

ARCHBOLD BIOLOGICAL STATION FIRE PLANNING AND EVALUATION



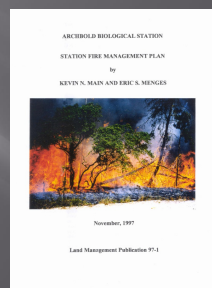
Fire is the Predominant
Ecological Disturbance in
the World (and in
Florida)



Fire Management Plan (Main and Menges 1997)

Goals

- Enhance Biological Diversity
- Enhance T & E Species
- Mimic Natural Processes
- Provide Diversity of Research Opportunities
- Provide Educational Opportunities
- Interact with other Fire Management Agencies
- Reduce Fire Hazards by Managing Fuels and Fire
- Conduct Safe Burns



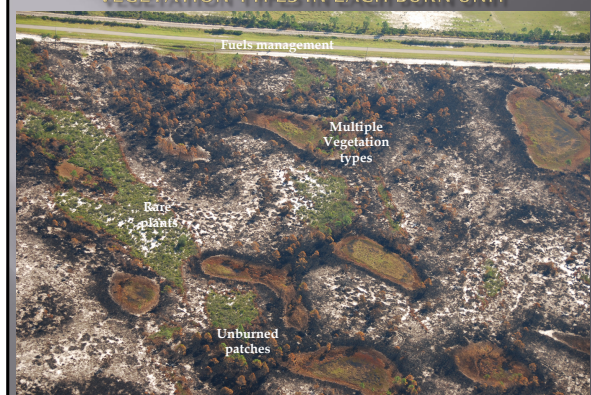
Guiding Principles

- ▣ Fire Return Intervals (FRI)
- ▣ Diversity of FRI for each vegetation type (VT)
- ▣ Modal FRI for each VT
- ▣ Use lightning season ignitions when possible
- ▣ Move to larger burns when feasible
- ▣ Tolerate heterogeneity
- ▣ Maintain flexibility - research



Balance
management/research

IMPORTANCE OF UNBURNED PATCHES, MULTIPLE VEGETATION TYPES IN EACH BURN UNIT



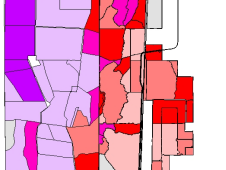
Modal Fire Return Interval

- 2-5 years:** Sandhill, Swales, Flatwoods
- 6-9 years:** Flatwoods, Seasonal Wetlands
- 6-9 and 10-19 years:** Scrubby Flatwoods
- 10-19 years:** Oak-Hickory Scrub
- 20-59 years:** Rosemary Scrub
- 20-59 and 60-100 years:** Sand Pine Scrub
- 60-100 years:** Bayhead



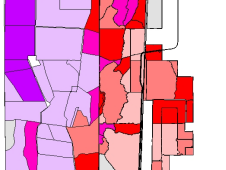
Modal FRI application

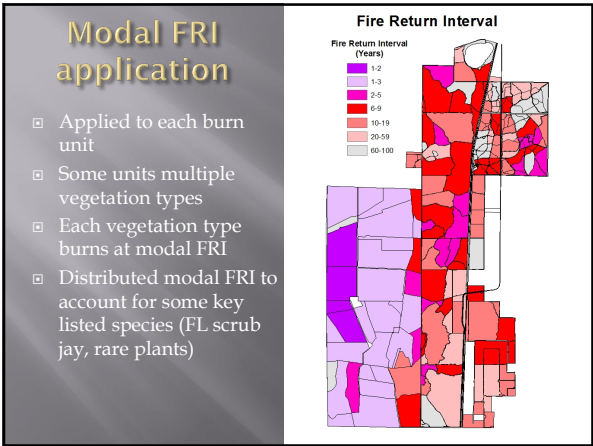
- Applied to each burn unit
- Some units multiple vegetation types
- Each vegetation type burns at modal FRI
- Distributed modal FRI to account for some key listed species (FL scrub jay, rare plants)



Fire Return Interval (Years)

Color	Fire Return Interval (Years)
Dark Purple	1-2
Light Purple	1-3
Medium Purple	2-5
Red	6-9
Dark Red	10-19
Light Red	20-59
Grey	60-100

- ## Modal FRI application
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 - Some units multiple vegetation types
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Components of Fire Regime

- Fire frequency/Fire return interval/TSF
- Fire intensity (e.g. temperature, duration)
- Fire severity
- Seasonality
- Patchiness/heterogeneity
- Type of ignition



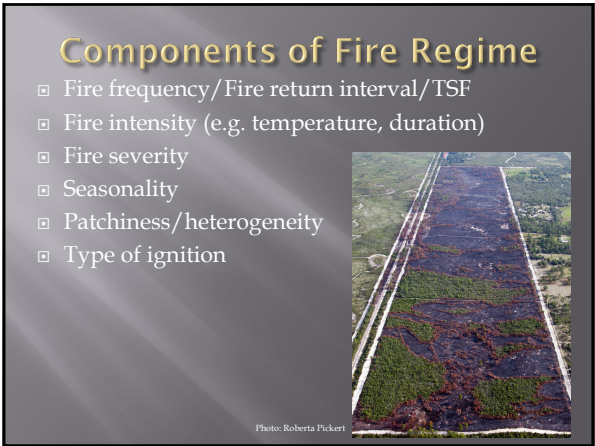


Photo: Roberta Pickert

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- Photo: Roberta Pickert



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Photo: Roberta Pickert

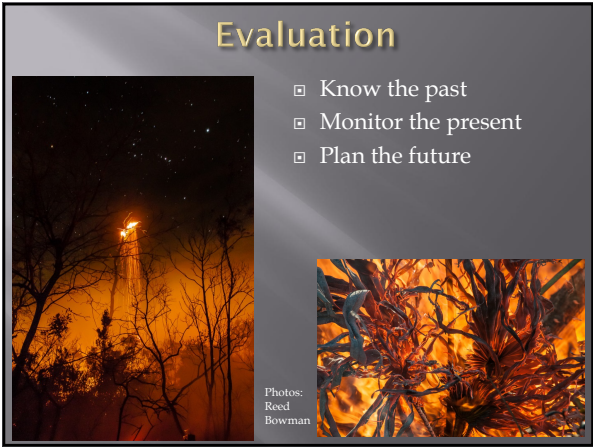
Evaluation

- Know the past
- Monitor the present
- Plan the future





Photos:
Reed
Bowman

- # Evaluation
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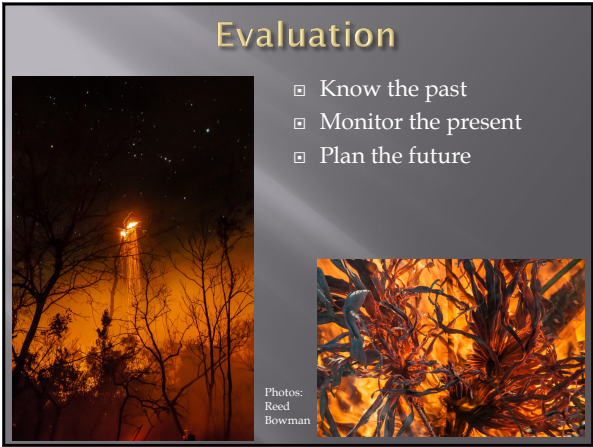


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METHODS

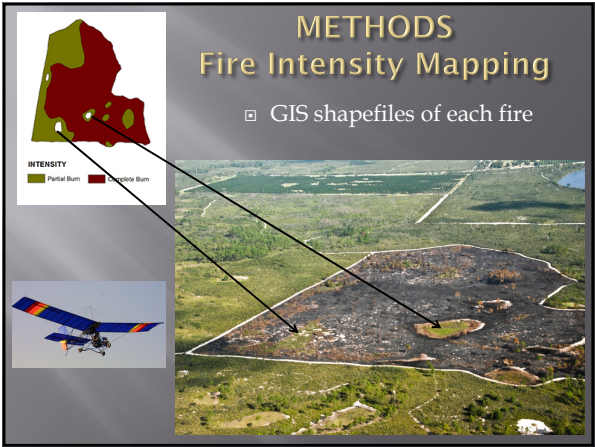
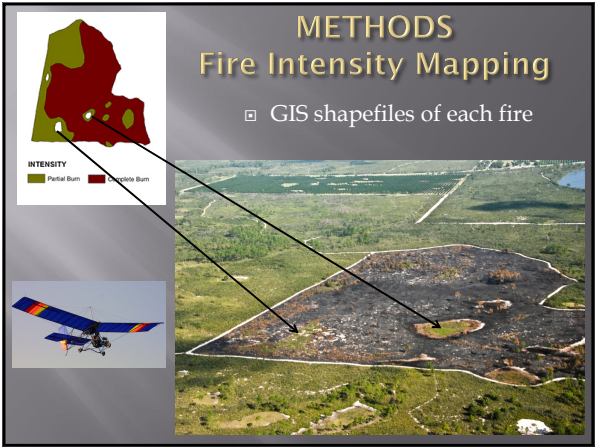
Fire Intensity Mapping

- GIS shapefiles of each fire



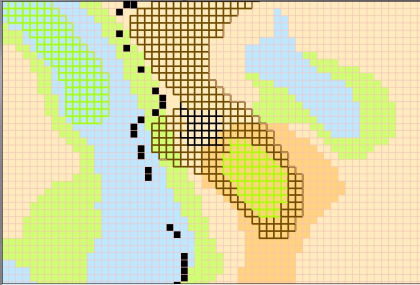
The figure shows an aerial photograph of a landscape with a large, irregularly shaped fire scar. The fire scar is dark brown and black, contrasting with the surrounding green vegetation. A legend in the top left corner, titled "INTENSITY", shows two categories: "Partial Burn" represented by a light brown color and "Complete Burn" represented by a dark brown color. Two black arrows point from the legend to the corresponding areas in the fire scar on the aerial photo. In the bottom left corner, there is a small inset image of a satellite in orbit, with a rainbow-colored band across its body.

- # METHODS
- ## Fire Intensity Mapping
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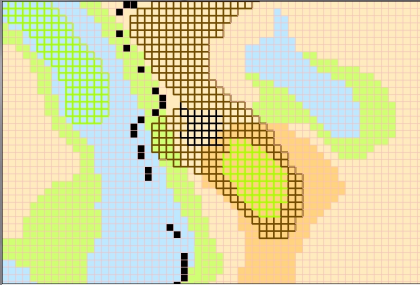


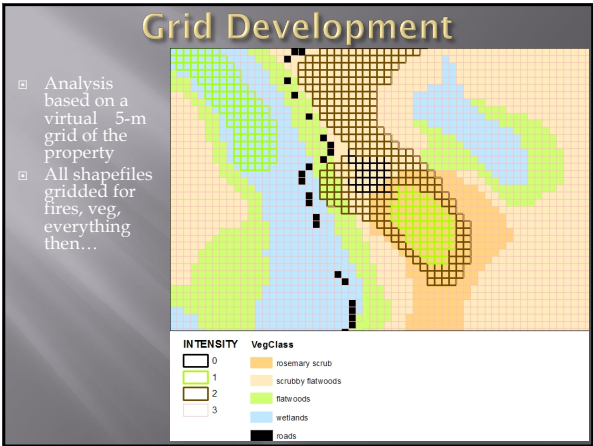
Grid Development

- Analysis based on a virtual 5-m grid of the property
- All shapefiles gridded for fires, veg, everything then....



INTENSITY	VegClass
0	rosemary scrub
1	scrubby flatwoods
2	flatwoods
3	wetlands
	roads

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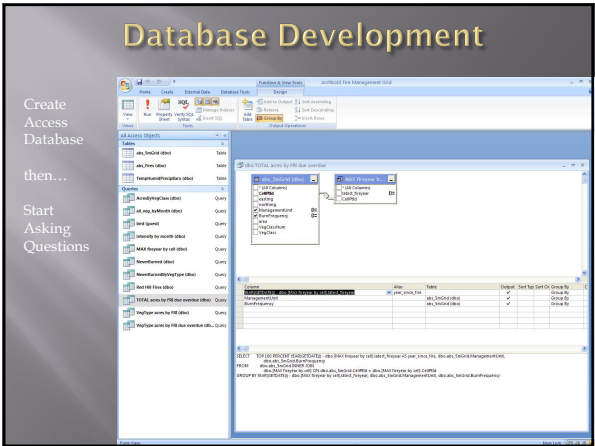
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Database Development

Create Access Database

then...

Start Asking Questions

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RESULTS – Some Examples



Photo: Roberta Pickert

Overall distribution of modal FRI

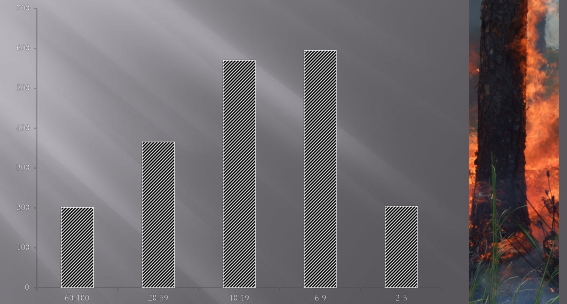


Photo: Kevin Main

We are burning more

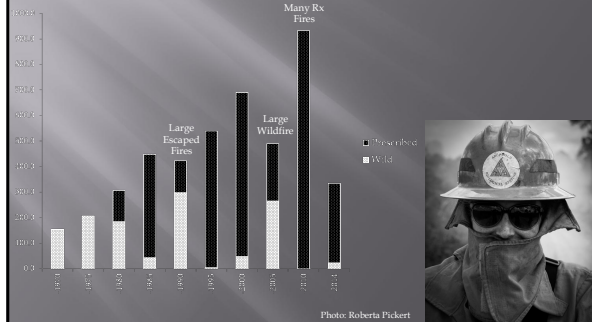
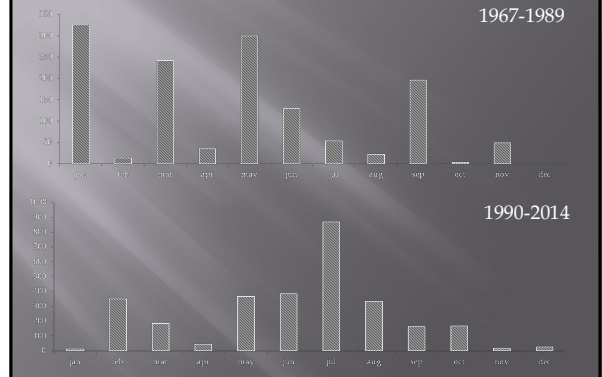
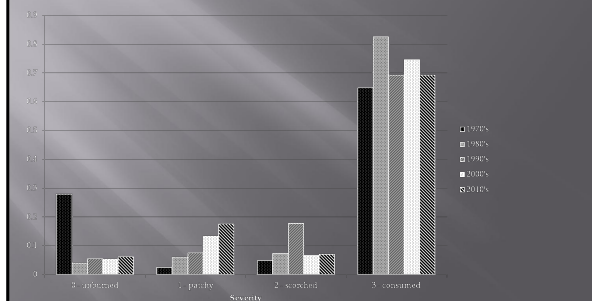


Photo: Roberta Pickert

Fire Seasonality



Fire severity by decade



Severity by veg type

