

Natural History of UCSC Fall 2018

Plants of UCSC Lesson Plan

By Deanna Davidson

Learning Outcomes:

- Students will learn about the major plant communities in the UCSC Natural Reserve and what factors affect their distribution
- Students will learn how there are different ways of seeing and relating to plants based on cultural background and how colonial language and mindsets around plants and nature has shifted the way in which we care for and relate to the Earth in our culture
- Students will gain practice in getting to know one organism in depth and inquiring deeply about the organism
- Students will be able to identify some of the most common plants in the area including special features of the plants and their traditional uses

Background Information:

The main goal of this class is to inspire students to look more closely at the plants around them and help them become familiar with common plants on campus. You can prepare to teach the class by familiarizing yourself with the common plants listed in this lesson plan. More information is in the “Plants” chapter of “Natural History of the UCSC Campus”. You can help students learn to look closely at plants by encouraging them to ask a lot of questions and to use all their senses by looking close, feeling the plants and tasting them in tea. In this lesson, we will be introducing a non-westernized way of relating to plants through the perspective of Robin Kimmerer. You can model this perspective by using the pronoun “ki” given to us by Kimmerer and by avoiding objectifying language when talking about plants and other living beings. You can encourage your students to do the same.

Materials:

- 3 Larger thermos with Yerba Buena and hot water in them
- Extra tea cups for students

- Braiding Sweetgrass book
- Excerpt from “Speaking of Nature” article (included in bibliography)

Plan for the day:

Meet at class, check in:

Duration: 15 minutes

- Ask students to share how finding their sit spot went and if anyone has any good stories or things they would like to share.
- Class check in: Go around the classroom and have everyone share their name, gender pronouns and answer the question: if you were a plant, what plant would you be??

Quiz

Duration: 25 minutes

Walk n Talk to North Remote

Duration: 20 minutes

Explain that we are going to do a Walk and Talk while walking to upper campus. Have students get into pairs of 3 and give them a Walk and Talk topic. Walk in one group straight to end of North Remote, no stopping to look at stuff on the way (to save on time).

Questions:

- What factors might affect plant distribution and changes in plant communities on the UCSC campus?
- If you could have a plant superpower what would it be?
- Another question to consider is: What is your relationship to/how do you relate to plants? This will tie in well to the rest of the lesson.

Once we meet at the end of North Remote, one instructor type can lead a discussion with everyone based on these questions. An instructor can also lead a short lecture on zonation of plant communities and the concept of fog influence.

Read “Speaking of Nature” excerpt and introduce interview activity

Duration: 5 minutes

Read expert from the “Speaking of Nature” article about objectifying nature/using “it” and how to practice science in a way that recognizes all beings as equal while still practicing close observation, importance of getting to know plants/other beings and learning *from* them. I read parts of pages 3-4 about the role of grammar in objectifying nature as well as part of page 6 introducing the pronoun “ki”. You might want to consider highlighting the parts you want to read before. Explain that students will have a chance to interview a plant and if they wish, they could choose to get to know this plant through the mindset of the plant being both their relative

and their teacher they can learn from instead of an object they are studying. They can also experiment with using the pronoun “ki” instead of “it”, as introduced in the passage. You can model this to help students feel more comfortable with experimenting.

Interview a Plant Activity

Duration: 20 minutes

Split students into three equal groups. Do a version of the Interviewing and Organism BEETLES activity--this will involve some explanation of plant adaptations and communities as we go.

1. Reintroduce the concept of “Spinning the Wheel” and I notice/I wonder/it reminds me of. Talk about how this practice is what can help you get going with your observations when you practice natural history/field journaling and can also be used to brainstorm questions and hypotheses for potential research topics. Choose an organism to gather around and have your group practice Spinning the Wheel together. You can do popcorn style, go around in a circle a few times, or just have everyone speak their observations (I notice/I wonder/it reminds me of) at once
2. After practicing, explain to the group that they will each be finding their own organism to spin the wheel about and record their observations in their journal (what they notice, wonder etc). Remind them to use the format suggested with a clear location, conditions and context. They can draw their organism and experiment with layout. They should use their observations to come up with questions that could potentially be answered. Maybe have students brainstorm together what kind of questions they could ask.
3. Have students find a solo spot with their organism and have them journal for 15-20 minutes or so before calling them back (you can come up with a come back call like a Coyote howl or raven crow if you want). When everyone is back you can debrief and have students share some highlights of their interview and anything new that they learned from their plant teacher.

Plant Walk

Duration: 45 minutes

Walk towards burn area teaching students about some of the common plants in the reserve. Try to get them to touch the plants and actually look closely at them. Make sure to Review redwoods and Tan Oaks. Ask students to identify the species and call on a few students to share something they remember about the species. You don't have to talk about every plant or everything about them, maybe depending on time just choose five or so and ask a few key Questions or share a few key facts. Maybe for your first one you can do a little popcorn style I notice/I wonder/it reminds me of. Collect a sample of each plant as you walk for the “steal the bacon” game later.

Plants you might want to point out (information about plants taken from Sheyna's plant lesson):

Douglas Fir (*Pseudotsuga menziesii*): *Tea Plant!*

“Let the students look at its needles and smell them. Explain how it’s the “classic christmas tree” and how it differs from a redwood. Find a redwood needle and compare the two. Redwood needles are flat and only grow on the sides of the branch whereas Doug Fir needles grow all around the branches and aren’t as thick or sharp at the tip. Have them observe the difference in bark color and texture (Douglas Fir gray and rough, redwoods red and soft). Tell the native american story of the Doug Fir pinecone- there was a big flood and all the mice ran and jumped into crevices to hide- that’s why the cones have little brown tails coming out of their grooves. Mention that these needles were used for lung illnesses in tea- add some fresh growth tips to your thermos if you want.” (Haisman-Holmes, 2017)

Madrones (*Arbutus menziesii*): *Tea Plant!*

What are the differences between this tree and a manzanita? What are the similarities? What are the main characteristics we can use to tell them apart? Madrones can grow burls after fire like manzanita and have similar cinnamon colored bark that peels and bright green leaves. Madrones are usually a lot bigger than manzanita and have much bigger leaves. Maybe talk about how Madrones twist to reach the sun (you can also ask the students first why they think it grows that way, someone will probably have an answer. Madrones have been used for stomach aches, leaves and bark used topically for wounds, berries for food, wood for structures, and charcoal for gunpowder. These trees can also be seen in redwood forests whereas manzanita is more rare to see in that plant community.

Manzanita: *Tea Plant!*

Same family as madrones but shrubs. Bark also medicinal. Berries traditionally used to make cider drink that tastes a little like apple juice (Manzanita means little apple).

Coyote Bush (*Baccharis pilularis*):

Common chaparral plant. Some questions to ask students: “which plant community would you expect this plant to grow in? What are some adaptations it has (ex: small waxy leaves)? This bush is native to the area and there are some issues with it encroaching on meadows. Why do you think this has become a problem? What is different now that is causing this?” (Haisman-Holmes, 2017). For your own knowledge, one of the big problems is that regular fire keeps meadows intact but lack of fire allows the coyote bush to take over these environments.

Yerba Santa (*Eriodictyon californicum*): *Tea plant! (bitter!)*

“Point out that this is a classic chaparral plant. Have everyone feel a leaf and how thick and leathery it is. This type of adaptation is for this environment to protect the plant from losing too much water through its leaves. Encourage everyone to take a little nibble out of a leaf to taste-- notice how it tastes kind of minty and coats your teeth with a funny residue. This plant is very medicinal and is used for coughs, lung issues, and colds. You can make tea from the leaves.” (Haisman-Holmes, 2017)

Knobcone Pine (*Pinus attenuata*):

“Point to the cones and how they are symmetrical from each other on the branches and are hugging the branches tightly. They look like handles or knobs attached to the trees. Explain how the cones need extreme heat to open their sap-sealed cones and that fire is the main source for that. Does it look like this tree has been recently burned? No? Then how do you think it could

reproduce? We will talk about fire again later, so let this question linger unanswered.”
(Haisman-Holmes, 2017)

Hedge Nettle: (*Stachys bullata*)*Tea Plant!*

Before introducing this plant, you can ask students if they have seen it before since it grows all around campus. Have the students feel the leaves and smell them. Then ask them if it reminds them of anything. Some students may say mint. This plant is in the mint (Lamiaceae) family and is a traditional medicinal herb. It is known for treating anxiety, stomach aches, colds, and many other illnesses: an all around healing herb. It makes really sweet and yummy tea in my opinion.

Poison Oak!:(*Toxicodendron diversilobum*)

Point out whenever you see so students know to avoid it. If you want you can have students point out things that stand out about the plant or ways to identify it (leaves of 3, shiny, sometimes red, can grow in vines, still poisonous even if no leaves).

Yerba Buena (*Satureja douglasii*): *Tea Plant!*

If you spot this plant, point it out so students can see before they taste the tea. Also a medicinal plant in the mint (Lamiaceae) family. Yerba buena is a traditional medicinal plant in the area and has been used to treat coughs, lung issues and colds. It usually grows in mats on forest floors as an understory species.

Steal the Bacon:

Duration: 5 minutes

Play steal the bacon game to identify what plants we just learned about (“Identification game” from *Sharing Nature with Children*) “Form two equal teams and line them up facing each other, 30 feet apart. Put the plant specimens in a row on the ground between the two teams. The team counts off separately, so that each player has a number, and on each team there are players numbered one, two, etc. When the teams are ready, call out the name of a tree or bush represented by one of the specimens lying between the teams, then call out a number--they have to run up and grab the right specimen of what you called”

Tea Time

Duration: 20 minutes

Regroup into one big group, go to clearing Ryan knows about and have everyone sit and serve yerba buena tea. Read “Sky Woman” story from *Braiding Sweetgrass*, which is the first chapter of the book. Possibly have brief discussion about our relationship to plants--talk with a partner or small group perhaps and then maybe bring it together. This could also be the walk and talk as we walk back on the dirt road. Walk back and depending on time, break at top of north remote--introduce journal topic and reminders for next week.

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