SUSTAINABLE LANDSCAPES TOWN HALL

May 23, 2023

UC San Diego
RESOURCE MANAGEMENT AND PLANNING

SETTING THE STAGE

STEPHEN JACKSON
ASSOCIATE VICE CHANCELLOR, RESOURCE MANAGEMENT & PLANNING

WELCOME

- Bryan Hooks, Director Landscape Services
- Michael Hogan, Urban Forestry Superintendent
- Todd Schmidt, Superintendent, IPM Program
- Guest Speaker, Matt Ritter, PhD, Biological Sciences Department, California Polytechnic State University

AGENDA

1. Landscape Management
2. Integrated Pest Management
3. Campus Urban Forest Management
4. Guest Presentation on Urban Forestry
5. Questions and Answers

LAND ACKNOWLEDGEMENT

The UC San Diego community holds great respect for the land and the original people of the area where our campus is located. The university is built on the unceded territory of the Kumeyaay Nation. Today, the Kumeyaay people continue to maintain their political sovereignty and cultural traditions as vital members of the San Diego community. We acknowledge their tremendous contributions to our region and thank them for their stewardship.

BEFORE WE BEGIN

- This webinar is being recorded.
- Recordings and Q&A can be viewed on the Climate & Sustainability Town Halls webpage: https://sustain.ucsd.edu/about/town-halls.html

Questions

- Were submitted during registration
- Can be submitted in the Zoom Q&A feature

We'll answer as many questions live as time allows.

LANDSCAPE MANAGEMENT

BRYAN HOOKS
DIRECTOR LANDSCAPE SERVICES, FACILITIES MANAGEMENT

LANDSCAPE MANAGEMENT

Municipal Waste Management

- Implement Zero Waste initiatives
- Manage waste hauling contract with EDCO
- Inform the campus community on sustainable methods and practices

Irrigation Management

- Monitor irrigation runtimes to ensure plants are receiving the appropriate amount of water
- Repair irrigation leaks
- Coordinate the campus' construction PM's to install new irrigation systems around new facilities

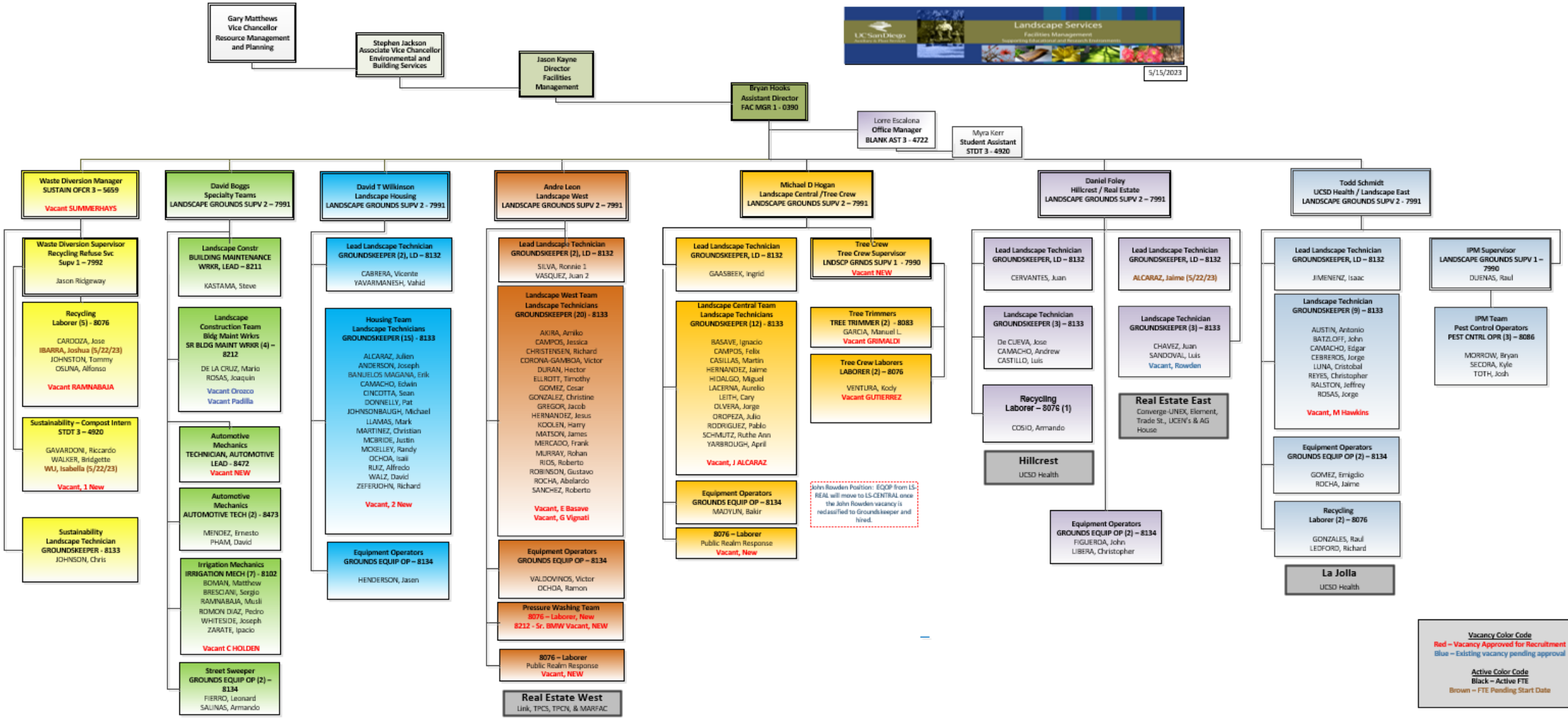
Small Engine Maintenance Shop

- Perform preventative maintenance
- Training on the proper use of equipment
- Repair or replace malfunctioning equipment

Tree Management

Integrated Pest Management

LANDSCAPE MANAGEMENT



LANDSCAPE MANAGEMENT

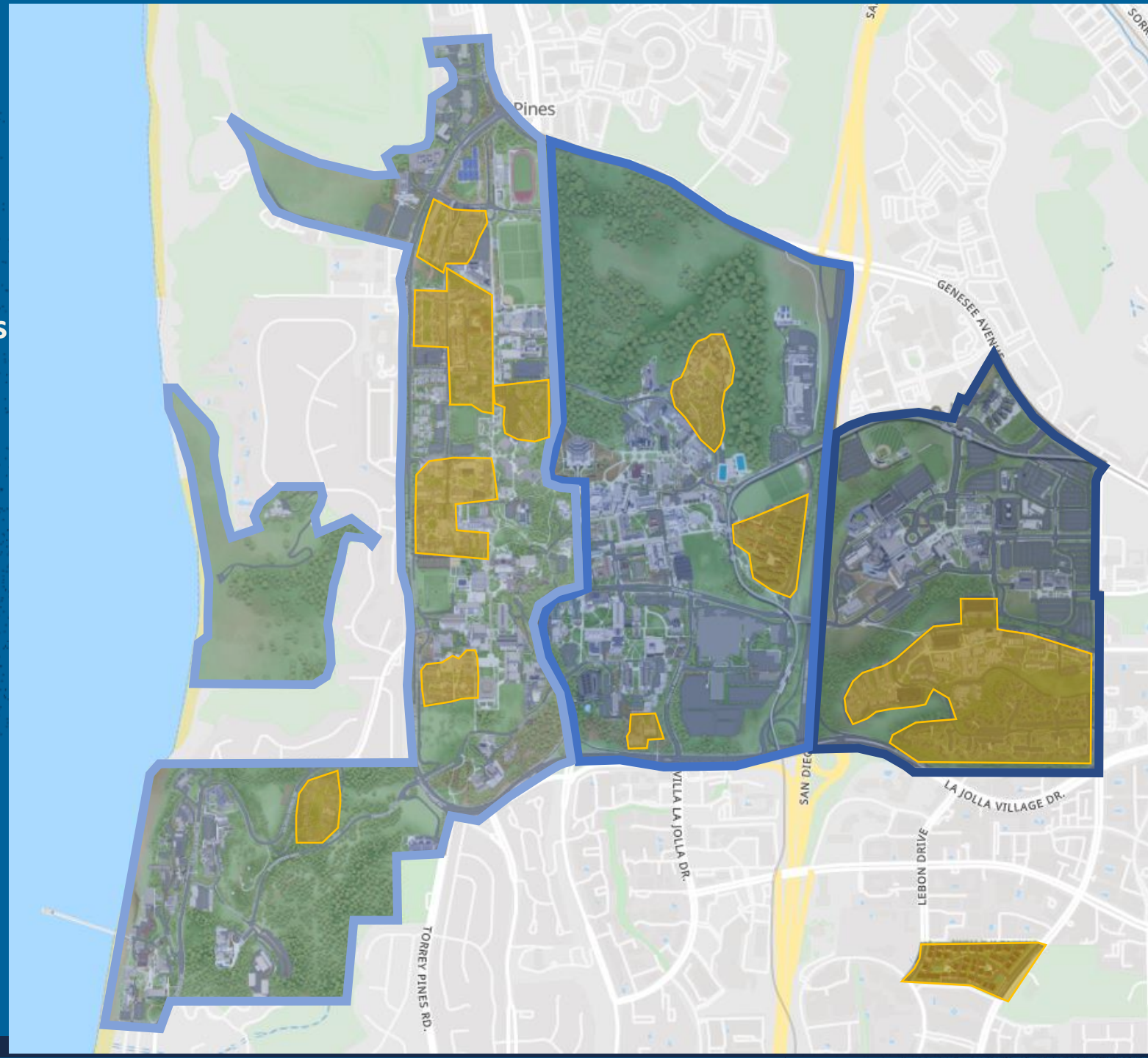
East Campus

West Campus

Central Campus

Housing

Developed Acres	786
Open Space	367
Undeveloped Acres	58
Total Acreage	1,211



INTEGRATED PEST MANAGEMENT

The effective and environmentally sensitive approach to pest management

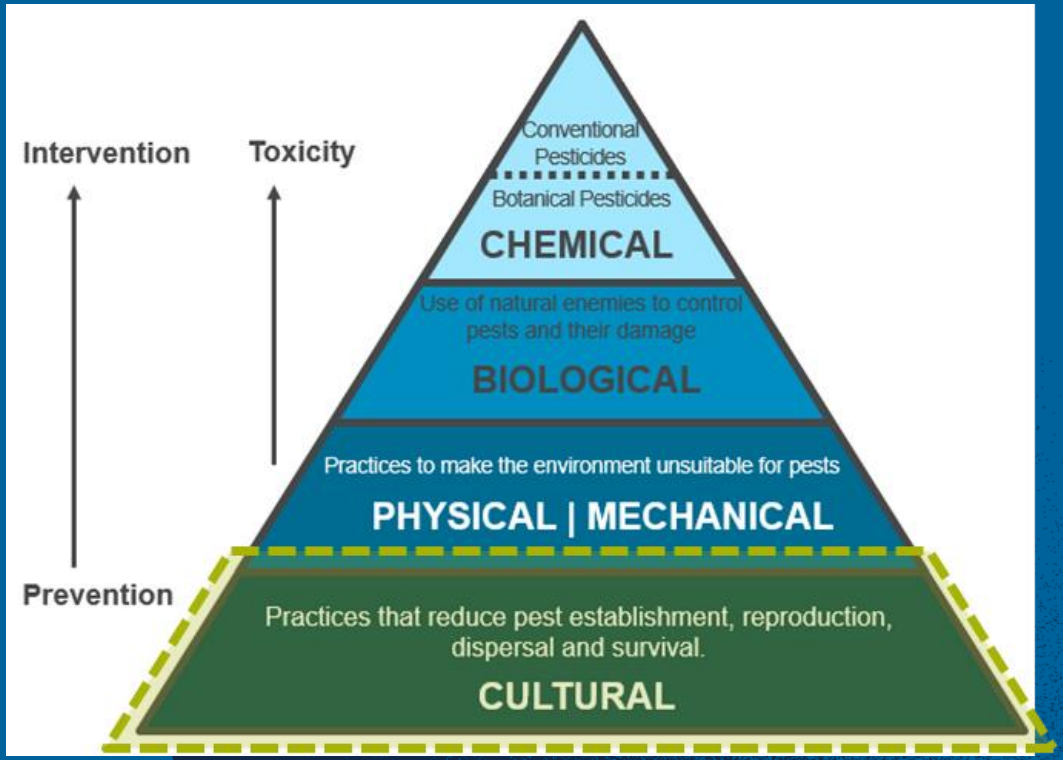
TODD SCHMIDT
LANDSCAPE SERVICES SUPERINTENDENT, FACILITIES MANAGEMENT

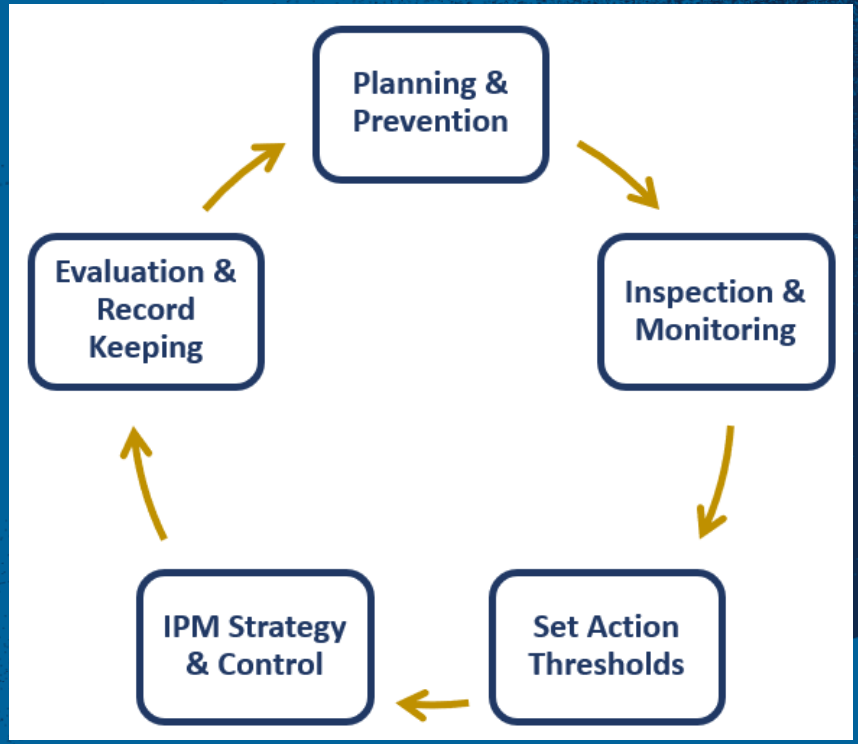
TOPICS

- IPM Methodology and Process
- IPM Technician Requirements
- IPM Philosophy vs. Contracted Pest Control
- Policy Mandate
- UC San Diego Results

IPM METHODOLOGY

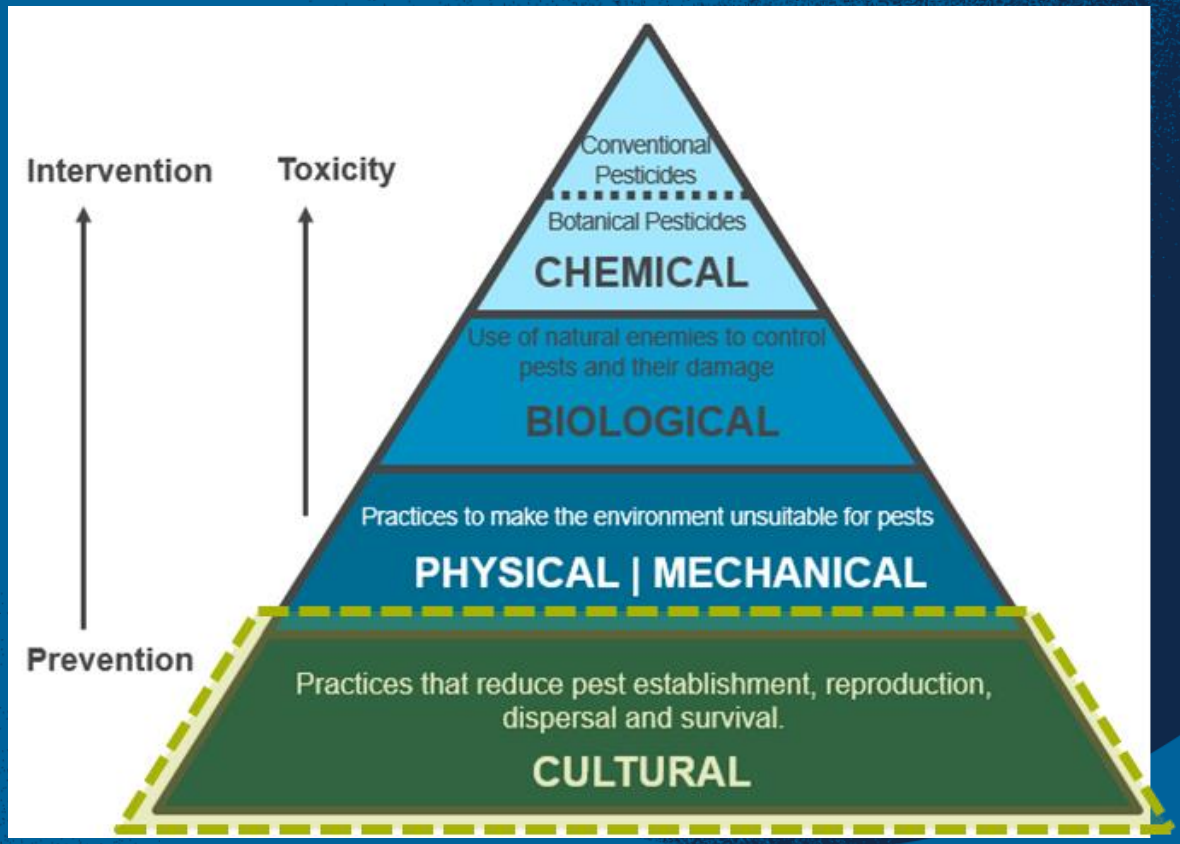
Integrated Pest Management (IPM) is a sustainable, science-based, decision-making process that combines biological, cultural, physical and chemical tools to identify, manage and reduce risk from unacceptable levels of pest damage by the most economical means with the least possible risk to people, property and the environment.





IPM METHODOLOGY

- IPM is not a single pest control method but a series of pest management evaluations, decisions and controls.
- IPM focuses on long-term prevention of pests or their damage by managing the ecosystem and implementing corrective actions before the pests become a problem.
- Rather than simply spraying chemicals to eliminate pests when they appear, IPM technicians consider environmental factors that affect the pest and its ability to thrive.
- Using this information, they then manipulate the environment to resolve cultural or environmental stresses creating conditions that are unfavorable for the pest.



PLANNING & PREVENTION

IPM focuses on prevention by removing conditions that attract pests, such as food, water and shelter. Simply put, don't feed pests, keep pests out and keep plants healthy. Preventive actions include:

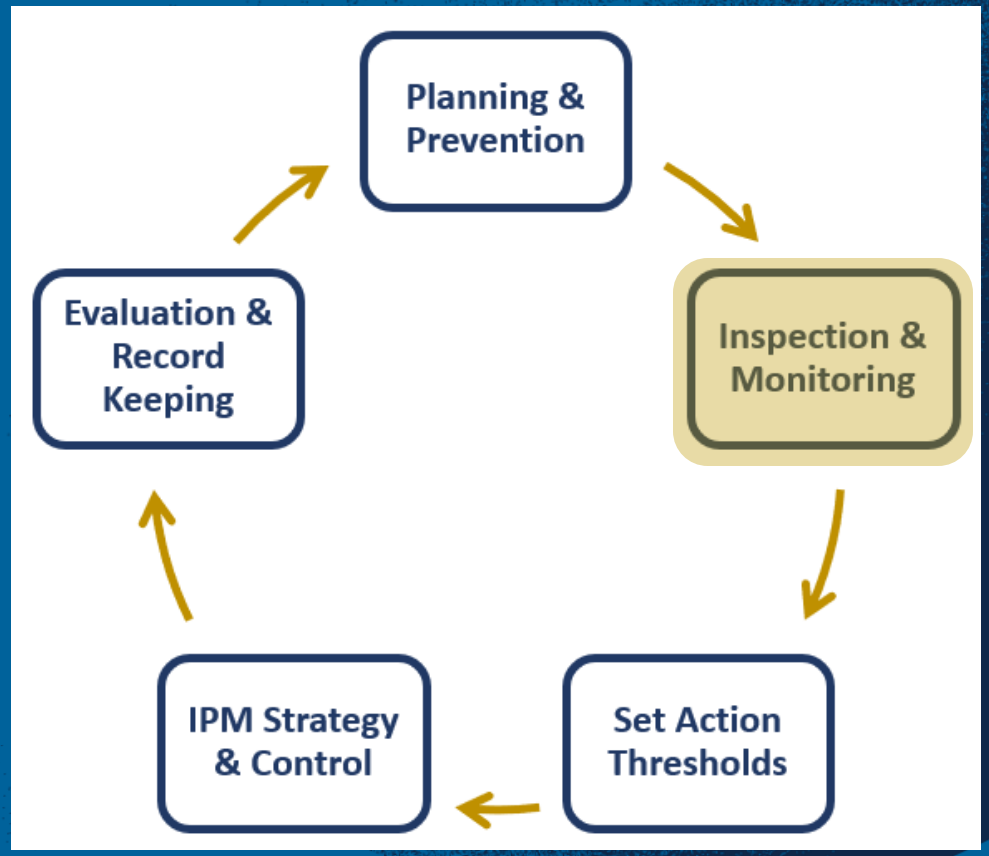
- Reducing clutter
- Maintaining healthy plant material
- Sealing areas where pests enter an area or building
- Removing trash and overgrown vegetation
- Installing pest barriers
- Removing standing water
- Educating building occupants on IPM

INSPECTION & MONITORING

Correctly identifying pests and monitoring their population is a critical step. A mistake in identification can lead to ineffective control tactics that waste time and money and may lead to unnecessary risks to the environment or people, or worse, could wipe out a beneficial insect that might have controlled the pest by itself.

Good Guy

Bad Guy

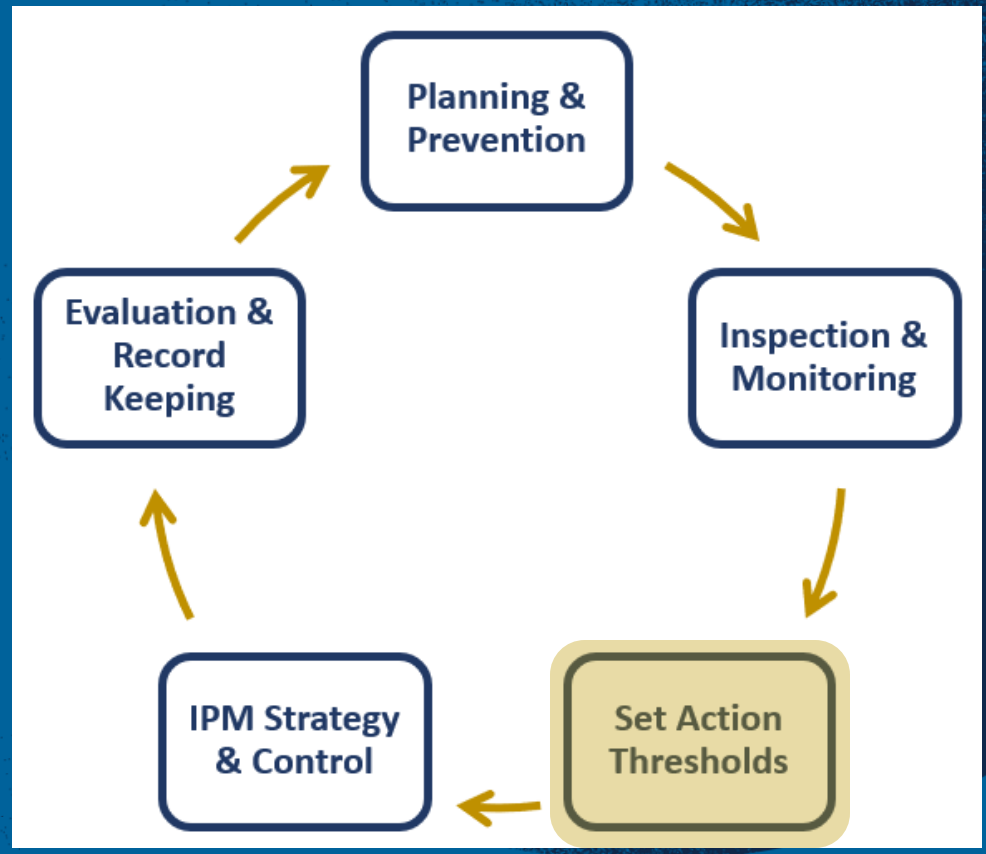


SET ACTION THRESHOLDS

Pest identification alone does not justify treatment. Some pests are natural and help feed and maintain our beneficial predators. Careful monitoring of pest populations is required to determine when this threshold becomes unstable and requires action.

Setting an "action threshold level" is critical to guiding pest control decisions. A defined threshold will focus the size, scope and intensity of an IPM plan. Considerations include:

- Nuisance level
- Health hazards to humans
- Hazards to the environment
- Economic threat

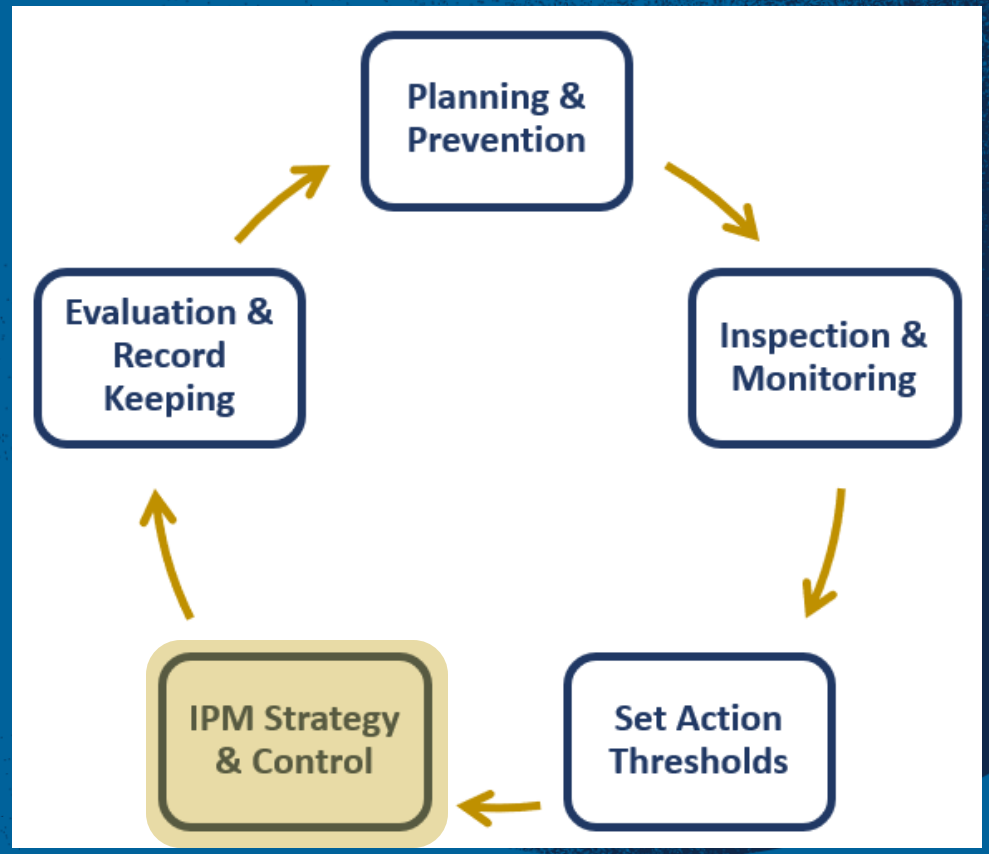


IPM STRATEGY & CONTROL

Control methods are implemented when preventative measures are not effective and action thresholds are exceeded.

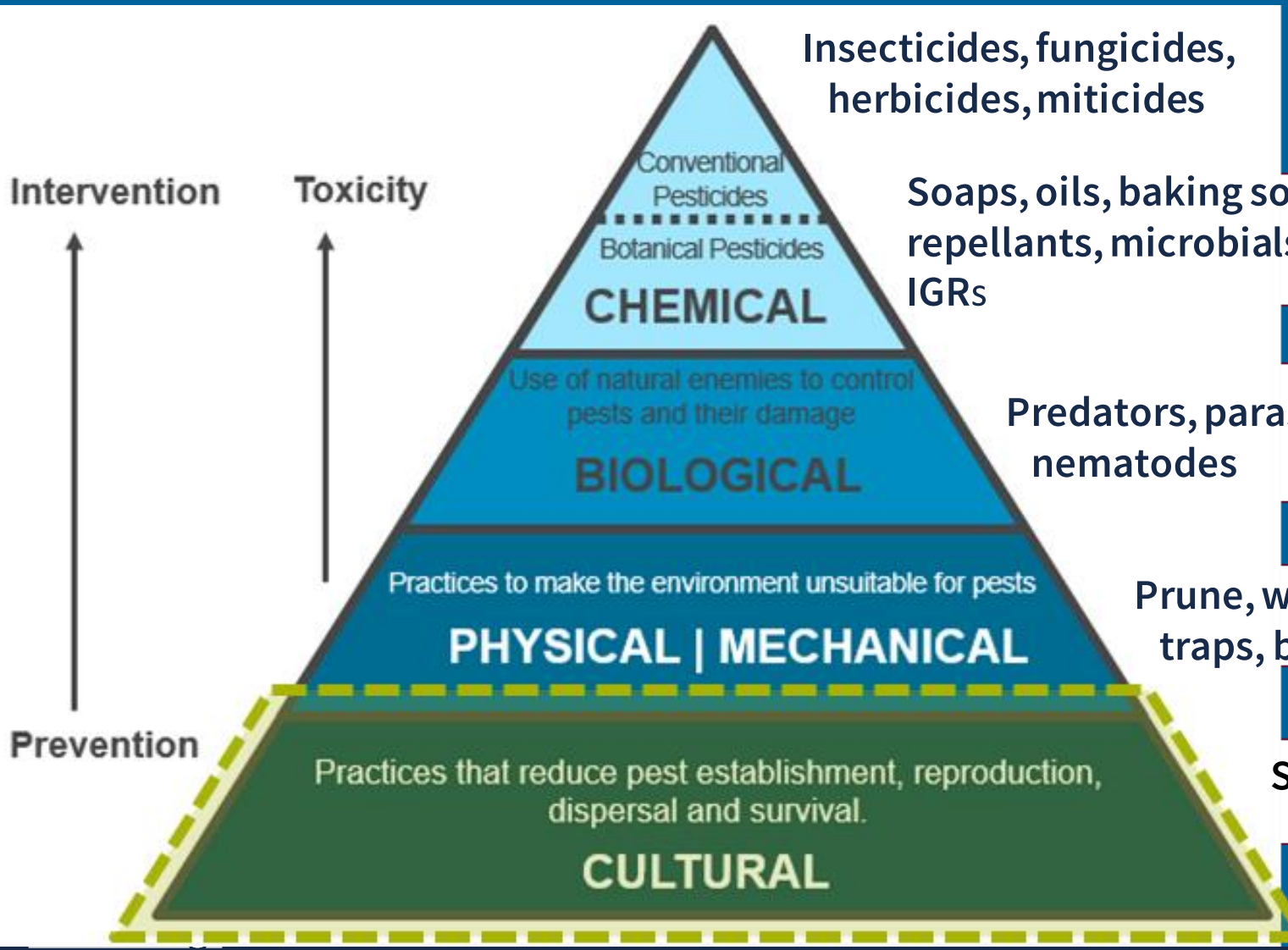
The four main control methods are prioritized by effectiveness and the lowest impact risk to the applicator, human health and environment.

- Cultural
- Physical/Mechanical
- Biological
- Chemical



IPM STRATEGY & CONTROL

Four main control methods



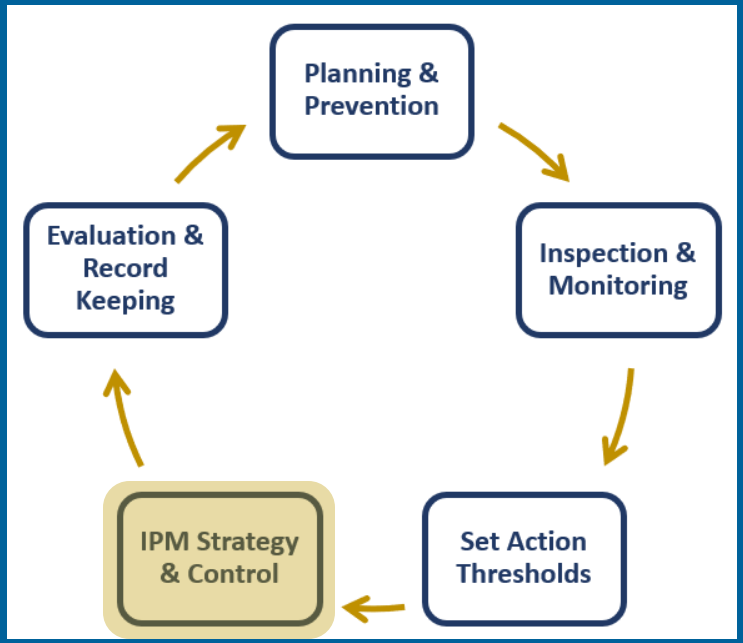
Insecticides, fungicides, herbicides, miticides

Soaps, oils, baking soda, repellants, microbials, IGRs

Predators, parasites, nematodes

Prune, weeding, mulch, traps, barriers, flaming

Site and plant selection, sanitation, rotations

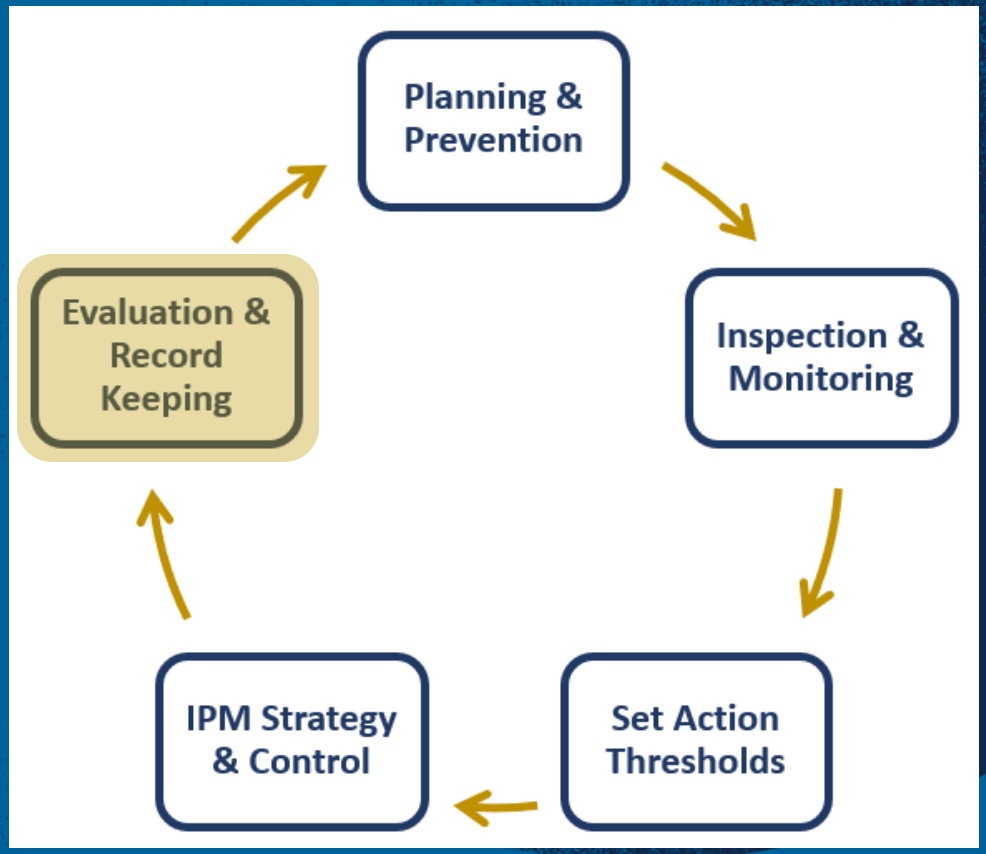


EVALUATION & RECORD KEEPING

Accurate record keeping is essential to effective IPM. Every IPM treatment is evaluated and documented to help technicians regularly assess what was learned and to help determine:

- If treatments were successful
- If any changes occurred due to weather, season or conditions
- If any changes need to be made to the IPM strategy for future implementation
- What to expect annually

Damage caused annually by the Mourning Cloak Butterfly



INTEGRATED PEST MANAGEMENT TECHNICIANS

IPM are required to act as authorities in multiple disciplines including Biology, HorticTechniciansulture, Chemistry, State Laws and regulations, etc.

Requirements:

- Hold a State QAC/QAL License from the California Department of Pesticide Regulations (DPR) per the UCSD State Pesticide Oversight Committee (SPOC) including State and County recommendations.
- Hold additional specialized State DPR certifications to perform work on all areas of campus, including:
  - —Category A “Residential, Industrial and Institutional”
  - —Category B “Landscape maintenance”
  - —Category C “Right of Way”
  - —Category E “Forestry”
  - —Category F “Aquatics”
  - —Category I “Animal agriculture/facilities (Camp Elliot)”
  - —Category K “Health Related (Mosquito Control)”
- All license and categories require continuing education annually to maintain and license must be renewed with the State of California every 2 years.
- UC Berkley adds the requirement of a 4-year degree.

A BETTER WAY

Traditional Contracted Pest Control

Linked to:

- Misuse of pesticides
- Ground water contamination
- Honeybee / Pollinator decline and death
- Human health risks and carcinogens
- Destruction of native and natural beneficial fauna and flora
- Food supply contamination

Integrated Pest Management

Solves for:

- Emphasizes prevention through practical, natural strategies
- Environmentally sensitive approach
- Reduces pests and pesticides
- Economically advantageous
- Protects human health
- Aligns with what students, staff and the community want

POLICY MANDATE

The Presidential Policy on Integrated Pest Management (IPM) and the Systemwide Pesticide Oversite Committee (SPOC)

- The policy intends to establish requirements for the implementation of an IPM Program as well as oversight and minimum requirements for the use of pesticides within the University of California system.
- Each UC location must implement within 18 months of the enactment of this policy, an IPM Program that minimizes the risk from both pests and pest management practices to humans, natural and cultural resources and the environment by focusing on prevention and ecosystem-based management before any use of pesticides.
- The SPOC exists to align IPM practices and SOP's systemwide, establish a pesticide Hazard Tiering System and create a centralized chemical use and tracking system.

SINCE THE IMPLEMENTATION OF UC San Diego's IPM PROGRAM:

We have reduced our pesticide use by 85%.

The product reduction equates to a cost savings of ~$60,000.

It has enabled us to alleviate concerns and create a positive brand image with students and staff.

URBAN FOREST MANAGEMENT

MICHAEL HOGAN
URBAN FORESTRY SUPERINTENDENT, FACILITIES MANAGEMENT

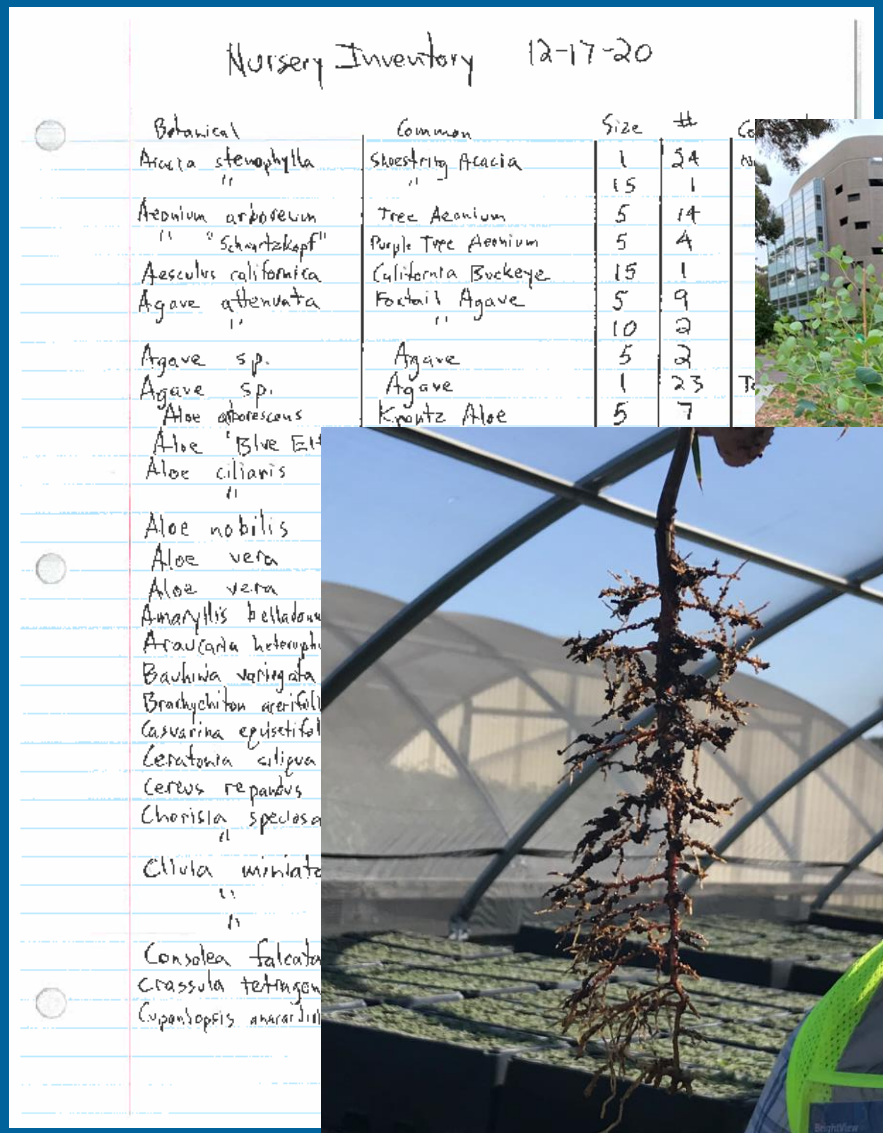
WHAT IS URBAN FORESTRY?

Urban Forestry goes by many definitions but this is my favorite

"Urban Forestry is a specialized branch of forestry that has as its objective the *cultivation* and *management* of trees for their present and potential contribution to the physiological, sociological and economic well-being of urban society. Inherent in this function is a comprehensive program designed to *educate* the urban populace on the role of trees and related plants in the urban environment. In its broadest sense, urban forestry embraces a multi-managerial system that includes municipal watersheds, wildlife habitats, outdoor recreational opportunities, landscape design, recycling of municipal wastes, tree care in general, and the future production of wood fiber as raw material. (Society of American Foresters 1974)

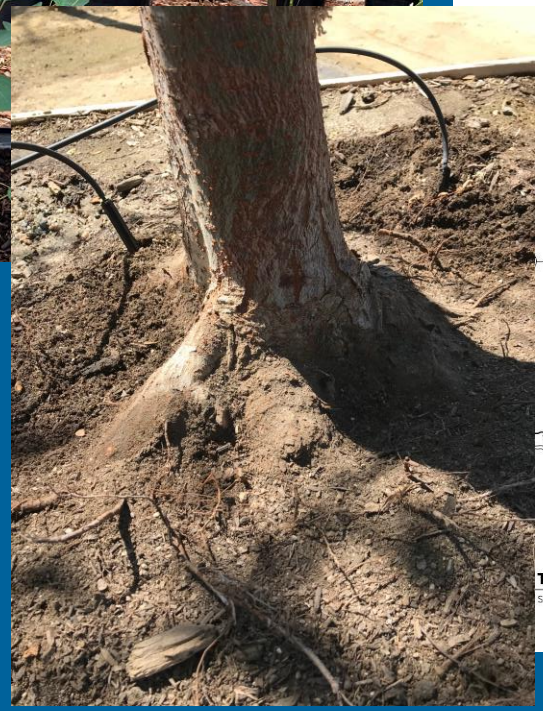
Cultivate | Educate | Manage

HOW WE CULTIVATE



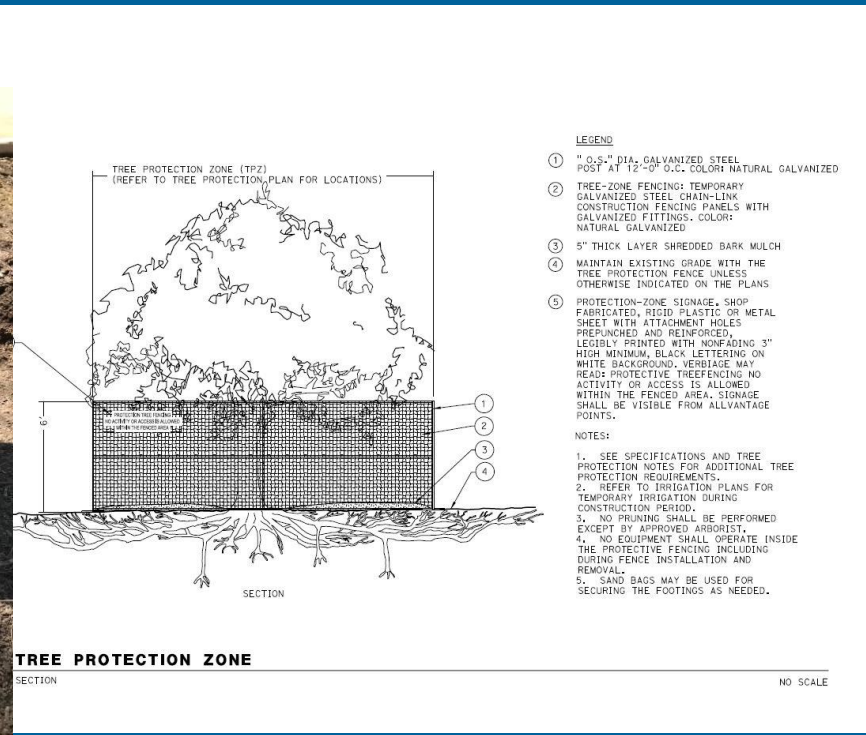
Nursery Inventory 12-17-20

Botanical	Common	Size	#
Acacia stenophylla	Shoestring Acacia	1	24
"	"	15	1
Aeonium arboreum	Tree Aeonium	5	14
" 'Schwartzkopf'	Purple Tree Aeonium	5	4
Aesculus californica	California Buckeye	15	1
Agave attenuata	Foxtail Agave	5	9
"	"	10	2
Agave sp.	Agave	5	2
Agave sp.	Agave	1	23
Aloe arborescens	Krantz Aloe	5	7
Aloe 'Blue Elf			
Aloe ciliaris			
"			
Aloe nobilis			
Aloe vera			
Aloe vera			
Amaryllis belladonna			
Araucaria heterophylla			
Bauhinia variegata			
Brachychiton acerifolius			
Casuarina equisetifolia			
Ceratonia siliqua			
Cereus repandus			
Chorisia speciosa			
"			
Clivia miniata			
"			
"			
Consolea falcata			
Crassula tetragona			
Cupaniopsis anacardioides			



Design | Selection

Installation | Establishment



HOW WE CULTIVATE – LITERALLY

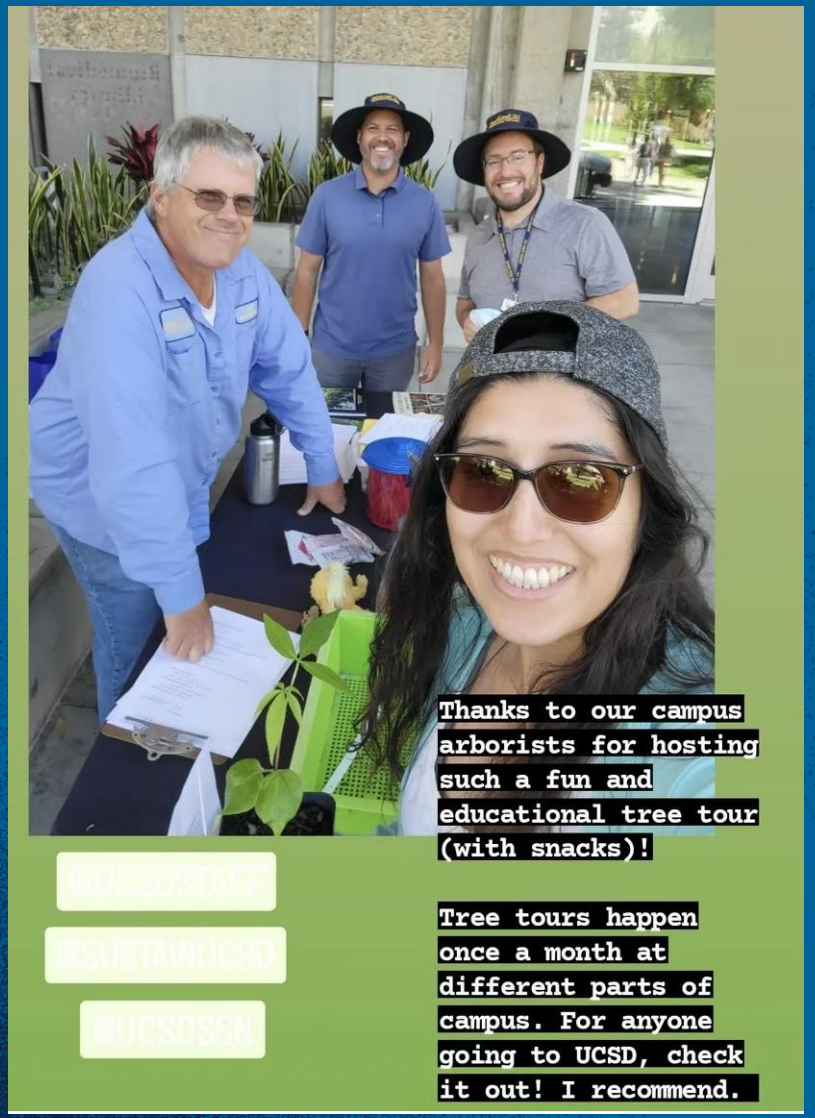
Nursery Inventory 12-17-20

Botanical	Common	Size	#	Comments
Acacia stenophylla	Shoestring Acacia	1	24	not ready
"	"	15	1	
Aeonium arboreum	Tree Aeonium	5	14	
" 'Schwartzkopf'	Purple Tree Aeonium	5	4	
Aesculus californica	California Buckeye	15	1	
Agave attenuata	Foxtail Agave	5	9	
"	"	10	2	
Agave sp.	Agave	5	2	
Agave sp.	Agave	1	23	To 5's
Aloe arborescens	Krantz Aloe	5	7	
Aloe 'Blue Elf'	Blue Elf Aloe	5	11	
Aloe ciliaris	Climbing Aloe	1	42	not ready
"	"	5	13	
Aloe nobilis	Gold Tooth Aloe	5	12	
Aloe vera	Aloe vera	5	1	To 15
Aloe vera	Aloe vera	15	1	
Amaryllis belladonna	Naked Lady	5	21	
Araucaria heterophylla	Star Pine	15	1	
Bauhinia variegata	Purple Orchid Tree	1	24	To 5's
Brachychiton acerifolia	Illawarra Flame Tree	15	6	To 50M
Casuarina equisetifolia	Horsetail Tree	1	20	To 5's
Ceratonia siliqua	Carob Tree	1	18	not ready
Cereus repandus	Peruvian Apple Cactus	5	4	not ready
Chorisia speciosa	Floss Silk Tree	5	29	To 15's
"	"	20	7	
Clivia miniata	Clivia	4"	38	
"	"	1	12	
"	"	5	23	
Consolea falcata	Tree Cactus	1	2	To 5'S
Crassula tetragona	Mini Pine	5	5	
Cupaniopsis anacardioides	Carrotwood Tree	5	9	To 15'S

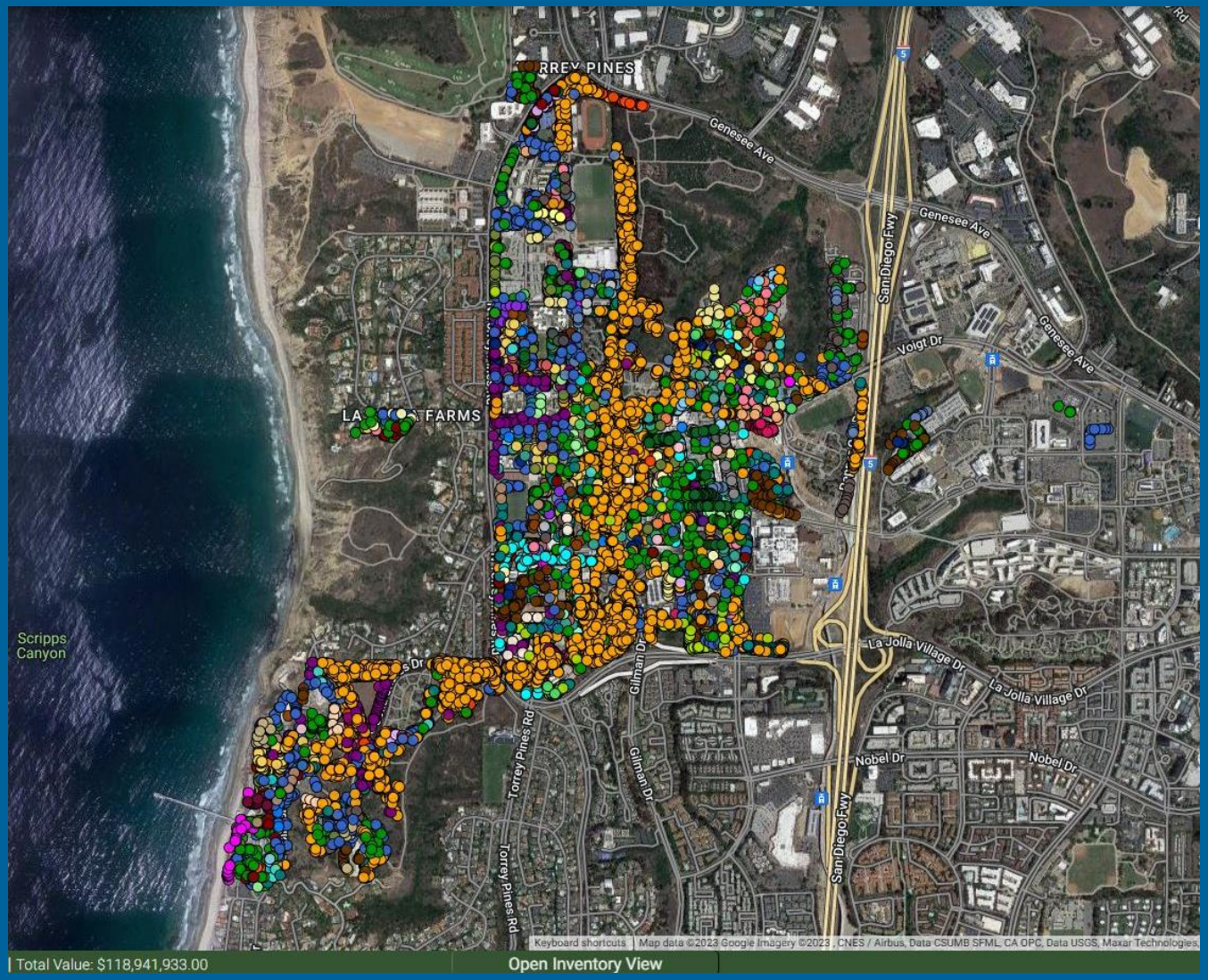
HOW WE EDUCATE – PLANTING EVENTS

- In March 2022, Landscape Services participated in a grant funded, state-wide planting event, Amplify the Urban Forest. Various cities and entities planted close to 2,000 trees state wide.
- On campus, we planted 64 trees, with 5 species new to our campus.
- Faculty from Cal Poly San Luis Obispo will track the condition of the trees planted in this effort, noting how the new species are adapting.
- Arbor Day Planting Event 2023

HOW WE EDUCATE – CAMPUS TREE TOURS

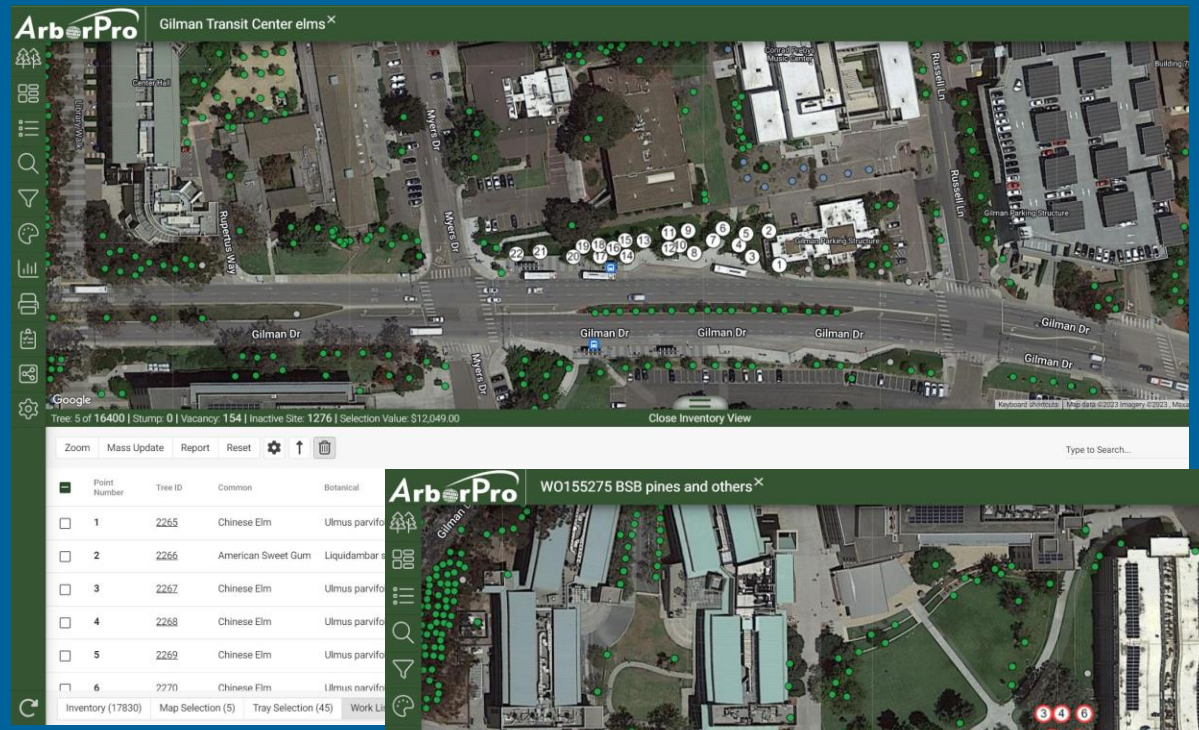


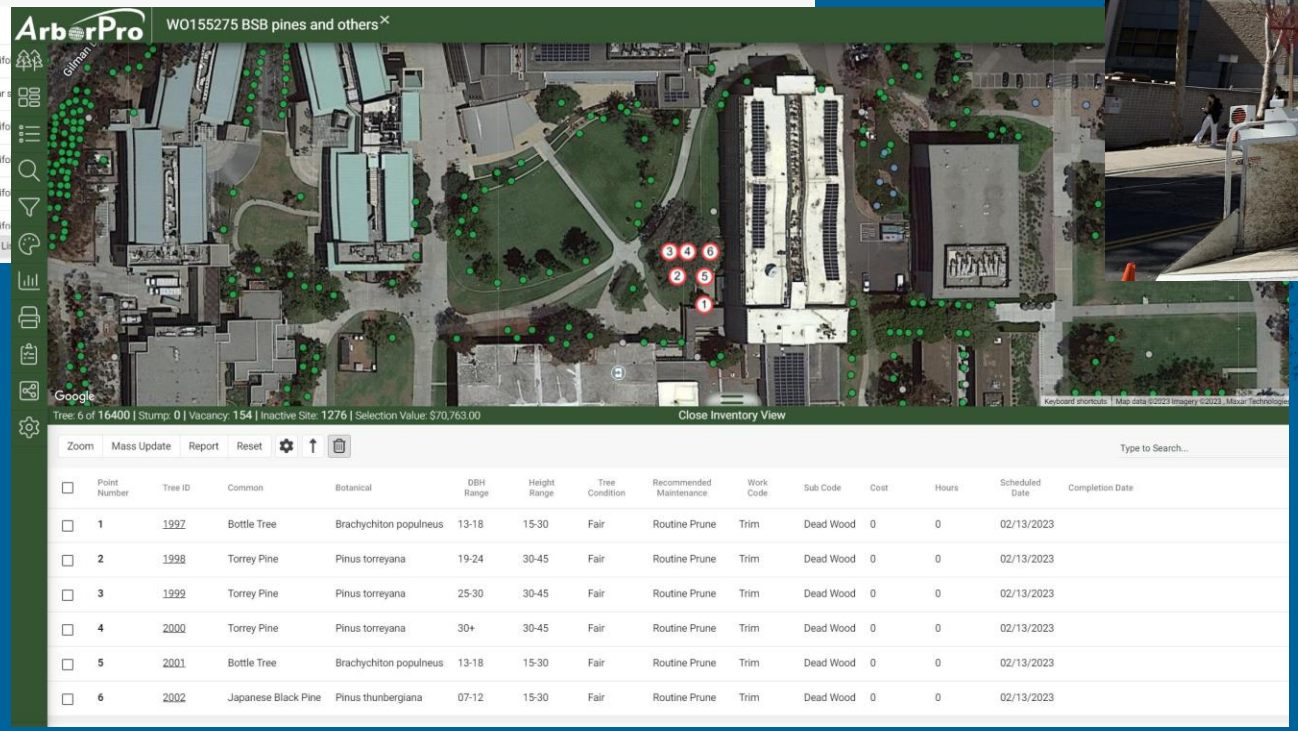
HOW WE EDUCATE – GIS-BASED TREE INVENTORY



- Work Plans
- Tracking Work History
- Tree Risk Assessments
- ANSI A300 Standards for Tree Care, Parts 1–10
- Inventory Update

HOW WE MANAGE – OPERATIONS





HOW WE MANAGE – PESTS

Inspection of *Phoenix canariensis* Canary Island Palm, Scripps Institute of Oceanography

Urban Forestry uses Integrated Pest Management to manage pests.

- Pest/Host-based management plans
- Pest pressure is increasing
  - Climate Change
  - Global Trade and Commerce
  - SAPW South American Palm Weevil
  - GSOB Gold Spotted Oak Borer
  - PSHB Polyphagus Shot Hole Borer
  - Erythrina Stem Borer

UC SAN DIEGO URBAN FORESTRY

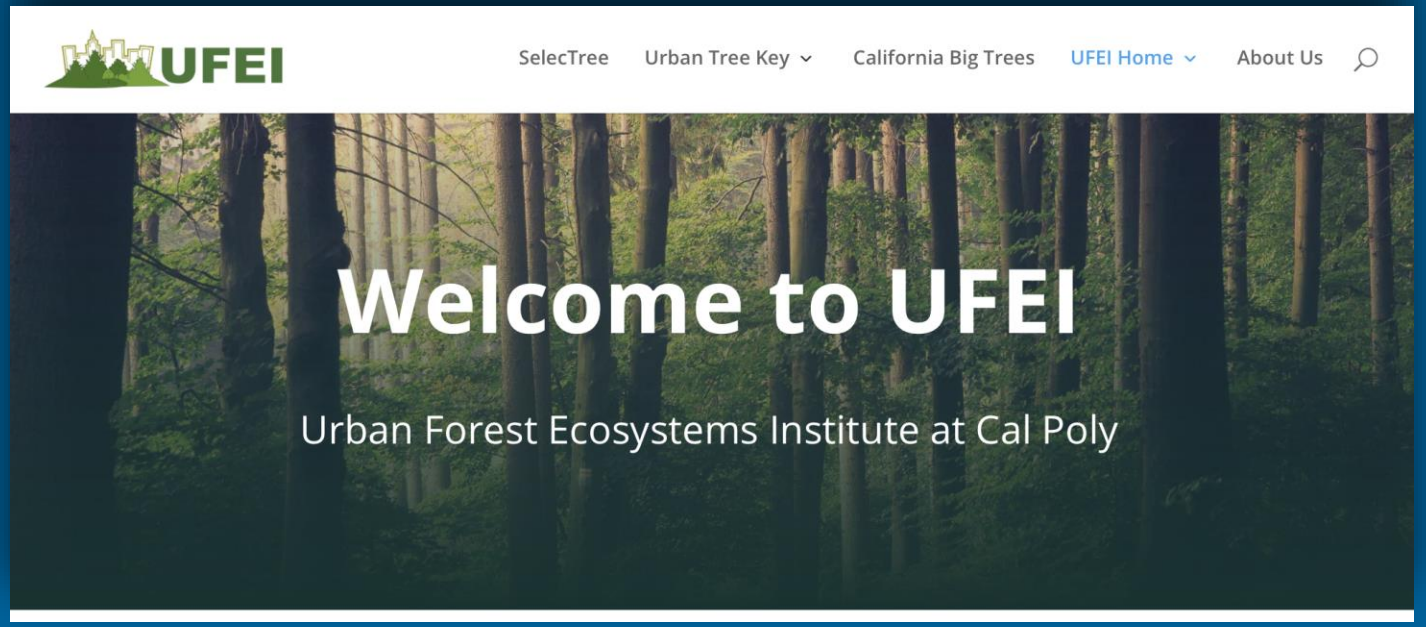
Manage the Urban Forest to increase safety, reduce risk and maximize the benefits that trees provide.

URBAN FORESTRY, CANOPY COVER AND THE TOOLS FOR CATALOGING AND UNDERSTANDING CALIFORNIA'S URBAN FOREST

DR. MATT RITTER
BOTANY PROFESSOR, BIOLOGICAL SCIENCES ,
CALIFORNIA POLYTECHNIC STATE UNIVERSITY

UC San Diego

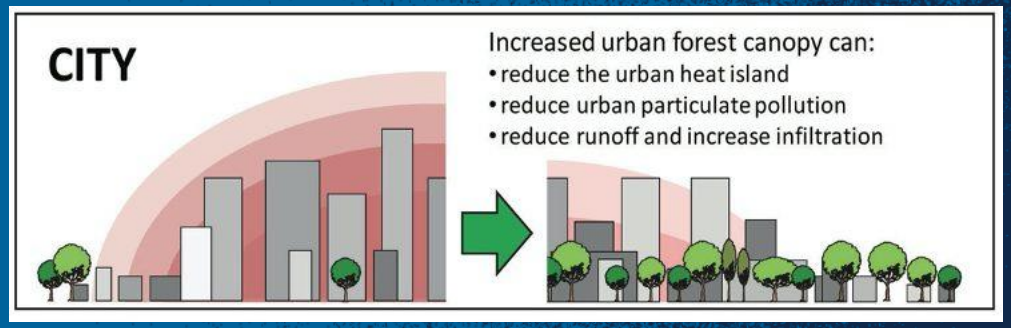
NEW TOOLS FROM THE URBAN FOREST ECOSYSTEM INSTITUTE



CAL POLY UFEI CAL FIRE SINCE 1885 FOREST SERVICE US DEPARTMENT OF AGRICULTURE

URBAN FOREST ECOSYSTEM INSTITUTE

- Urban life without trees is a lower quality of life.
- Trees cool cities.

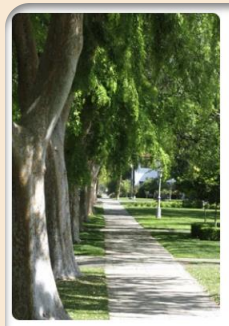


SELECTREE https://ufei.calpoly.edu

UFEI

SelecTree | Urban Tree Key | California Big Trees | UFEI Home | About Us

Tree Information & Resources



SelecTree

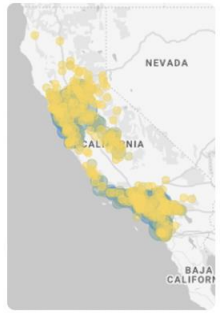
A tree selection guide. Find the tree you want.

California Big Trees

See the champions our state has to offer.

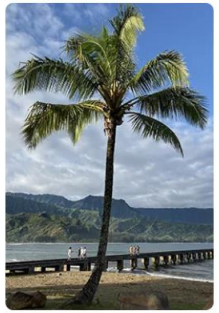
Urban Tree Key

Identify a tree. Listing over 350 trees.



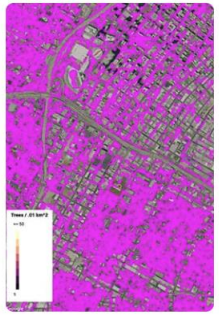
Urban Tree Inventory

A spacial analysis of California's urban trees.



Pacific Island Trees

Tree listings and identification



Urban Tree Detector

Urban Forest Tree Detector for California

CAL FIRE SINCE 1885 | FOREST SERVICE US DEPARTMENT OF AGRICULTURE | Department of Land and Natural Resources State of Hawaii | Forestry and Wildlife Hawaii | Learn by Doing | CAL POLY

UFEI

SELECTREE URBAN TREE KEY CALIFORNIA BIG TREES

SelecTree

A TREE SELECTION GUIDE

Enter a tree name...

SEARCH PACIFIC ISLANDS
Click here to search trees in the Pacific Islands

SEARCH CHARACTERISTICS
Search by height, flower color, and more.

SEARCH HELP
Find more information to help with your search.

SEARCH BY CHARACTERISTICS

TREE CHARACTERISTICS

MAXIMUM TREE HEIGHT

0ft 100ft

0 25 50 75 100+

IS CA NATIVE?
Yes

HAS FALL COLOR?
Yes

POWERLINE FRIENDLY?
Yes

SELECTREE

SEARCH BY CHARACTERISTICS

TREE CHARACTERISTICS

MAXIMUM TREE HEIGHT
0ft — 100ft
0 25 50 75 100+

IS CA NATIVE? ☐ Yes

HAS FALL COLOR? ☐ Yes

POWERLINE FRIENDLY? ☐ Yes

TREE SHAPE: Select...

LEAF FORM: Select...

FOLIAGE TYPE: Select...

LEAF ARRANGEMENT: Select...

FLOWERS & FRUIT

FLOWER COLOR: Select...

FRUIT TYPE: Select...

HAS FRAGRANCE? ☐ Yes

SEARCH TERM

TYPE IN A TERM TO SEARCH

SITE CONDITIONS

USDA HARDINESS ZONE: Select...

SUNSET CLIMATE ZONE: Select...

AVAILABLE PLANTING AREA: Select...

DEER RESISTANT ☐ Yes

SALINITY TOLERANCE ☐ Yes

UTILITY PRECAUTIONS
☐ Medium Zone ☐ Low Zones

SELECTREE WATER USE RATING
☐ Very Low ☐ Low ☐ Medium ☐ High

SUN EXPOSURE
☐ Sun ☐ Partial Shade ☐ Full Shade

SelecTree

A TREE SELECTION GUIDE

Enter a tree name...

SEARCH PACIFIC ISLANDS
Click here to search trees in the Pacific Islands

SEARCH CHARACTERISTICS
Search by height, flower color, and more.

SEARCH HELP
Find more information to help with your search.

Edit this Tree

CORK OAK

Quercus suber

FAMILY Fagaceae

See all *Quercus*

See *Champion*

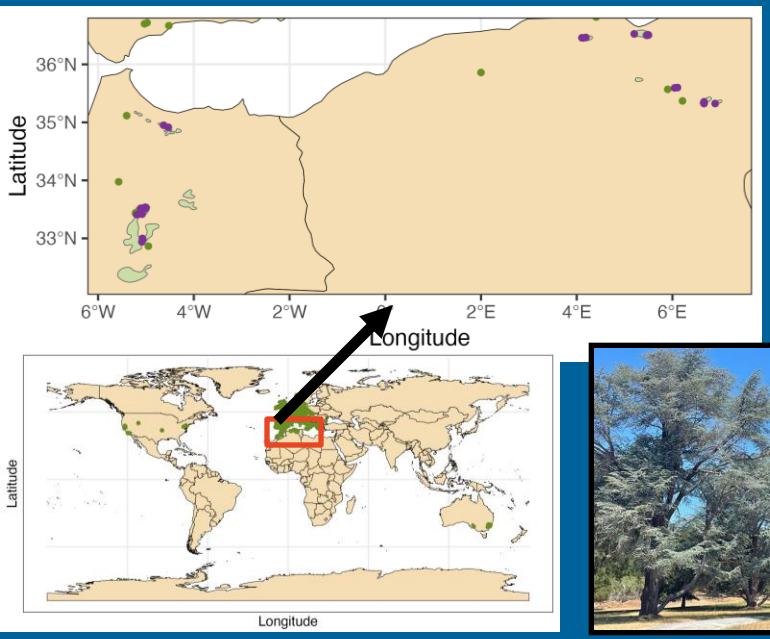
SYNONYMS

ADDITIONAL COMMON NAMES

SELECTREE

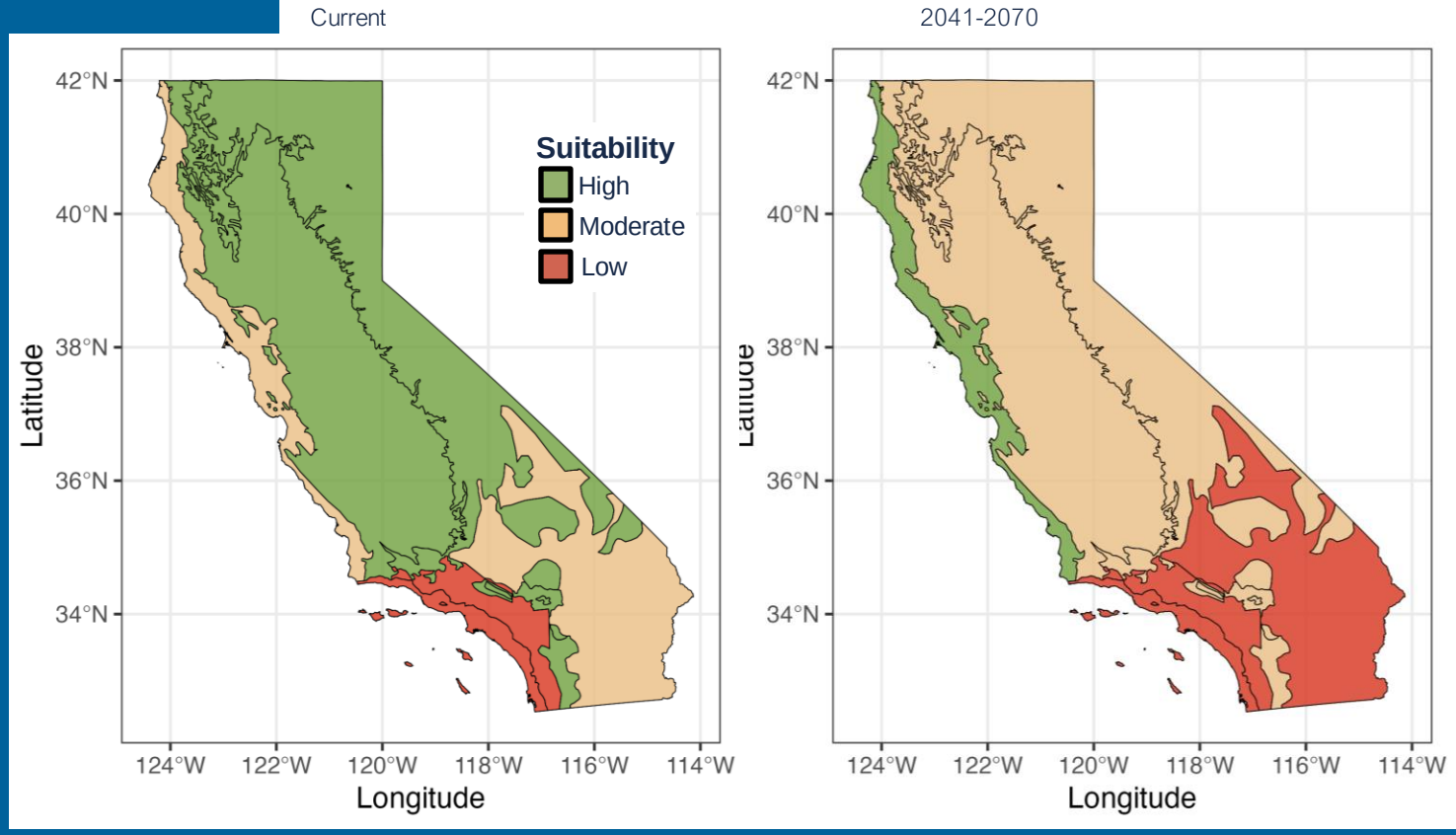
Can we use native ranges to predict suitability for future climate in California?

Occurrence data in native range



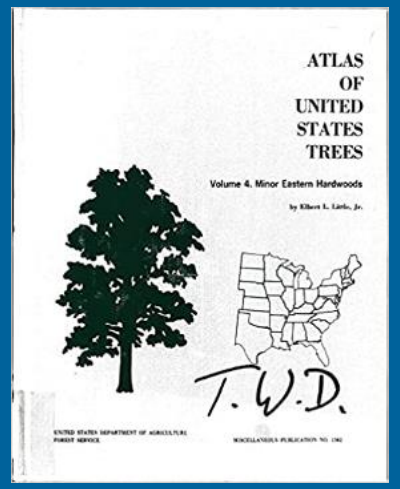
Atlas cedar

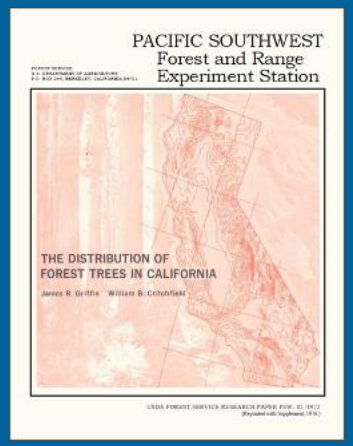
Cedrus atlantica

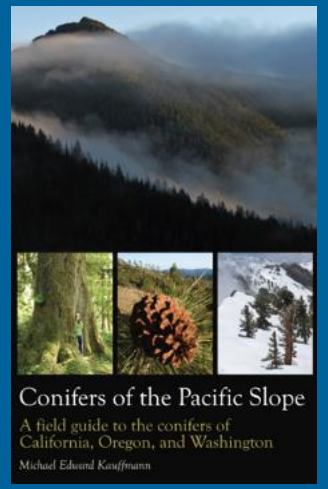


CALIFORNIA TREES – NATIVE RANGE MAPS

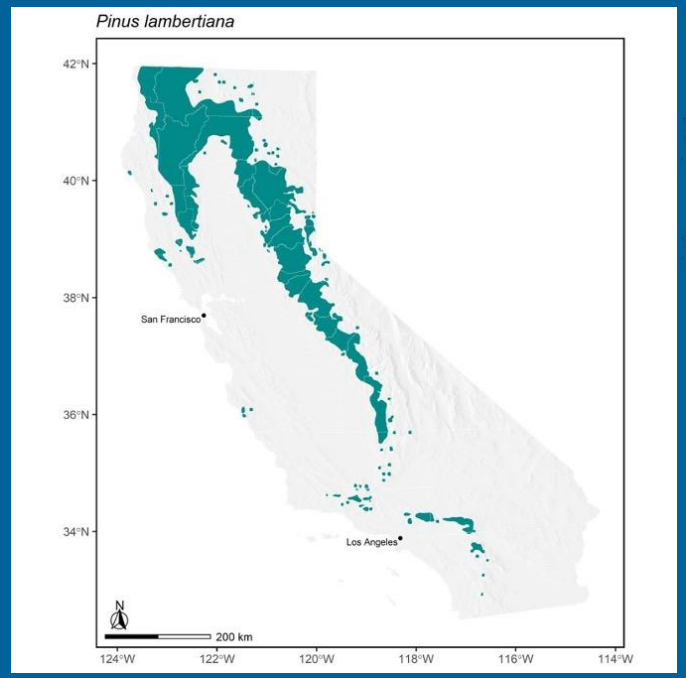
Native Range maps for all of California's Native Species



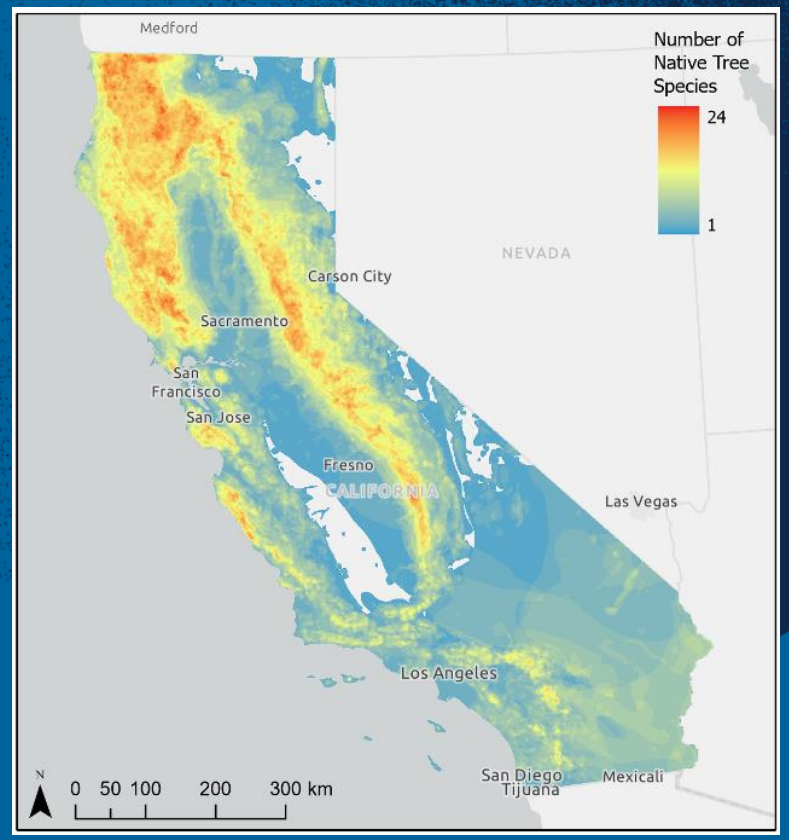




Range maps for 95 tree species

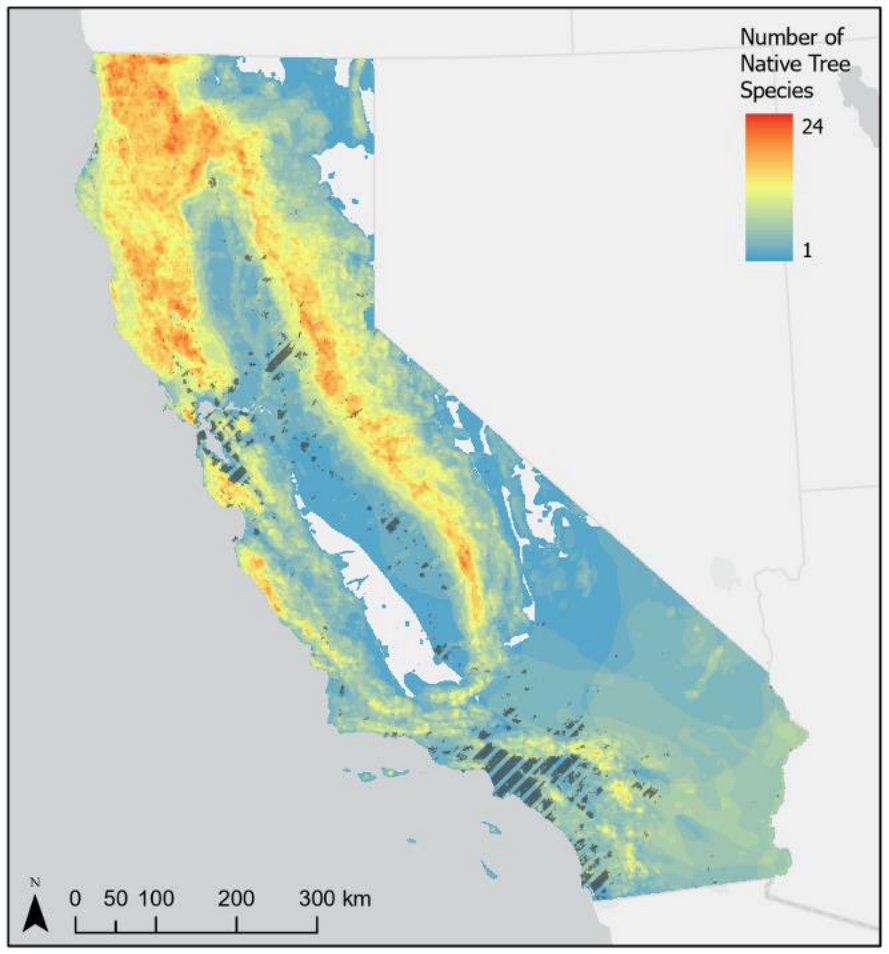


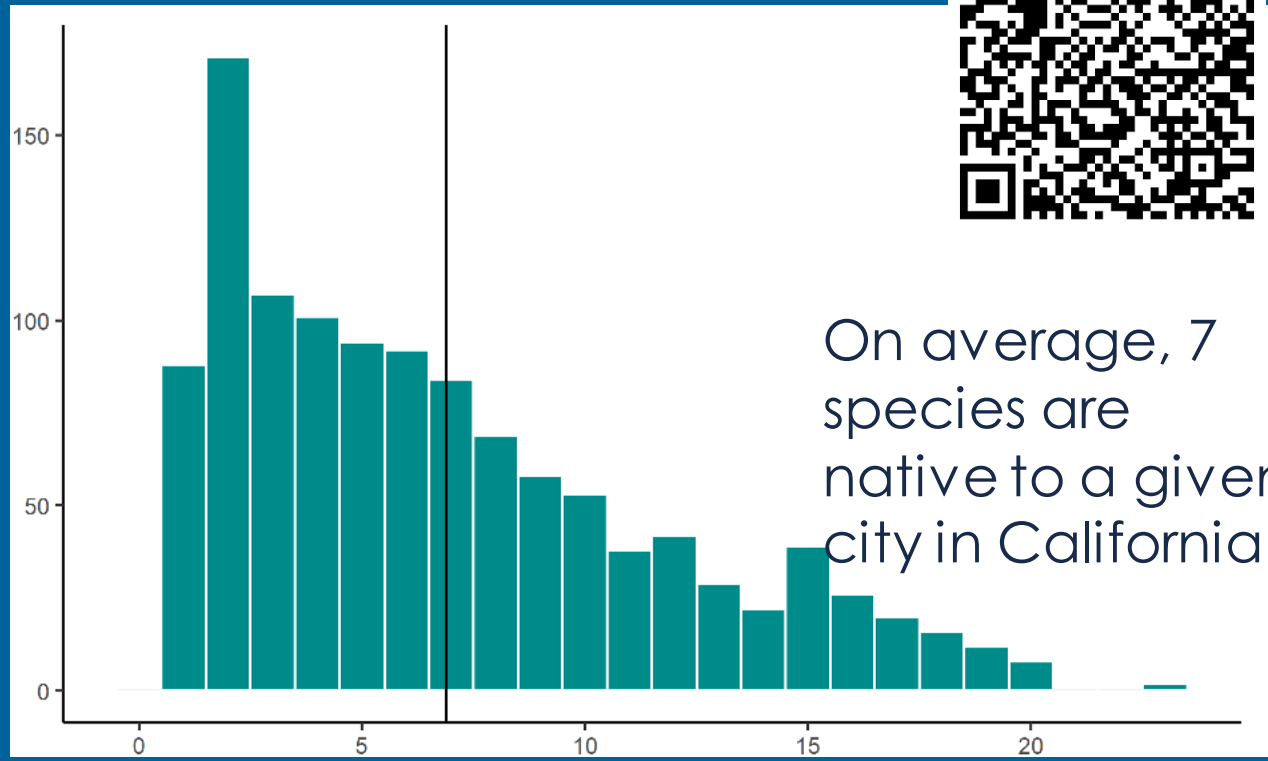
Tree Diversity Heat Map



CALIFORNIA TREES – NATIVE RANGE MAPS

California native trees in urban forests

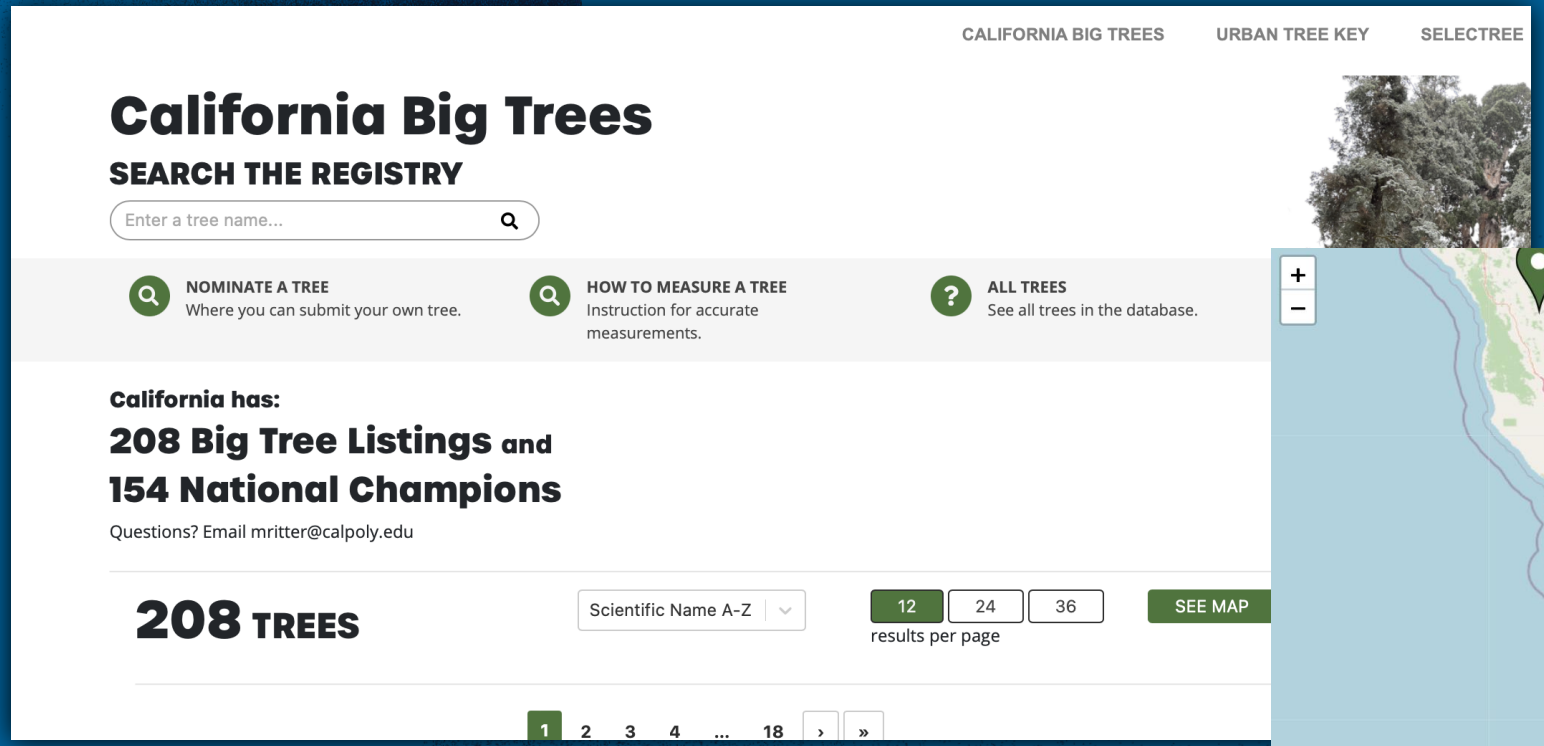




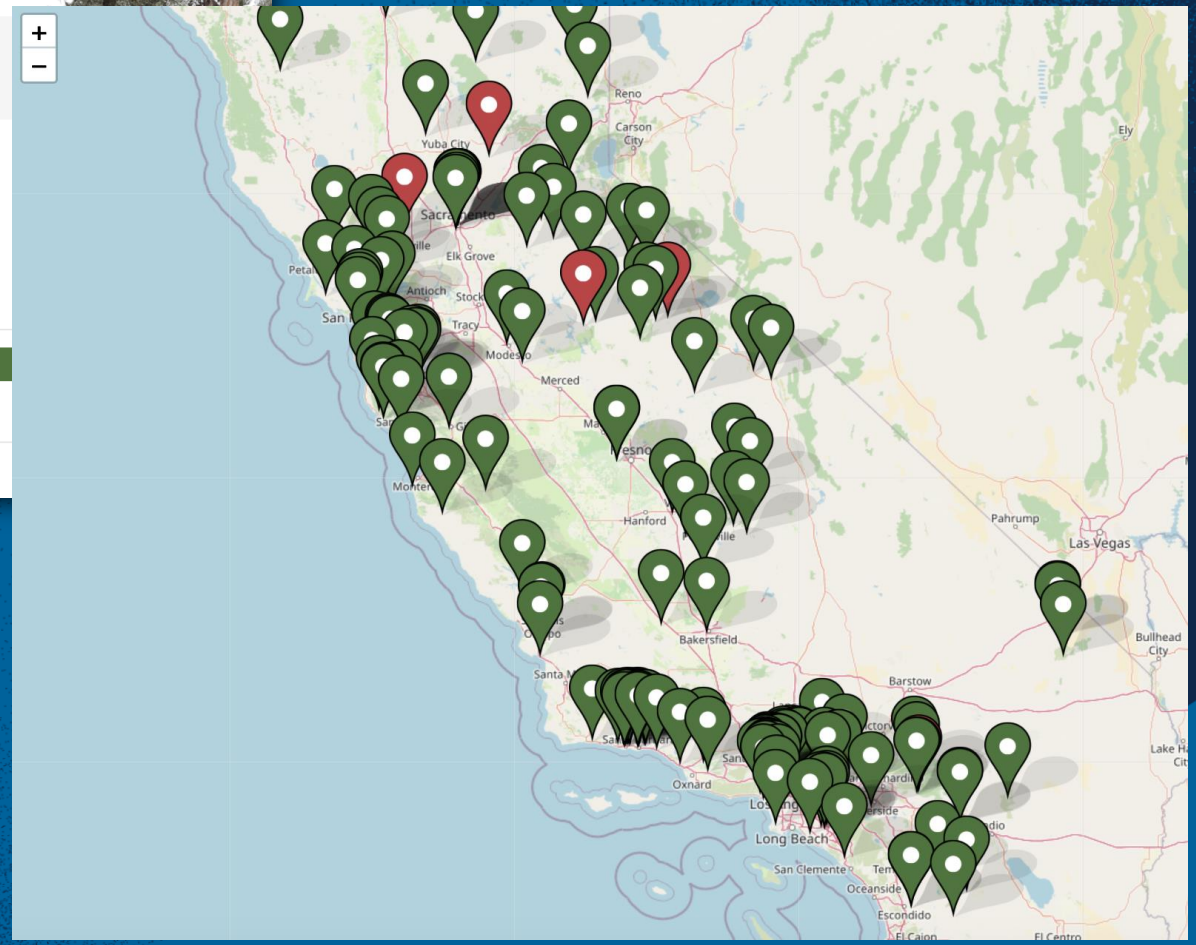
On average, 7 species are native to a given city in California

CALIFORNIA BIG TREES https://ufei.calpoly.edu

CALIFORNIA BIG TREES

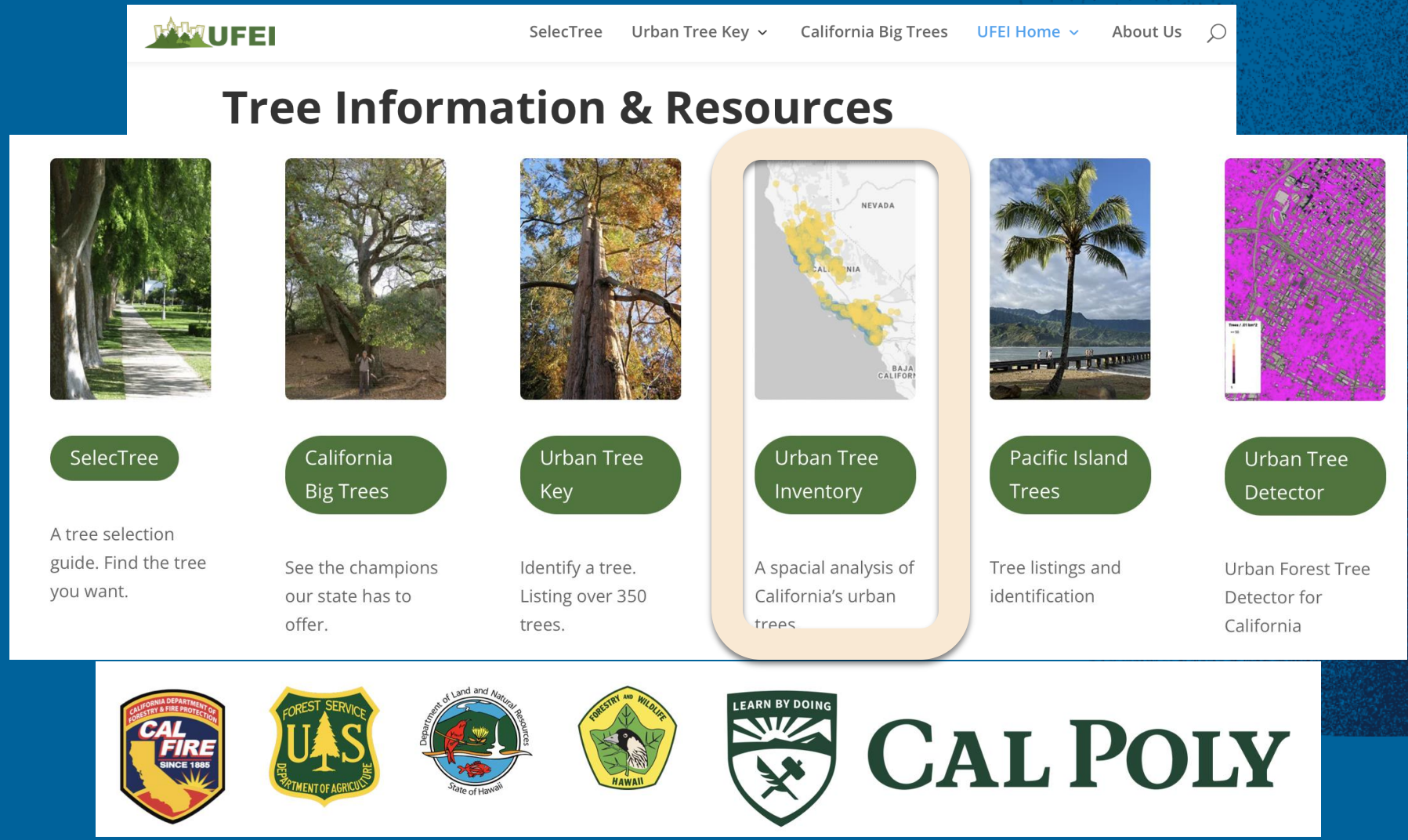


Champion Fever Tree
Vachellia xanthophloea
San Diego Zoo Safari Park



CALIFORNIA URBAN FOREST INVENTORY

https://ufei.calpoly.edu



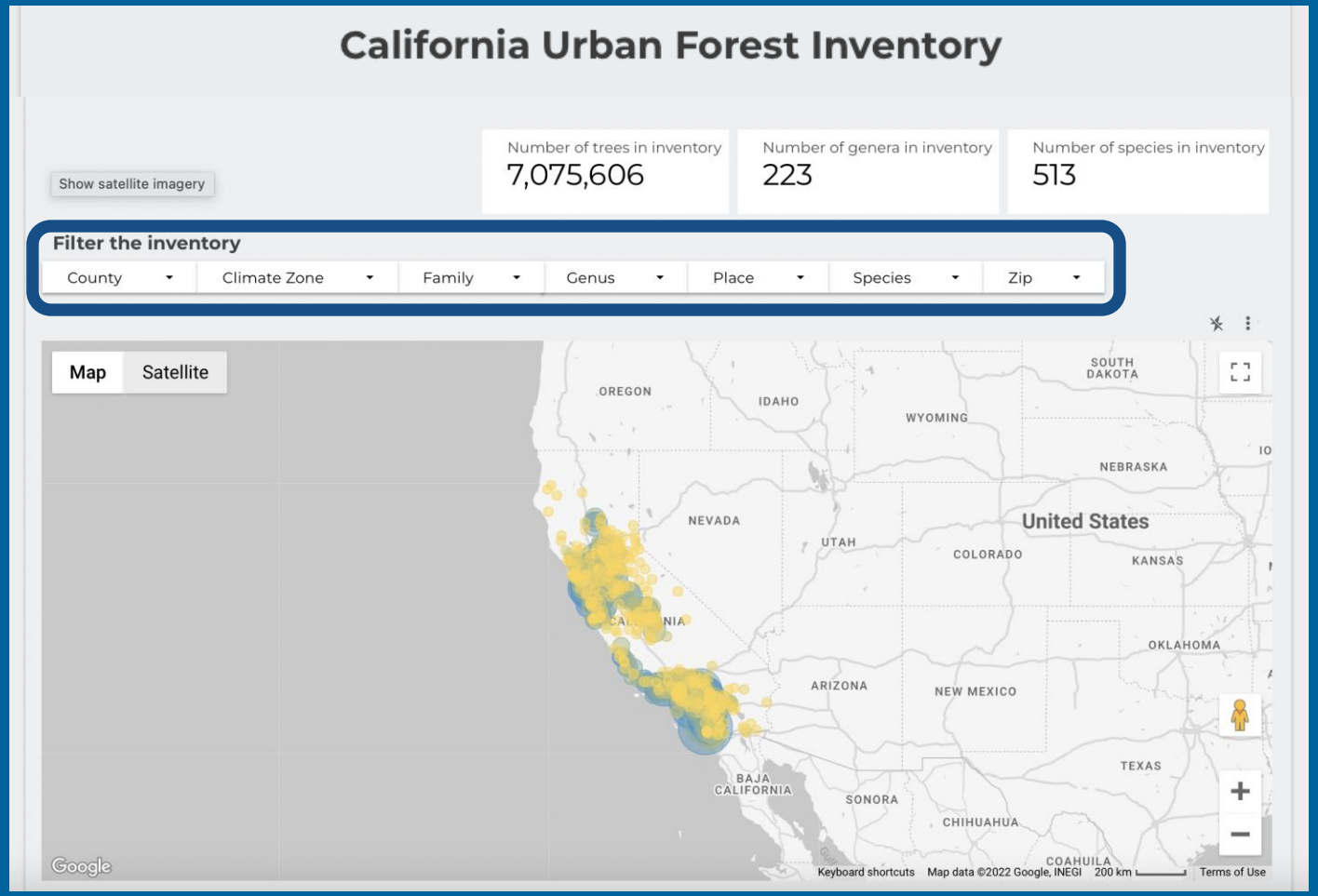
CALIFORNIA URBAN FOREST INVENTORY

California Urban Forest Inventory:

Online data portal

- 7 million trees
- Mostly public trees
- 513 species
- 223 genera
- 753 cities in California

CALIFORNIA URBAN FOREST INVENTORY



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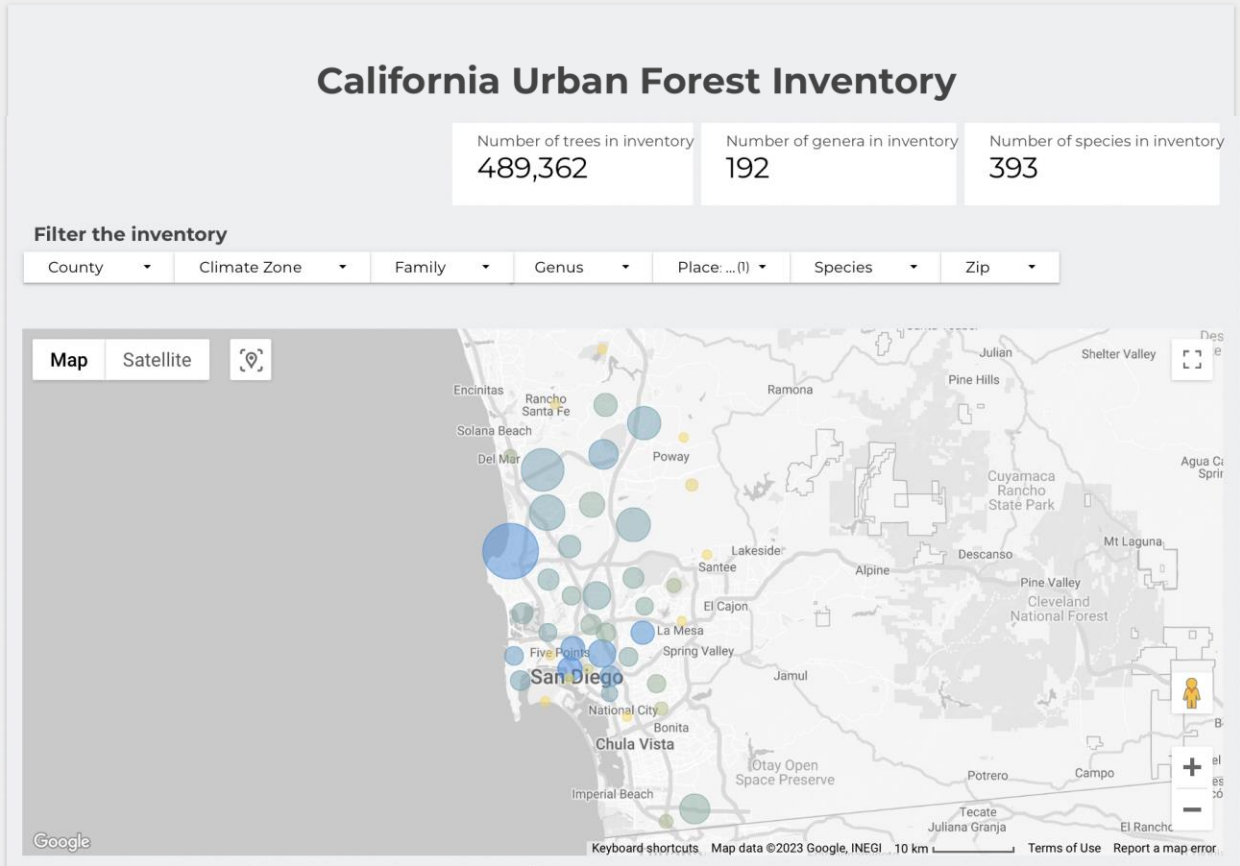


California Urban Forest Inventory: San Diego

Count distribution of each species

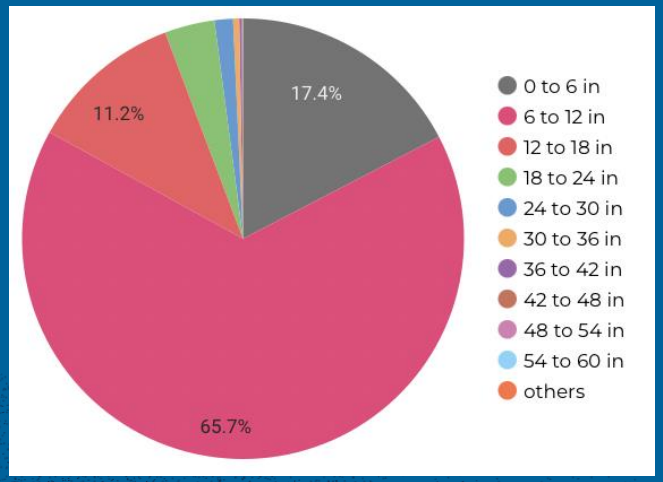
	Species	Number of trees	Proportion
1.	Syagrus romanzoffiana	47,095	9.62%
2.	Washingtonia robusta	25,097	5.13%
3.	Cupaniopsis anacardioides	23,529	4.81%
4.	Eucalyptus cladocalyx	21,015	4.29%
5.	Lophostemon confertus	20,213	4.13%
6.	Jacaranda mimosifolia	16,562	3.38%
7.	Liquidambar styraciflua	15,736	3.22%
8.	Eucalyptus	15,612	3.19%

1 - 100 / 455

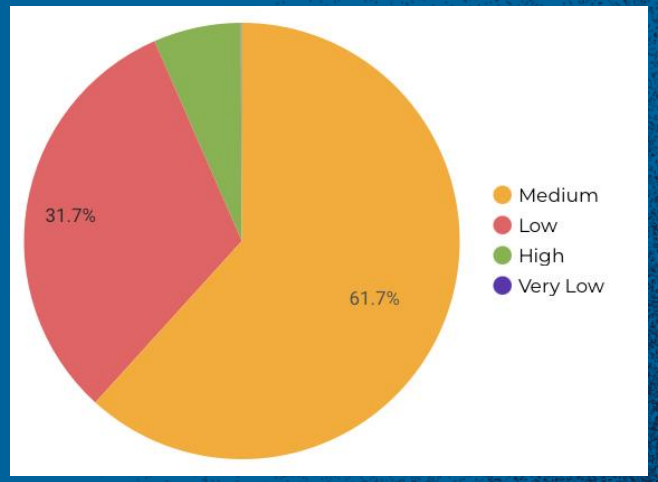
CALIFORNIA URBAN FOREST INVENTORY

California Urban Forest Inventory: San Diego

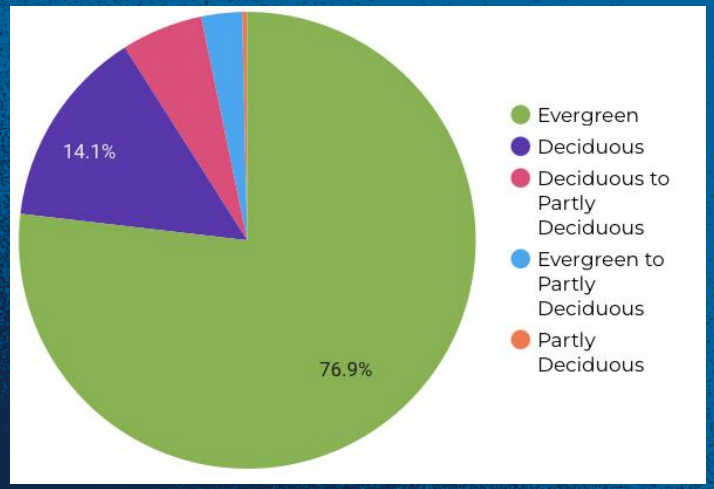
DBH Distribution



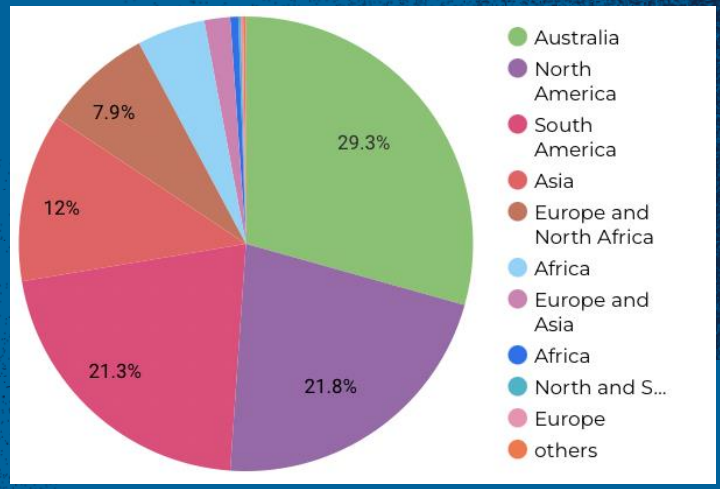
Water Use Distribution



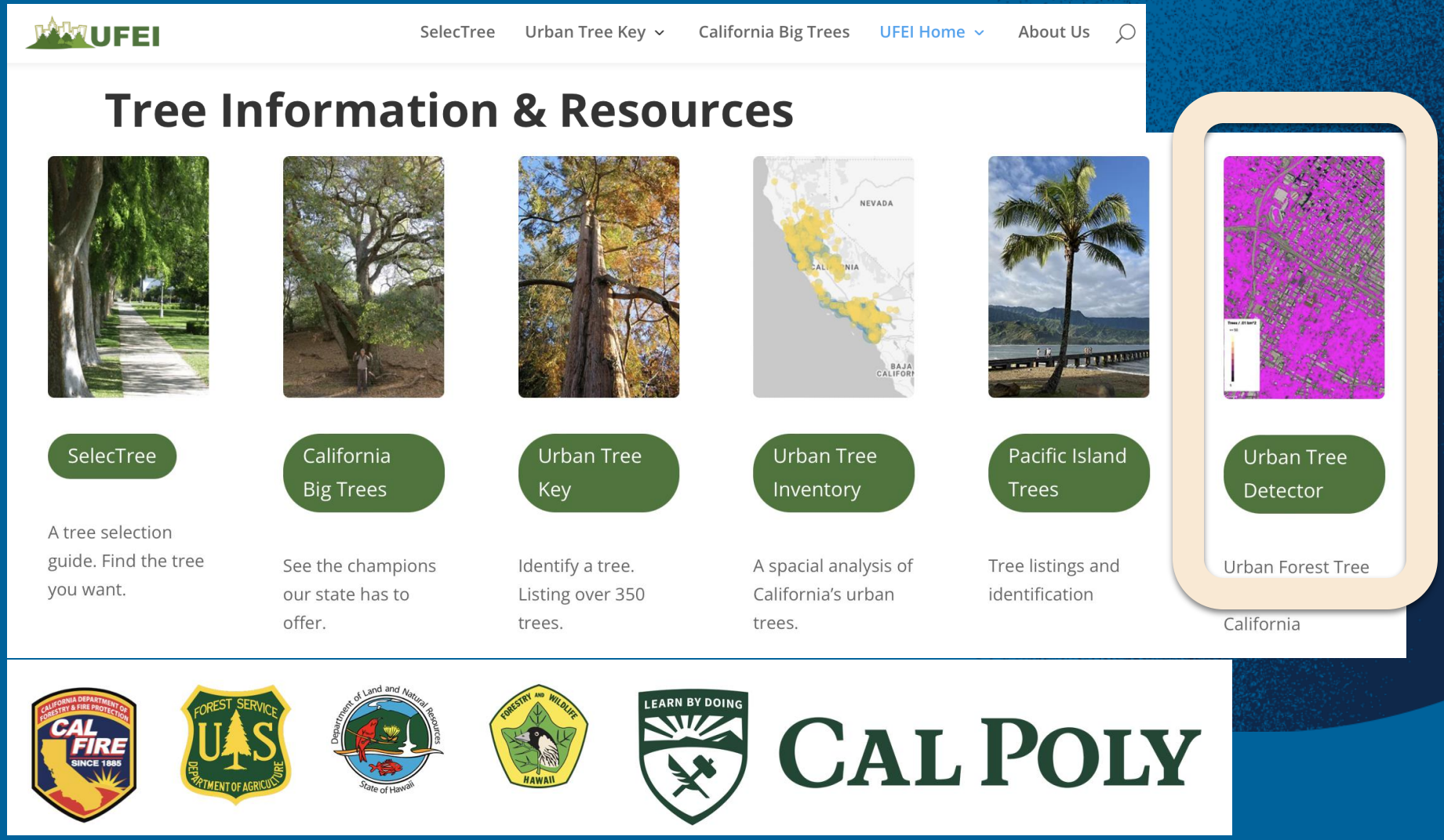
Foliage Type Distribution

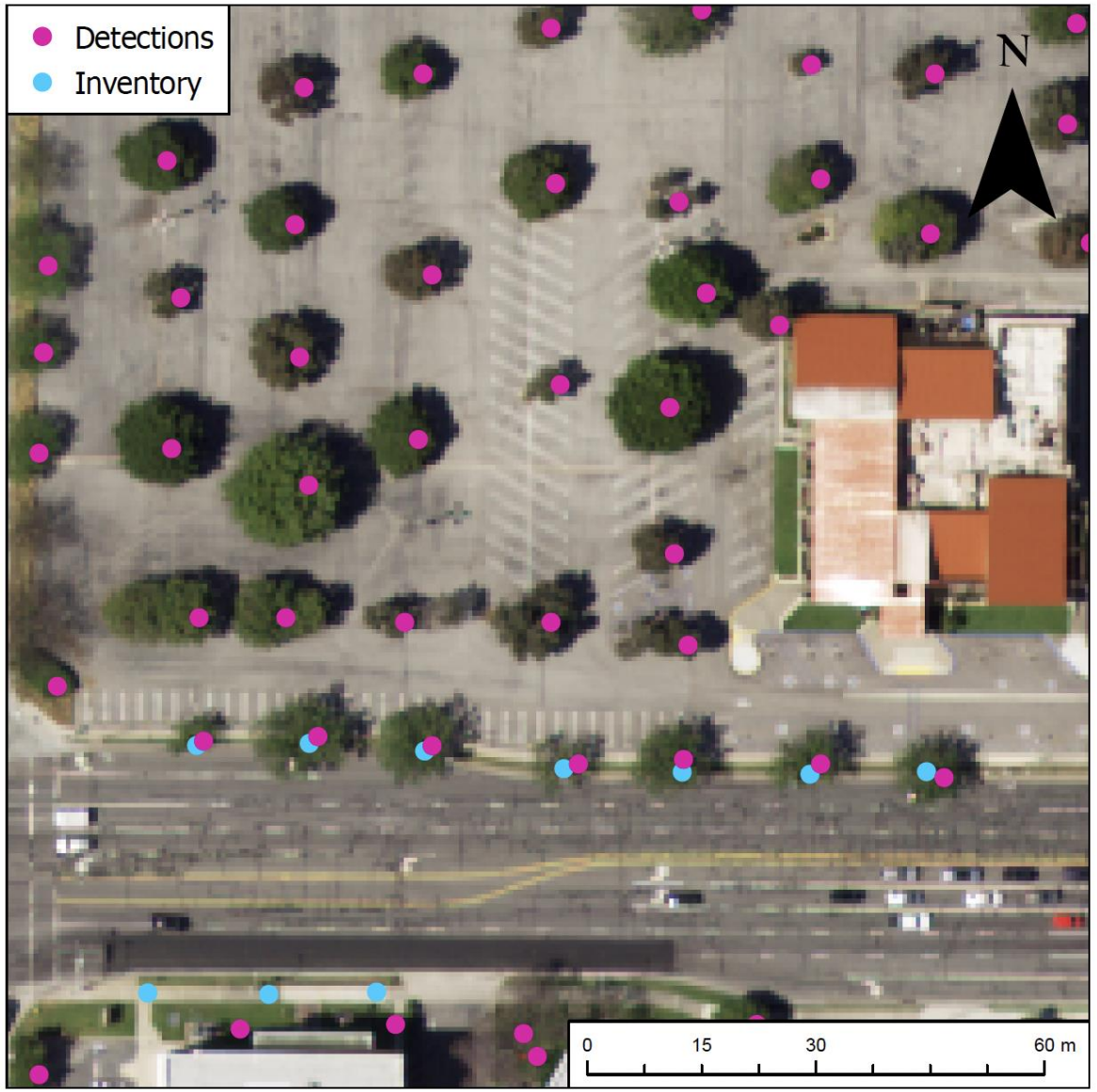


Native Range Distribution

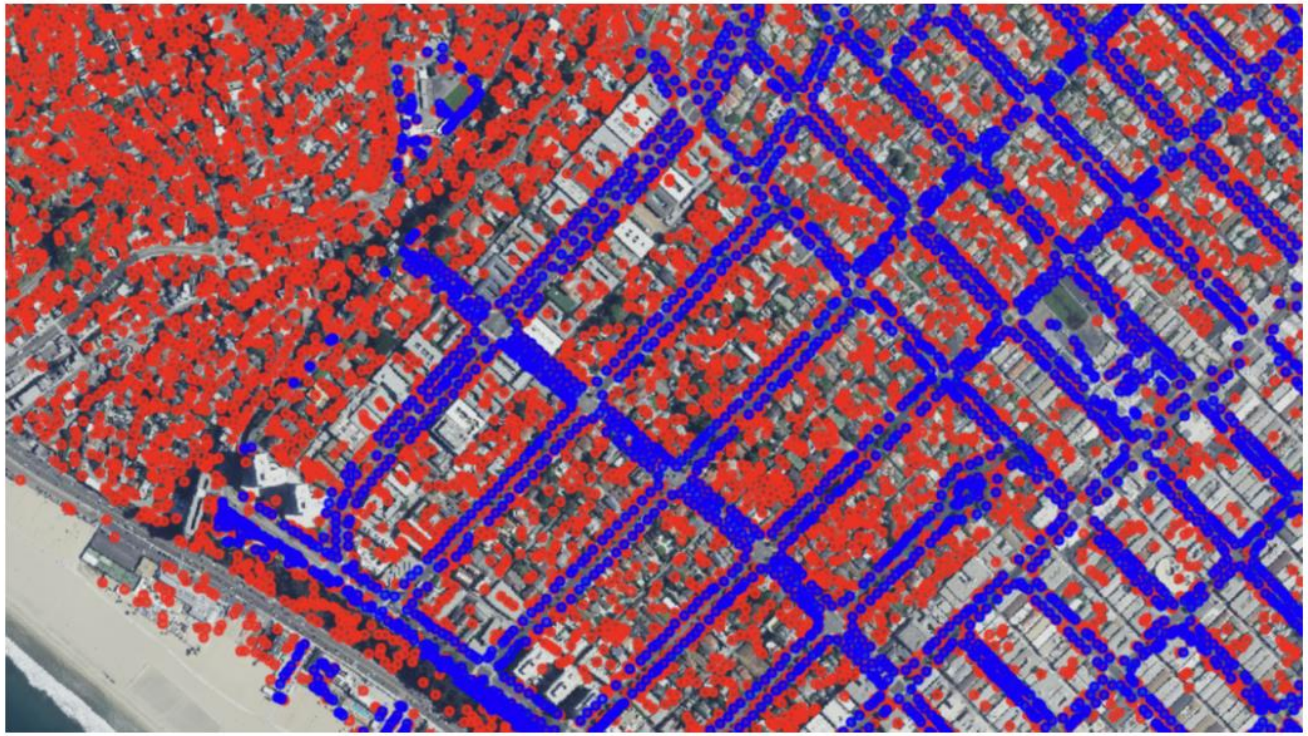


URBAN TREE DECTOR https://ufei.calpoly.edu



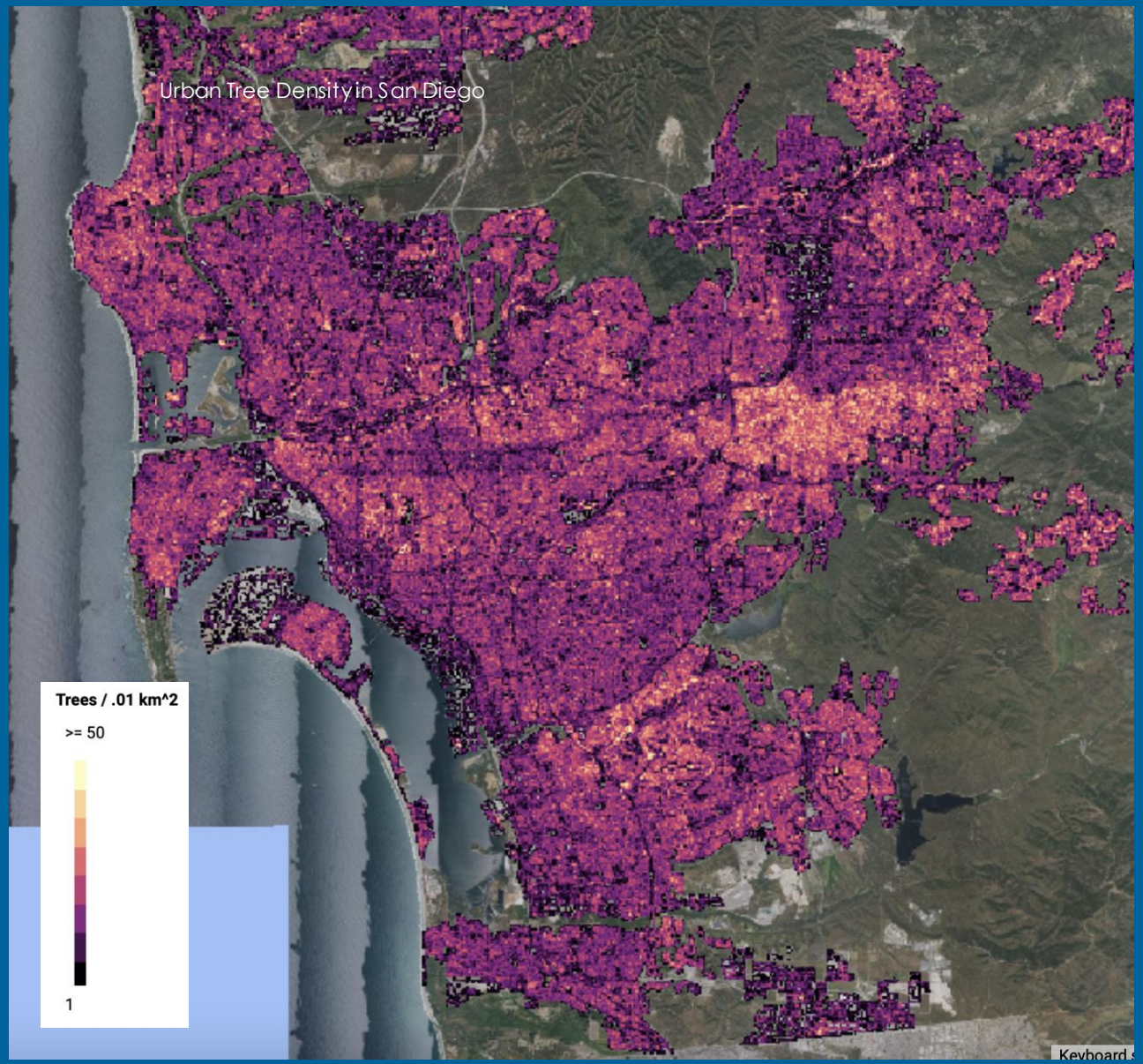


CNN Prediction
Arborist inventory



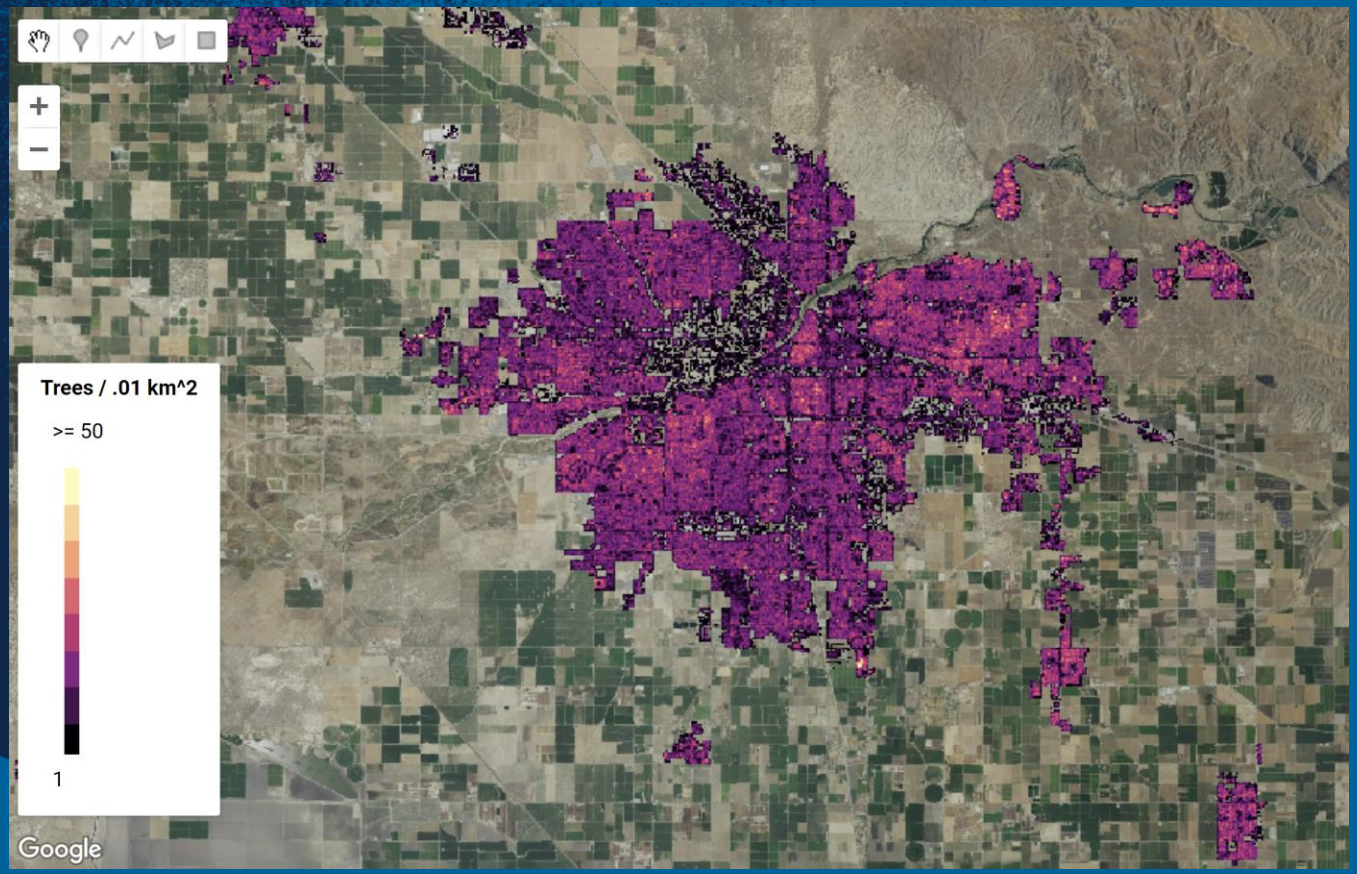
Santa Monica

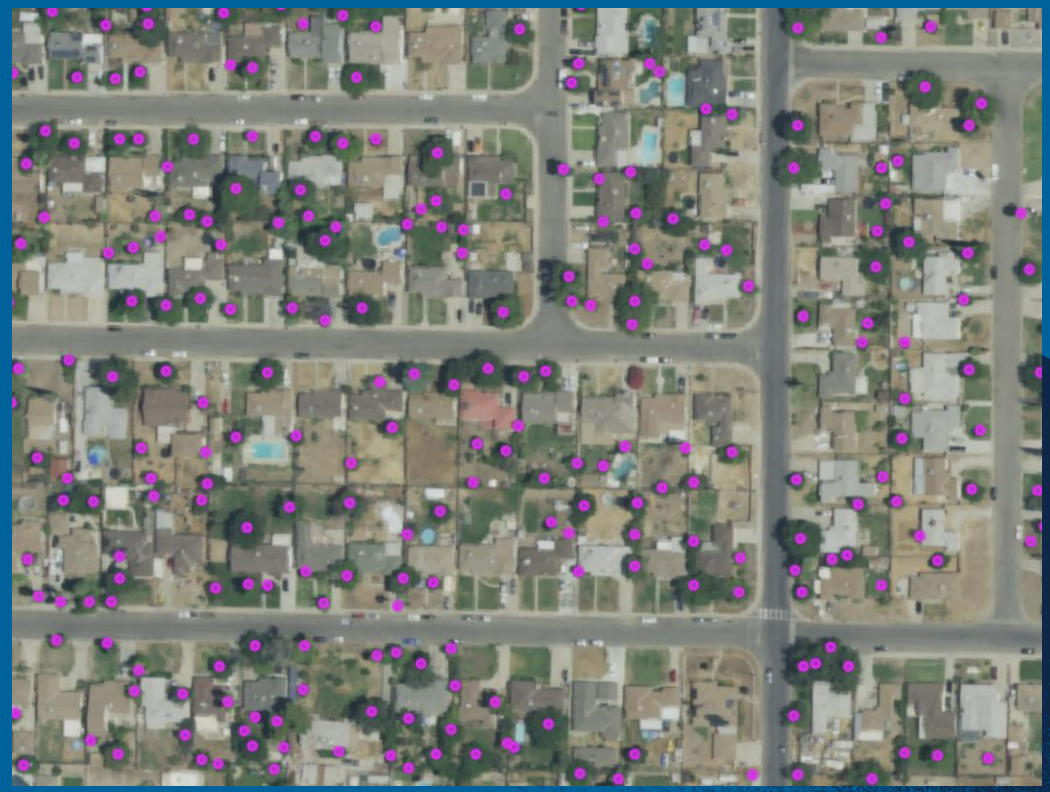
URBAN TREE DECTOR



URBAN TREE DECTOR

Data in new places: Bakersfield





URBAN FOREST ECOSYSTEM INSTITUTE

A diverse urban forest is a resilient urban forest.

Northern CA

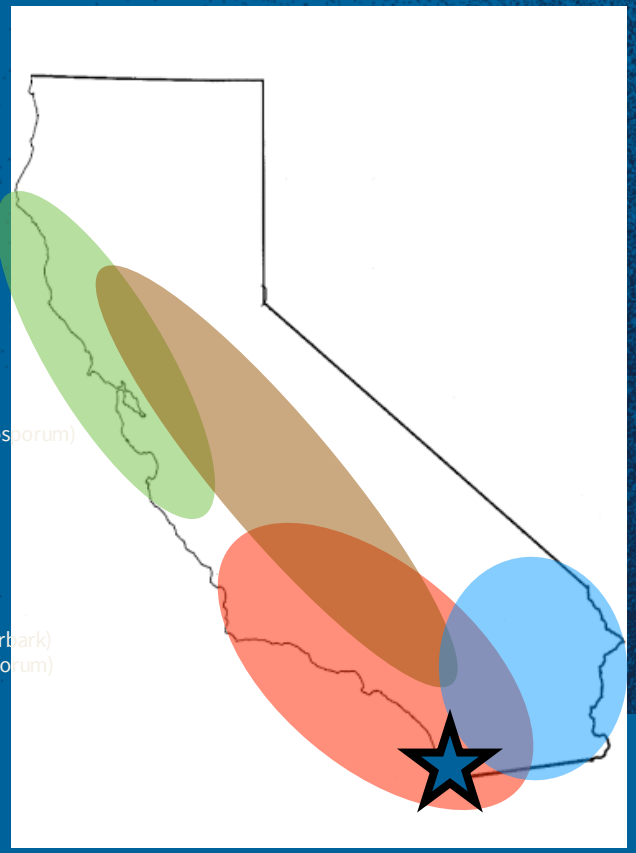
Acacia koa (Koa)
Angophora costata (Rose Gum)
Corymbia ficifolia (red flowering gum)
Elaeocarpus decipiens (Japanese Blueberry)
Eucalyptus cinerea (silver dollar)
Eucalyptus prava (Orange Gum)
Eucalyptus spathulata (swamp gum)
Harpephyllum caffrum (South African Wild Plum)
Pittosporum floribundum (Himalayan Pittosporum)
Quercus canbyi (Canby's Oak)
Quercus hypoleucoides (Silverleaf Oak)
Quercus oblongifolia (Arizona blue oak)
Quercus rugosa (Netleaf oak)
Quillaja saponaria (Soapbark Tree)
Syncarpia glomulifera (Turpentine Tree)

Southern CA

Acacia koa (Koa)
Angophora costata (Rose Gum)
Auranticarpa rhombifolia (diamond leaf pittosporum)
Banksia speciosa (Showy Banksia)
Corymbia ficifolia (red flowering gum)
Elaeocarpus decipiens (Japanese Blueberry)
Eucalyptus cinerea (silver dollar)
Eucalyptus spathulata (swamp gum)
Eucalyptus torquata (Coral Gum)
Harpephyllum caffrum (Kaffir Plum)
Melaleuca styphelioides (Prickly-leaved paperbark)
Pittosporum floribundum (Himalayan Pittosporum)
Platanus mexicana (Mexican sycamore)
Quercus canbyi (Canby's Oak)
Quercus hypoleucoides (Silverleaf Oak)
Quercus oblongifolia (Arizona blue oak)
Quercus rugosa (Netleaf oak)

Central Valley

Angophora costata (Rose Gum)
Eucalyptus cinerea (silver dollar)
Eucalyptus prava (Orange Gum)
Eucalyptus torquata (Coral Gum)
Platanus mexicana (Mexican sycamore)
Populus fremontii (Fremont cottonwood)
Quercus canbyi (Canby's Oak)
Quercus hypoleucoides (Silverleaf Oak)
Quercus oblongifolia (Arizona blue oak)
Quercus rugosa (Netleaf oak)



Desert

Corymbia aparrerinja (Ghost gum)
Dalbergia sissoo (Sissoo)
Eucalyptus lane-poolei (Salmon White Gum)
Eucalyptus spathulata (swamp gum)
Eucalyptus torquata (Coral Gum)
Melaleuca styphelioides (Prickly-leaved paperbark)
Platanus mexicana (Mexican sycamore)
Quercus canbyi (Canby's Oak)
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Quercus oblongifolia (Arizona blue oak)
Quercus rugosa (Netleaf oak)

SelecTree
A TREE SELECTION GUIDE
UFEI

Q&A

NEXT STEPS

- Feedback:
    - We aim to get representation from our diverse campus community.
    - You can express your comments, ideas, and questions by completing our survey on the Town Halls webpage.

- **Future Town Halls Covering Various Sustainability Topics**