THE POLLY HILL ARBORETUM

Education Center and Botany Lab

Case Statement

Honoring our Origins and Looking Towards the Future

Reflecting on the fortuitous meeting of Dr. David H. Smith and Polly Hill, we know they would both be pleased by the Arboretum's development since its public opening in 1998. Today the spirit of both these individuals enlivens our mission and inspires our current activities.

A man of immense passion and talents, David Smith left a lasting legacy with the establishment of his family foundation, the Cedar Tree Foundation (CTF). Today the CTF supports environmentally based not-for-profits through need-based grants.

The Arboretum has received a $500,000 matching grant from CTF. This capital project grant was given in support of the development of our Education Center and Botany Lab.

We sincerely hope you will recognize and be inspired by the incredible impact of the Smith family on the establishment and growth of the PHA by making a contribution to this appeal. Your gift will be matched 1:1 by the Cedar Tree Foundation! Thank you for your consideration.

David H. Smith and Joan Smith in 1998 with their daughters and extended family

Realization of a Vision

In 2006 the Arboretum outlined several capital projects to further our mission of education, horticultural experimentation, and plant conservation. We have been successful with a new greenhouse (2006), a renovated Cowbarn (2007), the Littlefield Maintenance Building (2009), and a refurbished Far Barn (2011). These projects were made possible by our supportive membership and generous donors.

Today one project remains: the Education Center and Botany Lab. An education center and science facility, this project embodies our mission to the fullest extent. We have already completed plans for this building slated to replace the dilapidated outbuilding known as the "Gym."

The site of the proposed Education Center and Botany Lab is at the heart of the Polly Hill Arboretum campus and visible from State Road.

Situated at the heart of the Arboretum campus, between our administrative offices (Homestead) and our library (Cowbarn), the Education Center and Botany Lab will provide the space and equipment to advance our plant research and the climate-controlled indoor environment to extend our education programming year-round.

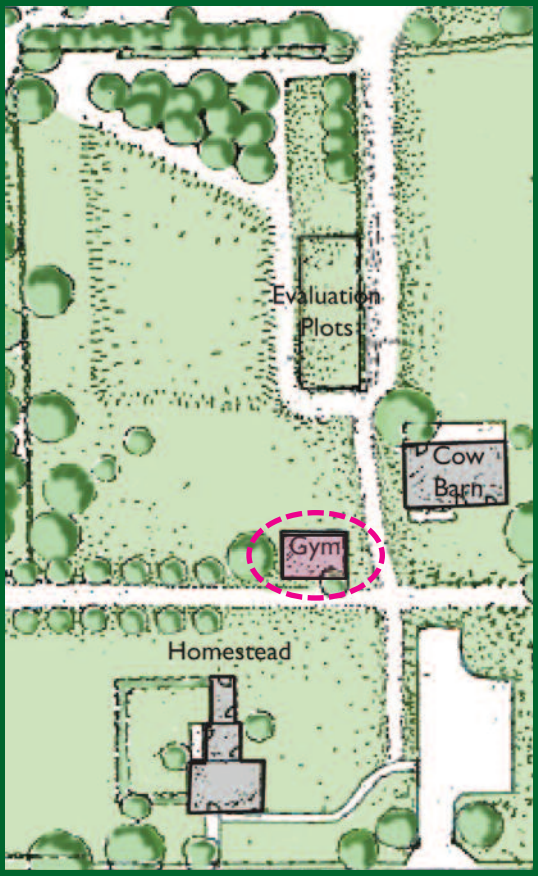
With a generous matching grant from the Cedar Tree Foundation, you can help us build this new facility. Your gift will be matched dollar for dollar by the Cedar Tree Foundation! Individuals, couples or family members would have the option of being listed or memorialized in our classroom facility with gifts of $100 or more.

Extending our Education Programs to a Broader Audience

Now in our 16th year as a public garden, PHA's public education programs include youth and adult classes, seminars, and workshops. We serve over 700 K–7th grade students each semester from six Island schools. Our adult education programs reach a diverse audience from the novice to the professional gardener. We also train naturalists and land managers that work for the major land conservation organizations on the Island.

Our programming is limited by the fact that we do not have a year-round heated classroom facility. Our current venue (the Far Barn) offers only seasonal use; in the cooler temperatures of fall, winter, and over our long spring season, the Far Barn does not provide a comfortable learning environment. The lack of indoor programming space also impacts our youth programs when inclement weather cancels spring or fall fieldtrips. In addition, the lack of proper storage for Polly's archival plant records, notes, and personal letters (detailing more than 50 years of horticultural experimentation) is an important concern.

The proposed site of the new building is at the center of the PHA campus between our administrative offices in the Homestead and the Cowbarn, which houses the Vineyard's most valuable collection of natural history, horticultural, and botanical books. This central location is visible from the road making its design and positioning critical to maintaining the spirit and integrity of our historical landscape. The new building incorporates the same architecture as the old "Gym."



The building site in relation to the Cowbarn features the old Gym building (*left and below, circled in pink*) due for demolition.

The proposed design (*above, circled in white*) incorporates the same architectural lines and style of the old building it will replace, preserving original design features at the main entrance.

The new building site is at the center of the Arboretum campus between the Homestead (administrative offices) and the Cowbarn.

How Will the Arboretum and the Community Benefit?

The Polly Hill Arboretum is the plant science education organization on Martha's Vineyard. The proposed Education Center and Botany Lab will serve the community by increasing our ability to share knowledge about plants through education, research, and plant conservation, while allowing PHA to further our mission.

The benefits in each mission area include:

Education

- Expanding adult programming into the fall, winter, and spring seasons
- Providing in-depth professional courses to the advanced student or naturalist
- Training our student interns in plant identification and curatorial techniques
- Expanding our course offerings to middle and high school students
- Providing in-service training for Vineyard teachers

Research

- Continuing to collect both native and introduced plants from the local flora to develop a modern *Flora of Martha's Vineyard*
- Documenting and verifying the PHA plant collections using herbarium specimens
- Supporting the long-term ecology study of our natural oak woodlands in collaboration with Harvard Forest in Petersham, Massachusetts

PHA collections management intern Emily K. Ellingson prepares a herbarium specimen of *Stewartia malacodendron*, silky stewartia, as part of her botanical verification project. Dried, pressed specimens if stored correctly can last well over 200 years. The Arboretum uses these specimens to verify the identification of species, record their flowering times, and to create a representative sample of a tree cultivated in our living collections.

Plant Conservation

- Mapping and monitoring endangered and threatened plant species on Martha's Vineyard
- Supporting the preservation of threatened tree and shrub species in their native habitats in North America and Asia

Training the Next Generation of Plant Scientists

PHA summer intern Eva Colberg takes leaf and flower samples from wild elderberry, *Sambucus canadensis*, during a botanical foray at Fulling Mill Brook Preserve, Chilmark, Massachusetts.

Without plants, life on earth is not possible. While our society continues to advance on many technological fronts, it lags behind in the number of people who observe, understand, and appreciate what plants do for us on a daily basis. Currently a large gap exists in the number of young scientists trained in the basic field identification of plants and plant conservation methods and the number needed to solve our environmental challenges.

Since 1988 undergraduate degrees in botany have declined 50% and advanced degrees are down 41%.

– US Department of Education

Young students in the Far Barn examine seeds as part of our Seeds Travel program. Education classes begin in late spring and end in October. The new Education Center and Botany Lab will extend our season by allowing us to begin earlier in the spring with a heated classroom facility and continue into the winter months.

This so-called "plant blindness" reflects a steep decline in enrollment in botany courses. Many have been eliminated over the last several years in colleges and universities across the country.

The Polly Hill Arboretum is part of a nationwide trend in botanical gardens and arboreta that has emerged to address this need. Each year we host three college interns to engage and educate them in the art and science of collecting and identifying plants in the field and in the Arboretum's living collections. PHA staff serves as "plant mentors" helping students to notice, appreciate, and cultivate plants. The Education Center and Botany Lab will be a headquarters for supporting our education program.

Rhododendron 'Marydel', a Polly Hill introduction. Plant collected from the cultivated collections of the Arboretum by PHA collections management intern Emily K. Ellingson as part of a collections verification project.

Herbarium specimens are a valuable teaching tool. Here, PHA Research Associate and botanist, Melissa Cullina teaches a class on identifying native grasses and sedges to Vineyard land stewards and advanced naturalists.

What Is an Herbarium?

A section of the new building will be dedicated to a climate-controlled herbarium. An herbarium is a repository for dried plant specimens, designed to ensure the long-term preservation of these scientific plant samples referred to as herbarium specimens or voucher sheets. The process requires collecting plants in the field, pressing them flat, and drying them to remove moisture that can lead to deterioration from molds, mildews, and fungus. Under optimum storage conditions properly dried specimens can last over 200 years.

An important part of the sampling process includes capturing the plant during flowering or seed production (as well as sampling the vegetative parts of the plant) since plants are described in scientific literature based on these features. Once identified, the dried and pressed plant specimens are mounted on acid-free archival storage paper and labeled as to their identity and place and date of collection. These specimens document the past and provide users with the historic and current locations of plants over time.

Arboreta and botanical gardens use these reference collections for numerous activities including plant identification, verification, and validation; documentation of environmental changes; development of local floras and keys; documentation of the distribution of vulnerable plant populations; genetic analysis; and the examination of plant/insect interactions.

Herbarium specimens provide detailed samples of plants in nature creating a lasting catalog of natural history. The Arboretum collects herbarium samples from each plant collected during plant exploration trips. Herbarium specimens are used to teach numerous classes on plant habitats and plant identification. PHA's herbarium collection is worthy of protection and preservation.

The Botany Lab will feature a bright workspace to prepare and examine herbarium specimens similar to the lab space pictured above at the Arnold Arboretum of Harvard University. It will also provide teaching space in addition to the main classroom.

Currently, the Arboretum houses nearly 2,000 herbarium specimens, which include lichens, seaweeds, and flowering and non-flowering plants.

The prime method of storage is in sealed herbarium cabinets that protect specimens from insect and mold damage. Ideally these cabinets should be located in a separate room with strict temperature and humidity controls.

Dried, pressed specimens are cataloged in a computer database. Specimens are often shared through a loan process that enables collaborative and supportive research with botanic gardens and plant research institutions around the world.

Building Features

Classroom

The classroom will be well lit and comfortably seat 40 students with a capacity to hold more. It will feature portable tables and a large projection screen for lectures. It will also have a digital projection microscope to assist in teaching plant identification classes and to examine plant parts under high magnification.

Botany Lab

This portion of the building serves as a herbarium specimen preparation area including a plant dryer to dry specimens before mounting. The lab will also contain a subzero freezer used to eliminate insect pests that naturally occur on plants collected outdoors. The freezer eliminates the need to use harmful pesticides.

Herbarium

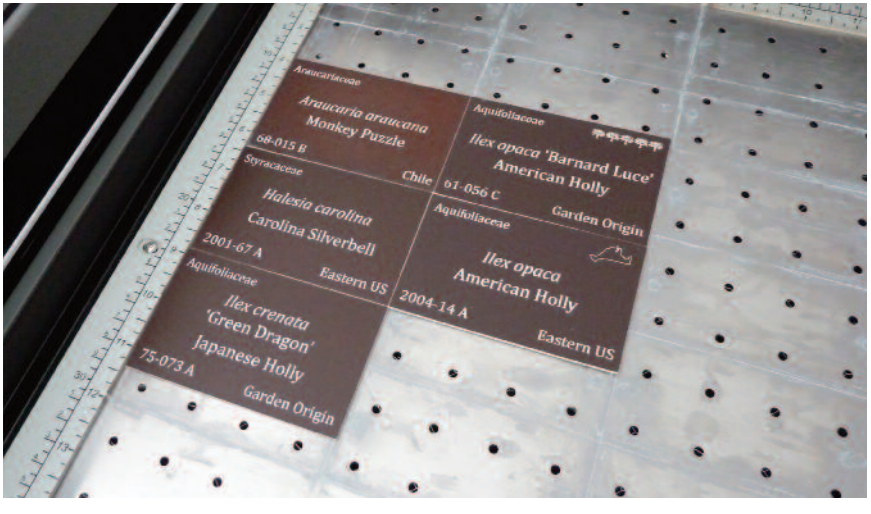
The Herbarium room will have ample lighting to examine specimens and will accommodate future collections for years to come. This climate-controlled room will contain 12 herbarium cabinets. They provide a reference device through organizing plant families and species for easy retrieval. More importantly they protect specimens from insect pests that can cause significant damage.

Plant Records, Archival Storage and Label Production Area

Currently Polly Hill's plant records, personal letters and photographs are stored in two separate areas, the Homestead and the Cowbarn. We plan to consolidate these archival materials in a climate-controlled room more conducive to long-term preservation. This second floor area will also

Polly Hill's story and history is captured in an extensive archive that continues to grow. From her early plant records to our founding board members, these archives represent our institutional history and deserve better storage conditions.

Below: We would like to move our label making engraver and all of the associated supplies and materials into a consolidated space on the second floor of the new building.



Received as a seedling from the Brooklyn Botanic Garden in 1961, the Japanese stewartia just east of the Gym is one of the finest specimens in North America. The tree will be protected during the construction of the new building. The foundation will be moved six feet west to avoid damage to the tree's root system.

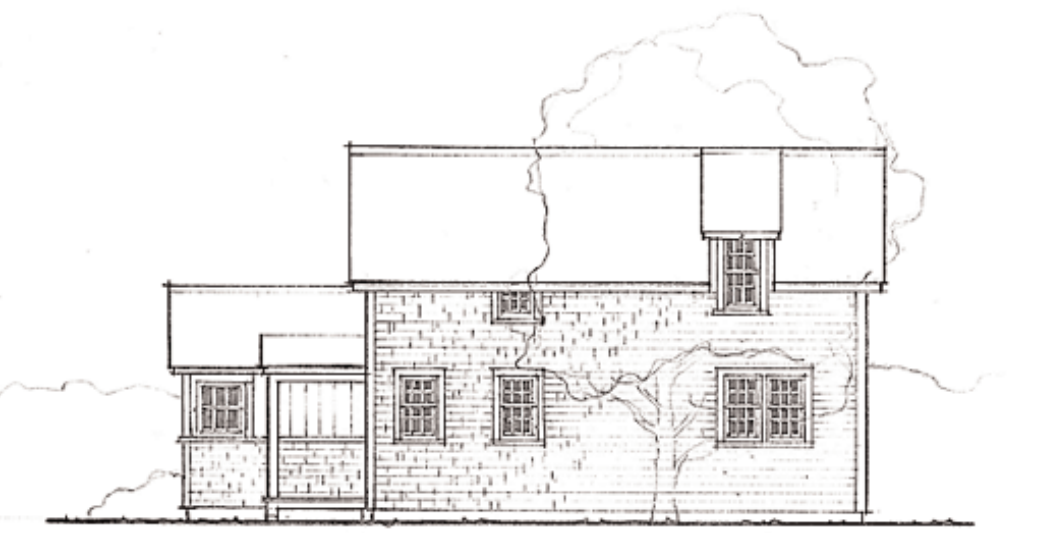
feature a curatorial office where botanical display labels will be produced with our laser engraver and associated materials stored.

The building will be energy efficient through the use of sustainable building techniques as well as solar panels that will provide 100% of our energy needs. The building will be wheelchair accessible and have expanded parking to enable students to be dropped off or park nearby.

A special effort will be made to protect the majestic Japanese stewartia tree growing on the east side of the building. We plan to move the existing footprint of the building six feet to the west to protect the tree and accommodate its future growth!

Herbarium specimen of Stewartia malacodendron *from Mrs. Lindsay (Weezie) Smith, Birmingham, Alabama. Single plant collected from the wild growing in a very wet area in shade, notable for its almost black, purple filaments. Planted West Field, South.*

– Notes by Polly Hill



EAST ELEVATION
1/8" = 1'-0"

POLLY HILL ARBORETUM
PO Box 561
West Tisbury, MA 02575
508-693-9426 Tel
508-693-5772 Fax
www.pollyhillarboretum.org

ADMINISTRATIVE OFFICES
The Homestead
809 State Road
West Tisbury, MA 02575

VISITOR CENTER
795 State Road
West Tisbury, MA 02575

ACCESSIBILITY
The Visitor Center is wheelchair accessible.

VISITOR CENTER HOURS
Memorial Day weekend to Columbus Day: 9:30 am–4 pm

ARBORETUM GROUNDS HOURS
Sunrise–sunset, year-round

TOURS
Memorial Day weekend to Columbus Day: 10 am daily

ADMISSION
$5 suggested donation
Free to members and children under 12

This book has been printed on paper certified by the Forest Stewardship Council™

SOUTH ELEVATION
1/8" = 1'-0"

THE POLLY HILL ARBORETUM
PO Box 561
West Tisbury, MA 02575
Tel 508.693.9426
www.pollyhillarboretum.org