

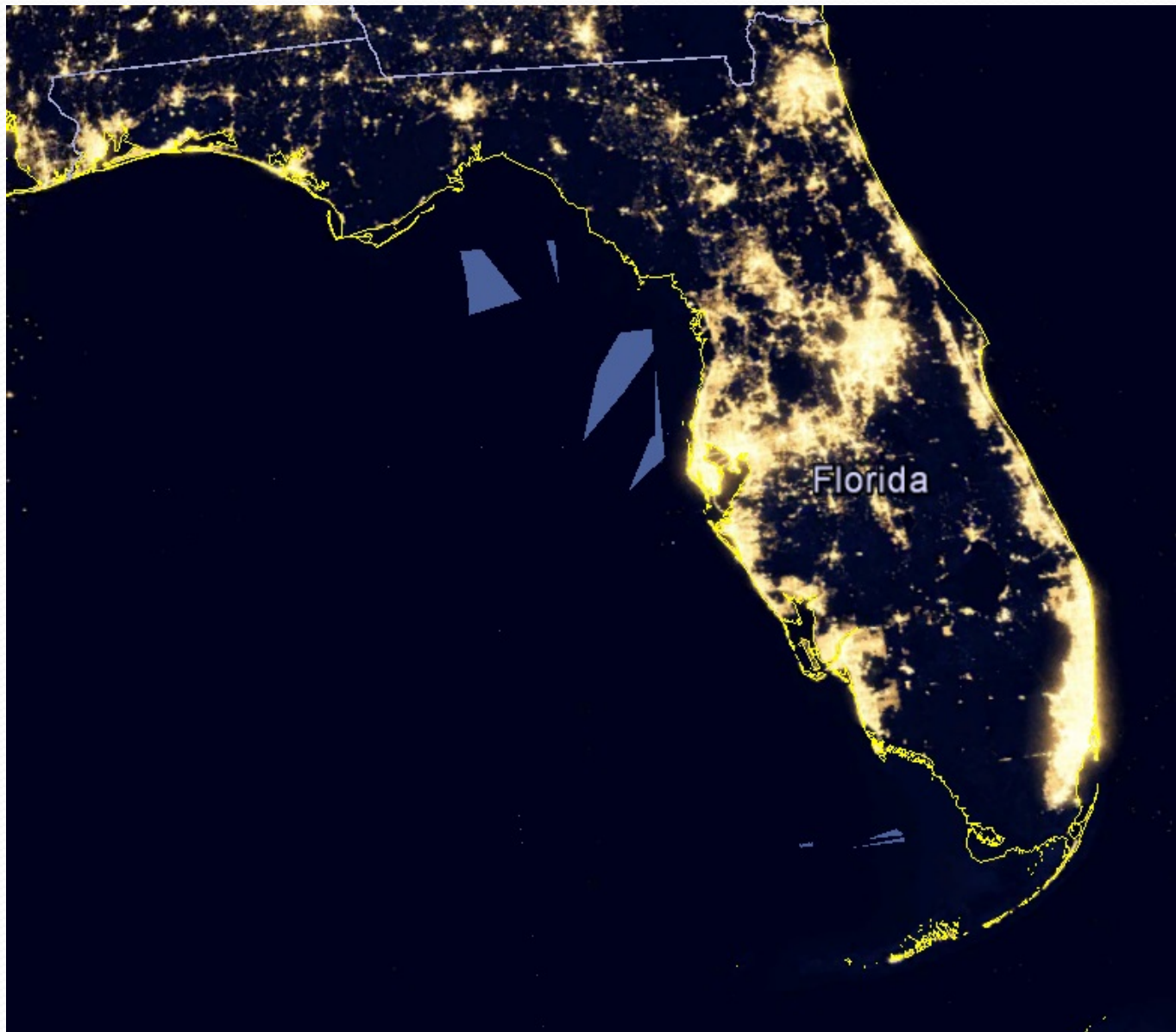
Do Wider Renourished Beaches Enhance Sky-Glow Effects on Sea Turtles?

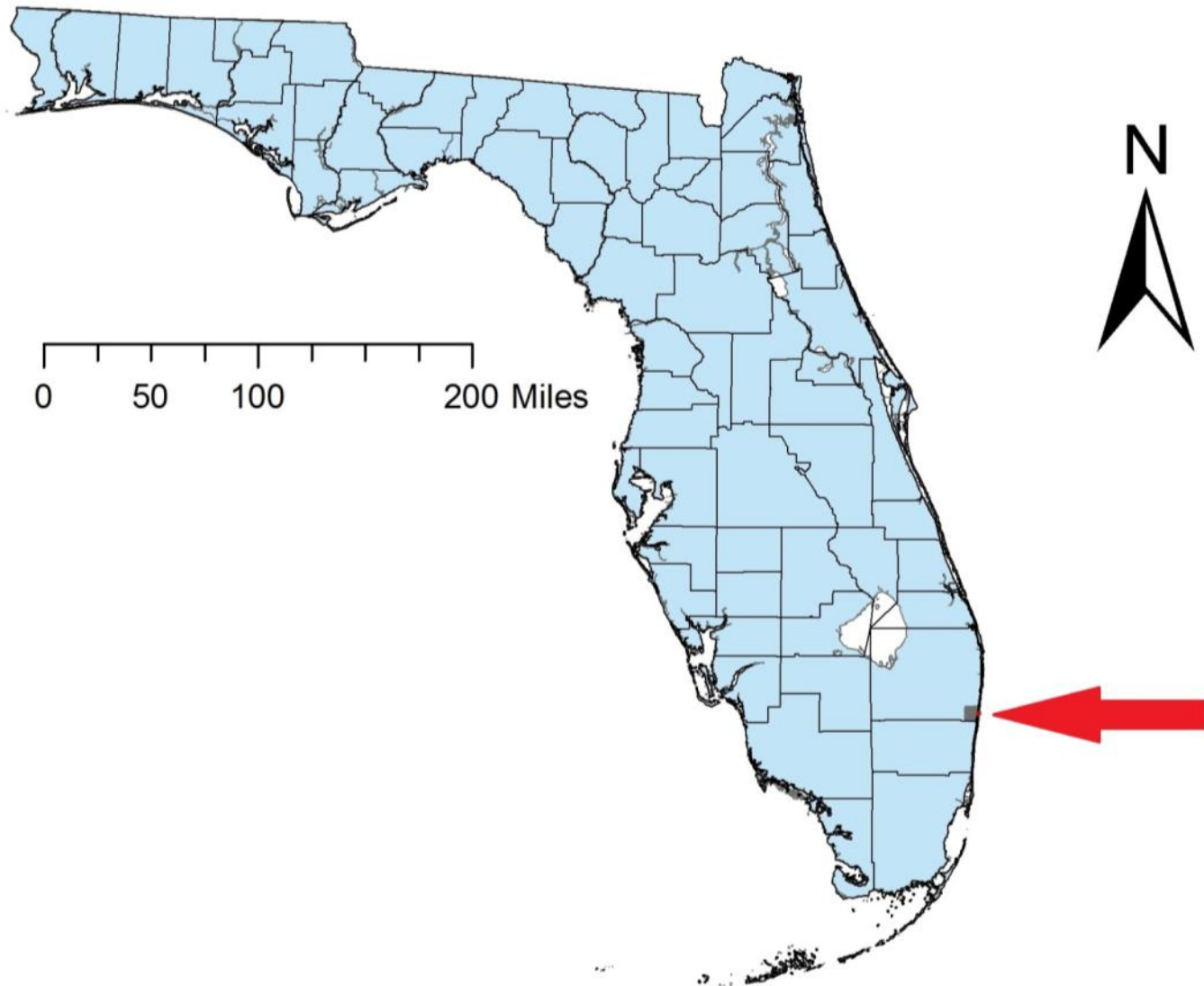
Kirt W. Rusenko, PhD

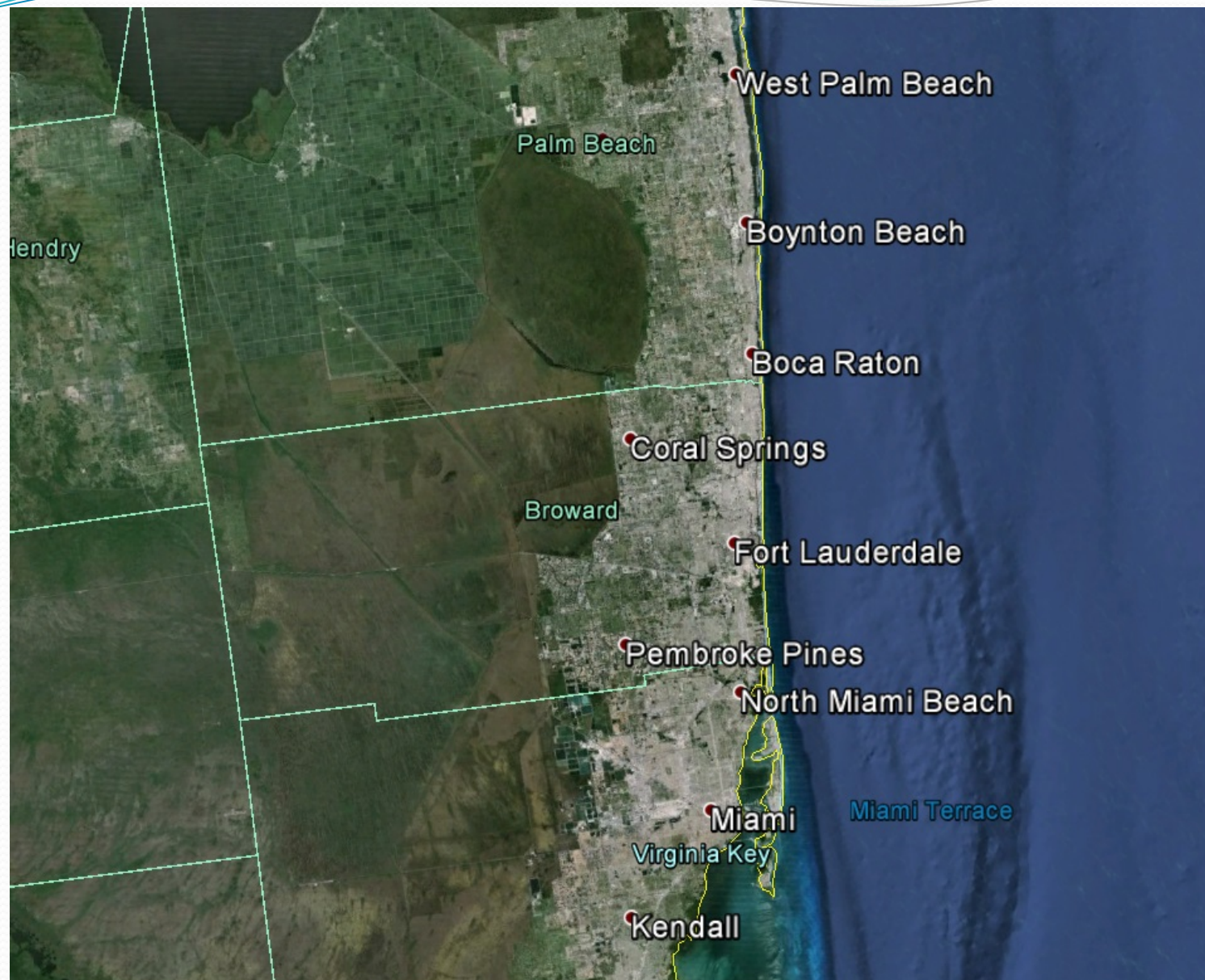
Gumbo Limbo Nature Center

City of Boca Raton



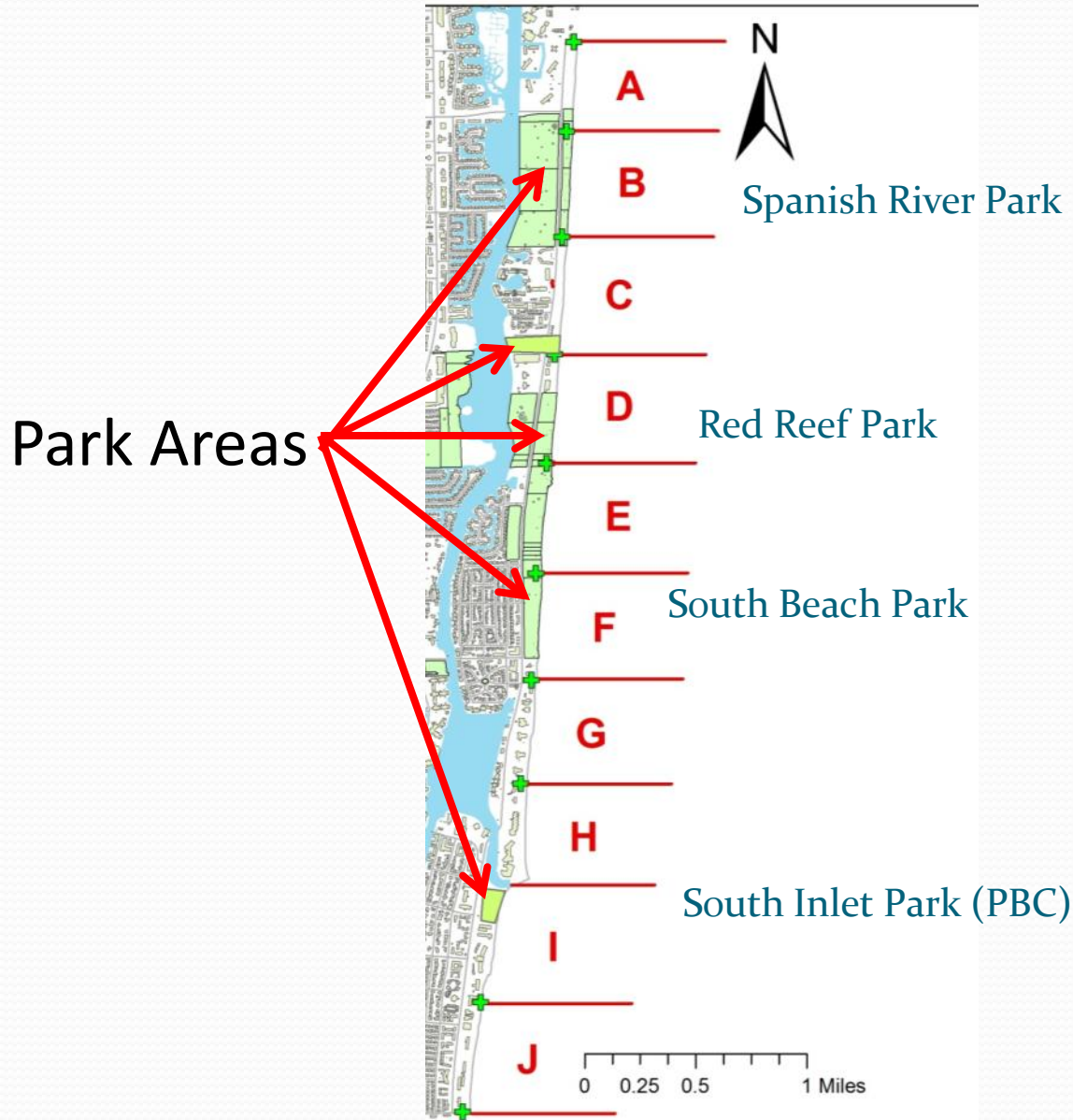








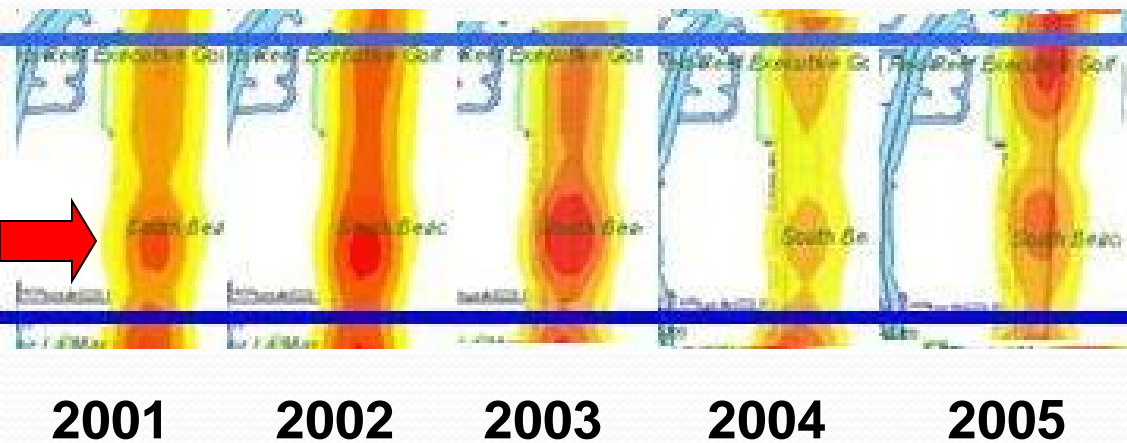
Boca Raton Zones



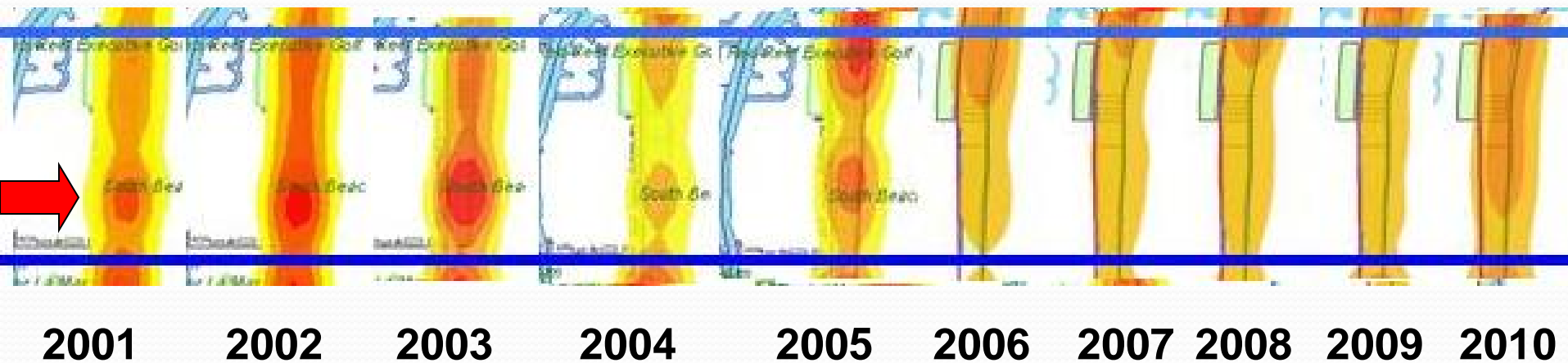
South Beach Park Sky Glow



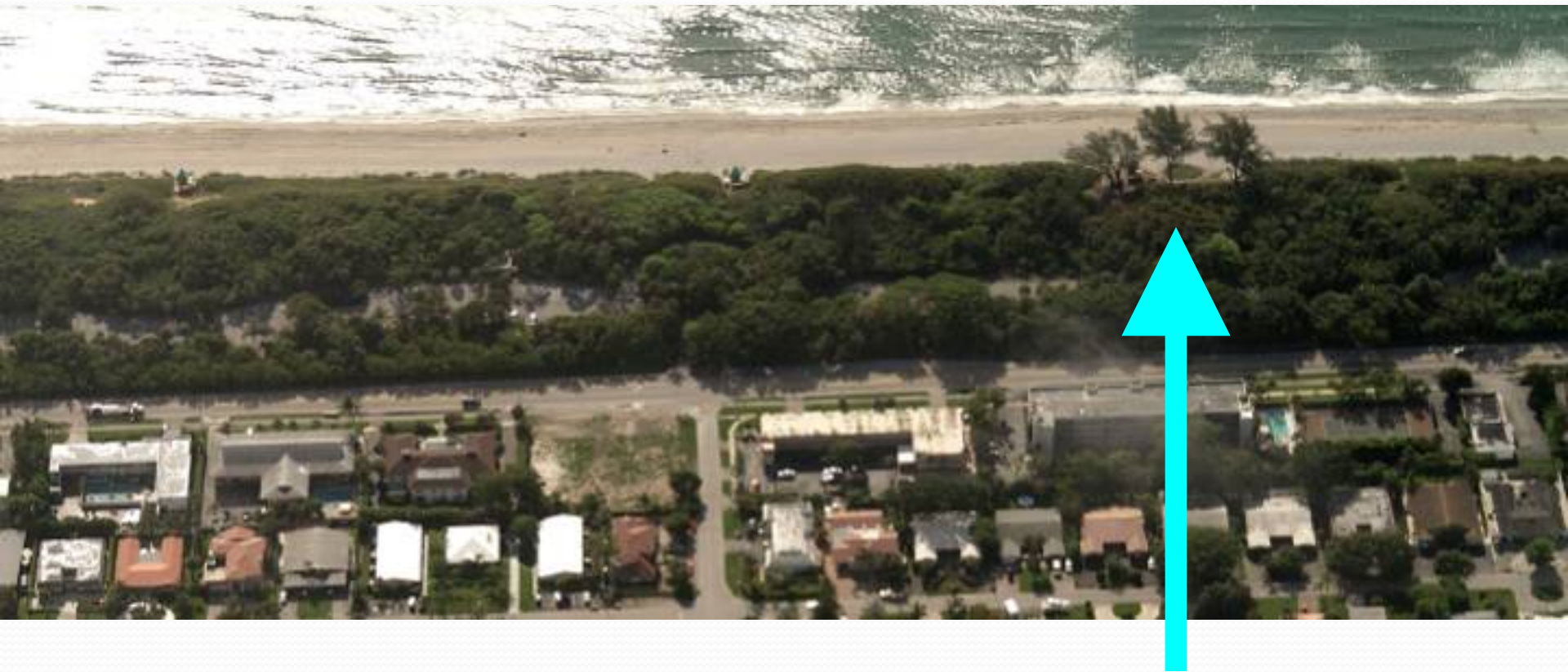
Total Crawl Densities South Beach Park



Total Crawl Densities South Beach Park



Area of Crawl Activity



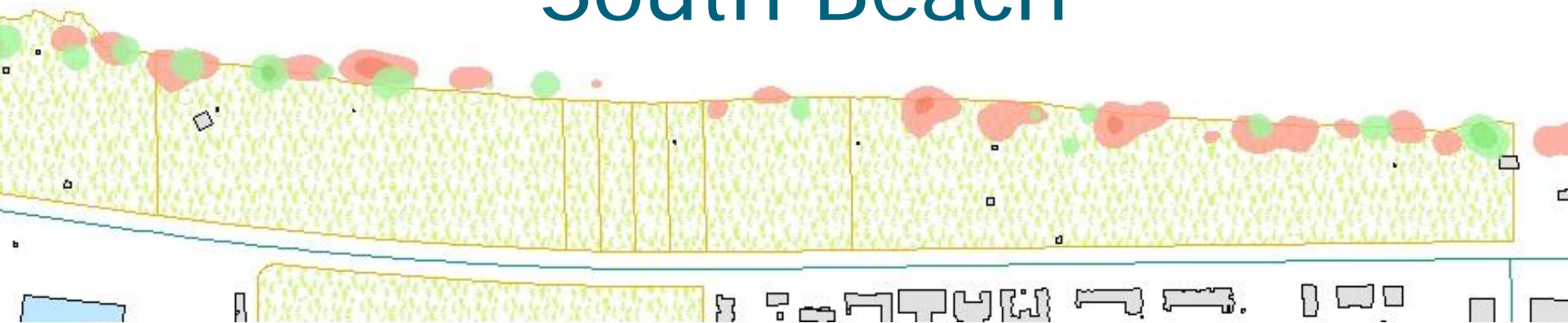
After Hurricane Wilma- October 2005



Condominiums



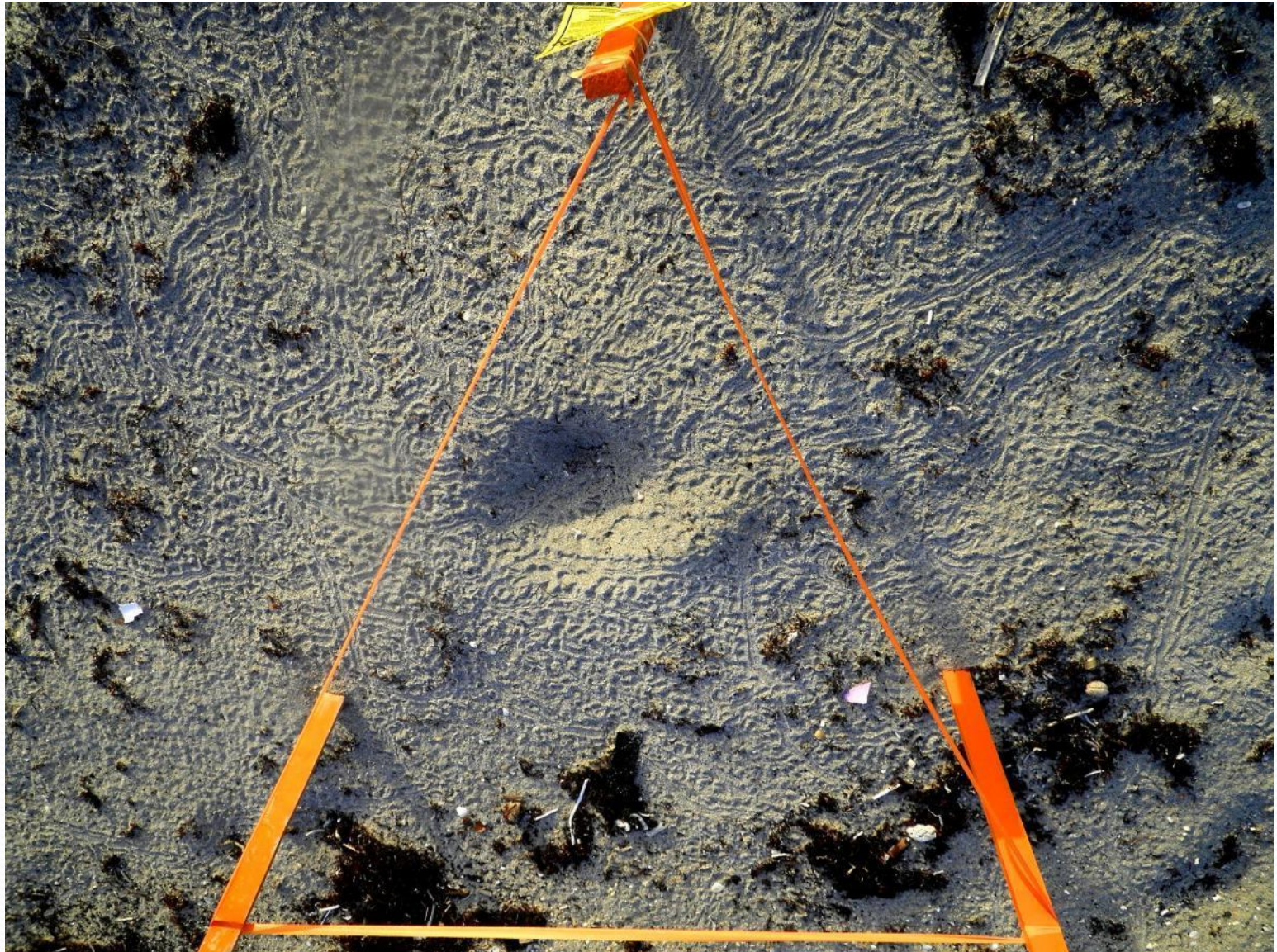
South Beach



Natural emergence (seaward orientation)



Sky-Glow Disorientations

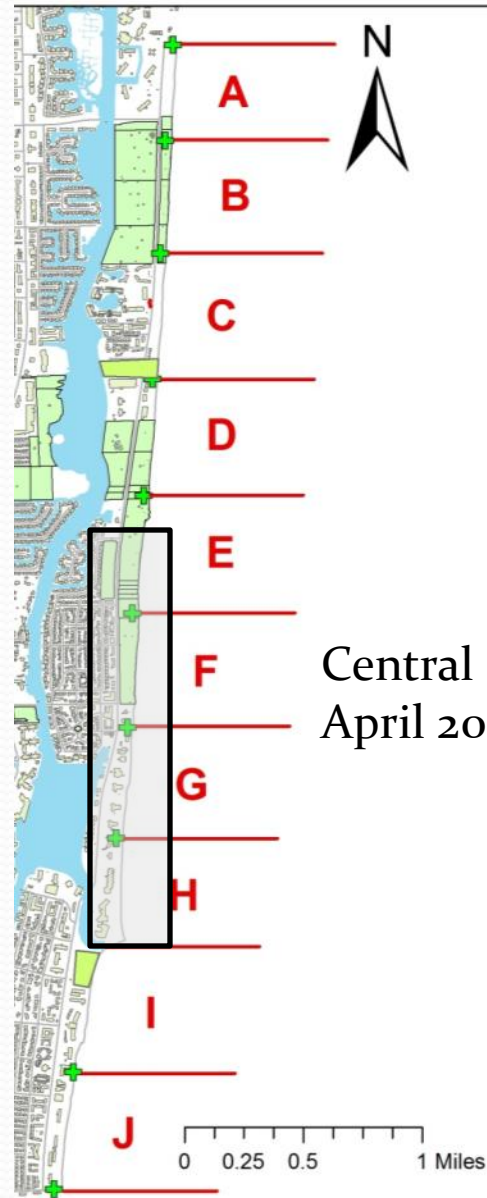


Disorientation Site, Zone F



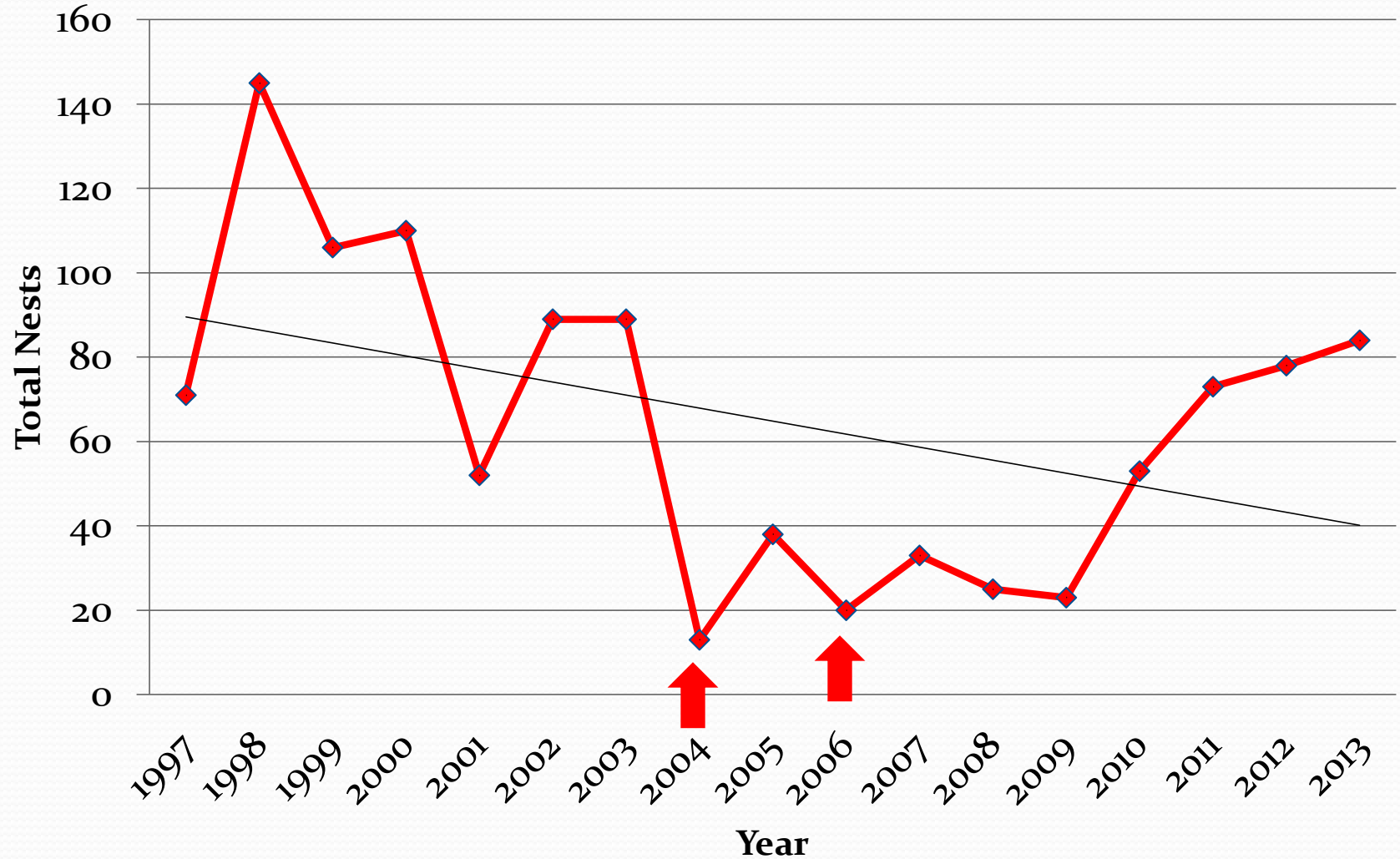


Boca Raton Zones

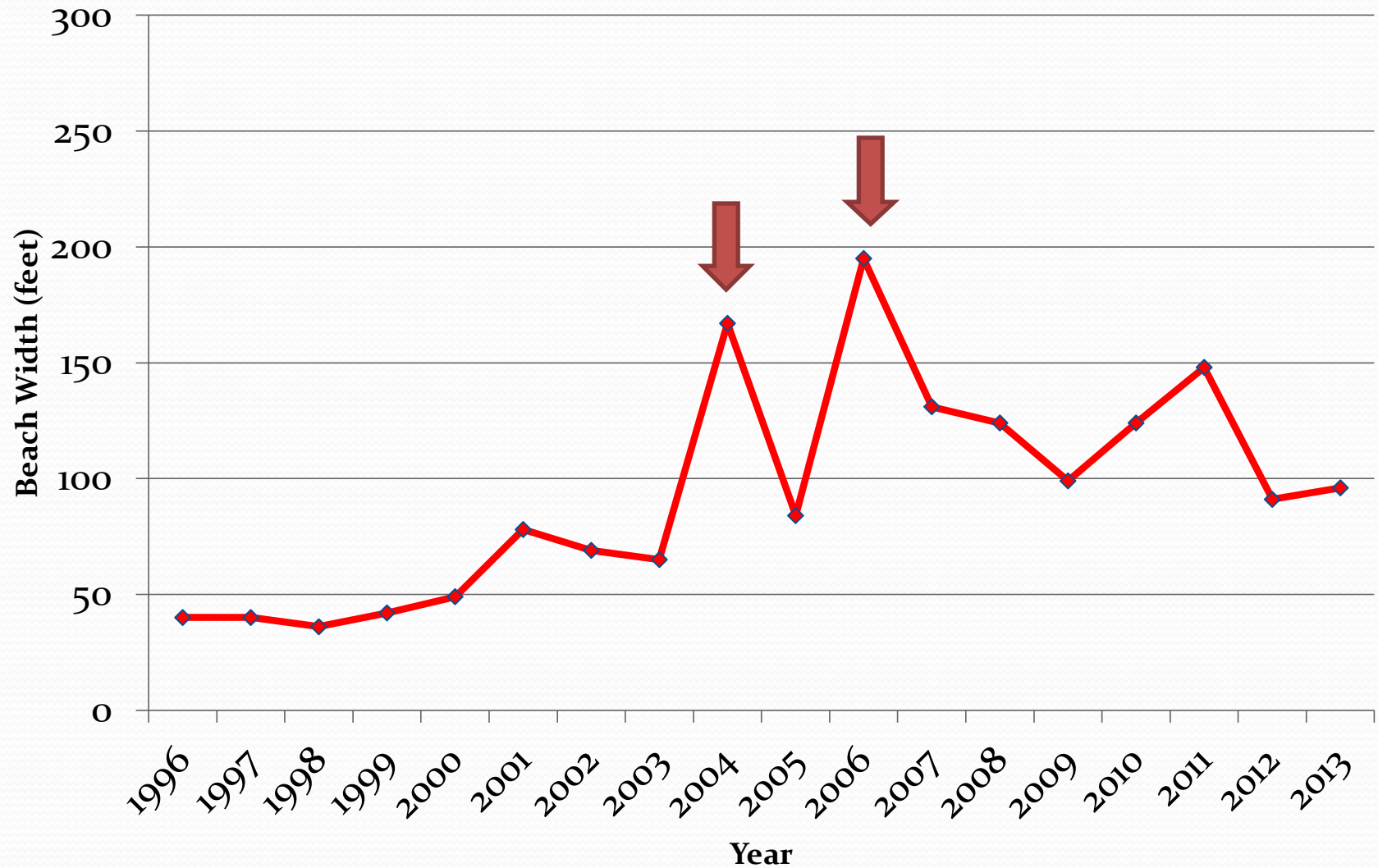


Central Project Area
April 2004, March 2006

Zone F Total Nests

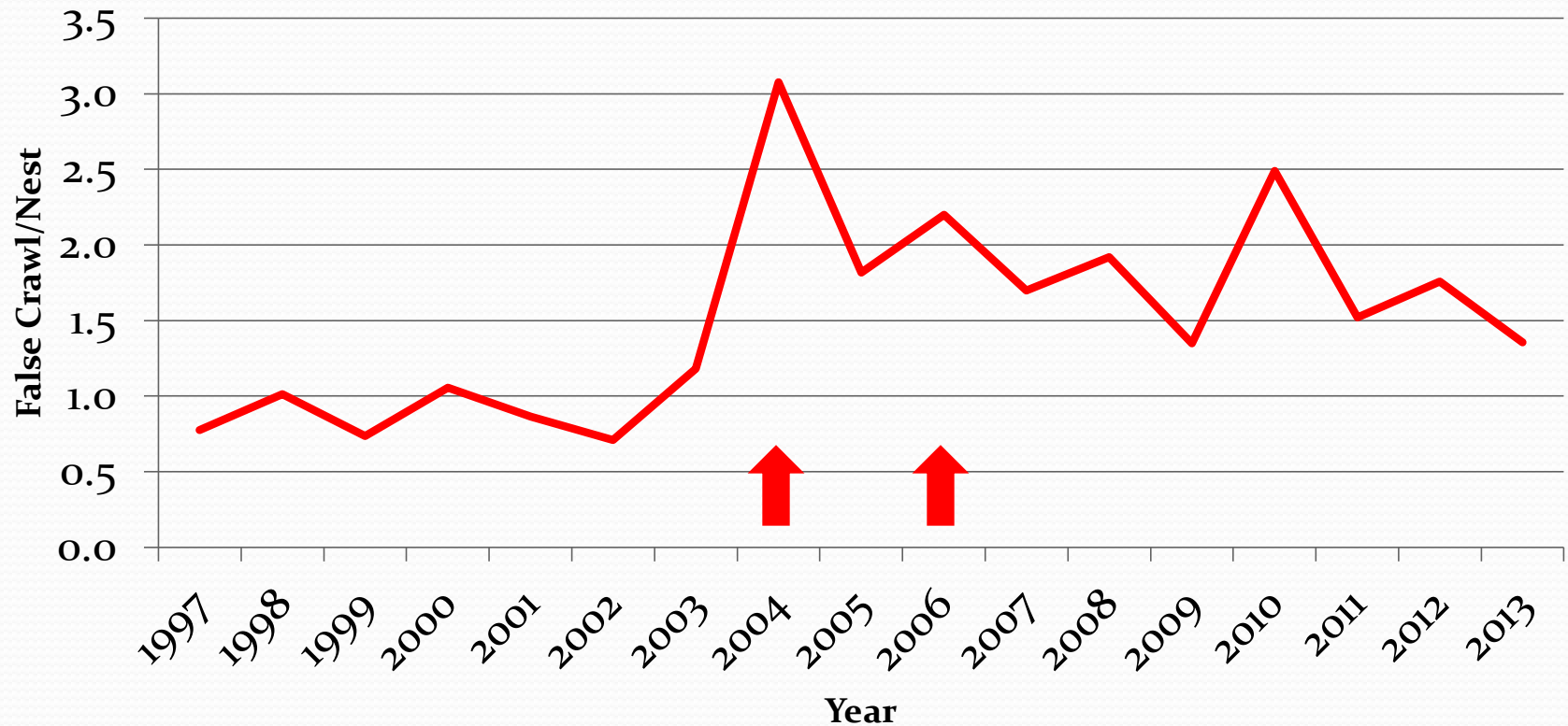


Zone F Beach Width



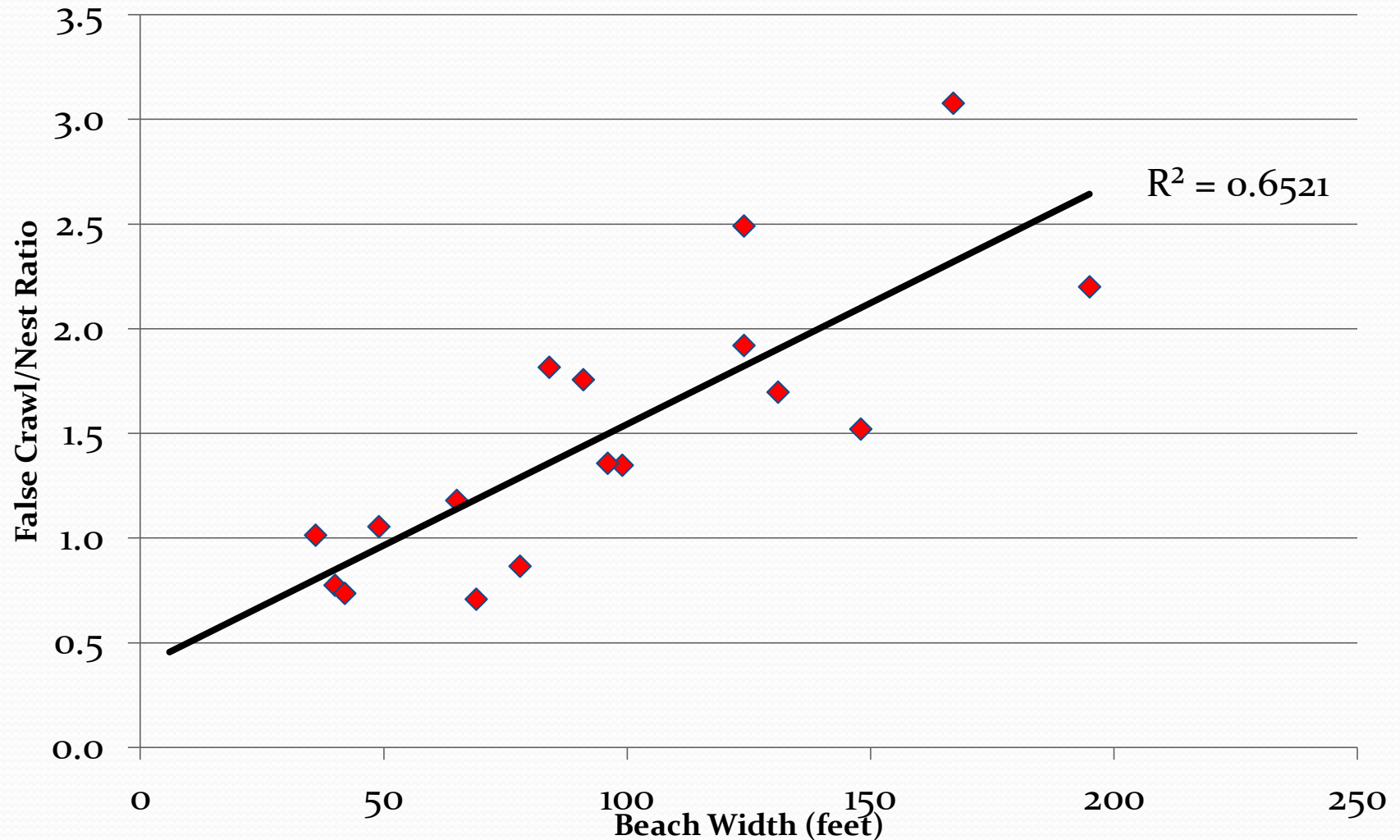
False Crawl/Nest Ratio

Zone F



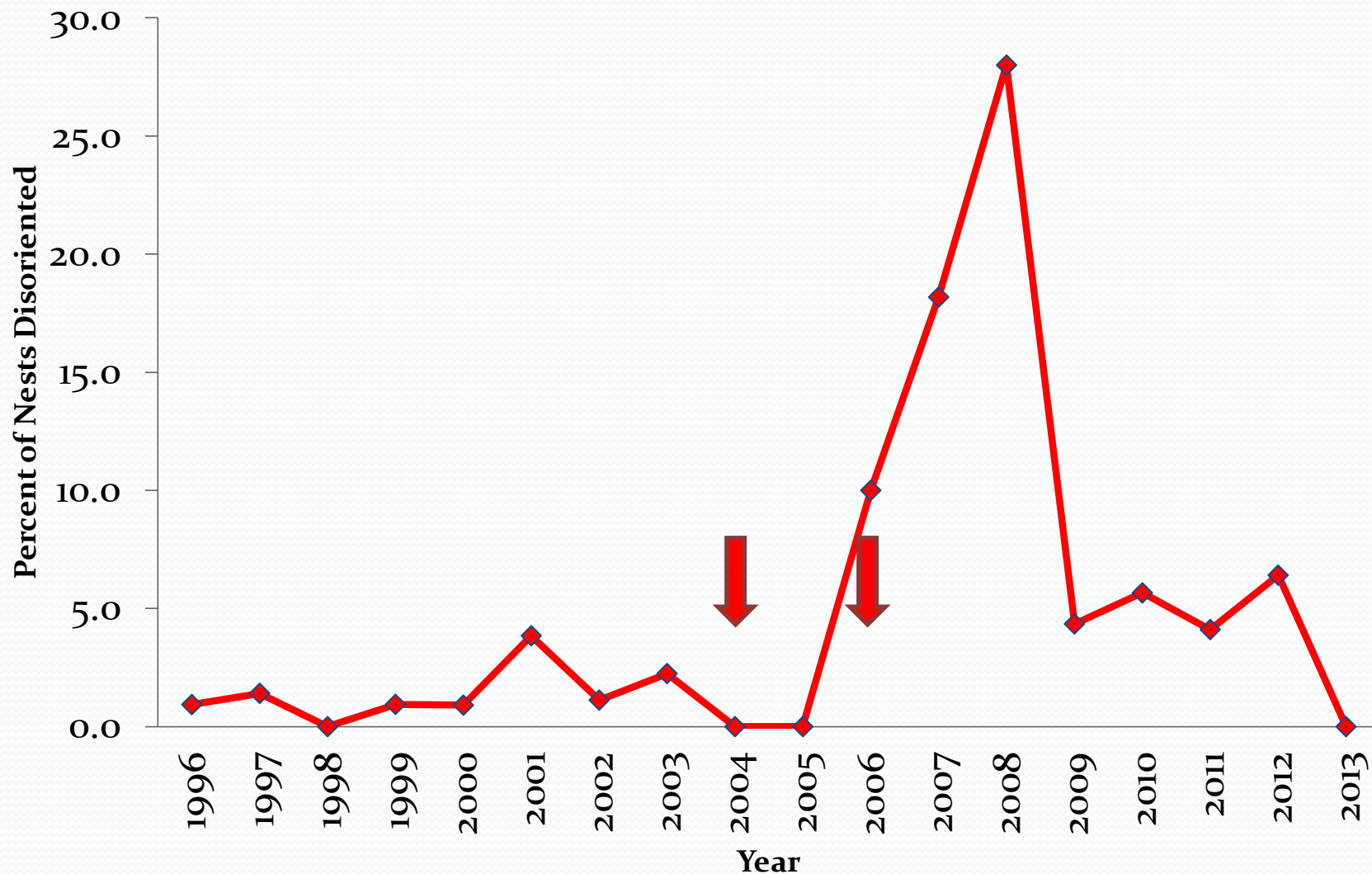


False Crawl/Nest Ratio vs. Width, Zone F





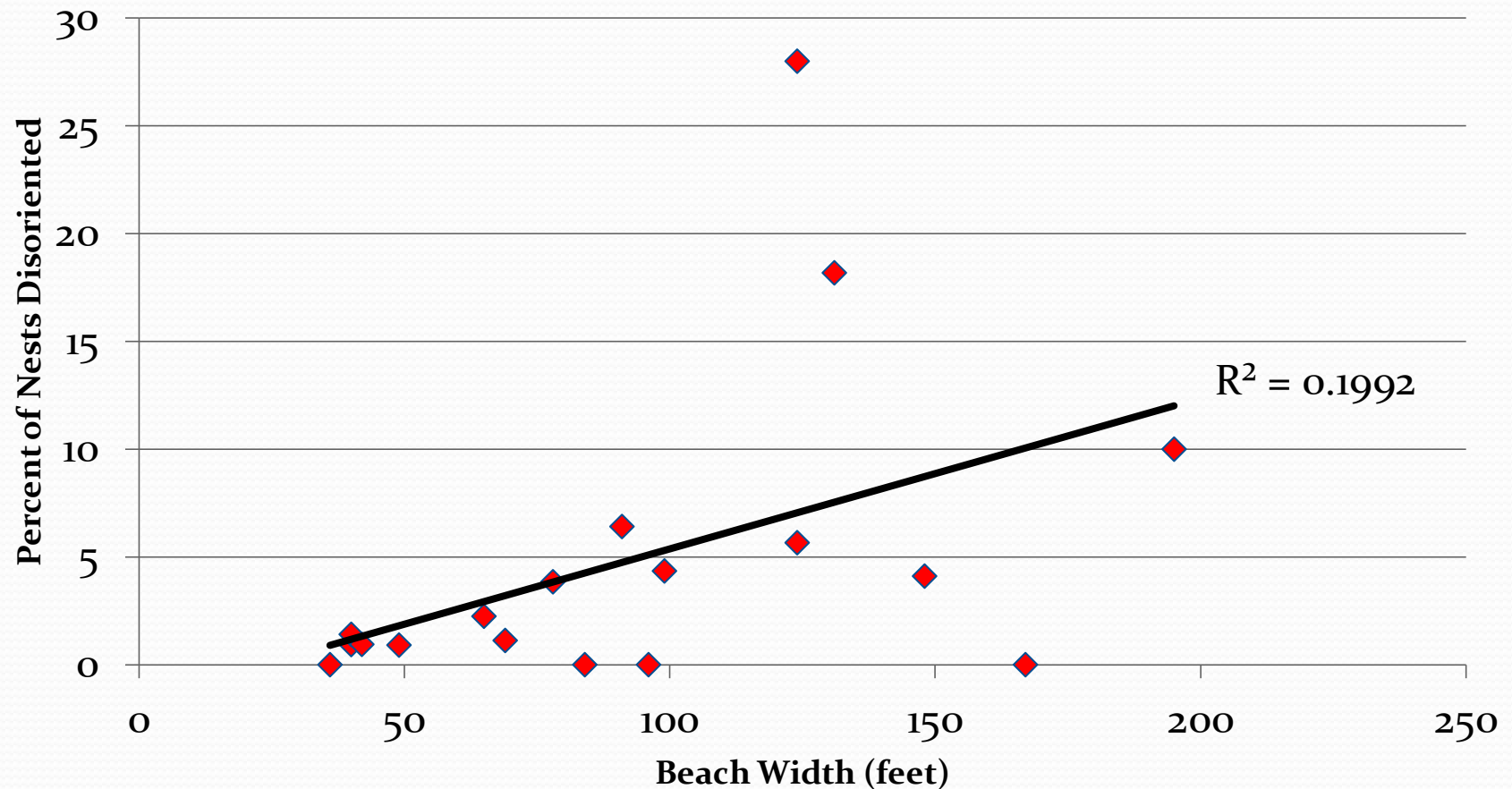
Zone F Percent Disoriented Nests





Percent of Nests Disoriented vs. Beach Width

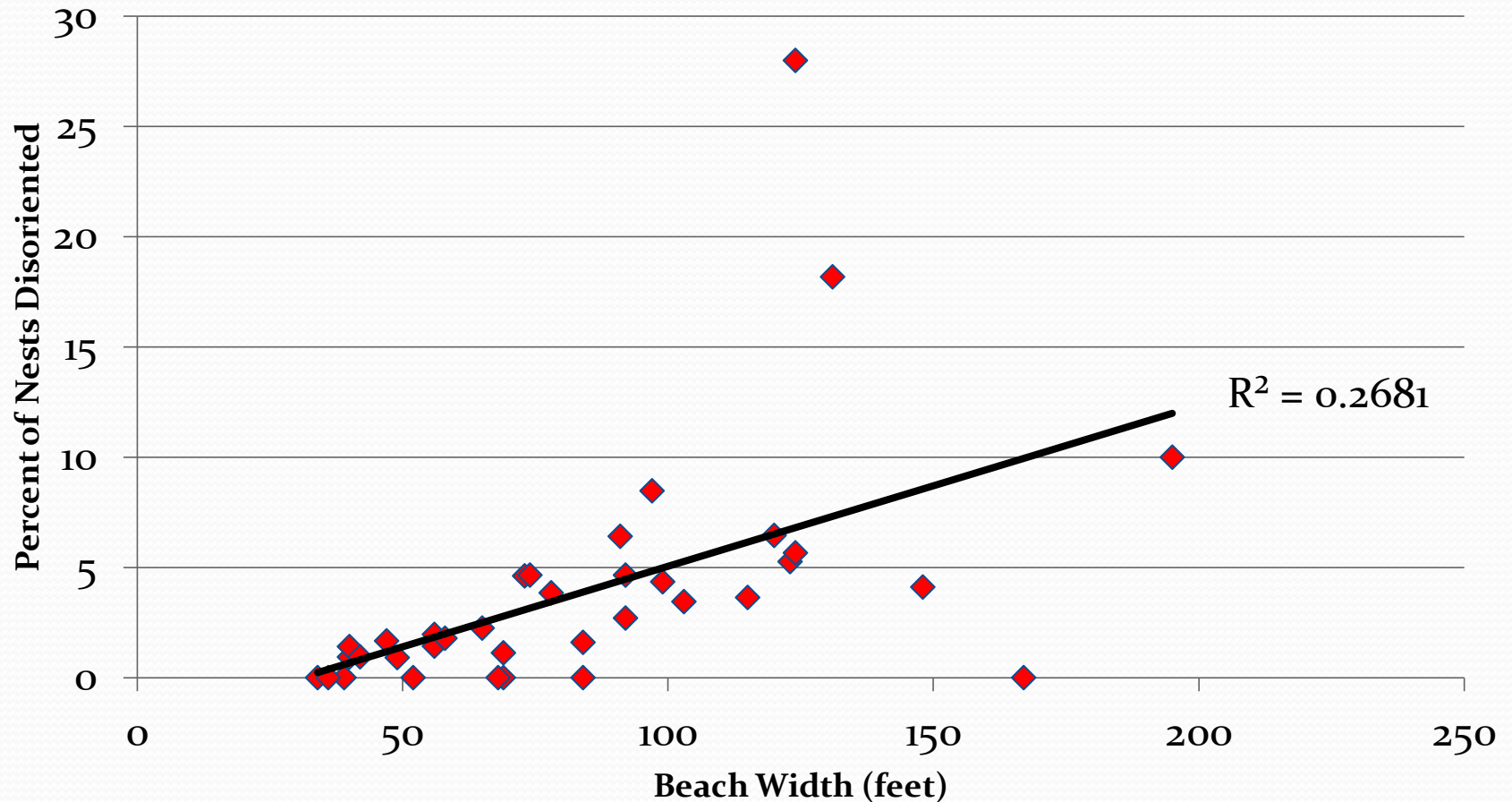
Zone F



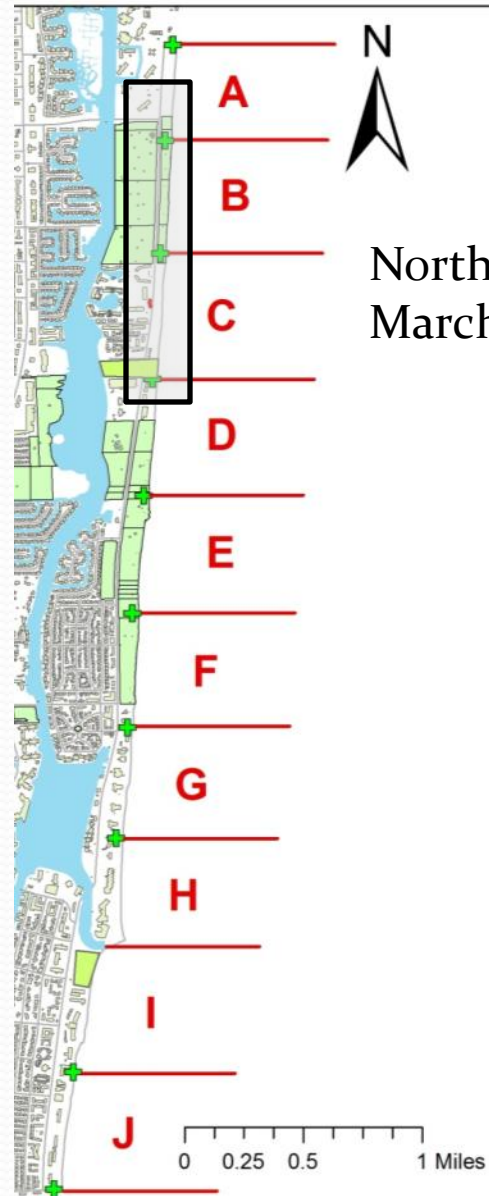


Percent of Nests Disoriented vs. Beach Width

Zones E and F



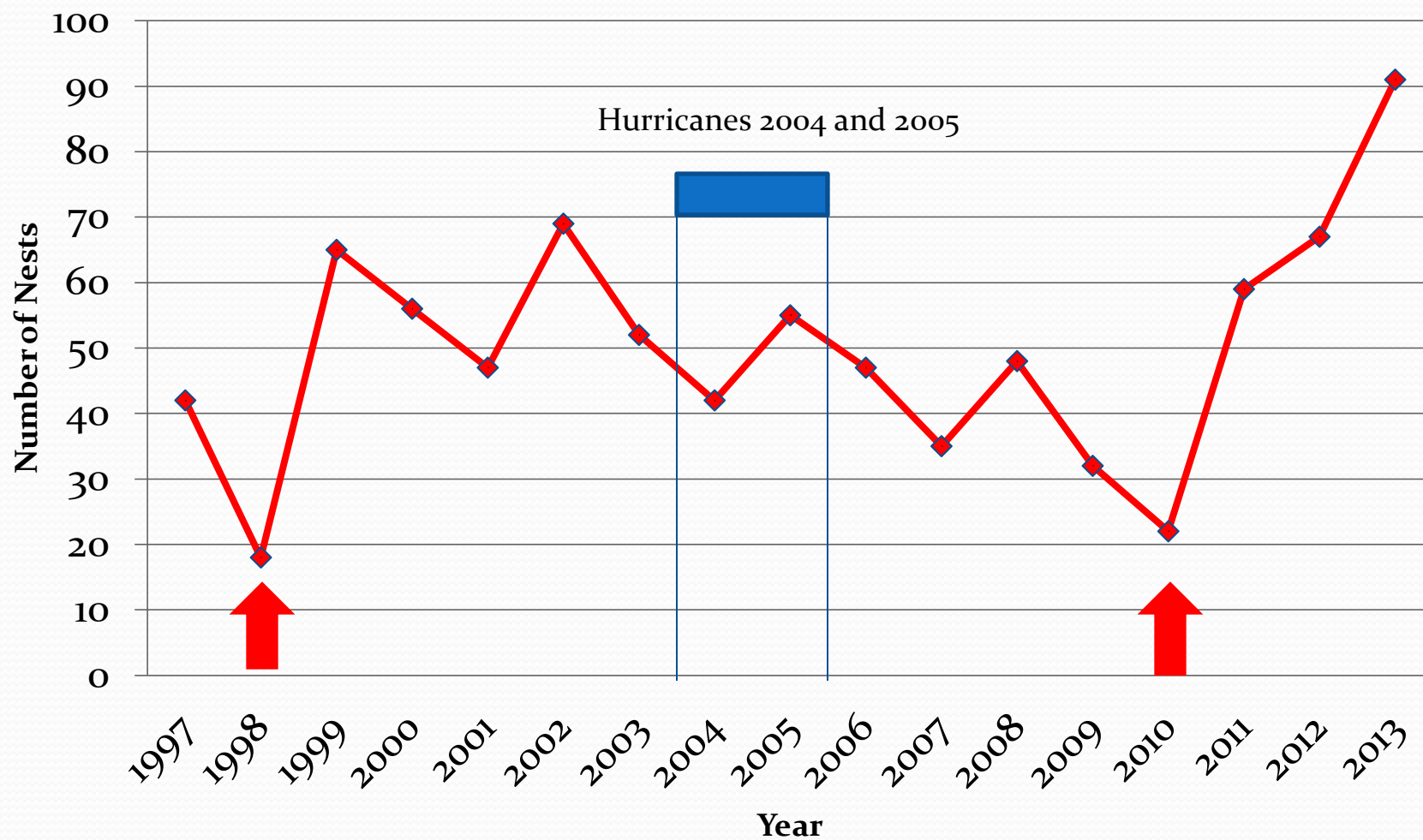
Boca Raton Zones



North Project Area
March 1998, March 2010

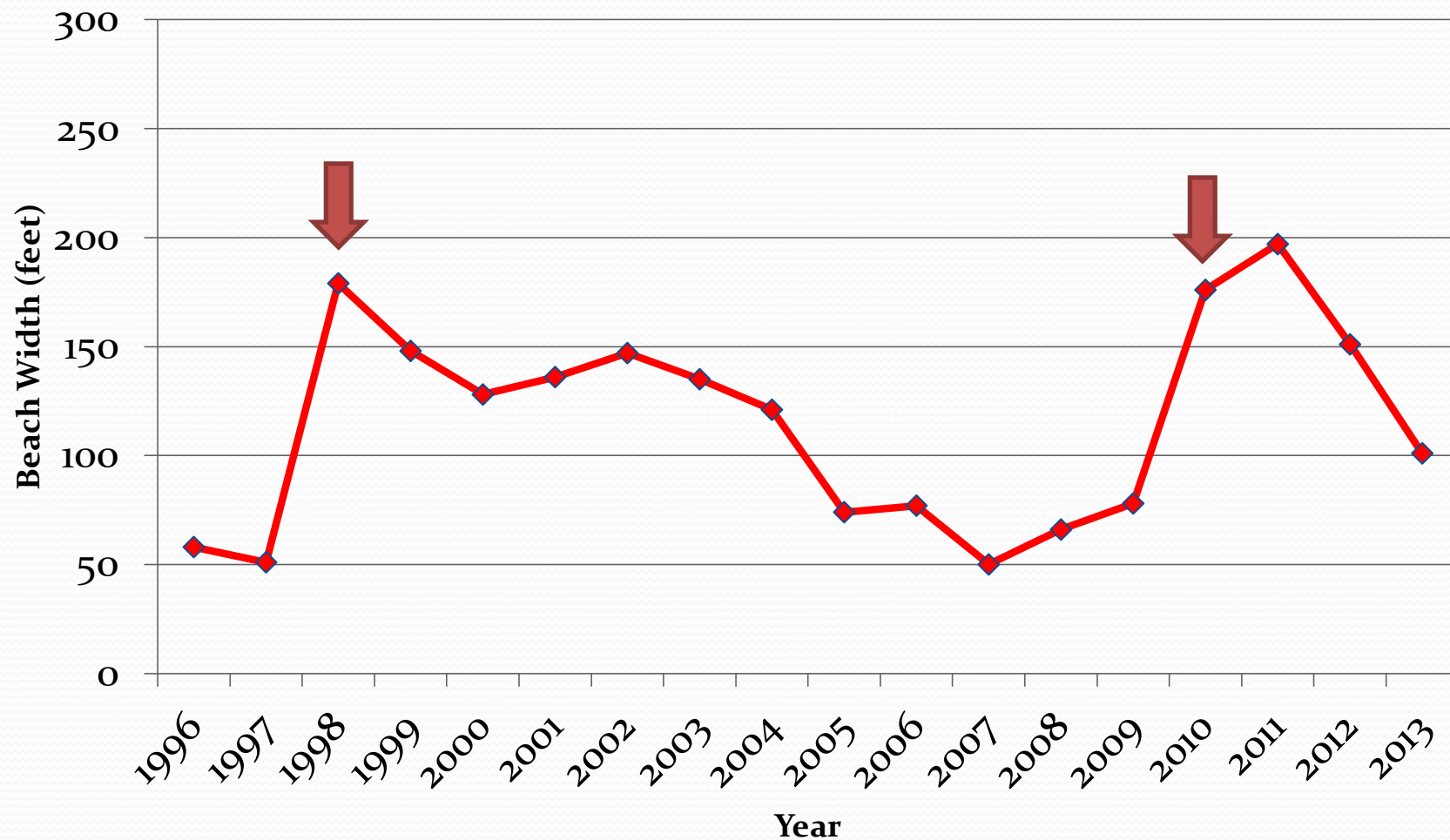


Zone B Total Nests (all species)



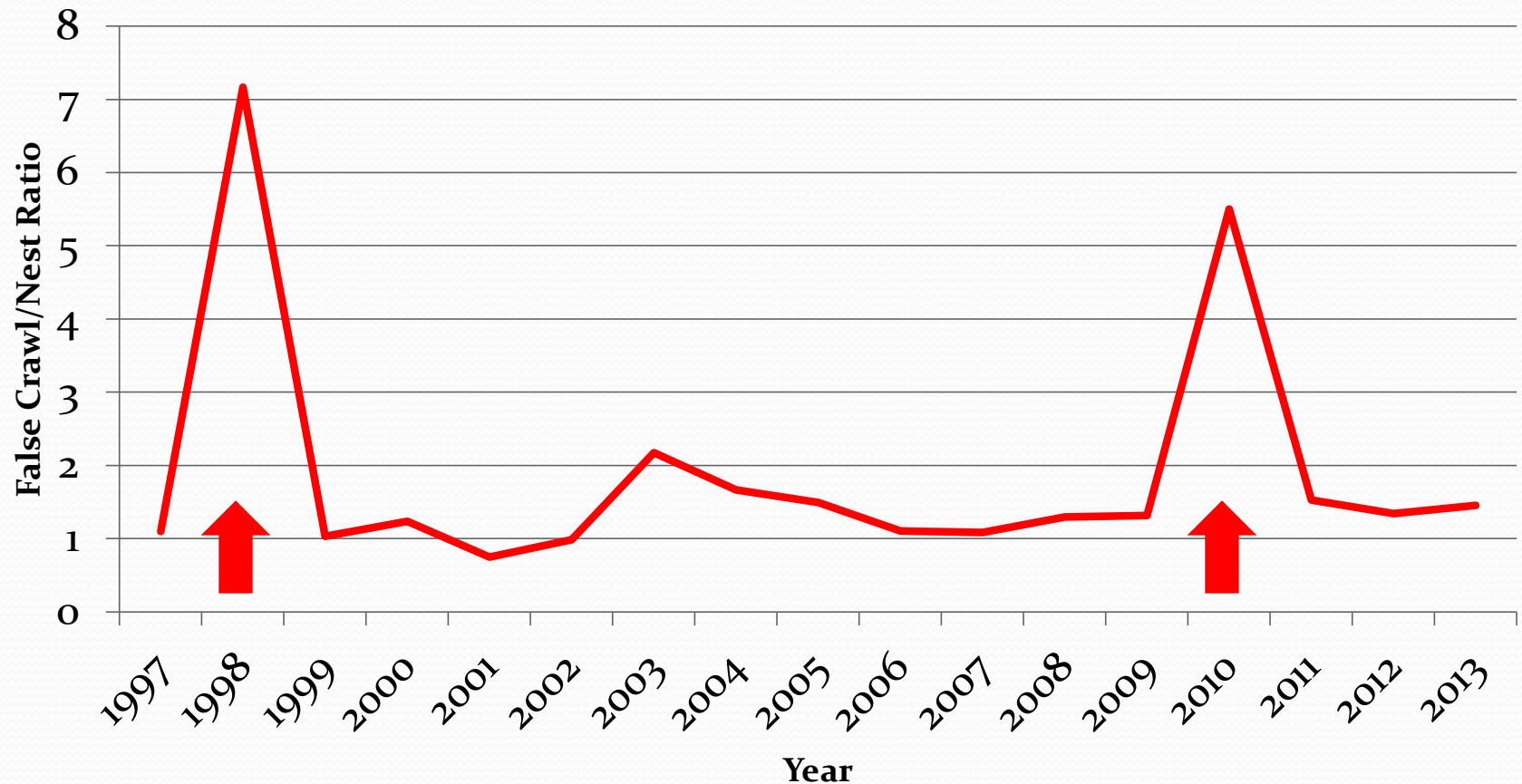


Zone B Beach Width



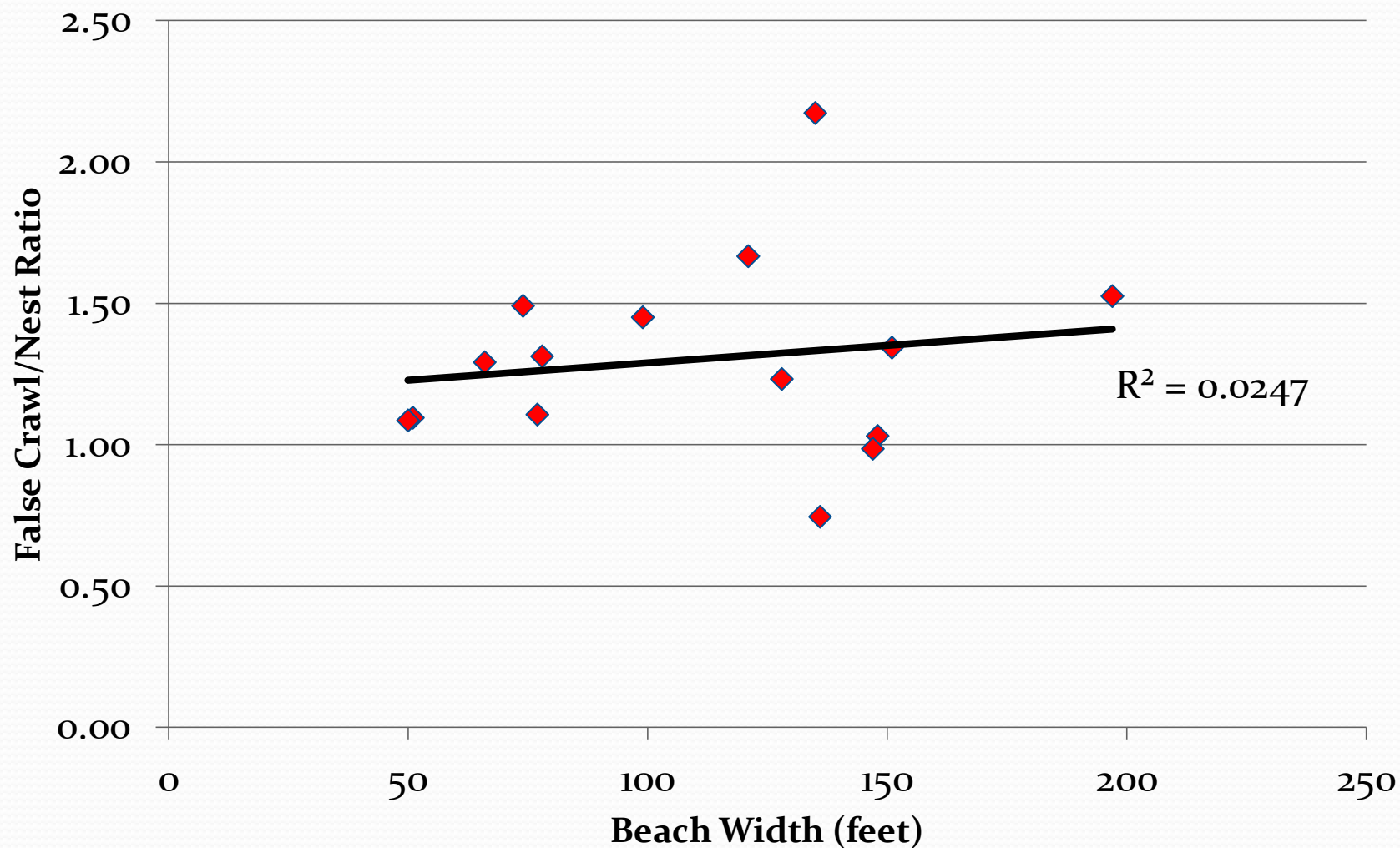
False Crawl/Nest Ratio

Zone B



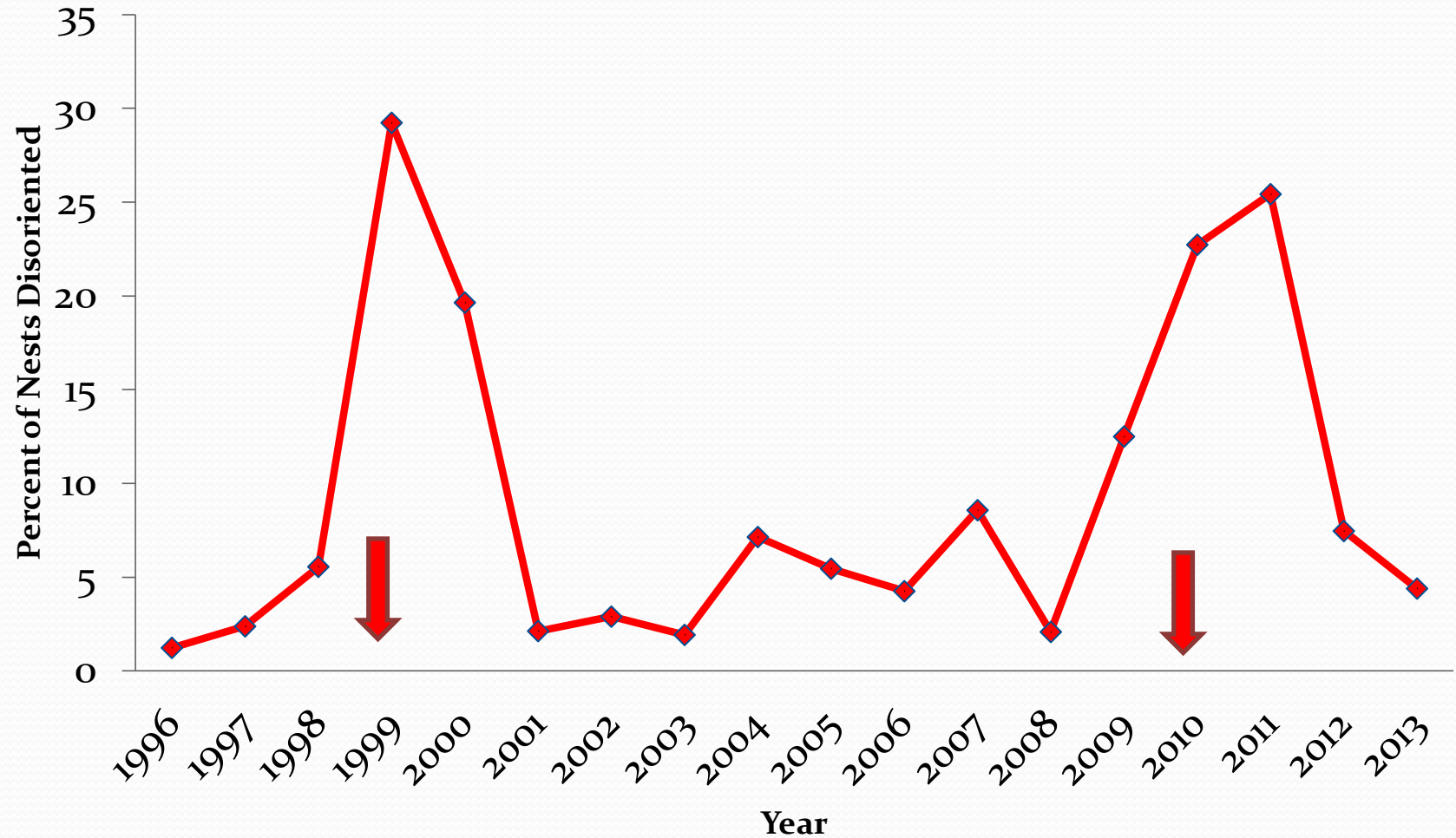


False Crawl/Nest Ratio Minus Project Years





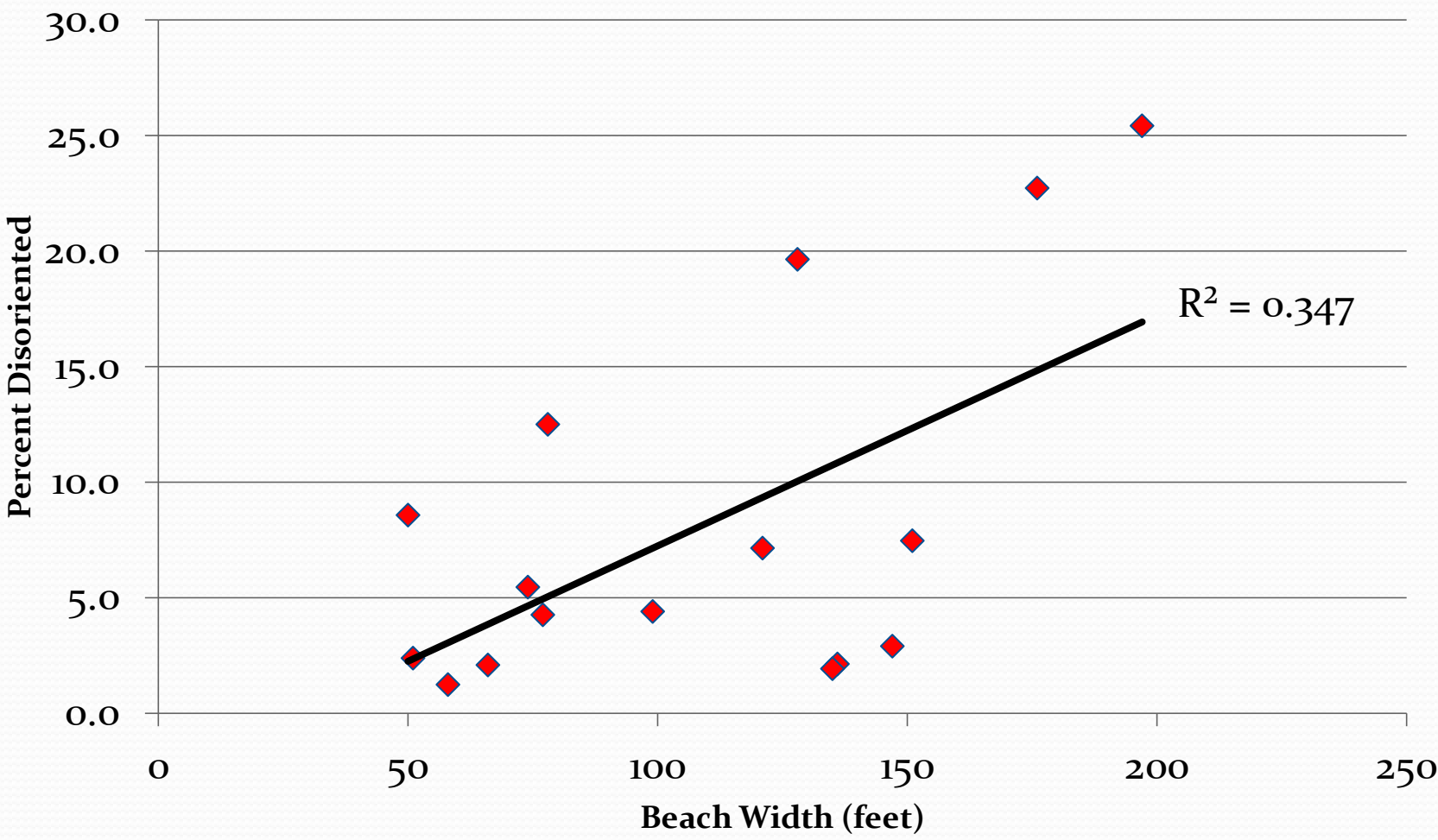
Percent of Nests Disoriented in Zone B



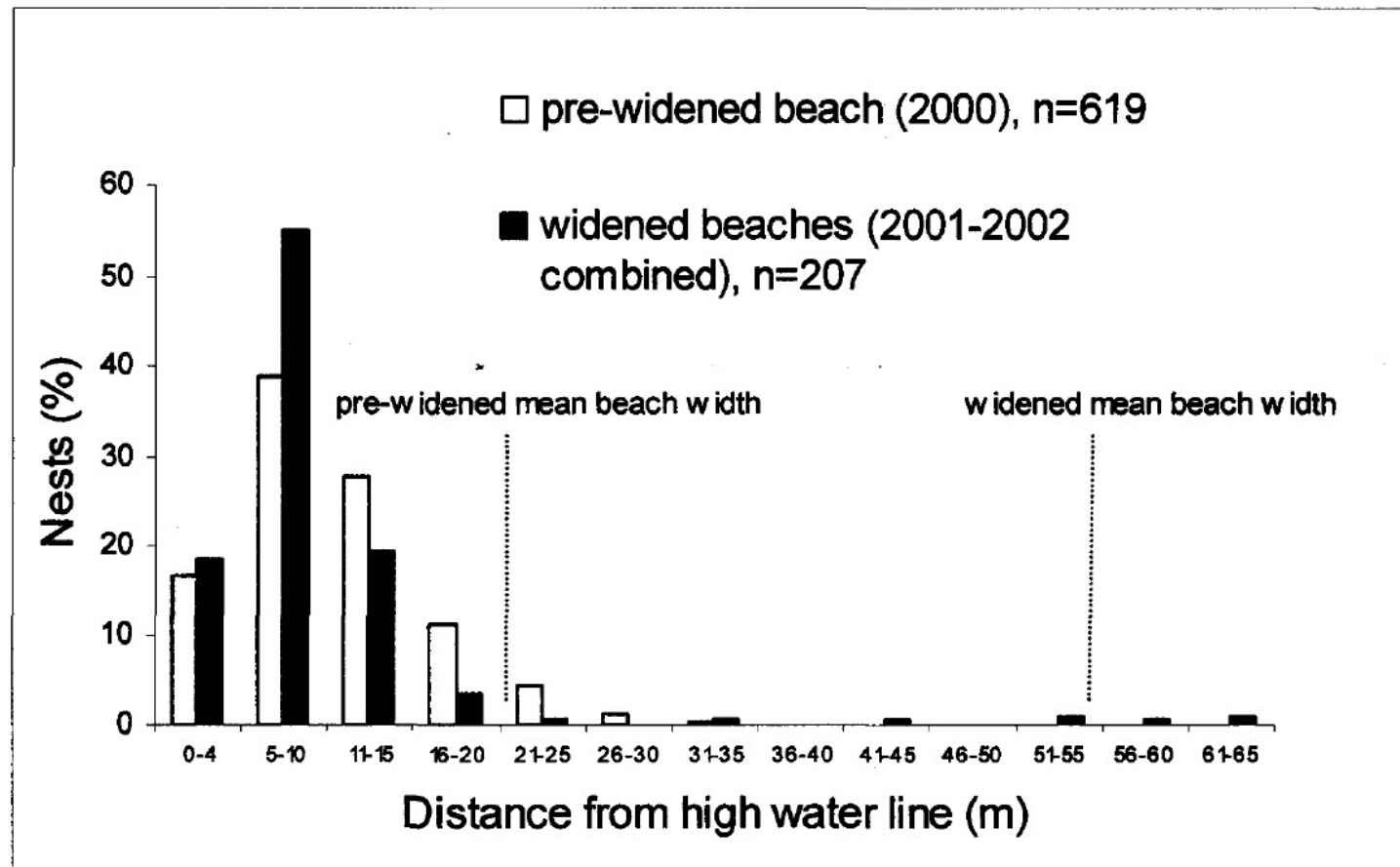


Percent of Nests Disoriented vs. Beach Width

Zone B



Distance of Loggerhead Nests from the High Tide Line





Conclusions

- To determine changes in sea turtle nesting behavior in response to sky-glow, the beach site MUST have the same dune/dune height conditions over the period of the study!

Conclusions

- Beach width in unlit park areas correlates with a higher false crawl/nest ratio apparently if the dune and vegetation height is less than 30 feet.
- Beach width in unlit park areas correlates with a higher percentage of nest (hatchling) disorientations.
- As the only lighting in these areas is sky-glow, the data shown must largely be the result of sky-glow.
 - Both adult nesting female sea turtles and their hatchlings are negatively impacted by this sky-glow in unlit park areas.

Cautionary Note

- This does not vilify renourishment as a method that negatively impacts nesting sea turtles and their hatchlings!
- Renourishment is not the problem in this case.

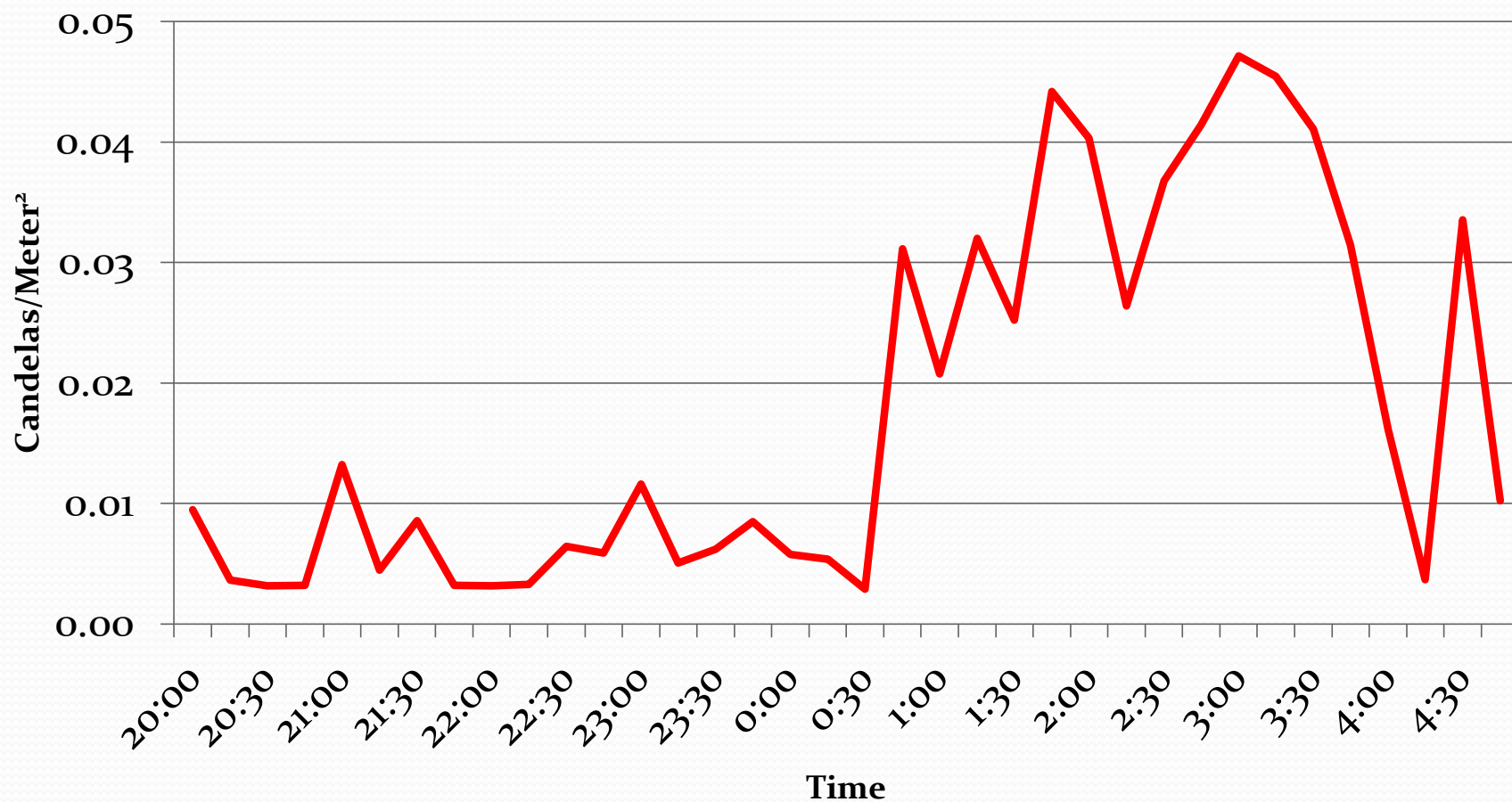
Remedy

- Since sky-glow increases intensity about 6% a year, narrowing beach width by restricting renourishment projects is not the fix!
- The best fix is to encourage responsible night-time lighting to minimize wasted light (sky-glow). The use of full cut-off lighting fixtures and amber/red bulbs at night is the best cure.
- Visit the International Dark-Sky Association's website for more information about light pollution and it's detrimental effect on our environment AND our health.-
www.darksky.org.



Future Sky-Glow Monitoring

Candelas per Square Meter, July 9-10



Thank You! Please Light the Night Right!!

