The following letter was written about the North Carolina shorelines, but offers another view on the issue for Longboat Key.

North Carolina law (G.S 115A-115.1) prohibits the use of groins — steel, rock or wood walls built perpendicularly to the beach in order to trap shifting sand — and other permanent erosion control structures along ocean shorelines. This ban is based on one, extensive studies and technical data documenting the detrimental impacts of erosion control structures and two, 150 years of documentation of the negative impacts of shoreline stabilization on the barrier islands in New Jersey.

The negative impact of groins on downdrift shorelines is well understood. When a groin works as intended, sand moving along the beach in the so-called downdrift direction is trapped on the updrift side of the groin, causing a sand deficit and increasing erosion rates on the downdrift side. This well-documented and unquestioned impact is widely cited in the engineering and geologic literature.

The United States Army Corps of Engineers’ Coastal Engineering Manual describes groins as “…probably the most misused and improperly designed of all coastal structures. Over the course of some time interval, accretion causes a positive increase in beach width updrift of the groin. Conservation of sand mass therefore produces erosion and a decrease in beach width on the downdrift side of the groin” (USACE, 2002). In his textbook (used by most coastal engineering programs to introduce beach processes) Paul Komar, professor emeritus in the College of Oceanographic and Atmospheric Sciences at Oregon State University, states, “Groins and jetties have the same effect in damming the shoreline and increasing the beach width updrift of the groin” (Komer, 1998). There is no debate. Groins cause downdrift erosion.

While the extent, degree, and duration of negative impacts cannot always be accurately predicted, a groin placed at the terminus of a barrier island, near an inlet, interrupts the natural sand bypass system. This deprives the ebb and flood tide deltas of sand and can cause substantial negative impacts to adjacent islands. In a complex coastal system, the precise location, onset and scale of these negative impacts are very difficult to pinpoint. As with all erosion control structures, it may take years for groin impacts to become apparent. This is why promises to monitor such projects ring hollow, and why disputes over groin impacts often end up in court. Judges, rather than scientific experts, end up making the coastal management decisions.

Using groins in conjunction with beach nourishment projects is of dubious value as well. When big storms occur, groins direct strong currents that carry large amounts of sand seaward, in an offshore direction parallel to the groins. After Hurricane Hugo, for example, sidescan sonar studies showed gullies excavated on the continental shelf adjacent to each of the groins on Pawleys Island in South Carolina. Because much sand loss is offshore during storms, groins will have little impact on holding sand in place (and may even accelerate loss).

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