

Crustacean Crazy

*Live saltwater shrimp in Montana?
They're ready for your plate.*

BY KYLIE MOHR

PHOTOGRAPHY BY LIDO VIZZUTTI

A Pacific saltwater shrimp is seen in an aquarium displayed in the office of Mission Valley Shrimp near Charlo.

STEPPING INTO JIM VAUGHAN'S MISSION VALLEY "shrimp barn" is a shock to the system. When they open the door visitors are greeted with a blast of unfamiliar heat and humidity.

All stages of a saltwater shrimp's life are found in the six tanks inside these four walls—from post-larval shrimp the size of an eyelash to full-grown and ready to eat. Vaughan grabs a net, bigger than you'd ever need to land a trout, and peels the cover off one of the tanks. He sweeps through the brackish water, grabbing dozens of shrimp, and heaves his haul over the edge of the tank. The crustaceans jump like popping popcorn, their feathery legs squirming as they flop around.

"Those are some nice shrimp," Vaughan says.

Tiny Charlo, in the heart of the Flathead Indian

Reservation where bison roam on a national range and the closest saltwater is nearly 500 miles away, may be the last place you'd expect to see a roadside sign advertising live seafood. But geographic constraints haven't stopped Vaughan, who grew up around sheep and cattle, from cultivating shrimp in Walmart swimming pools and selling them on ice for peak freshness. His business is about a year old.

As unlikely as northwestern Montana seems for saline aquaculture, Vaughan isn't the only one farming shrimp in the state. A renowned shrimp scientist in Polson, Rod McNeil, and Silicon Valley investors interested in cheap land have come together a few score miles to the west, in Noxon, where a massive AquaPrawnics facility is under way with big plans. Shrimp, the vast majority of





which are imported, are the most popular seafood in the nation. Plus, their protein payoff—the amount of food they produce compared to what they consume—is astronomically higher than traditional sources such as beef, pork or poultry.

A family affair

VAUGHAN GOT HIS FIRST STARTER SHRIMP FROM ANOTHER unlikely spot: his brother's shrimp farm in Potlatch, Idaho.

He's spent the better part of a year getting his production schedule established and learning how to segregate the different phases of shrimp to get them to their target weight of about 20 to the pound. He's tinkering with factors such as feed and water circulation. Shrimp can be fickle, and there are lots of variables, like oxygenation, temperature, salinity and acidity.

Both financing and advice can be hard to find.

"You don't go to a bank in Montana and say you're starting a shrimp farm," Vaughan said. Aquaculture

advice is also scarce. "If I was raising cattle, I could ask my 80-year-old grandpa, my neighbors or just go to the bar."

Once his business took off—starting with an experimental tank to hone the ideal environment—he began supplying baby shrimp for his brother as well as food for the dinner table.

"It's an experiment," he said. "There's always going to be learning." Friends, mostly traditional farmers, were skeptical at first. Vaughan has a varied background—working as a Canon microfilm technician and a water pump guy over the years—but no experience in aquaculture.

"They all said I was going to lose my ass," he said.

Vaughan lost about 45 percent of his shrimp in the summer of 2019 by feeding them too much, too quickly. He jumped in the tank in swimming trunks and cleaned the dead shrimp out by net in order to save the rest.

Vaughan was able to rebound, though, and built his current facility in October of 2019. The barn is heated



Opposite: Jim Vaughan stands among his large saltwater tanks — swimming pools he has fitted to raise shrimp. Above left: Vaughan holds a handful of the pellets he uses to feed the shrimp. Above right: Pacific saltwater shrimp raised at the facility. Vaughan mimics tropical conditions in the tanks to give the shrimp an environment where they can grow.

to 86 degrees Fahrenheit and kept at between 60 and 70 percent humidity, thanks to humidifiers. Tank water is about 84 to 85 degrees. A wall hanging of an alluring tropical island scene, complete with palm trees and a sandy beach, hangs on the wall.

“You’re not out there changing tractor tires,” Vaughan said of his workdays. “When it’s zero degrees it’s awful nice in here. My wife likes to sit in [the barn] instead of sit in a hot tub.”

Starting a shrimp operation was cheaper for Vaughan than starting a cattle operation. They need less machinery, feed and water. He estimates he uses about 45 to 50 gallons of water a week, with some lost due to evaporation.

“It’s the sustainability that really gets me,” Vaughan said. “That’s what two cows drink in a day.”

He likes not having a middleman and being able to sell directly to consumers, many of whom see the roadside sign and drop in out of curiosity. Facebook is Vaughan’s primary vehicle for advertising. He’ll sell 30 pounds in a weekend after spreading the word that way. Mature shrimp are available sporadically at \$20 a pound. At Vaughan’s target weight, that’s about 21 or 22 shrimp a pound. (Putting them on ice means the tasty creatures quickly stop flopping around.)

Although Vaughan doesn’t eat his own crop much, his favorite treat is scampi with butter, garlic salt and parsley, paired with prime rib.

“Ten years ago,” he said, “I thought the only way shrimp came was in a basket with fries.”

Groundbreaking facility underway

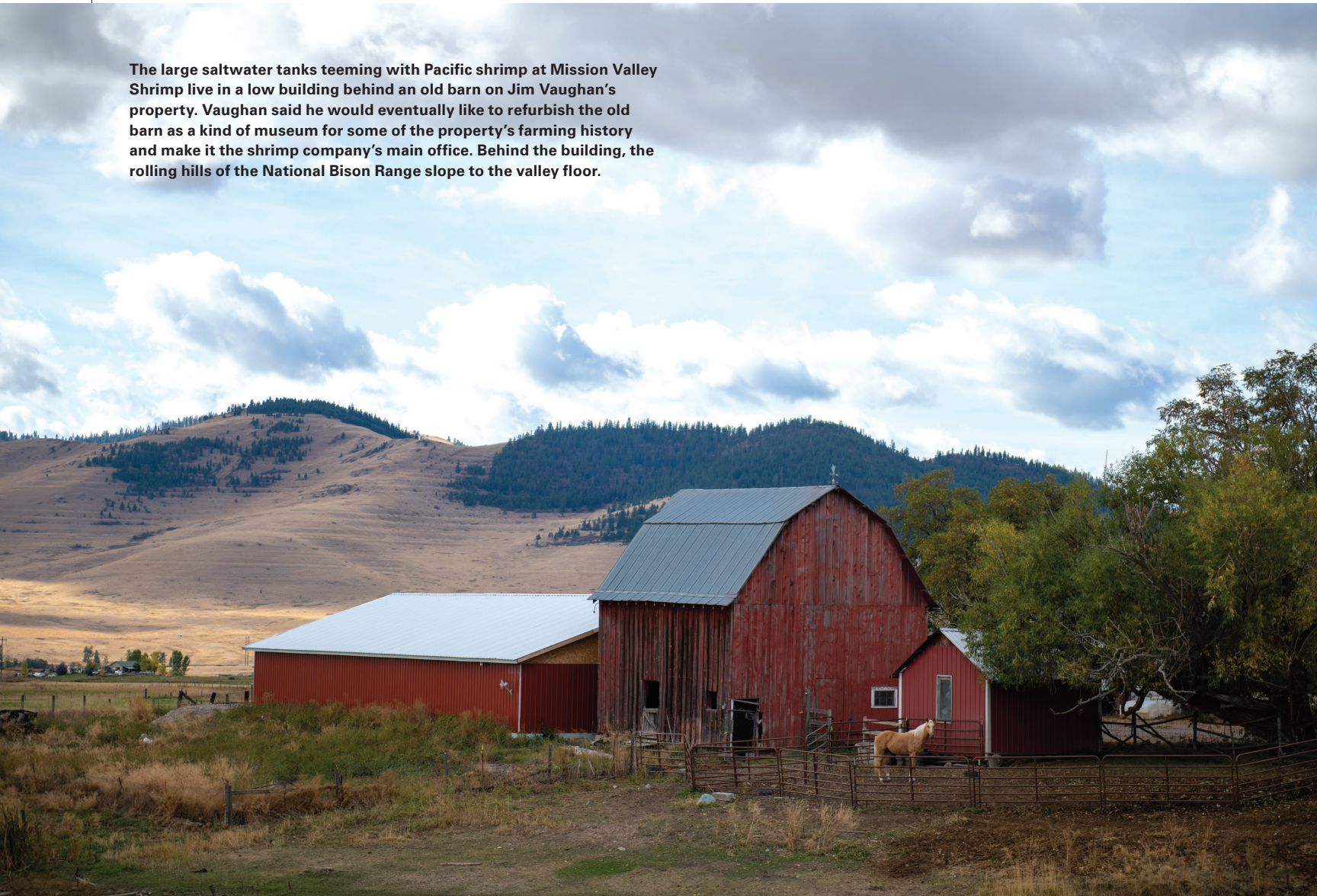
SPURRED BY THE COMPARATIVELY CHEAP COST OF PROPERTY IN rural Montana and the proximity of aquatic ecologist Rod McNeil, Noxon is now home to the latest Montana shrimp startup. AquaPrawnics bought a 23,000-square-foot facility there that used to be a custom furniture shop but sat vacant for over a decade.

“The United States is the biggest import market of shrimp in the world,” said CEO John Novitsky. “And so, if you’re going to try to make a business, instead of trying to do a little niche thing, you might as well start where the sweet spot is.”

Novitsky has big plans for the company. The Noxon site will be just one of many across the Pacific Northwest. AquaPrawnics is competing against Asian markets with cheaper labor and questionable environmental practices but is betting on consumers being interested in fresh, local shrimp raised with organic feed and no antibiotics or chemicals.

Shrimp are already growing in the Montana facility’s tanks, described as a cascade system with a stacked set of raceways. It’ll be about a year before it’s fully operational. The site will eventually employ a dozen people, act as a

The large saltwater tanks teeming with Pacific shrimp at Mission Valley Shrimp live in a low building behind an old barn on Jim Vaughan's property. Vaughan said he would eventually like to refurbish the old barn as a kind of museum for some of the property's farming history and make it the shrimp company's main office. Behind the building, the rolling hills of the National Bison Range slope to the valley floor.



“We’re basically trying to mimic trophic system ecology where we have multiple levels of ecosystems functioning in a tank. The shrimp just happen to be there.”

training facility, and contain a breeding lab. Its isolation and distance from the sea means the likelihood of viral transmissions is low, plus, cheap hydropower and a deep onsite well make other logistics easier.

McNeil is overseeing the operation. The shrimp farm consultant has had an illustrious and varied career that includes 19 trips to China and working for the Flathead Lake Biological Station, the Montana Department of

Environmental Quality and OceanBoy shrimp farms in Florida. McNeil is known for inventing mats made of synthetic seagrass to provide better quality habitat, a concept that first took off in Latin America. He’s seen it all and thinks shrimp farming can be improved.

“The thing that impressed me the most was the relative inefficiency of shrimp production in most facilities, and the level of damage to the environment caused by

discharge from the shrimp ponds when they're harvested," McNeil said.

McNeil is improving the system by growing a bacterial algal community in the tanks with the shrimp. The tank water is filtered by the bacteria, which eats shrimp waste. It's called a "bioflac" system, and Mission Valley Shrimp uses the same approach.

"We're basically trying to mimic trophic system ecology where we have multiple levels of ecosystems functioning in a tank," he said. "The shrimp just happen to be there. They're along for the ride, so to speak."

The waste that remains is turned into soil amendments to improve plant growth.

With hurricanes decimating processing facilities in the Gulf Coast, COVID-19 throwing shrimp boat and labor logistics out of whack around the world, and shrimp viruses ripping through farms in Southeast Asia, AquaPrawnics' CEO Novitsky estimates there will be half as many shrimp on the market this year. That's an opportunity for investors, including angel investors who are CEOs in Silicon Valley. Novitsky has also worked

in Silicon Valley for decades, first at Intel and then at several tech startups. His connections there are interested in this new venture.

"We're bringing in a capability for these kinds of shrimp farms that doesn't exist in the world right now," he said.

McNeil sees the potential for inland shrimp farms to boom. There's promise, he said, in areas with deep saline groundwater as well as warmer parts of the country with lower heating costs.

"Areas we consider deserts now may potentially be great sites for growing shrimp," he said. "I think there is definitely a large potential for inland shrimp farming in the United States. I think it's inevitable that this will become a major business."

AquaPrawnics plans to sell starter shrimp to Vaughan down the road, saving him the trip to the Missoula airport to get post-larval babies from Florida. From a mom-and-pop operation in the shadow of the Mission Mountains to a larger-scale facility tucked away alongside the Clark Fork River, the secret's out in Montana. 🍷

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