

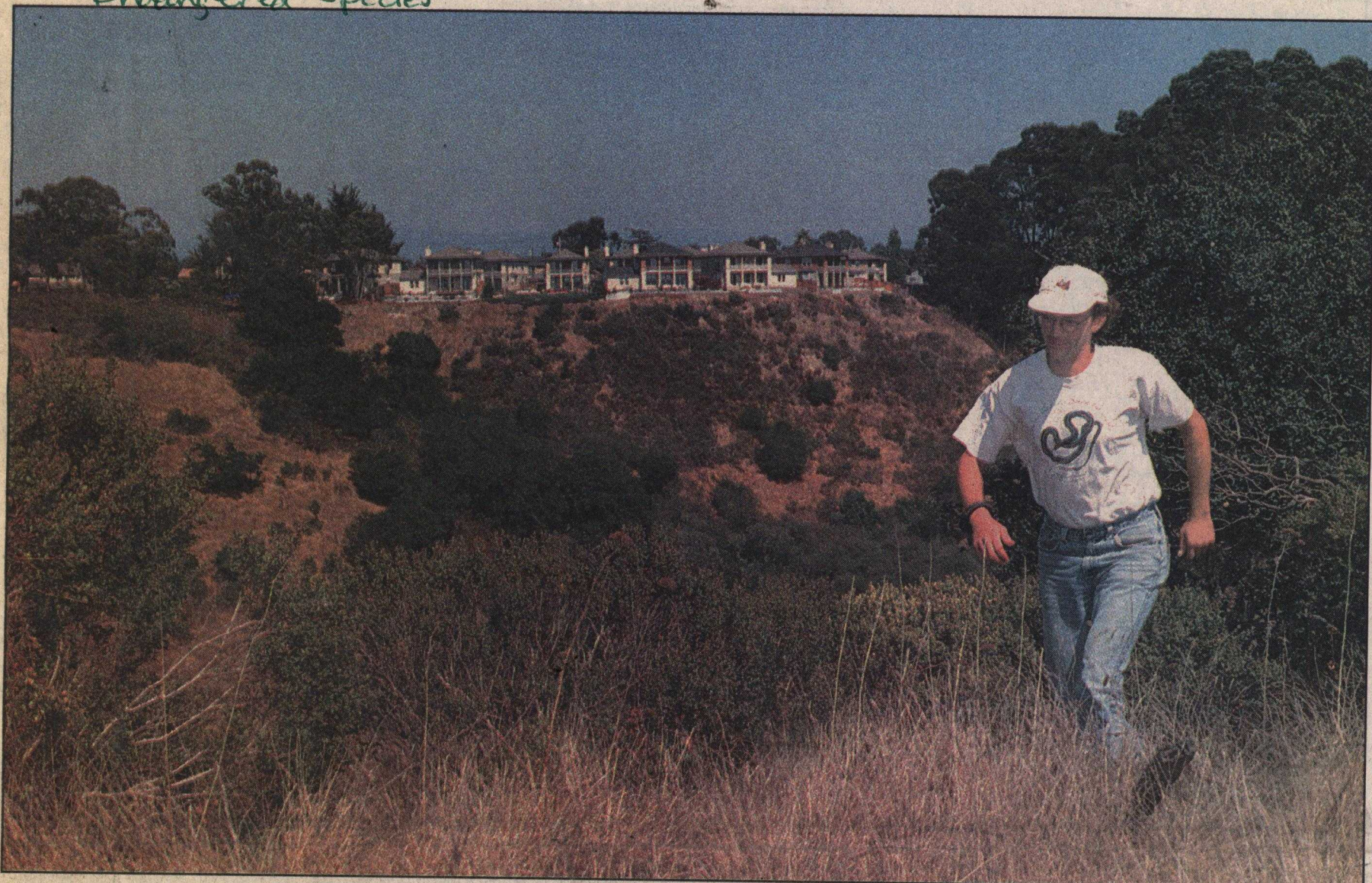
Rare Finds

Santa Cruz County
is the Galapagos Islands
of rare and endangered species



Sand hills, such as the protected South Ridge in Felton, are biological islands to species found nowhere else in the world. One such rarity is the silverleaf manzanita, left.

Endangered Species



UC grad student Grey Hayes hikes on the Bombay greenbelt property. Hayes and other ecologists and biologists say Santa Cruz's unusual combination of geology, climate and location creates an attractive home for many endangered plants and animals.

Dan Coyro/Sentinel

By ROBIN MUSITELLI
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SANTA CRUZ

Residents of this coastal city can add another item to the list of characteristics that make it so special: The area is a "hot spot" for endangered species, with more living here than just about anywhere else in the world.

Endangered frogs and flowers, beetles, butterflies and birds make Santa Cruz their only home. Certain salamanders, moths and grasshoppers live here and nowhere else.

Grey Hayes, a UC Santa Cruz graduate student who has spotted a number of these rare species, is here to tell you that the sighting of so many in this area is not a plot to stop development.

Rather, Hayes and other ecologists and biologists say, Santa Cruz has an unusual confluence of geologic, climatic and location factors that put the city on the map for potentially extinct critters.

According to Hayes' count, some 24 animals and 19 plants in Santa Cruz County have been listed by federal and state officials as threatened, endangered or of special concern. Others are pending listing.

That was enough to earn Santa Cruz designation as

one of a handful of "hot spots" for endangered species two years ago in a national study by scientists at Princeton University and the Environmental Defense Fund.

It wasn't just that Santa Cruz had a high number of endangered species. The city also showed a wide diversity of species that occurred in a very narrow range, said David Wilcove, a scientist with the Environmental Defense Fund.

In Santa Cruz County, unlike most places, the habitat of rare and endangered species tends to overlap,

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he said.

Nowhere is there a better example of this than on the inland marine sand hills found scattered around Santa Cruz County, said Steve McCabe, a biologist with the Arboretum at UC Santa Cruz.

The sand hills, such as the protected South Ridge in Felton, are "biological islands" of species found nowhere else in the world. Botanists consider them as unique and globally significant as the Galapagos Islands.

Millions of years ago, the sand dunes were on the beach. Over time, they uplifted to their present elevation of about 400 feet and were encircled by forests with much different ecosystems. Like on the Galapagos Islands, local plants and insects evolved uniquely to adapt to their islands of sand, McCabe said.

Some 85 species of unusual plants and animals can be found on the inland coastal terrace, including the silverleaf manzanita, Mount Hermon June beetle and Santa Cruz wallflower, Hayes said.

Other species that live in the sand hills, such as the ponderosa pine, aren't unusual in California. But the stands in the sand hills are unusual because they are growing at a low elevation in a relatively humid coastal climate.

Hayes estimated that at least one-third of the endangered species in Santa Cruz County are associated with the sand hills.

Not only are inland marine soils unusual, the isolation of the habitat, ringed by redwood forest and chaparral, makes plants and animals that live there especially vulnerable, said Maggie Fusari, director of the UC Santa Cruz Natural Re-

serve.

"There are no large areas of continuous habitat where species can easily move if something happens," Fusari said.

Another group of rare species is associated with increasingly scarce coastal prairie and grassland areas, Hayes said.

About 45 special-status plant and animal species live in the "Refugio" area, 19-square-miles composed of Bonny Doon, Davenport and the North Coast area, according to a study by Randy Morgan of the California Native Plant Society.

That's not all.

In bio-geography terms, Santa Cruz is known as a "suture" zone, meaning the area attracts species more common in areas north, and different species more common south of here, Fusari said.

At the same time, that makes Santa

Cruz and the Monterey region marginal territory for species at the end of their habitat range. They might find real estate here, but their hold is precarious and their numbers are few.

"You tend to have a high diversity and juxtaposition and sometimes interesting hybrids," Fusari said.

The variation in rainfall and temperatures contribute to the diversity and high number of species that are found in the Santa Cruz area, McCabe said.

"We have frost-free areas to areas that get to 12 degrees. That plays into it. You have foggy coastal areas, and then you go inland 10 miles and it's a radically different story. You have north facing slopes and south facing slopes. You have areas that get about 30 inches of rain (annually) and others, like Bonny Doon and Boulder Creek, that get 60 to 70 inches," McCabe said.

"Then you have really extreme conditions in the soils, from very sandy soil with low nutrient levels to redwood forests on deep, rich soils," he said.