

SHORELINES – April 2005 As presented to the Island Review Magazine.

Inlets

The Bogue Inlet Channel/Western Phase Beach Nourishment Project should be almost complete by the time this issue of the *Island Review* is delivered to your doorstep or various outlets in Carteret County. We actually talk a lot about inlets in our daily lives, whether we're discussing the Bogue Inlet Project, maintenance dredging of shallow draft inlets up and down N.C., Beaufort Inlet and the Morehead City Harbor, and all of the more day-to-day, "hands on" issues we tend to think about in relation to inlets like safe navigation, shoreline erosion, fishing, etc., etc.

So let's discuss inlets this month from a geomorphic perspective (geo = earth; morphic = form, structure, shape). Actually perhaps "outlets" is a more appropriate term for these tidal pathways as one of their primary functions is to help drain water from upper estuaries and sounds, especially after a large storm. That issue aside, there are approximately 20 inlets in N.C. currently (some more ephemeral or prevalent than others) with approximately a quarter of the inlets north of Cape Lookout and three quarters south of Lookout. The slope of the coastal plain, geologic underpinnings, and tidal range all contribute to this rather skewed distribution, and interestingly only three inlets in N.C. have known to be open continuously since the first maps of the New World were created in the late-1500s. Any guesses?

Although the phonetics and spelling of these inlets of changed over the past few centuries; Ocracoke, Beaufort, and Bogue Inlets are the three inlets that have withstood the test of time. Two of these inlets coincidentally border Bogue Banks – Bogue and Beaufort Inlets, lending itself to the stable nature of the island. Actually there is only one named inlet that breached the central area of Bogue Banks for any extended period of time. This inlet is historically known as *Cheeseman Inlet* that was generally open between 1750-1810, located near the Hoop Pole Creek area of Atlantic Beach.

Some other more temporary breaches have also occurred along Bogue Banks in more recent times, most notably within the "numbered streets" of western Emerald Isle. Perhaps one of the more notable episodes of breaching occurred in the wake of Hurricane *Donna* in 1960, located in the approximate area of 19th – 25th Streets.

Classification schemes for inlets and a discussion regarding the many subtleties of inlet dynamics can easily take a book's worth of print space. But for our purposes it might be interesting to note that inlets are often referred to as wave dominated, tide dominated, or transitional with somewhat predictable features associated with each type of inlet. Likewise, inlets are also termed as ebb dominated or flood dominated in reference to the ratio of water leaving or entering the inlet. If more water leaves than enters an inlet over a period a time, then the inlet is ebb dominated and vice-versa (flood dominated).

One thing certain about inlets is that they are dynamic with sand and channel configurations changing on a continual basis. Some of the more recognizable sediment bodies that form in the inlet complex are called tidal deltas, which are created by the sudden loss of current velocity as water exits the inlet on flood (incoming) or ebb (outgoing) tides. The accumulation along the landward side is called a *flood tide delta* driven obviously by the flood tide, and conversely the accumulation along the seaward side is the *ebb tide delta* for the same reasons.

A generalized schematic of a "typical" inlet system is included in this edition of *Shorelines*. Changes in tidal amplitude, wave energy, sediment supply, or other variables

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will change the morphology of this generalized inlet. However, the next time you visit an inlet see if you can begin recognizing a couple of these prominent features. Have fun!!!

