

The Fire at the Pringle Herbarium: A Disaster Averted



Torrey Hall at the height of the blaze.

Just after eight o'clock on the morning of August 3, 2017, the firefighters in Station 3 of the Burlington Fire Department responded to a fire alarm that came in from the University of Vermont's Torrey Hall, just 600 feet south of the firehouse. As the crew loaded up the fire truck, one firefighter said, "probably just another false alarm, like the one we responded to three weeks ago." Indeed, the crew had recently been in Torrey

Hall, gone from cellar to the fourth level, all through the natural-history collections that are in the building, finally deciding that someone working on the exterior renovation of the building, then in progress, had tripped the alarm accidentally. However, when the firehouse door was opened and they had launched the pumper into the street, they saw the huge plume of black smoke rising from the roof of Torrey Hall—this alarm was for real.

The roof interior of Torrey Hall, the University of Vermont Building housing the Pringle Herbarium as well as the University's vertebrate and invertebrate collections, had indeed caught fire—apparently related to braising work on the new roof. Anyone on the scene in the first half hour witnessed the entire top of the building in 30-foot-high flames, and a plume of black smoke rose over Burlington that made it clear to the entire University that a major blaze was in progress. Prospects for saving anything in the interior seemed dismal. The firemen from Station 3 went to work, with the assistance of crews from surrounding communities responding to four alarms. Aware of the value of the collections from their recent visit, the firefighters first spread waterproof tarps over the most vulnerable collection cabinets on the uppermost level, just under the roof, before they turned on the hoses. Within the hour, the fire was completely under control, thanks to the remarkable efforts of these firefighters.

The Natural History Museum in Torrey Hall brings together three of the most important natural history collections in Vermont: the flora represented by the plants in the Cyrus Pringle Herbarium and the fauna as documented for both the invertebrate and vertebrate animals in the Zadock Thompson Zoological Collections. The size of the combined collection is about 700,000 accessions (330,000 plants and fungi; 350,000 invertebrates; 20,000 vertebrates). All-told, the UVM Natural History Museum provides the State of Vermont at large and the University of Vermont with a working Museum that promotes the exploration of biodiversity through both original research and the teaching of natural history.

Geographically, the Natural History Museum lies in a region of unusual floristic and faunistic diversity for a recently glaciated region. Remnants of the early Holocene biota persist in the shifting sands at the edge of the



UVM Plant Biology major Sami Connolly in the wet-plant tent, day 2.

Champlain Sea (ca. 12,000–10,000 ybp) and in the alpine notches and summits of the state. Northeastern-most limits for species widespread on the North American craton to the south and west are common in communities on calcium-rich Paleozoic sedimentary rocks

and soils derived from them in the milder climate of the Champlain Basin. All of these elements are superimposed on the inherent diversity to be found across northeastern North America. The diverse flora and fauna of the Champlain Valley have for two centuries engendered a culture of deep interest in the biodiversity of the region, now epitomized in the Museum.

Torrey Hall, the building housing the University's Natural History Museum, was opened as the new University library and location for the burgeoning natural history collections for the University of Vermont in the summer of 1863, at the turning point in the Civil War—when the very future of the institution

was in doubt because so many young men had answered the call to service. The Reverend Joseph Torrey, ninth President of the University and a botanist himself, dedicated the building. The Burlington Free Press, in its account of the opening, reported that “It is felt that the building erected is a safe and solid structure. It affords room not only for the library and [collections] already belonging to the University, but for those additions which it is confidently hoped will be made in the future as they have been in the past, by individual donations.”

Listed on the National Register of Historic Places in 1973, Torrey Hall was extensively renovated and the building rededicated in honor of President Torrey in 1974. Working with Biology Professors Ingi Agnarsson and Bill Kilpatrick, curators of the Zadock Thompson Collections, I won a \$470,000 National Science Foundation Award in 2014 under the Collections in Support of Biological Research Program (CSBR) to provide housing for all of the University's collections in modern metal cabinets for the first time, reducing the chance of damage from fire and flood and enhancing pest control. While the specimens were being secured, curators and students systematically reorganized them to reflect current classifications. At the same time, the ongoing plant and arthropod digitization and imaging program was expanded to fully represent the collections and make specimen images and related data available online to researchers and educators.

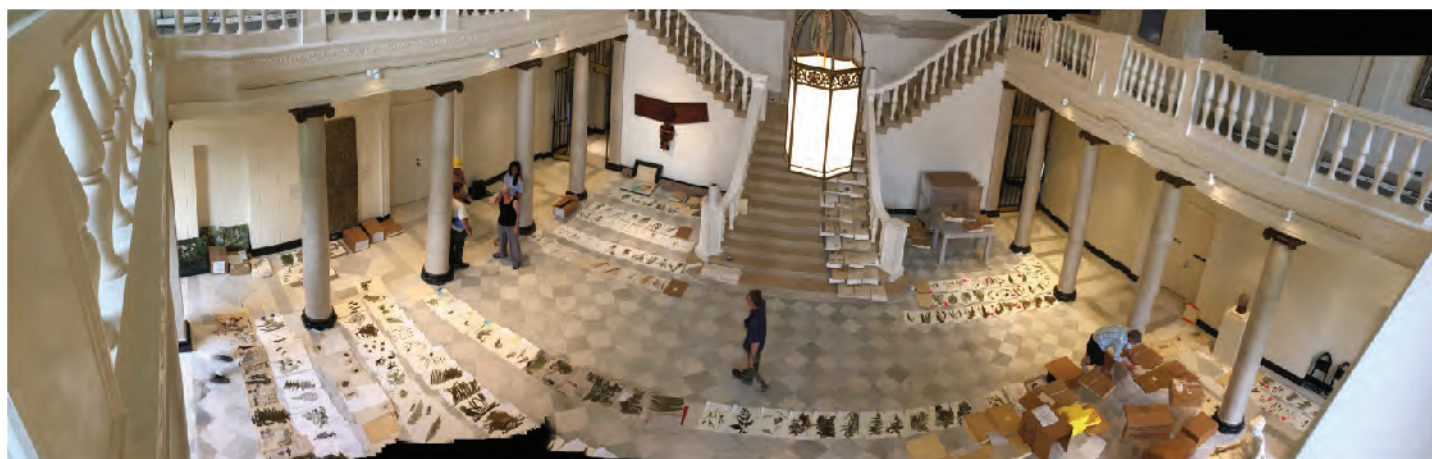


The moist specimens drying on the floor of the Marble Court, Fleming Museum, day 3 (photo, David Barrington).

Beginning in 2016, the University invested in an architecturally informed exterior renovation of historic Torrey Hall, including restoration of its original multi-colored slate roof as well as return of the chimneys, window decorations, doors, and windows to their original 19th-century condition. It was the work on this restoration that was abruptly interrupted on August 3rd of 2017 by the fire, which destroyed the roof and roof infrastructure. To put out the fire in the roof, about 500,000 gallons of water were delivered to the main section of the building, creating what amounted to an internal rainstorm in the building.

I entered Torrey Hall with the first group to survey the interior following the quenching of the flames. There was standing water on the floors on all levels. We discovered that, thanks to NSF, all of the collections in

about 36 hours to stabilize the wet collections before fungal attack would compromise them. Two days of herculean effort by almost 100 volunteers resulted in the salvaging of much of our wet material. We triaged the exposed materials into "only damp," "wet but important and salvageable," and "wet and lowest priority or unsalvageable." The damp specimens were spread out in the Marble Court of the adjacent Fleming Museum of Art, thanks to the kindness of Fleming Director Janie Cohen; they dried completely within a day. At any one time over those first two days, we had 15 or 20 people working together on the wet specimens on tables set up for the purpose under a tent. Following our University Library colleagues' instructions for recovering wet books, we separated the specimens by interleaving them with waxed paper, then bagged them in plastic bags, boxed the bags, and froze



Panorama, the Marble Court, day 3. (photo, Catherine Paris).

metal cabinets were unimpacted by the water—including virtually all of the accessioned collections of plants and all of the animal collections. The impact of this water on unsheltered materials was random, even capricious. In some places, plants out in the open, simply held in folders, were dry. In other places, hundreds of specimens were soaked. The water used to extinguish the fire compromised the electrical system, the floor coverings, and all of the plaster in the building (including, unfortunately, a set of fine student murals done over the last 40 years). Fortunately, we found that the herbarium's library and archives, as well as the vertebrate collection, were completely untouched by the massive influx of water—they were housed in a free-standing late nineteenth-century addition to the building.

We quickly learned from our University Library colleagues Scott Miller and Chris Burns, better versed than we were in emergency response, that we had

them in a rented freezer truck on site. We decided to discard the lowest-priority collections as the mold bloomed across the remaining wet specimens. At the end of that 36-hour marathon, we saw the freezer truck on its way to the Belfor Company, a Massachusetts firm that specializes in recovering wet books and archival materials.

However, our ordeal was not over. The engineers who surveyed the building in the wake of the fire were concerned that the weight of the collections, in combination with the weight of the water saturating the walls and floors, would compromise the integrity of the whole building, ending in its collapse. It was decided to move all of the natural-history collection from Torrey Hall to prevent this outcome. In four short days, we saw every last collection cabinet out of Torrey Hall to new quarters—the herbarium cabinets alone numbered 185; they were located on all four levels of the building. The animal collections were

housed in over 80 additional cabinets. Booska's, the local family-owned movers, were there for us; they moved cabinets out through a hole in the roof via crane, through window casements via forklift, or through the building's doors. In less than a day, we came up with space for all the cabinets: the plants were housed in Jeffords Hall (the University's Plant Science Building) and the animal collections in Blundell House, an unoccupied building on the University's south campus. The installation of the herbarium on two levels of Jeffords involved yet another crane—and an amazing amount of good work by the moving crew. As you might imagine, the collection is not in a very logical order in its new home, because we had so little control over the sequence in which cabinets came out of Torrey, into trucks, and into Jeffords.

The response of the international community of natural-history collections curators and especially herbarium curators was deeply important to us. Within a day of the fire, we had e-mails from over sixty colleagues, including from the major North American herbaria as well as herbaria in Europe and Asia. The offers of support were generous and sincere; we will be ever grateful to the community for their amazing response. Fortunately, we had such a massive number of volunteers show up outside Torrey Hall that we had all the help we could put to work right here in Burlington. At the same time, we had wise advice on recovery provided by the informal group of people who call themselves the Cultural Heritage Emergency Response Network, a group of Vermonters working with cultural heritage collections (Libraries, Museums, Historical Societies, Town Offices) that provides mutual aid in preparedness for, and response to emergencies. Soon after, the American Society of Plant Taxonomists provided funding for a larger-capacity freezer to cope with increased vulnerability to insect pests. With this abundance of help and expertise, we were able to



One of the new metal cabinets coming out of the roof of Torrey Hall, day 6 (photo, Sid Bosworth).

respond quickly enough to keep the Torrey Hall emergency from becoming a disaster.

Thanks to Scott O'Brien, Contract Coordinator with the University's Physical Plant Department, we were able to reinvent functional herbarium facilities in Jeffords Hall, allowing us to restore our routine collection functions within a few weeks of the fire. The improvements included constructing an enclosed space to house the Pringle's communications and mounting facilities as well as dedicating space for our digitization facility, now nearing its goal of digitizing the entire vascular plant collection.

Back at Torrey Hall, exterior renovation contractor J.A. Morrissey has resumed restoration work on the windows and brickwork; they have also removed the fire-damaged roof components and begun again to

restore the nineteenth-century slate mansard roof. In the first weeks after the fire, G.W. Savage Co., the local emergency restoration specialists, removed the compromised portions of the building interior, leaving the rich nineteenth-century architectural features intact but opening up the possibility of an innovative redesign and reconstruction of the building interior to suit our vision for the University of Vermont's Natural History Museum. At a November meeting of UVM's senior leadership convened by President Tom Sullivan, the decision was made to support the continued dedication of Torrey Hall to the Pringle Herbarium and the University of Vermont's Natural History Museum. Planning the restoration of the building's interior is now underway. We look forward to our return to Torrey Hall sometime in 2020.

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