completed the MA Bioethics program, and will complete MD degrees in 2022.



Nate plans to pursue a residency in anaesthesiology and hopes to be a part of the hospital ethics team. Hazel plans for a residency in general surgery and ultimately a transplant surgery fellowship. Blessings in these endeavors!



Photo at left: Dr. Brent Sherwin poses with colleagues and surgical trainees within the Pan-African Academy of Christian Surgeons program.

Some of our graduates of 2021, now alumni!



We'd love to hear from you! And we'd love to share important events in your lives with other alumni via this newsletter. Send us an email or letter to let us know what is new in your life. Below are some suggestions if you don't know what to say! Photographs are great too.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Year you graduated from AU \_\_\_\_\_ AU degree \_\_\_\_\_

Other degrees since graduating from AU \_\_\_\_\_

Your current employment \_\_\_\_\_

Your current interests and activities \_\_\_\_\_



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