

# Anne Morkill

## Introduction

### Purpose:

Best information for managing our pine rocklands  
Current state of knowledge on pine rocklands  
Consider animals and people who live here

### Expectations:

Learn something new and respect perspective of all stakeholders

# Tom Wilmers

- Fire is necessary to maintain pine rockland communities
- Only natural fires produce desired or beneficial results
- All fires increase plant species diversity
- Goals of NKDR to reduce fuel reduction
- At what stage do we want them
- Lose seed trees
- Kill 50 to 85% of pines
- Recovery slow process
- Fire did little to change plant species
- Need long-term studies
- Each site different on different keys
- Deer affect regrowth for different plant species
- Pushed small fires but hard to do
- Hurricane mortality was higher on second growth
- Would not do fire this year when pine under stress
- Need full time fire management

# Phillip Hughes

- Has grass stage which protects it from fires
- Butterflies important in keys
- Several gone
- Many others in low numbers and are in trouble
- Those gone and possible gone are associated with pine rocklands
- Need to burn to benefit many of these butterflies
- Lowering sea level increased fires and rising sea level decreased fires
- Need to burn buttonwood to increase marsh rabbits
- Two areas important to deer and rabbits are pine and buttonwood
- Different species may react different to different fire frequencies

# Roel Lopez

- Key deer background
- Pines high elevations
- Fire is part of system
- Relationship between deer and pinelands important
- Hurricanes and fire drive system
- People have disrupted process
- Fire drives deer numbers
- Matrix of mixed ownership make fire management difficult
- Deer eat plants
- Deer are selective eaters
- Knowing carrying capacity very important
- Challenge is to consider Key deer density in fire management
- Summary
- Fire is important, natural process
- Challenge is land fragmentation
- Urban-wildlife issue national

# Keith Bradley

## Rare plants

- Wedge sandmat
- Big Pine Partridge pea
- Sand flax
  
- Heavy cover less rare plants
- Increase with herb cover and native species richness
- Increase with dryer sites trend
- Much lower after Wilma
- Higher in north rare in south
- Higher dryer rocklands
- Negative with cover including pine and palm
- Few plants seen in areas suppressed by fire
- Need fire in urban south

# Jeanette Hobbs

- Restoring hydrological connections on Big Pine Key
- 12 projects on Big Pine Key
- 6 with fresh water
- 17 species listed need water
- Big Pine Key Sough Culverts 80 acres
- High salt concentrations not even red mangrove survived
- Monthly salinity back to 1997 using 21 stations and fixed photo stations
- Help stable salinity
  
- Port Pine Heights fresh water wetlands
- After Wilma deep ponds returned to “normal” much quicker than shallow waters holes
  
- Non-Tidal Fish Restoration
- Post Wilma, 2 did not get surge, but 3 on west BPK got surge
- Variability suggest maybe underground connection

# Jeanette Hobbs

- Potential threats
  - Exotic fish disperse via mosquito ditches
  - Sea level rise effects, decrease in size of freshwater lens,
    - either permanent or seasonal
    - Rise in water temperature mean more hurricanes
    - and more frequent storm surges
  - Can we design a hydrological monitoring program to capture the whole key.
  - Increase our efforts to create refugia?
  - How best to monitor the freshwater lenses
  - Do we need to look at subterranean connections for freshwater solution holes

# Mike Ross

- Sea level rise and the decline of pine rockland forest
- Sea level rise affect pine rocklands
- burned deposits of pines indicating pine more extensive than now
- 5 keys with pines have large land masses and low salinity
- 2,500 acres of pines in keys now
- Depth of ground water
- Water salinity
- And fire frequency
- Need 2 feet in height
- Sea level will affect all 3
- With large land mass fire more frequent

# Mike Ross

- Modeled pine distribution of Sugarloaf from 1935 to 1993
- Pine disappeared in low elevations
- Modeled sea level 2 cm rise in 5 years
- Model was good prediction
- By 2046 little pine left
- By 2101 almost all pine gone
- After Wilma 6-7 ft surge
- Low area 0 % to 28% survival of pines correlated with elevation
- BPK 60% or more and low in low areas
- Managing terrestrial ecosystems on low islands in a rising sea
- Storm surge must be incorporated in models and not just sea level rise
- 25 cm /100years, 60cm next 100 years but probably be more

# Chris Bergh

- Fire research on Terrestris Preserve
- Evaluated mechanical control prior to burn
- Fires did not hurt rare species
- Chipper first time used on BPK
- How dense do we want pine trees
- Burn after rains to decrease pine kill
- Litter depth decreases during fire but recovers by 7-8 years
- Partridge pea increases with burns
- Most herbs increased with burn
- Problem with homes and business within refuge
- Trying to educate people on dangers of wild fires
- and benefits of prescribed fires
- Need to learn from our mistakes working with fire
- Pines germinate on bare mineral soil only























































## FINAL THOUGHTS

PINES NEED MINERAL SOIL TO GERMINATE

FIRES DID NOT DECREASE ENDANGERED PLANTS

MANAGING PINE ROCKLANDS IS ECOSYSTEM MANAGEMENT

STORM SURGES OCCURRED OVER CENTURIES  
AND NOT JUST WITH GEORGES OR WILMA

NATURAL SUCCESSION FROM PINE, HARDWOODS,  
HAMMOCKS  
THEREFORE MUST SET SUCCESSION BACK TO SAVE PINE  
ROCKLANDS