REPORT ON BOCILLA PASS
CHARLOTTE COUNTY, FLORIDA

For
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Gulf Accretion and Erosion

The general Gulf of Mexico coastline in the vicinity of Bocilla Pass has formed numerous passes during the period of available records. However, only a few have survived until today without major change. The inlets in the general vicinity of Bocilla Pass are from north to south: Stump Pass, Knight Pass, Bocilla Pass, Little Gasparilla (Boca Nueva) and Gasparilla Pass.

Plates 4 and 5 show these passes very well, but by 1925 (Plate 6) major changes had taken place since the original surveys:

(1) Stump Pass has moved south about $\frac{1}{4}$ miles.

(2) Knight Pass has been cut through Island No. 6.

(3) Island No. 6 is now part of Island No. 1.

(4) Boca Nueva has migrated south about $\frac{1}{4}$ mile, and is renamed Little Gasparilla Pass.

(5) Island No. 2 is called Knight Island.

(6) Island No. 1 is called Don Pedro Island.

Chart 1255 revised to November 1951 (Plate 7) shows Knight Pass and Bocilla Pass closed and accreted areas have developed on the south shore of Little Gasparilla and Gasparilla Passes. By 1962, sand had closed Little Gasparilla Pass, and natural forces had eroded the offshore remains of Island No. 6.

Stump Pass was shoaling as the channel depth indicates. Depth in 1957 was 7 feet and depth in 1962 was 2 feet. Also, the sand spit from the south shore of Stump Pass, which is visible in the February 1956 and September 1957 charts (Plates 8 and 9), is beginning to curve into the mouth of Stump Pass.
Shoaling around the Gulf coast inlets is characteristically located seaward of the inlet proper. A large fan shaped shoal is usually present opposite each such inlet. These shoals are a source of beach building material for the Gulf beaches and usually supply the material in greatest quantity during stormy weather when shoal material is driven ashore on the downdrift side of the inlet. However, these shoals can close an inlet unless the currents through the inlet are stronger than the shoaling forces.

Stump Pass has the largest tidal prism to Lemon Bay, Knight and Bocilla Passes when in existence were only supplemental openings to Lemon Bay. Gasparilla Pass has the largest tidal prism to the north end of Gasparilla Sound. Little Gasparilla Pass was only a supplemental opening to Gasparilla Sound.

The currents to both Lemon Bay and Gasparilla Sound were reduced first by the construction of the railroad bridge to Boca Grande beginning in 1909 and later in the 1950's by the construction of the Gulf of Mexico Intracoastal Waterway and the road bridge to Boca Grande.

The original bridge piles were severely damaged by worms necessitating new piles. The new piles together with the old piles formed a partial barrier separating the north part of Gasparilla Sound from the south part. The intracoastal Water Way channelized the flow of water north and south and the road bridge further reduced the tidal prism of the north part of Gasparilla Sound greatly reducing the ability of Bocilla Pass and Little Gasparilla Pass to maintain their openings to the Gulf of Mexico.
The reopening of Little Gasparilla Pass in the 1950's by local interests and
the dredging of Bocilla Pass in the 1960's after Judith proved futile. According
to Mr. Ralph M. Cole, a native of the area and longtime fisherman now retired,
these two passes remained navigable for only a few years after their reopening.
The bridges to Boca Grande and the Intracoastal Waterway construction had
reduced the tidal current flow through the passes enough so that the current
force was not able to overcome the shoaling forces.

The Beach Erosion Control Study, Lee County, Florida, by the Corps of
Engineers, dated July 29, 1969, states that the littoral drift of sand for Gas-
parilla Island is generally to the north although periodic reversals do occur.
The result is that the northern end of Gasparilla Island is accreting while
the southern end is eroding.

A study by Gee & Jenson, Consulting Engineers, Inc., for Mr. Dewey A.
Dye, Jr. in 1961 showed that the north side of Stump Pass has a southerly
littoral drift and that the pass is an effective barrier to sand flow south of
the pass. Stump Pass to the north blocks most sand flow south and Gasparilla
Pass to the south blocks most sand flow north. The net result is that Bocilla
Pass is in an area where the littoral drift is variable and small in volume.

Storms
To date, there have been 23 storms of hurricane force, defined as tropical
cyclones, with wind velocities of over 75 miles per hour, that passed within
100 miles or less of Stump Pass from the date of the original government
survey (E. B. Camp's survey) of Lemon Bay and vicinity.
A chronological list of these storms is included in the appendix between sections of U. S. Coast and Geodetic Survey Charts 175 and 1255 (Plates 4 to 12) as pertinent.

Between publication of the September 1895 chart and the publication of the May 1925 chart, the area was influenced by 6 hurricanes which passed within 100 miles of Bocilla Pass. The changes, as reflected by the two charts and described in the two preceding sections, were very noticeable. New inlets have opened, old ones have closed, and Bocilla Pass had closed as had Knight Pass. Stump Pass has two openings to the Gulf of Mexico and Little Gasparilla Pass has a spit from the south shore inside the inlet reducing its width. By February 1956, one of the openings of Stump Pass has closed and a spit is evident from the south shore of the pass. After hurricane Donna in September 1960, part of the spit of Stump Pass had been forced into the Pass and by 1962 Little Gasparilla Pass had closed.

From the surveys and charts, it is evident that the area is unstable and subject to radical and rapid changes caused by passing storms. Even storms of less than hurricane force have had a noticeable effect on the area.

The latest opening of Bocilla Pass was by dredge in the Spring of 1957, but interior canals were reduced in both width and depth by tropical storm Judith on October 9, 1959. The storm passed over Boca Grande, moved northeast, and exited to the Atlantic Ocean near Vero Beach.
An aerial investigation of the Bocilla Pass area shortly after hurricane Agnes (June 1972) indicated that a new pass could be cut south of the 1957-1959 inlet if a severe storm should pass close to the area.

**Tides**

Tides in the Bocilla Pass area are a mixture of diurnal and semi-diurnal tides. The mean tide range is 1.6 feet as determined by the U.S. Coast and Geodetic Survey. Ebb tide erosion is the dominant factor in inlet behavior on the Gulf Coast of Florida. It was responsible for deepening and enlarging the ditch in the Spring of 1957 to a navigable channel about 4 months later.

The ebb tide on the Gulf coast is dominant because of the peculiar compound tidal curve involving a mixed diurnal and semi-diurnal tidal phenomena. During a few days of each month there is a sudden very strong ebb tide which results from changing from a high-high to a low-low in a period of a very few hours. This strong ebb tide sweeps the inlets clean and transports great quantities of material seaward to feed the offshore shoal areas. However, the Intracoastal Waterway and bridges to Boca Grande have greatly reduced the tidal influence and the ability of the minor inlets in the Lemon Bay and Gasparilla Sound area to remain open for more than a few years.

**Land Surveys**

A comparison of the December 1895 survey by E. B. Camp with the May 22, 1971 survey by A. B. Brown (Plate 16) indicates that Parcels A, B & C are predominantly located on lands which would be in the channel of the original Bocilla Pass. Furthermore, Parcel A is located where the most recent Bocilla Pass channel was located.
Hurricanes passing within 100 miles of Bocilla Pass.

1900  -  September 5 - 7
1901  -  August 10 - 17
1903  -  September 10 - 16
1910  -  October 11 - 18 *
1911  -  August 9 - 14
1912  -  September 11 - 13

* Storm passed very close to Bocilla Pass or was very severe.
Hurricanes passing within 100 miles of Bocilla Pass.

1926  September 6-22    *
1928  September 16-22
1929  September 22 - October 4
1932  August 24 - September 4
1933  July 25 - August 4
1935  August 31 - September 8    *
1936  July 27 - August 1
1941  October 4 - 12
1944  October 13-21    *
1945  September 15-20
1946  October 7-9    *
1947  September 11-19
1948  September 19-25
1950  October 17-21
1951  September 30 - October 7    *

* Storm passed very close to Bocilla Pass
or was very severe.
Hurricanes passing within 100 miles of Bocilla Pass

1953 October 8 - 10
Hurricanes passing within 100 miles of Bocilla Pass

1960 September 3-13