

Foragers find bounty of edibles in urban food deserts

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On the Berkeley campus, wild edibles include elderberries, California buckeyes and watercress. Credit: Hulda Nelson

With the gusto of wine enthusiasts in a tasting room, UC Berkeley professors Philip Stark and Tom Carlson eye, sniff and sample their selections, pronouncing them "robust," "lovely," "voluptuous"—and even "just beyond words." The undergraduate students with them flock close, curious.

The group is far from a trendy winery or upscale farmer's market. Instead, gathered at the forlorn corner of Sycamore Avenue and South 45th St. in Richmond, they're in the heart of a food desert, an area

without easy access to fresh, healthy and affordable food. Yet, in this low-income neighborhood, with more liquor and fast-food shops than grocery stores, there's a bounty of goodness thriving in some unlikely places—a parched lawn, sidewalk cracks, along a chain link fence.

And from the looks of it, that bounty is composed almost entirely of ... weeds.

"Yes, these are weeds," acknowledges Carlson, an ethnobotanist and [integrative biology](#) professor, happily munching on a low-lying edible called cat's ear. "But many of these were brought to America long ago by immigrants from Europe and Asia who used them for foods and medicines. There are high rates of obesity and Type 2 diabetes in these food deserts, and study after study shows the benefits of eating more [leafy greens](#). These are available and nutritious and free."

This fall, Stark and Carlson are launching a new interdisciplinary project that's bringing them to three East Bay food deserts to forage for wild edibles—dandelions, blackberries, oxalis, plantago, nasturtiums, mallow and more—and to document their availability. It's being funded by a seed grant from the campus's 2-year-old Berkeley Food Institute, headquarters for nearly 100 faculty and staff members on a mission to change the nation's food systems to "promote diversity, justice, resilience and health."

"The miracle is that even during a record drought, there is a lot of food here," says Stark, holding up another urban discovery—a soft, ripe, prickly pear cactus pod thriving on a nondescript curbside. "There is food growing where food is needed."

Foraging and logging

"Reaping Without Sowing: Urban Foraging and Berkeley Open Food

Source" is what the professors hope will be a multi-phase, ongoing project to not only study and document the prevalence, nutritional value and possible toxicity of wild edibles in urban food deserts, but to uncover the barriers to people's widespread use of these foods. They then plan to create educational tools to reduce those obstacles.

On four Thursdays this fall, Carlson, Stark and a small group of student volunteers from Carlson's medical ethnobotany course who are trained in medical and food plant identification roam for hours through three-square-block areas of food deserts in Richmond, Oakland or Berkeley. Using their cell phones and a mobile app called iNaturalist, created by UC Berkeley's School of Information, they log project data that includes each species of plant they find, its location, photos, and how many serving sizes are available per address.

Back at the corner of Sycamore and South 45th, for example, the group discovers nearly 100 servings of plantago – a medicinal and nutritious plant from Europe that's high in vitamins A, C and K. "This is just outrageous!" exclaims Carlson.

"I used to walk down the street before today, and grass would be grass," says Erika Cagampan, a third-year student in integrative biology and public health. "Now I see so many other things." About a dozen students volunteer for the effort; more will be joining the group later this semester and in the spring.

Soil samples from some 25 foraging locations are being tested for contamination by metals including lead and cadmium. So far, says Stark, the University of Massachusetts Amherst soil lab "has not given us any red flags, and we expect to find that metal contamination isn't a problem as long as the food is washed."

In the spring, he adds, plant tissue samples also will be taken and tested

both for nutrition and for toxicity from metals, pesticides and other contaminants, "but early indications are that none of the species seems to be extracting toxins from the soil."

'Botanical rubbernecks'

Both Stark and Carlson are longtime foragers and self-described "botanical rubbernecks" whose project is a labor of love.

Stark, a professor of statistics and the department's chair, is a runner familiar with what blooms, and in what season, along the trail. "I first recognized miner's lettuce and took a bite from time to time. Then, I started taking home enough for a salad. Then, I tried dandelion. At some point," he says, "a penny dropped, and I challenged myself to find a new species of wild edible each week, and I did so on my walks to and from campus."

He says he has been "deeply moved" by Berkeley colleagues' projects "in which people are helping others to obtain safe drinking water or to improve wood-burning cook stoves. I'd wished for a long time to do something fundamental for public health and welfare. And now I can help feed people."

Carlson, a pediatrician whose young East Bay patients often struggle with poor health, began foraging in high school, collecting and eating wild edible greens, berries, hickory nuts, butternuts and black walnuts in the forests of Michigan. He continued exploring wild edible and medicinal plants as a student at the University of Michigan, and at the school's biological station, he says, "I would conduct research in the forests all day and not need to pack a lunch."

While conducting ethnobotanical research in rainforest communities in Asia, Africa and Latin America, Carlson has eaten many different wild

edible tropical rainforest plants. He is now doing ethnobotanical research with the Karuk and Yurok tribes in California on how wild, edible, native food plants from their forests can contribute to food security. But foraging in the urban domain, he says, "is something I hadn't done until Philip invited me to join him."

Overcoming the 'ick' factor

In urban food deserts, "people have diet-related disease not from lack of calories, but from eating too much of the wrong kinds of foods," says Carlson. "One of the deficiencies is a lack of fruits, vegetables, leafy greens and phytochemicals," which are naturally occurring chemical compounds in plants that can remedy some illnesses.

"When you eat high-fiber leafy greens, you get filled up," he adds. "The calories aren't high, but the nutrients are. This won't solve all their nutritional problems, but it will be part of the puzzle."

The challenge, says Stark, is that "we've divorced ourselves from gathering our food—we once were hunter-gatherers." The thought of foraging on a roadside, or in a park or front yard, he says, presents "the 'ick' factor, but that's a mindset that can be changed. Some of these edibles, like dandelion greens, show up in high-end farmer's markets for \$1.75 a bunch. Whether you buy organic produce in the store or forage for it, a thorough washing is all that's necessary."

As for the taste of many wild, nutrient-dense edibles, it's often bitter, but "still very approachable in flavor," says Stark. "We breed a lot of nutrients out of our foods; we like sweet, we like bland, we like iceberg and Romaine. But a salad should be fuzzy, unctuous. A salad should have variety, and I don't mean nuts and cranberries."

Next spring, the professors look forward to exploring, with help from

additional faculty members in disciplines ranging from child welfare to agriculture to public policy, topics such as why bitterness and unfamiliar "mouth feel" might stop people from foraging for and eating wild edibles, how socio-economic status affects food habits, and whether the enormous amount of biomass that farms discard instead might be saved as nutritious food.

"As educators," says Stark, "we ultimately want to help people improve their nutrition by giving them information about food that they don't have to plant or water; about food that already exists and is nutritious and free. Our culture thinks [food](#) comes out of factories and in plastic bags, but it comes out of the ground, and it's all around us."

Provided by University of California - Berkeley

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