Planting Empowerment: Native Plants in School Gardens

Carrie Strohl, Ph.D.

CNPS Conference 2022
Why native plants?

- Native Americans have lived on the land with these plants for twelve thousand years.
- Study of CA Natural History, Cultures & Food
- Fun for the kids (milkweed, ladybugs, e.g. offer a real educational experiences).
- Beyond a tomato, a carrot, a zucchini:
- Another tool in the toolbox to find the buy in for a certain student;
- Observing phenology
- Involves more of the senses – links to memory, learning

That was great fun...and they remember that.  
-Arlene
01. THE POLITICS OF SCHOOL GOVERNANCE

02. METHODOLOGY

03. EMPOWERMENT NARRATIVES

04. IMPLICATIONS
01. POLITICS OF SCHOOL GOVERNANCE
School District Rules & Regulations

- A principal is required to file a form with the district to make “voluntary site improvements”
- Volunteers must be “vetted” to be allowed on a school campus
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<td>Groundskeeping Practices</td>
<td>Budgetary Constraints</td>
<td>Knowledge Gaps</td>
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<td>01</td>
<td>Ex. redundant “mow &amp; blow” techniques used in lawn and shrub maintenance</td>
<td>Ex. native plant nurseries use a hand-written receipt so a garden teacher cannot get reimbursed for purchases</td>
<td>Ex. installing a grid irrigation system in a drought-tolerant planting area</td>
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02. METHODOLOGY
Participant Storytellers

Jon Soper
4th Grade Teacher for 25 years; gardening for 20 years; Put gardens in at 3 school sites; mostly vegetables, but also native plants.

Arlene Bates
Retired RN; UC Master Gardener of Napa County; World’s Best Grandma

Chris Hattich
Informal Garden Educator (3 sites) 8+ years with a degree in Environmental Science; small-scale family farming, viticulture

Carrie Strohl
Former UC MG of Napa County; Former environmental science coach at PV; Perennial Member of the CNPS
Four Story Timeline

- 2014: Oak Woodland
- 2017: Water Feature
- 2020: Pocket Gardens
- 2022: Pollinator Habitat
Arlene: I met Jon at BV where he was trying to valiantly grow vegetables in the shade because the principal didn’t quite get it.
“Love your honesty! Completely agree with you, oaks trees are incredible and do not need any more damage done to them. I did not order them cut. That being said I am still surprised that I face resistance to moving the garden to another part of our playing fields. Sod lawns take tremendous amounts of water and they are not really even utilized that much in the summer or even during the school yr. I think I have pushback from parents who were here before and had a vested interest in the current garden. When I first came here 4 yrs. ago I saw immediately that we had problems with a garden located near a creek with oaks. At one point in time the principal agreed with me and I started to plan a new garden and was subsequently told to cease and desist. I started planting sunflowers last yr. in the area right off of Buhman ave. and it was a hit. This yr. I expanded quite a bit. I agree with you that the current garden should become a place of reflection or even a native plant garden or just an area for the kinders and maybe 1st graders. Let’s continue this dialogue. When you find time come over and we will walk the grounds and you can make some suggestions. Jon.”
WATER FEATURE

Installed as a focal point, this water feature had the infrastructure for working irrigation, but several attempts could not make the drip system work. The perimeter was replanted with seaside (Erigeron glaucus) and santa barbara daisy (Erigeron karvinskianus) until they went dormant and were pulled out after being locked out.
Pocket Gardens (2020-2023)
Garden Kit. This kit contains **32 herbaceous transplants** (including milkweed) and native bunch grasses, which will cover approximately **512 ft²** when planted on 4 ft spacing. Container sizes range from tree band to 1 gal.
Thanks for letting us know. I’d be curious to hear why it’s not a good fit for schools in Napa. Just interested in learning more and hoping to improve our programing and collaborations with Xerces. Maybe there is some important feedback to hear.
Summarizing Barriers

● Native plants are so polar [opposite] to what groundskeeper are trying to do (manage utilitarian purposes)
● Don't always fit with the aesthetic (not always neat, clean, tidy)
● False commitment to conserving resources (lawns use so much more water) – could be reduced by an acre
● Teachers, by and large, are not comfortable teaching outside
● Space and how it is allocated
● Parents who provide invaluable labor leave
● Access (fencing, volunteers)
● Values: gardening for food vs. native plants (Title 1)
Arlene: The problem with native plants is people think they don’t need water and they don’t need maintenance and neither of those is true.
Beyond partnering with the local [CNPS] chapter, what other recommendations do you have for how to make natives more approachable in the school landscape?
03. EMPOWERMENT THEORY
“An intentional, ongoing process centered in the local community involving mutual respect, critical reflection, caring, and group participation through which people lacking an equal share of valued resources gain greater access to control over those resources.”

—Cornell Empowerment Group (1989)
WHAT “VALUED RESOURCES” WERE AT STAKE?

- LAND AREA
- WATER
- LABOR
- PERMISSION
- PLANTS
- KNOWLEDGE
WHAT “VALUED RESOURCES” WERE AT STAKE IN JON’S OAK WOODLAND?

- Land Area
- Water
- Labor
- Permission
- Plants
- Knowledge
Jon: You remember when they started talking about cutting trees down... I remember talking to Carrie about... getting some sun in here. Carrie was not real happy. We have some [splendid] oak trees out there on the creek.
WHAT “VALUED RESOURCES” WERE AT STAKE IN PV’S WATER FEATURE?

- LAND AREA
- WATER
- LABOR
- PERMISSION
- PLANTS
- KNOWLEDGE
SUSTAINING AS EMPOWERMENT

Carrie: we had some pretty lovely native plants at PV... one day a groundskeeper cut shrubs at the fenceline... talk about regret... loss of habitat.
WHAT “VALUED RESOURCES” WERE AT STAKE FOR CHRIS’ CAMPUS?

- LAND AREA
- WATER
- LABOR
- PERMISSION
- PLANTS
- KNOWLEDGE
ADAPTING AS EMPOWERMENT

Chris: we have these giant, largely unused fields, but the district holds so tightly to that...the idea that a native plant garden has to be one central 50 x 20 or whatever size location...the idea of a pocket garden, where we have these little 10 x 10s that are just kind of interspersed throughout...while they’re not maintenance free...[it could be better utilized].
WHAT “VALUED RESOURCES” WERE AT STAKE WHEN A CONSERVATION AGENCY OFFERED SUPPORT?

LAND AREA
WATER
LABOR
PERMISSION
PLANTS
KNOWLEDGE
(RE)IMAGINE LANDSCAPES AS EMPOWERMENT
04. IMPLICATIONS
“If kids are not well fed and they don’t feel right in their bodies and minds, they can’t learn. If you can learn to sit in relative quiet in nature for a few minutes each day...we’d all be better off. “

A quiet space outside to chill, develop the social-emotional awareness can change the learning landscape.

Changing the surroundings we immerse kids in on school grounds promotes curiosity and attention.

Nurturing the human connection to native plants has the potential to restore balance in overlapping systems.
Jon: *from a cost perspective...* [when I] tore up their irrigation systems 2, 3 times; all of a sudden I had their attention; we’re watering these huge green grass lawns; we’d use so much less water with a native plant garden.
Chris: school gardens don’t have to be one central plot relegated to the shadiest, crumbliest corner of campus...areas of bark and weeds...it’s simple.
Planting Empowerment

- **Land**: highlighting new development that follows WUCOLS
- **Water**: training materials for landscapers
- **Labor**: resources in languages other than English
- **Permission**: negotiated shared spaces designed for mixed use purpose
- **Plants**: Outreach to school district facilities and operations personnel
- **Knowledge**: Curricular supports that align native plant topics to standards
Acknowledgements:

Frances Knapczyk, Program Director, Napa RCD

Ruby Stahel, Conservation Project Manager, Napa RCD
CNPS 2022 Conference
ROOTING TOGETHER
Native Teachings in the Garden, by: Rose Hammock
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Students learning how to process their pinecones; some used pine nuts for jewelry!

Acorn & Pine Cone Gathering, with proper [Pomo] protocols
From Asphalt to Green Schoolyards

Lessons learned from San Francisco’s bond measures to include natural spaces in highly urbanized locations with multi-ethnic communities
What is a green schoolyard?

An asphalt-covered outdoor area transformed into a green space where nature is integrated into teaching.

It serves three main functions
I. Recreation and Fitness
II. Teaching and Learning
III. Social Gathering and Community Building
What do these natural areas offer?

- Opportunities for both teachers and students to engage in ways that may not be feasible indoors
- Offers hands on learning
- Direct connection to natural world
- Allows students with learning differences to find other pathways to engaging and learning
What elements are needed?

- Quiet Spaces
- Creative and Adventurous Play
- Employment of all senses
- Planted Spaces - Dirt
- Outdoor Classrooms
- Social Engagement

- STE(A)M Curricula
- Glue → Adequate infrastructure
- Stewardship
How do you create a successful green schoolyard?
Listening to the different communities that contribute to the school population

- involving non-English speakers
- reaching out to a range of economic classes
- bridging between administration, teachers, parents and students
- Engaging all age groups
- Practicing active listening
Heading off divergent points of view between teachers who don’t want dirt in their classrooms and parents that want to see kids in the dirt.
Incorporating their feedback and deciding what elements will be included in the design
Pollinator gardens highly prized – students observing insects.
Natural Play
Multiple pathways
Boulders
Seating
incorporation of STEM and food security in the green schoolyard
Building raised beds with minimal materials and cost. Assembly developed by the United Nations to help combat food insecurity.

Photo by Rebecca Meyer
- Water in the landscape lessons
This wetland/pond allows for enriched natural history curriculum.
integrating paths with casual gathering areas to help students and teachers passing from an active school interior focused to an exterior 'natural' environment. Moving into a different mental energy state.

Different needs between age groups from ES to MS to HS
Fencing creates a protective barrier for new plants, but also helps define and enclose the natural play area from the more active play.
providing not only active learning and play areas but also quiet reflective spaces for students
designing for differently-abled people (non-sighted, mobility impaired, etc.)
Providing a “Brown” or shovel ready landscape that includes infrastructure.

- The design team and the contractors do the “heavy” lifting to ensure the long term success of an easily maintained green schoolyard.

- Demolition, grading, drainage, irrigation, utilities, clean soil, etc. provided

- Soil testing for pollutants and agronomic suitability

- Materials selection for community safety
Allowing the school community to plant the natural areas

- Builds ownership from within
- Maintenance expectations and agreements
- Retaining a portion of the bond monies to give to the parents to purchase plants
- Sourcing planting material from Friends of the Urban Forest and other avenues (perfect for CNPS chapters!)
Systems to help with the summer gap or long term stewardship in maintenance

Placing important stewards such as parents, neighbors or garden clubs.

Anticipating parents “aging out” of the school as their kids go to upper grades.
Hose bibbs ready for hoses AND temporary irrigation.

Detailed to reduce the risk of copper harvesting. Pipe is embedded in the redwood post.
Using gator bags for establishing trees

Cat is doublechecking the height of the root crown to make sure the Quercus is planted correctly.
“Classroom in a Box”

Design including specs and details describing how to quickly establish an "instant" outdoor classroom.

Exterior Whiteboard that can handle the elements.

Shed for storage.

Seating made from invasive tree species removed from the urban forest. Movable by two adults, but not so movable that a large student can lift and throw.

Demonstration counter. Can be a simple table top or a more elaborate cooking cart.

How to establish (food security and native garden) planting beds with school friendly soil specs.
Thank you to our partners at SFUSD, Whitney Young Child Development Center, Bishop O’Dowd High School Living Lab and Julia Morgan School for Girls

Cat Chang and Maru Echeverria
Principals, Madrone Design Studio
Culturally Sensitive Architecture, Landscape and Urban Design
Miyawaki Forests

"I can't say enough about how important this project is for our community and for our children. Most of the time, we just feel powerless as we watch the planet get hotter and experience longer and longer fire seasons in California. This is a very specific and progressive way to sink carbon and change the direction of the planet's temperature rise. I'm excited to include this solution in my curriculum this school year and beyond."

Miyawaki Forests

- Grow 10x faster than conventional forests
  - Grow a 100 year old forest in 10 years.
- Generate 20x - 100x more biodiversity
- 30x more dense
  - 3 - 5 native species are planted per every square meter
- Store 30x - 100x more carbon dioxide than traditional monoculture forestation.
- Conserve water - Self sufficient after 18 months to 3 yrs
- Lower the temperature and heal soil biology
Layers of a Miyawaki Forest

Often considered sacred

Source: Afforest
Control Group Traditional planting

Miyawaki Method

18 month old Aussie forest
Minutes of watering per week at Berkeley Schools

- Lawns
- Miyawaki Forest

The graph shows that the minutes of watering per week for Lawns is significantly higher than for Miyawaki Forest.
Case Study: Berkeley Schoolyard Forests
Site of Cragmont Miyawaki forest
Day one of the Cragmont Miyawaki forest
Cragmont Miyawaki forest after 10 months
AN INITIATIVE TO GREEN URBAN SPACES

GREEN POCKET FORESTS

Our mission is to green urban spaces using the Miyawaki Method, an ultra-dense planting method. We work with schools, cities, corporations, and organizations to facilitate a community-building planting process that results in greener, healthier, and more connected communities.

LEARN MORE
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ROOTING TOGETHER
RESTORING CONNECTIONS TO PLANTS, PLACE & PEOPLE