



Organization of Biological Field Stations

Supporting environmental research, education, and public understanding

May 10, 2021



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"Our virtues and our failures are inseparable, like force and matter. When they separate, man is no more."

- Nikola Tesla

Impacts of the Pandemic on Field Stations

by Chris Lorentz (OBFS President), Paul Foster, and Philippe Cohen

OBFS continues working to raise awareness of the crisis facing field stations due to the COVID-19 pandemic. Products of this effort include an online [petition](#), which remains available to sign and a *BioScience* [viewpoint](#) published in late January. We recently invited the OBFS membership to participate in a survey to quantify some of those impacts in order to provide more data for our future awareness and advocacy approaches. We are pleased to report that we received 50 responses, and there is still time to [participate](#). Every data point helps strengthen our argument.

The results of the survey show that field stations reported significant losses of revenue as both a percentage of their pre-COVID levels and in dollar amounts (Figure 1). One station reported lost revenue of \$1.3 million. The median value of the decrease in annual revenue was 25-49% compared with pre-COVID levels. When we weighted the decrease in revenue in US dollars using the distribution of field station annual budgets (as self-reported on yearly membership invoices) and using a figure of 400 field stations in the US, the estimated total amount of lost revenue is \$25,141,844.86.

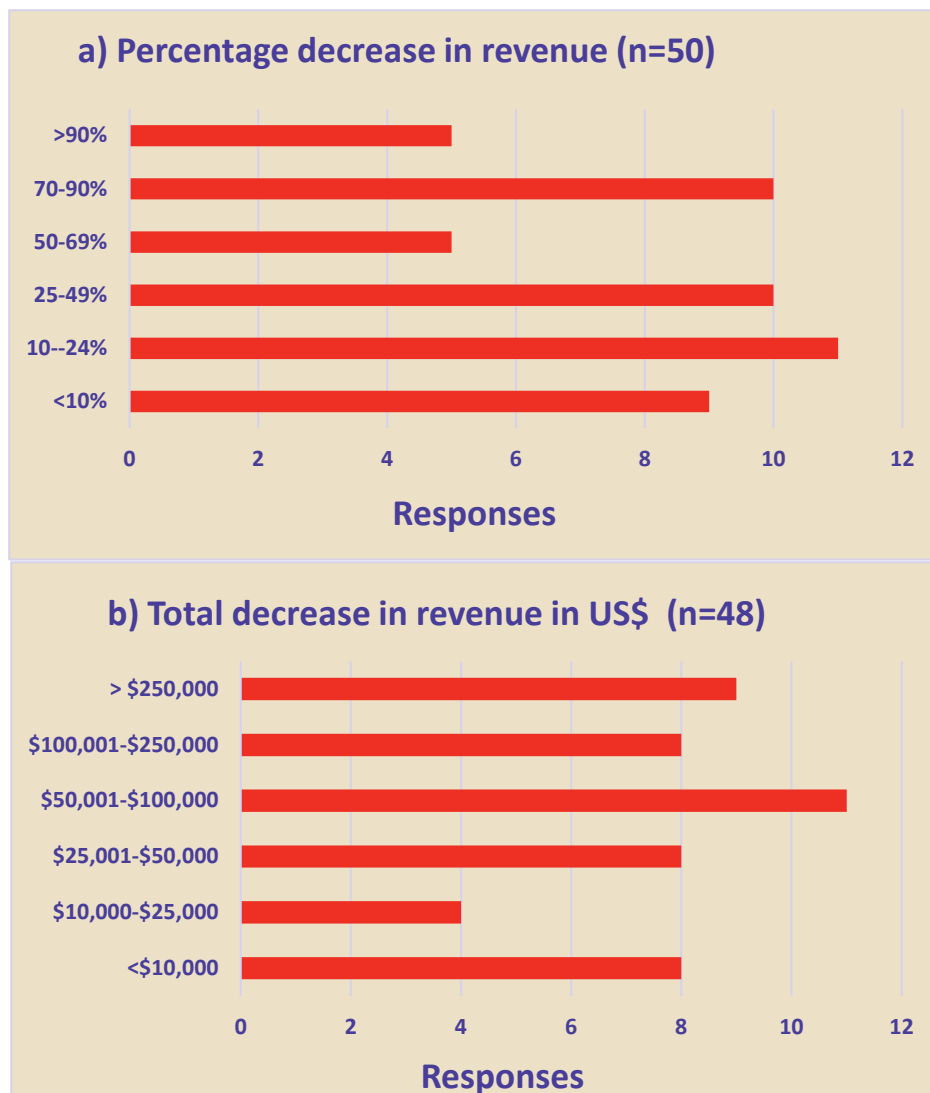
Impacts of the Pandemic on Field Stations

by Chris Lorentz, Paul Foster, and Philippe Cohen (continued)

The largest impacts of budget shortfalls were deferred maintenance and reduced staffing. Most field stations are facing budget decreases of > 10% with some stations facing cuts of > 70%. If funding became available, field stations would apply for shovel-ready infrastructure of deferred maintenance projects and bridge funding for staff, outreach projects, or education programs. When weighted using the distribution of self-reported field station annual budgets, the total amount needed to mitigate the effects of the COVID crisis is \$19,794,195.

We are now preparing a one-page summary to distribute to Congressional committees, the National Science Foundation, and other funding agencies. In addition to the data from the survey, we are soliciting testimonials and points of contact from field station directors / managers who might speak to the crisis their station is facing. If you are willing to contribute, please email president@obfs.org.

Figure 1. Responses from the OBFS membership survey on effects of COVID-19 pandemic.



2021 UFERN Network Meeting

By Jessica Sawyer, Public Information Assistant,
Oregon State University, STEM Research Center

The 2021 Undergraduate Field Experiences Research Network (UFERN) Annual Network Meeting took place virtually on March 1st, 2nd, and 5th. One hundred and twenty-six people attended at least one of the sessions, our largest meeting yet! Session topics included the future of UFERN, virtual field learning experiences, interdisciplinary research related to affective outcomes of undergraduate field experiences, invited panel discussion “What is the Field and Who is in It?”, and workshops related to Diversity, Equity, Inclusion, and Access (DEIA) in undergraduate field experiences. In a post-meeting survey, participants reported that they found the interdisciplinary networking and collaboration valuable and appreciated the inclusive atmosphere and genuine focus on DEIA.

If you would like to get involved in UFERN please [sign up for our listserv](#) and see the opportunities below:

1. Discussion Group focused on engaging community college students in undergraduate field experiences. Please email Alicia Farmer at farmeral@umich.edu if you would like to join the discussion.

2. Call for UFERN Community Conversation facilitators and topic ideas: We would like to hold periodic UFERN Community Conversations over the coming months to continue to nurture and grow our community and build on the momentum from the recent Network Meeting. These will be regular events held via Zoom and open to anyone. We are looking for three to four UFERN members who will help choose topics and invite panelists and speakers. A small participant support stipend will be available for members participating in this committee. To help us plan, either by joining the Community Conversation committee or sharing ideas for topics, please respond to this [4-question survey](#).

Many helpful resources were shared during the UFERN Network Meeting, including presentations, articles, and other resources suggested by participants. They are available on the [UFERN website](#). Special thanks go out to all the UFERN members who helped make the meeting a big success, especially the volunteer organizing committee: Itchung Cheung, Susan Flowers, Paul Foster, and Alexandra Race.

Affiliates and Collaborations

by Paul Foster, AIBS rep

NSF: We try and forward items of interest to the OBFS community from NSF on the list serve. However, if you would like messages from NSF sent directly to your inbox, you can sign up for various newsletters [here](#)ⁱ:

Below are links to various organization's public policy websites:

American Association for the Advancement of Science ([AAAS](#)ⁱⁱ)
American Institute of Biological Science ([AIBS](#)ⁱⁱⁱ)
Ecological Society of America ([ESA](#)^{iv})

For comments, additions, and suggestions, please email me at pfoster@bijagual.org.

The deadline for the next newsletter is July 15, 2021.

ⁱ<https://public.govdelivery.com/accounts/USNSF/subscriber/new?preferences=true#tab1>

ⁱⁱ<https://www.aaas.org/focus-areas/federal-science-budget-analysis>

ⁱⁱⁱ<https://www.aibs.org/news/policy/#subheader>

^{iv}<https://www.esa.org/public-policy/>

Rocky Mountain Biological Laboratory and Covid-19

By Ian Billick, Executive Director of the Rocky Mountain Biological Laboratory

Despite our county (Gunnison) ranking as the third most infected county in the United States at one point, [RMBL](#) opened last summer, reaching about two-thirds of capacity in a normal year, and had no recorded infections. To pull it off, we required people to isolate upon arrival, there were no shared bedrooms, people had to monitor symptoms daily, and masks were required.

Perhaps the biggest surprise was the success of our undergraduate research program. Not knowing whether we would even open until late May, we designed a hybrid online/field program. About equal numbers participated online, lived at RMBL, lived in proximity to RMBL and conducted field work, or did a mixture of online/onsite. Distant students either conducted computational projects or were matched with others collecting data, so everybody had an authentic research experience. The undergraduate research program was vital for some scientists who were unable to come and did not have funds to pay remote research assistants. To help scientists, we also created a list of trained individuals living locally and matched them to scientists.

Vaccinations are happening quickly in our community and we are optimistic about the upcoming summer. While many scientists will still be under restrictions, we anticipate being at 80-90% capacity. We will continue with isolation upon arrivals, masks, and limiting group sizes indoors, though we will worry less about surface transmission. We plan on allowing vaccinated individuals to share bedrooms. With a very dry winter, we are as concerned about forest fires as we are the pandemic; we are planning for disruptions to operations because of environmental problems becoming more common.

Undergraduate researchers eating lunch and talking science outside, socially distanced, and with masks.





Collaborative bighorn sheep research in Capitol Reef National Park

By Joseph Ceradini, Site Manager, Capitol Reef Field Station

[Capitol Reef Field Station](#) (CRFS), located in Capitol Reef National Park (CRNP), promotes, and supports engaged learning, environmental ethics, and research and creative work through the exploration of the Colorado Plateau. CRFS opened in 2008 and is run as a partnership between Utah Valley University (UVU) and Capitol Reef National Park. Joe Ceradini, CRFS Site Manager and Research Associate, is collaborating with UVU faculty and National Park Service (NPS) biologists to study desert bighorn sheep (*Ovis canadensis nelsoni*) in Capitol Reef National Park with funding provided by the CRFS grant program.

Bighorn sheep (*O. canadensis*) are an iconic North American mammal that inhabit rugged mountain and desert ecosystems from northern Mexico to southern Canada. Bighorns were well-established throughout these habitats until impacts from increased human settlement began to take a toll on the species. Widespread population declines and extirpations occurred from the late 1800s to mid-1900s mainly due to competition and disease transmission from domestic livestock, habitat loss, and unregulated hunting. By the 1940s, desert bighorns were extirpated from Capitol Reef National Park; by the '60s, desert bighorns were barely holding on in small, isolated groups on the Colorado Plateau. Starting in the 1960s, wildlife managers began an ambitious reintroduction effort in Utah, capturing some sheep from remaining populations and relocating them to historic habitats. In most cases, it worked, and populations slowly recovered.

Within Utah alone, over 1,000 desert bighorns and 1,200 Rocky Mountain bighorns (*O. c. canadensis*) were transplanted over the past 40 – 50 years (Utah Division of Wildlife Resources 2012). This management tool was used throughout the West, and bighorn relocations have occurred in 15 U.S. states as well as within Canada, since the first relocation in 1922 (Wild Sheep Working Group 2015). The sheep of Capitol Reef National Park, and in many areas in Utah and the West, are therefore native transplants that have reestablished parts of their historic range.

Although reintroductions in Utah and the West have been largely successful, particularly for desert bighorns, bighorn sheep still face many threats, especially disease transmission from domestic livestock (the primary threat), habitat loss from development, and, more recently, disturbance from recreation. Continued research and management are needed to ensure persistence of these populations. Within this complicated and fascinating context, CRFS, UVU, and NPS scientists are studying desert bighorns in Capitol Reef National Park using game cameras and DNA extracted bighorn scat. We are using these non-invasive techniques to better understand desert bighorn distribution, abundance, habitat use, and population connectivity to improve management and help ensure that this iconic species persists in the wild.

Utah Division of Wildlife Resources. 2012. Utah Bighorn Sheep Statewide Management Plan.

Wild Sheep Working Group. 2015. Records of Wild Sheep Translocations - United States and Canada, 1922 - Present.

Station Profile: Caño Palma Biological Station

By Morgan Hughes, Research Coordinator

Celebrating their 30th anniversary, the [Caño Palma Biological Station](#) is still far from discovering all the incredible ecological interactions that surround them every day. Located within the Barra del Colorado Wildlife Refuge in Northeastern Costa Rica, Caño Palma Biological Station is surrounded by over 100,000 square hectares of protected Atlantic Lowland Rainforest. The station property alone is home to at least 88 mammal species, 376 bird species, 98 reptile species, and 37 amphibian species. In addition, the station conducts research in Tortuguero National Park and the Archie Carr Wildlife Refuge. Over the years, their facilities have grown to include dorms for 40 researchers, a library, project room, and large communal kitchen.

The station maintains 12 long-term monitoring projects focusing on a variety of taxa including the Critically Endangered Great Green Macaw, the near threatened Neotropical River Otter, and the endangered Green Sea Turtle. Volunteers and interns participate in data collection and management on these long-term projects and are encouraged to design and implement independent research projects which complement and build from our long-term datasets. Both long- and short-term research projects aim to inform regional management or address key gaps in knowledge. Current projects include investigating the role of beach plants in reducing erosion, describing the nesting ecology of the Sungrebe, examining the dynamics of micro-plastics in freshwater systems, and studying the influence of sea surface temperature on sea turtle nesting dates.

In 2021, we are excited to restart sea turtle patrols and the installation of nest protection screens which reduce the impact of poaching and predation by dogs on the sea turtles which utilize our beach. In addition, we are excited to host a week-long workshop on neotropical bats in November of this year with the help of researchers from Costa Rica and Belize. All our projects are dependent on the support of volunteers and interns who stay for trip lengths of 14 days to 5 months. Interested individuals should email station@coterc.org for more information.



Meet a Reserve Director, Interview with Breezy Jackson

By Lisa Busch, Executive Director, Sitka
Science Center

"I'm a generalist and I enjoy learning about a lot of different things. I get my curiosity satisfied because I can learn from the botanists, artists, anthropologists, and giant sequoia experts who work here."

Breezy Jackson, Director Yosemite and
Sequoia Field Station, Univ of California Merced

Breezy Jackson's new job as the Director of the Yosemite and Sequoia Field Station at University of California Merced was an unlikely future for a girl who grew up in a small town south of Yosemite and was a competitive badminton player. But she has come back to Yosemite, near her hometown, armed with a PhD and a deep appreciation of field station life. "I focused on athletics in high school and was hoping for a sports scholarship," says Jackson who goes by "Breezy." But when a recruiter from St. Mary's College of California suggested she attend the Bay area school her world opened. Her science pump had been primed by an exceptional high school science teacher who cultivated an interest in science by leading offbeat activities such as having his students grow their own snails, dissect them, and cook them as escargot. "In high school, I took stock of my social currency. I wasn't popular and I wasn't going to be a wife so I was like I'm good at science and math I guess I will go in that direction."



As an undergraduate Breezy studied environmental science as one of only six others in the earth science concentration. One January term she had her first field station experience during a Field Biology in Kenya class at the Smithsonian Mpala station. She already liked science, but Kenya set her course. For her master's degree studying the effects of fire on riparian vegetation in Idaho she arrived at school and was immediately sent 30 miles inside the Frank Church River of No Return Wilderness Area. She ended up at the Taylor Wilderness Research Station where she found the field station directors enormously helpful and pioneering in the way they lived off grid.

After her PhD at The Ohio State, she worked In Antarctica where she learned how a remote field camp works, to be calm in the face of an emergency, address one thing at a time, and keep communications open. At one point she had to do logistics and lead a posse of ionosphere researchers with no camping experience 500 miles north of the South Pole. "I often look back on that and think if I can do that, I can do anything," she said. Jackson then went to work for the National Park Service which was the ideal segue to her current job where the two field stations are within National Parks and partner with the federal agency in many ways. Yosemite has 58 beds and Sequoia has one small cabin that houses three people.

In the News

Shoals Marine Lab: Sharing a Sustainability Success Story

Shoals Marine Lab (SML) is a living laboratory with low-impact infrastructure and a sense of community that fosters leaders in sustainability, education, and research. Operating on a remote island 10 miles off the coast of Maine, SML has built a green grid that integrates renewable energy and water-saving solutions. Resource limitations are a shared issue across the beautiful islands and peninsulas within the Gulf of Maine. To help overcome these widespread challenges, SML's energy grid is serving as a model for a University of New Hampshire project funded by a \$600,000 grant through the U.S. Economic Development Administration that aims to find viable solutions to the energy and freshwater insecurities of New England coastal communities. To read more about this exciting project, please click [here](#).

Jasper Ridge Biological Preserve - [Scientists Search for the Anthropocene: NPR](#)

From Jasper Ridge courtesy of Dr. Jorge Ramos and JRBP student Julien Ueda: a thoughtful and extensive compilation of resources for new students and early career researchers including links to funding and fellowship opportunities and organizations that are working on equity and inclusion efforts.

<https://jrpbp.stanford.edu/content/resources-students-and-ecr>

Tribute to Dr. Susan Williams of the **Bodega Bay Marine Reserve** and Lab

<https://link.springer.com/journal/12237/volumes-and-issues/44-2>

ESA's annual meeting is August 2-6 early registration ends on June 24th. Many OBFS-ers are presenting. Go to <http://www.esa.org> for more information.

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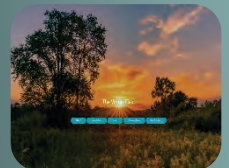
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Instagram

Remembering Our Friend and Colleague John Schade

With great sorrow, we learned that our friend and colleague, Dr. John Schade, a Program Director in the National Science Foundation's Division of Environmental Biology (DEB) passed away on Friday, March 26. John was a respected biogeochemist, an inspirational mentor, a great friend, and a tireless advocate for the ecology research community.

John received his B.S. in Biology from the University of Michigan and both his M.S. and Ph.D. in Biology from Arizona State University. He went on to develop a strong teaching and mentoring program for undergraduate students during the decade that he spent as a member of the faculty at St. Olaf College in Minnesota, where his research focused on the interface between land, water, and atmosphere. His most recent work examined the impacts of fire and permafrost thaw on carbon and nitrogen cycling in southwest Alaska. John was deeply committed to student-led research and collaboration, and he developed an extremely effective undergraduate training experience through his collaborative work on the [Polaris Project](#). At the time of his passing, John held an appointment as a Distinguished Visiting Scientist at the Woodwell Climate Research Center, where the Polaris Project is based.

Beginning in the summer of 2013, John served in DEB as a rotating Program Director with the [Ecosystem Science Cluster](#). In 2018, he was invited to return to NSF as a Permanent Program Director, working again with the Ecosystem Science Cluster and the [Long-Term Ecological Research \(LTER\)](#) program. John was an outstanding champion for the LTER program and its unique role in ecological research. He was also deeply committed to convergence research, and he was active in the beginning phases of many innovative cross-directorate programs at NSF such as [Navigating the New Arctic](#), [Signals in the Soil](#), and [Sustainable Regional Systems](#). John was particularly valued by his colleagues and many friends across NSF for engaging in deep and sincere dialogues about ecological science, education, and their role in society.

John was also appreciated for his great sense of humor, wry wit, and strong sense of mischief. He often had a "glint in the eye" and was involved in numerous escapades and adventures. He could find fun in almost any situation, and approached life with curiosity, wonder, and joy. We were all enriched by his warmth and friendship. We know many of you had the pleasure of working closely with John over the years and share our grief at this news of the loss of a wonderful colleague and friend, insightful scientist, and passionate educator and mentor. He will be profoundly missed.

From DEBrief, a blog of the Division of Environmental Biology at the National Science Foundation

<https://debblog.nsfbio.com/2021/04/01/remembering-our-friend-and-colleague-john-schade/>

<https://www.woodwellclimate.org/staff/john-schade/>



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field station or marine
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send articles (350 words)
and photos to
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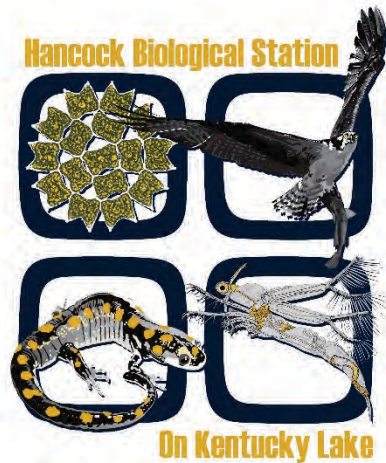
Next deadline is July 15, 2021

Station Profile: Hancock Biological Station

By Tyler Anderson, Administrative Assistant, HBS

Established in 1966 by Hunter Hancock, the [Hancock Biological Station](#) (HBS) on Kentucky Lake is a year-round facility with a mission of providing scientists with a base of operation for a wide variety of field research. Student opportunities include field-oriented classes, individualized instruction, and independent research. Researchers and students benefit from our laboratory facilities, field and reservoir sites, and the strong academic environment synergized by our location and facilities. HBS is located on the shores of Kentucky Lake in western Kentucky, sixteen miles from Murray, Kentucky, and within three hours of several major metropolitan areas including St. Louis, Nashville, Memphis, and Louisville.

The region is diverse in aquatic and terrestrial habitats. Western Kentucky has one of the largest densities of major rivers and reservoirs of any region in the world. Kentucky Lake is one of the largest reservoirs in the United States (187 kilometers long) and is joined by a canal to Lake Barkley; together they have over 5900 kilometers of shoreline and 102,000 surface hectares. Additional nearby areas for aquatic study include the Cumberland River, Tennessee River, Ohio River, Mississippi River, Reelfoot Lake, and the cypress swamps of Murphy's Pond.



The Land Between the Lakes (LBL) National Recreation Area, managed by the US Forest Service, contains nearly 1030 square kilometers of temperate deciduous forest with a rich history and active management.

HBS offers lodging year-round for visiting researchers and student groups. Limited boating resources are also available on a first-come, first-serve basis. For more visitor information and a schedule of fees, please reach out to HBS Director Dr. Michael Flinn at mflinn@murraystate.edu.