

A Transitional Fire Model for Restoration and Management of Natural South Florida Plant Communities

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Overall Project Goal

- Mechanism for Capturing Knowledge of Land Managers and Other Experts
- Can Be Passed on to New Land Managers
- Can Be Used to Explain a Land Management Program to Others

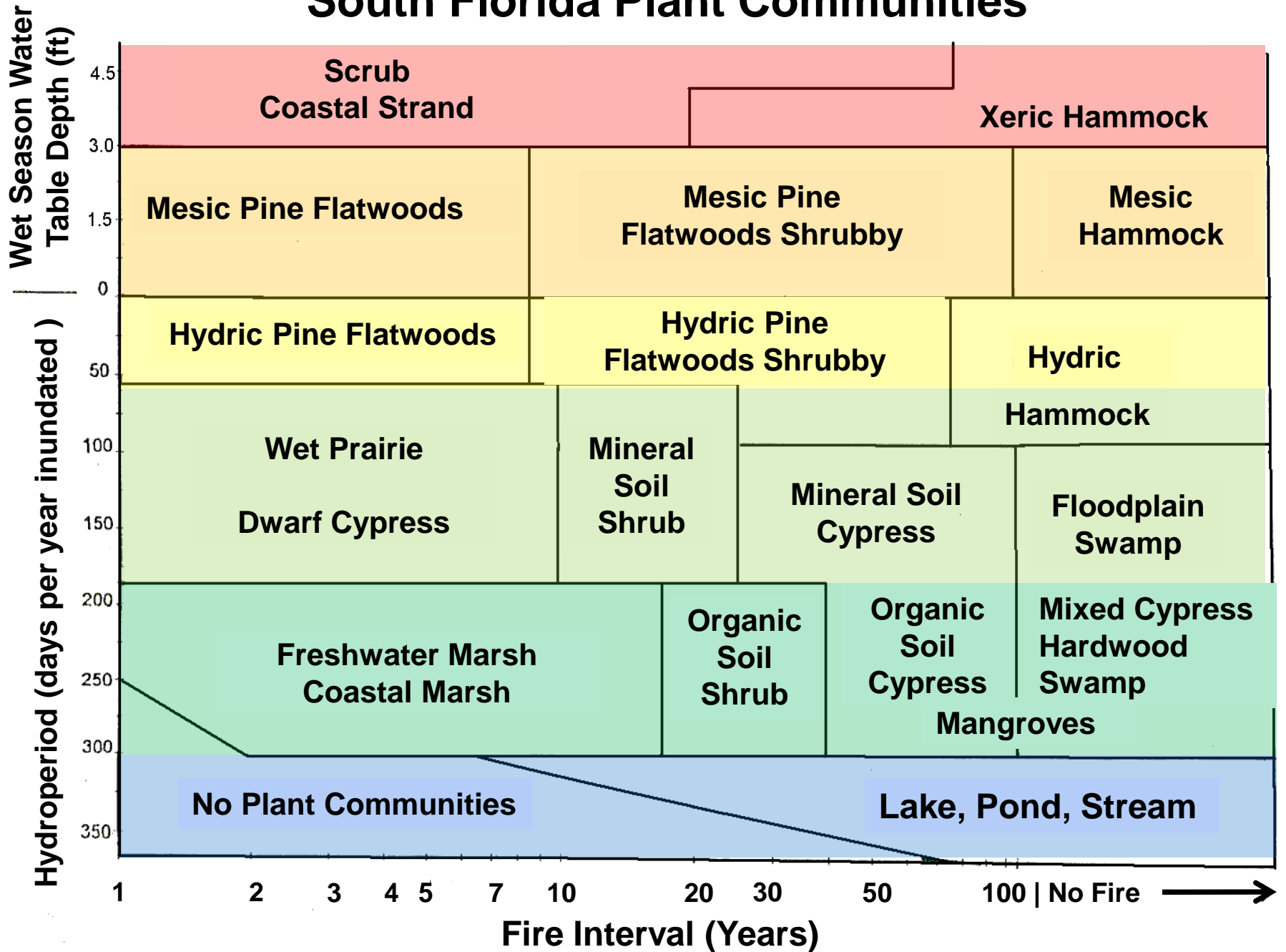
South Florida Interagency Fire Management Council Subcommittee

- **Met about Every 2 Months for 3 Years**
- **Individuals with Fire Experience Who Brought Their Expertise with Fire to the Process**
- **Not Just Positions of An Agency or Group**

South Florida



South Florida Plant Communities



Fire Management Objectives

- **Plant Community Change with Fire**
 - Move to Later Succession Stages
 - Return to Earlier Successional Stages
 - No Change in Successional Stages
- **Fire Regime Parameters**
 - Based on Consensus of Field Experience of Prescribed Burners

Fire Regime Parameters I

- **Range of Fire Intervals (Years)**
- **Growing or Dormant Season Fire**
 - **Growing Season: April – September**
 - **Dormant Season: October – March**

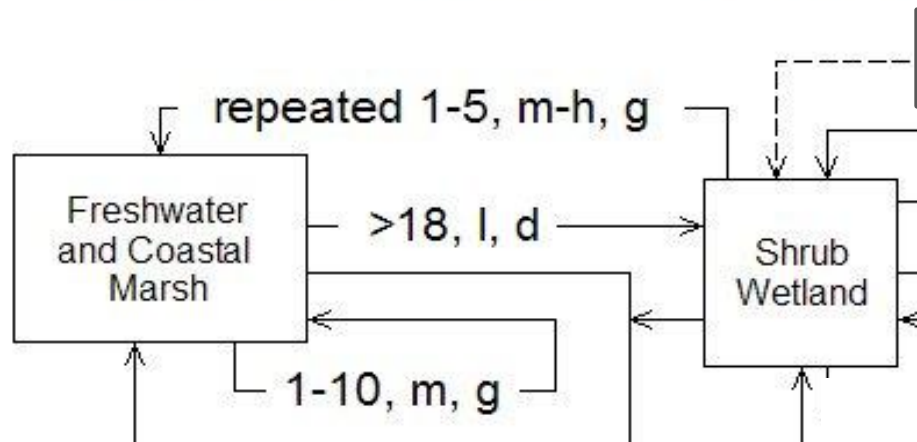
Fire Regime Parameters II

- **Fire Intensity**
 - **Based on Flame Lengths**
 - Low: <1 – 4 ft
 - Moderate: 4 – 8ft
 - High: 8 – 11 ft
 - Very High: >11 ft
 - **Flame Lengths are a Function of**
 - Available Fuels
 - Weather Conditions
- **Single Severe Fire**
 - Consumes Sufficient Organic Soil to Kill Most Vegetation Rooted in the Soil

Human Non-Fire Alteration

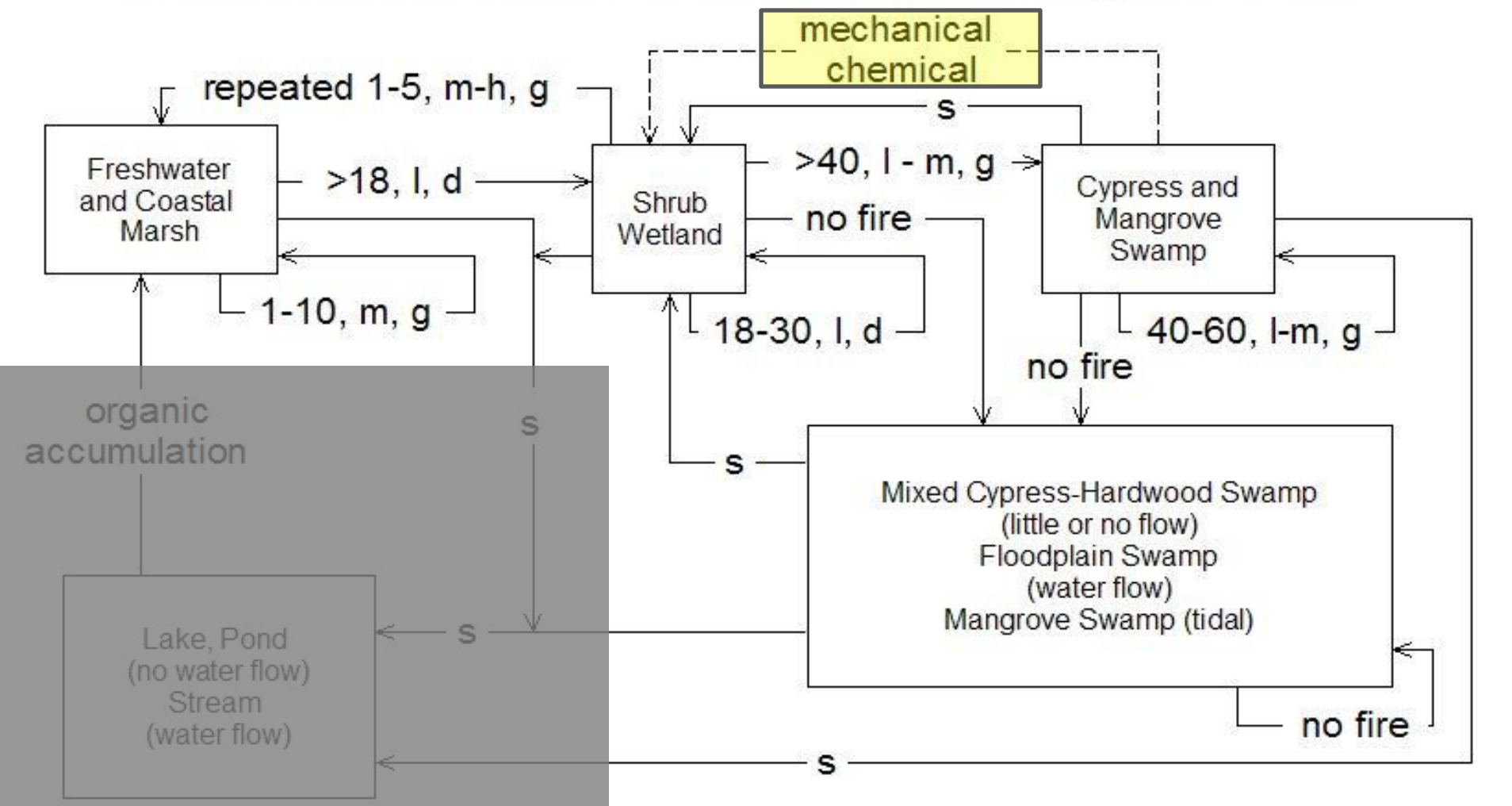
- **Mechanical Clearing**
 - Reduce Height of Woody Vegetation
 - Insufficient Fuels to Carry Fire
 - Cannot Obtain Burn Permit
 - Smoke Hazards
 - Major Roads
 - Urban Areas

Fire Transitions in South Florida Plant Communities on Organic Soils



- | | | | |
|---------------------------|----------------------------|---|------------------------------|
| 5-10 fire return interval | h high intensity fire | g growing season fire (April-September) | ————> fire driven transition |
| l low intensity fire | v very high intensity fire | d dormant season fire (October-March) | -----> non-fire disturbance |
| m moderate intensity fire | s severe fire (=muck fire) | | |

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Freshwater Marsh - 1975



Organic Soil Shrub



Organic Soil Shrub Invaded by Cypress and Hardwood - 2011



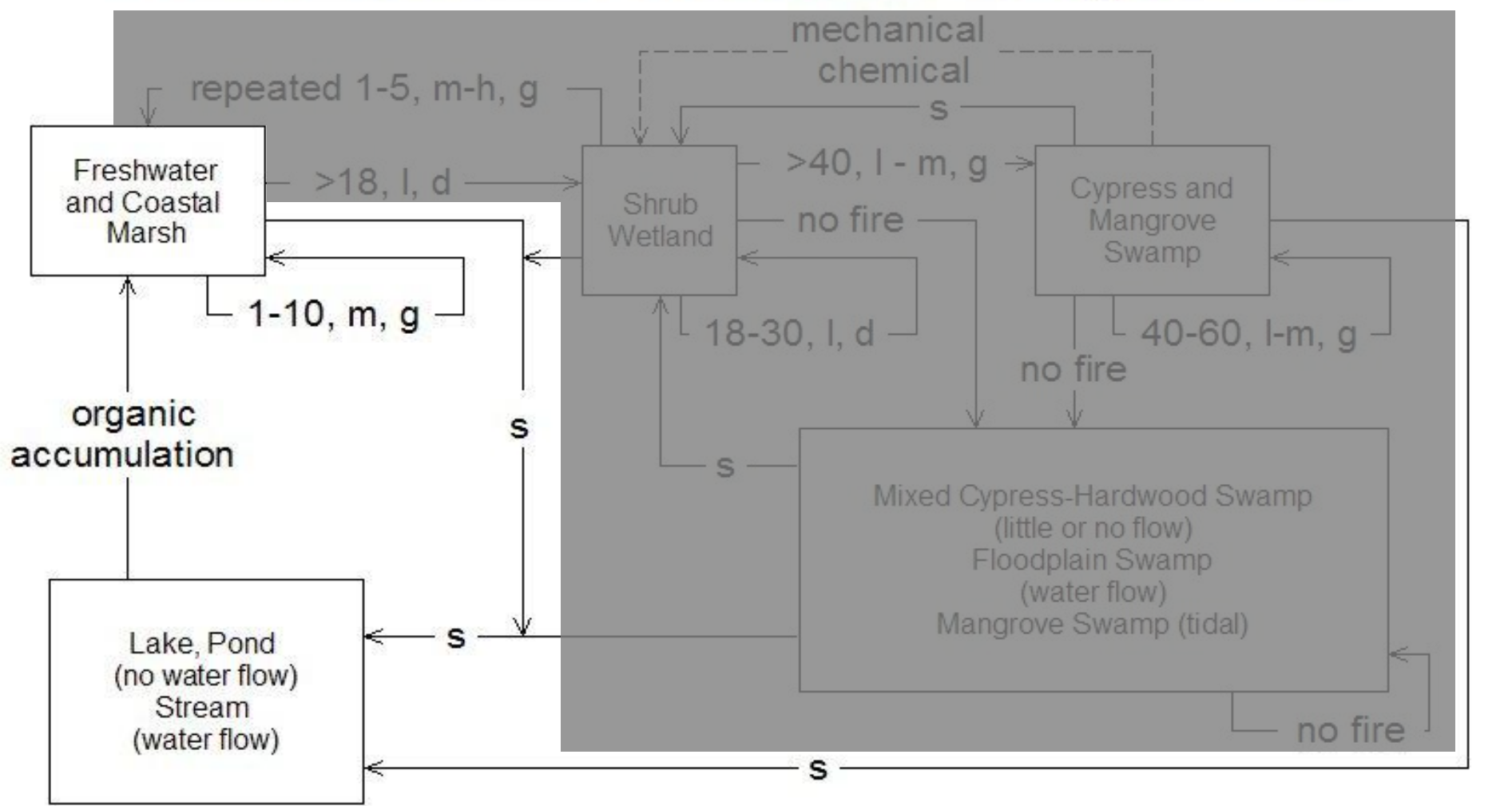
Mixed Cypress – Hardwood Swamp



**Burned Swamp Forest
15 Years After Fire**



Fire Transitions in South Florida Plant Communities on Organic Soils



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- fire driven transition
- non-fire disturbance

**Pond in Swamp Forest
During Dry Season
Drought**

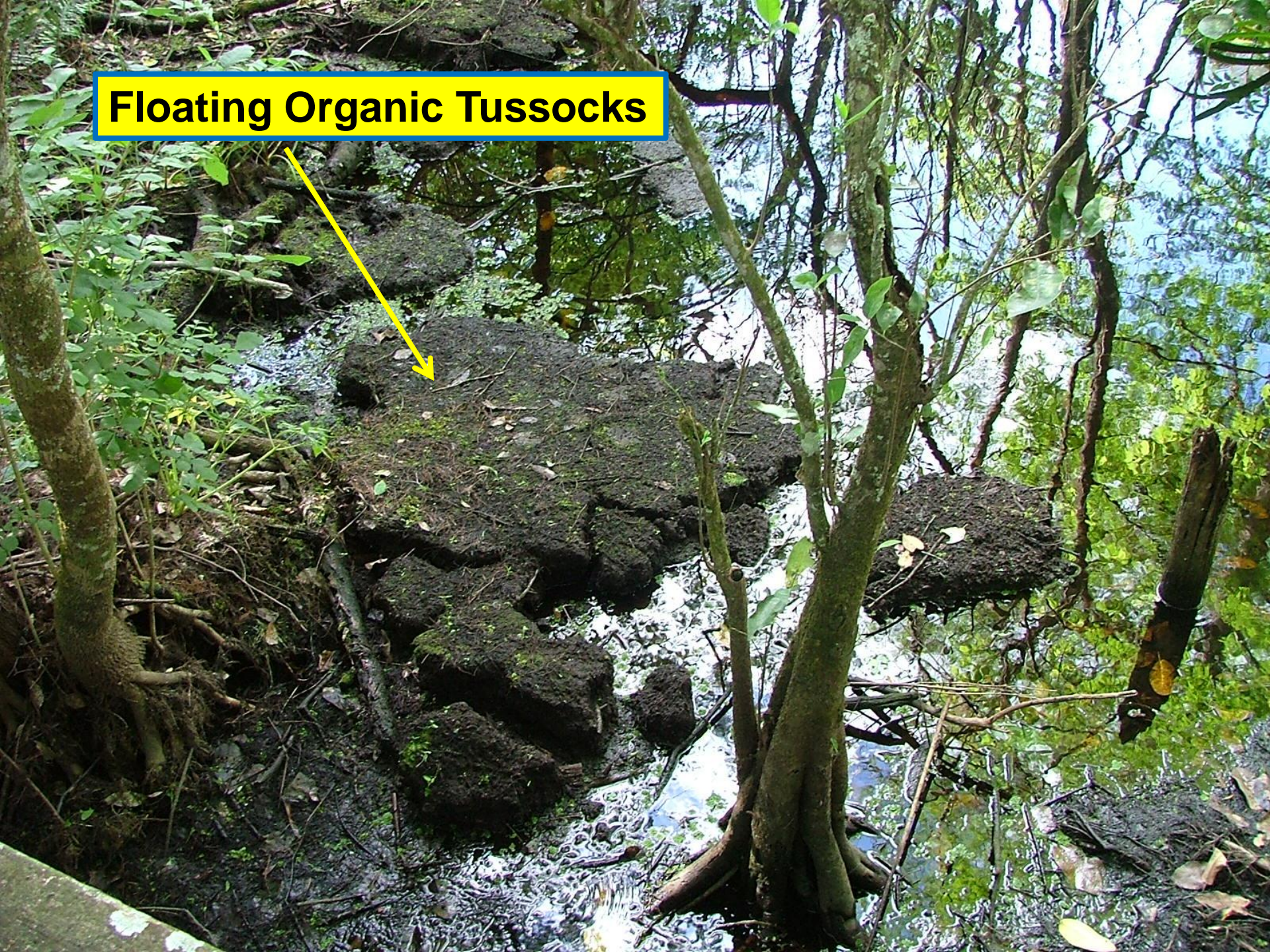
**Wet Season Water Depths
1.5 – 2 m**

**Ash Layer with Overlying
Accumulated Organics
C14 Dated at ± 540 Years**

**Oldest Cypress Found in
the Surrounding Forest
was about 500 Years Old**



Floating Organic Tussocks

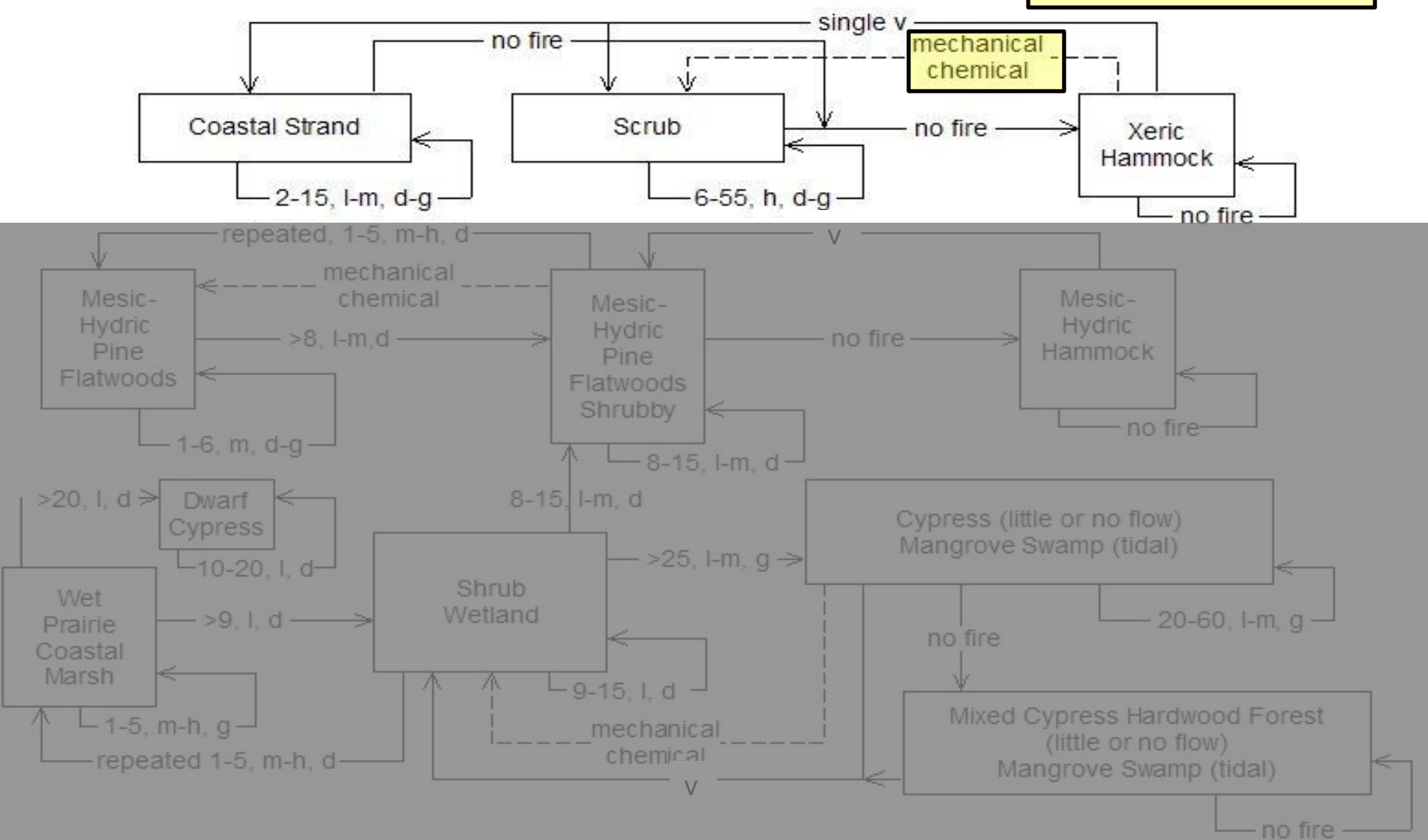




Trees Growing On Tussocks

Fire Transitions in South Florida Plant Communities on Mineral Soils

Mineral Soils



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→ fire driven transition
 - - - - - non-fire disturbance

Scrub



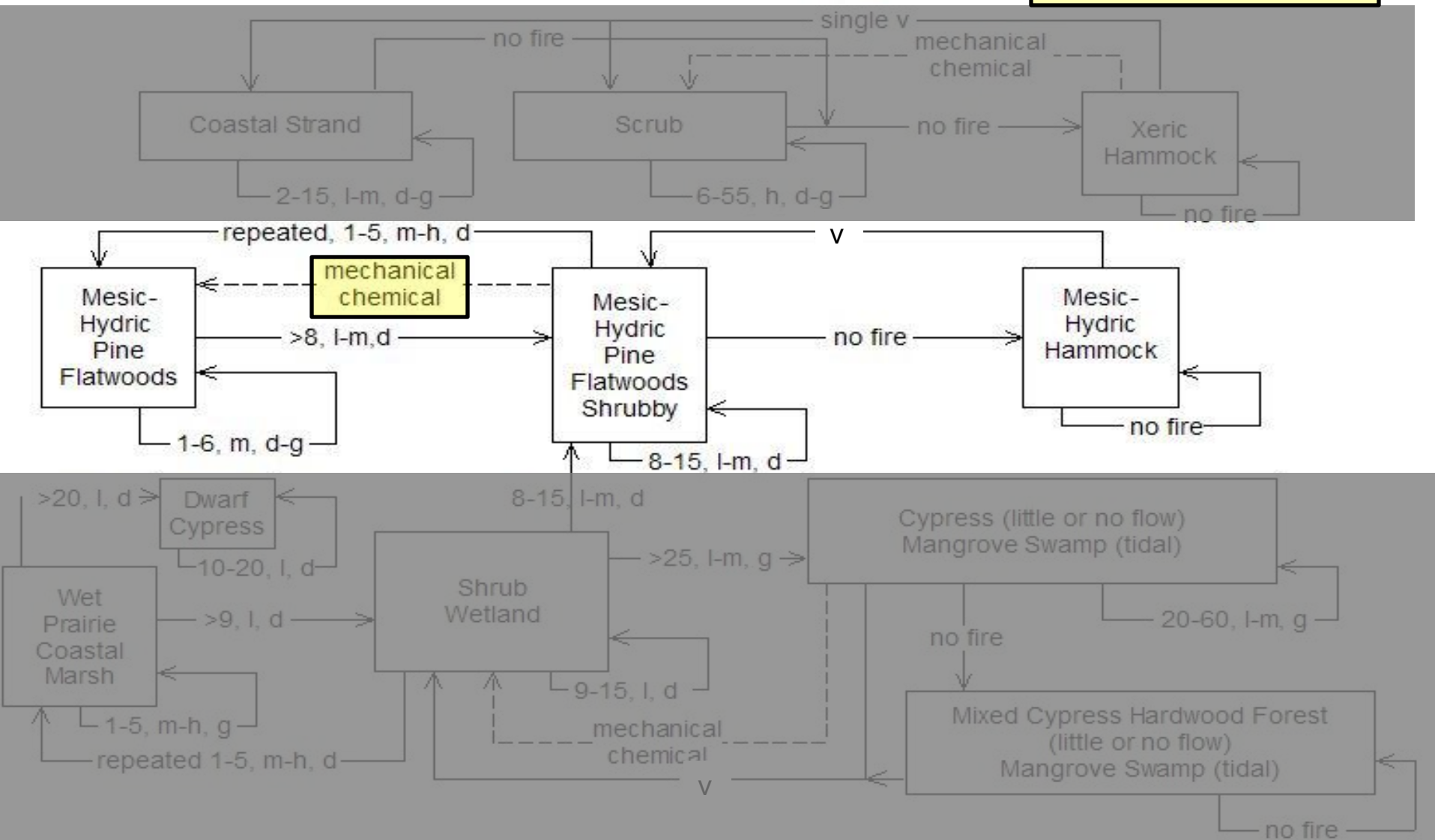


Xeric Hammock

**Xeric Hammock
in About a Year
After a Very High
Intensity Fire**



Fire Transitions in South Florida Plant Communities on Mineral Soils



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Hydric Flatwoods



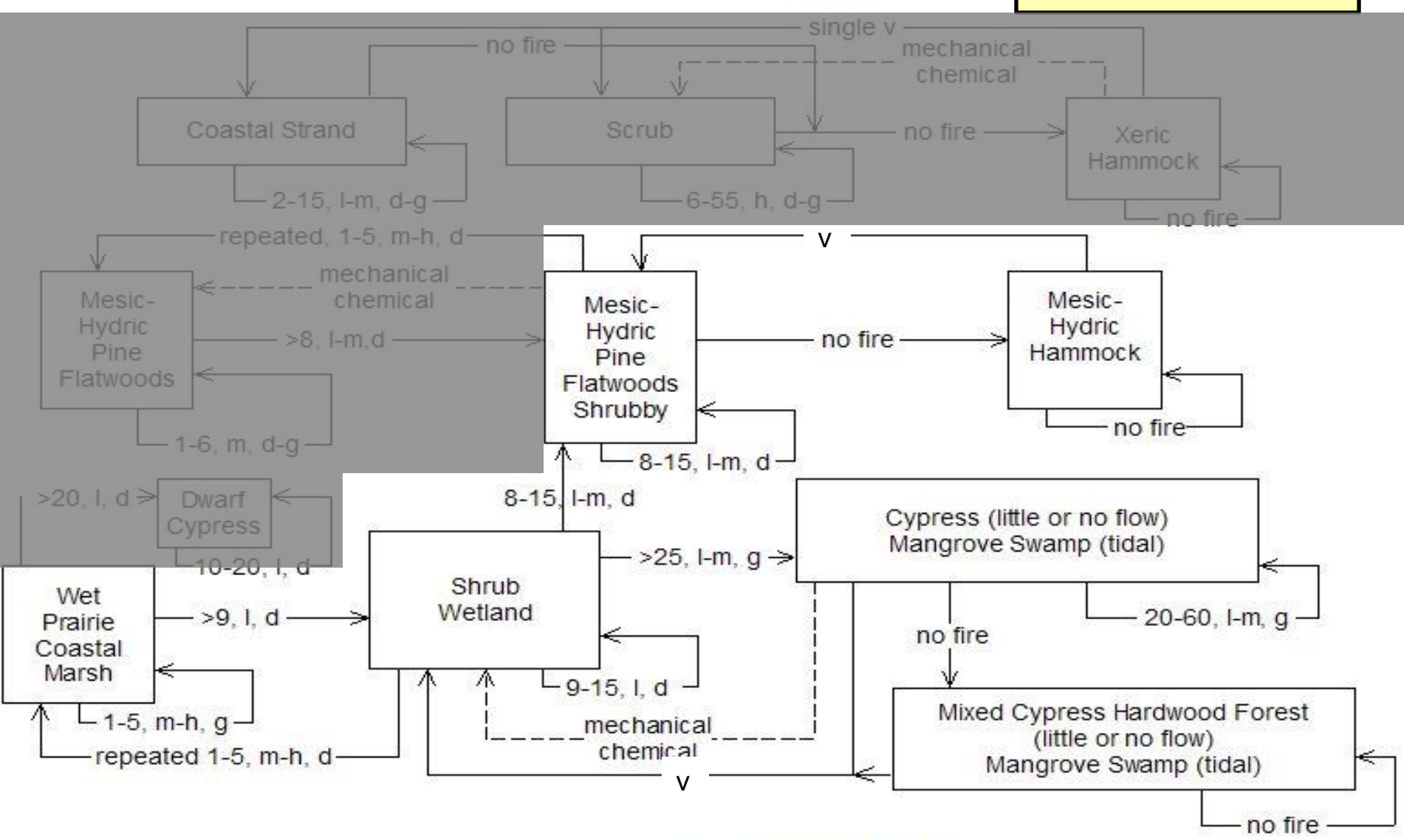
Mineral Soil Shrub



Hydric Hammock



Fire Transitions in South Florida Plant Communities on Mineral Soils



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Pine



Wet Prairie

Cypress



Model Application I

- **Generalization of Our Understanding of How Fire Management Can Determine Characteristics and Distribution of Major Plant Communities in an Area**

Model Application II

- **Model is Specific to South Florida**
- **But It Can Be Readily Adapted to Other Areas**
- **Adapted from Central Florida Model**
 - **Disney Wilderness Preserve (1999)**

Model Application III

- **Is a Hypothesis About How an Area Will or Will Not Change as a Result of On-Site Management Actions or Inaction**
- **Can Also Predict the Likely Response of a Site to Off-Site Activities**

Transitional Fire Models

- **These Models Can be Continually Improved Based on Experience Gained from Future Fires**
- **Mechanism for Capturing Knowledge of Land Managers and Other Experts, so That It Can be Passed on to New Land Managers or Be Used to Explain a Land Management Program to Others**



Questions?