

Highlands Biological Foundation  
Annual Membership Meeting 2021  
June 30, 2021 at 3pm



Annual Membership Meeting, June 30, 2021

1. Approval of the minutes of the previous meeting

2. Reports

a. President

b. Treasurer

c. Secretary

3. Reports of Committees

a. Education

b. Development

c. Garden

4. HBS Update

5. Election of Trustees

6. Unfinished Business

a. North Campus Update

7. New Business

a. Institute for the Environment

Susan Cohen, Assoc. Director of Institute of the Environment at Chapel Hill

8. Adjournment

Highlands Biological Foundation			
2020-2021	20-21 Budget 2	Actual 6.1.2021	Variance to Budget 2
<b>Income</b>			
<i>Ordinary Income</i>			
Public Support			
Annual Fund/Membership	\$ 150,000.00	\$ 285,395.00	\$ (135,395.00)
Grants	\$ 20,000.00	\$ 23,000.00	\$ (3,000.00)
Nature Center Donation Box	\$ 2,000.00	\$ 1,228.00	\$ 772.00
Nature Center Income			\$ -
Nature Center Camps		\$ 11,330.00	\$ (11,330.00)
Retail Income	\$ 5,000.00	\$ 7,220.00	\$ (2,220.00)
Program Fees		\$ 1,779.00	\$ (1,779.00)
Special Events Income			\$ -
Highlands-on-the-Half-Shell		\$ -	\$ -
Soirée		\$ -	\$ -
Other Seasonal Education Events		\$ -	\$ -
Summer Education Event	\$ -	\$ -	\$ -
<b>Total Ordinary Income</b>	<b>\$ 177,000.00</b>	<b>\$ 329,952.00</b>	<b>\$ (152,952.00)</b>
			\$ -
<i>Other Income</i>			\$ -
Scholarship Funds Appropriated	\$ 6,000.00	\$ 10,375.00	\$ (4,375.00)
Operating Balance Appropriated	\$ 52,500.00		\$ 52,500.00
Institute for the Environment	\$ 100,000.00	\$ 100,000.00	\$ -
North Campus Overage	\$ 150,000.00	\$ 139,228.00	\$ 10,772.00
Botanical Garden Appropriated Funds	\$ 10,800.00	\$ 6,874.00	\$ 3,926.00
Carpenter			\$ -
Haynes	\$ 4,935.60		\$ 4,935.60
PPP Loan Forgiven	\$ 32,500.00	\$ 32,500.00	\$ -
<b>Total Other Income</b>	<b>\$ 356,735.60</b>	<b>\$ 288,977.00</b>	<b>\$ 67,758.60</b>
			\$ -
<b>Total Income</b>	<b>\$ 533,735.60</b>	<b>\$ 618,929.00</b>	<b>\$ (85,193.40)</b>
			\$ -
<b>Expenses (Operating)</b>			\$ -
Grants-in-Aid	\$ 8,000.00	\$ 1,875.00	\$ 6,125.00
HBF Sponsored Research Projects	\$ 5,000.00	\$ 4,950.00	\$ 50.00
Professional Development	\$ 2,000.00	\$ 674.00	\$ 1,326.00
Board Expenses HBF	\$ 500.00	\$ 222.00	\$ 278.00
Maintenance and Repair - Equipment	\$ 500.00	\$ 455.00	\$ 45.00
HBF Properties Costs	\$ 2,500.00	\$ 8,767.00	\$ (6,267.00)
Equipment Purchase - Foundation	\$ -		\$ -
Bank/Credit Card Fees	\$ 2,500.00	\$ 1,764.00	\$ 736.00
Sales Tax	\$ 500.00	\$ 69.90	\$ 430.10
Property Tax	\$ 800.00		\$ 800.00
Mileage	\$ 500.00	\$ 224.00	\$ 276.00
Dues and Subscriptions	\$ 10,000.00	\$ 11,869.00	\$ (1,869.00)
Advertising and Marketing	\$ 2,000.00	\$ 1,640.00	\$ 360.00
Professional Fees	\$ 12,000.00	\$ 17,732.00	\$ (5,732.00)
Insurance - D & O, Liability, Workers Comp	\$ 3,500.00	\$ 3,620.00	\$ (120.00)
Office Supplies, Postage and Printing	\$ 5,000.00	\$ 4,775.00	\$ 225.00
HBF Salaries, Benefits and Withholding	\$ 188,000.00	\$ 202,433.00	\$ (14,433.00)
Intern Wages	\$ 2,000.00	\$ 15,232.00	\$ (13,232.00)
Intern Expense		\$ -	\$ -
Nature Center Expenses	\$ 10,000.00	\$ 17,380.00	\$ (7,380.00)
Volunteer Program	\$ 500.00	\$ 282.00	\$ 218.00
Employee Expense	\$ 1,000.00	\$ 1,369.00	\$ (369.00)
<b>Total</b>	<b>\$ 256,800.00</b>	<b>\$ 295,332.90</b>	<b>\$ (38,532.90)</b>
			\$ -
<b>Other Expenses (TRA or Projects)</b>			\$ -
Botanical Garden	\$ 10,800.00	\$ 6,874.00	\$ 3,926.00
Scholarships	\$ 10,375.00	\$ 10,375.00	\$ (10,375.00)
Zahner Lectures			\$ -
Carpenter			\$ -
Institute for the Environment	\$ 100,000.00	\$ 100,000.00	\$ -
North Campus Construction	\$ 150,000.00	\$ 139,228.00	\$ 10,772.00
<b>Total Other Expenses</b>	<b>\$ 271,175.00</b>	<b>\$ 256,477.00</b>	<b>\$ (156,477.00)</b>
			\$ -
<b>TOTAL EXPENSES</b>	<b>\$ 527,975.00</b>	<b>\$ 551,809.90</b>	

## **EDUCATION AND OUTREACH**

Members: Karen Patterson, Bill Clarkson, Jennie Stowers, Paige Engelbrektsson, Sarah Morgan Wingfield, Charlotte Muir, Carol Stewart, Cathy Jones, Jason Love, Melanie Mauldin

### **Zahner Lectures:**

Second, the **2021 Zahner series** will kick off on July 15. By now you will have received a schedule. Most, if not all will be in person. The Nature Center is still under WCU COVID restrictions, so we will meet at several settings – the Highlands Community, tents in the Meadow, and the amphitheater. This gives us the opportunity to “try out” various venues in search of more space. Please let us know your impressions of each venue as a Zahner venue –ease of access, acoustics, etc.

If you have suggestions for 2022 speakers, send them to Charlotte or Winter. Some of you know amazing people who would be terrific Zahner guests.

### **Summer Camps:**

Nature Camps are underway, with some changes based on past summers, and to continue to comply with COVID restrictions in classroom settings. We now have different drop off sites for simultaneous camps, one at the Nature Center, and the other at the North Campus. This was done to relieve the congestion from two camps dropping campers off on the busy Horse Cove Road. Class sizes are reduced to meet spatial distancing, and children are still required to wear masks. But, as always, the camps are great successes. We only wish we could accommodate more children.

### **Nature Center:**

The Nature Center has reopened, and is hosting the usual summer series of events such as the salamander meander, night creatures, etc. However, because WCU considers the Nature Center the same as a classroom, number of visitors is limited, and masks are required. This does not seem to deter people. They make reservations, and/or are happy to wait outside until there is space for them.

After hosting the Drawdown Bookclub last fall, Paige built on her success hosting Zoom gatherings, and put together a 3- lecture package on regional research on climate change: bird nesting, salamander behavior, and plant communities. All were excellent. If there is anything good about the last year, it is that it allowed Paige and Winter to experiment with new ways to reach bigger, and more geographically diverse audiences. We hope to continue these events, even as everything on campus returns to normal.

Melanie Mauldin has put together a terrific merchandise kiosk, focused mostly on things for children, but she also has books, t-shirts and hats, jewelry, hostess gifts, and more. She ran a popup over Memorial Day weekend, which brought in several thousand dollars.

### **Carpenter Lecture:**

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The rescheduled Carpenter Lecture, featuring Katharine Wilkinson is scheduled for Oct 21-22. The public lecture will be at 10:00 am on October 22, at the Methodist Church. More to follow.

**Funding:**

HBF provide more than \$20,000 to summer 2021 scholarship recipients. As always, Paige and Winter deserve tremendous kudos. They never missed a beat this winter. And their offerings were very professional, and/or well designed and eye-pleasing. And, Paige has hired an excellent summer staff to assist them. I value the many contributions and suggestions from individuals on the Education Committee who never refuse an ask, or fail to offer excellent suggestions, but really, our success rests with our staff, permanent and seasonal. So thanks to all of them.

### **Development Committee Report**

**Development Committee:** Monte Gaillard, Chair, Tricia Allen, Ruthie Edwards, Greg Gregory, Julia Grumbles, Jennie Stowers

What a year! Last summer as the development committee considered our annual fund goal, the world was filled with fear, with no known precedent of how to navigate financially through the year. We realized as the days ticked by that events were not going to be able to supplement our annual fund. We set a realistic **goal of \$150,000**. As the days rolled by, our trustees, our staff, and our members rose to the challenges. There truly was a silver lining.

Our staff of Charlotte, Winter and Paige used all their talents, their creativity, and hard work to keep the wheels of the organization turning, working together! Winter picked up the reins from Charlotte, as little Eliza, a member of the future generation, joined the world; a reminder of why our mission at the Highlands Biological Foundation matters, not only to us, but to those who follow. Paige expanded our membership base through her on-line walks through the garden, and led our first book club, based on *Drawdown; the most comprehensive plan ever proposed to reverse global warming*, edited by our Carpenter Lecture speaker, Katharine Wilkinson. Winter created interesting and beautiful newsletters, as well as on-line pieces.

**ALL these efforts contributed to our financial success.**

**Our annual fund raised a total of \$285,395 - or \$135,395 OVER our goal.**

Our Trustees responded with overwhelming support! A priority outlined in our strategic plan was to build a board that is engaged, with skill sets that fill the needs of the organization, and financially support the organization at whatever level is available to each of them. The challenges of the past year tested us on all fronts. Our Trustees generosity exceeded our expectations! **We hit a record \$101,947** in Trustee Giving! Gratitude to all of YOU! These gifts reflect the commitment of each member to the vision of the Highlands Biological Foundation – *to inspire present and future generations to preserve and protect the unique environment of the Highlands Plateau by raising awareness through experiential learning.*

Our strategic plan outlined the following goals under Resource Development:

*Fundraising: continue to grow private philanthropy to support the mission and vision of the Highlands Biological Foundation...CHECK! Board Development: Become the premier nonprofit board of directors in the Highlands Plateau region. CHECK!*

Under the tireless leadership of Julia Grumbles, the Highlands Biological Foundation has expanded on many levels, but especially financially. She led the charge and promoted the vision for our new entrance to our campus. Our North Campus welcomes our visitors into an educational experience of native flora and fauna.

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As I step down as chair of the development committee after four years, I thank each of our members for their special talents. Ruthie Edwards, with her boundless energy and ideas brings laughter and fun to our committee – the Soiree is a success today as the result of Ruthie’s talents from flower arranging to finding caterers. Greg Gregory grounds our committee with his commonsense approach, and deep love and appreciation for the Foundation and the Plateau. Tricia Allen, with years of experience in the development field, adds ideas, and insights towards success. Tricia reflects a long legacy with the Foundation and the Highlands Community. Jennie Stowers knowledge of the Foundation, its members, and her spirit of community adds a unique perspective to development. And Julia Grumbles always keeps us focused on our priorities. And every step along the way was made easier and more efficient with the support of Charlotte and Winter.

Sonya Carpenter and R.B Haynes introduced me to the Highlands Biological Foundation. I will be forever grateful for their encouragement to become involved and serve. I thank each Trustee for their numerous contributions both financially and through their personal skills and time commitment. The future is bright. Our mission continues to touch more lives as we expand our reach. Our work has never been more important.

<b>Three-year comparison</b>	5/31/2019	5/31/2020	5/31/2021
Annual Fund	\$165,500	\$180,194.42	\$ 285,395.00

<b>2020-21 Budget v Actual</b>	Budget	05/31/2021	Variance
Annual Fund + Memberships	\$150,000.00	\$285,395.00	\$ 135,395.00

**Goals for 2021-2022**

- Annual Fund \$210,000
- Events \$121,000

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### **Botanical Garden Committee Report to Highlands Biological Foundation**

Committee members include Lisa Armstrong (Chair) Frank Langford, Linda Barlow, Bill Reeves, Marianne Jenkins, Alex Smith, Jason Love and Rachel Martin

This year, the HBF garden committee transitioned roles as HBS created a Gardens and Grounds Committee which now oversees the grounds of the HBS campus. HBF along with HBS staff structured a proposal procedure in which HBS G&G may apply for funding from HBF Garden Committee for projects in the botanical garden. We are still working on how HBF can best invest in the botanical garden to improve it for our community. It is such an asset to Highlands and HBF has supported improvements within it for many years.

HBS has also been able to fully fund the HBS Horticulturist position which HBF has supported for the past 9 years. WCU hired Rachel Martin as the fulltime horticulturist in December. She is a great asset to the garden.

Expenses for the botanical garden this year totaled \$6,874.00. Most of this was for the completion of the Cottage Garden project completed by the HBS G&G Committee.

The HBF Garden Committee has begun to focus on the north campus area. They selected Sonya Carpenter, former HBF Director and current north campus project manager, to stay on to maintain that area. We have plans for further enhancements there as plants begin to mature.

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## HIGHLANDS BIOLOGICAL FOUNDATION NOMINATING COMMITTEE REPORT 2021

Committee Members: David Martin- Chair, Martha Stibbs, Jennie Stowers, Julia Grumbles, Carol Stewart and Bill Reeves

Nominated to serve a second term:

Monte Gaillard  
Jim Milby  
Amy Patterson  
Bill Reeves  
Sarah Morgan Wingfield

### BIOGRAPHIES OF NOMINEES:

Monte Gaillard

- Asheville, NC/Highlands, NC
- Former Director of Philanthropy for The Nature Conservancy (SC)
- Chaired HBF Development Committee for 4 years

Jim Milby (Finance)

- Highlands NC/London/Clearwater, FL
- Banker (and still at it!)
- Other boards/organizations: Lynn University, Boca Raton FL
- HNF Finance Committee Member

*What part of HBF interests you the most? The gardens and the joy they bring to everyone on another wonderful day in Highlands.*

Amy Patterson (Finance)

- Highlands, NC
- Vet (First fulltime veterinarian in Highlands!)
- Other boards/organizations: Highlands Board of Commissioners since 1989, Highlands Cashiers Land Trust Board Member, Former PAC Board Member
- HBF Treasurer

Bill Reeves

- Highlands, NC
- Retired partner with Spencer Stuart, a global executive search and leadership advisory firm
- Other boards/organizations: Bascom, Church of the Incarnation
- HBF Nominating Committee, Former Member of Executive Committee



Sarah Morgan Wingfield

- Highlands, NC by way of Atlanta
- Artist
- Other boards/organizations: Junior League of Atlanta, Tomodachi Club
- Education Committee Member and Nature Center Volunteer

*“My interest in HBF stems from my love of nature and the need to preserve and sustain it and appreciate the educational programs/resources it offers.”*

## Procedure for Nominating Trustee Candidates

The following criteria should be considered when making HBF Trustee nominations:

1. The nominee is supportive of the HBF mission.
2. The nominee is willing to share his/her volunteer time, talents, energy, and resources with HBF.
3. The nominee will demonstrate a fiduciary responsibility to HBF.
4. The nominee will help fill HBF's need for a well-rounded board with balanced talents and professional experience.
5. The nominee will contribute the HBF annual fund.

### NOMINATING PROCEDURE:

Trustee nominations should be submitted a minimum of 30 days prior to the June Board meeting. Nominations will be accepted throughout the year, up to the 30-day deadline. Nominations will not be accepted from the floor of the Annual Meeting. The Nominating Committee needs 30 days to properly vet the candidates, collect pertinent information, and allow time for the Board to review the nominees.

Members of the Foundation are encouraged to self-nominate, or to nominate other HBF or Highlands community members whom they know to meet the Trustee criteria.

The person making the nomination should send by email or hand-delivery to the Executive Director the following information: the name of the proposed candidate; a bio with all contact information; and a letter stating why he or she feels that this candidate is appropriate and would be an asset to HBF.

To encourage nominations, the Nominating Committee will send out a call for nominations to all HBF members, either as a notice with the spring email, or as an independent email notice.

**Once an individual is identified and accepted by the Nominating Committee, the Board Chair with the Executive Director will approach the nominee to discuss**

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**board responsibilities and also to confirm the interest of the individual. *No member of the Nominating Committee should approach or discuss the nomination with the individual.***

The Nominating Committee will submit their nominations to the Executive Committee 20 days prior to the June Board meeting. The Executive Director will distribute the list of nominees and attached information to the Board of Trustees seven days prior to the June meeting. This will allow time for the Board to familiarize themselves with the candidates prior to the meeting. The Board members should direct questions about nominees to the members of the Nominating Committee. Board of Trustee nominees will be voted on at the June meeting.

**Once the individual is confirmed at the June Meeting of the Board of Trustees, the Executive Director or Board Chair will contact the individual and a letter of congratulations will be sent to the individual with a reiteration of the board responsibilities, as well as the schedule for the Trustee Meetings. This is the appropriate time for the Chair or the Executive Director to meet with the individual to discuss their individual interests and to determine their committee options.**



**STATION UPDATE**  
***HBF Board of Trustees Summer Meeting***

**Jim Costa, Executive Director**  
**30 June 2021**

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Happy Summer! As I write this on the summer solstice, I reflect on what a joy it is to have the return of in-person programming this summer — courses, workshops, researchers, public programs like camps and special events, even meetings! (Never thought I'd welcome meetings...). What a difference a few months makes: there was still much uncertainty over residential programming of all kinds at the Station at the time of our April meeting, and fortunately we were green-lighted to welcome back everyone from researchers, faculty, and students to summer staff and campers. And, we continue to make steady progress in Station planning and improvements in pursuit of our strategic plan. Here is an overview of Station happenings of the past few months:

**1. Personnel**

- We welcomed David Ford, our new Program Assistant, at the beginning of June! You can find David in the main office and all around campus, where he'll be helping manage the Station reservation calendar and course registrations, and assist with course and research program management. David brings us back to full staff, after a long Covid-related university hiring freeze. He comes to us from the Gray Fossil Site in TN, and with his background in biology (BS with an ecology and evolutionary biology concentration) and science education (MS) he's a natural addition to our intrepid HBS team, and we're delighted that he's joined us.
- We are fortunate to gain an additional colleague from WCU Facilities, Rob Russell, who will assist Mike with maintenance and housekeeping!
- We could not do what we do each summer without excellent summer staff, and we are fortunate to have quite an outstanding crew this year. Here are short bios:

**Botanical Garden Assistants:**

Mary Featherstone is majoring in Horticulture at Clemson University and is expected to graduate in 2023. She served as a Camp Counselor at the Clemson Outdoor Lab and is a mentor to incoming freshmen at Clemson. Mary's grandmother worked as an educator at HBS several decades ago.

Tasmia Zaman was an IE student at HBS in 2016. She graduated from Chapel Hill in 2020 with a BA in Environmental Studies. She worked at the Piedmont Wildlife Center as an animal

caretaker, conducted research on birds at a restored wetland site, and developed curriculum and served as an instructor to high school students through the UNC Splash Program.

#### **Nature Center Naturalists:**

Holly Theobald graduated from UNC-Asheville in 2015 with a BS in Environmental Studies. She has worked as a Program Instructor for the Center for Human-Earth Restoration in Raleigh, a hydrogeologic field assistant at UNC-Asheville, and a geological lab intern at the NC Museum of Natural Sciences.

Katelyn Williams received a BA in Biology from Guilford College in 2016. During college she worked as an intern for various research projects. Katelyn currently works at Haw River State Park as an Environmental Educator.

Jon Gorter received a BA in English from Calvin College in Grand Rapids, Michigan in 2017. He will graduate in May from the University of Michigan with an MS in Environmental Justice. He has worked in the Shiawassee National Wildlife Refuge conducting biological surveys, served as the Resident Naturalist for the University of Georgia's field station in Costa Rica, and worked as a Naturalist at the Aspen Center for Environmental Studies in Colorado.

#### **Summer Research Assistants:**

Kristin Heape is pursuing a BS in Natural Resource Conservation & Management at WCU and expects to graduate in spring of 2022. She has worked in the entomology lab at WCU processing insect specimens for curation, served as a Teaching Assistant for the ornithology portion of the Wildlife Management class, and has processed trail camera images for a coyote/fox research project. In previous summers she worked as a whitewater rafting guide on the Chattooga River.

Mia Taylor is also pursuing her BS in Natural Resource Conservation & Management at WCU and has a keen interest in bird ecology and conservation. She has volunteered at Balsam Mountain Trust and, with fellow Wildlife Biology Club members, at Big Bald Banding Station. Mia also took the 2-week HBS *Biology & Conservation of Birds* course with Rob Bierregaard this summer.

Jessica Wash received her BA in History at WCU in 2020, with a concentration in Public History, and is now a graduate student. In partial fulfillment of her MA requirements, Jessica is working with us this summer as a research intern in the HBS Archives, helping with cataloging and curation in addition to assisting her advisor, Dr. Jessie Swigger, with research for HBS/Clark Foreman Museum National Register study list nomination process.

## **2. Budget**

- The lion's share of our budget comes from WCU/State of North Carolina, and about 1/4 of this consists of revenue generated through our course, workshop, housing, and lab/bench fees. Our revenue budget still has a Covid-induced hole, but with the return of residential programming, visiting researchers, etc. we are steadily filling it.
- Fortunately, the State of NC budget outlook is not as bleak as was feared last fall, and at the moment it appears that we will not suffer any budget reductions. On the contrary, we continue to advocate for budget expansion, once again including in our annual recurring budget request to the university justifications for a substantial budget increase to help us with the steeply rising costs of housekeeping and utilities. Unfortunately it does not appear that an increase will be forthcoming this year, but we will continue to press our case. Watch this space...

### 3. Facilities and Equipment

- The UNC System Office awarded us a \$45,889 research equipment grant this spring! This grant supported the following equipment purchases:
  - 28 gallon flammable liquids cabinet
  - 2 iPads to use with echo meter touch 2 bat detectors
  - IT/database services (Dr. Wade Sheldon) to harvest climate station sensor data, QA/QC data through MatLab scripts, and hosting data online
  - Commercial-grade dehumidifier for downstairs of Bruce Biodiversity to address problem with mold that was impacting microscopes
  - 3 commercial-grade dehumidifiers for Coker labs and classrooms to address problem with mold that was impacting equipment, cabinets, and furniture
  - BioMark HPR Plus waterproof PIT-tag reader, ISO 11784/11785 FDX-B and HDX PIT-tags, and BioMark BP Plus Portable Antenna for HPR Plus reader
  - Set of 24 glass bottles with caps for ISCO automated water samplers
  - 4 12 volt, 8.5 amh sealed lead acid batteries for powering ISCOs
  - 2-bank battery tender for charging 12 volt, 8.5 amp sealed lead acid batteries for ISCOs
  - Trupulse 360R Rangfinder/Hypsometer for vegetation/tree survey work
  - 6 Motic compound microscopes + 20x ocular lenses
  - High-quality large flat-bed scanner for dendrochronology research
- When it rains it pours, and the UNC System Office also recently notified us of **another** \$60K award for research equipment, forthcoming early in the new FY. For this grant we are targeting specialized equipment for plant ecophysiology research and teaching.
- Mike McMahan has been ably remodeling our field equipment room, behind the Coker Lab.
- Cataloging and organization of our archives continues with the assistance of WCU public history MA student Jessica Wash and volunteer Bryding Adams, retired museum curator and archivist who also volunteers in our Botanical Garden.
- Plans proceed with seeking support for funding our top two facilities priorities, as per our strategic plan: (1) conversion of the Weyman Building into a social space for the HBS community; and (2) new faculty/ researcher housing.
- Future university Renovation & Repair funding requests:
  - Nature Center window replacement and structural repairs
  - Valentine House structural issues
  - Weyman Building renovation --> Weyman Commons or Weyman Center
  - Architectural design services for faculty/researcher residence(s)
- The new Aquatics Lab is now fully operational, with thanks to Mike! The fancy new WCU-funded backup generator is now installed, and MS student Zeb Hull, a GIA recipient, is in there researching Mudpuppy/Hellbender behavioral interactions.
- We have not yet received our first shipment of Rainbow Mussels from the NC Wildlife Resources Commission, to raise in Lindenwood Lake as part of a mussel conservation breeding partnership, but we hope to obtain the mussels soon. The mussel breeding apparatus has been constructed and is ready to go.
- Historical background research proceeds the Clark Foreman Museum (aka Nature Center) for the North Carolina historic site study list.

- We have not yet heard about our proposal to Mountaintop Rotary Club of Highlands for equipping the new Sto Stowers Teaching Pavilion with chairs and projection equipment.

#### 4. Gardens & Grounds

- We now have our new BRAHMS database software, installed on a dedicated computer, and Rachel will be developing fields to initiate the living collections database.
- The HBS Gardens & Grounds Planning and Advisory Committee continues to make great progress, meeting monthly, with subcommittees taking on projects: (1) improvements to the moss garden; (2) signage/wayfinding overhaul; (3) development of our conservation mission statement; (4) comprehensive bridges & boardwalks inventory and evaluation in the Botanical Garden, to identify repair and replacement needs.
- Using GPS data for all trails of the HBS gardens & grounds, Jason put together a temporary trail map/brochure. Once a new "artistic" trail map is complete we
- The 'North Campus' garden and pavilion are open for "beneficial occupancy, but we are working through some outstanding issues raised by the State Construction Office inspectors.
- Wednesday volunteer garden work days continue under Rachel's direction, with ongoing work removing invasives, tending to our more sensitive gardens (such as the Rock Outcrop Garden, Moss Garden, and bog area), and maintaining the gardens around the Nature Center and at the Cottages. The group also did some invasives control and additional plantings at the Illges picnic site. *\*Calling All Volunteers\* — please join us Wednesdays in the Garden if you'd like to help out, have fun, and learn about gardening with native plants!*
- The "new" parking lot below Weyman is nearly complete, with parking bumpers on order – these will help define parking spaces for most efficient use of the space.
- We await word from the Mountaintop Rotary Club of Highlands on our Rotary District Grant proposal, which would provide funding for trail work in the historic core botanical garden, building on the trail improvements we made a few years ago partnering with the Greenway. We would implement much the same standards developed for the lake-side trail at that time.

#### 5. Research and Partnerships

- This year's Grant-in-Aid recipients are off and running for the most part — some of the researchers are here now, others arrive later this summer and fall.
- In addition, there are several other research projects going on at the Station this summer, some "in-house" and some with researchers from diverse institutions:
  - The HBS MAPS bird banding project, supported by the Foundation, has been going very well, with 4 successful banding days by the time of this meeting.
  - Drs. Caroline Kennedy, Rebecca Hale, and colleagues and students from UNC Asheville are working with pitcher plant species in the bog, assessing whether *Sarracenia jonesii* (Mountain Sweet Pitcher Plant) hybridizes with *Sarracenia purpurea* var. *montana* (Mountain Purple Pitcher Plant). They'll be comparing pollinators, taking pollen samples, and sampling plant tissue for genetic analysis.

- Dr. Kevin Cavasos and colleagues from UT-Knoxville are doing a summer-long pilot study of public attitudes toward amphibians and amphibian conservation. Their students will be conducting surveys about every other week this summer, strategically stationed at our main visitor entry points – outside the Nature Center and at the Botanical Garden main and Lower Lake Road entrances.
- Entomologist Dr. Jorge Santiago-Blay, Research Associate in Paleobiology at the Smithsonian, will be collecting bees at HBS, in order to compare the bee fauna present today with collections made in Highlands by apidologist Theodore Mitchell in 1920. Dr. Jorge Santiago-Blay is also taking the fleshy fungi course with Andy Methven (E. Illinois Univ.) while he is here.
- Dr. Brandon Sinn (Otterbein University) and a collaborator from West Virginia University were at HBS recently for research related to *Hexastylis* conservation and genetics.
- Dr. Katrina DeWitt (Duke University) visited recently for her research on pitcher plants in Dulany Bog. She is examining the taxonomy and ecological function of the microorganisms inside the pitcher plants, among other things.
- Dr. Grant Connette (Smithsonian Conservation Biology Institute of the National Zoo) and colleagues will be at the Station to continue Grant's long-term salamander monitoring project in the Nantahala. Grant, whose research also takes him to Myanmar, did his PhD research based at the Station, and was a regular Grant-in-Aid recipient.
- Dr. Mark Dugo from Johnson C. Smith University recently visited to plan for his return next month with a group of STEM under-represented minority biology/environmental science students, part of an NSF-funded summer research immersion program.
- Dr. Roseanne Healy and 7 colleagues (University of Florida and Michigan State) are coming later this summer to collect fruiting bodies of certain cup and saddle fungi), as part of an NSF-funded project that involves culturing the fungi and obtaining genome sequencing.
- Lichenologist Dr. Jolanta Miadlikowska and 6 colleagues from the Lutzoni lab at Duke are coming to the Station to collect certain lichens as part of their research into the evolution, ecology, and genomics of fungal symbioses.
- We are awaiting word from the National Science Foundation regarding our walk-in environmental control chamber proposal (\$169,700). We are seeking to replace the current dated dual walk-in units with 3 custom-designed walk-in units with precision temperature and RH control.
- Shout-out to lichenologists Drs. Jessi Allen (Eastern Washington Univ.) and James Lendemer (NY Botanical Garden) on their recently funded NSF grant "Leveraging Next-Generation Sequencing & Biodiversity Exploration to Understand Connectivity in the Imperiled Appalachian Migration Corridor." HBS is a collaborator on this project, funded to host intensive and more general lichen workshops annually over the next 3 years. Jessi and James have taught lichens courses and workshops at the Station for several years, and Jessi currently serves on the HBS Board of Directors.
- Further kudos to James Lendemer and his co-author Erin Tripp on the publication of their *Field Guide to the Lichens of Great Smoky Mountains National Park* (University of Tennessee Press), which we helped support!

- HBS is also a collaborator on an NSF-REU grant submitted by Dr. Brian Byrd, head of the WCU Mosquito & Vector-borne Infectious Disease Laboratory. If funded the grant will support several (1) short courses for vector biology, mosquito control, or public health professionals, and (2) continuing education courses for REHS specialists relating to mosquito and tick-borne diseases. Dr. Byrd also teaches the Rock-pool Ecology course with a focus on native mosquitoes and endemic diseases at HBS.
- The HBF will support Michelle Ruigrok (former IE student, HBS program assistant, and MS student of Tom Martin) to ID stream macroinvertebrates from Coweeta Hydrologic Lab to genus/species as part of long-term longitudinal study of stream macroinvertebrate richness and abundance.
- We were delighted to have Dr. Paul Manos and his partner Diane Lennox here for 2 months this past spring. Paul, a botanist and former Dept. Chair of Biology at Duke, serves as Chair of the HBS Board of Directors and for nearly 20 years has taught the Flora of the Blue Ridge course at HBS. While in Highlands Paul was conducting research on native blueberries. He and Diane also regularly volunteered in the Garden.
- Here's a shout-out to recently published research crediting support by the Station:
  - T. B. Lentz et al. 2021. Prevalence of *Ranavirus*, *Batrachochytrium dendrobatidis*, *B. salamandrivorans*, and *Ophidiomyces ophiodiicola* in amphibians and reptiles of North Carolina, USA. *Herpetological Review* 52(2): 285–293. \*Instructors and students in the HBS 2016 “Biology of Southern Appalachian Salamanders” course are co-authors!
  - Philip R. Gould and William E. Peterman. 2021. Life history mediates the effects of habitat variation on salamander abundance: a multiscale assessment. *Landscape Ecology* <https://doi.org/10.1007/s10980-020-01167-6>. \*Phil Gould was a Grant-in-Aid recipient.

## 6. Education, Outreach, and Public Engagement

- We have a full slate of courses and workshops in summer 2021, following the latest required Covid safety protocols). Registration was slow initially, but most courses were or are at capacity. Completed and upcoming courses:
  - Completed: *Southern Appalachian Grasses*, with Dr. Paul McKenzie (USFWS, retired), *Sedges of the Blue Ridge*, with Dr. Dwayne Estes (Austin Peay Univ.), *Biology & Conservation of Birds*, with Dr. Rob Bierregaard (Academy of Natural Sciences of Drexel Univ.), *Southern Appalachian Mammals*, with Drs. Ed Pivorun (Clemson) and Rada Petric (UNC-Greensboro), *Ephemeroptera, Plecoptera, Trichoptera*, session I, with Dr. John Morse (Clemson)
  - Upcoming: *Biol & Conservation of Lichens* (Drs. Jessi Allen, Eastern Washington Univ and James Lendemer, NYBG), *Fleshy Fungi* (Dr. Andy Methven, Eastern Illinois Univ.), *Biol & Identification of Ferns* and *Field to Database* (Dr. Joey Shaw, UT-Chattanooga), *Conservation Genetics of Salamanders* (Dr. JJ Apodaca, Tangled Bank Conservation), *Research Applications of Drones in Landscape Ecology* (Dr. Susan Cohen and Mr. Fleming Talton, UNC-IE), *Ephemeroptera, Plecoptera, Trichoptera*, session II, with Dr. John Morse (Clemson).
- Completed and upcoming workshops:
  - Completed: *Understanding and Appreciating Lichens*, with Jennifer Love (Macon Co. Schools), *Fireflies 101*, with Dr. Luiz Silveira (WCU)



- Upcoming: *Fishes of the Tuck* (Jason Meador, Mainspring Cons. Trust), *Introduction to Bryophytes* (Ed Schwartzman, Joe Pye Ecol. Consulting), *William Bartram & Naturalists of the S. Appalachians* (Brent Martin, Alarka Expeditions), *Mushrooms of the Carolinas* (Alan & Arleen Bessette; full), and *The Geology that has Shaped the Plateau* (Bill Jacobs, author)
- This is Clemson entomologist Dr. John Morse's 31st season teaching at HBS! An internationally known aquatic insect specialist, a film crew is on site getting footage of Dr. Morse and students for a documentary about his amazing career.
- 7 students taking HBS plant-related courses were awarded John E. Faurey Field Station Scholarships from the Southern Appalachian Botanical Society this year!
- The Highlands Plateau Audubon Society generously supported the 6 students who took the Biology and Conservation of Birds course with full scholarships!
- The fall semester-in-residence program we hold in partnership with the UNC Institute for the Environment is gearing up — we currently have 10 students signed up, and an offer was recently made for our new "IE-Highlands Field Site" program coordinator, generously supported by HBF. The new hire will become an in-house researcher, instructor, & IE program point person on staff, with a joint WCU appointment. Jason, Susan Cohen (IE), and I have been working on staffing the courses, refining the curriculum, lining up research internships, etc. We are also discussing mechanisms to permit WCU students to take this program seamlessly, as opposed to having to matriculate with UNC for that one semester as has been the case in the past. We hope that the process we establish will serve as a model for other UNC schools and students to participate.
- Patrick Brannon and Paige Engelbrektsson did a great job with the pivot to virtual programming last year, and we're delighted with the return of in-person programming and visitation. The Nature Center opened its doors to the public on April 2nd, reservations only. Kudos to Paige and Mike for getting the Nature Center Covid-ready for visitors. Visitation has been high, and camps are in full swing. We're excited that Zahner Lectures will be returning as well as exciting new programs, such as the Carpenter Lecture.
- We have submitted the annual NC Science Museums Grant which supports the HBS outreach education program spearheaded by Patrick Brannon. Despite Covid, in 2020 Patrick Brannon reached 9,379 students in 48 different schools and 10 different adult programs, mostly virtually. Patrick also teaches workshops for environmental educators and gives talks and programs for visiting college groups, such as the Clemson mammalogy course.
- With the busy summer season upon us, we are deferring until fall the introduction of the HBS Education & Outreach Planning and Advisory Committee, the BOD-appointed committee that will vet all on-site educational programming at the Station and help formulate plans for better integrating research and researchers at the Station with public engagement.

## 8. Miscellaneous

- HBS Summer Seminars, an informal series of talks by HBS instructors and researchers, kicked off earlier this month with a great talk by Rob Bierregaard on his osprey research and experience writing a children's book on his research.

- We have had considerable bear activity at the Station this spring, and have had to step up bear safety and awareness for Station residents.
- WCU Mountain Heritage Center director Pam Meister and archivist Loren Berg met with Jessica Wash and Bryding Adams, who have been assiduously cataloging our archival collections, to consult on arranging the collection.
- HBS recently hosted a staff retreat for the WCU Office of International Programs, and will soon host staff from the WCU Advising Center.
- The Highlands Historical Society's latest exhibits include an updated Highlands history exhibit, including Cherokee artifacts from the HBS Cleaveland Collection, our founding museum collection.
- The HBS Galápagos Program travelers, from our amazing February 2020 trip, recently gathered for a reunion. This inaugural Station travel program was a great success, and plans are proceeding for our next trips, one international (perhaps Patagonia) and one domestic (Bartram's Garden and other Philadelphia-area botanical gardens) — watch this space!

## 9. Director and Associate Director's scholarly and other activities

- Jim has decided to defer his scholarly leave (sabbatical) as Senior Visiting Fellow at the University of Hamburg owing to continued Covid-related uncertainties. He will be here in the upcoming academic year, helping coordinate and teach in the IE program.
- Jim recently gave a talk on the "world's oldest botanical gardens" for our friends in the Laurel Garden Club, and will be presenting this talk again for the Mountain Garden Club later this summer.
- Jim was interviewed on his Darwin work for *The Dissenter* podcast, with Ricardo Lopes, based in Portugal.
- In March Jim gave a virtual talk to the Tennessee Valley Wild Ones *Plant Natives!* Symposium: "If you want to feed the birds, first feed the bugs!"
- This past semester Jim served as a member of the WCU Natural Resources & Conservation Management Program review team.
- With the assistance of his wife Leslie, a scientific illustrator, Jim continues to make progress on several books he is authoring or co-authoring, including projects with Princeton University Press (annotated *Descent of Man* and a life of Alfred Russel Wallace), Timber Press (Darwin and the art of science), and Great Smoky Mountains Association / GSMNP (insect natural history field guide).
- Jim was a finalist for the Madison Professorship, Western Carolina University
- Jason and Michelle Ruigrok were awarded \$7,836 from the Highlands Biological Foundation to support research titled "Revisiting an Historic Coweeta Study: Seasonal Variations in Standing Crop of Bottom Fauna in North Carolina Trout Streams." We collected stream macroinvertebrate samples monthly for a year in the same reaches and using the same methods as from a 1953-54 study that assessed richness and abundance of stream macroinvertebrates in two third order streams at nearby Coweeta Hydrologic Laboratory. This is one of the earliest studies of stream macroinvertebrates in the southern Appalachians where we have the original data. The original PIs also recorded stream temperature and discharge.

- Jason also continues his work with the MAPS bird banding project, now in its second year. Our participation in this project is supported by the HBF (~\$5,000).
- Recent publications:

Charabidze, D., S. Trumbo, A. Grzywacz, **J. T. Costa**, M. E. Benbow, P. S. Barton, and S. Matuszewski. 2021. Convergence of social strategies in carrion-breeding insects. *BioScience*, In Press.

**Costa, J. T.** 2020. Charles Darwin's voyages of discovery. pp. 80–81 *In*: L. Berwick and I. Charmantier (eds.), *L: 50 Objects, Stories and Discoveries from The Linnean Society of London*. London: Linnean Society of London.

**Costa, J. T.** 2020. Presocial insects. *In*: C. Starr (ed.), *Encyclopedia of Social Insects*. Springer Nature. [https://doi.org/10.1007/978-3-319-90306-4\\_119-1](https://doi.org/10.1007/978-3-319-90306-4_119-1).

**Love, J. P.** and J. T. Anderson. 2020. Invertebrate abundance, biomass, and richness associated with an exotic invasive shrub (*Lonicera morrowii* A. Gray). *Natural Resources* 11: 257-282.

Jackson, C. R., K. K. Cecala, J. E. Kirsch, S. J. Wenger, J. R. Webster, D. S. Leigh, J. D. Knoepp, J. M. Fraterrigo, J. M. Sanders, **J. P. Love**, and A. D. Rosemond. 2021. Distinctive connectivities of near-stream and watershed-wide rural land uses differentially degrade aquatic ecosystems. *Bioscience*, In Press.

Miniat, C. F., A. C. Oishi, P. V. Bolstad, C. R. Jackson, N. Liu, **J. P. Love**, C. M. Pringle, K. J. Solomon, and N. Wurzbarger. Data Note: The Coweeta Hydrologic Laboratory and the Coweeta LTER Project. *Hydrological Processes*, In Review.

- Jim continues his service as Trustee of the London-based Charles Darwin Trust, and as a member of the Down House Scientific Stakeholders committee (English Heritage, UK). He also chairs CNIPM, the Coalition for Non-native Invasive Plant Management, a group of conservation-minded organizations here in Highlands including the HCLT, Highlands Plateau Audubon, Highlands Plateau Greenway, Highlands Historical Society, the Laurel Garden Club, and the Town of Highlands.
- Jason is entering his second year as Chair of the Board of Mainspring Conservation Trust, a local land trust and conservation organization. The mission of Mainspring Conservation Trust is to conserve the waters, forests, farms and heritage of the Upper Little Tennessee and Hiwassee River Valleys. Jason also serves on the Friends of Kelsey-Hutchinson Founders Park committee.