
# Planning Large Scale Burns

Presenter: Brett Williams and James Furman

November 6, 2013 12:00 PM (Eastern)

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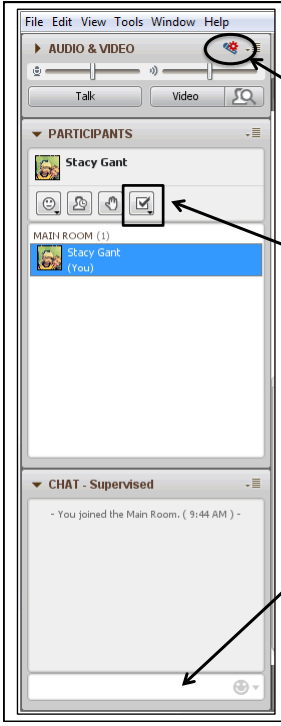


# Orientation

1. Audio Setup Wizard – Allows you to ensure your audio is set up properly.
2. Polling - Allows you to answer yes/no questions and respond in a multiple choice format
3. Chat - If the chat says "Supervised," be aware that the presenter/moderator can see all messages, even those marked private.


Webinar Series:

- **October 9:** *Burning on Private Lands with Consultants*
- ***October 17:*** *Federal Agency Ground-Based Burn Crews and the Prescribed Fire Training Center*
- **October 23:** *Prescribed Burning Techniques and Lessons Learned*
- **October 31:** *Techniques, Planning, and Precautions in Oklahoma, Arkansas & Texas*
- **Nov 6:** *Planning Large-Scale Burns*

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# Question for the Audience

How would you describe your current role in regards to fire?

A. Fire Manager/Practitioner
B. Fire Scientist/Researcher
C. Student
D. Outreach/Education
E. Other

# Landscape-Level Prescribed Fire at Eglin AFB

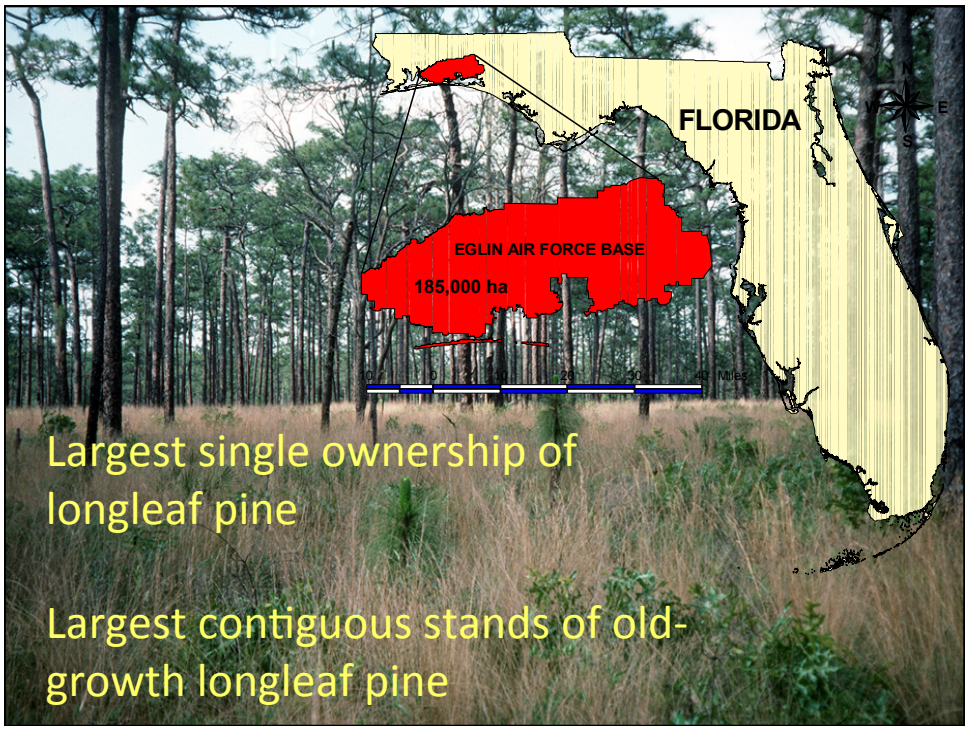
Southern Fire Exchange Webinar
November 6, 2013

Brett Williams, Fire Ecologist, Eglin AFB
James Furman, USFS / USAF Liaison

## Outline

- Background and Philosophy
- Landscape-scale Planning and Prioritization
- Implementation – Aerial Ignition
- Challenges
- Measuring Success

# Background and Philosophy




Largest single ownership of longleaf pine

Largest contiguous stands of old-growth longleaf pine


# Why We Burn

- **Support warfighting missions through sound environmental stewardship/long-term range sustainment**
- **Prescribed fire reduces wildfire severity/risk**
- **Federally listed species: Red-cockaded Woodpecker, Flatwoods Salamander, Indigo Snake**
- **Longleaf pine ecosystem requires frequent fire**

# Eglin Rx Fire Philosophy

- **Focus on long-term fuels management**
- **No fixed return interval**
- **Frequency leads to more frequency**
- **No perfect burns—think burn regime**
- **Uncertainty always increases return interval never increases frequency**

# It's Mostly About the Acres

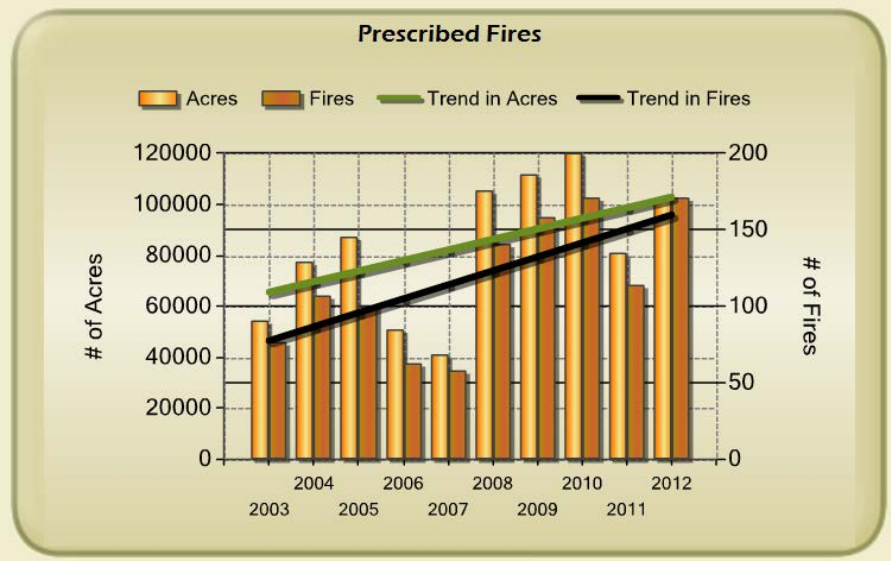
Of the 464,000 acres on Eglin AFB, 270,000 fire-dependent acres prioritized for burning

Our stated objective is to "complete an average of at least 90,000 acres of prescribed fire annually based on a five year running average".

270,000 acres / 90,000 annual acres = 3 year average FRI

Acres = Frequency

# Eglin Prescribed Fire Program




last 5 years mean = 103,500 acre/year = 2.6 year FRI

# Landscape-scale Planning and Prioritization

# Managing Longleaf

# Managing Longleaf at Eglin AFB

## The Problem: Limited Resources

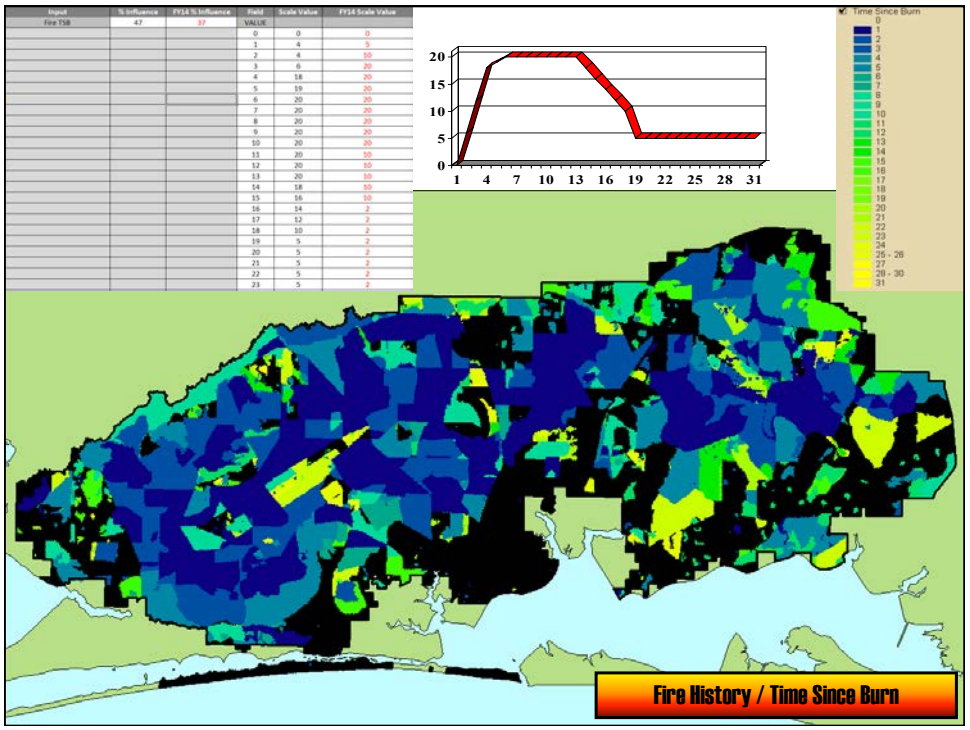
- In 1998, we were still trying to manage every acre at Eglin with fire.
- Through 2002, 30-year average was approximately 38,000 ac./year.
- Resources spread too thin and few conservation objectives were being met.

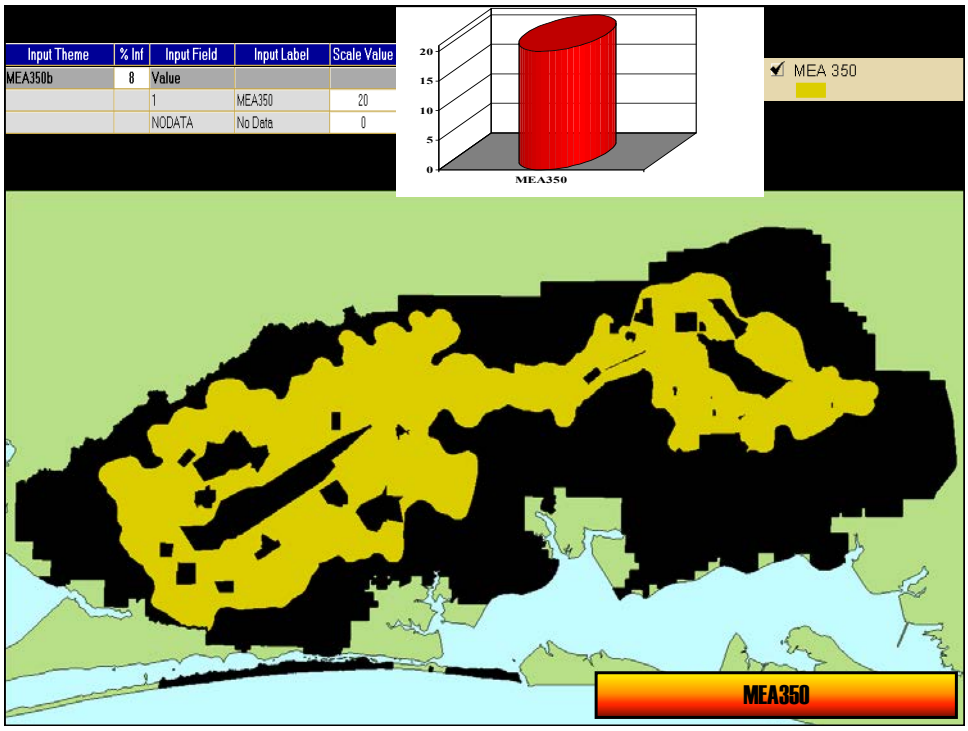
## Burn Prioritization Process

- Using managers and researchers, we identified key factors that determine the "need to burn."
- Developed GIS/Remote Sensing Data Layers to directly or indirectly represent the key factors.
- Weighted the factors by importance and scored each factor as to how it should influence burning.
- Using managers intuition and "Decision Support System," iteratively modify model.
- We continue testing model assumptions with monitoring.

# The Model

| INPUT | WEIGHT (%) | INPUT | WEIGHT (%) |
|---|---|---|---|
| Time Since Burn | 37 | TSI Mechanical | 5 |
| Flatwoods | 8 | TSI Chemical | 5 |
| Landcover Class | 7 | Upland Pine | 5 |
| Core Conservation Area | 5 | Seepage Slopes | 4 |
| RCW Foraging Area | 5 | Old-Growth LLP | 4 |
| Flatwoods Salamander | 5 | Sand Pine Buffer | 3 |
| ECM Tier Change | 5 | Sandhills | 2 |

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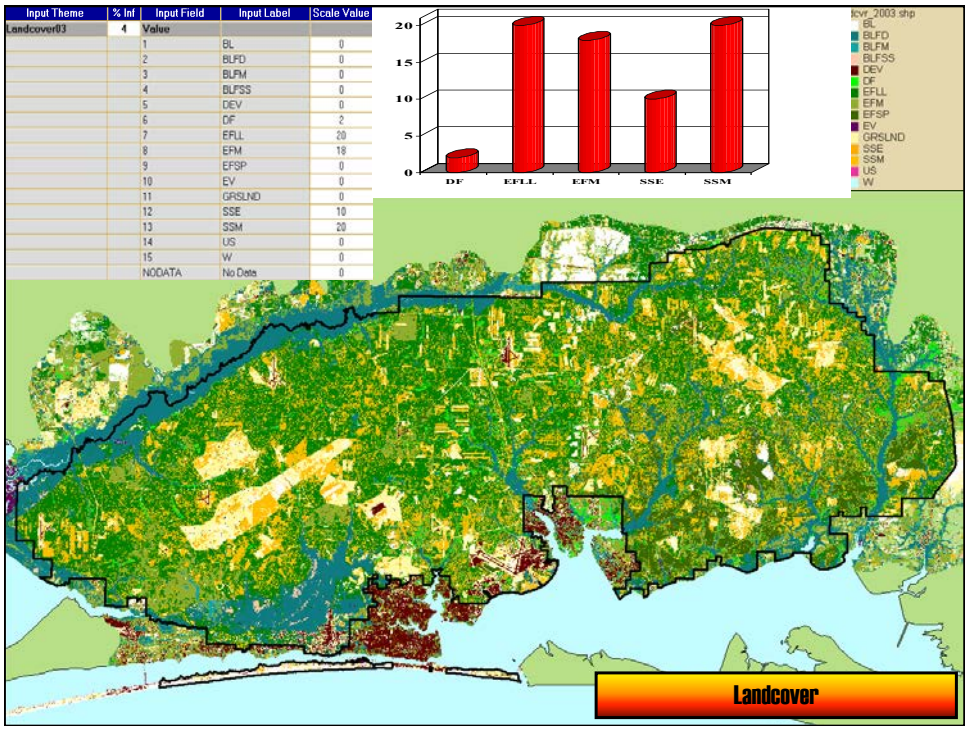
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2 | BLFD | 0
3 | BLFM | 0
4 | BLFSS | 0
5 | DEV | 0
6 | DF | 2
7 | EFLL | 20
8 | EFM | 18
9 | EFSP | 0
10 | EV | 0
11 | GRSLND | 0
12 | SSE | 10
13 | SSM | 20
14 | US | 0
15 | W | 0
NODATA | No Data | 0
20
15
10
5
0
DF
EFLL
EFM
SSE
SSM
lcvr_2003.shp
BL
BLFD
BLFM
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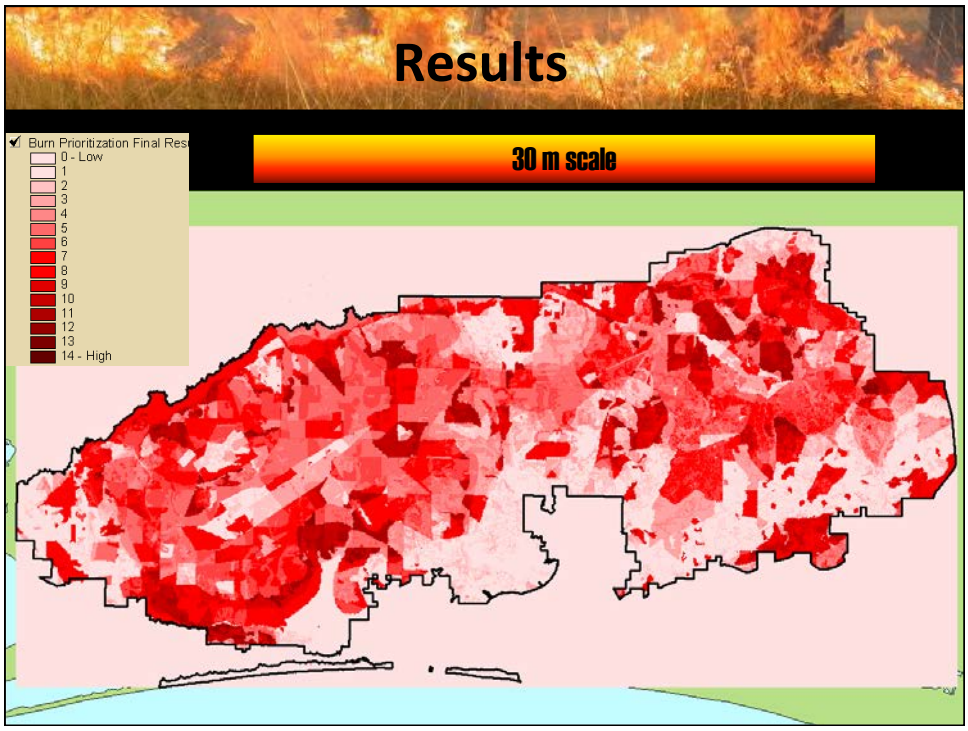
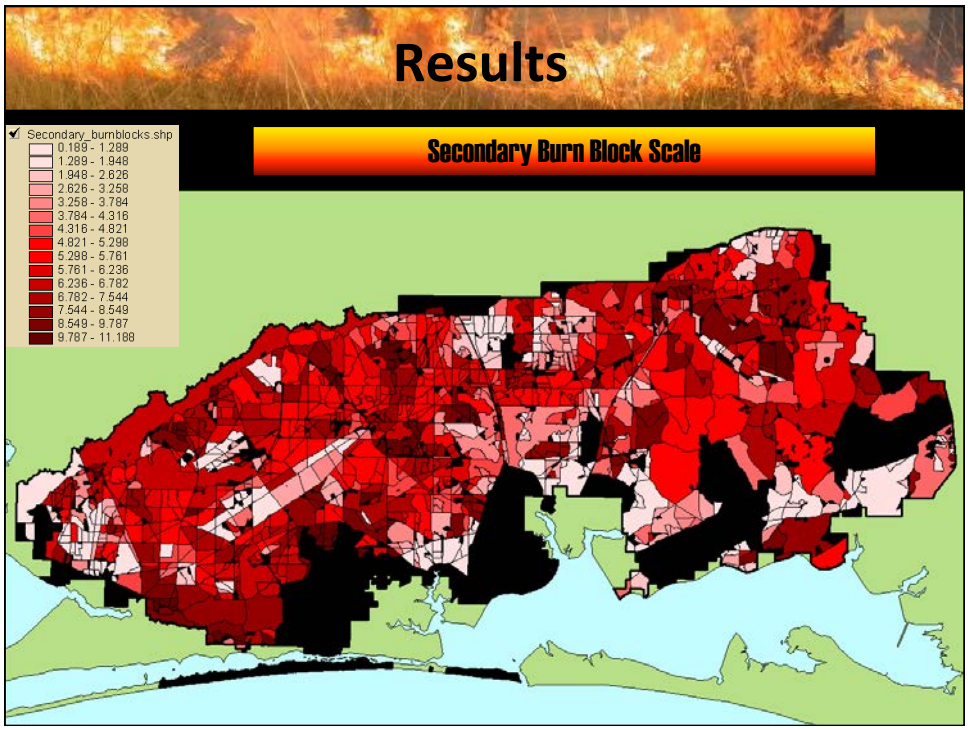
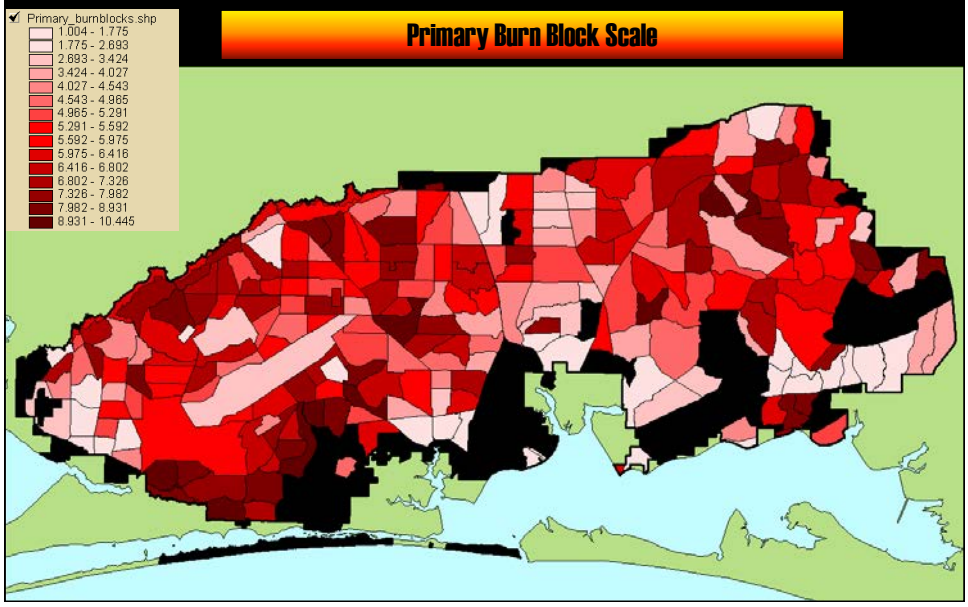
DEV
DF
EFLL
EFM
EFSP
EV
GRSLND
SSE
SSM
US
W
Landcover


Results
30 m scale
Burn Prioritization Final Res
0 - Low
1
2
3
4
5
6
7
8
9
10
11
12
13
14 - High


Results
Secondary Burn Block Scale
Secondary_burnblocks.shp
0.189 - 1.289
1.289 - 1.948
1.948 - 2.626
2.626 - 3.258
3.258 - 3.784
3.784 - 4.316
4.316 - 4.821
4.821 - 5.298
5.298 - 5.761
5.761 - 6.236
6.236 - 6.782
6.782 - 7.544
7.544 - 8.549
8.549 - 9.787
9.787 - 11.188

# Results




# Implementation

## Implementation

- Strategic burning
- Streamline planning
- Spatially explicit management objectives
- Prepare to burn more than you think you can
- Attitude
- Aerial Ignition

## Expanding the Rx Window

- One year roughs
- Early starts
- Smaller blocks
- Adjust firing patterns
- Night burns

# Aerial Ignition

# Aerial Ignition

- Cheaper
- Safer
- Smoke Management
- Hit the Rx Window
- Meeting acreage goals

# Aerial Ignition

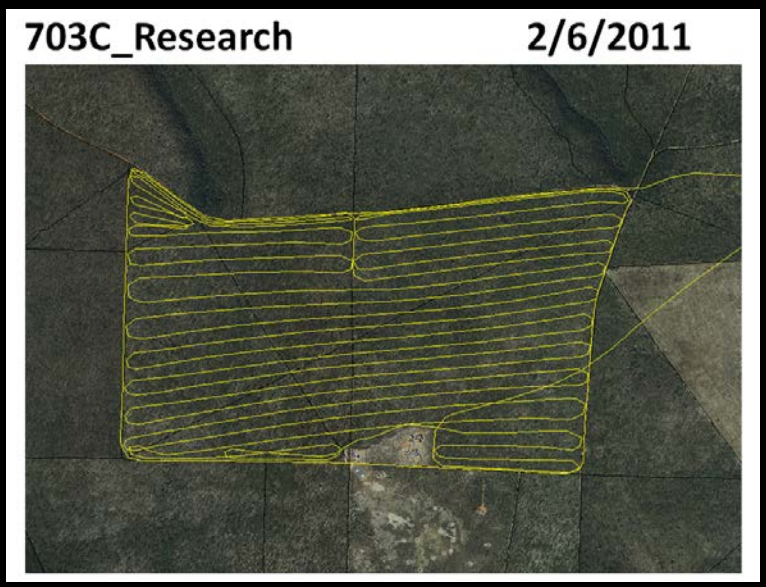
**PSD Video Clip**

# Aerial Ignition

## The Stats

- 2/3 of annual average acreage on Eglin is aerial ignition
- Average aerial ignition burn size is ~ 1,600 acres
- Target average of 4 balls / acre
- Typical distance between drifts is 150-300 feet
- 40-50 mph flight speed
- Total cost averages ½ cost/acre of ground ignition

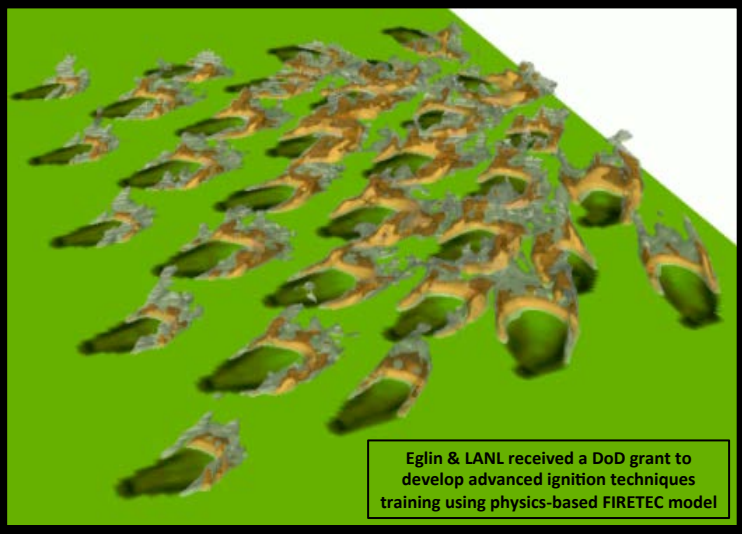
## Aerial Ignition




## Aerial Ignition

Aerial Ignition Video Clip

# Aerial Ignition

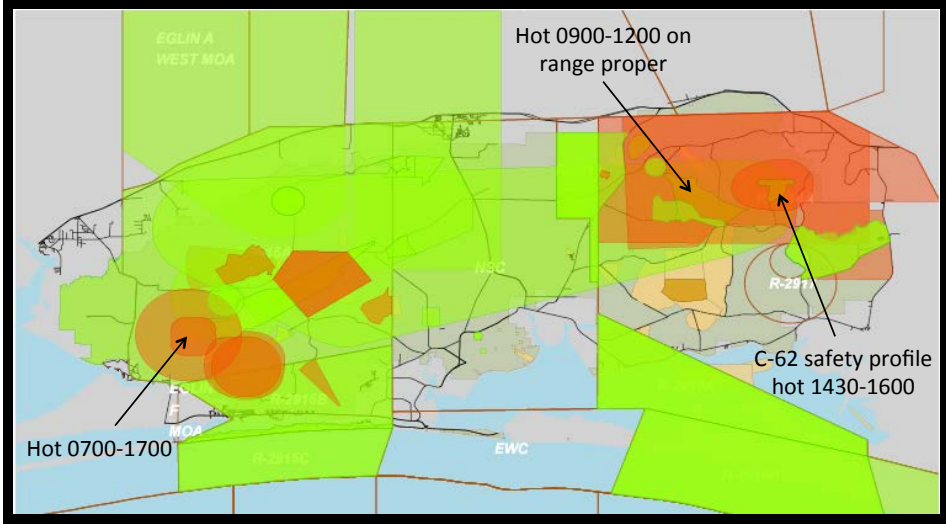


Eglin & LANL received a DoD grant to develop advanced ignition techniques training using physics-based FIRETEC model

# Challenges

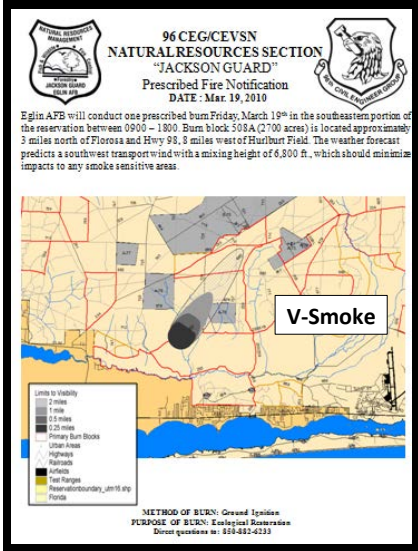
# Challenges

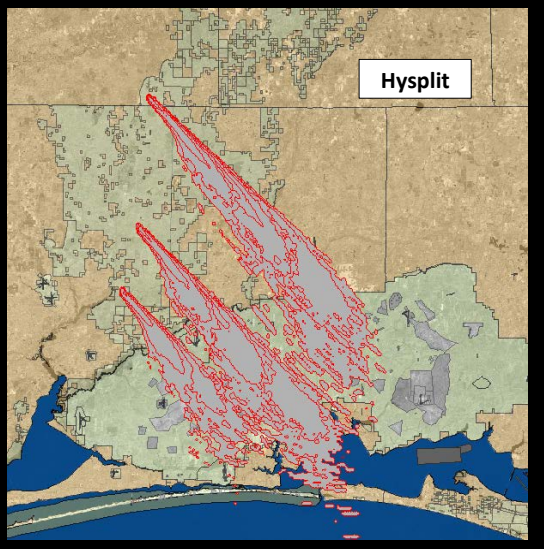

# Challenges



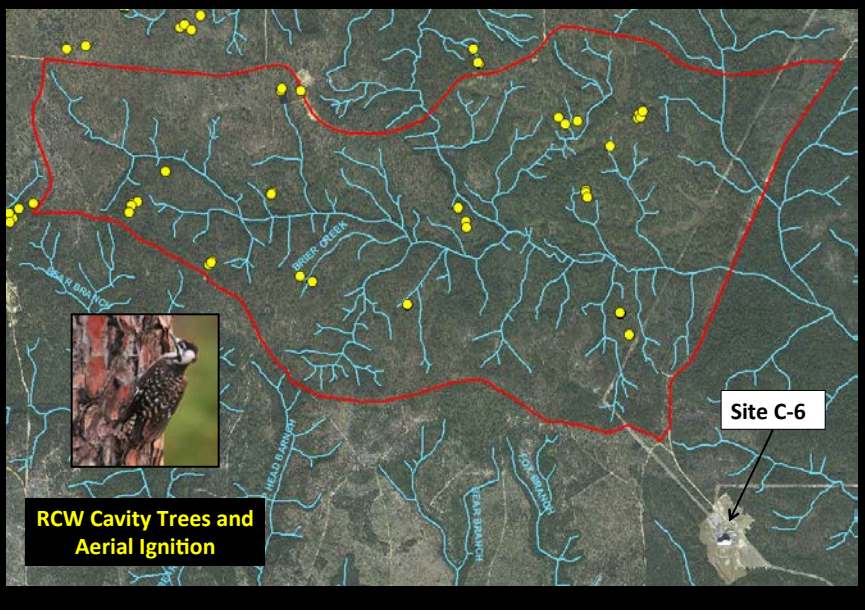

Tuesday, Feb 1 0700-1700

# Challenges



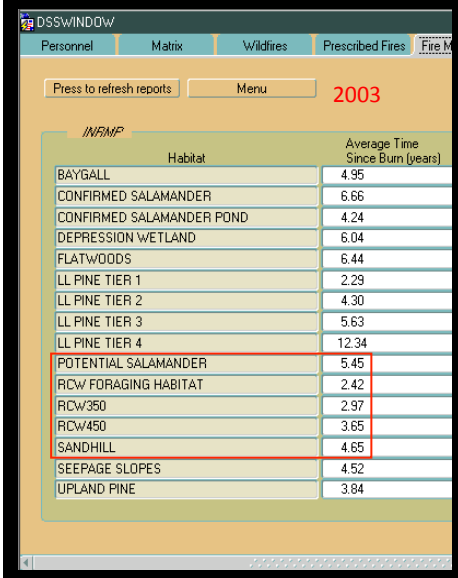



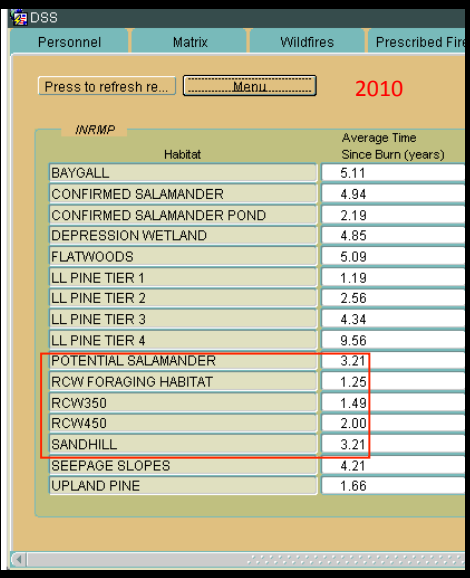

# Challenges



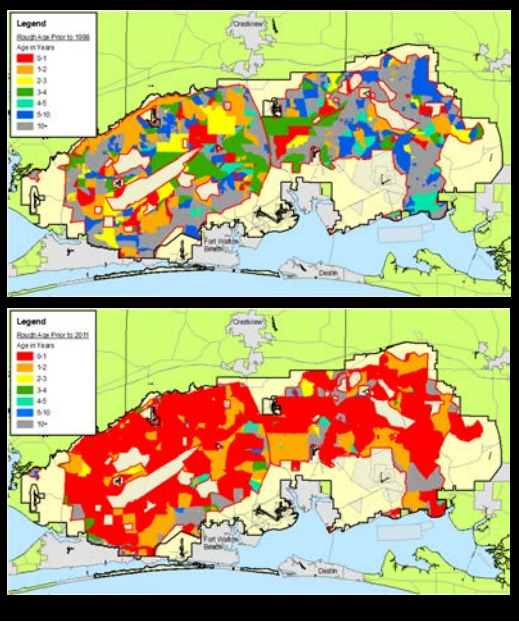
# Measuring Success

# Fire DSS: Measuring Success



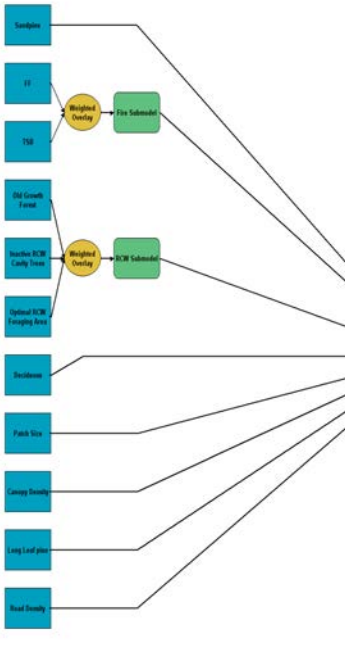
## Comparison of Average Rough Age in Eglin's Longleaf Pine Core Conservation Area




1998 = 10.5 years

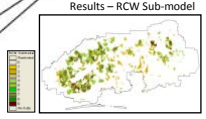
2011 = 3.5 years

## FY05 Ecological Condition Model

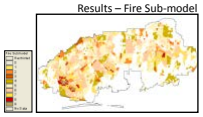



| INPUT | % MODEL INFLUENCE |
|---|---|
| % Sand pine / Hectare | 12 |
| % Longleaf / Hectare | 21 |
| RCW Model | 18 |
| Fire TSB | 7 |
| Fire Frequency | 21 |
| LIS History | 4 |
| LIS Frequency | 5 |
| Canopy Density | 6 |
| % Evergreen Oak / Hectare | 6 |
| Total | 100 |

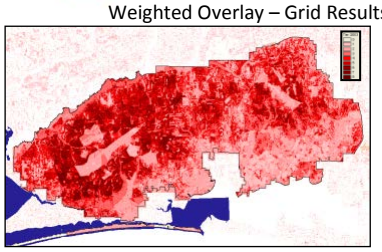
Results – RCW Sub-model



Results – Fire Sub-model



Weighted Overlay – Grid Results

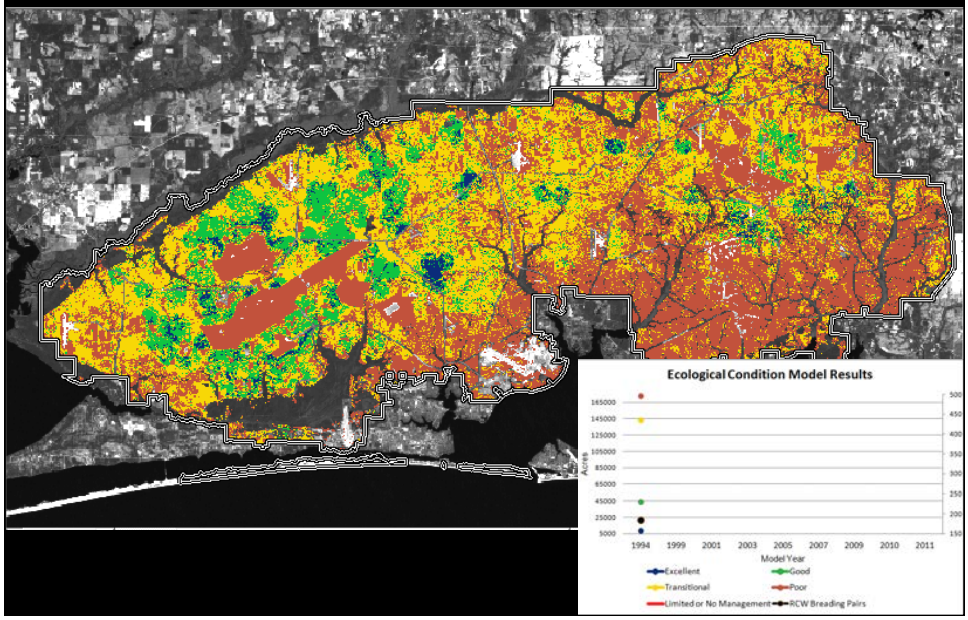


# Ecological Condition Model

Ground truthing with monitoring plots since 2001

201 stratified random 1-ha sample plots based on modified EMAP/USGS interpenetrating hexagon-based grid system

# 1994



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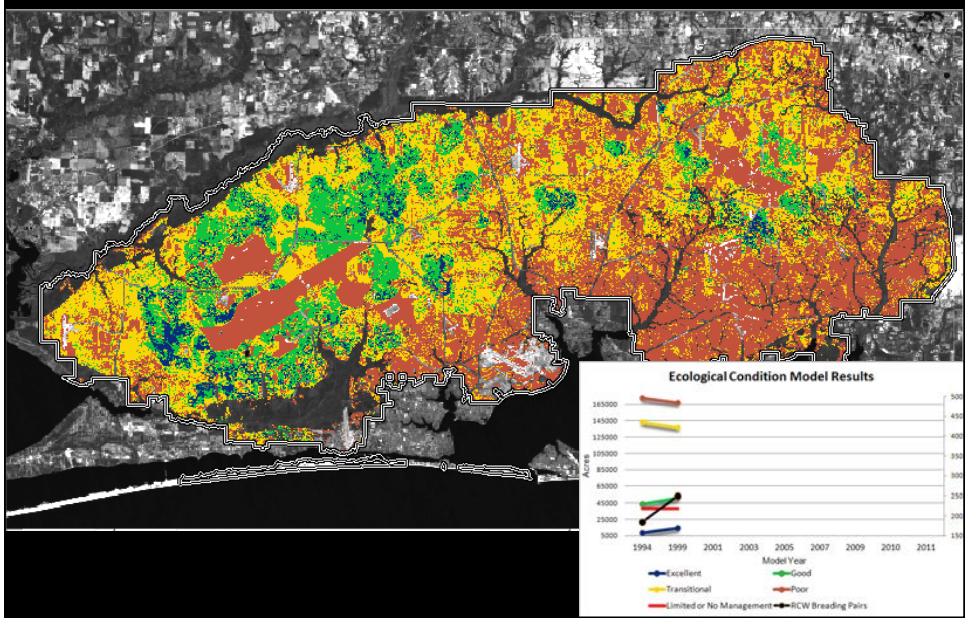
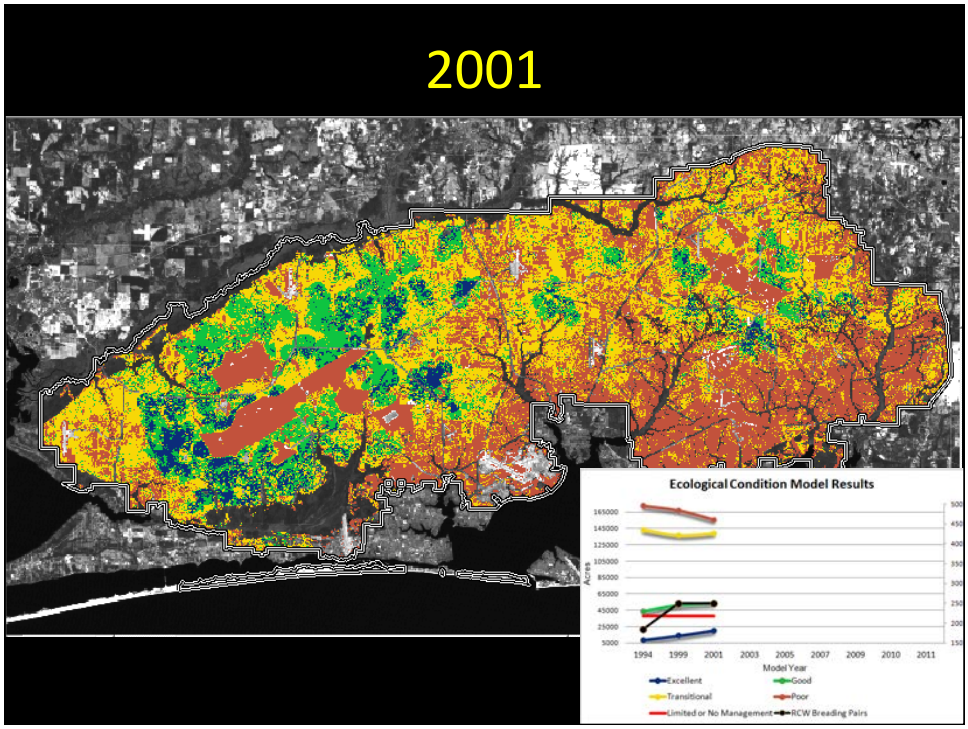

Ecological Condition Model Results
Acres
Model Year
1994 1999 2001 2003 2005 2007 2009 2010 2011
Excellent
Good
Transitional
Poor
Limited or No Management
RCW Breading Pairs

# 2001


Ecological Condition Model Results
Acres
Model Year
1994 1999 2001 2003 2005 2007 2009 2010 2011
Excellent
Good
Transitional
Poor
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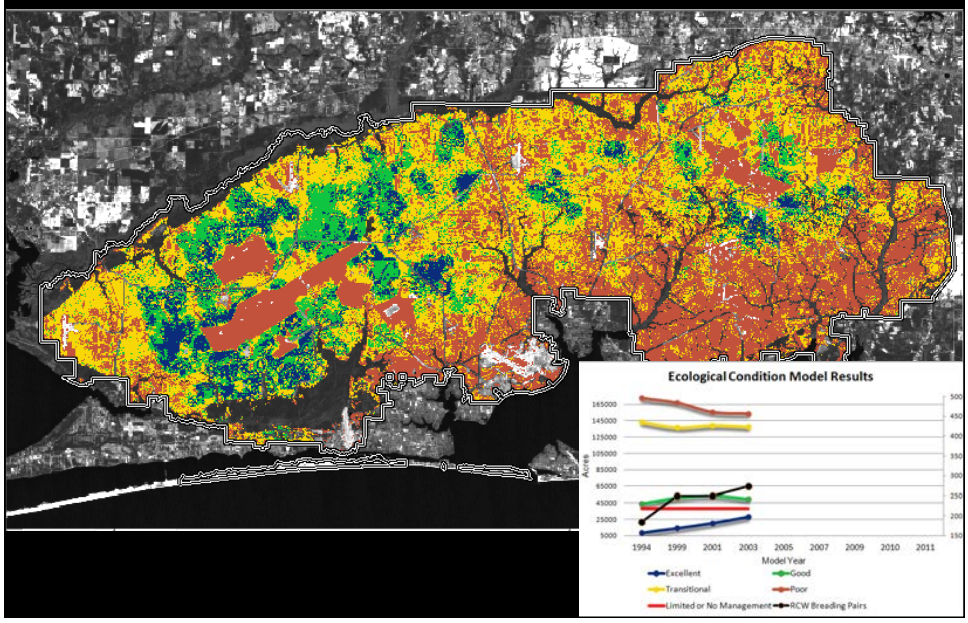
# 2003


Ecological Condition Model Results
Acres
Model Year
1994 1999 2001 2003 2005 2007 2009 2010 2011
Excellent
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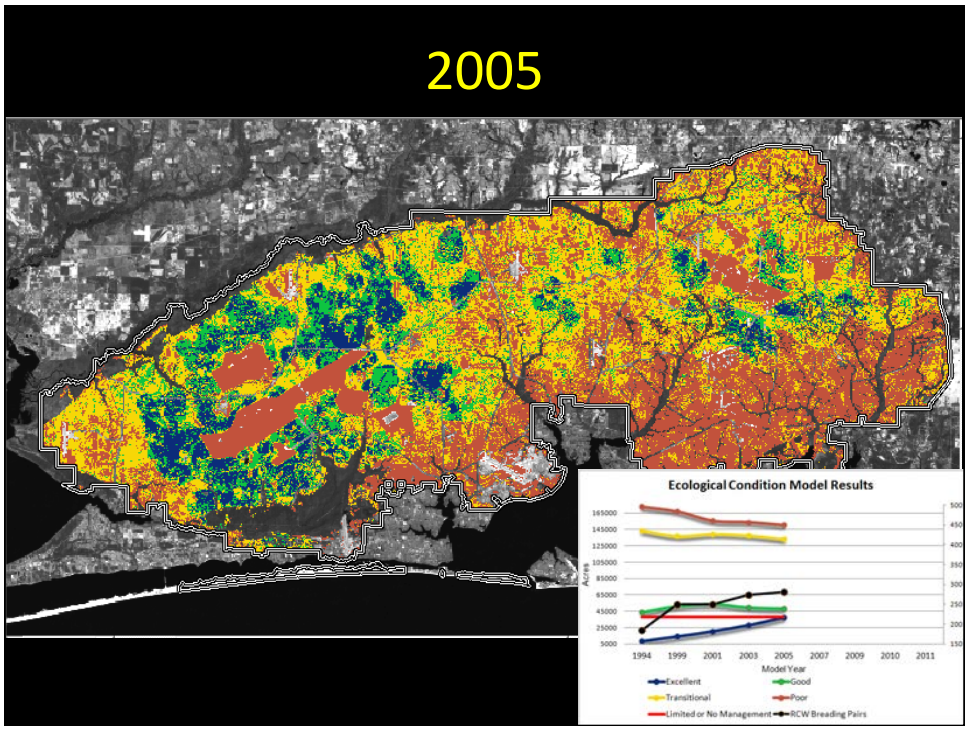
Transitional
Poor
Limited or No Management
RCW Breading Pairs

# 2005


Ecological Condition Model Results
Acres
Model Year
1994 1999 2001 2003 2005 2007 2009 2010 2011
Excellent
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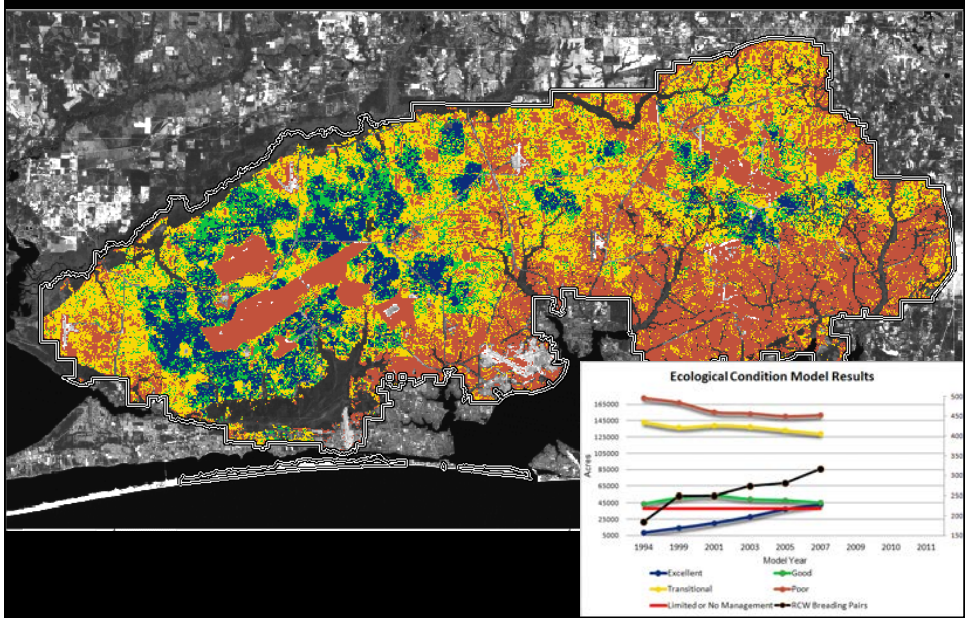
# 2007


Ecological Condition Model Results
Acres
Model Year
1994 1999 2001 2003 2005 2007 2009 2010 2011
Excellent
Good
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Limited or No Management
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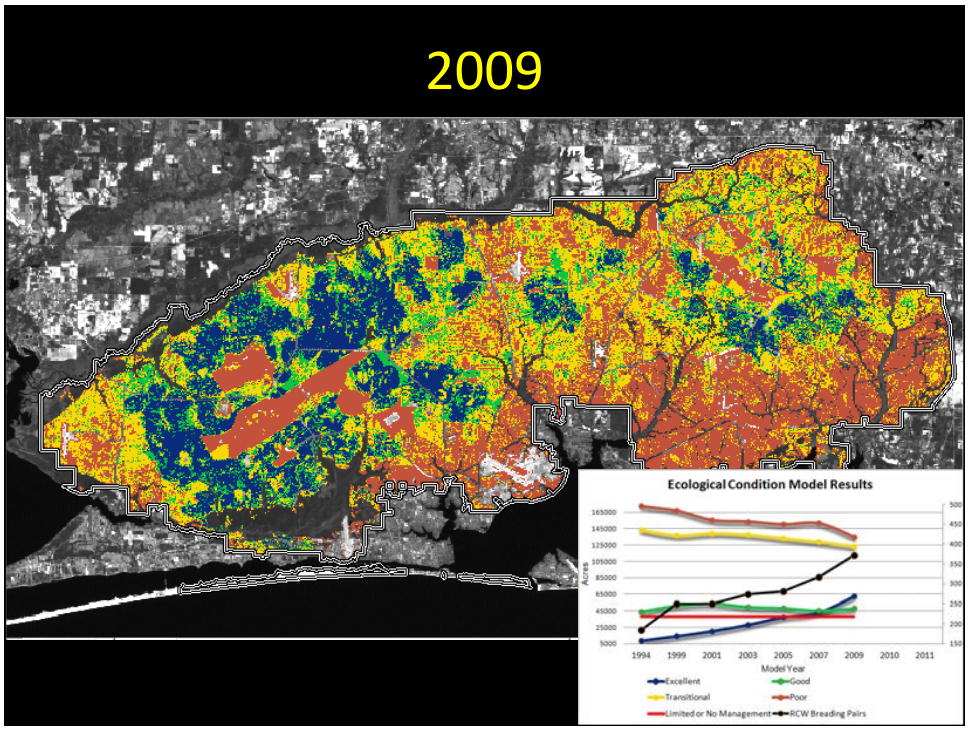
# 2009


Ecological Condition Model Results
Acres
Model Year
1994 1999 2001 2003 2005 2007 2009 2010 2011
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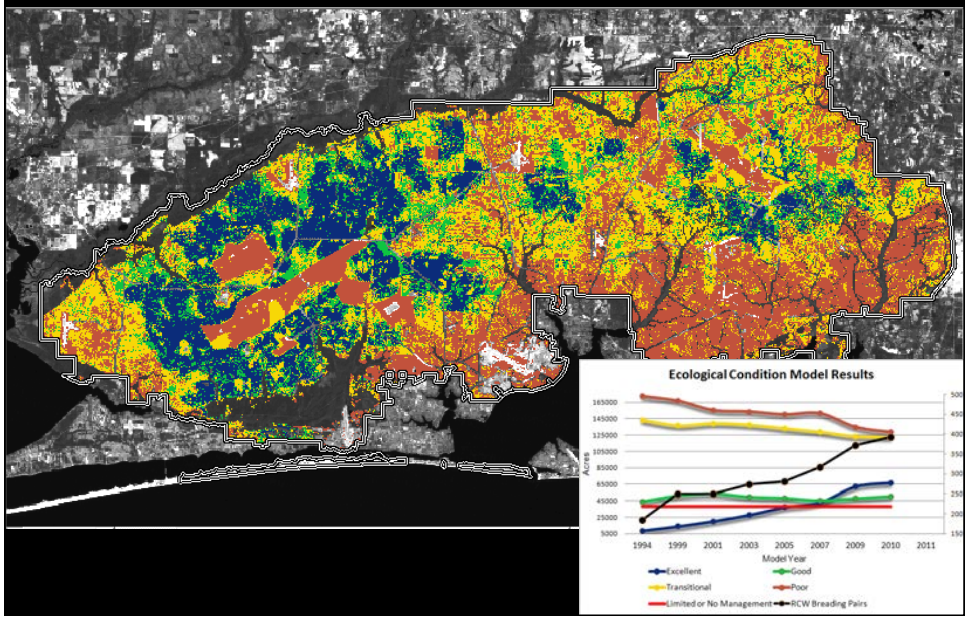
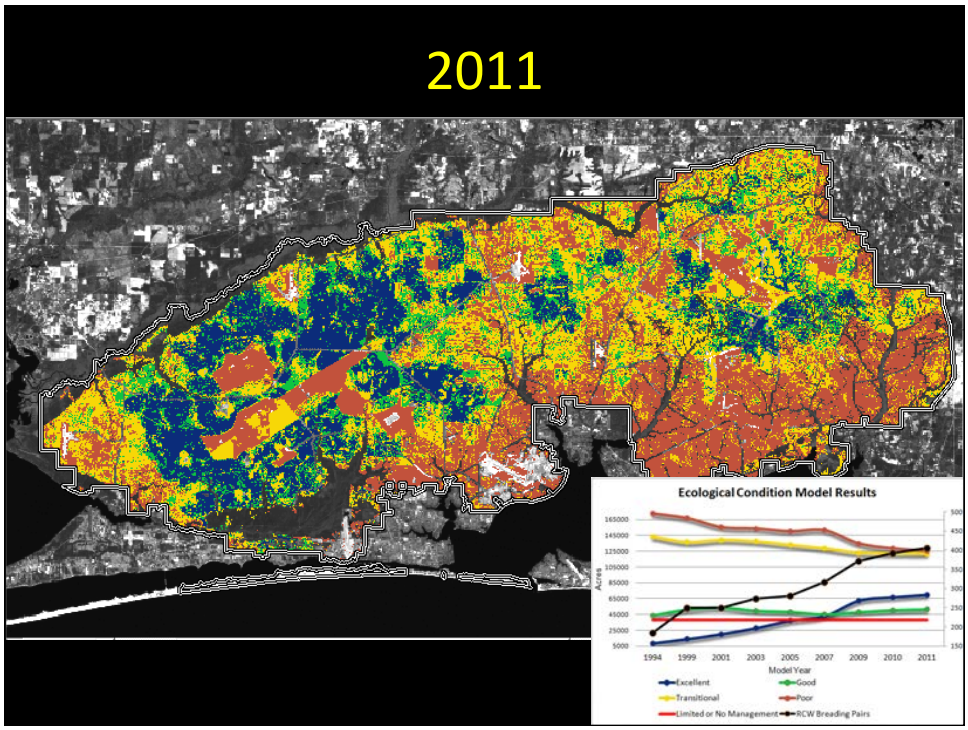
# 2010


Ecological Condition Model Results
Acres
Model Year
1994 1999 2001 2003 2005 2007 2009 2010 2011
Excellent
Good
Transitional
Poor
Limited or No Management
RCW Breading Pairs

# 2011


Ecological Condition Model Results
Acres
Model Year
1994 1999 2001 2003 2005 2007 2009 2010 2011
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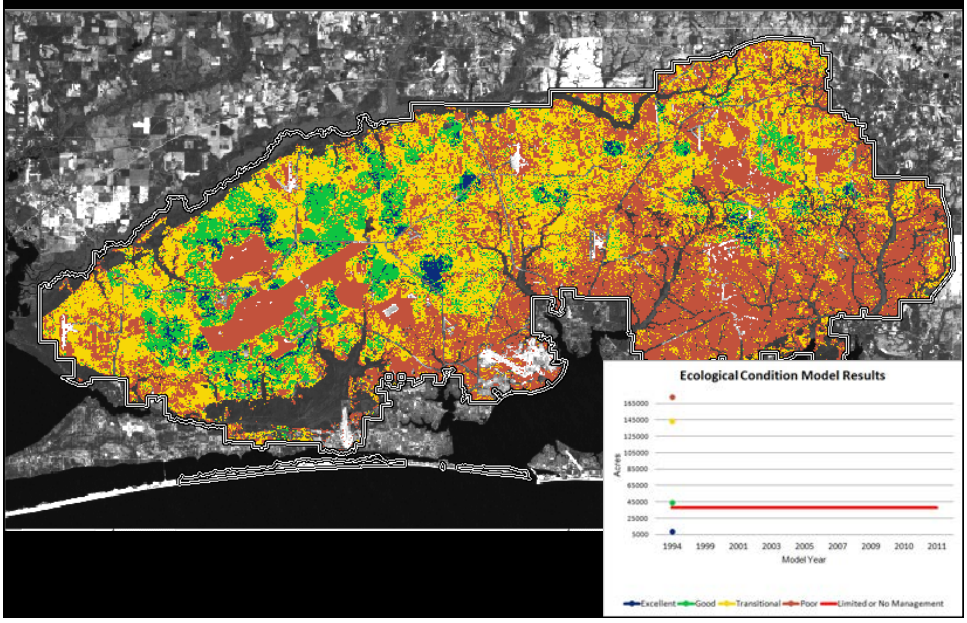
# 1994

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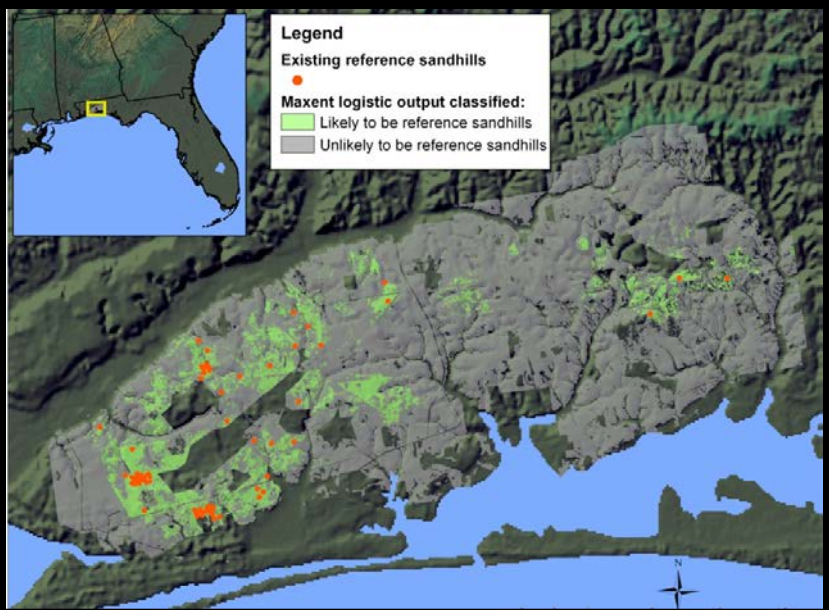


LIQUORS
Questions?