Facing Mother Nature's fury

Despite danger and potential cost, people 'build castles in the sand'

By Owen Ullmann
USA TODAY

"A foolish man . . . built his house upon the sand, and the rain fell, and the floods came, and the winds blew and beat against that house, and it fell."

— **Matthew 7:26-27**

Real estate developer Rusty Bennett lost his oceanfront home on Sullivans Island, S.C., when Hurricane Hugo blew through in 1989. But it never occurred to him to move to safer ground; he just built a sturdier house. Now Bennett, 45, has plans to put up nine beachfront homes on nearby Folly Island.

The threat of a hurricane doesn't scare Ron D'Angelo of Fort Myers, Fla., either. The pacemaker salesman decided to move to Florida in 1997 while lying flat on his back with a broken leg on his ice-slicked driveway in Broomall, Pa. "Every storm that's come here has missed us," D'Angelo, 56, says.

Bennett and D'Angelo are just two of the millions of Americans who have decided that living close to the Atlantic and Gulf coasts is worth the risk of coming face-to-face with Mother Nature's fury.

Yet this mass migration of Americans moving to the water's edge is occurring at a time when the odds of a killer hurricane striking the Eastern and Southern seaboards are the greatest in a generation, meteorologists warn.

Since 1980, the population of all the counties that touch the coast has outpaced total U.S. population growth by 15%, according to a USA TODAY analysis. These coastal dwellers now number 41 million, and they have triggered a coastal development boom that extends for miles inland. The boom is turning low-density, seasonal resorts into populous, year-round cities.

Putting a more crowded coastline in the path of a potentially more violent weather pattern makes for a dangerous mixture: more people in harm's way, more storms packing destructive punches, more property exposed to catastrophic losses.

"We're seeing more and more people and structures in places where you get really bad storms," warns Sheila David, a project director for the H. John Heinz III Center for Science, Economics and the Environment.

Hurricane lull is over

From 1970 through 1994, an unusually small number of major hurricanes struck the U.S. coastline, meteorologists say. Since 1995, there has been a sharp rise in hurricane activity. Weather experts say 1999 recorded the most violent hurricanes for one year, and the outlook for the next 20 years is for more of the same.

If those forecasts prove accurate, authorities would have to mount evacuations on a scale never before seen because of the increased population on the shoreline. Property damage could soar from an average $5 billion a year during the 1990s to $50 billion a year by 2030, and USA's taxpayers would have to pick up a good chunk of the tab, disaster experts predict.

"If you look at what we may be facing in the next 10 years, the cost of federal assistance could be astronomical and individual losses staggering," says James Lee Witt, who is the director of the Federal Emergency Management Agency (FEMA).

Imagine, for instance, a hurricane blasting through Horry County, S.C., which includes Myrtle Beach, a hot growth location over the past decade. Since 1990, the county's population has jumped 24% to 180,000 and the number of homes and apartments has grown by 20,000. A hurricane wallop would leave tens of thousands homeless and billions in property damage.

The costliest storm in U.S. history was Hurricane Andrew, which passed just south of Miami in 1992. It left 175,000 homeless and caused $25 billion in property damage.

The hurricane season, which begins in June, ends Nov. 30. But then there are threats from "nor'easters," severe winter storms that can strike as late as April. These storms, which usually form off the North Carolina coast, "can cripple a large area anywhere from Georgia up to Maine," says meteorologist Joseph Cione of the National Oceanic and Atmospheric Administration (NOAA).

And storms aren't the only natural risks that threaten this new wave of migrants settling along the coast. Other worries:

▸ **A rising sea level.** Along the Atlantic Coast, the ocean has risen a foot this century, and some forecasters predict another 2-foot rise over the next 100 years. The higher sea level stems in part from the fact that the land along the East Coast has been sinking since the end of the last ice age. In addition, rising global temperatures are causing ocean water to expand and rise.

A 2-foot rise in sea level translates into the loss of 200 feet of beachfront property, on average; the loss could be as great as 1,000 feet for some parts of Florida.

▸ **Beach erosion.** The contours of barrier islands that line much of the Atlantic and Gulf coasts are constantly being reshaped by the ocean's waves and currents, which steal sand from one stretch of beach to widen another. Some places lose several feet of beach each year. Seawalls and jetties don't prevent erosion; they just shift it to another section of the shoreline. Rebuilding projects that replace lost sand are only a short-term — and expensive — solution.

▸ **Inland flooding.** The number of structures destroyed by floods has been rising sharply in recent years because of unusually bad weather and the loss of coastal wetlands that act like sponges and sop up floodwaters. FEMA says that as developers fill in wetlands, more and more structures, even those built miles from the shore, are becoming more vulnerable to storm surges.

▸ **Evacuation gridlock.** Disaster experts worry that as the population along the coast continues to explode, they won't be able to handle the evacuation of a populous area when the next killer storm hits. Last September, Hurricane Floyd triggered the largest mass movement of people in U.S. history, 3 million. In South Carolina, evacuees spent 15 hours in traffic on an interstate highway, sitting ducks had the storm come their way.

Witt says the rapid growth along the shoreline has forced FEMA and coastal states to spend more time and a lot more money preparing for evacuations. For example, the annual federal budget for moving populations out of harm's way has soared from $835,000 in 1993 to $10 million this fiscal year. "It's become a very big concern," he says.

Billions in property losses

Property losses are another major worry for FEMA. An agency report released last month estimates that about 30,000 single-family homes and small condominiums within 500 feet of the Atlantic and Gulf coasts sit on land that will be under water within 30 years because of erosion and rising sea levels. FEMA estimates the losses at nearly $1 billion a year.

To escape the sea, communities along the water's edge would be forced to retreat to higher ground, elevate structures on stilts or armor their beachfronts with seawalls to slow the inevitable erosion.

The lesson of all these dangers should be obvious: "Don't build castles in the sand on barrier islands," warns Joseph Uravitch, coastal programs division chief at NOAA.

Properties close to the water aren't the only ones at risk. Unprecedented floods caused by the disappearance of wetlands are destroying homes once considered to be on safe ground.

Consider the plight of Mark and Regina Hopper, who bought a home in Wilmington, N.C., in 1994. Because the house was 1½ miles from the Intracoastal Waterway, which is several miles inland from the ocean, the couple didn't buy flood insurance.

"We were told we're not in the flood plain, so no insurance is necessary," Regina, 28, says. But when Hurricane Floyd hit last fall, the waterway flooded, and the house was swept off its foundation. Total loss: $125,000.

The higher risk of losses prompted the property and casualty insurance industry in 1998 to set deductibles much higher. Owners now have to pay out of pocket for damage up to 5% of their structure's insured value — $20,000 for a $400,000 home.

(Private insurance covers wind damage, while federal insurance covers flooding.)

"More and more people are moving to the coast, and that's creating an enormous strain for the industry," says Loretta Worters of the Insurance Information Institute, an industry research group based in New York City. "I can't fathom how people can take such risks," she says.

The insurance industry estimates that losses from hurricanes and nor'easters were nearly $40 billion during the 1990s, almost double losses over the previous 40 years, even after adjusting for inflation.

A trade-off

The tab will only get higher as the migration to the coast continues. Yet, the risks don't seem to dampen the human urge to live near the beach. "It's an irrational instinct," says Duke University coastal geologist Orrin Pilkey. "People go into heat when they see the ocean. They've got to live right on the beach no matter what the threats."

That's a trade-off that 1,000 people are making every day: a better lifestyle in exchange for a higher risk of devastation.

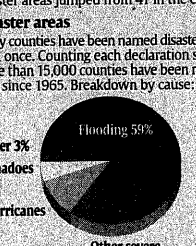
"As the man says," notes Bob Linville, a former mayor of Folly Beach, S.C., " 'You pays your money, and you takes your chance.' "

Tropical storms, hurricanes more frequent

Since 1995, the number of Atlantic tropical storms and hurricanes has risen sharply. Forecasters say this signals the end of two and a half relatively quiet decades. The number of coastal counties declared federal disaster areas jumped from 41 in the early 1990s to 148 in the late 1990s.

Disaster areas

Many counties have been named disaster areas more than once. Counting each declaration separately, more than 15,000 counties have been named in the USA since 1965. Breakdown by cause:



Source: Federal Emergency Management Agency, Michael Baker Inc., Unisys hurricane archive, USA TODAY analysis by Paul Overberg

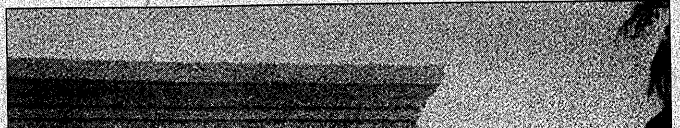
By Dave Merrill, USA TODAY

By Mannie Garcia for USA TODAY

A map of potential weather catastrophes in the USA: "The cost of federal assistance could be astronomical and individual losses staggering," FEMA Director James Lee Witt says.

High-risk life, high expense to taxpayers

Federal disaster aid makes it feasible to build in harm's way



replenishment projects. The U.S. Army Corps of Engineers currently spends $80 million a year rebuilding beaches.

▸ **Flood insurance.** The National Flood Insurance Act of 1968 provided subsidized flood coverage to people unable to buy private insurance. The program has 4.2 million policies in force; coverage is capped at $350,000 per pol-