

**UNDER THE UNCITRAL ARBITRATION RULES AND  
SECTION B OF CHAPTER 10 OF THE DOMINICAN REPUBLIC -  
CENTRAL AMERICA - UNITED STATES FREE TRADE AGREEMENT**

**CASE NO. UNCT/13/2**

BETWEEN:

**SPENCE INTERNATIONAL INVESTMENTS, LLC, BOB F. SPENCE,  
JOSEPH M. HOLSTEN, BRENDA K. COPHER, RONALD E. COPHER,  
BRETT E. BERKOWITZ, TREVOR B. BERKOWITZ,  
AARON C. BERKOWITZ AND GLEN GREMILLION**

Investors/Claimants

AND:

**THE GOVERNMENT OF THE REPUBLIC OF COSTA RICA**

Party/Respondent

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**SECOND WITNESS STATEMENT  
OF DR. KIRT RUSENKO**

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1. I have been provided with copies of the Witness Statement of Rotney Piedra and the Respondent's Counter-Memorial on the Merits. Having read both documents, I would like to add the following comments to the evidence I provided in my first witness statement.

**The Piedra Witness Statement**

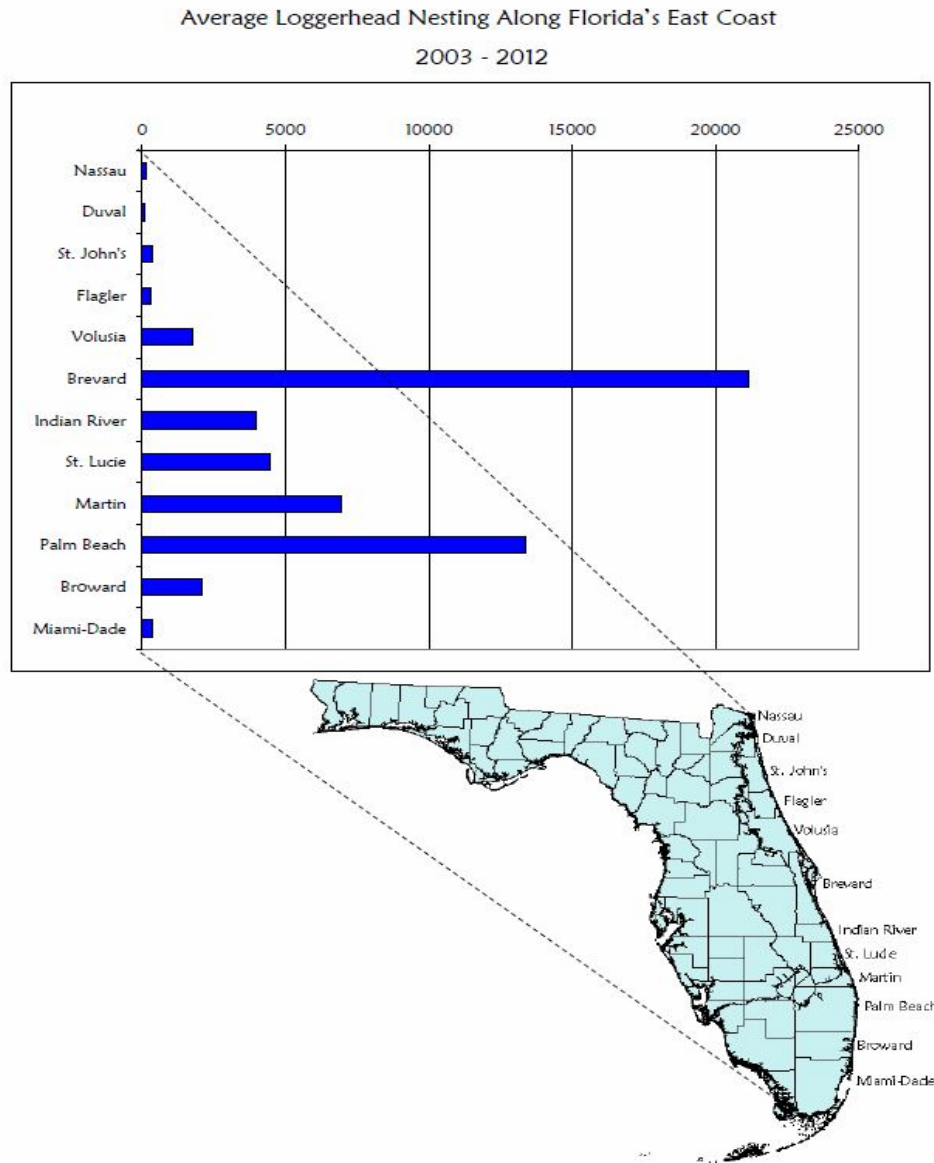
2. Rotney Piedra is a respected sea turtle biologist with many outstanding years of experience, and I am happy to say that we see eye-to-eye on most of the facts. With this Statement, I will focus on the areas in which we do not appear to share consensus.
3. First, I was very happy to see in Paragraph 12 that Playa Grande has seen an increase in "first time nesters" during the last 4 seasons. Hopefully that is a sign that all of his hard work has begun to pay off. Intelligent conservation measures and education are the best hopes for the survival of the Pacific leatherbacks.

4. In paragraph 13 of his Witness Statement, Mr. Piedra correctly identifies the major causes of the decline in nesting leatherbacks: poaching and fishing interactions. However in paragraph 14 Mr. Piedra also says: “There are two current threats to the population, which are increasing with each season.” The threats he mentions in this second paragraph are: “development of infrastructure” and “climate change.” I am concerned that the wording of paragraph 14 could incorrectly lead a reader to conclude that fishery interactions no longer represent a major threat to leatherback sea turtles nesting in the Playa Grande area.<sup>1</sup> As indicated in a recent publication by Roe *et al.* (attached as Exhibit A), fisheries interaction continues to be the major contributing cause for declines in leatherback nesting at this site.<sup>2</sup>
5. When I first visited Playa Grande in 2007 I was immediately shocked at how a City such as Tamarindo could have undergone what was apparently unrestricted development in such close proximity to Playa Grande. When I was toured around the area I was also impressed, or perhaps, depressed to see many real estate offices, most of which appeared to be affiliated with well-known international brands. The sight of such a significant presence of commercial real estate firms in the general vicinity of Playa Grande gave me cause for concern about what could happen if a suitable development plan was not established by the residents and other landholders, in cooperation with concerned government officials.
6. It was apparent to me that few of the hotel and resort developments in Guanacaste and especially Tamarindo were built in a manner that actually respected or maintained the 50-meter “Public Zone,” which was supposed to surround the city. As a result, affected areas of Tamarindo have been highly environmentally disturbed. It was to help ensure that there would be no repeat of Tamarindo in Playa Grande that I gladly accepted the invitation to assist in drafting a potential code, or some other suitable set of legal rules, to define how development would occur in the vicinity of Playa Grande’s nesting beaches, as well as in other environmentally sensitive areas in the immediate vicinity. It was also good that my participation came at the invitation of landholders, who seemed to welcome the establishment of a defined code that would reduce or eliminate impacts due to lighting, water run-off, waste treatment, and water use.
7. In and of itself, real estate development does not necessarily result in a decline in sea turtle nesting. An example is Palm Beach County, Florida, where I live and work. This is a highly developed county of 1.3 million people who live largely within 10 miles of the beach. As seen in Figure 1, Loggerhead sea turtles nest in high density in Palm Beach County. Palm Beach County also has high nesting densities of green <http://www.pbcgov.com/erm/coastal/sea-turtles/nesting.htm> and leatherback sea turtles. In fact half of Florida’s leatherback nests can be found in Palm Beach County – demonstrating that controlled development and sea turtle nesting can co-exist <http://myfwc.com/research/wildlife/sea-turtles/nesting/leatherback/>.

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<sup>1</sup> Certainly climate change and unrestricted development ought to remain significant causes for concern in the future for any nesting site. My experience of the 2007 and 2009 nesting seasons at Playa Grande indicates that the beaches are now well watched over, so poaching is not likely to be a significant future problem at this site.

<sup>2</sup> As explained further below, I think the primary cause for the original decline in the Leatherback population at Playa Grande was most likely the poaching of eggs from nesting sites from the 1970s until the late 1990s.

Figure I – Loggerhead Nesting on the East Coast of Florida.<sup>3</sup>

8. Miami, Florida, represents the other end of the spectrum: showing how unrestricted development can make nesting almost non-existent. Our experience in South Florida thus provides both good and bad examples of how development can proceed in other parts of the world, including Playa Grande and its environs. As I discussed with the officials and stakeholders I met in Costa Rica, Playa Grande would have done nothing but benefit from a code that would have permitted housing development while at the same time preventing the establishment of another Tamarindo.

<sup>3</sup> Please note that nesting in Palm Beach County is second only to Brevard County. Palm Beach County has a higher nesting density because it has 30 miles of beachfront, whereas Brevard has a total of 90 miles of beachfront.

9. In paragraph 20 of his Witness Statement, Mr. Piedra indicated that the nesting distribution pattern seen in Playa Grande was due to the existence of houses/hotels in the north and south end of the site. I really see no evidence that the nesting distribution pattern recently observed in Playa Grande has anything to do with these housing/hotel locations. I have not seen any nesting data prior to these developments to indicate that any observed decrease in nesting at specific locations was caused by the construction of the house/hotels Mr. Piedra described.
10. In Florida we have noticed a drop in nesting near inlets and fishing piers. In the case of Playa Grande, the north end of the available beach area has a small stream, which empties into the ocean via the beach. The south-end has the inlet to the mangrove estuary. In my opinion these water flows are more likely responsible for nesting distribution than any existing development. Additionally, as nesting numbers continue to decline, nesting distribution is more likely to be due to the preferences of individual turtles, rather than being demonstrative of a group preference. Therefore data on recent nest distributions should not be considered as statistically reliable.
11. Another potential cause for changes in nesting distribution at the southern end of Playa Grande would be bad lighting choices in Tamarindo, located south, across the estuary. In my opinion, the location of streetlights on Tamarindo's beaches could also be seen as more responsible for any changes in nesting distribution at the south end of Playa Grande, given its proximity to them.

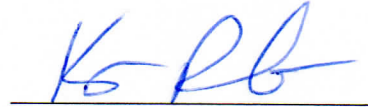
#### **The Respondent's Counter-Memorial on the Merits<sup>4</sup>**

12. In paragraph 15, it is stated: "the leatherback turtle is in grave and imminent danger of extinction". I believe this to be true for the Pacific leatherbacks as they continue to face heavy commercial and artisanal fishing pressure. It should be pointed out however, that the Atlantic leatherbacks are actually increasing with healthy nesting populations in the Caribbean and the West Coast of Africa. In Florida, leatherback nesting is increasing exponentially <http://www.myfwc.com/research/wildlife/sea-turtles/nesting/beach-survey-totals/>. The Atlantic leatherbacks are indeed considered endangered but there are many hopeful trends indicating a recovery of the species in the Atlantic.
13. In paragraph 18 it is stated: "One of the main reasons for the leatherback turtle's decimation is beachside development." That is certainly not the case for Playa Grande as even today I would be hard pressed to characterize that area as developed, with the exception of Tamarindo. I believe that the main reason for the decline of nesting in Playa Grande is the poaching that took place from the 1970's to the early 1990's. During my visit in 2007, residents estimated that most likely close to 100% of the eggs were taken during this 20-year period. As leatherbacks are relatively short-lived sea turtles, such poaching, alone, could account for the precipitous decline in nesting in Playa Grande. Not even the unrestricted development in Tamarindo could possibly have been responsible for the decline. As a matter of fact, it is possible that more development in the Playa Grande area could have possibly inhibited the poaching that took place!

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<sup>4</sup> I understand that the same document also included a "Memorial on Jurisdiction" but the legal issues addressed in that section did not concern me.

14. Also in paragraph 18 it is stated: "The beaches must be protected against erosion, such as erosion caused by water run-off from buildings and constructed sites even well away from the beach, and against pollution such as that from wastewater." Wastewater pollution is certainly an issue as a result of the unrestricted development of Tamarindo, as well as runoff from that city into the ocean. All of the issues stated in paragraph 18 were addressed for Playa Grande, however, by the development code that was proposed for the area. Had a similar development code only been in place before unrestricted development was allowed for Tamarindo, such problems could possibly have been averted. It should be noted that Tamarindo lost its Blue Flag designation in 2008 due to raw sewage runoff from the city into the waters adjacent to Playa Grande.
15. The same reasoning would also apply to paragraph 21, where it is stated: "The government was concerned that tourist development in the vicinity of the beach (including light, noise, and other forms of pollution) would seriously affect the nesting of the leatherback turtles." A properly enforced, restricted code of development would have eliminated, or minimized the impacts from all of the issues raised in paragraph 21.
16. In paragraph 22 the importance of the 50-meter and 75-meter vegetated zones is discussed. The importance of the vegetated zone was actually emphasized in the code I worked on between 2007 and 2009. It should also be noted that, in some parts of the area, this zone was already poorly vegetated prior to any of the development planned by those who invited me to see Playa Grande for myself. Without properly planned, restricted development of the kind contemplated in the code, there would remain little to no protection for such affected portions of the beach.



Kirt W. Rusenko, PhD  
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September 10, 2014



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### Sea Turtle Nesting Data



© Matthew Godfrey

Palm Beach County's beaches are some of the most densely nested in the United States. Sea turtles can be found in our waters year round, but in the spring and summer, large numbers of adults congregate off our beaches and along the reefs. Look at these graphs that show the high nesting of [loggerhead](#), [green](#), and [leatherback](#) turtles, as compared to the rest of the east coast of the United States.

Nesting on our beaches begins as early as March. Early nesters are usually leatherbacks with the more numerous loggerheads arriving in significant numbers in May. Nesting continues into August and tapers off in early September. The female sea turtle crawls ashore at night to dig a nest, deposit her eggs, cover the nest and return to the water. While on the beach, sea turtles are timid and vulnerable and can be easily frightened away if disturbed. It takes between one to three hours for the female turtle to lay her approximately 110 ping pong ball-sized eggs.

A number of researchers, volunteer groups and agencies monitor sea turtle nesting in Palm Beach County. These surveys are conducted during nesting season by trained staff/volunteers permitted by the Florida Fish and Wildlife Conservation Commission. Nests are identified to species by the turtle's tracks and size/shape of the nest.

Palm Beach County sea turtle nesting data by year: [1998](#); [1999](#); [2000](#); [2001](#); [2002](#); [2003](#); [2004](#); [2005](#); [2006](#); [2007](#); [2008](#); [2009](#); [2010](#); [2011](#); and [2012](#).

Palm Beach County sea turtle nesting densities from [2003 - 2012](#).

ERM coordinates the collection of sea turtle nesting data from beaches when the County has an active shoreline protection project, including Jupiter/Carlin, Juno Beach, Singer Island, and Ocean Ridge.

[Yearly reports](#) summarizing the effects of Palm Beach County Shoreline Protection projects on sea turtles are also available.

Other organizations/individuals in Palm Beach County that monitor the beach include:



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- ❖ [John D. MacArthur Beach State Park](#) [External Link]
- ❖ [Sea Turtle Conservation League of Singer Island](#) [External Link]
- ❖ [Gumbo Limbo Nature Center](#) [External Link]
- ❖ [Statewide Atlas of Sea Turtle Nesting Occurrence and Density](#) [External Link]
- ❖ Sue Fleming (Palm Beach Shores), DB Ecological Services (Singer Island/Palm Beach/Ocean Ridge), Bob Schonfeld (South Palm Beach), Phil Stone (Lake Worth/Manalapan), Chris Redgate (Lantana), Jackie Lorne (Gulfstream), John Fletemeyer (Delray Beach), Barbara James (Highland Beach).



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## Leatherback Nesting In Florida

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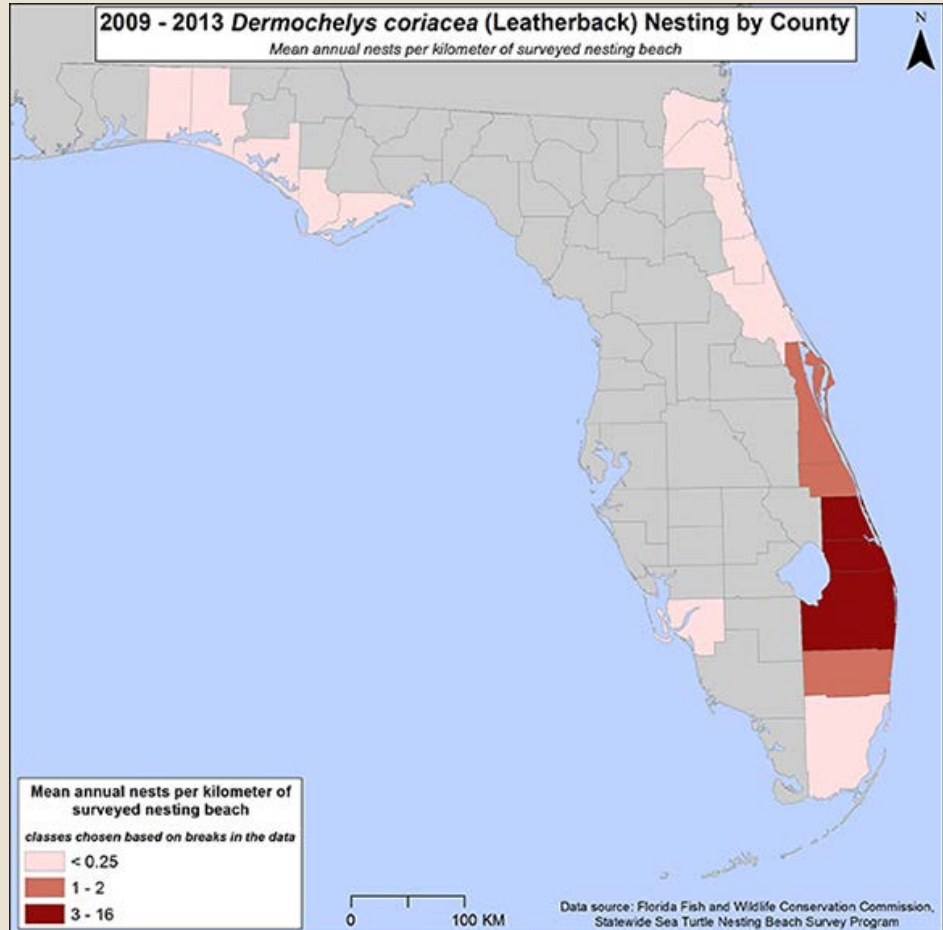
### Publications

*Florida is the only state in the continental U.S. where leatherback turtles regularly nest.*

With the exception of a few nests on the west coast, leatherbacks nest almost exclusively on the east coast of Florida. In fact, about 50 percent of leatherback nesting occurs in Palm Beach County.

Leatherback sea turtles are named for their rubbery shell and are the largest sea turtles. Adults can weigh between 700 and 2,000 pounds and reach 4 to 8 feet in length.

Leatherback nesting in Florida occurs from April through July. A female will nest at intervals of two to three years, laying between six to nine nests per season. They lay about 80 fertilized eggs and then cover them with a layer of about 30 unfertilized eggs. This layer serves as protection from predators like birds and raccoons and also regulates the temperature.





**FWC Facts:**

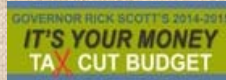
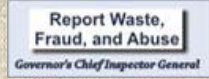
**Hard corals are corals with 6 tentacles or multiples of 6 (e.g., 6, 12, 18, 24). Octocorals have 8 tentacles.**

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## Index Nesting Beach Survey Totals (1989-2013)

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*The Florida Index Nesting Beach Survey records sea turtle nest counts on a standardized set of index beaches. Researchers use the annual survey to determine nesting trends.*

Since 1989, the Fish and Wildlife Research Institute (FWRI) has coordinated the Index Nesting Beach Survey, a detailed sea turtle nesting-trend monitoring program conducted in conjunction with the Statewide Nesting Beach Survey. The index survey uses standardized data-collection criteria to measure seasonal nesting and allow accurate comparisons between beaches and between years. Consistent effort by location and date and specialized annual training of beach surveyors make the index program suited to these trend assessments. Approximately 30 percent of Florida's beach length is surveyed under index-survey criteria.

FWRI coordinates data collection through a network of surveyors, including federal, state and local park personnel; other government agency personnel; members of conservation organizations; university researchers; and private citizens. FWRI staff train beach surveyors and compile data from the annual surveys.

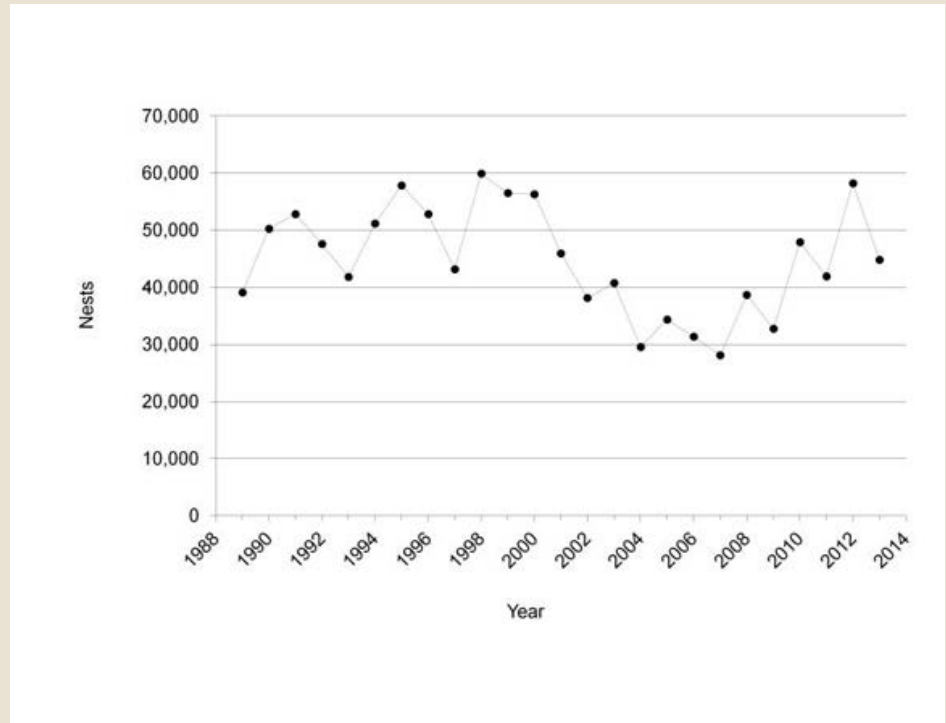
At a core set of index beaches monitored since 1989, trained surveyors monitor 320 kilometers of nesting beach (nearly 200 miles) divided into zones that average 0.8 kilometers (approximately a half mile) in length. These core index beaches represent the Atlantic and Gulf coasts of peninsular Florida. Beach surveyors monitor core index zones daily during a 109-day sea turtle index-nesting season (May 15 through August 31). Researchers record nests and nesting attempts by species, nest location and date. Index nest counts represent approximately 69 percent of known loggerhead nesting in Florida, 74 percent of known green turtle nesting and 34 percent of known leatherback nesting.



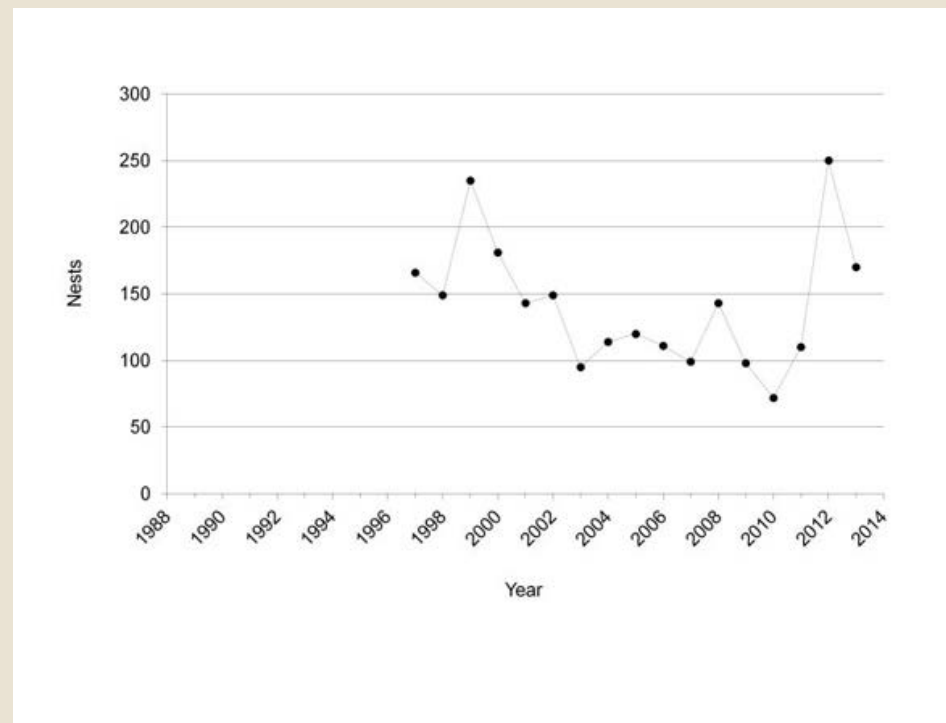
A loggerhead sea turtle throws sand over a nest, concealing her eggs, on an index beach in Brevard County.

**Loggerhead Nests**

Observed loggerhead nest counts on Florida's 26 core index beaches varied from a peak of 59,918 in 1998 to a low of 28,074 in 2007. In the most recent nesting season (2013), nest counts fell below those of the previous high year. Index beaches in the Florida Panhandle, which are not part of the set of core beaches, also had high loggerhead nest counts in 2012 and lower counts in 2013.



Annual loggerhead nest counts on core index beaches. From 1989 through 2013, annual counts ranged from 28,074 to 59,918 nests. Survey effort remained nearly identical. These data represent peninsular Florida and exclude an additional set of beaches in the Florida Panhandle and southwest coast that were added to the program in 1997.



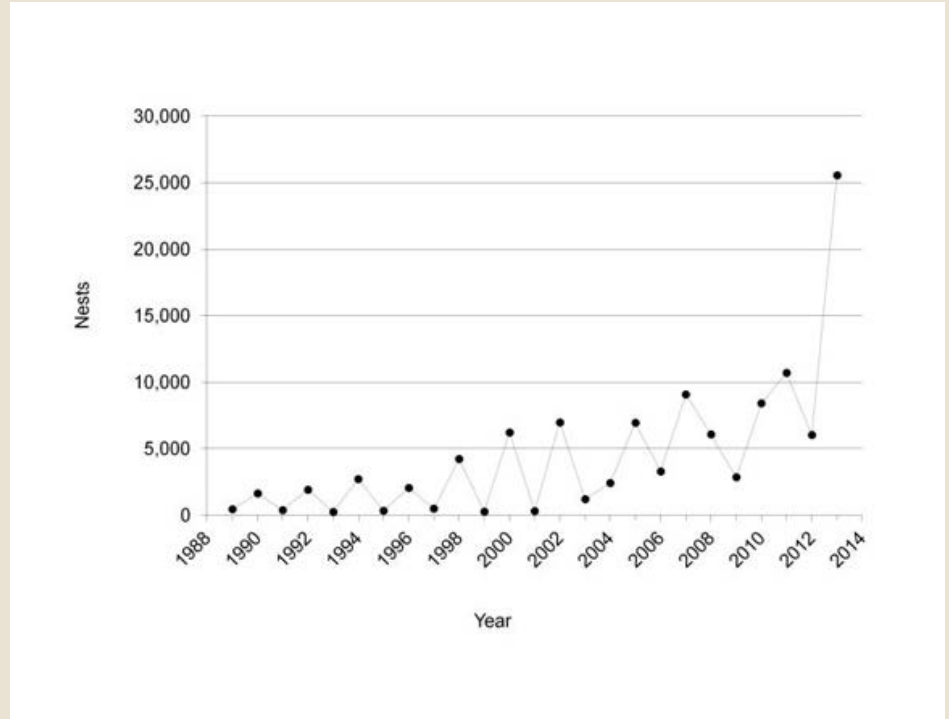
Annual loggerhead nest counts on Florida Panhandle Index beaches. Between 1997 and 2011, there was a general decline in the annual number of nests counted on Panhandle Florida index beaches; however, 2012 and 2013 saw high nest counts in comparison to the previous decade.

Concern over declines in annual loggerhead nest counts prompted researchers to conduct

a detailed analysis of the species' nesting trends since 1989. Download a 2009 journal article about the research:  
[Decreasing Annual Nest Counts in a Globally Important Loggerhead Sea Turtle Population.](#)

### Green Turtle Nests

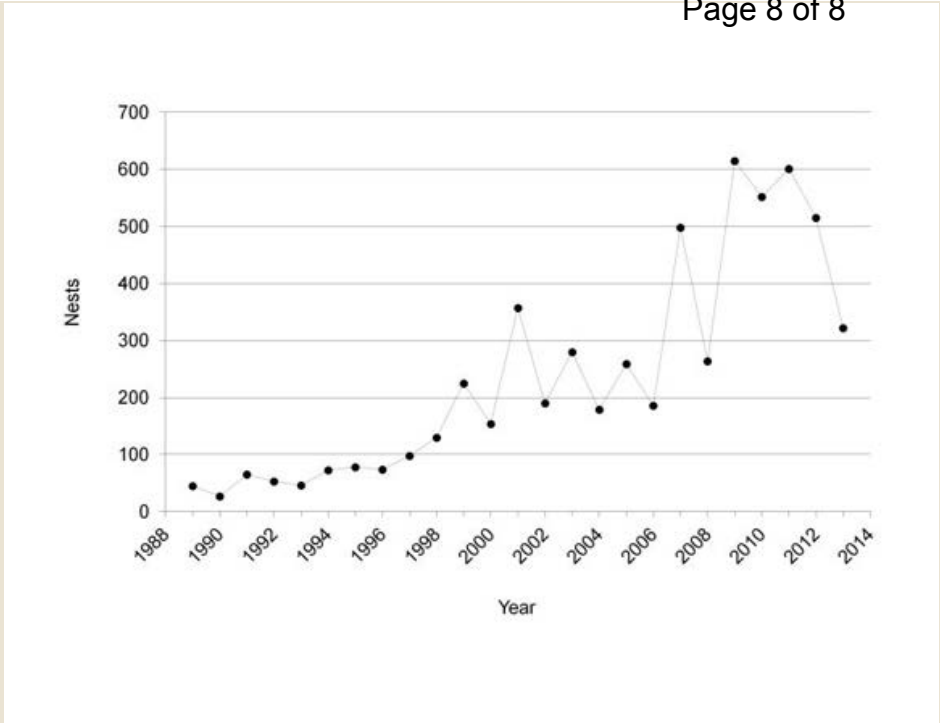
Green turtle nest counts have increased approximately one hundredfold since counts began in 1989 – a trend that differs dramatically from that of the loggerhead. The nest count for 2013 was more than twice the count from the next highest year.



Annual green turtle nest counts on core Index beaches. Since 1989, nest counts have ranged from 267 to 25,553, peaking in 2013. Numbers show a mostly biennial pattern of fluctuation, with the 2013 counts exceeding twice the next highest year.

### Leatherback Nests

Surveyors counted 322 leatherback nests on core index beaches in 2013. These counts do not include leatherback nesting at the beginning of the season before May 15; however, the index provided by these counts remains a representative reflection of trends. Similar to nest counts for green turtles, leatherback nest counts have been increasing exponentially.



Annual leatherback nest counts on core Index beaches. From 1989 through 2013, leatherback nests at core index beaches numbered from 27 to 615.

**FWC Facts:**

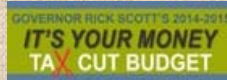
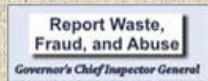
A harmful algal bloom, or HAB, is a high concentration of toxic or nuisance algal species that negatively affects natural resources or people.

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