



# CRUVER'S CATALINA SEA RANCH

Catalina Sea Ranch repowered the 22-meter (72-foot) *Enterprise* with twin PowerTech 13.5L engines.



## Repowered *Enterprise* flexes its 'mussels' offshore with new John Deere engines

**P**hil Cruver would love nothing more than to whet your appetite for succulent farm-raised mussels.

The president and CEO of Catalina Sea Ranch speaks with excitement as he describes the economic and palatable benefits of plucking mussels from the sterling blue water off the coast of southern California and shipping these ocean gems to consumers quickly — fresh and alive.

He's so confident in the quality of fresh mussels over imported frozen ones that he hopes it will boost per capita consumption in the U.S., which is a mere 136 grams (1/3 pounds) a year. Eventually, he hopes to export the shellfish.

Catalina Sea Ranch has attracted investors and gleaned the support of the government as the first federally permitted and

operational offshore aquaculture facility in U.S. federal waters. Located 10 kilometers (6 miles) offshore, about 1.5 million pounds of mussels hang suspended to a series of sub-surface ropes plunging 46 meters (150 feet) deep. Currently the operation spans 40 hectares (100 acres), and Cruver plans to expand to 405 hectares (1,000 acres) and add other shellfish species, such as oysters, as well as seaweed crops.

### Tractor of the sea

Supporting the farming activities is the 22-meter (72-foot) *Enterprise*, a converted landing craft. It has ample deck space and is outfitted with specialized mussel processing and longline management equipment. However, when Cruver purchased the 64-year-old vessel, its original engines billowed "a cloud of smoke" and was in dire need of a repower.

Today, two new John Deere PowerTech™ 6135AFM85 Tier 3/Stage III A marine engines propel the *Enterprise*. Western Power Products and its John Deere marine dealer, S&W Diesel, supplied the new engines and contracted Marine Services to install them. The John Deere engines turn 61 by 61-centimeter (24 by 24-inch), 3-blade props through a Twin Disc transmission with a 2.04:1 gear ratio. The port engine's PTO also drives hydraulics that run the deck gear, winches, a grapple hook, and wash pumps.

Matt Grant is the vessel's captain. He and his two crew members operate the vessel and its deck gear. The vessel performs various farming duties such as adjusting anchors, floats, and restocking mussels. On days when it harvests mussels, the *Enterprise* is loaded down with as much as 9 metric tons (20,000 pounds) by day's end. Yet that's no problem for the 317-kW



Harvested mussels run through a grader machine that sorts them by size and debeards them.



Mussels are seeded onto 6-meter (20-foot) ropes, where they attach and grow to about 2.5 centimeters (1 inch) in diameter.

## THE MAKINGS OF A MIGHTY MUSSEL

Pepper-size mussels are purchased from a hatchery and seeded onto 6-meter (20-foot) rope where they attach and grow to about 2.5 centimeter (1 inch) in diameter. After three months, populations become so dense, the mussels are stripped and re-established on long grow-out lines.

After five to six months feasting on the upwelling phytoplankton, it's time for harvest. The *Enterprise* pulls up one of the grow lines where a grapple hook pulls the mussel-stocked rope from the water and feeds it through a machine that shears them from the rope and gently breaks large clumps of mussels apart and cleans them. Mussels are then lifted with a bucket elevator and fed to a grader machine that sorts them by size and debeards them. Finally, the mussels are inspected, sorted again, bagged, and placed on ice. Once harvest for the day is complete, the *Enterprise* returns to shore and offloads directly into distributors' refrigerated trucks to ensure the freshest mussels are available to the consumer.

President Phil Cruver enjoys the fresh catch, too. And what's his favorite special way to prepare his mighty mussels? "Steam the mussels in beer infused with pepperoni and a lot of garlic, then pour onto angel hair pasta," he says. "You can't beat it."



Crew members on the *Enterprise* pull a line of mussels from the water.

(425-hp) engines, says Grant. "I normally run 1400 to 1500 rpm, and we can cruise 8.5 to 9 knots. Even when we load the boat heavy, we achieve similar speeds with that weight."

Cruver says the fuel economy of the *Enterprise* dramatically improved after the repower. "The *Enterprise* goes out at least five days a week, and it runs an hour and 15 minutes each way. Cruising 8 to 10 knots, the fuel economy is just wonderful," he says. "These are efficient engines, and that's very important to our economics."

In addition to the *Enterprise*, the Catalina Sea Ranch also operates the 23-meter (75-foot) *Captain Jack*, a dedicated research vessel equipped with a 65-kWe John Deere-powered generator set that runs a hydraulic power unit that drives the steering, rudder, thrusters, windlass, and a knuckle-boom crane on the vessel.

The vessel transports scientists, oceanographers, and mobile monitoring vehicles to the ranch to conduct research and advance offshore aquaculture. Cruver hopes for governmental approval to expand Catalina Sea Ranch by documenting that it has no negative social or environmental impact.

Cruver says the expansion will also include more John Deere-powered vessels. "The engines just work extremely well, and we've had such good service, starting with Glenn Dobbs at Western Power Products, says Cruver. "We're going to need three more of these landing crafts, and we're going to insist that all of them have John Deere engines."

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