

Erosion eating away at beaches



ZOE NORCROSS-NUU photo

Waves crash against a seawall of rocks and sandbags in front of the Hololani Oceanfront Condominium Resort in Lahaina. Seventy-eight percent of Maui's beaches have eroded in the past century due to sea-level rise, according to a recent study published by University of Hawaii researchers.

By **CHRIS SUGIDONO**, Staff Writer

A new study says that Maui could see some of its beaches completely disappear over the next few decades due to sea-level rise, following a trend of erosion at more than three-quarters of Valley Isle beaches in the last century.

"It's not a pretty picture," said Charles Fletcher, associate dean and professor at the University of Hawaii's School of Ocean and Earth Science and Technology on Oahu. "For Maui beaches, the worst erosion is on the north shore — 87 percent of north shore beaches are eroding. Kanaha Beach Park and Paia beaches have some really problem areas."

Global sea-level rise was determined to be the primary cause of coastal erosion in the state by the study published late last month in the scientific journal *Global and Planetary Change*. This conclusion was applied to data published last year by Fletcher and a team of university researchers, including lead author and Coastal Management Specialist Brad Romine, that found 78 percent of Valley Isle beaches had eroded with an islandwide average shoreline reduction rate of 13 centimeters per year.

In the report last year, the team said that Oahu had a significantly lower shoreline reduction rate of 3 centimeters per year and had lost 26 percent less beach than Maui in the last century. The difference in the rate was caused by Maui sinking, due to forces related to Haleakala, Fletcher said.

"On the island of Maui, you have a relatively young

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volcano in Haleakala Crater, which is bending the Earth's crust underneath its mass," Fletcher said. "With young volcanoes, they subside or settle down into Earth's mantle and that means sea level on Maui is going up faster than on Oahu."

Fletcher estimates Maui's sea level could rise nearly a foot in the next century and erode about 100 feet of shoreline.

"You could end up looking like American Samoa, which is a museum of seawalls," he said. "There's still beaches, but you have to drive a long time to get to them."

"If we're not careful, we're going to lock up the Maui shoreline with seawalls, as well."

The researchers isolated sea-level rise as the root problem of beach erosion by removing outside influences such as human impacts and other natural forces from the equation. Fletcher said that the findings should help with future solutions for Hawaii's disappearing shorelines.

This is a critical issue — with which some condominiums on Maui's shorelines already are having to contend — but in general the public doesn't seem to care, Fletcher said.

"Even though there has been warning after warning (from the local media), there has been no real effort against this," he said. "There is nothing new about (beach erosion), yet we haven't seen an innovative solution."

One of the last major policy decisions to deal with eroding shorelines occurred more than 10 years ago, when Maui County expanded the setback

for construction along shorelines. Prior to 2002, buildings were allowed just 40 feet from the beach.

Fletcher, who led another team of researchers to help create the setback rules, came up with a formula that took the annual rate of erosion, multiplied that number by 50 feet and added another 20 feet to come up with the shoreline construction setback.

"This effectively means the distance of where you're allowed to build your house is a function of how badly your beach is eroding," he said. "It was a huge thing that took two years to do, and I caught a lot of pressure from homeowners and other groups because they all thought it was going to be the end of shoreline construction."

"But it didn't. It meant the beginning of safer construction," he said.

Fletcher said Hawaii has "a long history of building too close to shorelines."

"Previous steps didn't take into account future sea-level rise and that process is only going to accelerate," he said.

North-facing shores, including those in Waihee and Waiehu, continue to erode. Fletcher said that "the only solution" to save Maui beaches is for the county to acquire and to protect as many shoreline areas as possible, keeping them out of development so that they may erode naturally.

"The county needs to purchase land that is sand rich, using whatever means they can," he said.

County and state funds also could be used to obtain development rights or conservation easements along beaches to stall further construction too close to shorelines, he said.

"Beach erosion doesn't nec-

essarily spell the end of the beach if the shoreline is allowed to naturally erode," he said, adding that seawalls disrupt the natural process and effectively destroy beaches. "I think Maui County will decide that we want beaches for our grandchildren."

Fletcher acknowledged that his policy solutions are more long term. A short-term remedy may be beach nourishment — or adding sand — but only in select circumstances.

"It sounds great: go find sand and put it on the beach," he said. "The problem is finding and paying for the sand, which is a huge issue."

Although Fletcher recognizes beach nourishment as a viable solution, he said that "unless you put a butt-load of sand there you won't solve the problem."

"Waikiki just had nourishment with sand and that cost \$4 million," he said. "But that cost is justified because of all the tourists."

Beach nourishment is not a cure-all. The sand is hard and secretes a white silt that is harmless but causes the water to be murky, he said.

"But that beach was gone," Fletcher said. "And that's the decision you have to make: Do you want zero beach or a beach that's not perfect?"

Other Maui areas targeted for beach nourishment include Kaanapali Beach south of Black Rock, which received some state funding for an environmental impact statement earlier this year. The project, which is estimated to cost around \$6.8 million, is being led by the Kaanapali Operations Association and calls for restoring about 35 feet of shoreline from Black Rock to Hanakao'o (Canoe) Beach Park.

"We're not necessarily adding sand to the beach, but restoring it to what it was decades ago," said Wayne Hedani, president and general manager of the association.

The EIS also was funded by the association and is projected to be completed in the next two to three years. Hedani hopes to reach a similar funding arrangement with the state for the actual project.

The beach nourishment would add about 50,000 cubic yards to the shorelines from the beach park to the Marriott's Maui Ocean Club Lahaina and another 25,000 cubic yards from Black Rock to Kaanapali Aiihi Resort.

Hedani said he hopes the sand will last at least 20 years.

"It'll probably last quite a while," he said. "It's not going to stop sand from moving, but adding to the total inventory of the beach will reduce the severity of the erosion."

West Maui state Rep. Angus McKelvey has followed the project closely through the Legislature and called it a "critical project on a number of fronts."

"Our visitor industry is our bread and butter, and the erosion is eating away at that," he said. "If we don't take this pro-environmental approach, the erosion is going to start eating at the land itself."

"The state needs to start looking aggressively at this problem, and hopefully this project will help spur our colleagues to form long-term plans in locations where beaches that are important to the community should be kept from going underwater."

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