

## Fate of a tiny mouse rests on salt marsh restoration

By Aric Crabb  
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SONOMA -- In a lightning flash of brown, a tiny mouse with big black eyes and a long, thick tail leapt from a pickleweed plant and disappeared in the early-morning light of the marsh.

The movement was nearly imperceptible, but it was a victory for the scientists who gathered on a recent day in search of clues about the minuscule creature.

The salt marsh harvest mouse weighs about as much as four pennies, but millions of dollars are being spent to try to restore the tidal marsh habitat the endangered species calls home. In the meantime, the mouse is a significant issue for every development being considered in its bayside habitat, blocking residential and office projects alike unless efforts are made to preserve the rodent population.

"You can think of it as just a damn mouse that's getting in the way of construction," said U.S. Fish and Wildlife Service biologist Meg Marriott, who led a group of scientists on a mouse count that day. "But it's actually signaling that the ecosystem is not functioning properly."

Marriott is part of the team trying to figure out how to address the problem, and its study of the mouse and its population is key to determining if restoration efforts are effective.

### Data collection

Each year, the U.S. Fish and Wildlife Service sets traps and conducts a survey to gather data on the elusive rodent. This year, 320 traps were deployed at nine locations in the San Pablo

Bay marshland. Each trap was baited with a mixture of seeds and peanut butter and opened for three

nights. The result: eight salt marsh harvest mice.

Biologists do not have enough data to say if the population is steady or has crashed. Officials don't even know how many salt marsh harvest mice exist. What they do know is that they live only in the marshes of San Francisco Bay.

About 90 percent of the historical tidal marsh habitat in the bay has been lost. Marshes have been cut off from the bay with dikes built for salt evaporation ponds and filled in to create land for homes and businesses. In 2003, the state and federal government spent \$100 million to buy 16,500 acres of former salt ponds to restore those areas to help protect the federally endangered salt harvest mouse and other species.

Early on a September morning, Marriott worked her way through a field near the Napa-Sonoma Marshes Wildlife Area. Wearing tall rubber boots, she navigated around barbed wire fences, across train tracks and finally over a narrow but deep slough, arriving at a thick pickleweed marsh.

Pickleweed, a native marsh plant that grows low to the ground, has bright green stems and lush red tops. It has a salty taste, punctuated by a tart flavor and provides essential cover for the endangered mouse.

The salt marsh harvest mouse depends on cover for its survival. With habitat loss, the tiny mouse becomes a bigger target for other animals to prey upon. Foxes, cats, herons and hawks are all threats to the mouse. Even the endangered California



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clapper rail has been noted as a potential predator.

Marriott headed toward traps that were set the previous evening. She was not in the marsh alone. The tiny rodent has a fan club. Two interns and two government scientists were along for the trip, and everyone hoped for a chance to see the secretive mouse.

## Critter's close-up

There are two subspecies of the salt marsh harvest mouse. The southern subspecies is found in the counties of San Mateo, Santa Clara and Alameda. The northern subspecies has been found in Marin, Sonoma, Napa, and Contra Costa counties.

Trap after trap came up empty. Finally one was found with the spring door closed. Everyone gathered at the site, circling Marriott as she held the trap above a green carpet of pickleweed. The biologist carefully slid a plastic freezer bag over the trap, held the metal box upside down and shook its contents into the clear bag.

After a couple of strong shakes, out popped some bait, the cotton batting placed inside to keep any trapped animals warm and a little brown mouse. Marriott held the bag in the air and took a closer look.

"It's a salty," she said. Even better, it turned out to be pregnant.

Smiles were on every face in the marsh that morning. The animal remained remarkably still as Marriott completed the checklist of government data requirements.

The mouse was weighed, measured and inspected to determine gender. Marriott gently placed the tiny mouse onto some pickleweed, and in the blink of an eye, it was gone.

"This mouse specifically is endangered because of habitat loss around the bay," Marriott said. "To see creatures on the verge of going extinct, it signals that something is wrong."

Plans over the next 40 years to spend an estimated \$1 billion in restoration efforts could change that.

Ponds in Menlo Park, Alviso and Hayward have all

seen restoration work, said executive project manager John Bourgeois with the State Coastal Conservancy.

Money for this first phase of the work has come from federal stimulus funds, state bond money and contributions from the Santa Clara Valley Water District and other local and state agencies, Bourgeois said.

The second phase of the work will focus on creating transition zones in the tidal marsh, an area that is important habitat for the salt marsh harvest mouse.

## Restoration effort

Along with the historic work in the South Bay, 1,460 acres of salt ponds included in the 2003 purchase from Cargill are being restored in Napa County. Managed separately from the South Bay operation, the Napa restoration work is overseen by the California Department of Fish and Game.

Cargill has not sold all its Bay Area holdings to the government. The Minneapolis-based agriculture company hopes to develop more than 1,400 acres of salt ponds it owns in Redwood City. Its partner, Arizona developer DMB, has submitted a plan to the city that calls for about half the area to be open space, restored marshland and public recreation areas with the other half a combination of housing, retail space, schools and transit facilities.

That idea has not gone over well with environmental groups that would rather see the entire site restored

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to tidal marsh.

For now, the salt marsh harvest mouse will need to make do with the fragmented marshes left along San Francisco Bay.

"The salt marsh harvest mouse is like a canary in a coal mine, in that it is an indicator of the health of the system in which it lives," Marriott said. "Much of the remaining tidal marsh is fragmented or compromised in some way. This effects all of us living and working in and around the bay, whether we care about species extinction or not, because tidal marsh serves so many important functions in our environment."

### Salt marsh harvest Mouse

Length: 2.75 to 3 inches.

Weight: 9 to 14 grams.

Habitat: Dense salt marsh vegetation, particularly pickleweed. The northern subspecies is found in northern Contra Costa, Marin, Sonoma and Napa counties; the southern subspecies is found in Alameda, Santa Clara and San Mateo counties.

History: The salt marsh harvest mouse was listed as a federally endangered species Oct. 13, 1970. The state listed it as endangered in 1971.

Source: [www.southbayrestoration.org](http://www.southbayrestoration.org)

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