

A Matter of Chemistry

How a former California high-school teacher came to brew craft beer in a remote Japanese mountain village

By [Annika Hipple](#) | January 6, 2025 | [Starting a New Career](#)

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In a scenic Japanese village, a former high school chemistry teacher from Los Angeles has found a new calling as a craft beer brewer. Ken Mukai, 55, was active in the L.A. homebrew scene but had never considered making it a full-time endeavor — certainly not abroad — until a friend in Japan planted the idea and even found the perfect location in Niyodogawa, a small town in the mountains of Kochi prefecture on the island of Shikoku toward the southern end of the Japanese archipelago.



Ken and Masako Mukai | Credit: Courtesy of Ken Mukai

A second-generation Japanese-American, Mukai spent two years teaching English in Japan after college and had visited often over the years. He knew that Niyodogawa had some of the cleanest, purest water in the world —

perfect for brewing. What had seemed like a crazy idea began to seem like an intriguing possibility.

When the local government offered a suitable location for a brewery free of charge, the offer was too tempting to refuse. In 2019, Mukai and his wife, Masako, a Japanese-born preschool teacher and former flight attendant, found themselves packing up their essential belongings and moving across the Pacific to start their new life.

Innovative Ingredients

They arrived in Niyodogawa in February 2019. While the COVID pandemic added some unanticipated challenges, local residents and organizations welcomed the couple and provided the necessary support that enabled Mukai Craft Brewing to begin operations in November 2020.

Since then, the Mukais have slowly but steadily built a business with an innovative lineup of beers that incorporate local ingredients such as blueberries, ginger, sancho pepper and green tea.

"I have less gray hair now than five years ago."

Their small brew pub, which overlooks the Niyodogawa River, typically has 12 beers on tap, including seven regulars that they also sell in bottles, and a selection of non-alcoholic options. In addition to being available at the brewery, the bottled

beers are distributed to restaurants and bars throughout Kochi prefecture, as well as to bottle shops in Kochi City and a few other locations. The brewery also distributes kegs throughout Japan.

"There's absolutely no regrets in this venture that we're making," says Mukai. "The stresses that used to be central to our lives are different kinds of stresses now. Now we worry about things like the weather. Obviously, we worry about making sure that our product, that everything is to standard, and that we make sales numbers, et cetera, but I have less gray hair now than five years ago."

Still, Mukai was determined to do more than just create tasty drinks. "As a teacher, I took my mission seriously, which is to raise the next generation, to make sure that our society makes progress," he says. "How do you go from supporting society to just making beer?"

After discovering that the population of Niyodogawa had been declining for years — falling from 8,919 in 1995 to 4,827 in 2020 — the Mukais set a goal of using their beer to attract more tourists and possibly even new residents.

One of their brews is named 17. "Why 17? Because if you take the population at the time and divide by the square kilometer area of the town, it turns out there are 17 people per square kilometer in this town. That's not much," says Mukai. "We named the beer 17 and set out as our mission to ultimately make a beer called 18." So far, the effort to attract new residents hasn't made much progress.

Villagers Pitch Ideas

"We're getting sort of hammered in that category," Mukai admits, "but that doesn't mean that we're losing hope. We've just realized this is going to be a bigger battle than we originally planned for."

While 18 residents per square kilometer may be unrealistic in the near future, the Mukais hope that they can at least contribute to slowing the town's decline and eventually turn the negative population trend around.

"We're always experimenting with new recipes."

Local residents have embraced the Mukais with enthusiasm. "We're always experimenting with new recipes," Mukai says. Villagers often come by and offer ingredients — everything from blueberries to kuromoji, a local tree that grows in

the mountains around Niyodogawa.

One older local man kept telling him, "Mukai-san, you've got to make a beer with kuromoji." Mukai had no idea what the man was talking about until he came by one day with a truckload of kuromoji he had harvested, saying, "Here, make a kuromoji beer."

"It took about six tries," Mukai recalls, "but ultimately we were really happy, and we now have that as one of the regulars."

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Mukai has also put his chemistry knowledge to good use in other ways. Because Niyodogawa lacks a sewage treatment plant, he developed his own effective wastewater treatment method using ozone and air — a detailed yet relatively simple system that has attracted interest from other brewers.

The Mukais didn't realize they would need a wastewater treatment system until after they had already moved to Japan and committed to their brewery. They also realized that the cost of investing in a professionally installed system was way out of their budget.

Improvisation Required

"We don't think about stuff that we flush down the toilet in L.A., because there's the sewage system treatment plant," Mukai notes. "There isn't a treatment plant out here, and the Niyodogawa River is consistently ranked as Japan's clearest river. I'm making 600 liters of beer at a time. That's a couple thousand liters of wastewater that ultimately has to go back to the river."



Mukai Craft Brewing in Japan | Credit: Courtesy of Ken Mukai

Seeking a solution that wouldn't break the bank, Mukai decided to do some research and figure out how to build his own wastewater treatment system.

"I'm a chemistry teacher, and I knew a little bit about physics, biology, et cetera, and I had a couple of friends who were professionals in dealing with this," he says. He consulted with a professor he knew who specialized in water and began conducting experiments on wastewater he obtained from another brewery. Eventually he managed to design a system that successfully treats wastewater using only ozone, air and gravity.

Chemistry Comes in Handy

"A lot of people have taken interest," Mukai says. "Other breweries come here, and they study the system. It's not really a complicated system, but it is very detailed." Instead of the \$150,000 a professionally installed treatment system would have cost, Mukai's do-it-yourself method ended up costing him only about \$1,500 to build. "It took a year and a heck of a lot of research, and we got a lot of help," he says. "It's all DIY, but it was 1% of the cost."

Though friends encouraged him to patent his method, Mukai was too busy preparing to open his brewery. But that's not the only reason he hasn't bothered, even though a patent would give him more of a financial return on his ingenuity.

"I'm sort of happy to know that other people can take this technology and then make sure their rivers and wherever they live stay clean," he says. Once a teacher, always a teacher.

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