# Key Deer and Pine Rocklands: *A Historical Perspective*

*Roel R. Lopez*

# Presentation Outline

- Key deer background
- Population trends
- Pineland use by Key deer
- Future conservation challenges

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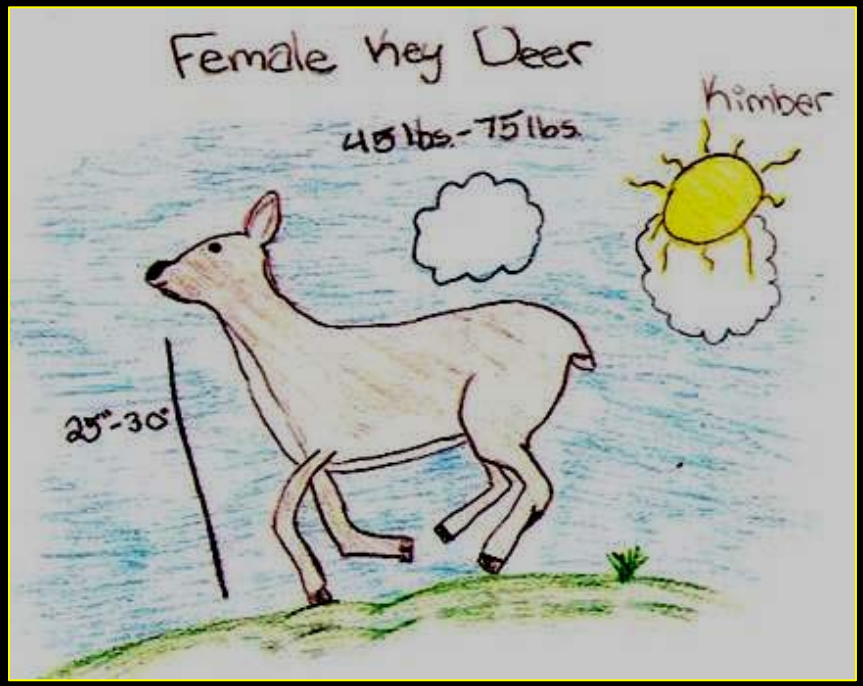
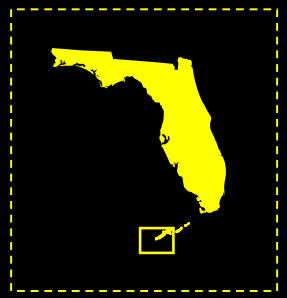
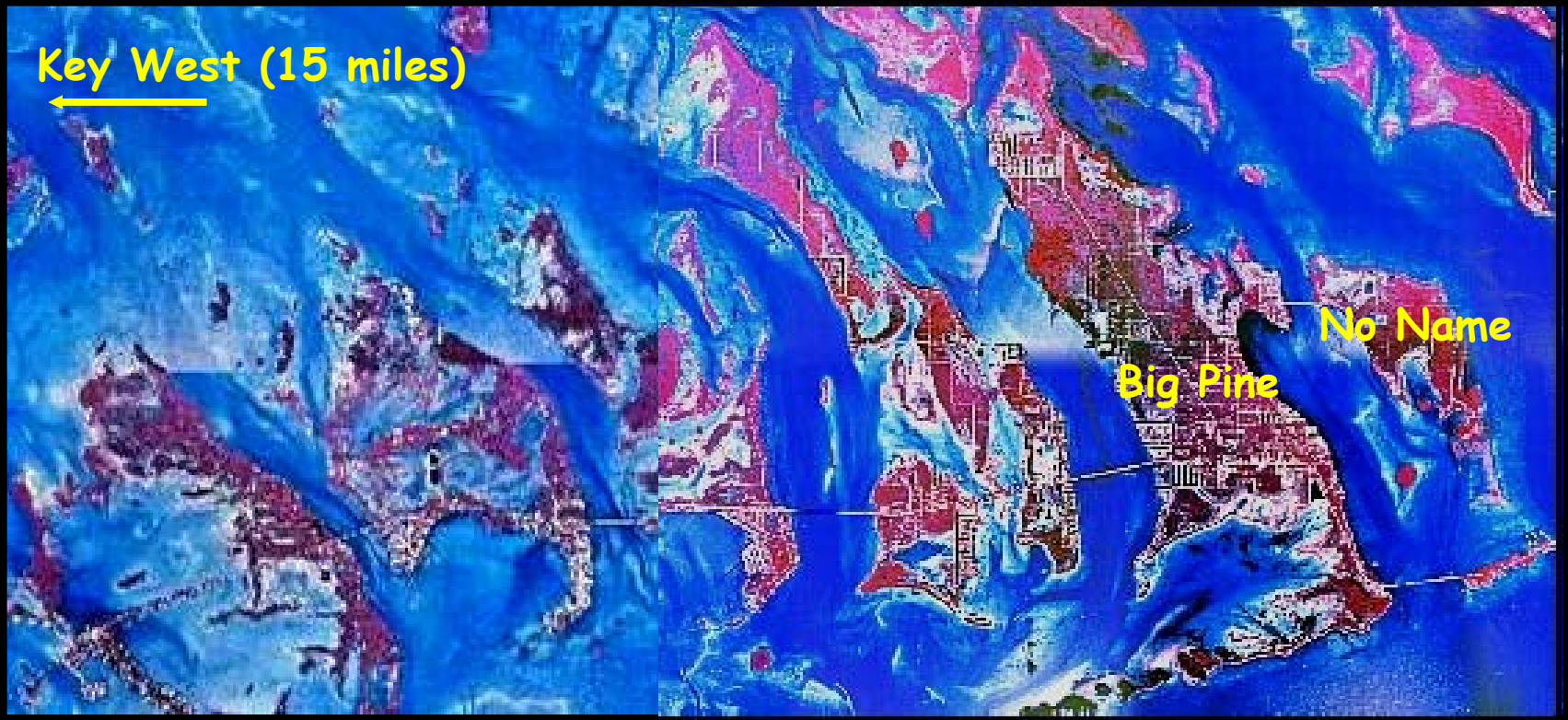
# Florida Key Deer

- Diminutive race of white-tailed deer (*Odocoileus virginianus clavium*).
- Listed as endangered in 1967.
- Endemic to the Lower Florida Keys, primarily BPK and NNK.



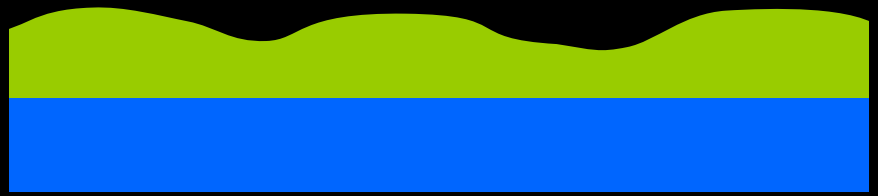


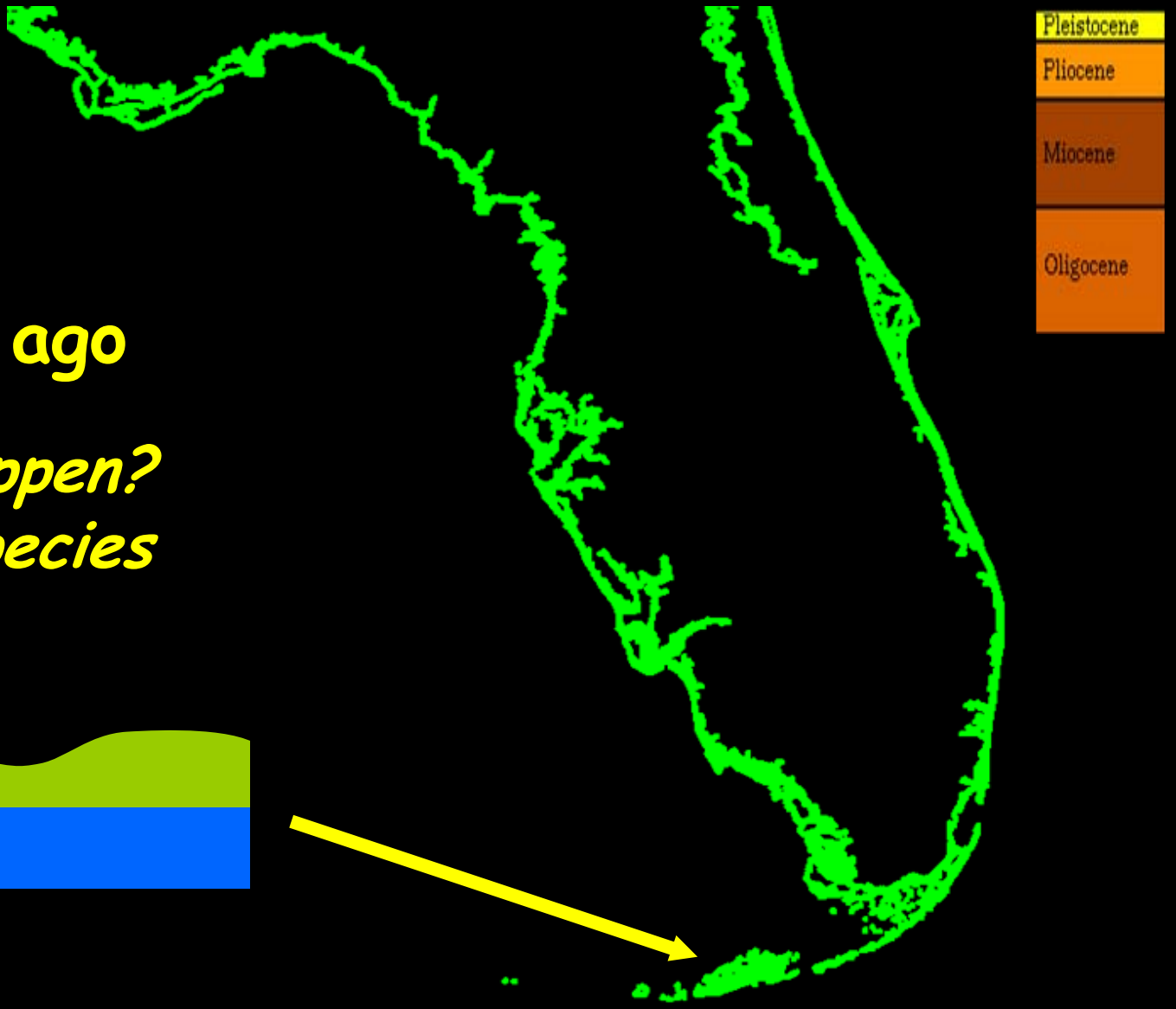
# Key Deer Range



Florida
10,000 years ago

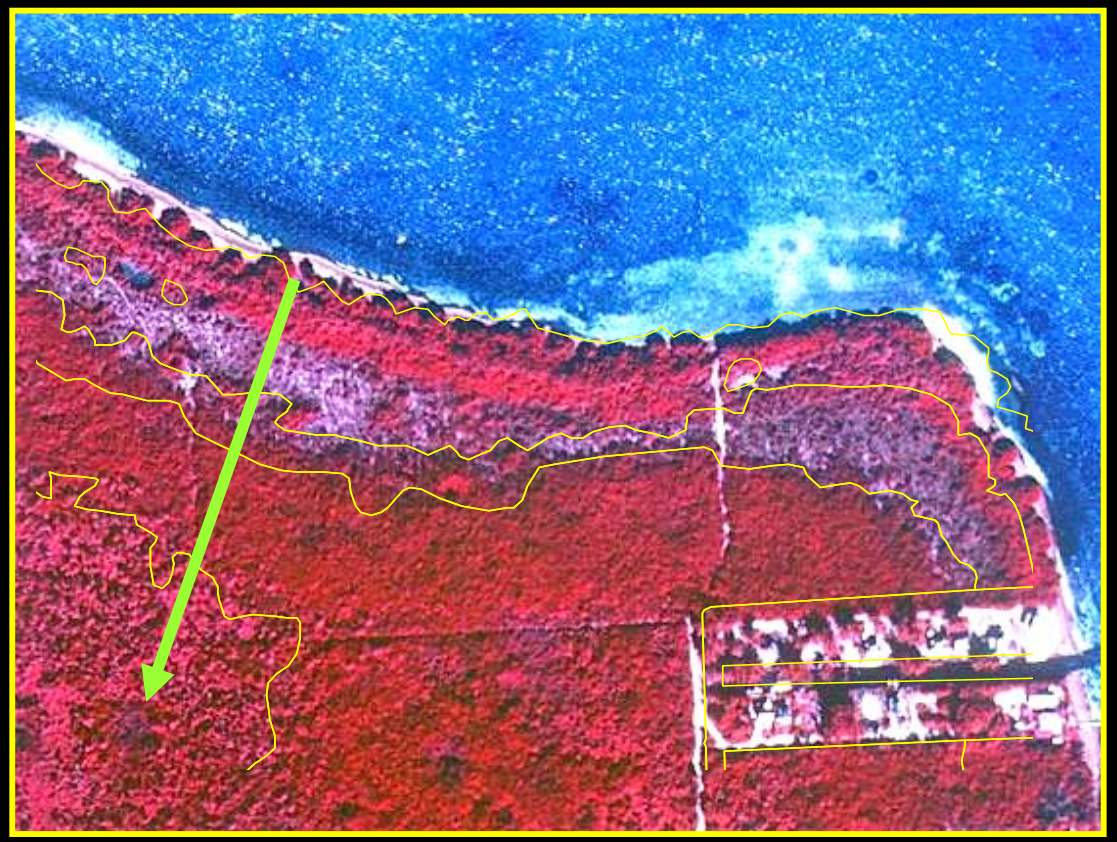
*How did this happen?*
*Wide-ranging species*



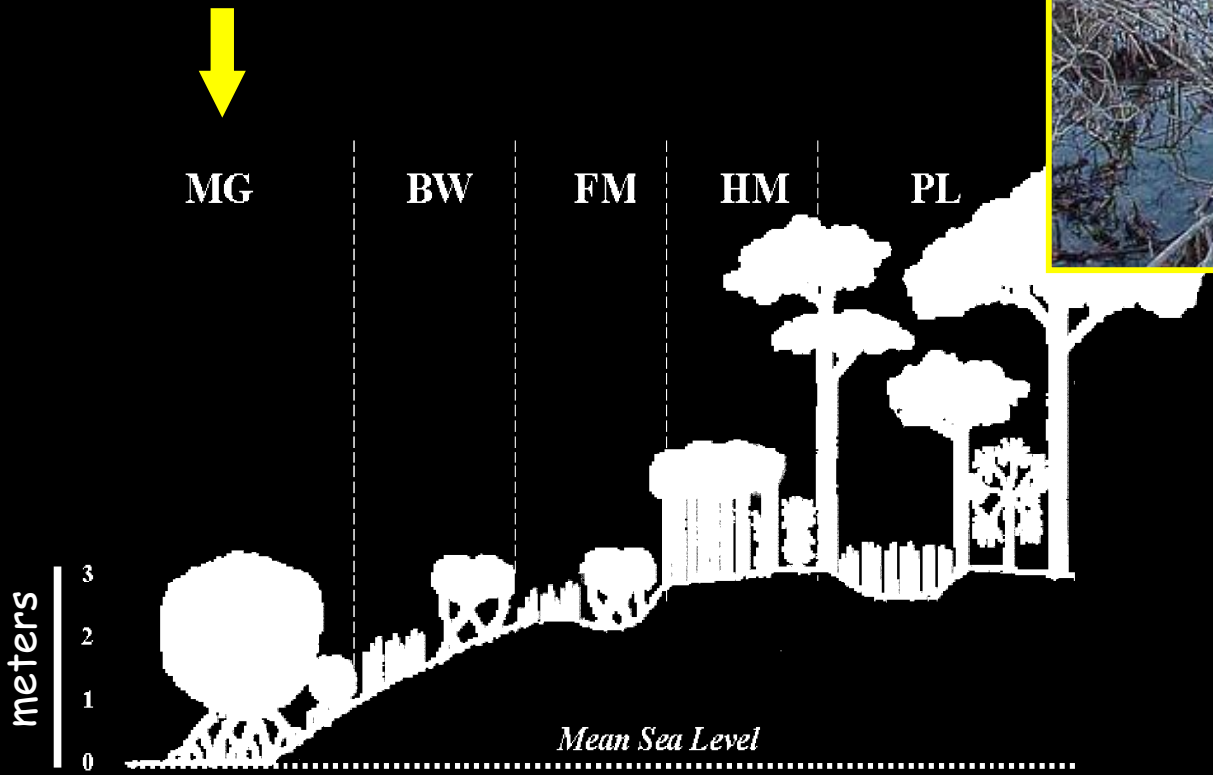


# Vegetation Types

- Vegetation types are influenced by tides
- With increasing elevation, maritime zones transition in hammocks and pinelands



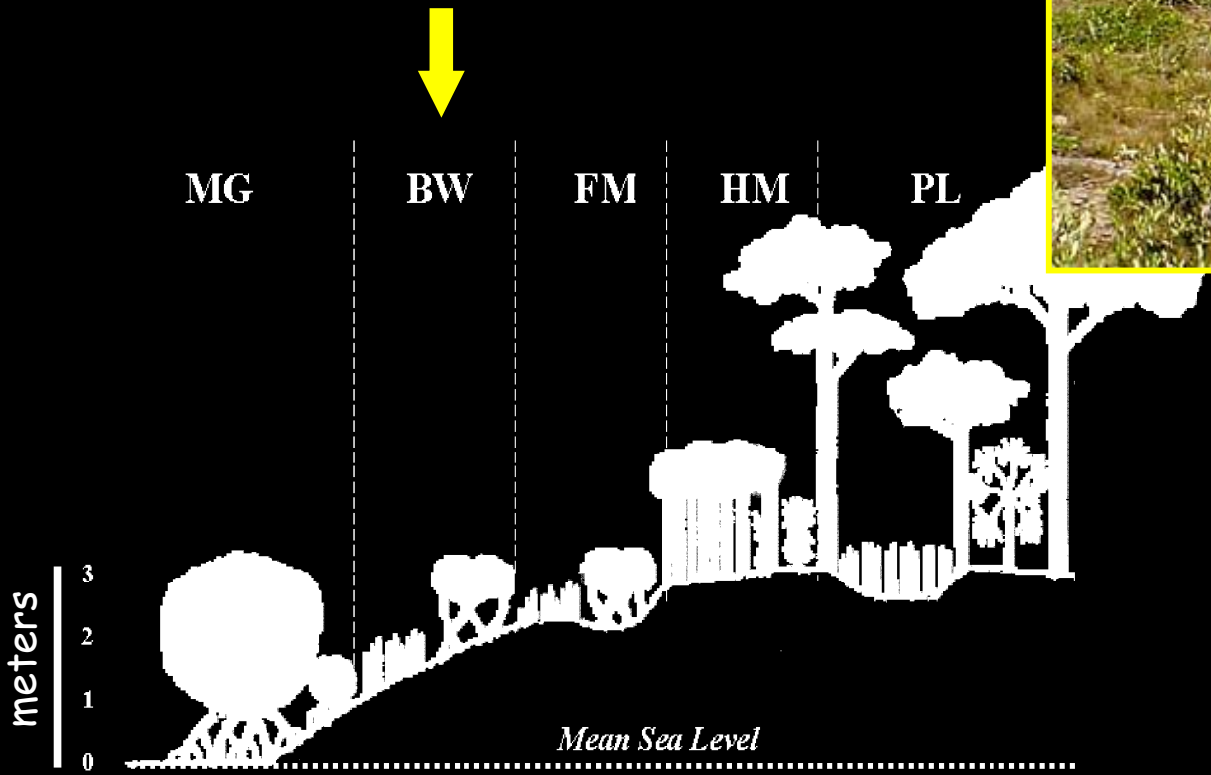
# Mangrove




**Examples:**

*red mangrove*
*black mangrove*
*white mangrove*

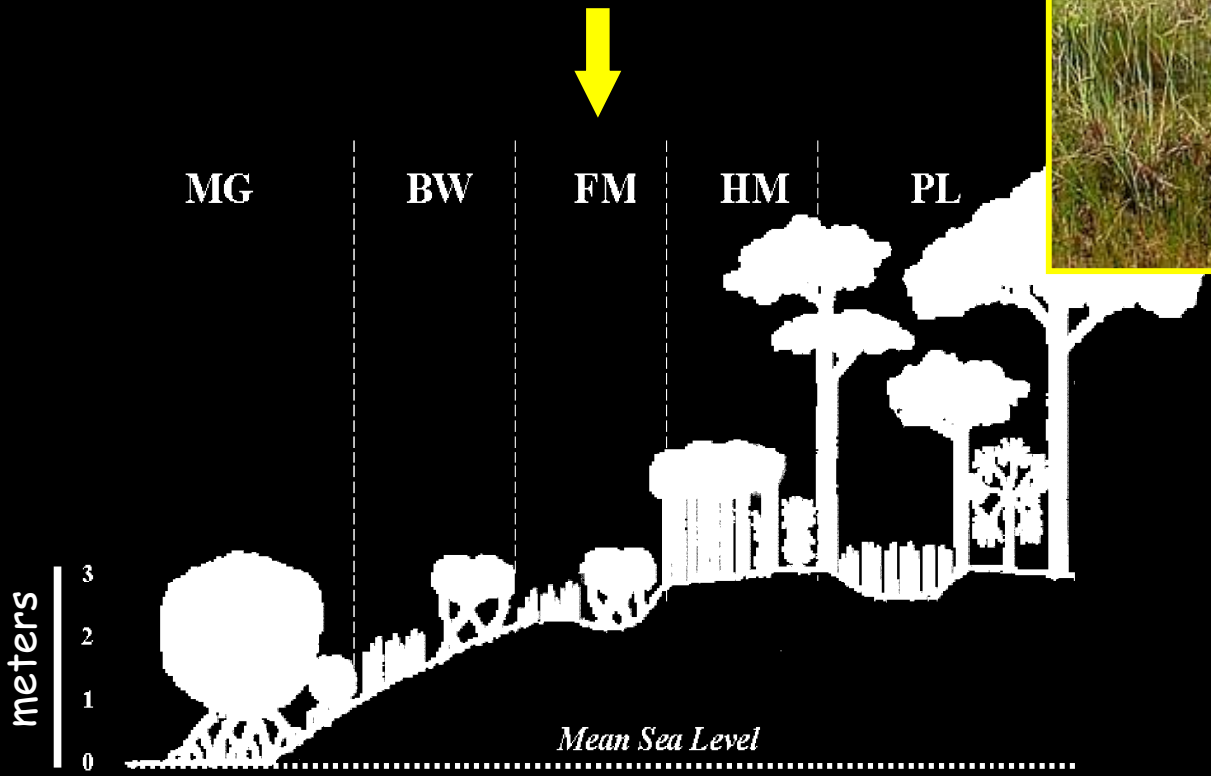
# Buttonwood




**Examples:**

*buttonwood*
*joewood*
*wild dilly*
*mangrove*

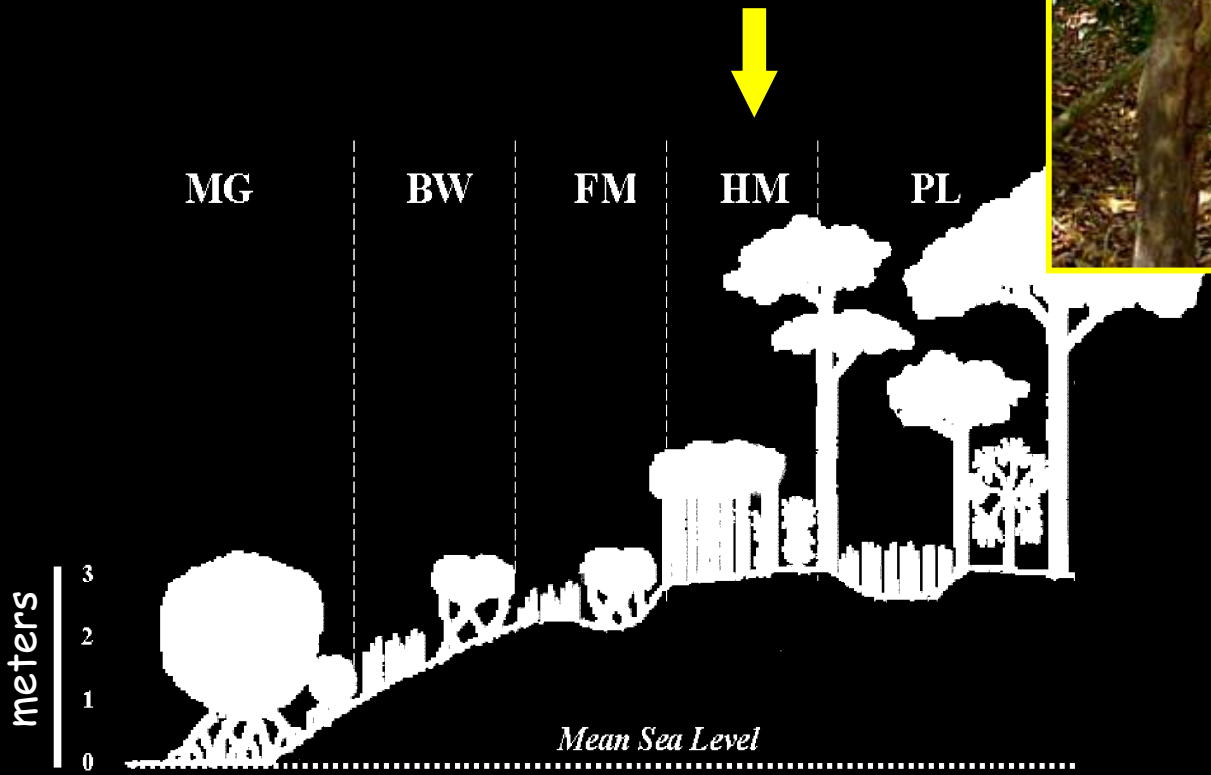
# Freshwater Marsh




**Examples:**

*sawgrass*
*buttonwood*
*mangrove*
*saw sedge*

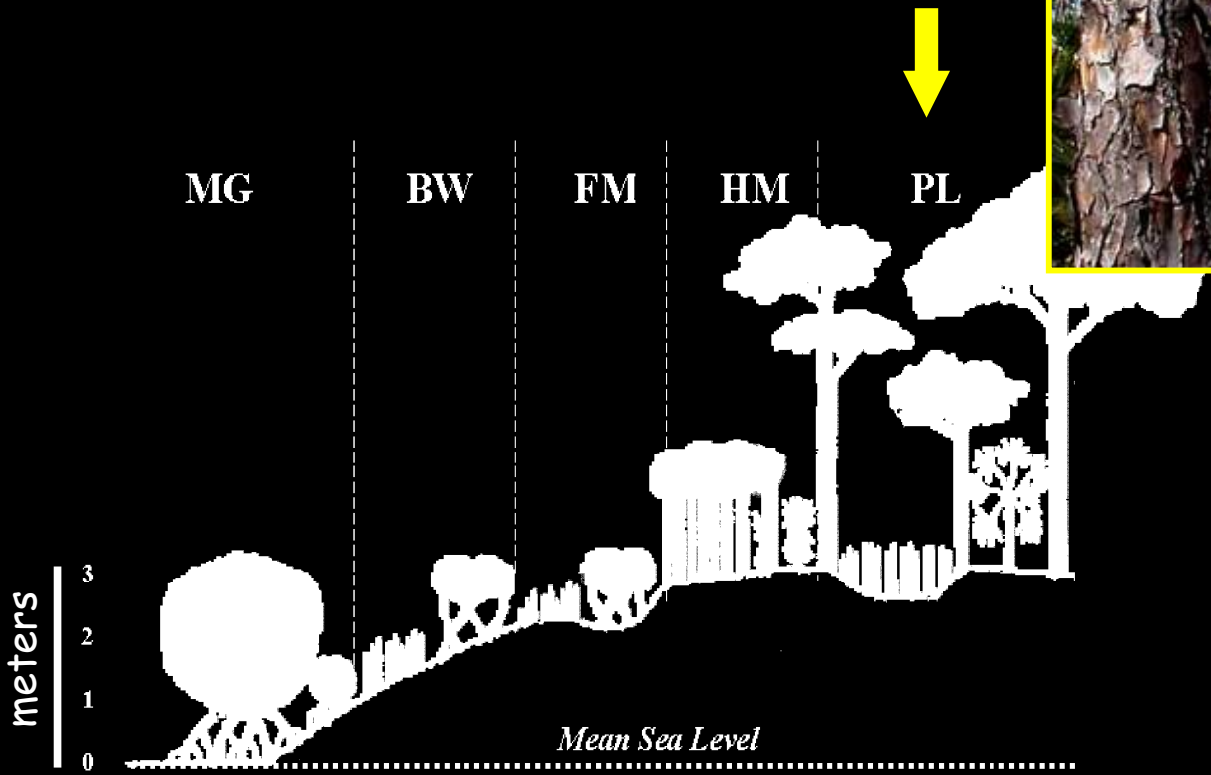
# Hammock




**Examples:**

*gumbo limbo*
*Jamaican dogwood*
*poisonwood*
*blolly*

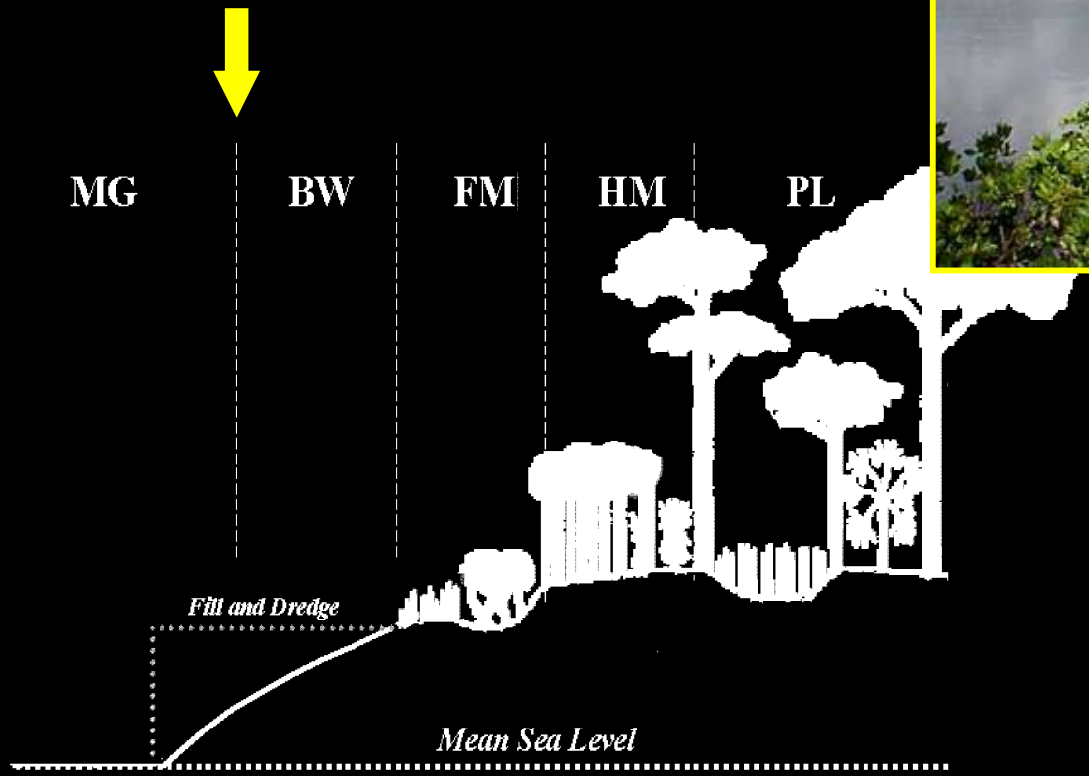
# Pineland




**Examples:**

*slash pine*
*blackbead*
*saw palmetto*
*Keys thatch palm*

# Developed

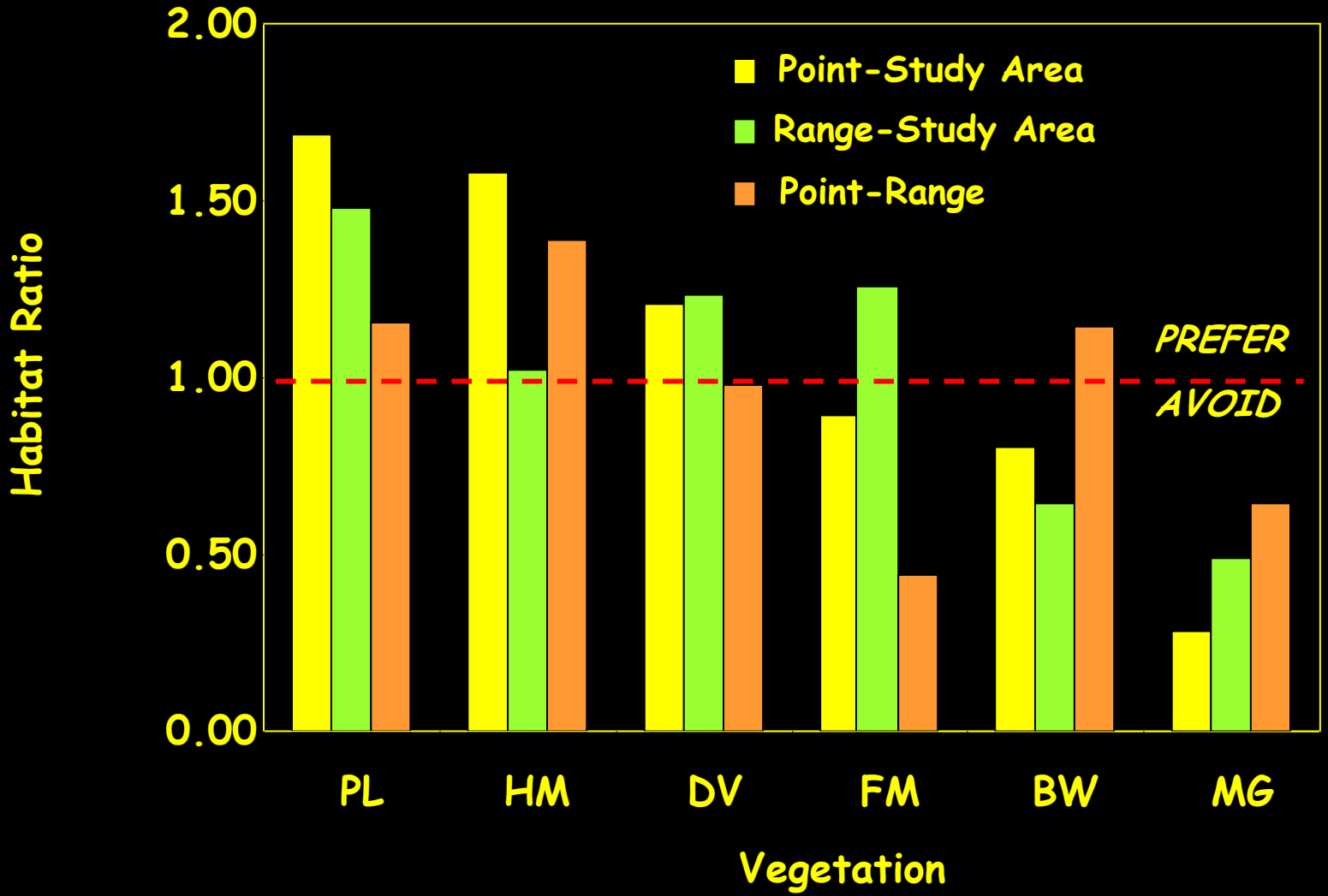



**Examples:**
*hibiscus*
*poinciana*
*bouganvillea*
*bananas*

# Radiotelemetry

- Radio collared deer (n=318, 1968-72, 1998-02)
- >50,000 locations

# Upland Habitat = Key Deer



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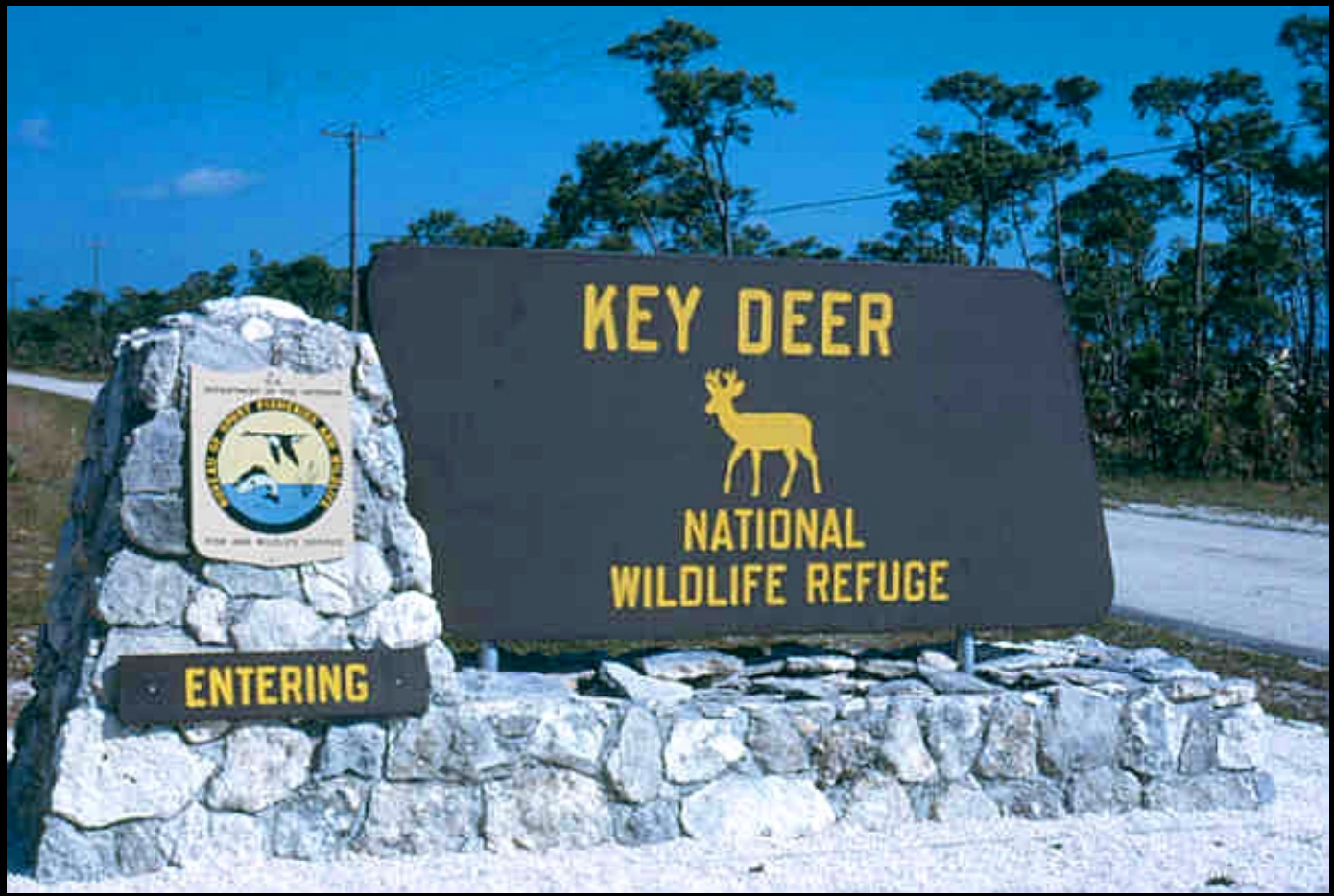
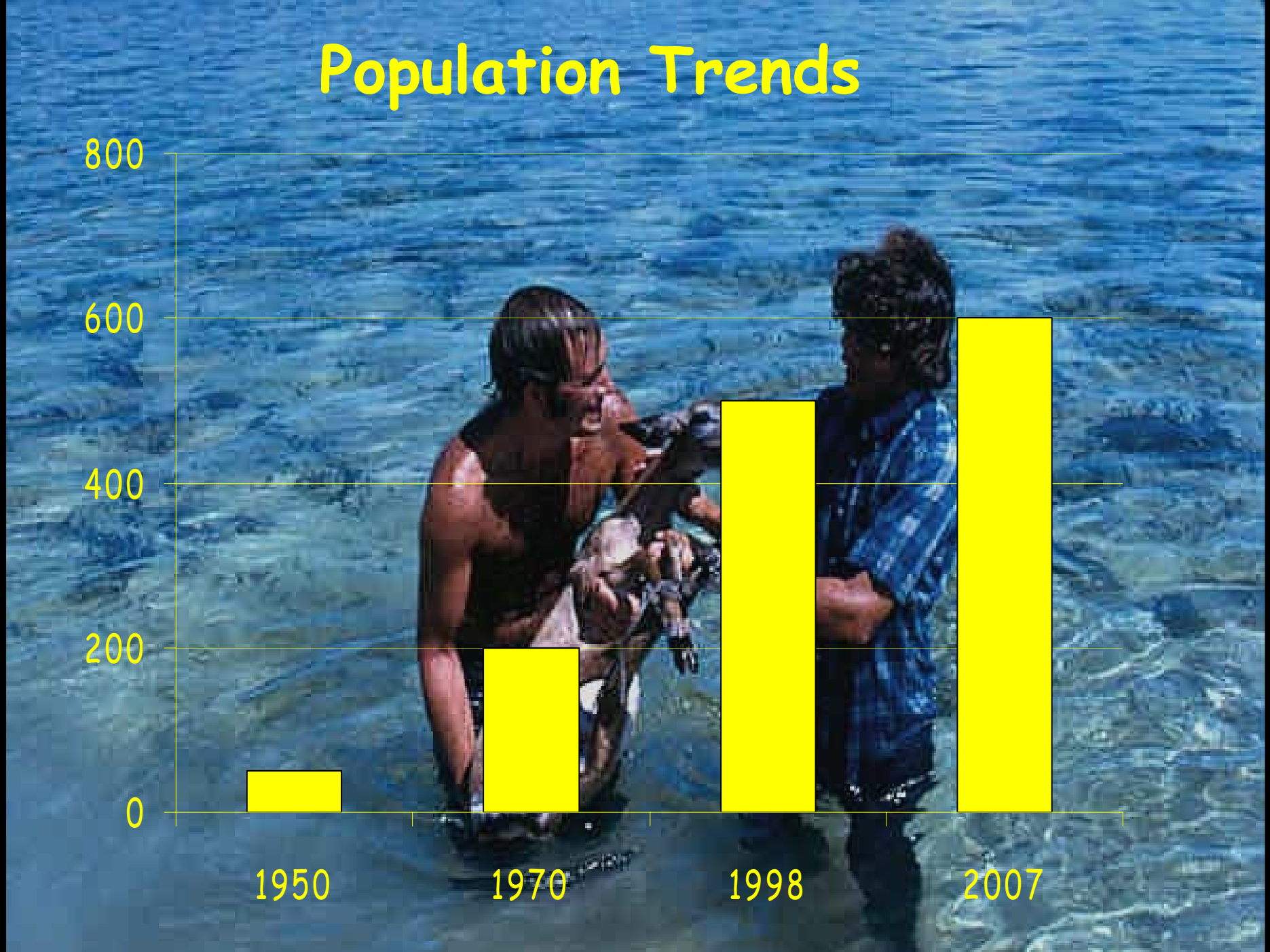
THE LAST OF THE "TOY" DEER
OF THE FLORIDA KEYS


KEY DEER
NATIONAL
WILDLIFE REFUGE
ENTERING

# Population Trends



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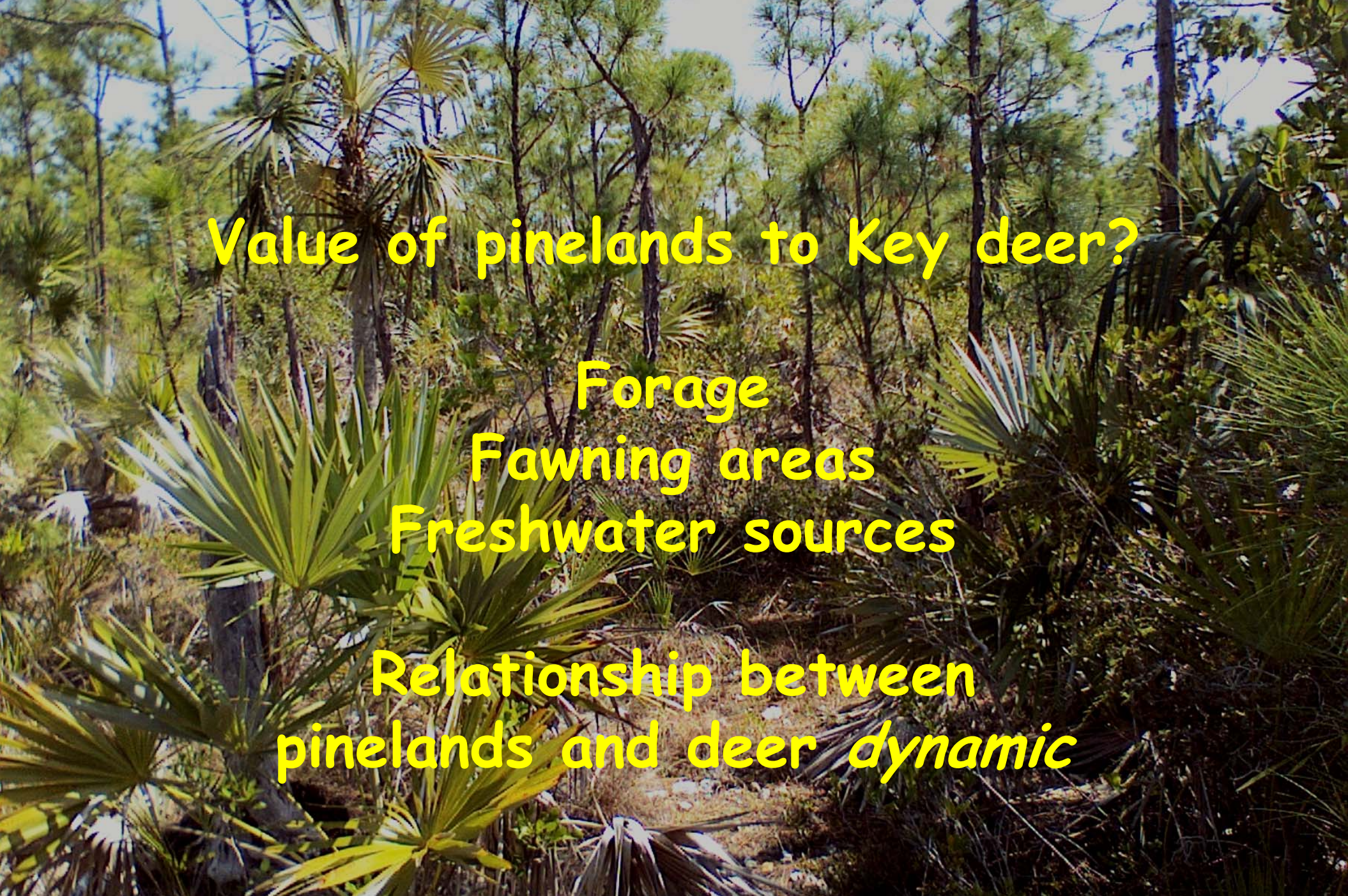
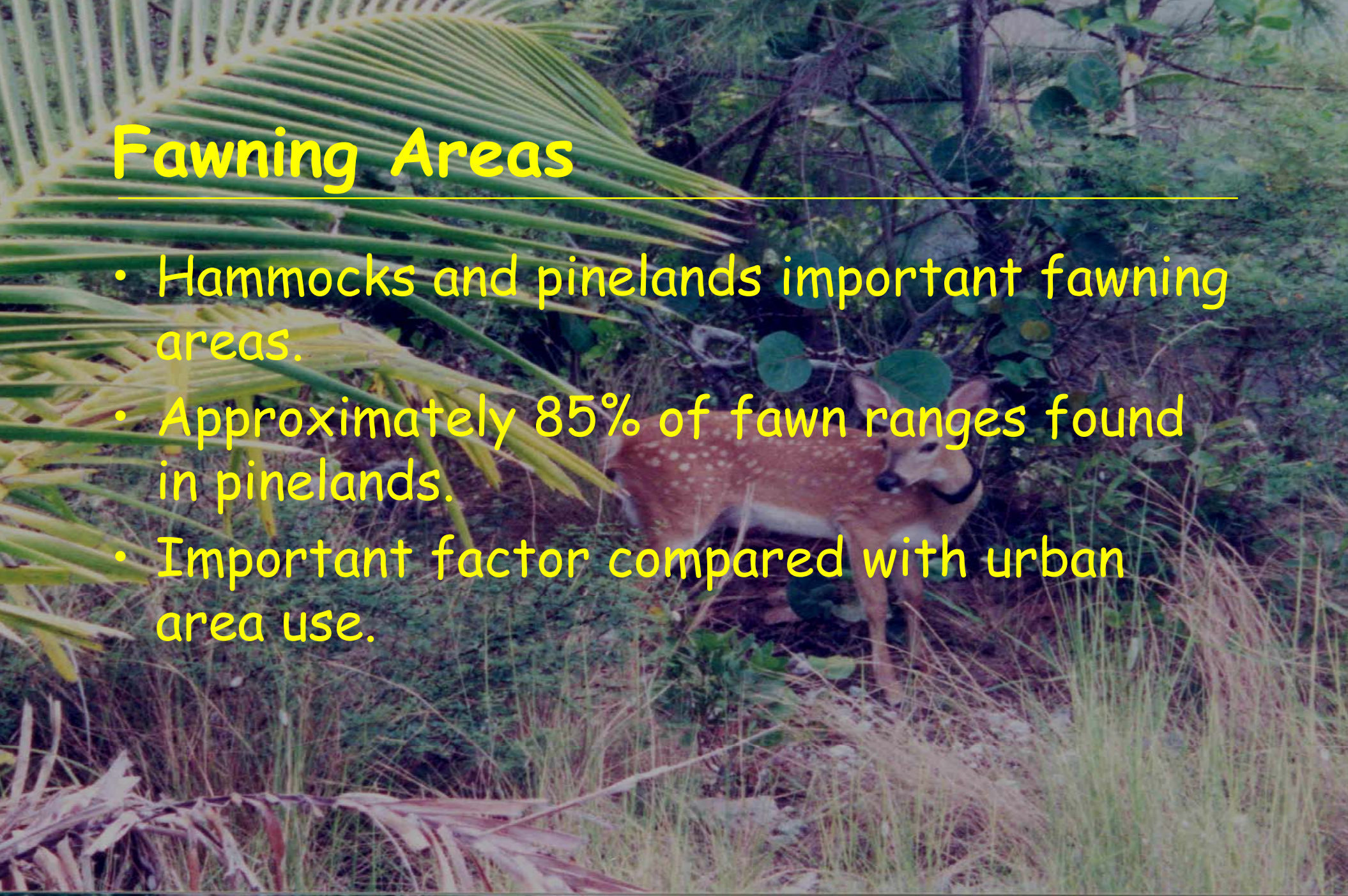

Value of pinelands to Key deer?
Forage
Fawning areas
Freshwater sources
Relationship between
pinelands and deer dynamic

# Forage

- Highest species richness in shrub layer
- Top 40 Key deer foods:
  - 9 trees/shrubs
  - 9 forbs

  - Example - palm fruits, blackbead

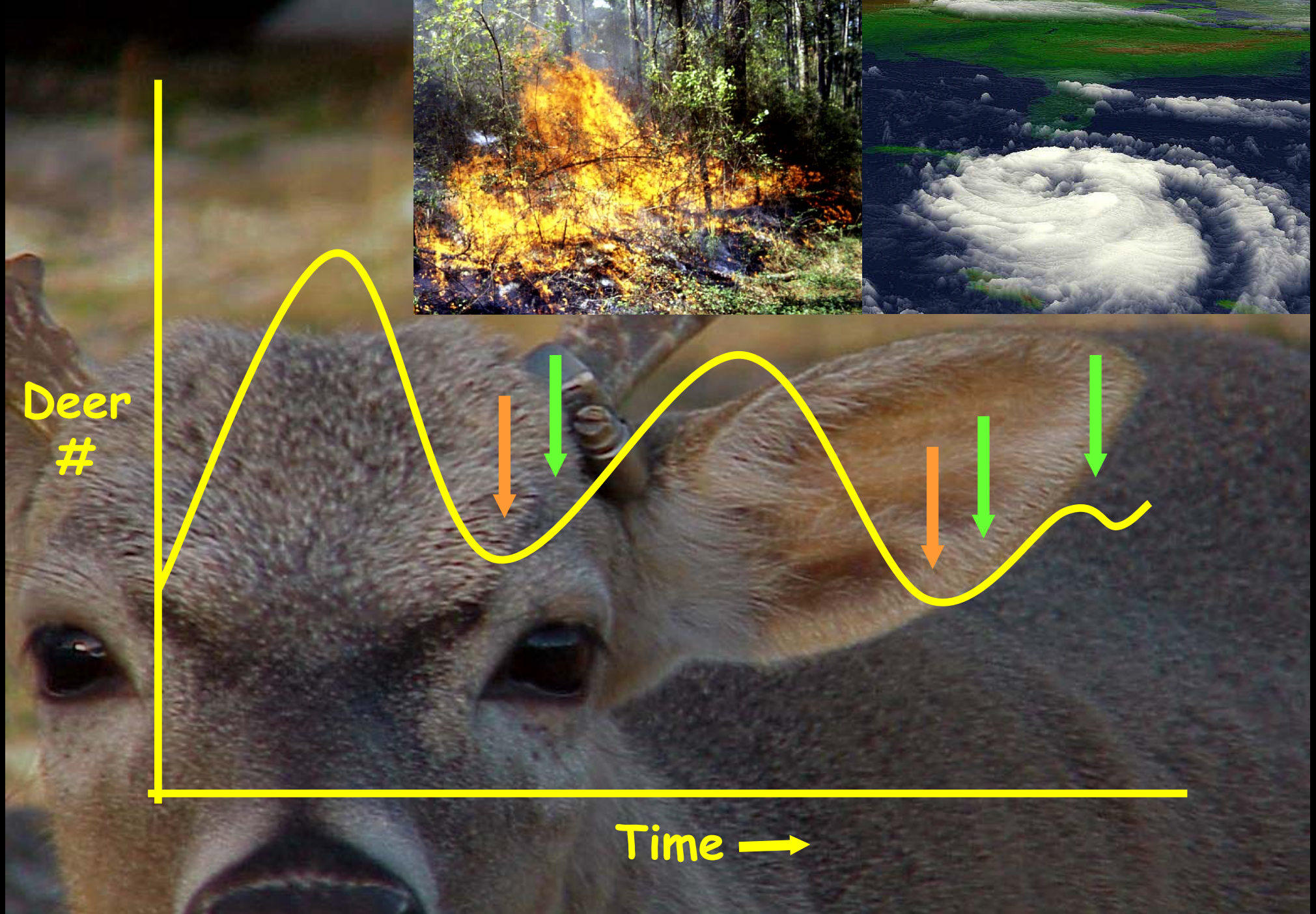


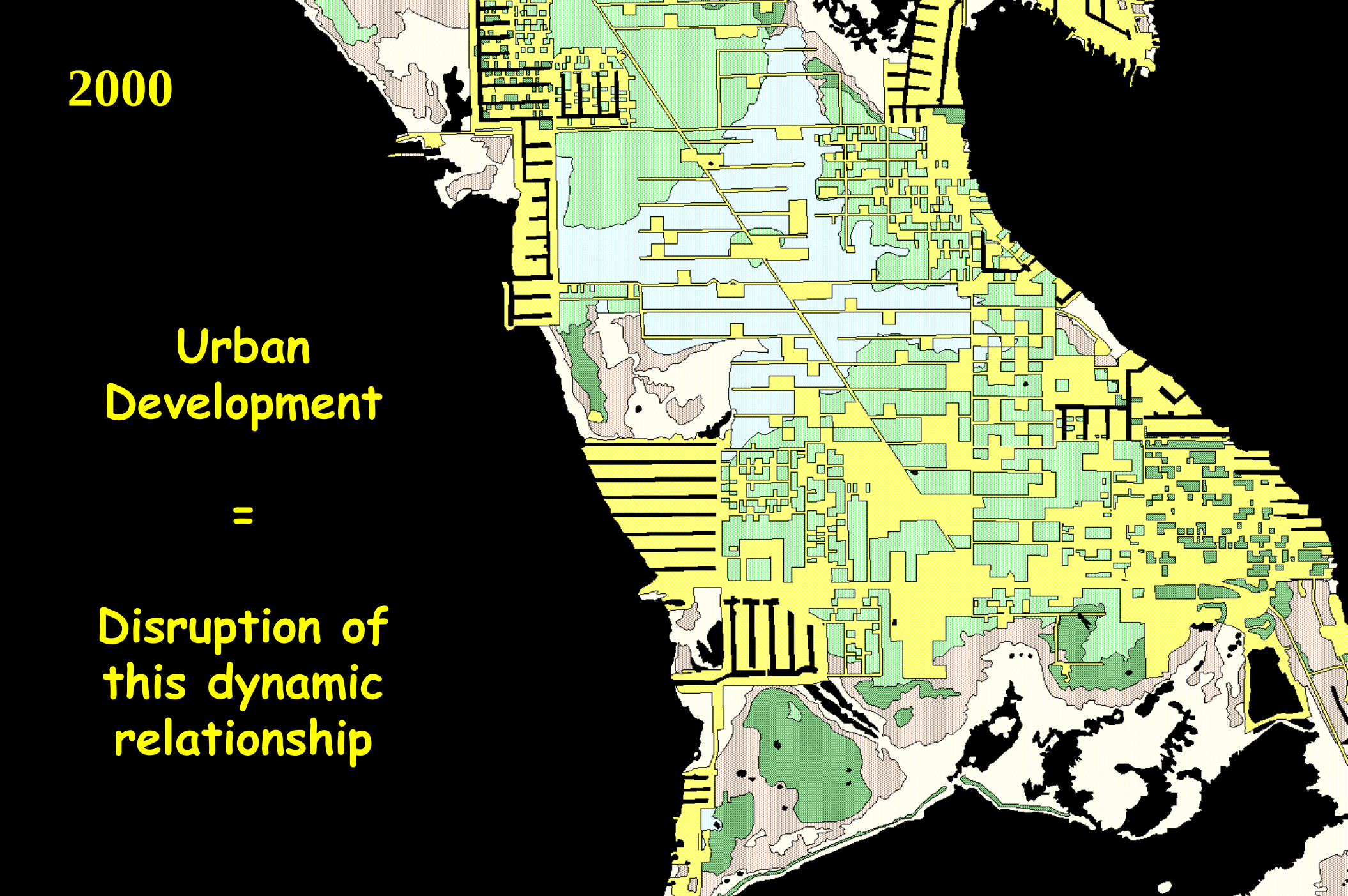
# Fawning Areas

- Hammocks and pinelands important fawning areas.
- Approximately 85% of fawn ranges found in pinelands.
- Important factor compared with urban area use.

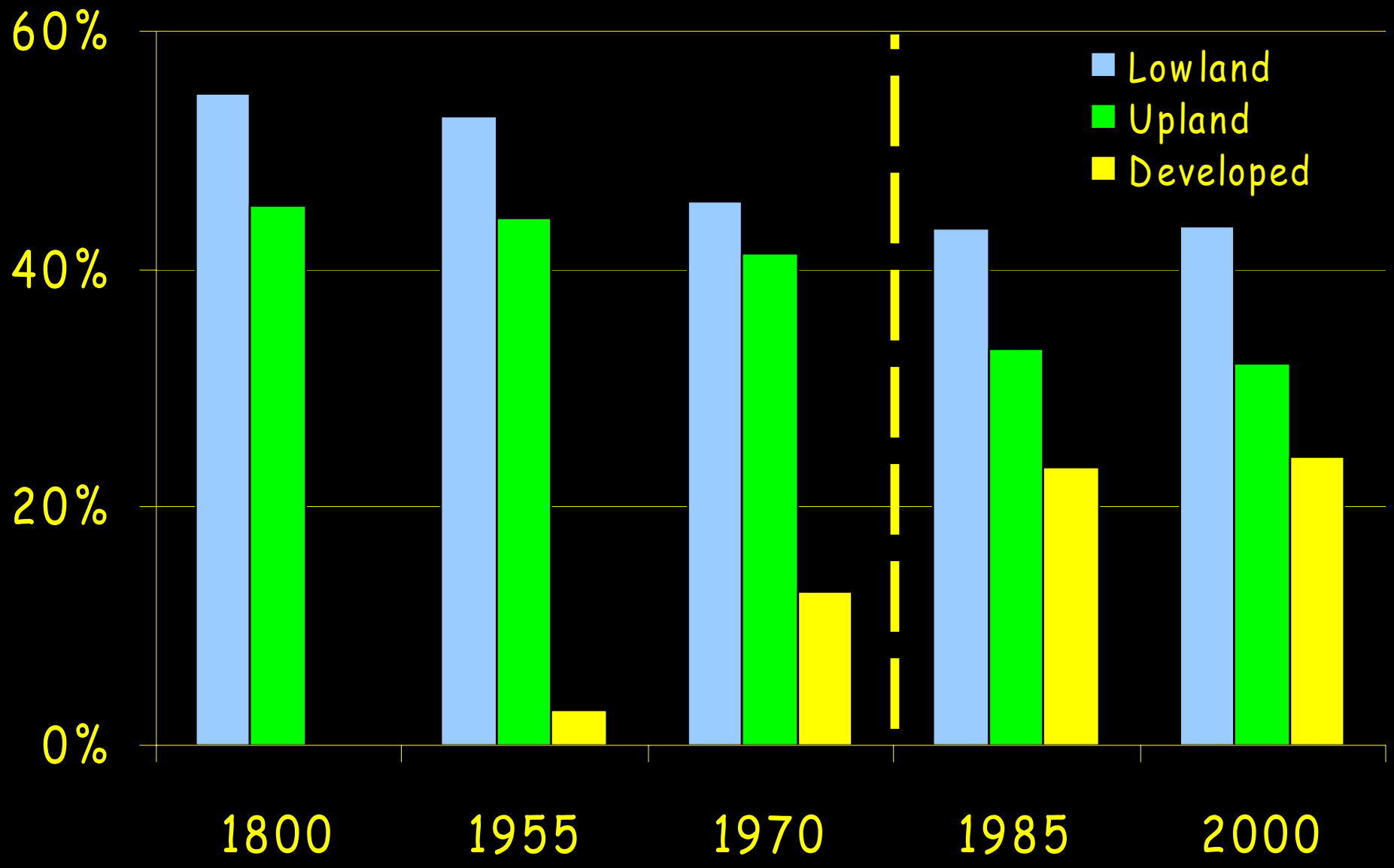
# Freshwater Sources

- Pinelands offer freshwater supply.
- 30-50% of waterholes found in pinelands.


Deer
#
Time


2000
Urban
Development
=
Disruption of
this dynamic
relationship

# Land Conversion




*Issue will continue to increase*

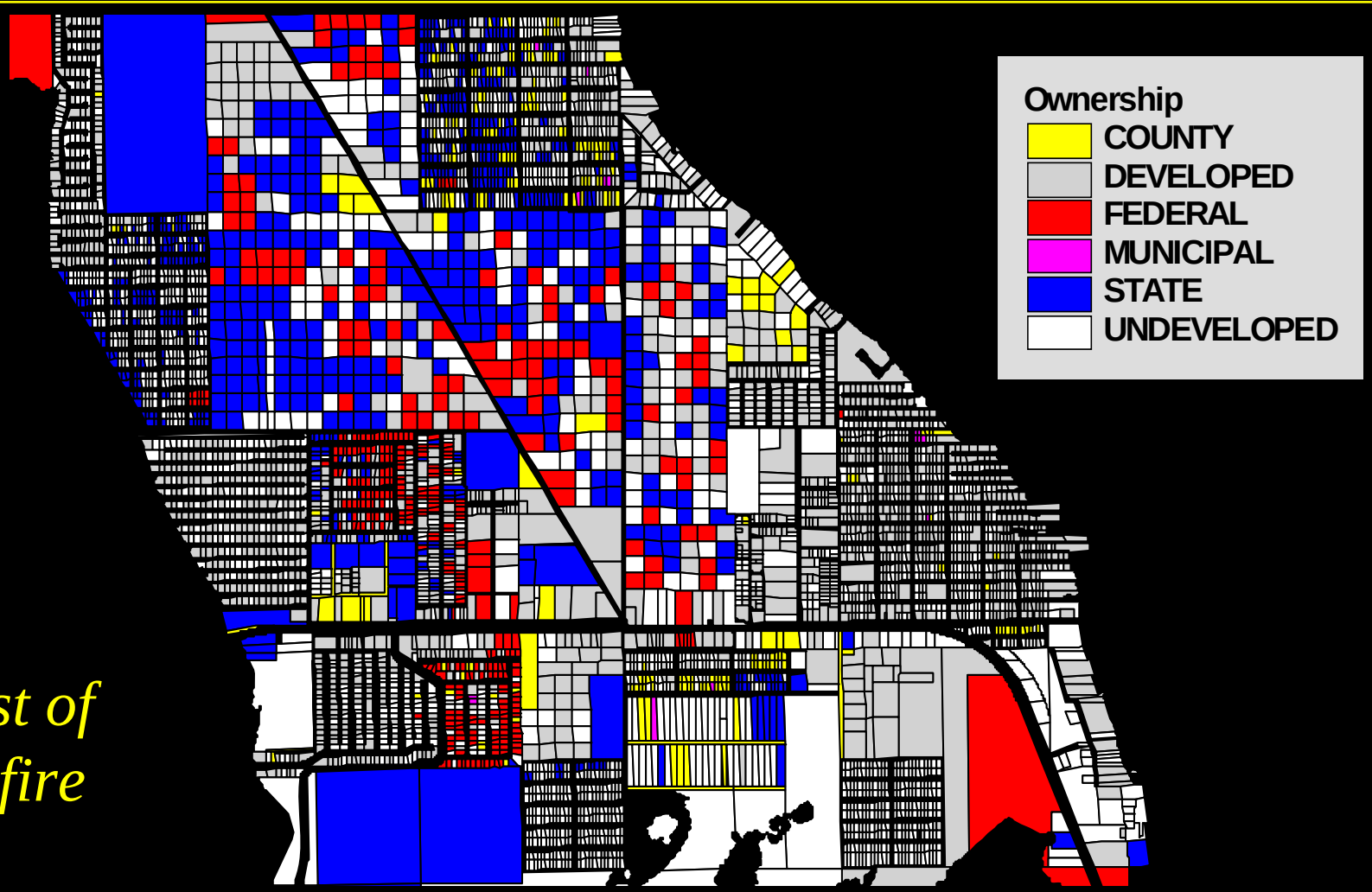

Urbanization
= disrupts this
natural process


Deer #
Time since last fire

# Future Conservation Challenges

- Land fragmentation makes use of controlled fires difficult.
- Locally abundant deer population impacting pineland vegetation.

# Ownership Patterns



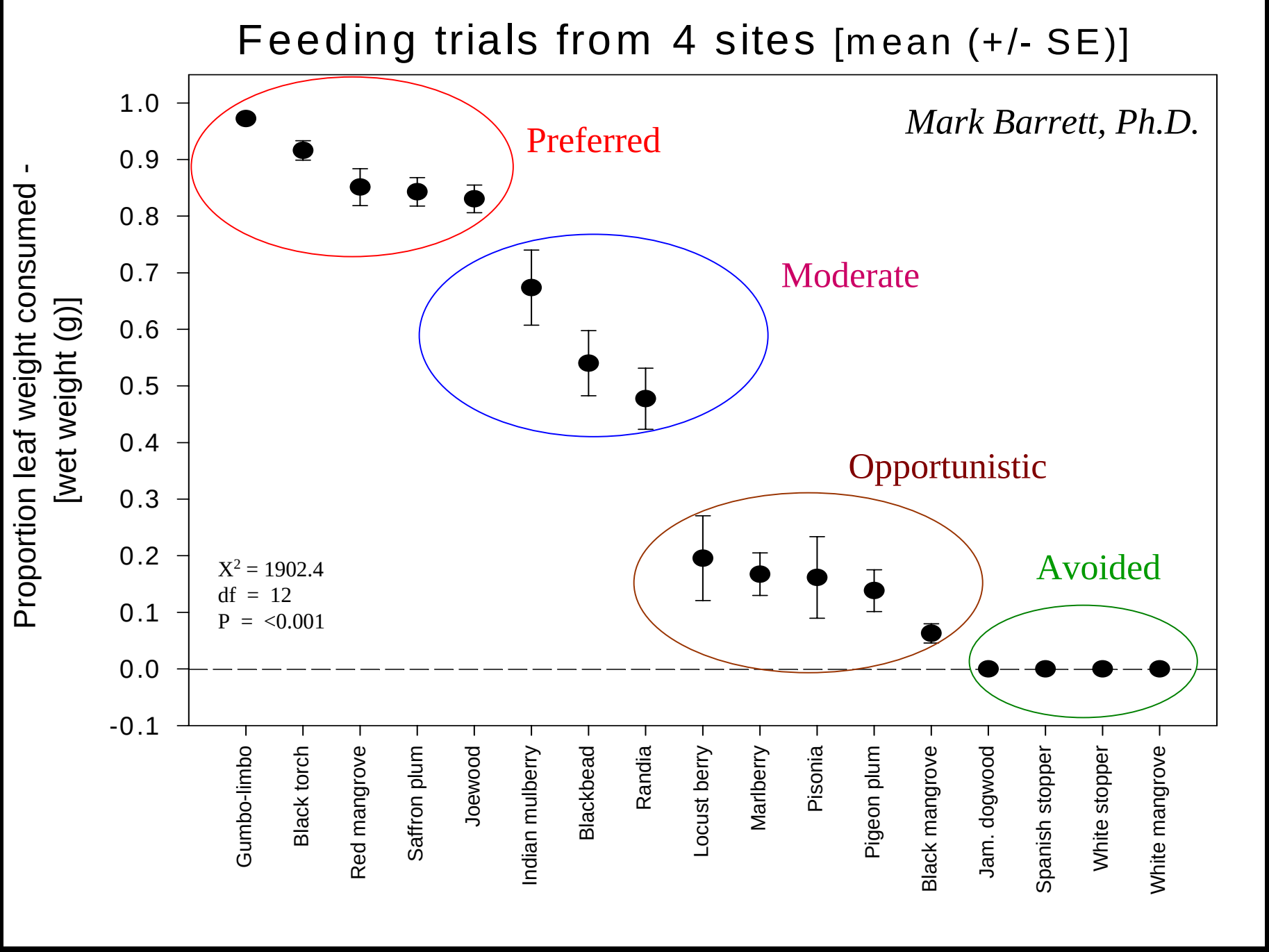

*Cost of P-fire*

# Land Fragmentation

**Result:**

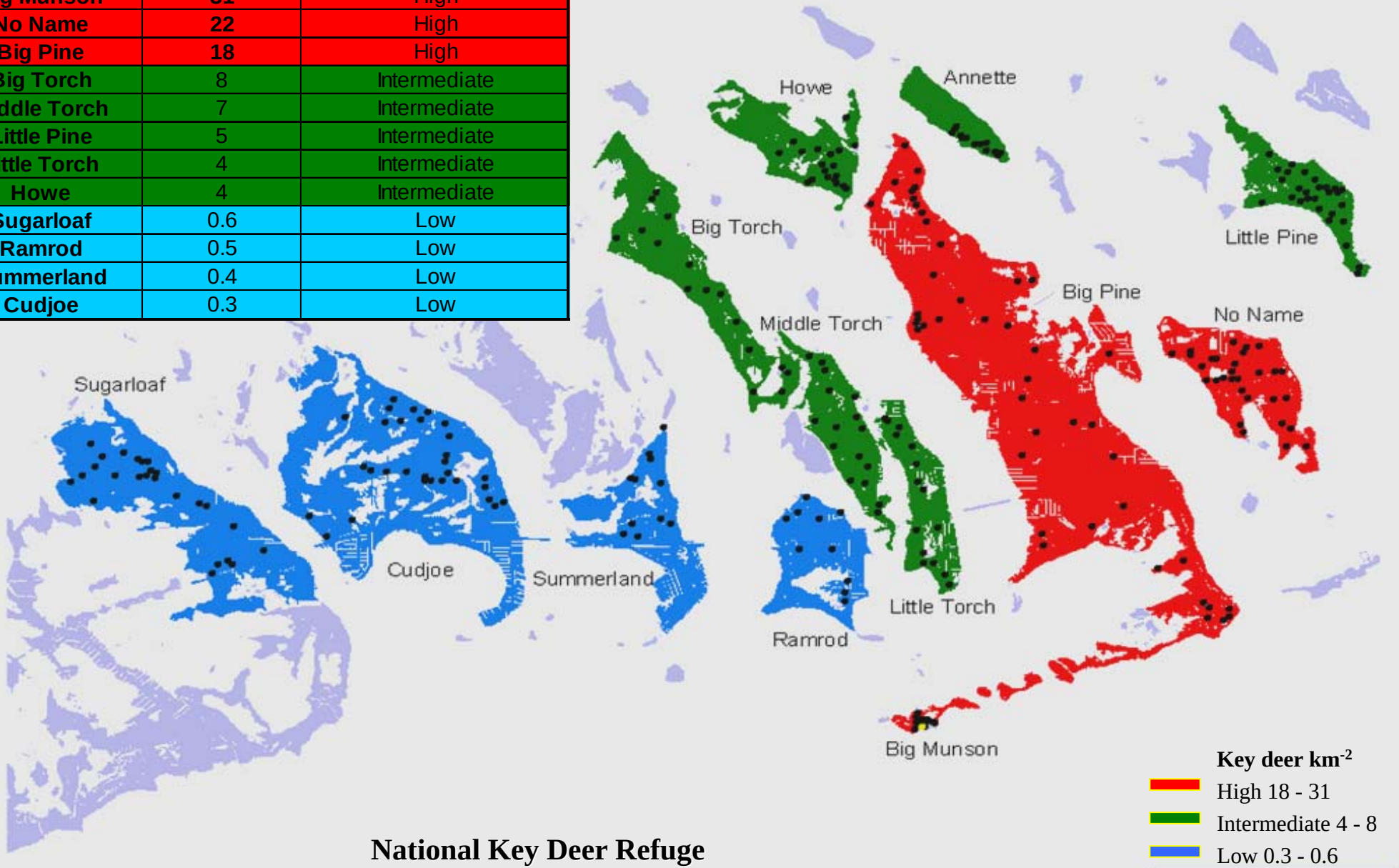
- Dense understory, reduction in deer forage.
- Increase in fire risk due to hurricane debris / heavy fuel loads.


Deer eat plants!

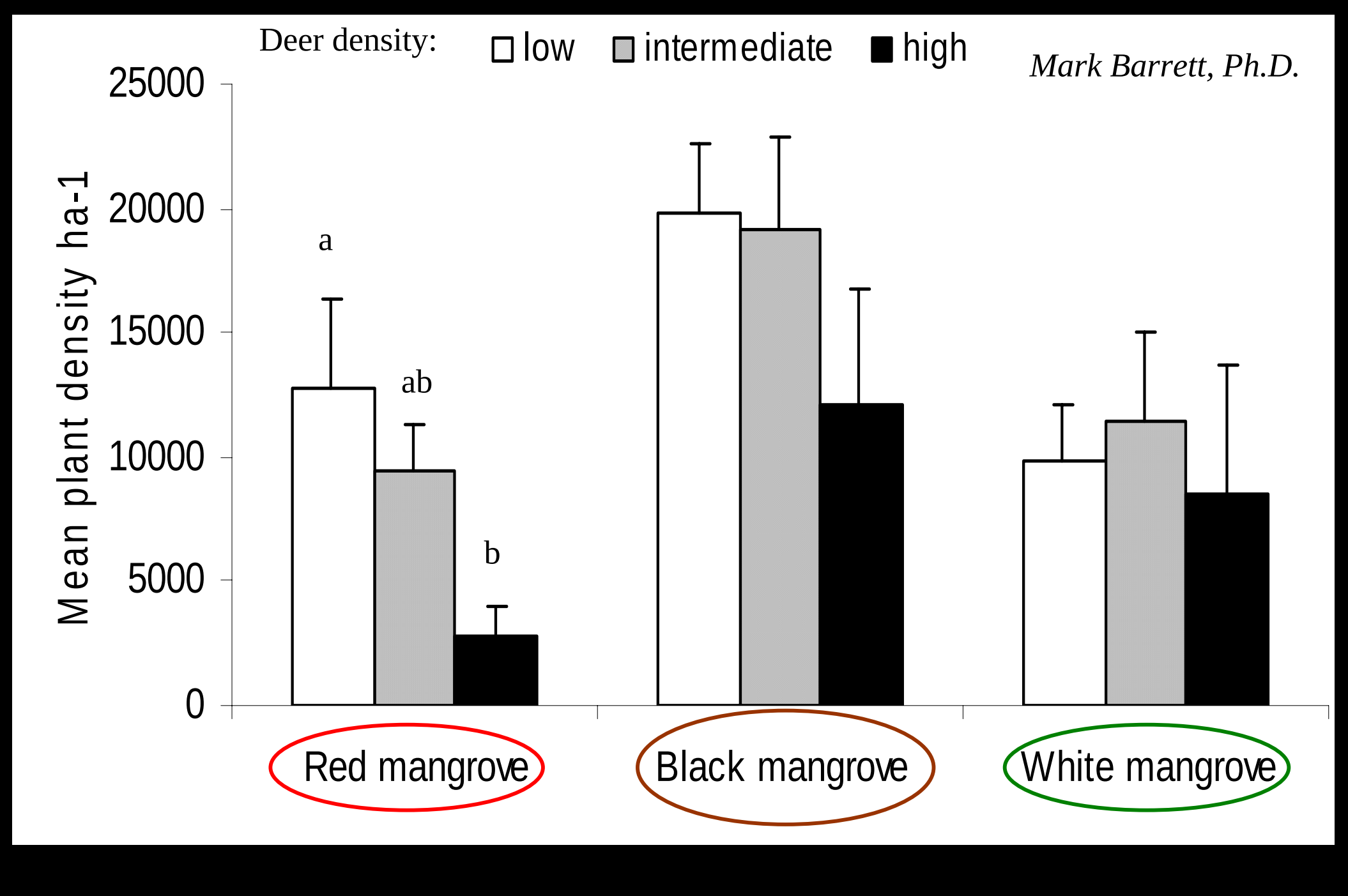

Feeding trials from 4 sites [mean (+/- SE)]
Mark Barrett, Ph.D.
Proportion leaf weight consumed - [wet weight (g)]
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
Preferred
Moderate
Opportunistic
Avoided
X2 = 1902.4
df = 12
P = <0.001
Gumbo-limbo
Black torch
Red mangrove
Saffron plum
Joewood
Indian mulberry
Blackbead
Randia
Locust berry
Marlberry
Pisonia
Pigeon plum
Black mangrove
Jam. dogwood
Spanish stopper
White stopper
White mangrove

*Mark Barrett, Ph.D.*

| Island Name | Deer km$^{-2}$ | Deer Density Category |
|---|---|---|
| **Big Munson** | **31** | High |
| **No Name** | **22** | High |
| **Big Pine** | **18** | High |
| **Big Torch** | 8 | Intermediate |
| **Middle Torch** | 7 | Intermediate |
| **Little Pine** | 5 | Intermediate |
| **Little Torch** | 4 | Intermediate |
| **Howe** | 4 | Intermediate |
| **Sugarloaf** | 0.6 | Low |
| **Ramrod** | 0.5 | Low |
| **Summerland** | 0.4 | Low |
| **Cudjoe** | 0.3 | Low |




**National Key Deer Refuge**


Deer density:
low
intermediate
high
Mark Barrett, Ph.D.
Mean plant density ha-1
25000
20000
15000
10000
5000
0
a
ab
b
Red mangrove
Black mangrove
White mangrove


Sugarloaf Key
(low deer density)


No Name Key
(high deer density)

# Deer "Overabundance"

- Populations have increased on some islands; have decreased on others.
- Locally abundant deer populations on some islands = cause local plant extinctions.
- Challenge – manage population with different recovery goals?
  - High numbers, reduce populations
  - Low numbers, bolster populations

# Summary

- Fire is important, natural process in maintaining Key deer viability.
- Can we live without fire?
- Conservation challenges – land fragmentation and addressing locally abundant deer.
- Issue of urban-wildland interface is a *national* issue.


Questions?