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# Geologist walks Kaua'i coastline for the record

By Jon Letman  
Special to The Advertiser

Scientist, educator and ardent conservationist Chuck Blay came by his intimate knowledge of Kaua'i's beaches step by step.

One foot in front of another, that is.

In other words, he walked pretty much the entire perimeter of the island's 111-mile coastline in 1986.

In the process, he came to understand the way Kaua'i's coastline is affected by a complex interplay between natural forces and human impact.

A self-described earth scientist and naturalist, Blay ("call me Chuck," he says) has become one of Kaua'i's leading authorities on the island's geologic record. He is also an active advocate for the environment, leading discussions, presentations and public outings on a range of topics as varied as shoreline sedimentology, beach safety and natural history.

Sitting barefoot in the office of his modest Poipu home, Blay elucidates on what, for him, forms the essence of Hawai'i.

"Basically, Hawai'i can be broken down into two elements — extreme isolation and the effects of the trade winds," he said. These two factors have made Hawai'i a great place to study earth sciences and the impact of humans on their environment.

It is this living laboratory that Blay seeks to understand, interpret and protect through research and education.

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Pulling out a map of seafloor topography, Blay mentions that it was provided by the U.S. Geological Survey and appears in his newly revised book, "Kauai's Geologic History: A Simplified Guide," now in its second edition.

Much of Blay's research for the book is based on his experience of walking Kaua'i's coastline.

He took on the project of exploring Kaua'i's coast because he needed to examine the places where the beach physically ends to understand how it was formed. In the process, he could also observe the geography of the area, and the dynamic forces that act on each portion of the beach.

### **Kaua'i on foot**

Blay always stayed below the vegetation line, to avoid getting on private property as well as to keep a constant perspective, watching the subtle, and sometimes dramatic, changes that reveal themselves in Kaua'i's geologic record.

"I walked it in sections," he said. Starting on the east-facing shore in Hanamaulu, Blay would walk three to seven miles of coastline every day, scrupulously drawing maps, taking notes and photos of Kaua'i's coastline, then walking back to the road and hitchhiking to his car at night.

When he had covered all the landscape possible, Blay spent eight months tucked away in a plantation cottage in Waimea, where he wrote up his notes.

He saw firsthand the ways volcanic activity, weathering and erosion, the patterns of ocean waves and currents, the movements of sediment and human effects combine as he answered such questions as, "How did Hawai'i's largest beach (Polihale) form?" and, "Why is there only one major volcanic sand beach (Waimea) on Kaua'i?"

Blay says by writing about what he has seen, he can share his knowledge of Hawai'i's dynamic geological history and fragile coastal systems.

More recently, he's developed another means of sharing his knowledge: "edu-tourism."

As an "independent professional educator," Blay leads environmental training programs and interactive seminars for science educators.

Kathy Reynolds, a Los Angeles middle-school science teacher who has participated in Blay's courses, brought eight of her students to Kaua'i to study with Blay last summer. "The best testimony of the success of the trip is that six of the students are returning this year, along with 14 additional students for a second course on the Big Island," Reynolds said.

Blay occasionally offers educational hikes along Kaua'i's south shore for small groups, as well. All this activity has led the bearded scientist to explore outside his vocation in order to better understand the association between botany, climatology, archaeology, anthropology, sociology and Hawaiian oral history.

One local educator, Kaua'i Community College professor Andy Bushnell, called Blay's group hikes and lectures "fascinating in the way they convey the idea of Kaua'i as a living island."

### **Hawai'i 'extremes'**

Born in Lodi, Calif., Blay earned a Ph.D. in geology and spent seven years as a college professor. He went on to work as a research scientist for an oil company for five years, and this, he says, got him started as an earth scientist. Research led to geological consulting which in turn took him to Jakarta, Indonesia, and Quito, Ecuador, where he was an international consultant in the petroleum industry.

In 1995, Blay moved to Kaua'i to pursue his own geological research.

"When I was doing field work as a research scientist in the Aleutians in the late '70s, it was possible to fly between Anchorage and the West Coast, and for \$5 more you could lay over in Hawai'i. That is when I started coming here," he said

In the beginning, Blay came to relax and lie on the beach. But one day, out at remote Polihale beach, he was trying to decide if he was "on the beach, in the beach or under the beach," when he realized that even a volcanic island like Kaua'i had enough sedimentary rock to feed his curiosity. He eventually came to Kaua'i to study it.

Based on his walk around Kaua'i, Blay started The Edge of Kauai Investigations in 1996, and now does work on both Kaua'i and the Big Island. He likens the Big Island (geologically the youngest of the eight high islands) to a giant "Baby Huey" and Kaua'i (the oldest) to a "little old wrinkled man," and says he prefers to study these two islands because they represent the extremes of Hawai'i, illustrating "the difference five million years can make."

### **Drowning map**

Kaua'i and the Big Island are relatively unpopulated and unstudied, Blay says, and on them he's less likely to step on the toes of a territorial scientific community. He adds that in Kaua'i one can examine rain forests, high mountain bogs, sandy beaches, diverse reefs and near-desert conditions all on one island.

A firm believer in invoking all of one's senses in learning, Blay leads participants in his training programs and hiking tours to the subarctic heights of Mauna Kea, the sand dunes of west Kaua'i, hiking in Waimea canyon and snorkeling the emerald waters and walking along the green, black, white and gold sand beaches of the Big Island.

In addition to Hawai'i's natural history, Blay also has an interest in ocean safety. Spending long periods of time by the ocean, he became interested in the causes of drowning in certain areas. "It seemed obvious to me that the same forces that move sand grains on the beach are the ones that move bodies in the water," he said.

Collecting statistics from the Kaua'i Police Department and the archives of the island's Garden Island newspaper back to 1970, Blay began to plot this information on a 'drowning map' of Kaua'i. The map, viewable on "The Edge of Kauai" Web site, [www.teok.com/Drownings/drownmap.html](http://www.teok.com/Drownings/drownmap.html), identifies treacherous beaches. By better understanding the conditions that exist in the ocean, he says, we can understand why drowning occur in certain areas more than others and as a result, avoid the danger.

Blay notes that increased funding for more lifeguards appears to be having a positive effect on beach safety, but he bemoans the propensity for using stock ocean-hazard signs at beaches which greatly vary in risk.

"If, for example, a 'strong current' sign is posted at Salt Pond (generally considered a relatively safe beach) and the same sign at Hanakapiai (notorious for its deadly longshore current), the average tourist is going to see the two as comparable, and won't heed the warning where it is most needed." Instead of generic warnings which do not paint a true picture of varied sea conditions, Blay says, it would be more useful to post signs explaining what kind of natural forces are at work.

"If it were up to me, there would be billboard-sized signs explaining the causes of risk and how many people have drowned at that particular spot," he quips, only half joking.

"They won't do it though," he says, "because it's a liability issue."

Rather than wrangle over signage, which Blay sees as a largely political battle, he seeks positive change through his research, books, edu-tours and volunteer trail maintenance.

A member of the grass-roots group Malama Maha'ulepu, Blay is actively involved with the group's efforts to preserve Maha'ulepu, one of Kaua'i's last undeveloped shorelines and home to ancient dunes that have lithified, or hardened into limestone.

Citing overfishing as an example, Blay points out that human conservation efforts often don't arise until a crisis situation emerges, which is usually too late. It is the need to reach a state of effective co-existence with the environment that fuels Chuck Blay's passion for fostering a deeper understanding of Hawai'i's earth and sea which Blay refers to as "the ultimate microcosm of a planet, a living laboratory in the middle of the Pacific."

"Besides," Blay breaks into a smile, "we have the greatest weather in the world."

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