

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

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Lost cargo tracks ocean currents



Container carriers stack containers very high and on average, one of these large containers goes overboard every hour somewhere in the world ocean.

The currents along our shoreline move things around in many different directions, sometimes north, sometimes south and sometimes onshore or offshore, depending upon the season and the winds. Whether nutrients or plankton, pollutants or lost people, oil spills or flotsam, the ocean currents can transport stuff thousands of miles. Surface currents are driven by the wind, and overall, the current patterns in the Pacific, the Atlantic and the Indian oceans are pretty similar, and reasonably well understood. In the months and years ahead, we may well begin to see some of the debris washed offshore by the Japanese tsunami in March along our shoreline, just as beachcombers periodically find Japanese fishing floats along the beaches of California and Oregon.

On January 29, 1992, a large container ship left Hong Kong, destined for Tacoma, Washington. Several thousand miles into the voyage, near the International Date Line, the ship hit severe storm conditions, not too uncommon in the Pacific in

winter, and lost twelve big shipping containers. One of these was stuffed full of 29,000 Chinese-made plastic bath toys, yellow ducks, blue turtles, green frogs and red beavers. When the container broke open, the floating toys were carried off by the currents, and in the following years, traveled in different directions and reached some surprising places.

Their first landfall came 10 months later when over a hundred of the toys washed onto the beaches of southeast Alaska. In the fall of 1995, nearly four years later, after apparently circling counterclockwise around the entire north Pacific and passing over the original drop site, several thousand of the floaters passed through the Bering Straits between Alaska and the Soviet Union. This group continued, passing eastward into the Arctic Ocean, where they were trapped in the ice. Simultaneously, another large group of the plastic bath toys floated south, ending up on the coastline of South America and also on beaches of Indonesia and Australia.

Moving with the ice, some of the Arctic travelers began reaching the Atlantic Ocean in 2000, where they began to thaw out and move southward. Soon plastic ducks were seen bobbing in the waves from Maine to Massachusetts. In 2001, ten years after they were released, some of them were tracked in the area where the Titanic sank.

Each of the toys was labeled with the words “The First Years”, the name of the Chinese company that manufactured the bath toys, so the source of any animals recovered could be confirmed. In 2003, a lawyer vacationing in the New Hebrides, off the west coast of England discovered the first faded green frog from the original spill. In 2007 a retired school teacher believed she had found the first of the toys to wash up on the coast of England, 15 years after their initial release; but under careful examination, it turned out not to be one of the original toys. Bleached by sun and seawater, the ducks and beavers have faded to white, but the turtles and frogs have retained their original color. Two children’s books have been written about the amazing voyage of the ducks and their companions, and the toys themselves have become collector’s items, fetching up to \$1000 each.

This wasn’t the first time this has happened, however, and oceanographers were treated to some unexpected information on ocean currents. In May 1990, almost two years before “The First Years” toys started their voyage, another container ship, the *Hansa Carrier*, encountered a severe storm on its route from Korea to the west coast, losing 21 shipping containers. Four of the containers, holding about 60,000 Nike shoes, broke open and released the tennis shoes into the North Pacific.

The following winter, individual shoes started washing up on the coast of Oregon, Washington and onto the beaches of Vancouver Island and the Queen Charlotte Islands. Some of the shoes were diverted south along the California coast, and then were carried by westward flowing equatorial currents, ending up in the Hawaiian Islands by the summer of 1992.

About 90% of all of the non-bulk cargo transported around the world is now shipped in containers. Right now, as you are reading this, there are five or six million of these on huge cargo ships transiting the world's oceans. And about once an hour, on average, one of those containers breaks loose and falls overboard, although usually more than one falls at a time. Some sink, some float to become navigational hazards, but they are each full of stuff. When they break open, the floating cargo has the potential to provide us with more interesting information on which way ocean currents move and how fast.