

Our Ocean Backyard — *Santa Cruz Sentinel* columns by Gary Griggs, Director, Institute of Marine Sciences, UC Santa Cruz.

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Coastal currents and missing sailors

We dropped drifters into the ocean monthly around Monterey Bay from November 1971 to April 1973 in hopes of finding out which way the coastal currents moved. Most of the flights were without incident once we resolved how to fly the plane and drop objects out of it safely.

What we did discover was that nearshore currents patterns along our coast change seasonally. The winter months are characterized by a well-defined northerly flow known as the Davidson Current, which moves at speeds of about two to six miles per day. Drifters dropped between November and March typically headed north, and were usually recovered along the beaches from Davenport to Pacifica. The greatest distance traveled by one of the little red Frisbees was 750 miles, ending up north of the Columbia River at Ocean Shores, Washington. This doesn't compare with the little yellow ducks that came out of the shipping containers, but then we only recovered about 30% of all the drifters we dropped, so I don't actually know how far the others may have eventually traveled.

An abrupt reversal occurs in the spring as nearly all drifters dropped in those months moved southward with the California Current. From March to May 1972, 93% of the surface drifters moved southward or onshore. Those dropped off of Santa Cruz and Pleasure Point usually ended up along the beaches of Monterey Bay, while those dropped offshore the Monterey Peninsula often traveled north and also ended up in the bay. Typical California Current speeds were also about two to six miles per day, although speeds as high as 12 miles a day were also recorded. The longest southerly voyage was nearly to Morro Bay, a 100-mile trip from the Monterey Peninsula drop point.

Nearshore circulation in summer and fall was less regular, with about equal number of drifters moving north and south, which seemed to be due to eddies or gyres within the larger California Current system. The late spring and early summer months are part of the upwelling period and usually characterized by winds from the northwest, and due to the Earth's rotation, surface waters tend to move offshore. Nutrient rich bottom water rises to replace the surface waters in a process known as upwelling. This is common along the eastern sides of all oceans

and produces very high biological productivity. The nutrients fertilize diatom and algal blooms, followed by krill and other small planktonic organisms, which are in turn fed on by sardines and anchovies, and then the larger fish, marine mammals and birds. Our current studies were helping us to better understand how things actually moved around offshore, but I didn't realize then how the information we collected might ultimately be used.

On Labor Day 2002, two distraught young ladies approached the Santa Cruz Harbor office nearly at dark. They were very concerned that two brothers, the husband of one lady and the fiancé of the other, had taken out a Hobie Cat four hours earlier on a very windy afternoon and hadn't yet returned. The Coast Guard was notified, took charge and along with the Harbor Master staff, launched a full-scale search and rescue operation. The wind at the time was from the northwest so all the rescue teams and boats went southeast toward Capitola and Rio Del Mar. By midnight, despite their best efforts, they had no contact and decided to give up the search and resume it again at daylight.

Don Kinnamon, who was on the Harbor Master staff and part of the search crew, returned to the office very discouraged. But remembering the current study we had done 30 years earlier, he recalled that currents were usually more irregular in the early fall and could be moving in a different direction than the wind was blowing. He and another crewmember, Cary Smith, now a deputy harbormaster at Pillar Point Marina, decided to launch a second effort at midnight. After informing the Coast Guard and the Harbor Master, they decided to head offshore 210 to 220 degrees, or southwest rather than southeast, where the earlier search had been focused.

About ten miles offshore, on a pitch-black night, in a slow series of sweeps, Don and Cary heard a voice calling out. They were soon able to locate one of the brothers, Bill Hopps, whose core body temperature was very low and whom they believed was within minutes of dying. His first weak words were "find my brother". Don and Cary struggled with the decision of trying to warm him up and keep looking for the other brother, or race back 10 miles to the harbor to get him to an ambulance and medical attention.

They decided to make the run to shore to drop off the Bill. They then turned around and retraced their route in the dark back to their previous location. They continued their slow sweeps back and forth, and about a mile farther offshore found the second brother, Matt, just barely alive.

Several weeks later, the second brother to be rescued that night was getting married to his fiancé in Los Gatos. They invited Don and Cary to the wedding. Instead of toasting his new wife, Matt explained to the wedding guests that he wanted to instead make the first toast to the two men standing in the back, who saved his life and made the wedding possible.

While at the wedding that afternoon in 2002, Don Kinnamon met one of the bridesmaids. They subsequently became partners in life and now have a young son. While this wasn't an outcome I could ever have predicted, it made the coastal current project all the more interesting and rewarding.