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SILENCE ON THE BEACH

By Orrin Pilkey

There is a serious problem facing the most precious strip of land in our state. During the last 5 years North Carolina beaches have taken a beating. Our beach nourishment program has gone dreadfully wrong and the various government agencies responsible for keeping our beaches healthy have, without exception, abdicated their responsibility.

Silence, dead silence, stony silence has met the beach degradation juggernaut. Beaches too full of sharp shells to walk on with bare feet (Emerald Isle, 2003), beaches intended for nesting sea turtles filled with fist-sized cobbles (Oak Island, 2001), beaches with more mud than sand, (Atlantic beach, 2005) beaches made up of sand mined in environmentally damaging fashion (Emerald Isle, 2005) have elicited not a whisper of displeasure, nor a murmur of complaint from officialdom.

Instead, town managers praise disastrous beaches, mayors declare no problems exist and army colonels stand on bad beaches, hands on hips, arrogantly declaring victory over nature. One community in particular has proved to be particularly irresponsible and out of control in the care of its beaches. That community is Emerald Isle.

North Carolina's open ocean shorelines are retreating almost everywhere. And on almost every barrier island not in government hands, buildings - mostly seasonal rental cash cows - line the beach. Few vacant ocean lots remain. Since the shoreline is retreating toward these precious buildings, a great deal of effort

and money is being expended to halt the landward march of the surf zone.

There are three ways to respond to a retreating shoreline:

- Construct seawalls
- Bring in new sand by truck or dredge and put it on the beach
- Retreat by allowing buildings to fall in, demolishing them or moving them back.

But each approach has its own problems: Seawalls destroy beaches in a decadal time frame; beach nourishment is very costly and can be environmentally damaging and retreat is considered by many to be almost un-American.

If our state's highest priority is to preserve shorefront buildings, than seawalls – the bigger the better - are the way to go. If our highest priority is to preserve beaches for future generations, retreat is the best way to go. So the question is, “Which is more important, beaches or buildings?”

Considering the fact that global warming is causing the sea level to rise, which will increase rates of shoreline erosion in the future and make both the seawall option and the nourishment option more expensive, we think most people will choose the beach.

But in North Carolina, as elsewhere, a relatively small number of wealthy and influential people crowd the beachfront. And as the value of beachfront property skyrockets, the relative value of beaches, treasured by millions, ebbs with the tides and slips slowly down the tube.

North Carolina, once a coastal management pioneer admired by every other coastal state, passed rules prohibiting the construction of seawalls back in 1985. In 2004, pushed by Senate President Pro Tem Mark Basnight, the state toughened its anti-seawall stance by

making the rules into laws. This move recognized that seawalls eventually result in the loss of the beach in front of them, a lesson learned from New Jersey - a state with more 150 years of shoreline hardening experience.

Unfortunately, North Carolina left a loophole in its seawall law big enough to drive a Mack truck through. The state allows, as a temporary measure, sand bag seawalls to give property owners time to move threatened buildings back. But beaches are lost just as fast in front of sandbag walls as they are in front of concrete walls.

Adding fuel to the fire, the state has failed to enforce the 2-year limit on sandbag seawalls. Today, hundreds of sandbag seawalls line our shoreline and in some places (e.g. South Nags Head) sandbags have been in place for two decades, having been replaced several times. Each time the sand bags wear out or are damaged in storms, the Division of Coastal Management (DCM) dutifully issues a new permit and now the “seawall effect” has taken out the beach in several places in South Nags Head. North Carolina deserves better from its coastal management agency.

Like most coastal states, North Carolina is looking to beach nourishment (also called replenishment but better termed dredge and fill) to solve its coastal management problems. But dredge and fill has its own set of problems. When sand is dumped on the beach everything is killed and the entire nearshore ecosystem including birds and fish may take years to recover.

Meanwhile, since dredge and fill must be repeated again and again forever (on a 2 to 4 year basis here in North Carolina) it is not clear whether biological recovery can ever completely occur. In addition, sand must be similar to (compatible with) the native beach sand if turtles are to successfully nest and if parents with

children, surfers and swimmers are to enjoy the particular beach they have come to know.

In some ways, nature has dealt us a bad hand. We have, on average, the highest waves along the US east coast, which means that nourished beaches will, on average, disappear faster here than elsewhere. That's not all the bad news. Unlike the southern half of South Carolina and Georgia where offshore sand abounds, we have relatively little sand on the continental shelf to pump up on beaches. Much of our shelf is rocky, and good beach sand must be sought using sophisticated and costly prospecting techniques. The best sand is often miles away from the beach that needs it. The bottom line: beach nourishment in North Carolina will be costly.

For 20 years we in the Program for the Study of Developed Shorelines in the Nicholas School at Duke have kept close track of the national beach nourishment experience. We believe we have the most complete record (<http://www.nicholas.duke.edu/psds/nourishment>) of beach nourishment available for all the nation's beaches including the Great Lakes and the Pacific coast.

Our list includes beaches funded by state, local, federal, and private sources and many combinations thereof. On the basis of this accumulated knowledge we believe North Carolina leads the national pack with the most damaging, most irresponsible beach nourishment program in the nation. Leading North Carolina's march of shame is the tiny coastal town of Emerald Isle.

THE EMERALD ISLE INDICTMENT

In terms of mismanagement of the public's beaches, the town of Emerald Isle on Bogue Banks has become an outlaw community followed closely by a slew of other NC coastal towns. In Emerald Isle about 1,400 voters speak for 3,600 year round residents, 6,000

property owners and, at any given moment during the season, 50,000 vacationers. On an annual basis, those who use the beach probably outnumber voters by several hundred thousand. As is the case in most of North Carolina's beach communities, a very small group of people runs the show, and run it badly.

- In April 2003 a very poor quality beach was pumped up on Emerald Isle. The “sand” consisted mostly of fragmented oyster shells impossible to walk on with bare feet. In a few months, wind-blown sand quickly covered the beach with a few inches of good sand and a subsequent nourishment project covered some portions. Understandably, many locals and visitors assumed (and still do) that the bad beach had been “repaired” by the thin new sand cover. Like a bad dream that won't go away however, sharp shells will be showing up between the high and low tide lines and just beyond for decades to come. They will be particularly abundant after storms. There are many cut feet in Emerald Isle's future.

The mind-boggling fact about this beach is that, even before the project started, everyone knew the sand would be bad. They knew because Pine Knoll Shores and Indian Beach, next door to Emerald Isle, used the exact same material the year before. However, since no government agency condemned the Pine Knoll Shores project, Emerald Isle correctly figured they could get away with it, too. And they did.

The sand was so bad because these projects were done on the cheap. In order to cut corners, Emerald Isle, Pine Knoll Shores and Indian Beach all obtained sand from as close as 500 yards from the beach (based on our own observations). To put this in the context of good beach management, the Dutch (because too-close dredging causes sand supply and wave pattern problems) require dredges to be so far offshore they cannot be seen from

the beach.

Interestingly, the Corps pumped a similar too-shelly beach in Jacksonville Beach, Florida around the same time. But there, the town demanded that the Corps screen the beach sand - a costly exercise that removed the poor quality shell material and greatly reduced the problem.

- A few months after the town completed its project, in September 2003, Hurricane Isabel paid a visit to the northern Outer Banks. After the storm, EI mayor Art Schools and Town Manager Frank Rush proudly proclaimed the new beach came through the storm scot-free. The town's official newsletter stated in October that, "There was no significant beach erosion, and some areas of the beach actually gained sand." The entire town sustained only a paltry \$60,000 in damage (mostly lost shingles). Within weeks, the town had asked for, and would receive, a \$1.7 million grant from the Federal Emergency Management Agency to, "replace sand lost during the storm."
- In a project completed in May of 2005, sand for another Emerald Isle beach stabilization project was mined from the seaward-extending tidal delta at Bogue Inlet. Mining of tidal deltas is always a temptation for the short sighted and irresponsible because the sand is high quality and cheap. The shape of such deltas is in equilibrium with tides, waves and the supply of sand. When sand is mined from inlets the deltas will reconstitute or rebuild themselves using sand that would normally be transferred across the inlet, from island to island. Tidal Delta mining clearly violates the state rules on beach nourishment (which we will discuss later).

In the case of Bogue Inlet, this will create a sand shortage causing increased erosion rates for both Emerald Isle and Hammocks Beach State Park, the adjacent islands, and will

- The 2005 beach nourishment/inlet mining project almost didn't happen because only one bid was received, and it came in almost \$4 million more than the town expected. So, Emerald Isle did what it promised not to do and turned to the North Carolina taxpayer to bail it out.

But if the town was going to get state tax money, it had to provide “adequate” public access and public parking to the entire beach constructed with public funds. And it didn't. Short on time and in a panic, the town submitted a grant application to the NC Division of Water Resources (DWR) claiming it had more public beach access and parking than it really did.

The application states, and the Emerald Isle town manager confirmed, that it had seven public parking areas along the 4-plus mile length of beach to be nourished. But official town and county maps show only six parking areas - four that contain only one handicap parking space each and another that is several blocks away from the beach.

The state does not define “adequate” but one parking lot for four miles of beach clearly isn't. We can only conclude, after reviewing the grant application, that Emerald Isle knowingly presented false information and that state bureaucrats were

- Adding to the towns' public parking problem is the fact that some of this state taxpayer-funded beach was placed in front of private gated communities where no public access to the beach is allowed. In our estimation, almost 80% of the 4-mile long artificial beach is effectively inaccessible to Triangle residents interested in spending a day on the beach you helped pay for.
- Compounding Emerald Isle's beach problems is the arrogance and disdain that emanates from the town's elected and appointed leaders. Various statements made by Town Manager Frank Rush, such as his refusal to acknowledge that the bad beach is bad followed by a veiled threat to use the bad material again in the future, only serves to confirm the designation of Emerald Isle as an outlaw town.

In his unwavering dedication to his employer, Mr. Rush ignores possible problems with mining the tidal delta of Bogue Inlet, persistently glosses over public access/parking problems and convinced DWR that the town provided adequate public access and parking. We assume his statements and actions reflect the official view of the town council or he surely would have long since been fired.

Bad sand quality, unfortunately, is not restricted to Emerald Isle. Sand full of fist-sized cobbles was pumped up on Oak Island in 2001 and muddy sand was pumped up on Atlantic Beach in 2005. Inlet sand mining in NC has not been restricted to Bogue Inlet either. Shallotte Inlet, between Ocean Isle Beach and Holden Beach, was mined in 2001 and is now causing accelerated shoreline erosion on adjacent beaches. Some truckloads of muddy sand were dumped on the beach at Kittyhawk and shelly sand was

pumped on the private beach at Figure 8. Where is the recognition of the rare treasure that is our beach?

WHO ARE THE SILENT ONES?

The NC Division of Coastal Management (DCM). This vastly understaffed agency has said not a public word about the bad beaches and bad sand mining practices. Although state rule 15A NCAC 07H.0308 says, “*Sand to be used on the beach shall be compatible with the natural grain size and composition. Sand to be used for beach nourishment shall be taken only from those areas where the resulting environmental impacts will be minimal*” and gives DCM clear authority to prevent the placement of unacceptable material on state beaches. A DCM representative stated that without precise guidelines the agency will not act.

Perhaps the rule is not as clear as DCM would like. But common sense and responsible management of the state’s public trust natural coastal resources for future generations takes precedence over semantics and the agency should have spoken out. At least they could have tried to stop the bad beaches. At least they could have said something out loud about the bad beaches. But DCM is an agency that has been beaten into submission. Gone are the days when the North Carolina Division of Coastal Management proudly led the nation in restricting seawalls and instituting rolling set back lines.

North Carolina Division of Water Resources (DWR). This state agency oversees the Water Resources Development Grant Program and doles out state money for federal and non-federal beach nourishment/stabilization projects. Led by John Morris, a North Carolina Shore and Beach Preservation Association (NCSBPA) board member and ardent beach nourishment proponent who never met a beach engineering project he did not like, the agency has provided tens of millions of state tax dollars to stabilize our state’s

beaches. DWR is the agency that spent \$3.8 million on the Emerald Isle/Bogue Inlet project and \$4 million on the project that placed rock along several miles of beach on Oak Island. The agency clearly never looks back to see what its funding has accomplished.

The North Carolina Coastal Resources Commission (CRC).

The state's citizen-based, rule-making body could have insisted on high quality sand and made it stick, we believe, but took no decisive action as North Carolina's beach degradation charged ahead.

Part of the commission's problem is that it is overwhelmed, under funded, meets only five times per year and spends an inordinate amount of time dealing with minor regulatory issues such as variances. More fundamental is a problem that plagues many NC commissions – the CRC is comprised of 50 % bad guys and 50% good guys (you define which is which) so little is accomplished. In our view, the CRC is loaded with the very people who are responsible for the problems leading to poor beach management.

The North Carolina Coastal Science Panel. The Coastal Science Panel's job is to furnish scientific advice to DCM and the CRC, but has not weighed in on the beach quality issue in a timely fashion. For over two years this group has discussed new beach sand compatibility guidelines, but to no avail. No rule has yet been put in place to protect state beaches. If history is any indication, DCM probably will not enforce any new guidelines anyway.

This group (Pilkey is a member and therefore bears some responsibility for the group's inaction) has other problems including the fact that five of the eleven members are engineers. Nothing wrong with engineers except they take a solution-oriented view rather than a purely scientific view of beach problems.

Another problem is that some panel members serve as private consultants for, and are paid by, the very same North Carolina coastal communities responsible for causing many of the problems the Panel is charged with helping to solve. For example, Tom Jarrett, retired US Army Corps of Engineer's Wilmington District coastal engineer and William Cleary, a UNCW coastal geologist, both worked on the Bogue Inlet mining project and consult for coastal clients such as Figure Eight Island and North Topsail Beach. Greg Williams, the current chief of coastal engineering in the Corps Wilmington District and a Science Panel member, is responsible for the disastrous Shallotte Inlet mining project.

The North Carolina State Legislature. In 1999, the NC General Assembly established a Legislative Research Commission on beach nourishment. Co-chaired by Ray Sturza, Dare County Planning Director and Representative Nurham Warwick, the commission was supposed to address the complex and controversial issues associated with beach nourishment. If you think a governmental study commission would explore all sides of an issue on behalf of the people of North Carolina, think again. To the legislatures' everlasting shame, this group was packed with beach nourishment proponents and heard nary a negative word about nourishment.

The commission's final recommendation was to establish an independent beach nourishment commission and fund that would further move the process out of the broad context of coastal zone management. In other words, it would take beach nourishment completely out of the hands of the Coastal Resources Commission – a bad move for the beach, but a favorable move for special interests intent on protecting coastal development at all costs. Fortunately, this idea has gone nowhere. But there always seems to be a member of the General Assembly susceptible to the temptations of the beach nourishment lobby, so the idea continues to pop up.

In 2003, a state legislative committee overrode one of the CRCs few recent positive decisions to prohibit swimming pools in the setback zone between buildings and the shoreline. Too bad the legislature didn't take a similar interest in the much more important issue of bad beaches.

Local Coastal Politicians. Local elected town councils and mayors could have stopped the bad beaches in Pine Knoll Shores, Emerald Isle, Ocean Isle and Oak Island with a collective snap of their fingers. But they remained silent, perhaps because to complain might have jeopardized their funding. No one bites the hand that feeds them.

At the local level, saving buildings and the tax base overrides concern for the quality of beaches for tourists, concern for the environment and concern for the preservation of beaches for future generations. The fact that Emerald Isle knew ahead of time that the 2003 beach would be bad speaks volumes for the priorities of this community's leaders.

The US Army Corps of Engineers. The Wilmington District of the US Army Corps of Engineers has approved and issued permits for every one of the bad beach projects. If Emerald Isle is an outlaw community, the Wilmington District certainly qualifies as an outlaw agency.

Colonel James Delony, previous Wilmington District Commander, visited Pine Knoll Shores in March 2002 and hailed the project as a "great job" declaring, "what a great piece of work that's been" referring to the shell hash and gravel beach. It was a breathless bit of bureaucratic courage.

The Corps carried out the flawed mining of Shallotte Inlet in 2001, and intends to go back to the inlet for more sand to repair the

damage caused by the original mining, which will cause more damage.

The Corps approved the flawed design of sand mining at Bogue Inlet, and Corps itself put the muddy sand on Atlantic Beach and the rocky material on Oak Island. Both came from stockpiled dredged material that the Corps said was sampled ahead of time. If the Corps did sample these sites as they said they did, they sure did an incompetent job.

Imagine that the nation's first beach nourished as a sea turtle habitat restoration project (Oak Island) is full of rocks! And the 2005 Atlantic Beach nourishment project that was supposed to be a wide beach extending into Pine Knoll Shores ended up much shorter and much narrower than projected. The sand was so fine and so full of mud that it quickly moved out to sea and only a small portion of the expected beach volume was actually put in place. The engineering incompetence of the Wilmington District of the corps of Engineers continues to be downright awe-inspiring. (It has not always been this way. In the 60's and 70's the district had a good reputation – at least by Corps standards)

Over long years of interaction with the Wilmington District we have learned that public comments on environmental impact and other documents are viewed as a procedural requirement and no more (a problem not unique to the Corps). Public comments by us - and others – always seem to be ignored or answered with a kind of “thanks, we'll take that into account” attitude. The district had ample warning about all of its beach quality missteps in public comments, but ignored them all.

The US Fish and Wildlife Service (FWS). The FWS offered the only bright spot in this sordid, sad picture, even if only for a short time. FWS has an official interest in beach quality because of its impact on threatened and endangered species such as piping

plovers and sea turtles.

Tracy Rice, a coastal geologist fresh out of graduate school working for the FWS Raleigh office, read the consultants report and looked at samples from the sea floor and immediately understood that the proposed 2002 Pine Knoll Shores beach was going to be extraordinarily bad. Tracy's supervisor sent 2 letters to the Wilmington District in June and October of 2001 informing them that the material was coarse shell gravel unsuitable for the beach. But the Corps chose to ignore the Service's concerns and issued a permit for the project anyway.

FWS sent a third letter to the Corps in September 2002, after the Pine Knoll Shores project was completed and after the poor quality of the material was obvious, stressing that Emerald Isle should not be allowed to use the same bad sand. The Corps again ignored FWS warnings

Copies of these letters were sent to the Division of Coastal Management and to all of the communities involved. There was no one who could say they didn't know. No one had an excuse to remain silent.

As a reward for her alertness, a shower of letters complaining about Rice reached FWS offices in Atlanta and the Department of Interior in Washington. Complainers included local mayors, local politicians and beach nourishment proponents such as Harry Simmons, president of the North Carolina Shore and Beach Preservation Association (see below) and Howard Marlowe, the association's Washington, DC lobbyist. According to documents obtained through the Freedom of Information Act by North Carolina Coastal Federation Coastkeeper Frank Tursi, the Wilmington District of the Corps was, to some extent, directing and coordinating this letter writing campaign.

The Corps and other beach nourishment proponents in North Carolina need not fear the Raleigh FWS office anymore. After the Emerald Isle project, Ms. Rice moved to Pennsylvania and North Carolina lost the only beach quality advocate in government. The Raleigh office of the USFWS is quiet as a mouse once again.

Consultants. Consultants have effectively taken over the management of our coast, and for all practical purposes, beaches are now viewed as infrastructure to be engineered like highways, sewer systems and elevated water tanks. Coastal Science and Engineering (CSE) identified the source of the bad sand for Pine Knoll Shores and Emerald Isle while Coastal Planning and Engineering (CPE) designed the sand mining project at the tidal delta in Bogue inlet.

In its project design, CPE predicted that the tidal delta would completely reconstitute itself within four years (an impossibility). This would require construction of a dike across the natural channel to stop tidal flow and encourage the accumulation of sand along the edge of the inlet in front of threatened houses on Emerald Isle that were about to fall in due to erosion.

After 3 months, the dike has almost completely disappeared and the design of the Bogue Inlet project by CPE clearly was poor. But it doesn't matter because the design was a good fig leaf for politicians to march onward with the inlet mining. And, as might be expected, EI Town Manager Frank Rush is now defending the failed design saying that the dike across the old channel wasn't important anyway.

NC Shore and Beach Preservation Association (NCSBPA). You might think, from its name, that this group is very much concerned with beach quality. But it's not. A more appropriate name would be "Beachfront Building Preservation Association" or "Shore and Beach Nourishment Association." (Note: The group has recently

changed its name to the North Carolina Beach, Inlet and Waterway Association). Harry Simmons, Mayor of Caswell Beach, NC, is president of this group and an effective lobbyist whose mission is to get everyone but the local community to pay for beach nourishment. The idea of retreating from the shoreline is unthinkable for this group. Simmons has a Karl Rove attack mentality and regularly trashes nourishment opponents including Pilkey.

Environmental groups. The NC Coastal Federation (NCCF) is the premier coastal environmental group in the state and should have been hollering from the mountaintop about the bad beaches. NCCF works behind the scenes and has a powerful lobbying effort in Raleigh. But it deals mostly with water quality and preservation of wetlands and its approach is very much non-confrontational. It is distressing that NCCF chose not to fire all barrels when an environmental issue as great as the destruction of the beach occurred almost in the backyard of the group's headquarters building.

NCCF Cape Lookout Coastkeeper Frank Tursi was very effective, however, in feeding facts about the beaches and the politics behind them to the media, which is why we consider him one of the few heroes of the Emerald Isle debacle.

HOW TO BREAK THE SILENCE

What can be done about an outlaw beach community like Emerald Isle and a government so non-responsive at every level that additional beach degradation is all but guaranteed?

One good step in the right direction would be to foster an understanding that we have a coastal development problem, not a coastal erosion problem and that our beaches would do just fine if

left alone. There is no erosion problem until we build something next to the beach.

Changes can happen, but not without your help.

Forget about the Wilmington District. The Corps is an arm of congress – not of the people and can only be reformed through our congressional delegation in Washington.

We believe that legislators from here in the Triangle and elsewhere in the Piedmont have the clout to save our beaches. Some like Representative Pricey Harrison from Greensboro are already very active in beach affairs. Maybe you should talk to your representative about beach sand quality, public access, rules enforcement and the lack of agency backbone.

And if you don't like what they have done to your favorite beach, phone city hall and tell them. Then vote with your feet and move on to a community that cares about the beach.

Your great great grandchildren will be grateful for your foresight.

OUR EMERALD ISLE HEROS

In the sad case of Emerald Isle's mismanagement of the state's precious natural coastal resources, a few heroes stand out. These individuals, who in all cases risked their status in the community or agency, tried to stop the juggernaut and hold the line for quality beaches for future generations of North Carolinians. We all owe them a debt of gratitude.

Emily Farmer, former Emerald Isle Town Council member. Emily was on the EI town council when the first bad beach was

pumped up on PKS in 2002. She energetically opposed the EI project having learned from Tracy Rice that the sand would be as bad as that dumped on Pine Knoll Shores. This effort earned her a torrent of negative letters to local papers and snubs at the grocery store. To no one's surprise, her dedication cost her the next election. The voters of Emerald Isle will reap what they have sown.

Tracy Rice, the young coastal geologist with the US Fish and Wildlife Service in Raleigh, was the sole government worker who spoke out and warned against the bad beaches. Copies of her three letters (signed by her boss) warning the Corps were sent to all the communities involved, as well as to state's coastal managers. For her efforts, she was rewarded with a flood of letters to her bosses in Atlanta and Washington urging she be fired or held back from doing her job. Before she moved away, Tracy also warned everyone about the bad beach material for the 2003 nourishment project on Emerald Isle and recommended not mining the tidal delta at Bogue Inlet.

Frank Tursi, North Carolina Coastal federation, Cape Lookout Coastkeeper, played a less visible but critical role in opposition to the bad beaches along Bogue Banks. Frank obtained material from the Corps Wilmington District through the Freedom of Information Act indicating that the Corps was orchestrating resistance to project opponents such as Tracy Rice. Frank also kept other activists and the media posted on the nature of the beach, and the progress of various projects. For a number of months, he organized free beach tours to any and all wishing to see the problem.