

Yale Peabody Museum of Natural History

Sustainability Action Plan

Sustainability at Yale

The 2013–2016 Yale Sustainability Strategic Plan identifies five areas in which to focus sustainability efforts:

- Energy and greenhouse gas emissions
- Natural and built environment
- Materials management
- Food and well-being
- Sustainability leadership and capacity building

Included in this plan is a special mandate for museums to execute sustainability action plans.

Yale Peabody Museum Sustainability Action Plan

The 13 million specimens in the collections of the Yale Peabody Museum of Natural History (YPM) tell the story of 2 billion years of life on Earth. These collections provide a baseline for understanding climate and biodiversity through time. Scientists use our collections to gauge the effects of environmental and climate change on the quality and composition of life on Earth and make predictions for the future. This research is brought to the Yale community and the public through the Peabody Museum's exhibitions and events, through student and public engagement, and through leading by example as an institution. As a natural history museum we are not only stewards of the past, but can also promote, educate, and advocate for the *natural future*. In line with the target areas in the 2013–2016 Yale University Sustainability Strategic Plan, we have outlined here the areas in which we will achieve a more sustainable Peabody Museum.



Successes to Date



ENERGY AND GREENHOUSE GAS EMISSIONS

Over the past 50 years, the Peabody Museum has moved to use materials with much longer life spans for the housing of its specimens, artifacts, and archives. Acidic wooden storage equipment has been replaced with more than 3,000 powder-coated steel cabinets and shelving units and acid-free materials have been introduced for specimen trays, specimen labels, and mounts. New glassware with appropriate gaskets and seals have replaced most of the containers in our fluid collections, thus reducing evaporation and the need for the periodic topping off of preservative liquids. We have also introduced an innovative ethanol recycler through a National Science Foundation collection improvement grant for the rehousing of vertebrate specimens.

In 1990 the Peabody Museum began to address the environmental conditions in which specimens were housed and exhibited in its buildings. With air handling renovations in the Kline Geology Laboratory (KGL) and the construction of the Class of 1954 Environmental Science Center (ESC), designed to accommodate approximately half of the Museum's collections, the Peabody identified the appropriate environmental conditions necessary for the organic, inorganic, and cultural materials housed in the Museum. In some cases we made building-level improvements and in others created microclimates.

Over the past fifteen years there have been multiple improvements to the infrastructure and mechanical systems affiliated with the YPM-KGL-ESC building complex, including:

- New roofs for (KGL and YPM),
- Exterior renovation, including new doors and windows (YPM),
- A central air conditioning system fed by chilled water from Yale's central power plant, replacing window units (YPM),
- Fume hood modification and replacement, along with new operating procedures (ESC and KGL),
- Air handling equipment replacement (KGL), and
- Adjustment of environmental set points (ESC and KGL).

The Peabody Museum maintains a Zipcar account for its employees, has a Yale shared-use bicycle on site, and uses a hybrid vehicle for West Campus deliveries and transportation. Yale bicycle racks installed outside our buildings are available to commuters. Sensor lighting installed throughout the ESC and the Peabody in offices, laboratories, and classrooms ensure that lights are not on in unoccupied spaces.



NATURAL AND BUILT ENVIRONMENT

We have taken measures to preserve resources within the Peabody's gallery and public areas. With a microloan from the Yale Office of Sustainability all the halogen lights in the Museum Store have been replaced with LED lighting. Floor maps, previously distributed to visitors, are now provided as static displays in high traffic areas, reducing the significant amount of waste generated by distributing printed maps. Our low water use Cretaceous Garden along Whitney Avenue uses no chemical fertilizers.

The Peabody Museum Green Team has been an active force in guiding and educating staff about Yale sustainability initiatives and events, and with Ginger Chapman, then in the Office of Facilities, the Green Team also developed an occupancy information and training presentation to encourage sustainable practices and disseminate information on practicing sustainability within the YPM–KGL–ESC complex.



MATERIALS MANAGEMENT: PURCHASING

The Green Team encourages paper-free business practices, reuse of paper, two-sided copying and printing, and fewer desk-side printers. Most of the paper purchased for the Museum has 30% or greater recycled content. The Museum has installed several shared scanner–copier systems and departments collectively purchase copier paper.



MATERIALS MANAGEMENT: DISPOSAL

The Green Team’s occupancy presentation about the facilities available for the proper disposal, recycling, and reuse of materials within the YPM–KGL–ESC complex keeps the building occupants informed. Our centrally located mail station is a central location for recycling receptacles for electronics, batteries, toner cartridge, and pens, and a bin for Yale’s junk mail elimination program. This space also serves as a place for staff to leave or pick-up unwanted items, both personal and business related. Additionally, all-staff emails regularly notify staff about the availability of extra packing materials and other items such as vintage glassware and wooden boxes headed for the trash that might be another’s treasure.

The Peabody Museum Construction Shop whenever possible salvages or repurposes exhibition construction materials, reducing purchases of new materials for cases, panels, and other exhibition structures. New exhibitions are designed with the reuse of existing cases in mind. Finally, the Peabody follows the Office of Sustainability green event guidelines and uses compostable supplies for exhibition openings and volunteer events.



FOOD AND WELL-BEING

Within the YPM–KGL–ESC building complex filtered tap water dispensers have replaced jug spring water dispensers in three locations. The Green Team has provided cutlery and dishes for our staff kitchen to discourage the use of disposable products. For organizational meetings where beverages are served, such as the Peabody Town Hall, attendees are encouraged to bring their own mugs. The Green Team has also developed *internal* sustainable events guidelines based on the Office of Sustainability green event guidelines.



SUSTAINABILITY LEADERSHIP AND CAPACITY BUILDING

The Peabody Museum, by nature of its mission, is a leader in promoting environmental issues to the public through citizen science, school programs, and exhibitions. Our citizen science projects are designed to enhance the connection between our lives and the natural world. Some of our current projects are outlined below.



iCBug — An electronic version of the Connecticut Butterfly Atlas, where the Yale community and the public can identify butterflies and enter sightings in Connecticut with a mobile phone, tablet, or laptop.



Peabody FrogWatch — A chapter of FrogWatch USA, in partnership with Connecticut's Beardsley Zoo, that trains Yale and other community members to listen for frog calls and enter data in this national citizen science program, contributing to research on long-term amphibian populations.



YUBio (Yale University Biodiversity Initiative) — A program where Yale community members receive training on bird identification and plant phenology and can enter Central Campus observations in an online data collection form used for long-term planning.



Nature Programs for Adults — Programs in which Peabody members, non-members, and Yale community members can learn about their local environment through sustainable gardening, gardening for butterflies and birds, Horse Island trips, propagating native shrubs, and more.

In addition, Peabody EVolutions, a career-building and STEM afterschool program for middle and high school students from New Haven and West Haven, explores such diverse topics as local food issues and climate change using the fossil record.

Many of the Peabody Museum's traveling and temporary exhibitions also highlight sustainability, notably *Big Food! Health, Culture, and the Evolution of Eating and Sustainable Choices*. Sustainability themes are also incorporated into the content of several permanent exhibitions, such as the Connecticut Biodiversity Hall, which includes the Connecticut Biodiversity iCBug kiosk. The Discovery Room, a hands-on public space for all ages filled with touchable specimens and live animals, addresses sustainability by including an interactive exhibit on lunch alternatives and waste.

Sustainability and the natural environment are central to many of the Museum's public events, such as annual collaborations with Connecticut's Beardsley Zoo on *BioBlitz*, a 24-hour race to identify as many living organisms as possible in a specific area. Free admission events such as *Earth Day* and *Dr. Martin Luther King, Jr.'s Legacy of Environmental and Social Justice* offer talks and other programming related to sustainability. We also host many natural history lectures that incorporate concepts of sustainability.

The Peabody regularly participates in Yale's Sustainability Week. In 2014 we sponsored an office supplies swap and leftover materials were donated to Goodwill and New Haven Reads/Wexler School. In 2013 we organized the interactive *The Quinnipiac River Bottled!* by Fritz Horstman, which recreated in Beinecke Plaza the Quinnipiac drainage using plastic water bottles filled on site by passersby. The installation allowed dialog with participants about water issues in urban areas and the ubiquity of plastic in our daily lives. EVolutions interns and Office of Sustainability student representatives were on hand to guide participants.

In 2012, Resourcerer C. J. May presented *Food, Magic, and Sustainability*, a magic show tailored to be a companion to our exhibition *Big Food! Health, Culture, and the Evolution of Eating*. Our 2011 event was a bring-your-own-lunch noontime showing of Annie

Leonard's *Story of Stuff*, a short film about environmental damage brought about by poor purchasing habits. YPM's Green Team has several active Yale Sustainability Leaders (Patricia Brunetto, Susan Butts, Jim Sirch, Kim Zolvik). At least one member attends the monthly Sustainability Leaders meeting.

The Peabody has been recognized several times for achievements in sustainable activities. The Museum's Division of Vertebrate Zoology (Greg Watkins-Colwell) in 2011 received Green Labs Certification from the Yale Office of Environmental, Health and Safety – the first laboratory on campus to be so recognized – for efforts to green its practices and for the introduction of an ethanol recycler. Jim Sirch and David Heiser in the Education department won the 2014 Yale Sustainability Award for work with YUBio, a web portal to survey and record biodiversity on the Yale campus.

Opportunities



ENERGY AND GREENHOUSE GAS EMISSIONS

The Peabody Museum is enlisting the Yale Office of Facilities to support audits of energy usage and sustainable preservation practices in the YPM–KGL–ESC Science Hill complex and at the Collections Study Center at West Campus. The environmental conditions of the exhibitions, research collections, and collection management and conservation spaces will be evaluated under guidelines from the Rochester Institute of Technology's Image Permanence Institute for long-term sustainable preservation. During the next two years the Peabody will participate in an audit of energy usage and sustainable collections practices in the Collections Study Center organized by the Yale Institute for the Preservation of Cultural Heritage and the Yale Office of Sustainability.

A liquid nitrogen storage facility being installed in the KGL basement for the Museum's tissue and genomic collections will replace six -80°C freezers for significant energy savings. ESC. We are also investigating whether to relocate Peabody collections management and security systems computer servers to University central server space in the next year. We will soon complete our feasibility study to evaluate the source of perimeter heat on the second floor of the Peabody building and will look into replacing steam radiators with fan coils within two years. An evaluation of environmental requirements and air handling controls is part of the planning and design for the renovation of the Museum's Fossil Halls, including LED lighting and the use of sustainable building materials.

The Green Team has encouraged staff to complete a transportation survey as first step to determine ways to reduce greenhouse gas emissions. We hope this might promote use of ZipCar for work activities, the bicycle program for personal use during work hours, and the West Campus shuttle for transportation between campuses.



NATURAL AND BUILT ENVIRONMENT

To reduce its carbon footprint, the Peabody Museum is gradually replacing older lighting in exhibition areas with energy efficient LED lights, with the goal of replacing 25% of gallery lighting within three years. A recent night energy audit in YPM buildings resulted in the

reduction of incidental lighting at night, particularly in hallways, and in infrequently used areas, such as mechanical rooms.

Efforts to enhance the natural and built environment at the Peabody will improve the Museum's main entrance by removing non-native vegetation and adding seating areas for visitors. An extension of this is our participation with the New Haven Urban Wildlife Refuge Initiative and Urban Oasis, a joint program with the U.S. Fish and Wildlife Service, Audubon Connecticut, Common Ground High School, and six New Haven Public Schools, in which we are improving wildlife habitat in schoolyards and public parks by advising on wildlife plant lists and designing and installing interpretive signage.

In addition to reusing materials in exhibition construction, the Peabody Construction Shop also uses low VOC (volatile organic compound) paints, will reduce or eliminate the use of oil-based finishes, and source sustainable local products when possible. With the Office of Facilities, the shop is looking into diverting hundreds of pounds per year of sawdust waste to compost processing.

Several projects on the horizon dependent on external funding – a *Green Courtyard* and renovations to the Peabody's auditorium – will also incorporate sustainable building features and enhance the natural and built environment at the Peabody. Among the sustainable design features planned for the renovation of the Fossil Halls are an improved building envelope with new insulation and vapor barrier, edge grain reclaimed wood, all low VOC finishes, recycled steel, efficient variable constant volume air processing, and energy-efficient fans, motors, metering, controls, and lighting.



MATERIALS MANAGEMENT: PURCHASING

The following measures will reduce the effects of the Peabody's consumption practices on the environment:

- Paperless business operations

- Paperless membership renewals (50% within one year)

- Shared departmental purchasing of office supplies

- Discussion with Yale BluePrint to promote transition to 100% recycled paper

- Eliminate shipping waste from deliveries to the YPM-KGL-ESC building complex (which have a common loading dock) (with Yale Purchasing and preferred supplier W.B. Mason)

- Installation of point-of-sale system (FY16) with e-ticketing for visitors

- Electronic dissemination of *Explorer* newsletter, replacing 3,000 paper copies



MATERIALS MANAGEMENT: DISPOSAL

As part of a waste management audit walk-through with Yale Waste and Recycling, Custodial Services, and the Office of Sustainability in October 2014, several opportunities for improvement were identified: access to single-stream recycling bins, laboratory recycling, event waste and composting, and reduction of desk-side printers.



FOOD AND WELL-BEING

In addition to the filtered water delivery systems replacements in staff lounges and kitchens, the Peabody is investigating adding a filtered tap water fountain that incorporates a bottle filler for use by staff and visitors (notably at events where individual bottled water is provided).

Other sustainability promotion initiatives include:

- Obtaining Yale Green Event Certification for Museum events, including program and departmental collaborations with Fellows, Institutes, Volunteer, Events, EVolutions, summer camps, and Public Programs,

- Creating Sustainable Events Guidelines for external users (non-Peabody), and

- Making available the building occupancy training slideshow to new staff.



SUSTAINABILITY LEADERSHIP AND CAPACITY BUILDING

The Peabody Museum recently began a signage campaign to promote the “Treasures of the Peabody.” We will expand this campaign to include sustainability “factoids” in public areas that will highlight the Museum’s sustainability initiatives, our work with environmental quality and climate change issues, and sustainability “tips” for our visitors. The Green Team will work to increase the visibility of sustainable initiatives by reporting regularly at Peabody Town Hall meetings and by distributing the Office of Sustainability monthly campaign emails. Additionally, we will work to reduce the deficiencies in our YALE Green Workplace status (this year we received “YA”; the previous year “YAL”) and encourage Green Lab Certification for ESC laboratories by the end of 2015.

The Peabody Museum continues to include and expand awareness of sustainability issues through its exhibitions, public programs, and education activities. The increased museum collections funding directed at climate change and diversity research facilitates the incorporation of sustainability in the broader effects developed in our projects. These broader effects often include our EVolutions high school afterschool program for New Haven area teens.

Finally, in 2015 we will combine forces with the other Yale museums, libraries, archives, and the Yale Office of Sustainability to host a sustainability summit for museums. We anticipate that this will be a two-day workshop and think tank with Yale and invited speakers.

