

Spit Development and Effects of Ebb Channel Relocation: Bogue Inlet, North Carolina

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Bogue Inlet, located 34 miles southwest of Cape Lookout in the northeastern portion of Onslow Bay separates Bogue Banks from Bear Island (BI). The exceptionally wide inlet (6,180 ft) is characterized by an unstable ebb channel that has migrated across a 10,170 ft wide pathway. The channel began to migrate in an eastward direction in 1981 and by 2003 had shifted 4,136 ft toward Emerald Isle (EI). As a consequence, ~552 ft of erosion occurred along the eastern inlet margin while the western margin eroded 2,152 ft. In order to alleviate erosion along the eastern margin, the ebb channel was relocated westward 3,500 ft in March 2005. The project's performance was perturbed by Hurricane Ophelia (2005) which prolonged the existence of the old channel. By 2009, the former channel had nearly infilled while concomitantly the eastern segment of the ebb delta had been reconfigured in accordance with the alignment of the new ebb channel. Concurrent with reorganization of the shoal system the eastern marginal flood way became a key role in the development of a spit that by October 2010 extended 1,830 ft into the estuary across a secondary feeder channel opened by Hurricane Ophelia.