DOES BEACH NOURISHMENT PROTECT PROPERTY VALUES FROM HURRICANES? THE CASE OF THE 2004 AND 2005 HURRICANES

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INTRODUCTION

Florida is the nation's premier ocean state, dependent on its 825 miles of sandy beaches for the enjoyment of Florida residents and tourists. Equally as important, beaches provide natural resources for plant and animal habitat and act as storm protection for public infrastructure and private investments along the state's coastline.

For more than thirty years, the State of Florida, in partnership with federal and local governments, has encouraged the use of beach restoration—the placement of sand on eroded beaches—to reduce storm damage to upland properties. In 2004 and 2005, an unprecedented number of hurricane strength storms hit the state's coastlines, four hurricanes in 2004 and four in 2005. The impact of these storms was sufficiently widespread and variable in their characteristics that much can be learned from them in regards to the benefits of beach restoration.

This report focuses on the economic impact of restored beaches on residential properties in the hurricane study areas of 2004 and 2005. The average changes in property values before and after the 2004 and 2005 hurricanes for a large number of properties upland of nourished beaches were compared to changes in property values on similar beaches that had not been restored.

The first phase of the case study was completed for the 2004 hurricanes and the second phase of the case study for the 2005 hurricanes. This research represents part of an ongoing multi-phase project undertaken for the Bureau of Beaches and Coastal Systems in the Florida Department of Environmental Protection by the Catanese Center for Urban and Environmental Solutions (CUES) at Florida Atlantic University. Dr. William B. Stronge, Professor Emeritus of Florida Atlantic University's Economics Department served as principal consultant and conducted the primary research, analysis and authoring the report with CUES.

BACKGROUND

Phase I of the report examined changes in property values affected by the 2004 hurricanes for 6,700 properties along the coastlines of Escambia, Indian River, Lee, and Sarasota counties (Figure 1).

Phase II of the report examined changes in 17,489 property values affected by the 2005 hurricanes for properties along the coastlines of Bay, Brevard, Collier, and Santa Rosa counties (Figure 1).

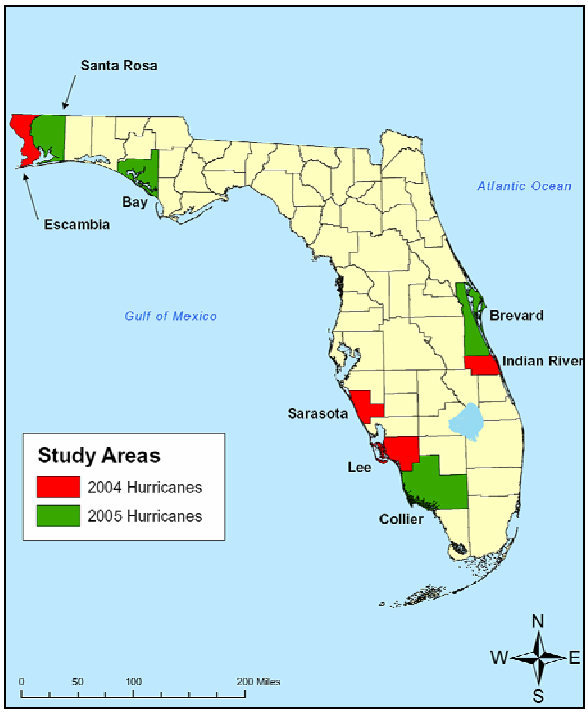

Figure 1

Figure 2 (below) specifies the study case areas of the restored and non-restored beaches and the hurricane of impact.

Restored Beaches	Non Restored Beaches	Impact Hurricane
2004 Study Areas		
Pensacola Beach **Escambia County**	***Perdido Key*** **Escambia County**	**Ivan (Cat 3)**
Bonita Beach **Lee County** ***Venice Beach*** **Sarasota County**	***Ft. Myers Beach*** **Lee County**	**Charley (Cat 4)**
Ambersand Beach **Indian River County**	***Sector 7*** **Indian River County**	**Francis (Cat 2) Jeanne (Cat 3)**
Restored Beaches	**Non Restored Beaches**	**Impact Hurricane**
2005 Study Areas		
Panama City Beach **Bay County**	***Navarre Beach*** **Santa Rosa County**	**Dennis (Cat 3)**
Marco Island Beach **Collier County**	***Naples / Vanderbilt Beach*** **Collier County**	**Wilma (Cat 3)**
South Beaches **Brevard County**	***South Beaches*** **Brevard County**	**Wilma (Cat 3)**

Figure 2: 2004 and 2005 Case Studies

METHODS

Property values were compared from Property Appraisers' files for 2004-2006.

One-third of the 2004 properties and over three-fourths of 2005 properties were upland of restored beaches. Two-thirds of the 2004 properties and nearly one-third of 2005 properties were upland of non-restored beaches.

Figure 3: (Left) Pensacola Beach before Hurricane Ivan, (Right) after Hurricane Ivan.

RESULTS

The results of Phase I of this report show that nourished beaches protected property values in 2005 during the 2004 hurricanes.

The value of single family properties upland of restored beaches increased more than 30 percent, twice the increase in value of properties upland of beaches that had not been restored (Figure 4). The value of condominium properties upland of restored beaches increased more than 15 percent, compared to no increases in value for condominiums upland of eroded beaches (Figure 4).

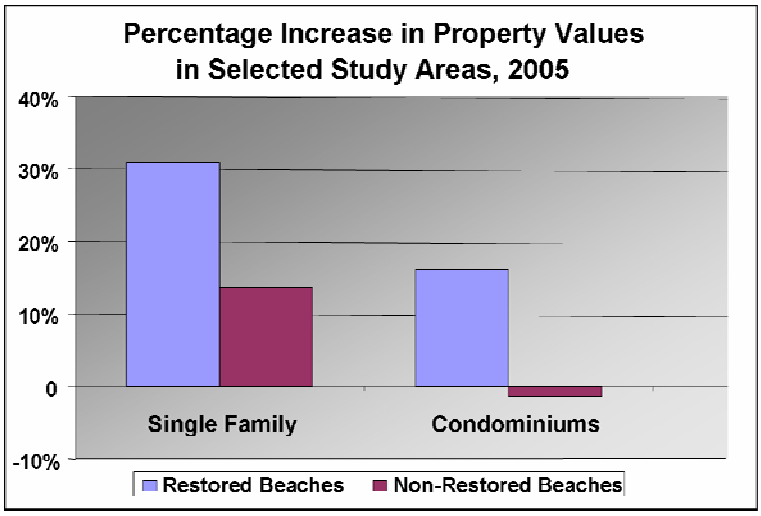

Figure 4

The estimated benefit to property values in the study areas is $45 million in storm protection and enhanced aesthetics for single family homes and more than $105 million

for condominiums (Figure 5). Total benefits to property values approximately $150 million.

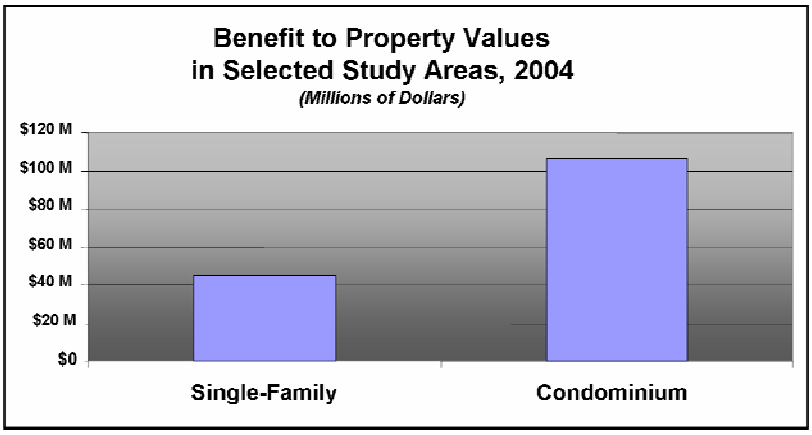

Figure 5

The preliminary results of Phase II of this report show that nourished beaches protected property values in 2005 (Figure 6) and 2006 (Figure 7) during the 2005 hurricanes:

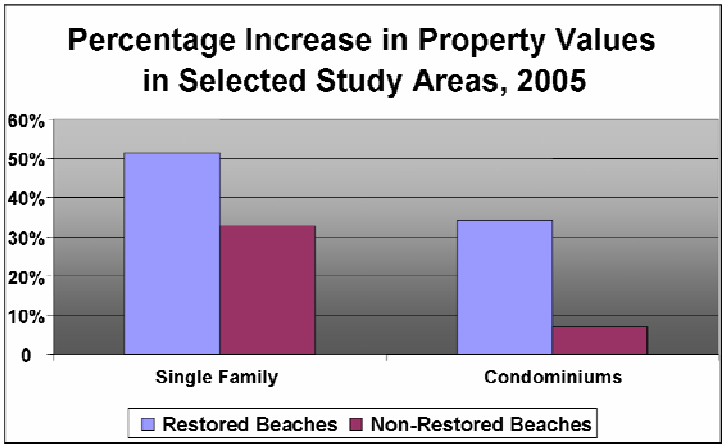

Figure 6

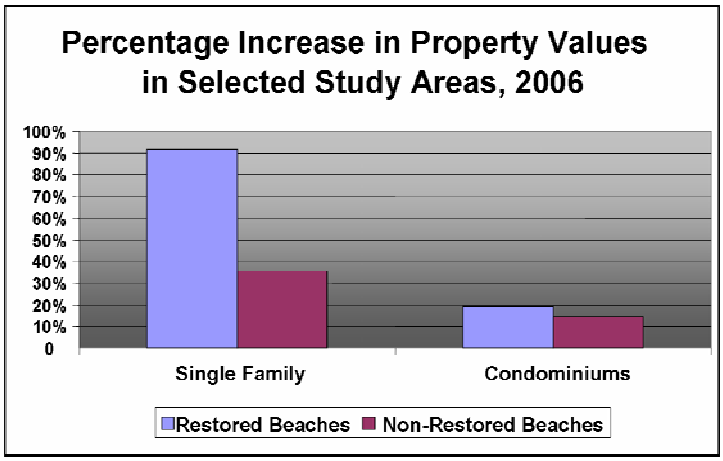

Figure 7

The properties upland of nourished beaches grew more than 40 percent than those upland properties of non-nourished beaches (Figure 8). This difference in value amounted to more than $2 billion.

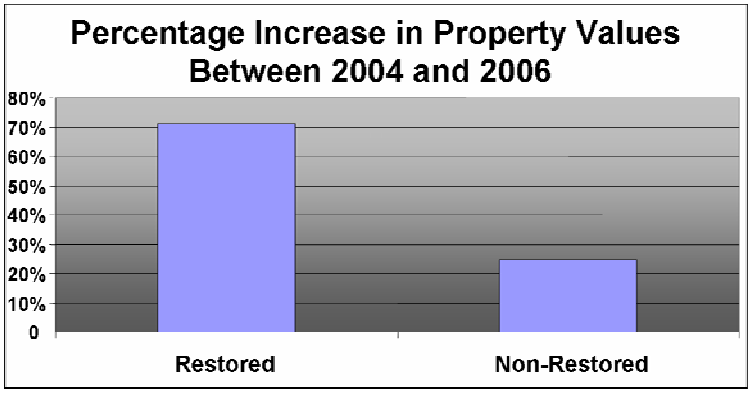

Figure 8

All findings in this report have been computed by Dr. William Stronge in 2005, 2006.

SUMMARY

This exploratory study provides evidence that restored beaches protect the value of Florida coastal properties from hurricanes. The study examines the changes in the value of 24,189 properties along the coastlines in Bay, Brevard, Collier, Escambia, Indian River, Lee, Santa Rosa and Sarasota counties, which were impacted by the hurricanes of 2004 and 2005 (Figure 9).

Figure 9: Santa Rosa Beach property after Hurricane Wilma.

The study demonstrates that the value of coastal residential properties upland of restored beaches was less negatively impacted by the hurricanes of 2004 and 2005 than were nearby properties on beaches that had not been restored.

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