



Ventura marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*) grows in the marshes not far from shore. Once thought extinct, the milk-vetch has regained a foothold in the Coal Oil Point Reserve, run by the University of California-Santa Barbara. Photo by Benjamin Zack.

Hope Rising:

Milk-vetch, once considered extinct, coming back at reserve

By Tina Casagrand

SANTA BARBARA, Calif. — A wall of gray sky and sea covers the Pacific coast, broken only by pelicans gliding overhead and oil wells blinking offshore. Wind chills the air.

Despite cold temperatures on this day in August, Coal Oil Point Reserve teems with life. Surfers shout at each other; joggers kick up insects and sand. Terns, gulls, cormorants and other shorebirds create a whistling, jeering racket over the ocean's roar. And behind a set of dunes where all the noise dims, new sprouts of the Ventura marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*), once considered extinct, are re-establishing their place at the border of land and sea.

Previously undervalued, the reserve now shows how creative ecosystem management can enable impressive recoveries of plant and animal species of concern.

"When you see that 95 percent of California's wetlands are already gone, then you realize we need to do everything we can to protect them," says the reserve's director, Cristina Sandoval, of the Marine Science Institute at the University of California-Santa Barbara. Her smile lifts in pentagonal angles as she leads a tour of the 158-acre reserve. Sandoval, more than 300 animals, and nearly

200 plants call this place home.

It even houses a refugee. Biologists thought the Ventura marsh milk-vetch had been wiped out — until 1997, when 30 plants appeared above an oil dump about 40 miles away in Ventura County. Its seeds had stayed dormant there until favorable growing conditions returned. The seeds had sprouted in an area slated for development.

Sandoval loves the milk-vetch's story



Biologist Cristina Sandoval lives on the edge of the Coal Oil Point Reserve, where she works as the reserve director. Located next to the University of California-Santa Barbara campus, the reserve has strong community support but also has been a common spot for college parties. Photo by Benjamin Zack.

because the developer realized the plant's importance.

"He could have just yanked all the plants before it was declared 'existing' because an extinct plant has no protection, right?" she says. Scientists at the Coal Oil Point Reserve took on some milk-vetch seeds to research potential recovery habitats.

Thirteen plant species thought to be extinct in California have been rediscovered since 1994, according to the California Native Plant Society.

"There is one population," Sandoval says of the milk-vetch at the reserve. She raises a finger. Just one.

Nobody had studied the milk-vetch prior to extinction, and now botanists have a second chance. Of the recorded milk-vetch knowledge, scientists know that it thrives best in well-drained soils of coastal habitats near dunes or coastal shrub land.

"The plant is very picky," she says. "Too wet, it rots. Too dry, and it doesn't germinate long enough to survive."

Of the six sites planted at Coal Oil Point, three did well, and enough seeds are stored to guard against extinction. The purpose of experimental populations such as this is to assess potential habitats for recovery, and to

provide insurance against catastrophic loss, according to the website of the Center for Plant Conservation, a consortium of plant research and conservation organizations, headquartered in St. Louis.

Picking their way through dune swale with long strides, Sandoval and the restoration coordinator, Tara Longwell, look for the milk-vetch. Behind the dunes, the air feels warmer and sounds quieter, except for boots crunching on stiff, dark green saltgrass.

And there, through the grass, the milk-vetch's fuzzy silvery-teal leaves and yellow buds softly pop out. They feel weightless. The first plant Longwell finds stands about a hand-and-a-half high, with two stems outstretched in different directions as if shouting, "I'm back, world!"

Although it's an important plant, the

waves cough help onto the shore, the seaweed sits out in the sand. It supports an entire insect ecosystem that's absent from most public beaches.

"Watch this," Sandoval says, and tugs up orange-brown kelp bladders. The mat explodes: sand-colored dots create a frenzied cloud. These insects feed the birds.

This coastline was not always so alive. In 1969, suffering from an oil spill and partially tarnished by agriculture, it must have seemed doomed. In 1970, UC-Santa Barbara incorporated this section of land into the University of California Natural Reserve System. Students from the adjacent campus still used the beach for recreation, destroying the sensitive dunes.

"It was like a party where the police never came," Sandoval says. "Just labeling

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milk-vetch costs little to maintain: about 10 hours a year to observe its progress and about three days a year to plant and grow its seeds. In contrast, Sandoval estimates that the threatened Western snowy plover — Coal Oil Point's celebrity bird — takes about \$50,000 worth of full-time volunteer docents and another \$90,000 a year for staff and supplies.

Even so, the investment in the plover recovery has paid off. Since active management began in 2011, plover nest numbers soared from one to 65, and wintering populations rose from under 100 to 400.

On the beach, docents watch over the reserve and educate visitors. They explain the symbolic fence around the dunes, why plovers need their space and how the dunes reestablished themselves from flat ground when left undisturbed by recreational users.

Near the fence, plovers run for three seconds, then stop. Five seconds, then stop.

"Aw, they are so cute," Sandoval says. The chicks are tailless and look like puffballs on stilts. "There is dad, trailing right behind and stressed out." Several chicks happily bounce in a beached kelp patch.

By listing one species as endangered, government agencies help ensure entire biological communities are protected. For instance, this beach isn't groomed. So when

it as a reserve does not do the job."

Sandoval started her graduate work in the mid-90s and found that the reserve was losing species. Even before becoming reserve director, she led aggressive measures to bring back species and restore habitat.

"I learned a trick," she says. "You really need to keep an eye on possibilities for mitigation."

When the university proposed a development nearby, she realized that too many people already visited the reserve, which did not have enough staff. She told university officials, "I think we can find a win-win solution. You give us a staff, and we'll make the reserve even better with your development."

It worked.

Balancing public access with biodiversity management has been one of the reserve's biggest challenges, but also its greatest reward. Like an ecosystem, the human system all works together. Funding spurs research, which spurs understanding.

Education spurs caring, which spurs protection.

What works here can work elsewhere, Sandoval says, and that gives hope for endangered plant and animal recovery. Even on gray days.



Winds, tide and time create a constantly changing environment along the shore of Coal Oil Point. In addition to natural changes, large pieces of ecosystem were lost when development began in the region decades ago. Photo by Benjamin Zack.



In the midst of the popular beaches of the Coal Oil Point Reserve, biologists are working to protect the habitat of the endangered western snowy plover and California least tern. Along the shore, fragile habitat and prime recreation areas often overlap. Photo by Benjamin Zack.



An endangered western snowy plover searches for food on the beaches of the Coal Oil Point Reserve. Protecting federally listed endangered animals includes conservation of their habitat, which can benefit plants or other animals in the ecosystem that, on their own, don't have federal protection. Photo by Benjamin Zack.