

# Lethal Bronzing Disease Update

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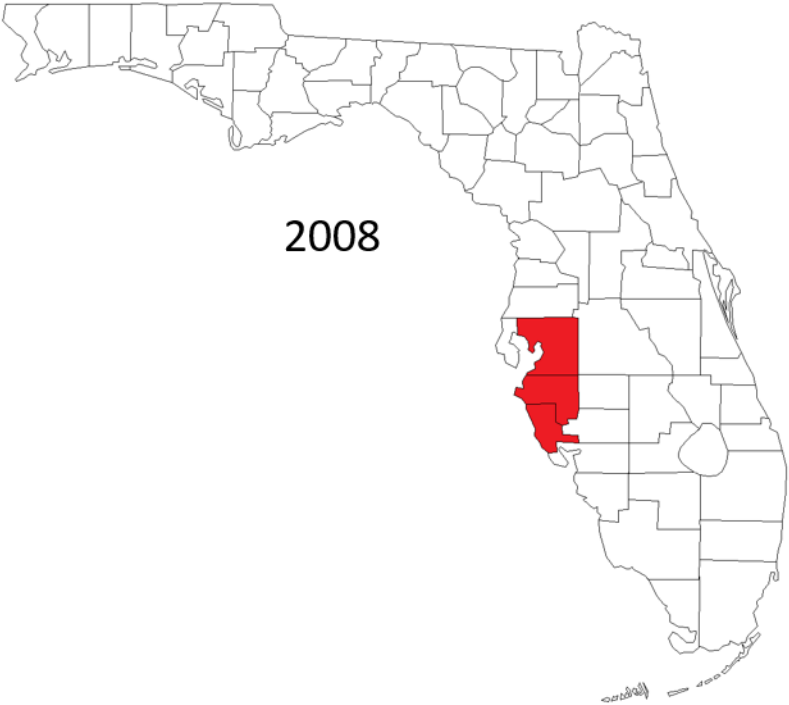
# 16SrIV Taxonomic Group

- ▶ 16SrIV-A → Lethal Yellowing (LY)
- ▶ 16SrIV-B → Yucatan Coconut Lethal Decline (YCLD)
- ▶ 16SrIV-C → Coconut Lethal Decline (CLD) → Africa and India
- ▶ 16SrIV-D → Lethal Bronzing Disease (LBD)/Texas Phoenix Palm Decline (TPPD)
- ▶ 16SrIV-E → Coconut Lethal Yellowing (CLY) → Dominican Republic
- ▶ 16SrIV-F

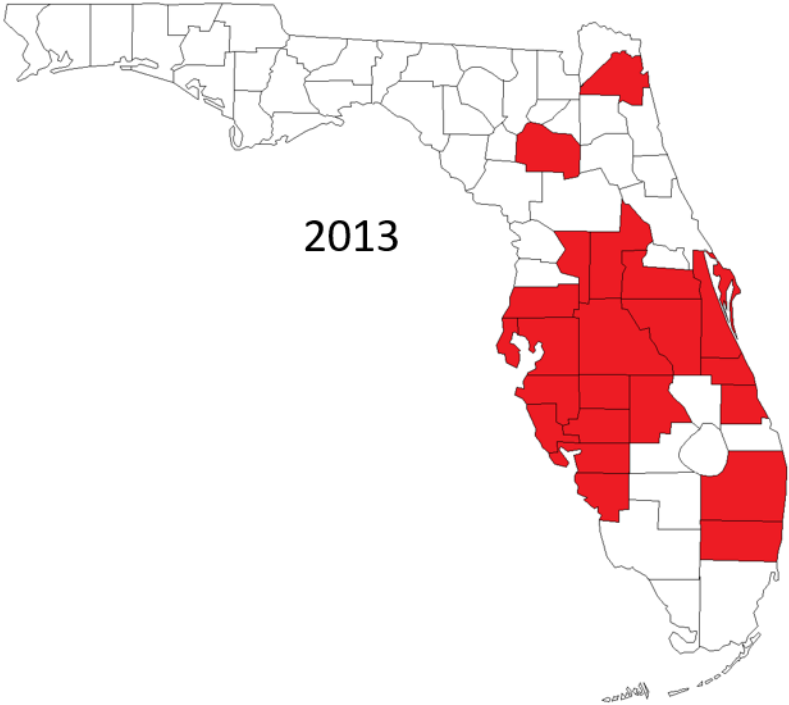
# History - TPPD

- ▶ Disease first described in 1980 in Texas
- ▶ Introduced to the west coast of Florida around 2006
- ▶ First report was in Hillsborough County
- ▶ Since 2006, TPPD has spread throughout much of the state

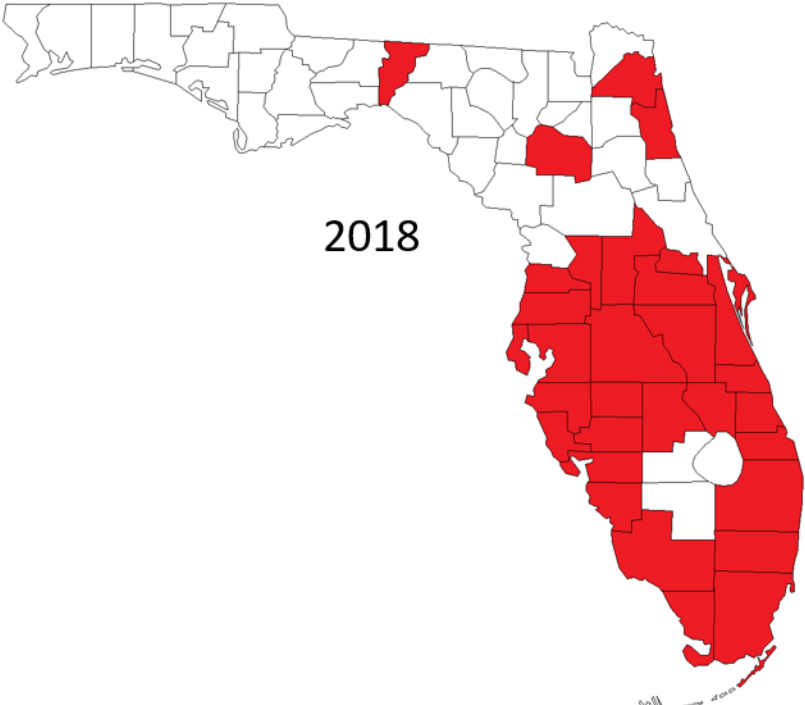
2008



2013



2018

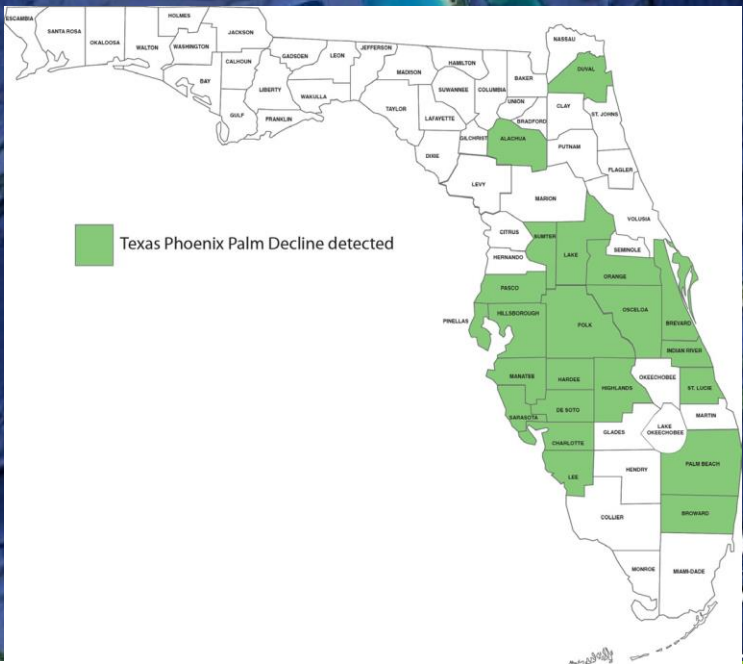
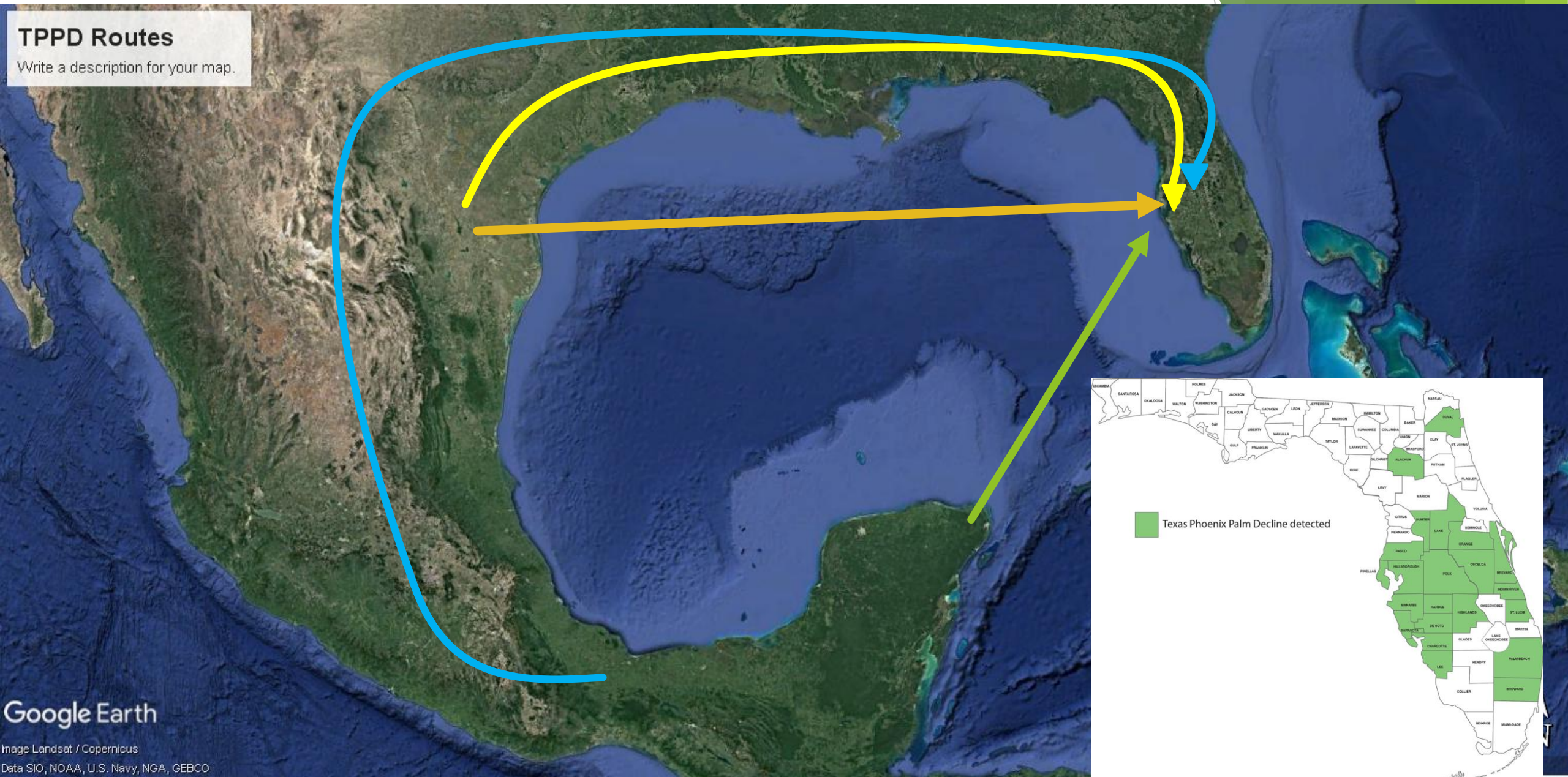


# Distribution

County	County	County	County
Duval	Brevard	Palm Beach	<b>Monroe*</b>
Alachua	Indian River	Broward	
Sumter	Manatee	<b>Okeechobee*</b>	
Lake	Hardee	<b>Martin*</b>	
Orange	Highlands	<b>St. Johns*</b>	
Pasco	St. Lucie	<b>Jefferson*</b>	
Pinellas	De Soto	<b>Hernando*</b>	
Hillsborough	Sarasota	<b>Seminole*</b>	
Polk	Charlotte	<b>Collier*</b>	
Osceola	Lee	<b>Miami-Dade*</b>	31 total

# TPPD Routes

Write a description for your map.





Google Earth

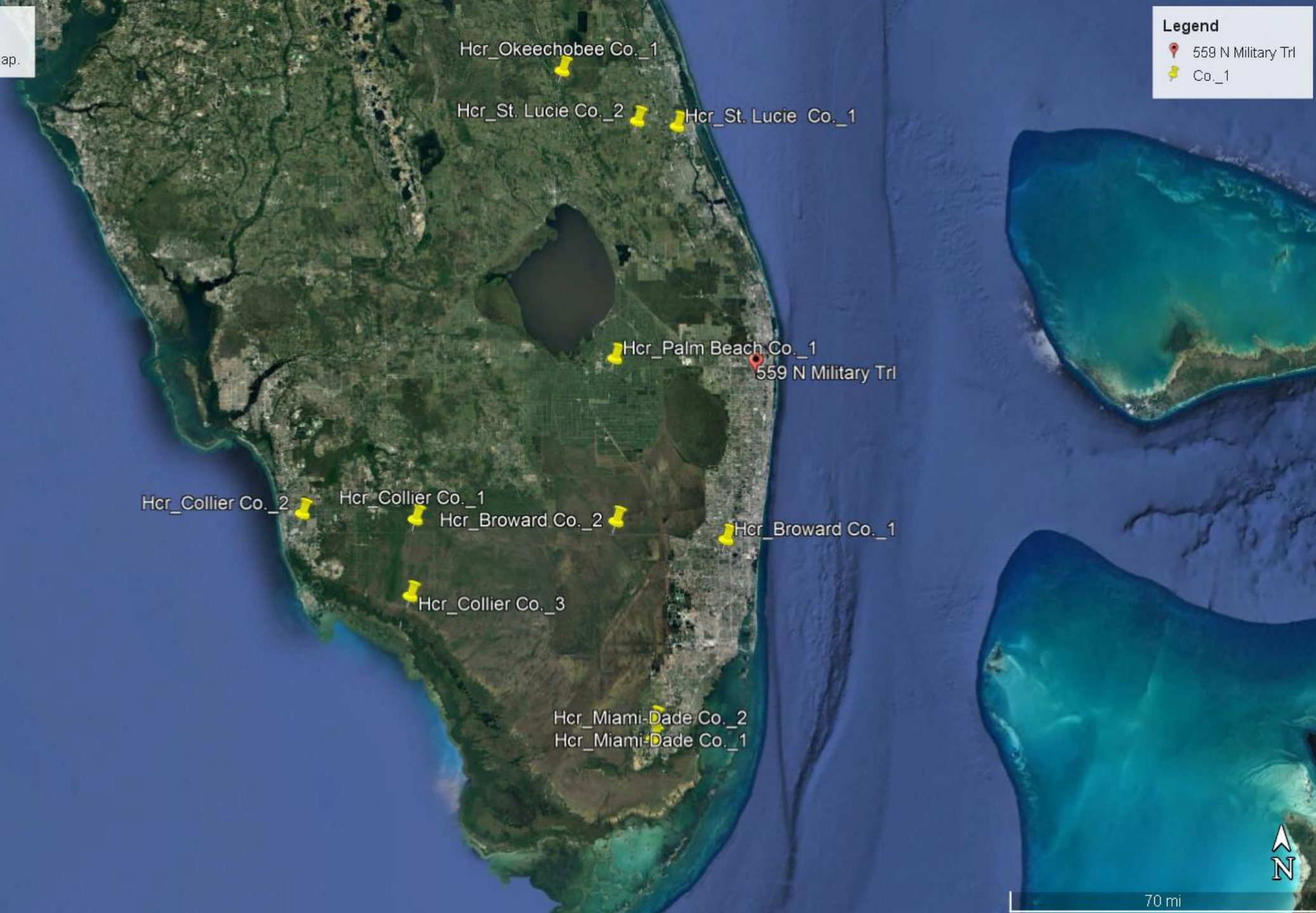
Image Landsat / Copernicus  
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

# Untitled Map

Write a description for your map.

## Legend

-  559 N Military Trl
-  Co\_1



Google Earth

Data SIO, NOAA, U.S. Navy, NGA, GEBCO  
Image Landsat / Copernicus



70 mi

# Epidemiology - Insect Vectors

- ▶ Initially there were three species suspected as vectors of TPPD
  - ▶ *Haplaxius crudus*
  - ▶ *Ormenaria rufifascia*
  - ▶ *Omolicna joi*





# Epidemiology - Insect Vectors

Insect Species	No. insect collected	No. Insect tested	No. insect tested positive of phytoplasma
	Oct-18-2017 to Nov-02-2018	Oct-18-2017 to Jul-13-2018	Oct-18-2017 to Jul-13-2018
Haplaxius crudus (Cixiidae)	2830	1260	14
Cedusa inflata (Derbidae)	118	85	0
Idioderma virescens (Membracidae)	353	107	0
Cicadellidae spp.	416	271	1
Omolicna joi (Derbidae)	23	10	0
Total	3740	1733	15

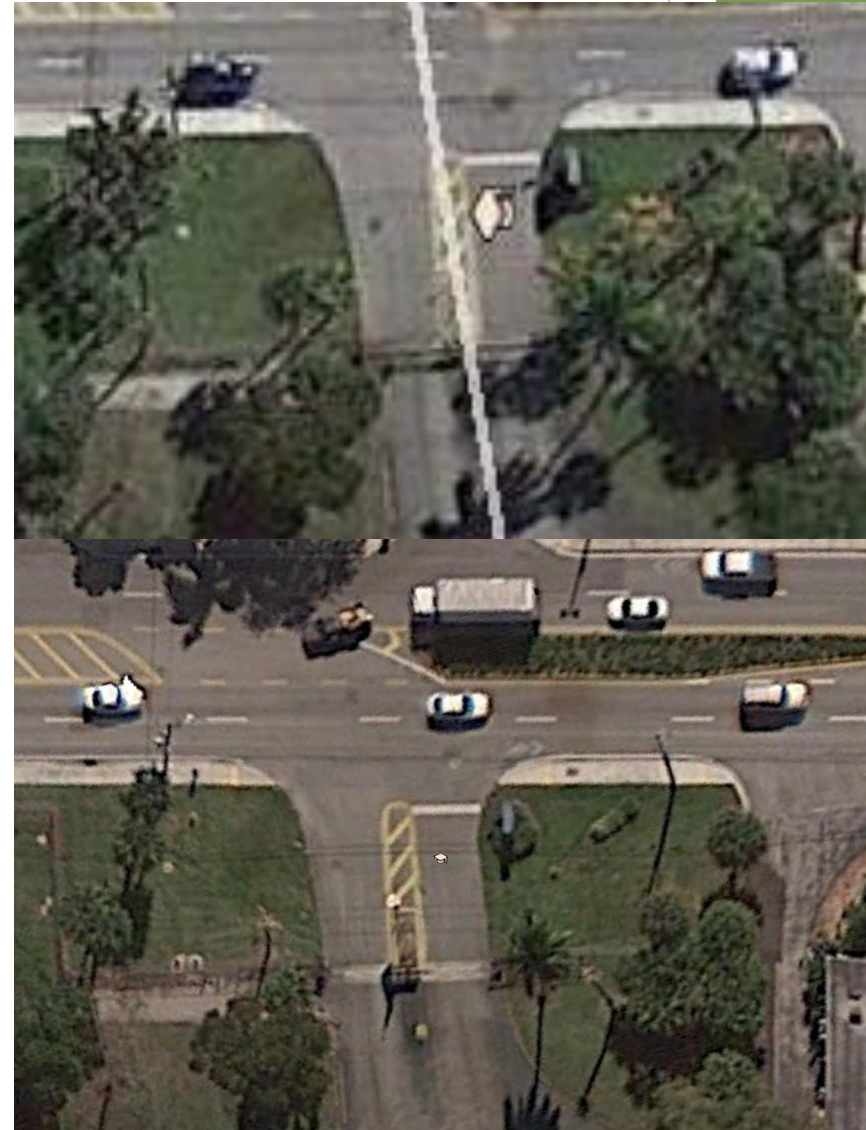
# Disease Progression

- ▶ TPPD first showed up at FLREC in 2014
- ▶ No nearby palms exhibited symptoms



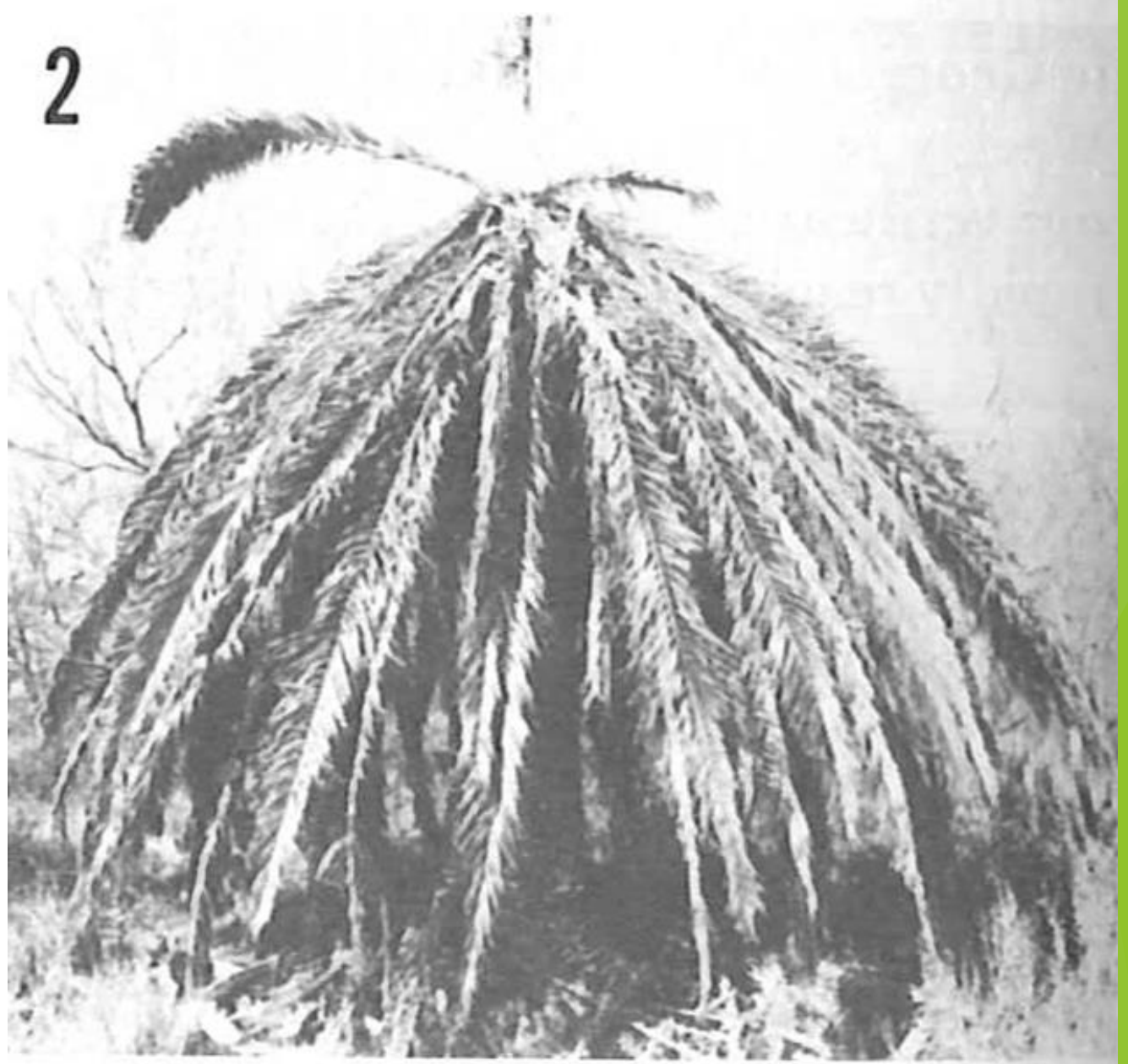
# Disease Progression - Front Entrance

- ▶ December 2014 = 5/30 positive
- ▶ February 2015 = 7/30 positive
- ▶ April 2015 = 9/30 positive
- ▶ June 2015 = 10/30 positive
- ▶ November 2015 = 14/30 positive
- ▶ May 2017 = 16/30 dead from TPPD



# Host Range

- ▶ First recorded in *Phoenix* palms
- ▶ Shortly after, infected *Sabal palmetto*
- ▶ Currently 10 confirmed susceptible hosts
- ▶ McCoy et al. 1980



# Host Range

## Current Palm Species

*Bismarckia nobilis*

*Carpentaria acuminata*

*Phoenix canariensis*

*Phoenix dactylifera*

*Phoenix roebelinii*

*Phoenix sylvestris*

*Sabal palmetto*

*Syagrus romanzoffiana*

*Adonidia merrillii*\*

*Livistona chinensis*\*

*Butia capitata*\*

*Cocos nucifera*\*



TPPD

LY

*Sabal palmetto*

*Syagrus romanzoffiana*

*Phoenix roebelinii*

*Carpentaria acuminata*

*Bismarckia nobilis*

*Corypha taliera*

*Aiphanes lindeniana*

*Allagoptera arenaria*

*Arenga engleri*

*Caryota mitis*

*Chelyocarpus chuco*

*Copernicia alba*

*Crysophila warsecewiczii*

*Cyphophoenix nucele*

*Dictyosperma album*

*Dypsis cabadae*

*Gaussia attenuata*

*Howea belmoreana*

*Howea forsteriana*

*Hyophorbe verschaffeltii*

*Latania lontaroides*

*Livistona rotundifolia*

*Nannorrhops ritchiana*

*Phoenix reclinata*

*Phoenix rupicola*

*Pritchardia affinis*

*Pritchardia pacifica*

*Pritchardia remota*

*Pritchardia thurstonii*

*Ravenea hildebrantii*

*Syagrus schizophylla*

*Dypsis decaryi*

*Veitchia arecina*

*Adonidia merrillii*

*Cocos nucifera*

*Phoenix canariensis*

*Phoenix dactylifera*

*Phoenix sylvestris*

*Trachycarpus fortunei*

*Livistona chinensis*

*Borassus flabellifer*

*Caryota rumphiana*

# Symptoms

- ▶ In *Sabal palmetto*
  - ▶ Fruit drop/inflorescence necrosis
  - ▶ Lower leaves begin to exhibit a bright brown/bronze coloration
  - ▶ Discoloration progresses into younger leaves
  - ▶ Spear leaf collapse → bushy top appearance
  - ▶ Younger leaves will remain green for variable amount of time
  - ▶ “Nest” stage







# Symptoms

- ▶ In *Phoenix* palms, the symptoms between LY and TPPD are the same





A



B



C



# Thank you!

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