



HIGHLANDS  
BIOLOGICAL STATION

## STATION UPDATE

### *HBS Board of Directors & HBF Board of Trustees Summer Meetings*

**Jim Costa, Executive Director**

**25 June 2022**

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#### **1. Budget**

- Thanks to strong summer course and workshop enrollments, increased Station usage by visiting groups, and increased user fees, I'm pleased to report that our revenue this FY is very strong — \$176,477 received to date, and a projected \$188,513 once outstanding invoices are received. This represents some \$68K over our mandated revenue target (\$120,874) — best of all, we are permitted to carry this excess revenue forward to FY22-23, giving us a huge 46% head start toward our revenue target for next year!
- If revenue remains this strong going forward, we will be in an excellent position to request a long-overdue base budget increase, based on revenue. This would in turn enable us to address certain deficiencies in our budget, including staff salary inequities.
- This year little money was available for non-recurring and recurring budget requests to WCU, and we did not receive funding this time around.

#### **2. Facilities and Equipment**

- WCU/Facilities informed us that we will receive some R&R funding for FY22-23. This is very welcome news — we will prioritize repair project needs, foremost among them the Clark Foreman Museum structural repairs (rear wall/windows) and drainage improvement for the Cottages.
- We recently received notice that we will be awarded another \$60,000 research equipment grant from the UNC System Office, for FY22-23 — yet another shot in the arm, enabling us to prioritize replacing the chillers for the Living Stream units in the Aquatics Lab, among other equipment. Between System Office support, generous donors, and our NSF grants in recent years, we have been able to make tremendous progress toward our goal of having a wide array of high-quality, state-of-the-art scientific equipment in support of research and education at HBS.
- Progress on our NSF environmental chamber project has been slow in recent months as Darwin Chambers, HBS, WCU/Facilities, and Sud Associates personnel worked out the

design details, and especially the supporting electrical work, for the new chambers. But a purchase agreement has been signed and the target date for installation of the new chambers is January 2023. Sud Associated recently submitted the electrical design drawings to WCU/Facilities, and these will go out for bid.

- The "north campus" project is, we hope, in its final stages, awaiting a commercially licensed plumber to connect the water supply to the restroom. Otherwise, the facility remains open for "beneficial use." Sonya Carpenter continues to care for the garden, in consultation with staff Horticulturist Rachel Martin and the Gardens and the Grounds Planning and Advisory Committee. The WCU public art review committee, chaired by Denise Drury Homewood, director of the WCU Fine Arts Museum, is in the process of reviewing plans for a sculptural installation for the north campus plaza. Also, the "north campus" area is now enrolled in the Audubon Society's "Birdability" site as a birder-friendly location for those with disabilities: <https://gis.audubon.org/birdability/>.

- Conversations continue with seeking support for funding our top two facilities priorities, per our strategic plan:

(1) Rebuilding the **Weyman Building** as a social space / creative commons for the HBS community. Envisioned as a kind of "university center" for the Station, flexible-use space as a welcoming social center is badly needed at HBS — a facility with common area and kitchenette for staff, students, faculty, volunteers, researchers, and other visitors, as well as accommodating smaller meetings, seminars, and exhibit space.

(2) New **faculty/ researcher housing**. Available faculty/researcher space is limited to the 2 Duplex units, a problem that the Sato House was intended to help solve. Even if we were not denied use of the Sato House, by itself that is not a sufficient fix as it can effectively house only 1-2 small researcher groups at a time. We must solve our faculty/researcher housing limitations with new facilities. The best option is to **replace Valentine House** rather than continue to invest in improvements may be the best way to address our faculty housing shortage as well as expanding and improving student/summer staff housing. This dated facility is space-limited, inefficiently laid out for a dorm, not fully ADA compliant, and increasingly expensive to renovate. This dorm has traditionally housed the IE students in the fall program, yet its dated condition and limited beds (13) are sub-optimal for that program, especially if we envision expanding enrollment (in fall 2022 we are experimenting with housing the IE students in the Cottages dorms, but these were not designed for long-term occupancy and so are also suboptimal). A better long-term solution would be replacement of Valentine House with a modern residence that meets our needs — faculty and student space, ample space, meeting all codes, common areas, generous kitchen and dining area.

The challenge is that this is new construction, not R&R. Such funding is difficult to procure, but this may be achievable through a cooperative effort on the part of WCU/HBS, HBF, and UNC-IE to advocate for capital improvements funding from the State combined with private funds.

- A shout-out to our multi-talented Facilities Manager, Mike McMahan, who has been ever busy on a range of repair and improvement projects to help keep HBS running. Some recent ones include:

- Cleaning catch basins and "snaking" in-ground lines to maintain good drainage behind the Cottages.
- Boardwalk and trail construction, including bridges, stairs, and railings.
- Addressing driveway & road erosion and pothole issues.
- Small renovations and creative storage solutions: Coker 109 B was remodeled for improved storage, and shelving from the old environmental chambers were recycled to create storage space behind the Aquatics Lab.
- Point person for scheduling electrical and plumbing work with WCU and private contractors (dehumidifier hook ups, receptacle and switch relocations and additions, addressing Fire Marshall code violation issues), scheduling plumbing contractors for work on campus (North Campus restroom), working with HVAC installers and repair crews to keep everything functioning at the highest possible efficiencies and reliability.
- We continue to work toward future HVAC and dehumidifier improvements.
- Aquatics Lab maintenance. Water monitoring, filter and pump maintenance and cleaning as needed, exterior raceways and water reservoir monitoring as needed, cold-water siphon system operational checks and monitoring.
- General repair and maintenance of all HBS buildings and vehicles.

### **3. HBS Research and Related Activities**

- Our 3rd MAPS bird banding season is underway. Highlights thus far this year include capturing and banding a Pileated Woodpecker! Mia Taylor, a WCU NRCM student (and member of an under-represented group in science) worked as a summer research assistant last year at HBS and gained experience extracting birds out of the mist nets. Because of that experience, Mia has been hired by Blue Ridge Bird Observatory as their net leader this year, which means she calls the shots when we are out in the field checking the nets.

We continue to explore the possibility of establishing a Motus telemetry tower (<https://motus.org>) to monitor tagged migratory birds, bats, etc. There is a dearth of such stations in the southern Appalachians, and HBS could help fill this gap, providing a valuable contribution to avian ecology and conservation.

- Jason Love is a co-PI on a Community Collaborative Research Grant (\$24,050): "Source, transport rates, and transport dynamics of plastic particles in small headwater basins of the Southern Appalachians." Lead PI is Dr. Jerry Miller, Department of Geosciences and Natural Resources, Western Carolina University, and other Co-PIs include Dr. Bob Youker, Department of Biology, WCU, and Dr. Austin Gray, Department of Biological Sciences, Virginia Tech. As part of this grant, HBS received \$8,290 to cover the salary of summer research assistant Noa Meiri and to pay for supplies and travel costs to Virginia Tech for training of research assistants on the FITR and Raman spectrometer, which are used to assess the chemical composition of the particles that we are calling microplastics. In a nutshell, we will be deploying two ISCO automated water sampling units in Coker Creek and Station

Branch, two second order streams at HBS that feed into Lindenwood Lake. We will program the units to sample water during storm events; a pressure transducer will also be deployed so we can calculate discharge and associated loads of microplastics. We will also sample atmospheric deposition of microplastics. This study will continue in the fall as part of the IE capstone project.

- Jim is working with grad student Curtis McGehee, a WCU MS student and GIA recipient, on assessing impacts of invasive Asian Needle Ants on local forest communities, in collaboration with Robert Warren (Buffalo State) and Rada Petric (HBS/UNC-CH).

- Rada has several additional research projects going on this summer with different collaborators, including **BatPak Project** (a citizen science project focusing on long-term bat monitoring along the Appalachian Trail), her continued **Anthropogenic Noise and Bat Activity** research (assessing the effects of anthropogenic noise on bat behavior), **Flying High to Study Bats** (exploring the use of remote sensing – drones, audio recording, and thermal imaging) and machine learning technology for studying bat in-flight social calls), and **Natural History of Small Mammals** (using historic and present occurrence records of small mammals to map the current and future distributions of vertebrates of s. Appalachian high-elevation communities, especially red squirrels).

- In progress: Jim and Jason continue (slowly) to develop an NSF proposal with Dr. Diane Styers (Natural Resources Conservation and Management at WCU) to develop a centralized environmental data server and web portal for streaming data from WCU campus field plots, Gribble Gap hydrological station, Long Branch/Upper Long Branch field plots, and HBS climate station and field plots.

- Summer Research Assistants

- HBS is hosting several summer research assistants. Chloe Hall and Noa Meiri will be working primarily on microplastics research at HBS with Jason. Both Chloe and Noa were 2021 HBS IE students. Chloe was awarded a Summer Undergraduate Research Fellowship through UNC-Chapel Hill to continue research on microplastics at HBS. Noa will start in July and is being paid from the Community Collaborative Research Grant (lead PI Dr. Jerry Miller, WCU); she will also be working on microplastics. Kristin Heape (spring 2022 graduate of WCU in Natural Resources) is spending her second season with us this year. Grace Kinder is also a 2021 HBS IE student who came back this summer to work. Heather Pratt (junior at WCU in Natural Resources) is working 3 days/week at HBS. Kristin, Heather, and Grace are being funded through the Highlands Biological Foundation with funds raised through the Bearshadow Festival event this spring. They are primarily working on sorting insects to Order from our two Malaise traps, entering historic dragonfly and butterfly records into an Access database, helping with the microplastics project, and assisting with bird banding and the *Caterpillars Count!* project.

- Lucy McRae (junior at Brown University) is another research assistant, working 2 days/week in our archive room with volunteer Bryding Adams to help organize and

database our many documents and photos, as well as assisting with some of our research projects.

– Amber Rousseau (junior at WCU in Art & Design) is volunteering 3 days a week as part of a required 120-hour internship. Amber is a talented artist who would like to be an illustrator of birds. She is helping with the bird banding and is assisting us on deciding on the best ways to conserve/curate some of our artwork and rare maps at HBS.

– Desi Hoagland, recent WCU Biology M.S. graduate, is working 10 hrs/week to sort beetles from our Malaise traps to family level

- Our **Environmental Sensor Data** can now be found on our website!

[https://highlandsbiological.org/monitoring\\_data/stations/index.html](https://highlandsbiological.org/monitoring_data/stations/index.html). Climate and water quality data from Lindenwood Lake are harvested and uploaded hourly. Data from our soil moisture stations are harvested and uploaded daily. The metadata and format follow formatting styles used by NEON and LTER sites, so yearly data can be harvested and archived by the Environmental Data Initiative, which is the clearinghouse for LTER, NEON, and other field site data.

- Jason Love and his research assistants collected soil in our 50 x 20-m permanent vegetation plot for Dr. Connor Fitzpatrick, a post-doc in the Grant-Dangl Lab at UNC-Chapel Hill. Connor is studying a particular group of soil bacteria, *Streptomyces*, to better understand what soil types or climatic conditions drive its abundance. Connor will also be using data from our climate station and soil moisture stations. He will run the soils for C:N and other macro- and micro-nutrients, so we'll have a good summary of soil chemistry from our permanent plot that can be included in the metadata.

- This year's Grant-in-Aid recipients are in residence at various times this summer:

Rachel Jordan (Univ of Wisconsin)  
University of Kentucky Group (Dr. Robbie Burger, Kyra Liedtke, and Kimberly Cook)  
Jorge Santiago-Blay (Smithsonian, UPenn-York)  
Curtis McGehee (WCU)  
Joseph Williams (UT-Knoxville)  
Django Grootmyers (UT-Knoxville)  
Shannon Skarha (Duke Univ.)  
Elissa Sorojsrisom (Columbia Univ./NY Botanical Garden)  
Bubba Pfeffer (E. Washington Univ.)  
Ryan Bacon (Univ. of MD/Baltimore Co.)

- Recent and upcoming visiting researchers:

– Dr. Meaghan Gade, former GIA recipient and now a postdoc at Yale, returned to HBS with colleagues to collect salamanders for a research project.

- Dr. John Reiss (Humboldt State University) and colleague recently visited the Station with students, pursuing a research project on the evolution of olfaction in plethodontid salamanders. Dr. Reiss's students also took the Biology of Plethodontid Salamanders course.
- Dr. Akira Terui, UNC-Greensboro, was in residence recently to continue to identify potential research sites and pursue collaborations with Jason and Rada.
- Dr. Shweta Basnett, Fulbright Postdoctoral Fellow at the University of Maryland, visited recently as part of her research on pollinators of *Rhododendron* species.
- Dr. Charlotte Easterling (Northwestern University) and former HBS GIA student Mary Kate O'Donnell (now faculty at Lycoming College, Penn.) and students visited HBS recently conducting research on the effects of tail morphology on locomotion in terrestrial and aquatic salamanders.
- Dr. Romain Darnajoux (Princeton University), working with Dr. Francois Lutzoni (Duke University) and Nicolas Magain (University of Liege), arrived at HBS this week with three undergrad student assistants for research studying the flow of nitrogen and other elements through cryptogams (bryophytes and lichens) in terrestrial environments varying with elevation and slope aspect, as well as in different biological communities.
- Elena Gratton, MS student at Penn State, will be staying at HBS for a week in July for research on bumblebees, part of a large-scale study looking at the impacts of landscapes and habitat quality on bumble bee disease loads and community composition.
- Dr. Damien Wilburn (former GIA recipient, now Assistant Prof. at Ohio State) and Drs. Rick & Pam Feldhoff (Univ. of Louisville) will be returning in August for their ongoing research project "Characterizing the evolution of gametic proteins in plethodontid salamanders."

#### 4. Gardens & Grounds

- HBS has hired 2 excellent Botanical Garden Assistants this summer working under the direction of staff horticulturist Rachel Martin: Alana Hicks, a recent graduate of UT-Chattanooga and Tatiana Carey, a senior at NCSU.
- The HBS Gardens & Grounds Planning and Advisory Committee continues to make progress. Ongoing projects are briefly summarized here (see also the report submitted by Committee Chair Ken Conover):
  - Plans for the re-booted HBS Native Plant Symposium in celebration of the Botanical Garden's 60th anniversary proceed apace. The two-day event is scheduled for September 16th–17th, with a program of speakers including Doug Tallamy, Patrick McMillan, and others. Registration will open July 1st and is priced at \$150 per person (including lunch)

and a reduced student rate of \$20. All proceeds will directly contribute to the conservation initiatives of the Highlands Botanical Gardens.

– The Wayfinding and Interpretive Signage project with Equinox Environmental is underway. The first stakeholders group charette is scheduled for next Wednesday, June 29th. Equinox will lead us through the process of determining where we need wayfinding (road, garden, and trail) and interpretative signs, what the signs will look like, and provide costs estimates on the signs. Once we have that, we will be in good shape to look at grants and other sources of funding to pay for the signs. As a preliminary step the Gardens and Grounds Planning and Advisory Committee recently reviewed and came to a consensus on trail and garden names — some existing names will be retained, others will be changed to more suitable names.

– Development of the "Conservation Mission and Strategic Objectives" document for the HBS gardens and grounds has been completed, with consultation from subcommittee members and fellow conservation partners from the North Carolina Botanical Garden and the Atlanta Botanical Garden. Implementation of Goal 1 of the Strategic Conservation Objectives are ongoing in the form of site assessments and seed collection of both swamp pink (*Helonias*) and pitcher plant (*Sarracenia*) species.

– A draft HBS "Sensitive Areas Guidelines" document to inform the efforts of the Horticultural Specialist, other HBS staff, and volunteers has been completed. Points of reference for these guidelines include the HBS Appropriate Use Policy and consultation from the Hemlock Restoration Initiative.

– Moss Garden improvements: new stone steps are now installed, old steps removed, several plantings are in with more to go, as well as a "stumpery" for moss growth. We will also be installing a plaque dedicating the moss garden to the late distinguished bryologist Lewis Anderson, of Duke University, who conducted extensive moss research based at HBS in the 1950s and 1960s.

– Cherokee Garden improvements: With the help of a WCU 1889 Impact Grant, the revitalization of the Cherokee Garden is a work in progress, with new rails, plants, and labeling. Plants of ethnobotanical significance have been installed, and other materials to replace stone steps and railings have also been acquired and will be installed this summer. New plant labels will follow.

–Trail improvements. This project has been rescheduled for late summer/fall, when Jim Chance (Greenway) plans on organizing a workshop on step-building that will include a project at the end of the "Falls Trail" in the Botanical Garden. With the assistance of the Rotary Club, supplies have been procured for the re-construction of several stone steps in the Gardens, and lumber and materials were purchased to improve access to the Boardwalks and Lindenwood Lake Loop by constructing steps.

- We are working with Concept3D, a company that specializes in creating 3D maps for online use, to create a useful and attractive map of the HBS campus. They created the

campus map for WCU; our map will have a similar look:  
<https://www.wcu.edu/discover/locations/main-campus/campus-map.aspx>

- Our weekly Botanical Garden tours are being held Mondays at 11:30 AM. Special garden tours are also scheduled throughout the summer for larger groups.
- In effort to increase engagement with the Coalition for Non-native Invasive Plant Management (CNIPM), a workday is being organized with the HBS and HCLT to align with the late summer seminar. This year participants will volunteer on one of the HCLT properties and interact with the local Rotaract chapter.
- Rachel is developing a formal Volunteer Policy for HBS, in alignment Western Carolina University policy and informed by other public gardens. As of 20 June 2022 the overall volunteer hours contributed to the Botanical Garden this year thus far is 349. According to [independentsector.org](http://independentsector.org), the estimated average value of each volunteer hour is \$29.95. This means that the work effort provided by individuals volunteering their time in the Botanical Gardens so far this year equates to some \$10,452.55.

## **5. Education, Outreach, and Public Engagement**

- NSF-funded research/education collaborations with HBS, bringing students to the Station this summer:
  - Dr. Mark Dugo (Center for Renewable Energy and Sustainability, Johnson C. Smith University) is scheduled to hold the second of 3 Summer Sustainability Science Camps at HBS next month, an NSF-funded program for African-American students majoring in environmentally related STEM disciplines.
  - Drs. Jessi Allen (Eastern Washington Univ.) and James Lendemer (NY Botanical Garden): their grant "Leveraging Next-Generation Sequencing & Biodiversity Exploration to Understand Connectivity in the Imperiled Appalachian Migration Corridor" will support intensive and general lichen workshops each year of the 3-year project beginning this summer (29-31 July 2022).
  - Drs. Sarah Stellwagen (UNC Charlotte) and Mercedes Burns (Univ. of Maryland, Baltimore County) built student scholarships into their recently funded NSF grant, "Genetics and Biomechanics of non-Newtonian Prey Capture Glues across Panarthropoda." The scholarships will support travel and tuition for 6 students in each of 2 offerings of the HBS "Spiders of the Southern Appalachians" field course, as well as a "Daddy-long-legs Day" public engagement event.
  - Pending: Drs. Brian Byrd (WCU) and James Vonesh (Virginia Tech) have submitted an NSF-REU grant that would support HBS-based (1) short courses for vector biology, mosquito control, & public health professionals, and (2) continuing education courses for REHS specialists relating to mosquito and tick-borne diseases.



- HBS 2022 courses successfully concluded thus far:
  - Conservation Biology in the Field (Peter White, UNC-Chapel Hill)
  - Biology of Plethodontid Salamanders (Joe Pechmann, WCU & Ken Kozak, Univ. of Minnesota)
  - Fish of the Southern Appalachians (Aaron Geheber, University of Central Missouri)
  - Flora of the Blue Ridge (Paul Manos, Duke University)
  - Identification of s. Appalachian Grasses (Paul McKenzie, USFWS, emeritus)
  - Diversity & Identification of s. Appalachian Leaf Litter Arthropods (Mike Caterino, Clemson Univ. & Paul Marek, Virginia Tech)
- Upcoming courses:
  - Landscape Ecol. & Conservation of Amphibians (Bill Peterman, Ohio State)
  - EPT I & II (John Morse, Clemson University)
  - Southern Appalachian Spiders (Sarah Stellwagen, UNCC & Kefyn Catley, WCU emeritus)
  - Cliff & Rock Outcrop Communities (Laura Boggess, Mars Hill Univ. & Gary Kaufmann, USFS)
  - Comparative Temperate-Tropical Ecology [HBS-WBS, Ecuador] (Jim Costa, HBS/WCU & Travis Knowles, Francis Marion Univ)
  - Bryophyte Identification (Ed Schwartzman, Joe Pye Ecological Consulting)
- Workshops (non-credit, general interest):
  - Fireflies 101 (Dr. Luiz da Silveira, WCU) [completed]
  - Geology of the Highlands Plateau (Bill Jacobs, author of *Whence These Special Places?*)
  - Drawing Leaves in the Studio & Field (Margie Bauer, artist & Friend of the Station)
  - Lichen Identification (James Lendemer, NYBG, & Jessi Allen, EWU)
  - Natural Dyes (Susan Leveille, weaver & former owner of Oaks Gallery, Dillsboro)
  - Mushrooms of the Carolinas (Alan & Arleen Bessette)
- The 2022 HBS Summer Seminar program is off to a good start, with 2 talks thus far this summer. These brown-bag seminars feature faculty and researchers in residence speaking about their research.
- IE Program 2022. 15 students are signed up for the fall 2022 program! This year we will experiment with housing the students in the Cottages dorms rather than Valentine House this year. We continue to work toward finalizing an MOU between HBS/WCU and UNC/IE — the current (and hopefully final) draft is currently still in review by UNC-CH's legal counsel office.
- Nature Center and other programs:
  - We have 3 excellent Assistant Naturalists working with Paige Engelbrektsson and Holly Theobald this summer: Hanne Parks, Hunter Embler, and Sophia Petritz.
  - Paige and Holly have developed an impressive menu of youth and family programs through the Nature Center, including 9 daycamps ([highlandsbiological.org/2022camps/](https://highlandsbiological.org/2022camps/)), 7 evening/night programs "Nature Center Nights; [highlandsbiological.org/naturecenternights/](https://highlandsbiological.org/naturecenternights/)), in addition to a menu of daily programs and activities.

- HBF sponsored a successful event called "Rain Check: Water on the Highlands Plateau" in May. This day-long program featured a presentation by Sonya Carpenter followed by three workshops that participants could choose from, including a visit to Greg and Amanda Gregory's Pond Hollow Garden with Sonya and Michelle Ruigrok, a hike along the Chattooga River Trail with Jennie Stowers and Cauty Worley, and a visit to Coweeta Hydrologic Lab with Jason Love.

- HBS Outreach program

- We have once again been awarded a grant from the NC Science Museums grant program, supporting the HBS school outreach education program spearheaded by Patrick Brannon.

- School Outreach numbers, year-to-date 2022 (as of 27 May):

PROGRAM OFFERINGS	# PEOPLE	# PROGRAMS
SCHOOLS - STEM OUTREACH:	4772	156
EDUCATOR / ADULT WORKSHOPS:	242	11
COMMUNITY SERVICE:	1725	8
<b>TOTALS:</b>	<b>6739</b>	<b>175</b>

# virtual programs = 31 (18%)

# in-person = 144 (82%)

# schools / orgs served = 34

# counties served = 11

- Other recent educational activities, led by HBS Associate Director Jason Love:

- April: (1) students participating in the Southeastern Wildlife Conclave, at Western Carolina University, visited Tessentee Bottomland Preserve to look for salamanders and talk about land trusts, stream restoration, and other conservation topics. (2) Field outing with students from the University of Florida taking a Comparative Ecology course (Dr. Emily Sessa).

- May: (1) Wednesday morning bird walks at the Station, open to the public. (2) Group tour of Coweeta Hydrologic Laboratory as part of "Rain Check" program.

- June: (1) Field trip for a group of about 30 butterfly and moth enthusiasts who were participating in the annual Lepidopterists' Society meeting, which was being held in at

WCU. (2) Assisting with fish survey on the Little Tennessee River with HBS research assistants.

## 6. Foundation

- On 7 June the HBF held a celebratory dedication for the "North Campus" project. Chancellor Kelli Brown kindly attended on behalf of the Station and University, and Jason represented us as well. This was a community-oriented event to acknowledge and thank the many donors of the Highlands community who helped make the project possible, as well as a shout-out to key partners on the project from HBF, HBS, and WCU.
- This summer the Foundation is supporting several of our summer assistants, including three assistant naturalists in the NC, as well as continuing support of the MAPS Bird Banding project and aquatic insect sorting project.
- MOU with WCU/HBS and HBF. Mea culpa — it has taken longer than it should to turn around the revised draft, but with comments and concerns from all parties now in hand finalizing a revised agreement is a top priority for us.
- The HBF's summertime Soiree fundraiser, "A Ravenel Soiree," kindly hosted by Diane and Ray McPhail, is scheduled for Monday 18 July.

## 7. Other Initiatives and Events

- **HBS Program Review.** Our 5-year program review through the WCU Office of Institutional Effectiveness is scheduled for **28–30 August 2022**. This review team includes Chris Lorentz (Director of the Biology Field Station of Thomas More University), Sylvia Torti (Dean of the Honors College at the University of Utah), and Brian Byrd (WCU, School of Health Sciences). **The BOD is tentatively scheduled to virtually meet with the review team around mid-day on Monday 29 August.**
- **HBS Documentary.** With the generous support of former HBF Trustee Glenn Murer, we are contracting with award-winning documentary filmmaker Paul Bonesteel, of Bonesteel Films (<https://www.bonesteelfilms.com/home>), on two short films telling the story of HBS, a 3-minute promotional "Who we are" kind of film and a ~ 2-min trailer for a full-length documentary. We are very excited about the prospect of producing a full length HBS documentary for PBS/UNC-TV — ideally, to be screened in 2027, the Station's centennial year! We hope funding for the documentary will be achievable over the course of a few years by pursuing several avenues, including reaching out to HBS alumni and community supporters, and grant-writing.
- **HBS Archives project.** Volunteer Bryding Adams has been spearheading the organization, curation, and cataloging of the HBS Archives, in particular correspondence, photographs, maps & blueprints. Two of our summer research assistants, Lucy McRae and Heather Pratt, are dedicating some time working with Bryding in the Archives. Next week Special

Collections staff of Hunter Library at WCU will be visiting HBS to advise on next steps with curation and cataloging.

## 8. Director and Associate Director's Scholarly (and Related) Activities

- Jim recently returned from a productive visit to the UK, where he spent time in Wales for research connected with his forthcoming A. R. Wallace book, and in London working on manuscript compilations relating to Darwin's experimental work, and attending a meeting of the Charles Darwin Trust. He also attended a short meeting in Rotterdam, Netherlands, for the Darwin200 Project ([www.darwin200.com/globalvoyage](http://www.darwin200.com/globalvoyage)), a global voyage for exploration, education, and conservation planned for August 2023-July 2025, emulating Charles Darwin's *Beagle* voyage of the 1830s. Jim is serving as an advisor helping to develop a program of Darwin's experiments and related investigations as part of the Darwin200 project educational program.

- Jim recently gave a virtual lecture on "Darwin and the Origin of Species" for students and alumni of King Edward's School, Birmingham, UK.

- Update on Jim's books and papers in various stages of production:

Costa, J. T. and B. Angell. *Darwin and the Art of Botany*; in cooperation with the Oak Spring Garden Foundation. (Timber Press)

Costa, J. T. *Radical by Nature: The Revolutionary Life of Alfred Russel Wallace* (Princeton Univ. Press).

Schultz, M., R. J. Warren II, J. T. Costa, B. Collins, and M. Bradford. 2022. Myrmecochorous plants and their ant seed dispersers through successional stages in temperate cove forests. *Ecological Entomology*, *in press*.

- Jason is Chair-Elect for the Little Tennessee Native Fish Conservation Area Program (LT-NFCP: <https://www.littlet.org/>), a group of academics, non-profit conservation groups, and state and federal biologists who are working together to conserve the rich biodiversity of the Little Tennessee River basin, including the upper Little Tennessee and its tributaries in Macon and Rabun Counties, and the Tuckasegee River.

- Jason is working with Dr. Bill McLarney and Jason Meador (Mainspring Conservation Trust) on a paper that examines the recovery of a fish community after a catastrophic debris on Peeks Creek, a tributary of the Cullasaja River. They are collaborating with Dr. Akira Terui (UNC-Greensboro) as a Co-PI to help them with the stats. Dr. Terui and his PhD student Ashely joined the team as they sampled Peeks Creek one last time.

- Jason also continues 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.