GREENING MEASURES FOR HAWAII’S HERITAGE HOMES

CLASS 5: LANDSCAPE

HHF PLANNERS
ROTH ECOLOGICAL DESIGN INTERNATIONAL, LLC
A statewide non-profit advocacy organization, Historic Hawai‘i Foundation encourages the preservation of historic buildings, sites and communities relating to the history of Hawai‘i.
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OUTLINE OF TODAY’S CLASS

- Welcome and Overview (5 min.)
- Assessing & Preserving Historic Landscapes (20 min.)
- Permaculture & Preservation (10 min.)
- Permaculture & Sustainability (10 min.)
- Native Plants in Landscaping (20 min.)
- Discussion (15 min.)
Wendie McAllaster, ASLA, HHF Planners

Wendie is a registered landscape architect and land use/environmental planner with over 30 years’ experience in Hawai‘i. As a Principal with HHF Planners, she specializes in historic preservation planning and landscape architecture, with an emphasis on cultural landscapes. Wendie was the project manager and primary author for the award-winning Pearl Harbor Integrated Cultural Resources Management Plan, for seven Cultural Landscape Assessments for historic neighborhoods at Pearl Harbor, and the Rural Historic Landscape Assessment for the Robinson Family Homestead on Kaua‘i. She has also prepared numerous Historic American Landscapes Survey (HALS) reports, including for the Wake Island National Historic Landmark.
Hunter Heaivilin, Roth Ecological Design International, LLC

Hunter has been a permaculture design educator and consultant for the past decade. From homesteads in Hawaii to disaster response in Haiti he has worked with individuals and communities to navigate social and ecological systems towards the development sustainable human habitats. He is currently pursuing his PhD at UH Manoa researching the impacts of climate change on agriculture across the state. He has worked as a systems planner for Roth Ecological Design International for many years, most recently on development planning for public agricultural lands. As the Chair of the Sierra Club Oahu Group’s Executive Committee he focuses on agricultural policy and watchdogs the consumptive use of our productive lands. He also works as the market manager for Farm Link Hawaii, helping Oahu’s organic farmers connect with local buyers through an online marketplace and island-wide delivery service.
Richard “Rick” Quinn, ASLA, LEED AP, Certified Arborist
HHF Planners

Rick, both landscape architect and planner, joined HHF Planners in 2000 and became a principal in 2006. He has over thirty-three years of landscape design and construction observation experience in Hawai‘i and throughout the Pacific Region. Rick serves as Vice-President, heading the company’s landscape architecture department. His extensive experience and unique approach to planting design has resulted in the creation of very special and distinctive landscapes. Under Rick’s direction, the company has excelled in the detailed planning and design of ecosystem restoration projects, commercial developments, and residential communities. The incorporation of the principles of sustainable and regenerative designs have become integral part of the company philosophy.
GOALS OF THE SERIES

- To share measures homeowners can implement to save energy, conserve resources and integrate respectfully with local culture and natural geography in a way that is harmonious and compatible with a property’s historic character and features.

- To help historic homeowners reduce their homes’ carbon footprint while retaining the properties’ historic integrity.

- To provide information and knowledge to help owners preserve the historic property; save energy, money and resources; and contribute to the natural health and vibrancy of their neighborhoods.

- To encourage historic homeowners to approach maintenance of their properties through the lens of sustainability in order to provide affordable and accessible sustainability tools and techniques to incorporate into their preservation maintenance plans.
CULTURAL LANDSCAPES
ASSESSING & PRESERVING HISTORIC LANDSCAPES
CULTURAL LANDSCAPES

A cultural landscape is

"a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein) associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values." (NPS)
Types of Cultural Landscapes

Historic Designed Landscapes

Consciously designed by landscape architect or master gardener according to design principles.
TYPES OF CULTURAL LANDSCAPES

Historic Vernacular Landscapes

Evolved through use by the people whose activities or occupancy shaped the landscape.
CULTURAL LANDSCAPE APPROACH

- Holistic view
- Comprehensive
- Relationships
Cultural Landscape Planning Process

Historical Research

- Ground & Aerial Photos
- Plans & Drawings
- Age & Types of Vegetation
- Materials
- Family, Neighbors
- Past Owners, State Archives, Libraries
- Internet
CULTURAL LANDSCAPE PLANNING PROCESS

Analysis

- Development Periods
- Compare Past and Present
LANDSCAPE CHANGES AND PRESERVATION
STANDARDS FOR REHABILITATION OF LANDSCAPE

• Manage Change and its effect on historic features while allowing some repair, alteration and additions for compatible new use
  • Retain historic character
  • Repair rather than replace deteriorated features
• Additions shouldn’t destroy historic materials, features, spatial relationships
• Change should be Reversible
LANDSCAPE CHARACTERISTICS

What to look for when assessing historical character, current conditions, and possible changes?

- Natural Features
- Spatial Organization
- Land Use
- Circulation
- Views and Vistas
- Vegetation
- Buildings and Structures
- Small-scale Features
- Archaeological Sites
LANDSCAPE CHARACTERISTICS

Natural Features

- Topography
- Streams, Shorelines
- Drainageways
LANDSCAPE CHARACTERISTICS

Spatial Organization
LANDSCAPE CHARACTERISTICS

Land Use
LANDSCAPE CHARACTERISTICS

Circulation
LANDSCAPE CHARACTERISTICS
Views and Vistas
LANDSCAPE CHARACTERISTICS

Vegetation
LANDSCAPE CHARACTERISTICS
Buildings and Structures
LANDSCAPE CHARACTERISTICS
Small-scale Features
LANDSCAPE CHARACTERISTICS

Archaeological Sites
ADDITIONAL RESOURCES

• National Park Service, Cultural Resources, Preservation Brief 36: Protecting Cultural landscapes

• Guidelines for the Treatment of Cultural Landscapes
  www.nps.gov/history/hps/tps/standards_guidelines.htm
PERMACULTURE & PRESERVATION
Quick Bio
Permaculture is..

- **Design** for **sustainable human settlement habitats**
- From lifestyle to livelihood

“The only ethical decision is to take responsibility for our own existence and that of our children.”

—Bill Mollison

The ‘permaculture flower’ adapted from David Holmgren’s book ‘Permaculture: Principles & Pathways Beyond Sustainability’.
TELLING STORIES – PLANTING PLACES

- Fancy Gardening Tricks?
- Growing from from spaces to places
- Using plants to tell the natural and human histories of your homesite
- The ecological and socio-cultural histories can help to inform/understand the modern world
- As stewards of these places you can help turn histories into stories
- You are also a part of the narrative of place now, and you get to add your own page to the book
- Planting to tell the story of the past and the present
Why Permaculture

- Ecological degradation
- Social injustice
- Economic inequality

“Issues of climate change, land degradation and decreasing biodiversity are everyone’s problems with local and global impact”

– Rosemary Morrow
SAMPLE DESIGN PROCESS

Data Collection
- Topography
- Photos
- Soils
- Climate
- Parcel
- Client Goals
SAMPLE DESIGN PROCESS

Dream and draw..
SAMPLE DESIGN PROCESS

.. From Patterns to Details
PERMACULTURE & SUSTAINABILITY

Sustainability, like Permaculture, is the carrot we amble after.

A complex adaptive process that is never static. We can term sustainable systems are those that are able to maintain their desired functions over time and in the face of disturbances.

This cannot be accomplished by attempting to implement a static system.
The Home in the Landscape

When and where are you?
- Natural history of site
- What made this place
- Climate (water & weather)
- Landform (topography)
- Life and soils (vegetation & wildlife)

http://www.kumukahi.org/units/ka_honua/onaepuni/ahupuaa
The Home in the Landscape

Home landscapes as ecological kipuka:

- Weaving landscapes back together
- Use the land help tell the story of the home
- Homes as historical kipuka/refuges
- Permaculture design to craft kipuka for habitat & species regeneration

http://www.dronestagr.am/kipuka/
The Landscape of the Home

Synthesis between built & ecological environments

Using the land, help enhance historic landscape

Using landscape, help enhance historic value of the property
“The attempt to derive meaning from landscapes possesses overwhelming virtue. It keeps us constantly alert to the world around us, demanding that we pay attention not just to some of the things around us but to all of them—the whole visible world in all of its rich, glorious, messy, confusing, ugly, and beautiful complexity.”

– Pierce Lewis in ‘Common landscapes as historic documents’, 1993
Where to Begin

Take yourself on an observational site tour of your home and neighborhood

Thematic
- Sun & wind patterns, water movement, potential energy sources

Instrumental:
- Temperature measurement, wind speeds, slopes

Experiential
- What senses are engaged
- Who did you meet, and what do they know

“Read from the book of nature” – Sepp Holzer
Where to Begin

1. THE AXIOM OF LANDSCAPE AS CLUE TO CULTURE The man-made landscape – the ordinary run-of-the-mill things that humans have created and put upon the earth – provides strong evidence of the kind of people we are, and were, and are in process of becoming. In other words, the culture of any nation is unintentionally reflected in its ordinary vernacular landscape.

2. THE AXIOM OF CULTURAL UNITY AND LANDSCAPE EQUALITY Nearly all items in human landscapes reflect culture in some way. There are almost no exceptions. Furthermore, most items in the human landscape are no more and no less important than other items - in terms of their role as clues to culture.

3. THE AXIOM OF COMMON THINGS Common landscapes – however important they may be – are by their nature hard to study by conventional academic means.

4. THE HISTORIC AXIOM In trying to unravel the meaning of contemporary landscapes and what they have to “say” about us as Americans, history matters.

5. THE GEOGRAPHIC (OR ECOLOGIC) AXIOM Elements of a cultural landscape make little cultural sense if they are studied outside their geographic (i.e., locational) context.

6. THE AXIOM OF ENVIRONMENTAL CONTROL Most cultural landscapes are intimately related to physical environment. Thus, the reading of cultural landscape also presupposes some basic knowledge of physical landscape.

7. THE AXIOM OF LANDSCAPE OBSCURITY Most objects in the landscape – although they convey all kinds of "messages" – do not convey those messages in any obvious way.

‘Axioms for Reading the Landscape: Some Guides to the American Scene’ by Peirce K Lewis
Zones of Use

Gradient of management

Intensity of interaction

For example, cooking herbs near the kitchen
Zones of Preservation

Gradient of historical value

Preservation focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time.

Rehabilitation acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.

Restoration depicts a property at a particular period of time in its history, while removing evidence of other periods.

Reconstruction re-creates vanished or non-surviving portions of a property for interpretive purposes.
Where to Begin

- Read your landscape
- Map your use and preservation needs
- Weave together your story and history
- What does your plan and planting demonstrate about the values and priorities of our time?

http://www.vjwlimited.com/peppercreek_tree_preservation.htm
Resources

PRACTICAL PERMACULTURE
for Home Landscapes, Your Community, and the Whole Earth
JESSI BLOOM & DAVE BOEHNEIN
WITH ILLUSTRATIONS BY PABLO KERSEIT

GAIA'S GARDEN
TOBY HEMENWAY

NATIVE PLANTERS
In Old Hawaii
Their Life, Lore, & Environment
A NUI LOKI PRESS BOOK

permacultureprinciples.com
Resources

www.HawaiiHGG.com
Resources

SURFBLITZ

CREATING HEALTHY, EDIBLE LANDSCAPES

FOR MORE INFORMATION: OAHU.SURFRIDER.ORG & PERMABLITZHAWAII.COM
Consult the genius of the place in all;
That tells the waters or to rise or fall;
Or helps th’ ambitious hill the heav’ns to scale,
Or scoops in circling theatres the vale,
Calls in the country, catches opening glades,
Joins willing woods, and varies shades from shades,
Now breaks, or now directs, th’ intending lines;
Paints as you plant, and as you work designs.

By Alexander Pope in Moral Essays: Epistle IV – Of the Use of Riches. 1731
Using Native Plants in Landscaping
Why Use Native Plants in Heritage Home Landscapes?

- Preservation of species and bio-diversity
- Story of Pre-history and culture
  - Educational / Interpretive value
  - Time line connections
- Sustainability / Storm Water / Carbon Foot Print
- Celebration of the Uniqueness of Hawai‘i
  - Non-native Tropical Ornamental landscapes look the same everywhere
  - 90% of Hawai‘i’s native plants are found nowhere else on earth
Indigenous vs. Endemic

Hawai‘i & Elsewhere

Only Hawaii

10%

90%
Indigenous vs. Endemic

In general, are good ornamental plants  
In general, are not good ornamental plants
Hawaiian Cultural Plants

“canoe plants“
Typical Features of Hawaiʻi’s Native Ecosystem

- Poor soil conditions
- Low level of nutrient cycling
- Low pH soils
- High diversity of plant species in close proximity
- High level of endemic species
- Co-Evolution with specialized soil and plant microbes
Plant Microbiome: Interaction and interdependence between a plant and essential micro-organisms.
How to Support a Healthy Plant Microbiome

- Have a diversity of species
- Water and fertilize for survival, not for maximum growth
- Allow for attrition and re-generation
- Use nitrogen fixing plants, and mycorrhizal encouraging plants (ferns) together
- Allow dead things to remain (leaf litter, tree stumps, logs)
- Accept a “natural” aesthetic, not an “ornamental” one
Caring for a Native Garden

**DO’S**
- Get a soil test for pH, Phosphorus and nitrogen
- Use Mulch top dressing
- Remove any and all weed species
- Control for Ants
- Replant and Experiment
- Use plants from multiple sources
- Grow your own native plants from seed
- Loosen the root ball before planting
- Dig a hole just big enough

**DON’TS**
- Don’t over water!
- Don’t plant too deeply!
- Don’t till the soil. Don’t use soil amendments
- Don’t remove leaf litter.
- Don’t use high nitrogen or phosphorus fertilizers
- Minimize the use insecticides and herbicides
- Don’t use fungicides or pre-emergents after planting
- Do not over trim!
Challenges

- Plant Availability
- Insect, & Disease Problems
- Weed Control
- Urban Conditions – drainage/soil/heat
- Lack of knowledge and research
- Aesthetics
- Needs Patience
Native Plants in Urban Honolulu

EXAMPLES
Honolulu Museum of Art

BEFORE
New native garden features:

- 12 species
- River stone swale
- Lower water use
- Unique theme relates to other themed areas
- Opportunity for sculpture display

Honolulu Museum of Art
AFTER
BEFORE

IBM Building
IBM Building

AFTER
The Native Hawai‘ian Garden at the IBM Building

Hawai‘i has a truly unique and special ecosystem, with over 1,000 species of plants that are found nowhere else on earth. Many of these plants are highly endangered. The native garden at the IBM Building is a celebration of the biodiversity of Hawai‘i and the inherent beauty of the natural Hawaiian landscape.

The use of ferns is an important component of this native garden. The endemic native plants of Hawai‘i have evolved to have an interdependence with each other, and to have an association with a native soil ecology that is essential for the plants survival. In this garden, the use of native ferns encourages the establishment of the soil micro-organisms that will benefit the other native plants, such as the ‘Ohi‘a lehua.

Uki‘uki
Dianella lavarum
‘Uki‘uki produces attractive purple fruits used for making tea or dye. Leaves were used to decorate the Manaua (he‘emana) and braided for cottage. Leaves were also used in house construction.

‘Oh‘i‘a Lehua
Metrosideros polymorpha
This indigenous tree is found on all islands except Kaho‘olawe. Every portion of this plant was used by Hawaiians, such as leaves for weaving mats, sails and thatch, fruits for teas and dye brushes, and roots for cottage and medicine.

Koki‘o Kea
Hibiscus wassmannii
This native white Hibiscus has an attractive large flower which opens up in the morning and lasts for two days. They slowly fade to a light pink and begin to close up before falling off. Koki‘o Kea has a delicate subtle fragrance.

Koki‘o
Hibiscus kokio
Koki‘o can be a shrub or small tree. It has small red flower blooms year round. Hawaiians planted Koki‘o Hibiscus near their house to enjoy the flowers. It was also used as a medicinal plant to purify blood or as a laxative.

Palapalai
Microsperma stipogal
Palapalai Ferns are indigenous to Hawai‘i and thrive under the shade of trees in cooler mountainous areas of all the major islands. The delicate fronds are traditionally used in making leis and it was one of the plants placed on the altar of Laka, the hula goddess.

Hapu‘u
Cibotium glaucum
Beautiful Tree Fern with large fronds that have bluish green undersides and soft “pu‘u‘uhu‘u” (silky material from fiber of Hapu‘u) at the base of the fronds and new frond fiddleheads. The Hapu‘u is referred to as the mother of the forest since the seeds and spores of many other native plants will germinate, grow and possibly take over the Hapu‘u.

Hō‘awa
Pithecospermum conferiflorum
Beautiful shrub or tree with a dense canopy of leaves with bronze color backside. Hō‘awa has a cluster of creamy white flowers and they are highly fragrant at night. It also has a fascinating fruit that resemble walnuts. Hawaiians used the wood to construct the gutwales of canoes.

WHAT IS AN INDIGENOUS PLANT AND AN ENDEMIC PLANT?

Indigenous plants are plants that came to Hawai‘i via wind-currents or storms, birds, or ocean currents and remained unchanged by their new environment—they are native to Hawai‘i but can also be found in other parts of Polynesia.

Endemic plants are unique to Hawai‘i. These plants came to Hawai‘i via wind-currents or storms, birds, or ocean currents and evolved into forms uniquely suited to their new environment—these plants can be found nowhere else on Earth.
THANK YOU

By: Richard Quinn, ASLA

HHF Planners
ADDITIONAL RESOURCES

Local nursery sources for Native Plants:

- Hui Ku Maoli Ola: [www.hawaiiannativeplants.com](http://www.hawaiiannativeplants.com) (largest selection of small native plants)
- Home Depot Garden Center: native plants supplied by Hui Ku Maoli Ola
- Contemporary Nursery – Waimānalo (native trees)
- Tien Nursery – Waimānalo (shrubs and groundcovers)

Local information sources:

- [http://www.nativehawaiiangarden.org/home](http://www.nativehawaiiangarden.org/home) (general information about common native plants)
- [http://www.botany.hawaii.edu/faculty/carr/natives.htm](http://www.botany.hawaii.edu/faculty/carr/natives.htm) (photos)
- [http://nativeplants.hawaii.edu/](http://nativeplants.hawaii.edu/) (general information about planting and care for a wide variety of native plants)
DISCUSSION