Catalina Sea Ranch's Cruver 'chomping at the bit' to expand mussel farm on federal waters

By Jason Huffman Jan. 28, 2019 17:54 GMT

Phil Cruver, the founder and CEO of Catalina Sea Ranch, in San Pedro, California. Photograph by Jason Huffman.

SAN PEDRO, California, US -- Don't bother telling Phil Cruver, founder of the Catalina Sea Ranch (CSR), that he needs to be patient.

Nearly seven years after taking the initial steps necessary to build his 100-acre Mediterranean mussel (*Mytilus Galloprovincialis*) farm some six miles off the coast of Los Angeles, California -- the only commercial aquaculture facility operating in US federal waters -- he is ready to make it 30 times larger and further backup his trademarked claim of operating the "Aquaculture Capital of America".

Now that the federal government shutdown is at least temporarily ended, CSR staff are working the telephones and will submit their application any day for a building permit to the US Army Corps of Engineers (USACE) to expand to 3,000 acres and add at least three shellfish species: 900 acres more of mussels, 1,000 acres of giant kelp and 1,000 acres of other cage-culture shellfish, including oysters, rock scallops and abalone.

Cruver's been ready to submit his paperwork to USACE since before the congressional election, in November, in fact, he told *Undercurrent News* on Friday, but he was waiting for an anticipated recommendation letter from Wilbur Ross, secretary of the US Commerce Department. Ross has previously expressed his support for aquaculture in federal waters as a means of reducing the US' nearly $16 billion seafood trade deficit and has not expressed any reticence about the project.

Mussels being brought up at Catalina Sea Ranch, in federal waters off the coast of Los Angeles, California. Credit: Catalina Sea Ranch

The National Oceanic and Atmospheric Administration (NOAA), a division of Commerce, has publicly set a goal of growing US marine aquaculture by 50% by 2020.

Also, although USACE is part of the Department of Defense, which has been 100% funded throughout the recent federal government shutdown, Cruver said the staff he needed to work with at the agency have not been available.

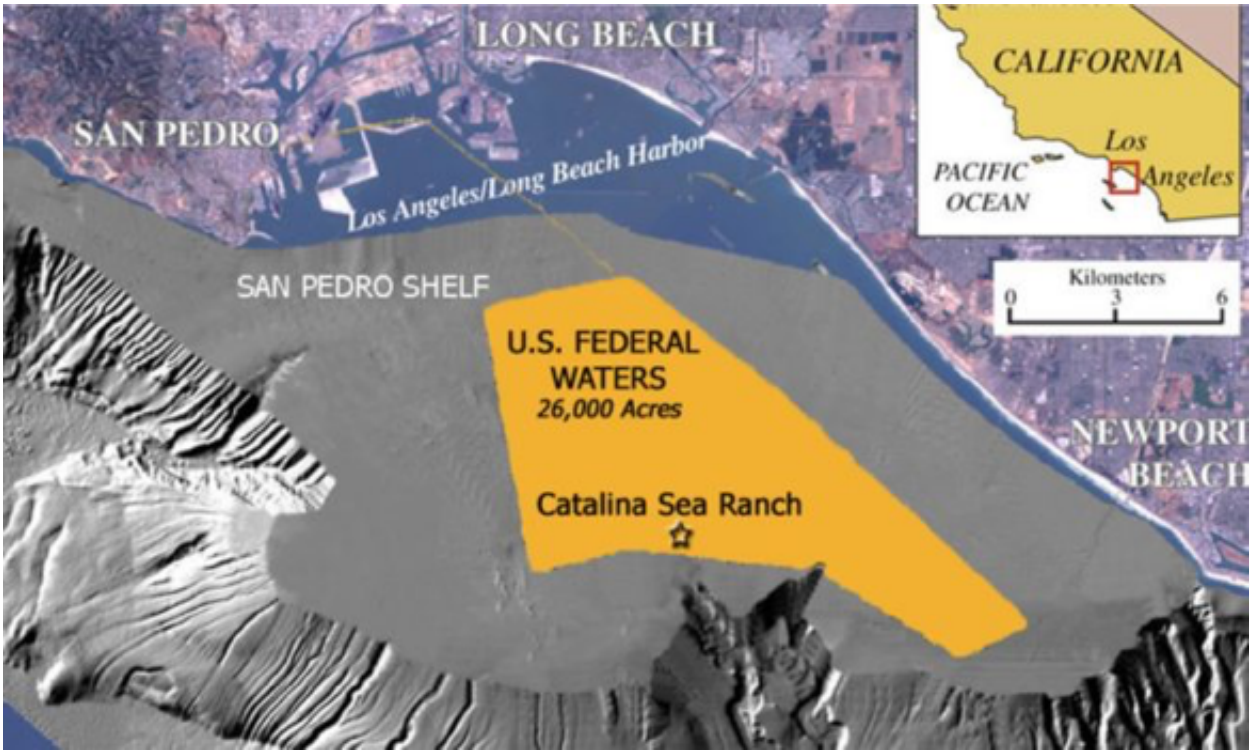
Regardless, CSR's leader is prepared to go forward now with or without a letter from Ross, noting the support he has from numerous other individuals and groups.

"I've got about 30 letters of support, including from the mayors of Los Angeles and Long Beach, all kinds of scientists and the World Wildlife Fund," he said.

There's no telling how long USACE will take to review CSR's application, but it must provide the public at least a 30-day comment period, Cruver explained. After that period, USACE must consult with NOAA regarding essential fish habitat and endangered species.

Then, also as part of the process, the 12-member California Coastal Commission (CCC) will have six months to review CSR's permit to make sure it's consistent with the California Coastal Zone Act, a more than 40-year-old law intended to preserve the environment of the state's coastline.

The CCC, in 2014, gave CSR unanimous approval for its initial plans, so Cruver is optimistic for another positive outcome. But if the panel gets hung up this time over CSR's expansion plans, the next step is to go back to Commerce and secretary Ross, which have the final say.



The San Pedro shelf where Catalina Sea Ranch hopes to expand soon. Graphic from the company's website.

Cruver: 'I'm not frustrated, I'm pissed off'

The Catalina Sea Ranch has had its share of regulatory barriers to overcome in its first few years of existence.

After spending $1.5 million on the infrastructure necessary to start its farming operation, including a collection of large screw-bottom anchor poles, ropes and flotation devices bought and transported from New Zealand, and landing its first batch of mussels in July 2017, the company was hampered by a lack of qualified laboratories available to satisfy regulatory biotoxin test requirements and stopped harvesting.

It wasn't until May 2018, after Washington state got its first qualified lab, that CSR was able to resume production and begin bringing its first mussels to market. The delay cost his small company more than $100,000, he said.

Long anchor poles from New Zealand, used to support mussel ropes, sit on Catalina Sea Ranch's warehouse floor in San Pedro, California. Photograph by Jason Huffman.

"I'm not frustrated, I'm pissed off," Cruver told *Undercurrent* last week about the continuous barriers he's confronted just a few hours before the end of the shutdown was announced. "This is hurting us economically, and I'm absolutely chomping at the bit to get things underway."

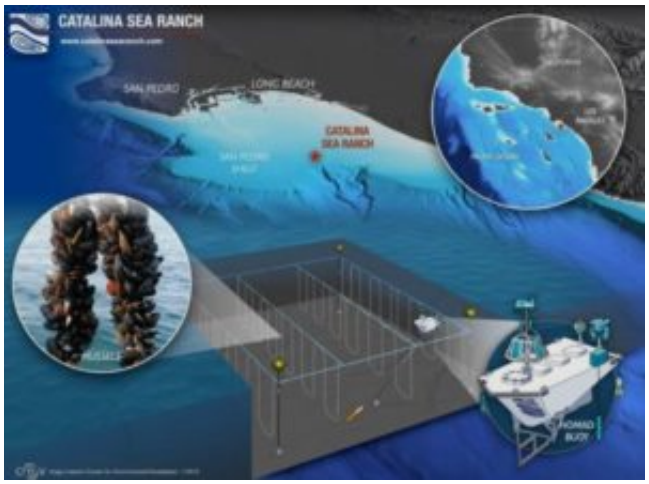
Since CSR's harvest re-start in May, it has ramped up production to a pace of 1,100 to 1,500 lbs of mussels per day, two days per week. The mussels are processed on CSR's 72-foot-long World War II-era military grade landing vessel, the Enterprise, but Cruver expects to shortly move processing to shore where he believes his crew and the new machinery he plans to buy will handle 20,000 lbs per day.

CSR will harvest and sell at least 300,000 lbs of mussels in 2019, Cruver conservatively predicted. But, even before expansion, it has the capacity to harvest and sell 2m lbs of mussels per year, he estimated.

The number grows significantly if the company is allowed to add another 900 acres. CSR would be able to harvest as much as 20m lbs (9,072 metric tons) of mussels annually, he said.

Though a batch of bad weather and high waves off the coast of normally sunny southern California canceled a boat tour for *Undercurrent* of CSR's ranch on the ocean, diagrams in its San Pedro office illustrate how it works.

Forty 600-foot long "backbone" nylon ropes (1.25 inches thick) tie to long metal anchor poles that are bored into the bottom and are suspended about 20 feet into the water. Hanging 30-50 feet below the backbone are the "grow-out" ropes that hold the mussels, roughly 5 lbs on every foot of rope. Flotation devices are the only things visible above the water.



A graphic illustrates how Catalina Sea Ranch grows its mussels off the coast of Los Angeles, California.

Phil Cruver said his expansion shouldn't cost as much per acre as his initial efforts, as new equipment can now be found much less expensively in India and California. All of the original equipment was purchased and shipped from New Zealand.

Canada, Chile and New Zealand dominate US import market

Mussels are one of the most inexpensive of seafood products, and CSR is currently getting a wholesale price of only about $2.15 per pound of mussels, but Cruver believes his mussels – due to their freshness and traceability on the local market and their 18% to 38% meat to shell ratio – soon could be commanding as much as $3 per lb.

CSR, on a weekly basis for the past eight months, has purchased samples of the rival producers mussels and reviewed their count per pound and meat per shell. Mussels from Salt Spring Island, a company named for where it harvests in British Columbia, Canada, have been getting a premium $3.80 per pound, he observed.

Beneath the cavernous 60,000 square foot warehouse at Berth 58 that CSR uses as its headquarters and serves as shelter from the rain, Cruver is a continuous source of optimism.

Assuming CSR's expansion is allowed to go forward, it's able to step up production to its capacity 9,072t per year and it can charge as much as $3 per lb, the company could be generating annual sales of $60m, he told *Undercurrent*.

That would quickly dominate other US mussel producers. Based on the latest available harvest statistics, published by NOAA in its "Fisheries of the United States 2017" report, US mussel harvesters landed just 1,603t worth $7.2m two years ago.

But even with the landings CSR hopes to add in the future, US domestic production would still trail its import market.

The US imported 35,882t of mussels worth $121.8m in 2017, with three countries dominating the space: Canada (13,608t worth $38.4m), Chile (10,925t worth $26.3m) and New Zealand (10,441t worth $53,047). Through the first 10 months of 2018, the US imported a combined 25,337t of mussels worth $82.3m.

The Enterprise, a converted 72 foot -long World War II-era military grade landing vessel, serves as "the workhorse" of the Catalina Sea Ranch fleet, and currently handles processing on deck. Photograph by Jason Huffman.

Mussel production is growing worldwide, the French seafood marketing firm Via Aqua reported in a presentation given in September, using statistics provided by the United Nation's Food and Agriculture Organization. More than 2m tons of mussels – six major species -- were produced in 2016, nearly double the volume harvested in 1987. China (879,000t), Chile (302,000t), Spain (216,000t), Thailand (115,000t) and New Zealand (94,000t) were the five largest producers.

Prices for mussels are climbing globally, too, Via Aqua noted in its presentation, from an average wholesale price of $2.20 per kilogram in 2006 to $2.50/kg in 2016.

Abalone, scallops, oysters and seaweed, oh my

But CSR isn't satisfied to just grow and sell more mussels.

The abalone it plans to grow could be, by contrast, a premium, high dollar-shellfish product. The large sea snails are in relatively short supply in California, where harvesting them from the wild is illegal and comes with steep fines.

CSR plans to initially grow red abalone (*Haliotis rufescens*), one of the seven species available, and would eventually like to grow green abalone, as they are

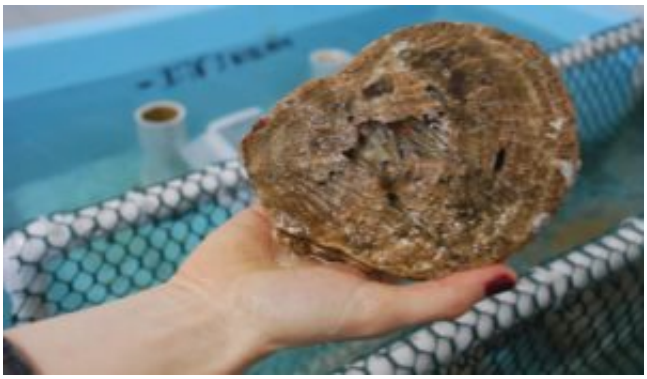
more tolerant to warmer waters, Cruver said.

For a sense of the price that CSR could charge, consider that Giovanni's Fish Market & Galley, in Morro Bay, California, is selling packs of "California Red" abalone steaks online for $125/lb.

Red abalone. Picture from Catalina Sea Ranch website.

Another mollusk that CSR hopes to add to its farming operation is the purple-hinge rock scallop (*Crassadoma gigantea*), a creature that lives all along the West Coast of North America from Canada's British Columbia to Mexico's Baja California. They are known as hardy creatures, living to 25 years in depths of up to 150 feet up, and growing to sizes of 10 inches in diameter. And they are reported to have a great taste.

Joth Davis, a senior scientist at the Puget Sound Restoration Fund, in Bainbridge Island, Washington, has been working since at least 2016 to spawn and develop rock scallops that can be sold commercially. He calls the scallop's abductor muscle "quintessentially one of the finest scallops in the world".



Rock scallop in Catalina Sea Ranch's hatchery. Photograph by Jason Huffman.

Rock scallops are prolific in the area where CSR has its farm and can be found on the legs of nearby oil rigs, where the company has retrieved samples, but they are hard to find on the market.

Also, three weeks ago the company laid its first batch of giant kelp (*Macrocystis pyrifera*) on 100 feet of rope at its 100-acre ranch, an experimental project that was at least partly supported by a $450,000 grant from the US Department of Energy. Primary Ocean Producers, another San Pedro company, has partnered with Cruver to commercialize the crop, looking at the possibility of converting it into fuel and fertilizer among other options.

Additionally, CRS is getting into the Pacific oyster (*Crassostrea gigas*) business. It

has acquired 20,000 triploids from Taylor Shellfish Farms, in Shelton, Washington, which it now has growing in cages, Cruver told *Undercurrent*.

Triploid technology, growing bivalves with three sets of chromosomes instead of the usual two, makes each creature sterile and allows it to use all of its energy to grow fat rather than focusing on reproduction. It's commonplace in the oyster industry but hasn't been tried yet on mussels; something CSR will do, Cruver said.

Catalina Sea Ranch's laboratory where it is cultivating algae for feeding to mollusk broodstock. Photograph by Jason Huffman.

CSR will also be using a $100,000 grant it got from the US Department of Agriculture (USDA) to apply cryopreservation, freezing mussel, oyster and scallop larvae so that it can be thawed and used on demand, spreading out the growth cycle of the various creatures to allow the company to spread out and better manage its harvests. Early trials of the technology on mussels have maintained a strong 71% survival rate, Cruver reported.

Ultimately, CSR hopes to use its multiple technological solutions to boost its mollusk production by 20% each year.

To further develop and provide genomic, genetic and synthetic biological solutions to its expanding shellfish operation, CSR has spun off another

company called Syntheseas and is partnering with genetic scientist Tariq Warsi, a top scientist at Amgen, a Thousand Oaks, California, biopharmaceutical company. CSR will have right of first refusal on any new technology developed by the new enterprise, Cruver said.

'Regenerative is a magic word with impact investors'

While Cruver said CSR intends to pay for its expansion from future cashflow, CSR is hoping to raise another $4m in investment capital over the next two months, Cruver told *Undercurrent*. It initiated a call for another $5m in private placement in November, but already has attracted $1m toward its goal.

The company collected $6m between 2012 and 2018 through six rounds of capital-raising efforts.

Investors are all high net worth individuals who are "accredited, passive and mission-driven," Cruver told *Undercurrent*. They are generally looking for investments that can make a difference in society, which Cruver is able to promote.

The San Pedro shelf, where CSR is looking to expand to 3,000 acres, has 26,000 acres of fertile aquaculture space available. The waters are at a consistent depth of 150 feet and with an extremely flat bottom, but it borders a 3,000-foot cliff from which comes a tremendous upwelling of nutrient-rich phytoplankton. Also, underneath CSR's farm is a strong two-knot current.

Also, the mollusks and microalgae that CSR wants to grow are the most sustainable and regenerative organisms in the ocean, he said.

"Regenerative is a magic word with impact investors," Cruver said.

Besides his investors, a large and powerful segment of the US seafood industry would like to see CSR succeed. A group of at least 15 companies, including the likes of Cargill, High Liner Foods and Taylor Shellfish Farms, formed a coalition in 2018 and have been pushing for Congress to pass a law that would ease the path for the creation of aquaculture facilities on federal waters.

The group has run into resistance from some wild fish harvesters and an effort to establish aquaculture in federal waters in the Gulf of Mexico was dealt a court defeat in September.

The NOMAD buoy transmits real-time data for remotely monitoring environmental, security and aquaculture husbandry functions at the Catalina Sea Ranch, but was temporarily in for repairs during Undercurrent's recent visit. Photograph by Jason Huffman.

Despite the pain his company has been through, Cruver said his efforts to grow mollusks in federal waters don't face the same opposition or regulatory barriers as those trying to grow finfish. Also, the body of water where he is attempting to expand his operation doesn't have the same environmental concerns as the Gulf of Mexico, he said.

Cooking mussels is 'insanely simple'

But should CSR succeed in securing the regulatory approvals needed to expand its mussel production, an even bigger challenge awaits: convincing more US consumers to eat them.

Americans ate only 0.15 lbs of mussels per capita in 2017, CSR reports based on seafood consumption data obtained from the National Fisheries Institute. That's nowhere near the 4.4 lbs of shrimp NFI reports Americans ate during the same year.

Consumers in other countries are much more prone to eat mussels. The 4.8m inhabitants of mussel-happy New Zealand, for example, eat an impossible 33 lbs of them per capita on an annual basis, almost a third of the amount of poultry eaten by Americans on an annual basis, Cruver noted.

But the CSR founder thinks the country to look at more closely is France, where the average annual consumption is 5 lbs per capita. French consumers, unlike Americans, are more likely to cook and eat mussels at home, rather than in restaurants, Via Aqua noted in its report.

Catalina Sea Ranch's mussels on display at the San Pedro Fish Market. Photograph by Jason

"Mussel consumption in France remains high and stable, thanks to the excellent image that consumers have

Huffman.

of mussels," the French marketing group said in its report. "Most French citizens are familiar with the product and not afraid to handle and cook a live animal, the study found."

But Cruver believes, with a strong marketing campaign, he can win over more Americans. In fact, if he can just convince the nearly 40m residents of California to eat an average of 5 lbs of mussels per year, at $2.50 per lb, he'll be sitting on top of at least a half-billion dollar market, he told *Undercurrent*.

Plus, there's the export market, he notes. China is increasingly becoming a valuable destination for seafood and US seafood products are incredibly popular there, as recently reported by *Undercurrent*.

The mussel dish that helped chef John Taube IV win the Ninth Annual Vitamix Challenge, in Brooklyn, New York, in November.

The US exported 882 metric tons of mussels worth $3.7m in 2017, China taking 177t worth $443,859, though Japan was a close second in the volume of mussels it took from the US (158t worth) and it was first in sales ($445,450).

Cruver has a few things working for him already, too, like some big wholesalers promoting his product. Paul DiCarlo, the founder and president of DiCarlo Seafood, in Wilmington, California, and Roger O'Brien, the CEO of Santa Monica Seafood, in Rancho Dominguez, California, are both investors at CSR. Both are also CSR's biggest buyers.

"It's a great product and an exciting project," Joe Scognamillo, VP of sales for DiCarlo, said about CSR mussels during a visit by *Undercurrent* to his company's office. "If the millions of people in California knew how easy it was to cook mussels, how good they are and how cheap they are, it would take off. It's a totally untapped market, but it's going to take some education."

In August, Cruver added a director of marketing and sales to his 20-person team, hiring Ross Martin, formerly an independent design and marketing consultant and a marketing and sales professional for Nextility, a startup in the solar panel space.

John Taube IV used mussels from Catalina Sea Ranch to win the the Ninth Annual Vitamix Challenge, in Brooklyn, New York, in November.

One of Martin's early strategies is to win over chefs. He has at least one champion in John Taube IV, the award-winning sous chef at the Nomad Hotel, in Los Angeles. Taube recently used CSR's mussels to win the Ninth Annual Vitamix Challenge, in Brooklyn, New York, mixing them with eggs and fennel and blending the shells of the mussels into a salty powder.

People are afraid to cook mussels, Taube told *Undercurrent*, but "it's insanely simple.

"You heat a pan up so its ripping hot and you add the mussels in, after you clean

the beards and scrub the shells. You just add the wine and cover it. It'll take literally less than a minute to cook them all. The shells pop open and they smell absolutely wonderful and fragrant. You cook out all of the watering and from there you just add them to a bowl and toast bread."

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