

Appendix Section 3

Newspaper Articles & Links

'Fighting a losing battle with the sea'

By Beth Daley

Globe Staff / April 3, 2011

One in an occasional series of articles on sea level rise in New England.

SCITUATE — A piercing wail startled Gary and Paula Elsmore awake at 3 a.m. Paula knelt on the bed and peered out the upstairs bedroom window. In the blinding snow, she could barely make out a neighbor waving up at her frantically.

The ocean was coming.

Fierce seas had overtopped a sea wall about three blocks away, and the roiling water was now heading straight toward the Elsmores' neighborhood.

"You could see the storm surge, it was bending all the backyard fences one way as it came in," Paula Elsmore said of that late December night.

The Elsmores' basement filled with 5 feet of water, and flames billowed into the dark sky from two nearby houses that flooded and caught fire. Their neighbors' young children had to be evacuated from their house by a bucket loader. In all, some 400 homes were swamped.

The ocean's fury is an omnipresent threat for the growing number of people who live at its edge. But accumulating scientific evidence suggests that our warming climate could cause sea levels to rise faster than previously thought, making storm surges like the one that pummeled Scituate more dangerous.

Several lines of research now indicate that a 3-foot global rise by 2100 is a plausible scenario, though some scientists forecast a smaller rise. In other words, what was once a problem for our great great-grandchildren is one our children could confront.

And it is possible the news could be even worse in the Northeast. Studies show that changes in ocean circulation driven by warming waters could raise sea levels an additional foot or more along New England shores by the end of the century.

Already, 65 acres of prime Massachusetts coastal real estate is swallowed by the sea every year; ocean waters have crept up about a foot here in the last century. While more land will be eaten away, storm surges — abnormal rises of water during severe weather — layered on top of higher seas could push much further inland, especially in flat coastal areas of New England, and oceanside homes in places like Scituate and Gloucester will be even more vulnerable. Some scientists say that climate change may also bring fiercer and more frequent storms.

As the Scituate flood demonstrated, the region is woefully ill-equipped to hold back a rising ocean. In some places along the Bay State's coast, concrete and boulder barriers, most more than a half-century old, protect billions of dollars worth of property. In the last five years, several sea walls have partially or entirely failed in Massachusetts, including ones in Gloucester, Marshfield, and Oak Bluffs.

Deeply concerned over the projected sea level rise, state officials commissioned a massive inventory of publicly owned sea walls and other coastal barriers four years ago. Almost 165 structures, whose failure would result in significant property damage, were declared in fair, poor, or critical condition, but only a fraction of them have been fixed because of the budget crisis. The price tag to repair and fortify all of them against rising seas is huge: more than a billion dollars.



Archived Edition: Friday, March 11, 2011

Ferocious Erosion Sees Shoreline Shapeshifting

By MIKE SECCOMBE

Three days ago, The Trustees of Reservations staff removed the last of the big old telephone poles delineating the parking lot at Wasque Point on Chappaquiddick, lest they lose them to the sea.

A week or so from now, the remaining half of the parking lot will probably be gone; the shoreline at Wasque has retreated almost 100 feet since early November, and continues to erode at a rate of about one foot per day.



Ocean has broken through dune to pond side.

How long might this go on?

"Who knows," said Chris Kennedy, The Trustees' Martha's Vineyard superintendent. "A year from now? Five years from now?"

Meanwhile, 10 miles or so along the Vineyard's south shore, part of the track to the eastern section of Lucy Vincent beach is gone, eaten up by the Atlantic.

"It's been ferocious this winter. I've never seen erosion so dramatic," said Kristin Maloney, chairman of the Chilmark beach committee.

"I mean, we get a bit of wash-over every winter, but it doesn't completely break the dunes down like it has this year. The dunes are basically gone in one section. A little beach is being created in the pond behind."

Already Lucy Vincent is essentially two beaches, separated by the crumbling cliffs.

"And there's now a big cave in the cliffs there. That's going to be really dangerous, because kids of course will want to walk in there," she said.

"And it's been bad all the way down the Windy Gates side too."

You get the picture here: even by the usual standards of Martha's Vineyard's constantly changing shoreline, this has been a dramatic winter.

As to why it has, different people attribute it to different causes.

In the case of the erosion at Wasque, Mr. Kennedy blames the breach in Norton Point beach, caused by a big storm four years ago.

Since that storm, the breach has moved slowly eastwards, as sand has been deposited on one side and removed from the other. Now the tidal flows through the gap are tearing at Wasque.

"As long as that concentrated current is forced against the shoreline, we're going to see massive erosion," he said.

"We think we won't see much accretion of sand until the breach closes," said Mr. Kennedy. "And who knows when that might be."

On the upside, he said, it seems at least some of the sand being taken from Wasque, along with trees and bushes plucked from the cliffs, is being redeposited around the corner on the east-facing beaches of Chappaquiddick.

Elsewhere on the south shore, he said, things were more typical of the seasonal changes which happen every year; there is erosion in winter and deposition when the wind changes to the southwest in spring and summer.

"At our Long Point property we have a typical winter beach profile. At high water the waves are pounding right up against the dunes," he said.

Ms. Maloney, however, says what she has seen over recent months is not typical.

"The ocean's definitely rising, I think. Some of these changes look permanent to me. Even during high tide in winter storms, it has never come in that far before.

"The sand will come back in summer, but there's definitely less beach than there used to be."

Of course, even the scientists who warn about climate change also warn against attributing any single event to the phenomenon.

So does Reid Silva, owner of Vineyard Land Surveying and Engineering, who has studied the data on coastal erosion on the Vineyard over many years.

The long-term patterns, however, are undeniable — the Vineyard is washing away at a pretty rapid rate. On average, the south shore is retreating about seven feet a year, more in some places than others and more in some years than others.

"And there are big variations, and some years look extreme compared with others," he said.

"A large section of cliff — 40 or 50 feet — might suddenly collapse one year, and then it could take several years for the fallen material to be washed away before the sea once again begins undermining the next section of cliff."

As to what climate change, a sea level rise of three or six inches, more frequent and intense storms might do to the rates of erosion, he says, "There's a lot of questions" yet to be answered.

But for south shore property owners, those questions are pretty vital. A number of houses already have had to be moved back from the edge, he said. A couple have even been specially designed on beams so they can be moved as the shoreline retreats.

"Erosion is going to continue. There's a lot of valuable houses on [the south shore of] the Island that are going to be threatened. And in the Squibnocket area in particular, there is not much room to move back in a lot of cases," he said.

Which is tough for them. But Chris Kennedy looks at the dynamic nature of the Vineyard shoreline in a more sanguine way.

"This is a place of tremendous change, and I think that is one of the things that makes living on the Vineyard so wonderful. You always have a different landscape to view, depending on the season," he said.

The fact is, Martha's Vineyard is a very temporary land form, which has been eroding since the last ice sheet retreated only 25,000 years ago.

"Sooner or later we are all going to have waterfront property, said Mr. Kennedy.

Press of Atlantic City.com

Delaware Bay beach erosion has homeowners desperate



Posted: Sunday, December 20, 2009 11:15 pm | Update

By RICHARD DEGENER Staff Writer |

LOWER TOWNSHIP — Tourists don't pack the home on summer days.

No high-rise condominiums or hotels overlook the no beach badges, lifeguard races, arcades or hot do

But the beach has no protection.

The lack of protection is the one major difference between the ocean-side and the Delaware Bay c

While the oceanfront gets millions of dollars a year in beach-replenishment funding, the Swopes l government for permission to spend their own money to protect their home, which could be one s

Jody Swope understands the reason.

"It's always about the ocean. The community makes money on the ocean-side. I totally get that. N Swope said.

What bothers Swope is people seem shocked to even hear there is erosion on the bayside. The Vil they have the same problems of dunes eroding, cliffs forming and water flooding nearby streets.

"People are shocked this happens," Swope said.

The Swopes, who live at 19 Redwood Ave., are among a group seeking a solution. They joined w well as Frank Murphy and Mary Domico at 14 Redwood to ask permission to spend \$150,000 of 175-foot retaining wall covered with a new sand dune.

"We had to mortgage our house to do this," Swope said.

The Swopes, who have lived here for seven years, are not rich. She's an artist and her husband is what one on the ocean is worth.

The homeowners, however, are desperate. Some recent storms have put the homes precariously close to the water. They uncovered a make-shift retaining wall somebody built years ago and left an electric pole with a transformer in the way.

Swope said about 17 feet of a 10-foot-high dune has disappeared since October.

"Every tide and storm that comes, we are not sleeping. We are fearful for our homes," Swope said.

The group appealed for help from Township Council recently. They don't want money. They need Environmental Protection to do the work but need the township's support since it has a right-of-way.

"I've lived here 10 years, and this is the worst it's ever been. We're not asking for any aid. Just help us get back to what it was," Fallon said to council.

Council pledged support. It will draft a resolution that will be sent to the DEP.

"I think we should grant them our permission as quickly as we can," Deputy Mayor Kevin Lare said.

Some issues persist, however. Township Attorney Tony Monzo is concerned with liability during the work. The homeowners agreed to assume the liability.

Councilman Tom Conrad is concerned a retaining wall could cause neighboring properties to erode. The DEP, which is just getting involved. DEP spokeswoman Darlene Yuhas said the agency got a request for a permit in front of the houses.

"We will evaluate it and will make a determination as to whether an emergency actually exists and if it is warranted," Yuhas said.

The DEP tends to discourage structures on the beaches, since they can make matters worse in the long run. Just sand, without the wall, would be a waste of money.

"Without the wall, that's \$10,000 in sand just to watch it wash away," Swope said.

The Swopes were not aware the U.S. Army Corps of Engineers proposed a major sand-replenishment project that would benefit spawning horseshoe crabs, nesting shorebirds and diamondback terrapin turtles.

The project was for wildlife, but it would have provided beach protection as well, with an 80-foot-wide strip of the coast in the Villas as well as Reed's Beach and Pierce's Point in Middle Township. The project is according to the Army Corps.

The Army Corps and the state DEP were planning to fund most of the work. The township backed contribute \$960,000.

"We're going in accordance with the desire of the locals. Lower Township is out and probably moving Township up towards Reed's Beach," said Army Corps spokesman Ed Voigt in 1999.

On Friday, Army Corps spokeswoman Sarah Rivette said the project has not been done. It was an separate appropriations bill needed to fund it was never passed.

It still could be done, and the township possibly could get back on board.

"It's not dead. It's just not funded yet," Township Manager Kathy McPherson said.

She said any change to the 1999 decision would be up to council. McPherson said the Redwood / help.

Along the ocean, towns including Ocean City, Cape May, Cape May Point and others have won pump in sand for half a century. It's a multimillion dollar commitment. The Cape May Point project expected to cost \$75 million over the decades. The state approved more than \$20 million in sand \$6 million for Strathmere.

The federal government expects to spend about \$13 million on New Jersey sand projects next year million on Long Beach Island and almost \$2 million in Atlantic City.

A project on the bay would not be long-term.

"It's different from ocean. Those are 50-year projects for storm reduction. This is a one-time environmental happen," Rivette said.

Contact Richard Degener:

609-463-6711

RDegener@pressofac.com



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SalemNews.com, Salem, MA

March 3, 2011

Crane Beach erosion is region's worst

Salem, Marblehead and Swampscott show little erosion

By Jesse Roman
Staff writer

—
IPSWICH — Take a look at a 30-year-old aerial photo of Crane Beach and compare it to a more recent one, and the contrast is startling.

"It's almost like a whole different place," said Cheryl Hapke, lead author of a new report from the U.S. Geological Survey that details erosion along more than 650 miles of Atlantic coastline from Maine to Virginia.

The survey found that 68 percent of the beaches studied down the coast have eroded during the past 150 years, but few places have had the kind of short-term volatility that has occurred in Ipswich.

For the last 25 to 30 years, the Crane Beach area has been eroding at a rate of about 16 feet per year, Hapke said.

"It's the highest short-term rate of erosion in all of the New England North region," she said. "It's enormous."

The average rate of erosion along the entire 650-mile study area was 1.6 feet per year, including an extreme case of 60 feet in one year, according to the report.

To make matters more interesting, the Crane Beach/Castle Neck area also has the largest annual accretion in the entire New England North Region, which stretches from Cape Ann to Maine. Accretion is the opposite of erosion — new land stretches eastward, driving back the coastline.

The exceptional erosion and accretion happening along the Ipswich coast is not necessarily a good or bad thing; it's just a result of the unique geography of the area, Hapke said.

"There are pulses of material coming down the river mouth that interacts with the tides and waves to create conditions that are constantly shifting things around," Hapke said. "It's really just the natural state of things if you look at that coast. It's what you would expect to see."

In contrast to the Crane Beach area, the stretch of coast from Salem to Nahant — which includes Marblehead and Swampscott — is pretty stagnant, the report concludes. The coast is eroding overall, but at a rate of less than half a foot per year, which is small enough to be insignificant, Hapke said.

"Salem, in terms of a dynamic environment, it's not — which is good," she said. "The reason the rates are so low, I would guess, is the orientation of the coast. It is tucked in and very protected from a lot of wave energy, nor'easters and that sort of thing."

The worst erosion region in the study area was from New York's Long Island to the Virginia/North Carolina border, a region with more vulnerable barrier beaches and frequently changing inlet areas. New England's rockier coasts are receding more slowly, but the percentage of coastline eroding here is higher, the report said.

The report also indicated that erosion has slowed slightly in the past 25 to 30 years, with the percentage of beaches eroding dropping to 60 percent, perhaps due to beach recovery programs.

Beaches change for a variety of reasons, including storms, rising sea levels, human activities and the amount of sand.

The report was conducted to find out what is happening with the eastern coastline, not why or what to do about it, Hapke said.

"We wanted to produce a set of data that can be used by the people who do analysis," she said. "That's the next step."

The information will help officials make future decisions about how best to use the land, she said.

The report is the fifth in a geological survey project to study historical shoreline changes around the country. Shorelines have growing coastal populations and a wealth of infrastructure that's vulnerable to erosion.

Previous reports on areas such as the Gulf of Mexico and the southeast Atlantic were less comprehensive than the new report, which studies erosion rates on nearly 80 percent of New England and mid-Atlantic coasts.

Researchers surveyed 21,000 locations over 650 miles of coastline from Maine through Virginia, measuring shoreline changes using old maps and aerial photographs, as well as lidar, which is technology similar to radar that uses light to gather topographical information.

Information from The Associated Press was used in this report.

CALIFORNIA

Coastal sites retreat from rising seas, worsening erosion

PROJO 1/23/11

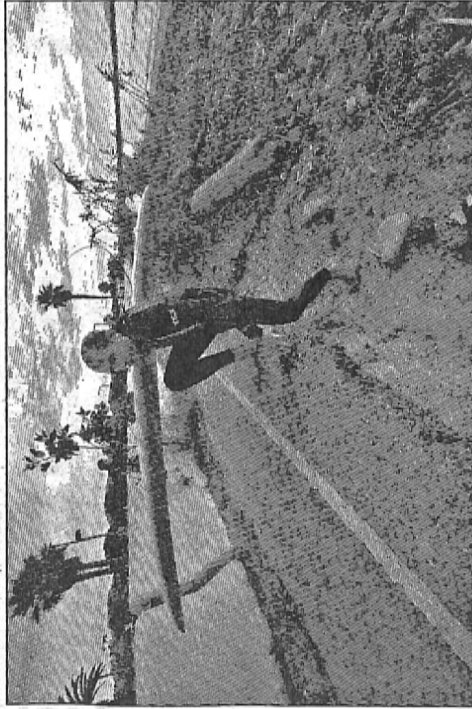
Erosion is forcing landowners to make a difficult choice: reinforce or relocate

By TONY BARBOZA
LOS ANGELES TIMES

VENTURA, Calif. — At Surfers Point, California is beginning its retreat from the ocean.

Construction crews are removing a crumbling bike path, ripping out a 120-space parking lot and laying down sand and cobblestones. By pushing the asphalt 65 feet inland, the project is expected to give the wave-ravaged point 50 more years of life.

The effort by the city of Ventura is the most vivid example to date of what may lie ahead in California as coastal communities come to grips with rising sea levels and



MCT / AL SEIB

worsening coastal erosion. As the coastline creeps inland, landowners will increasingly be forced to decide whether to spend vast sums of money fortifying the shore or give up and step back.

State officials say the \$4.5-million project in Ventura is

the first of its kind in California and could serve as a model for threatened sites along the coast.

"Managed retreat, as it's called, is one of the things that we're going to have in our quiver to deal with sea level rise and increasing storms,"

Jan Sovich climbs onto a crumbling pathway at Surfers' Point in Ventura, Calif., last month. Rising ocean levels and eroding beaches have the community relocating a crumbling bike path and parking lot farther from the ocean to give the beach more life.

perts say. In California, the sea is projected to rise as much as 55 inches by the end of the century and gobble up 41 square miles of coastal land, according to a 2009 state-commissioned report by the Pacific Institute.

For years, the preferred solution to an eroding shoreline has been to build sea walls or dump imported sand to serve as a buffer. About one-third of the Southern California coastline and about 10 percent of the shore statewide have been fortified with seawalls and other hard structures.

Although artificial barriers may protect property in the short term, they often intensify the impact of waves, leaving beaches stripped of sand until they narrow or disappear, permanently altering surf patterns.

As a result, beach-armor-

ing projects are increasingly out of favor with environmentalists and coastal regulators.

As Surfers Point, Ventura officials first knew they had a problem about two decades ago, when storms started chewing away at the ocean-front bike path.

Officials at the Ventura County Fairgrounds initially suggested a buried seawall. But environmentalists and surfers fiercely objected, saying that armoring the shore would protect a parking lot at the expense of the beach and destroy the point break near the Ventura River that generates the distinctive, surf-friendly waves for which the site was named.

After extensive debate, the fairgrounds agreed to give up some of its property for a plan that would provide room for the sand to shift.

NORTH CAROLINA

PROTO - 1/23/11

Water rising 3 times faster than 100 years ago

At risk: More than 30,500 houses, other buildings, including some of state's most expensive real estate

By **BRUCE HENDERSON**
MCCLATCHY NEWSPAPERS

MANN'S HARBOR, N.C. — The sea that sculpted North Carolina's coast, from its arc of barrier islands to the vast, nurturing sounds, is reshaping it once again.

Water is rising three times faster on the North Carolina coast than it did a century ago as warming oceans expand and land ice melts, recent research has found. It's the beginning of what a North Carolina science panel expects will be a 1-meter increase by 2100.

Rising sea level is the clearest signal of climate change in North Carolina. Few places in the United States stand to be more transformed.

About 2,000 square miles of its low, flat coast is 1 meter (about 39 inches) or less above water.

At risk are more than 30,500 homes and other buildings, including some of the state's most expensive real estate. Economists say \$6.9 billion in property, in just the four counties they studied, will be at risk from rising seas by late this century.

Climate models predict in-

tensifying storms that could add billions of dollars more in losses to tourism, farming and other businesses.

The Outer Banks, some scientists predict, could disintegrate into a string of high spots reachable only by boat.

Human habitats will be forced into momentous decisions — fortify or flee.

State planners are preparing detailed maps of future high-water lines, groundwork for an eventual retreat inland of both people and buildings.

"To me, it's the big planning problem for this century," said Scott Shuford, planning director in Onslow County, on the southern coast. "There's an element of urgency about it, but at the same time a recognition that it can't be solved easily."

It seems implausible that an almost imperceptible rise in the sea — about the thickness of two nickels a year — could cause such havoc.

But it took only an 8-inch global rise to threaten the iconic Cape Hatteras Lighthouse, which was 1,500 feet from the Atlantic when it was built in 1870. By 1999, when hydraulic jacks gingerly nudged the striped brick tower inland, waves crashed at its foundation. Long before people were capable of such engineering, the sea and wind were shaping the Carolina coast. Coastal geologists who

reconstructed sea-level changes on the northeastern North Carolina coast say levels were stable for 3,000 years. The sea began rising in the 19th century. The rate of climb doubled again in the 20th century, with a further quicken-

ing in the past 30 years.

Scientists envision more acceleration this century. Some say seas could rise to as much as 6 feet above current levels by 2100 if large ice masses melt in Greenland and Antarctica.

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<http://www.yankeemagazine.com/issues/2008-09/features/nantucket-beach-erosion>

<http://www.capewind.org/news869.htm>

<http://www.wickedlocal.com/nantucket/news/environment/x1042544545/Paradise-lost-Baxter-Road-owner-moving-house-to-Monomoy#axzz1Jcnzovgc>

<http://www.wickedlocal.com/nantucket/news/environment/x1664788198/Sands-of-Time-Erosion-and-the-Sconset-Bluff#axzz1Jcnzovgc>

http://www.wickedlocal.com/capecod/visitor_guide/beaches/x1793476343/Major-erosion-damage-reported-on-Outer-Cape#axzz1Jcnzovgc

http://articles.boston.com/2010-05-30/news/29299994_1_storm-damage-winter-storms-major-storms

<http://capecodproductions.com/>

<http://www.newsday.com/long-island/nassau/erosion-imperils-4-fire-island-homes-1.1781527>

http://www.boston.com/news/local/breaking_news/2008/11/storm_erosion_d.html

<http://www1.whdh.com/news/articles/local/BO137751/>

<http://abcnews.go.com/US/blizzard-flooding-evacuations-fires-scituate-massachusetts/story?id=12485328>

http://articles.boston.com/2010-12-28/news/29303528_1_sea-walls-tide-freight-train