

The Role of Herbaria on Pacific Island Floras



UNIVERSITY
OF HAWAII
HILO

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The Importance of Herbaria

- Key collections for Hawaii and the Pacific
- Research opportunities
 - Biogeography
 - Ecology
 - Conservation



Key Herbaria

Bishop Museum (BISH)

Honolulu, HI

- Largest collection for the central Pacific region
- Includes type specimens for many Hawaiian taxa
- Online database

National Museum of Natural History, Smithsonian Institution (US)

Washington, DC

- Includes many historical collections
- Online database for Pacific Islands

National Tropical Botanic Garden (NTBG)

Kalaheo, HI

- Newer collection, representing intensive botanical exploration in Hawaii and the Pacific
- Online database with images



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All Names (Accepted and Synonyms) Query

Major Group:

Family:

Genus:

Species:

Common Name:

Status:

- Island:* French Frigate Shoals Maui Necker
- Gardner Pinnacles Midway Nihoa
- Hawai'i Molokai Ni'ihau
- Kaho'olawe Lana'i O'ahu
- Kaua'i Laysan Pearl & Hermes Reef
- Kure Lisianski

Include common names in results Order Results by [Lineage](#)

[Query Help](#)

This query is designed to give checklist information for all names and to provide publication and type information for names based on Hawaiian collections.

To query a list of accepted names only, click [here](#).

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Query Results

Hibiscus, Island = any. (19 records)

Malvaceae

Abelmoschus moschatus Medik.

Status: Naturalized

[Distribution](#): K (Hanapepe Val, single collection)

Synonyms: *Hibiscus abelmoschus* L.

Hibiscus arnottianus A. Gray subsp. *arnottianus*

Status: Endemic [Type Information](#)

[Distribution](#): O (Wa, east Ko: Wahiawa to Niu Valley)

[1999 Conservation Status](#): Apparently Secure

[United States Status](#): No Status

Synonyms: *Hibiscus waimeae* var. *hookeri*



Hibiscus arnottianus A. Gray subsp. *immaculatus* (M. J. Roe) D. M. Bates

Status: Endemic [Publication Information](#)

[Distribution](#): Mo (Wailau; Waihanau; and Papalaua Valleys)

[1999 Conservation Status](#): Endangered

[United States Status](#): Endangered

Synonyms: *Hibiscus immaculatus*



Hibiscus arnottianus A. Gray subsp. *punaluuensis* (Skotts.) D. M. Bates

Status: Endemic [Publication Information](#)

[Distribution](#): O (Ko: Kaipapa'u to Waiahole)

[1999 Conservation Status](#): Apparently Secure

[United States Status](#): No Status





★ Mauna Kea Summit

★ Hakalau

★ Kokee

★ Pohakuloa

★ Princeville

★ Honolulu

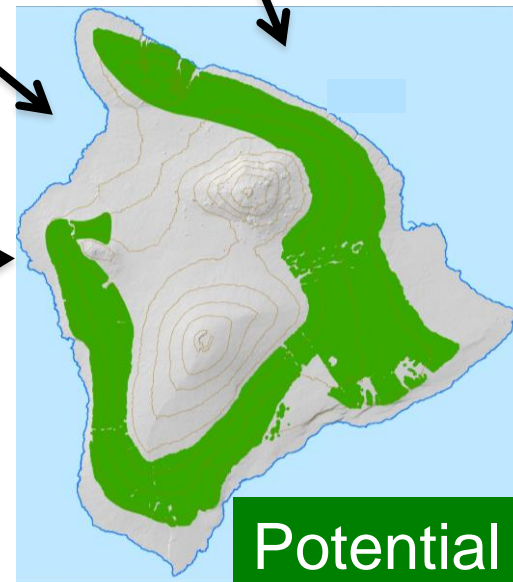
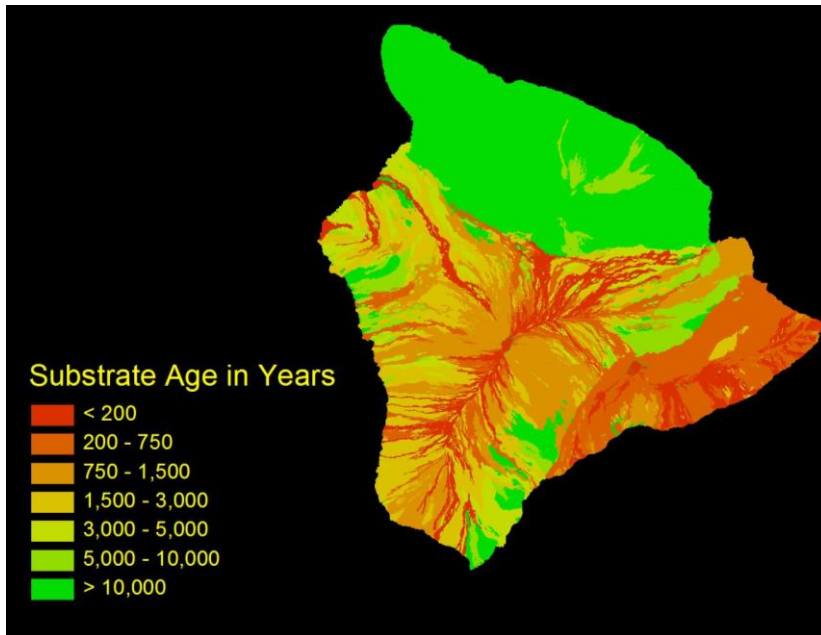
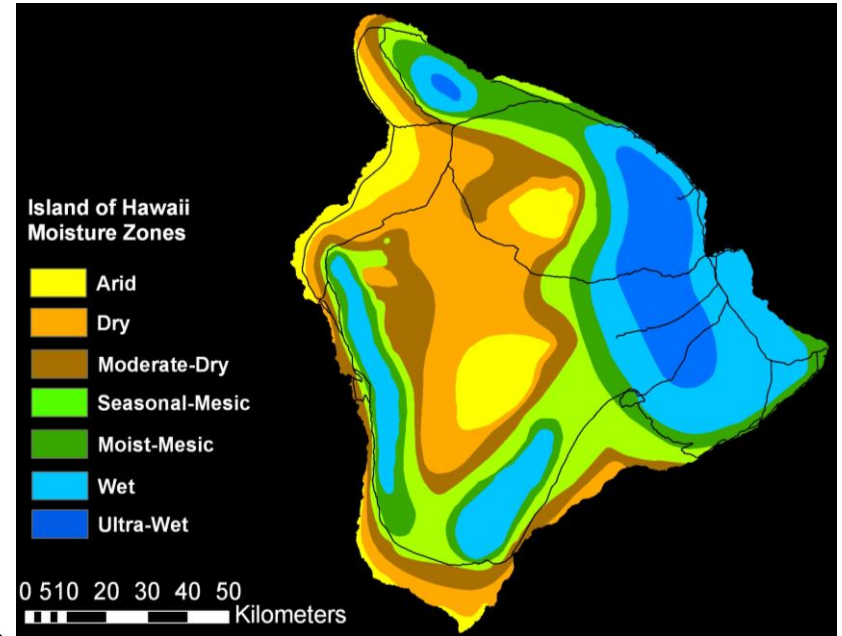
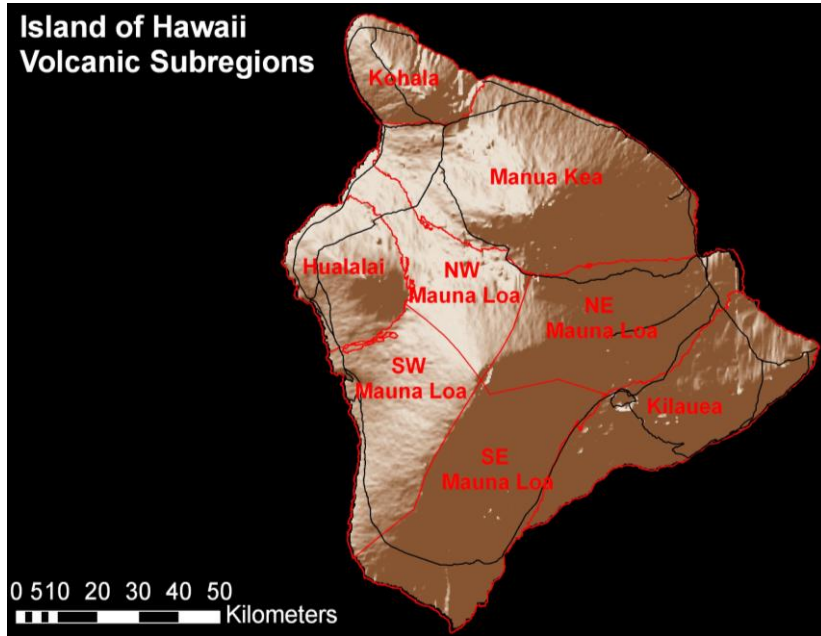
★ Hilo

Plant Species Range Projections

- Database includes all native vascular plants – 1,167 species
- Data from herbarium specimens, published sources, unpublished survey reports, field notes, archaeological sites, and targeted field work
- Data on presence in different regions, climatic habitat zones, and elevations
- Database is used to “clip out” each species’ range from GIS Base layers

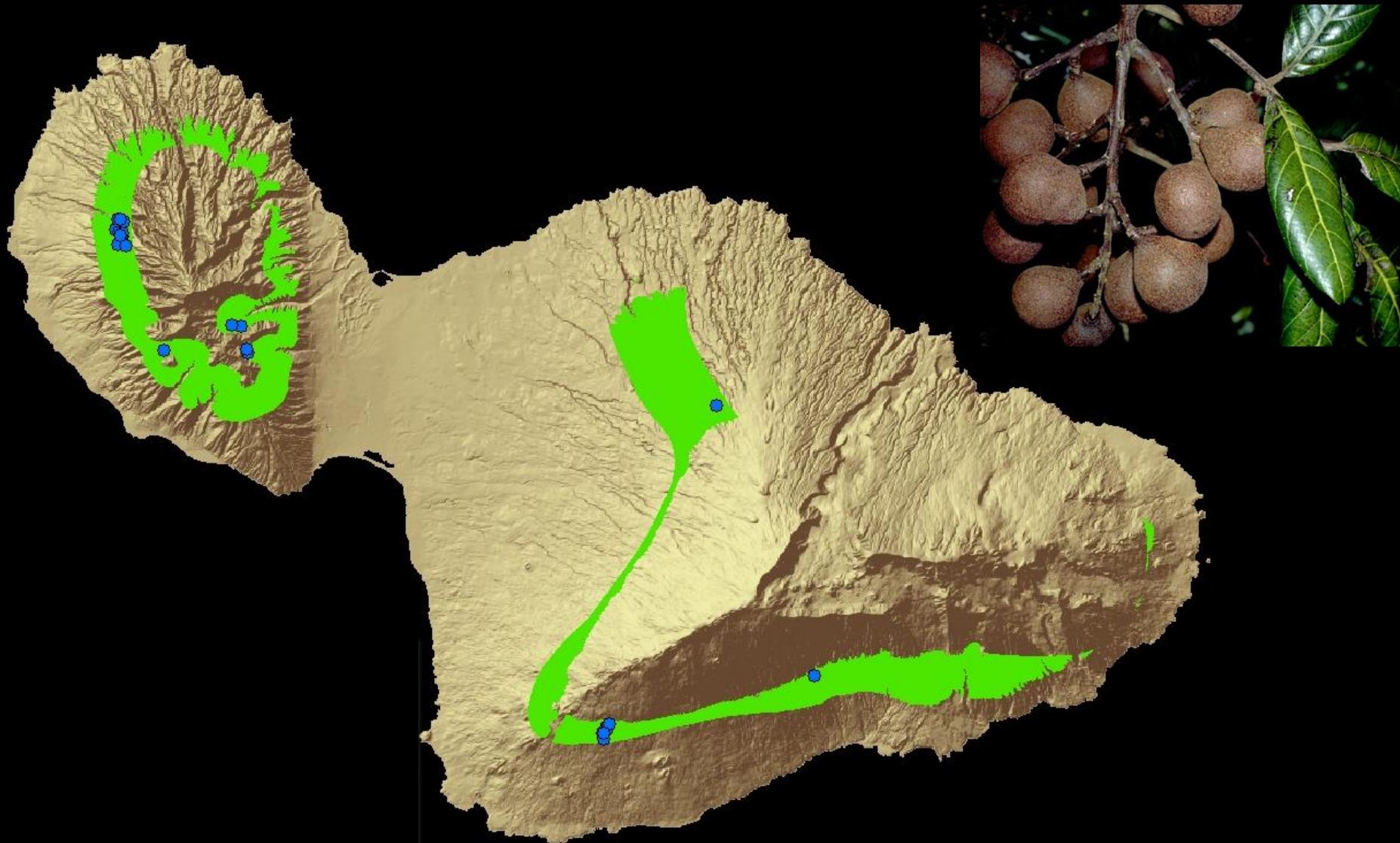


Base GIS Layers

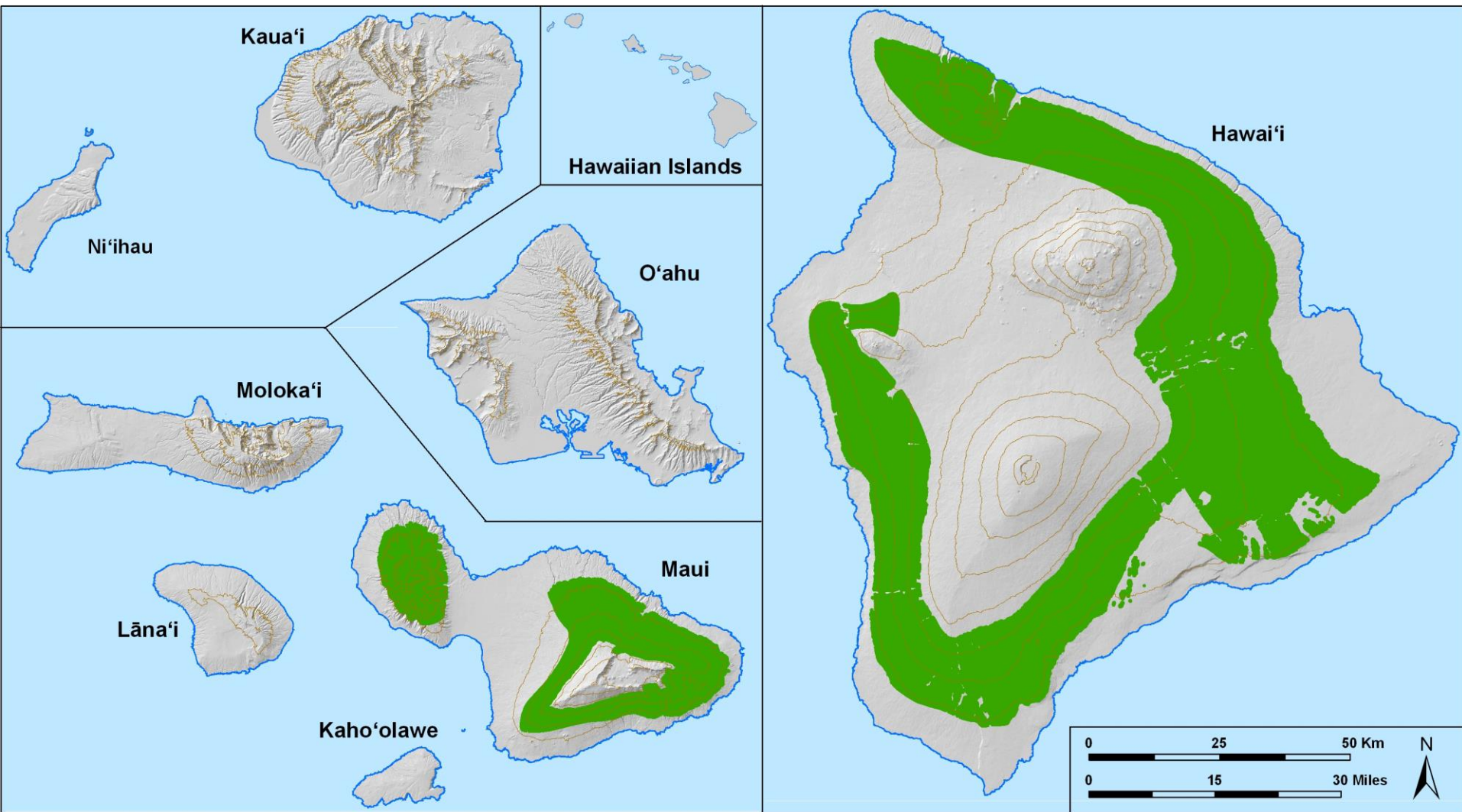


Potential Range

Example: *Alectryon macrococcus* on Maui



Atlas of the Hawaiian Flora



Cyrtandra platyphylla

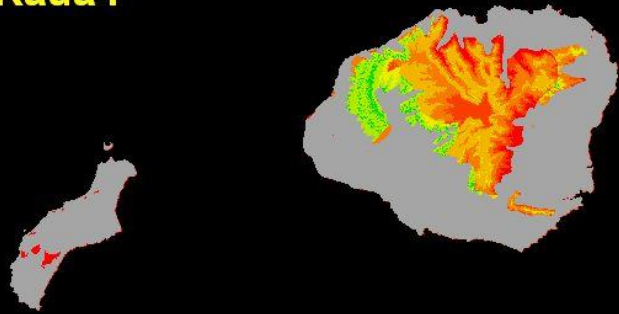
Family: Gesneriaceae
 Common Name: 'Ilihia
 Native Status: Endemic
 Conservation Status: Apparently Secure

 Estimated Range (Recorded in Region)
 Possible Range (Not Recorded in Region)
 500 m contours

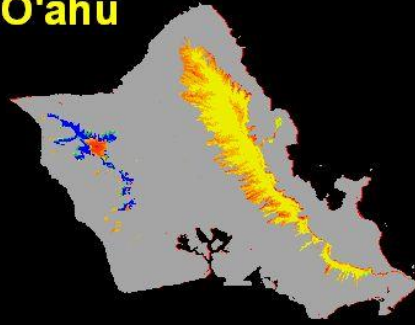
Note: This map shows the estimated potential range of the species. This may include residential areas, cropland, or alien vegetation, where native species seldom occur today. In many cases species are restricted to one mountain range or geographic region, or have not been positively recorded from other regions.



Kaua'i

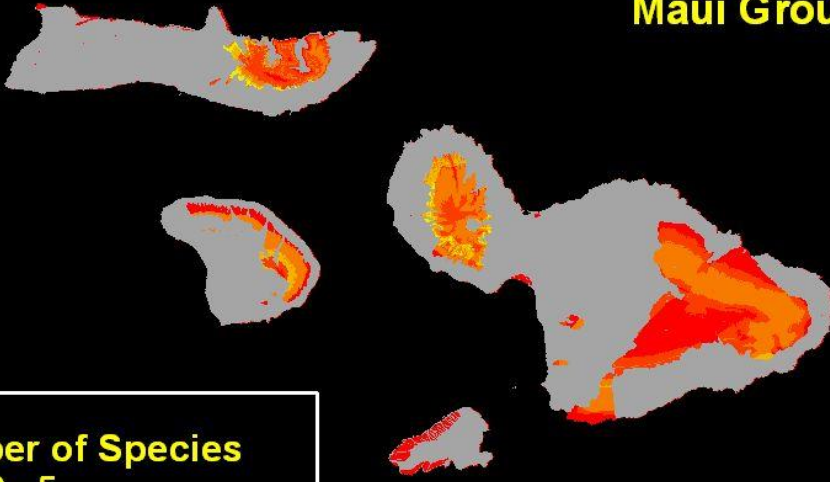


O'ahu

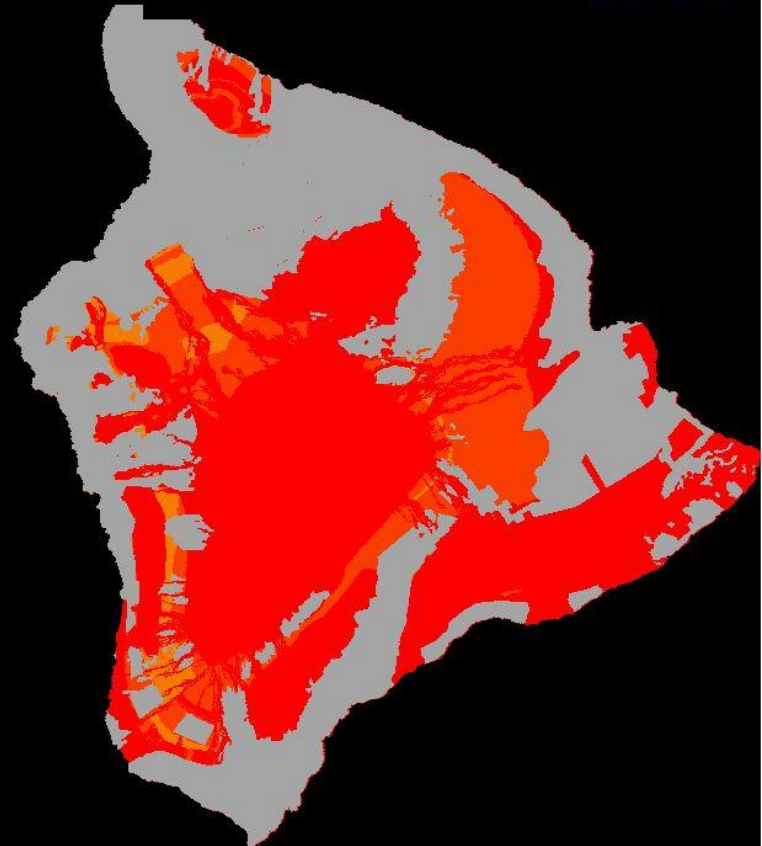


**Plant Species Richness:
Rarity Based on
Federally Listed
Endangered Species**

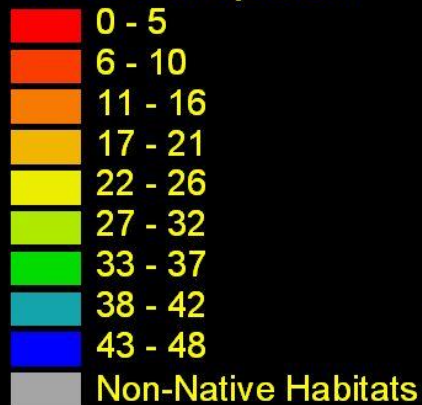
Maui Group



Hawai'i



Number of Species



10 0 10 20 30 Miles

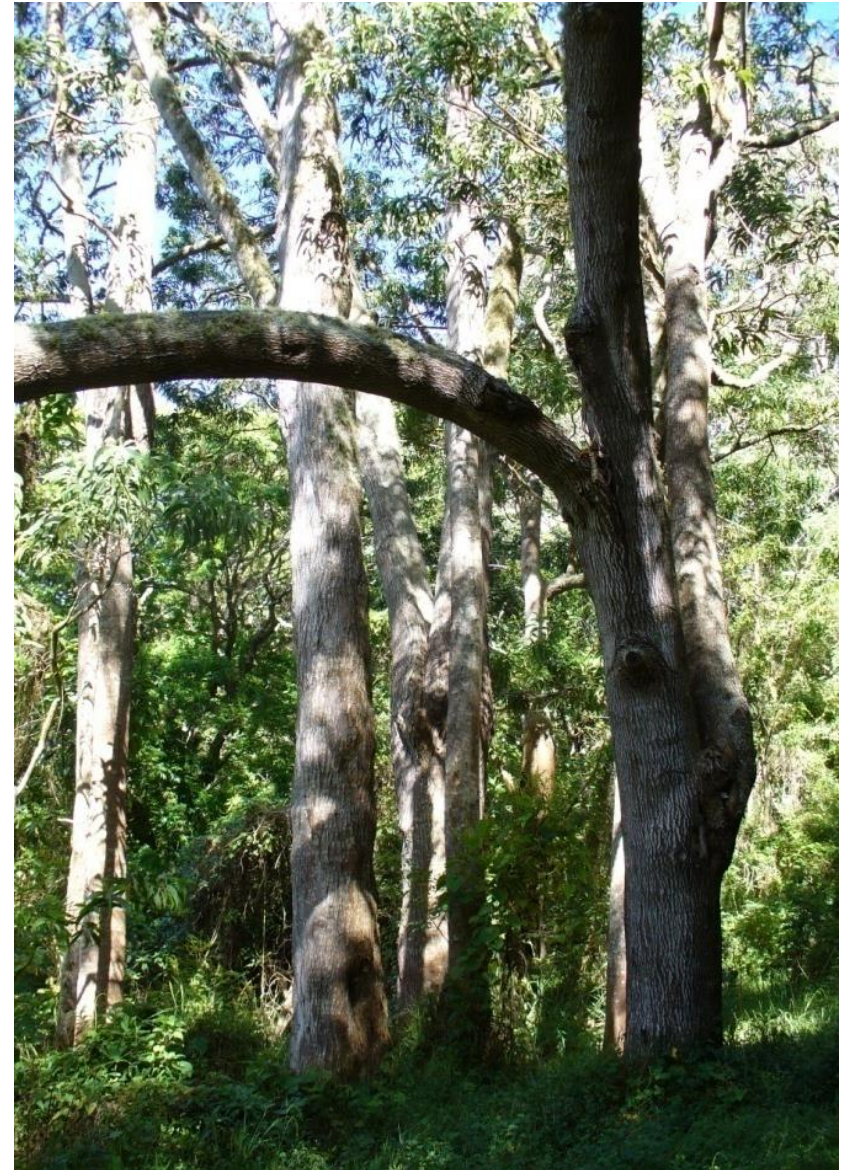


25 0 25 50 Km



Lessons from Digital Specimen Data

- Permit rapid assessment and searching for species localities
- Older, vague locality data is highly important
- Ancillary data from locality description and notes are often useful
- Example: comparatively few specimens of *Acacia koa*, but described in locality data of hundreds of specimens



Research Opportunity: Reproductive Phenology

- Specimens very often collected with reproductive material
- Timeline a of specimens permits long-term examination of the timing of flowering and fruiting across the landscape
- Digital specimen images can enhance research on reproductive ecology



Research Opportunity: Ecological Restoration

- Some specimens have intensive site description including soil and microsite conditions, species composition, and even local abundance
- Specimens in aggregate contribute to an understanding of species abundances and structure across gradients



Collections from 28 July 1908 by Charles N. Forbes Konāhuanui, Oahu

Adenophorus tripinnatifidus

Asplenium lobulatum

Bobea elatior

Broussaisia arguta

Clermontia oblongifolia

Cyrtandra lessoniana

Dryopteris glabra

Hedyotis schlechtendahliana

Nertera granadensis

Ophioglossum pendulum

Peperomia latifolia

Psychotria kaduana



Hedyotis schlechtendahliana

(photo by Warren Wagner)

Mahalo!

Acknowledgements

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Many More!