Results of seven years (1999-2005) of prescribed fire in Everglades National Park pinelands

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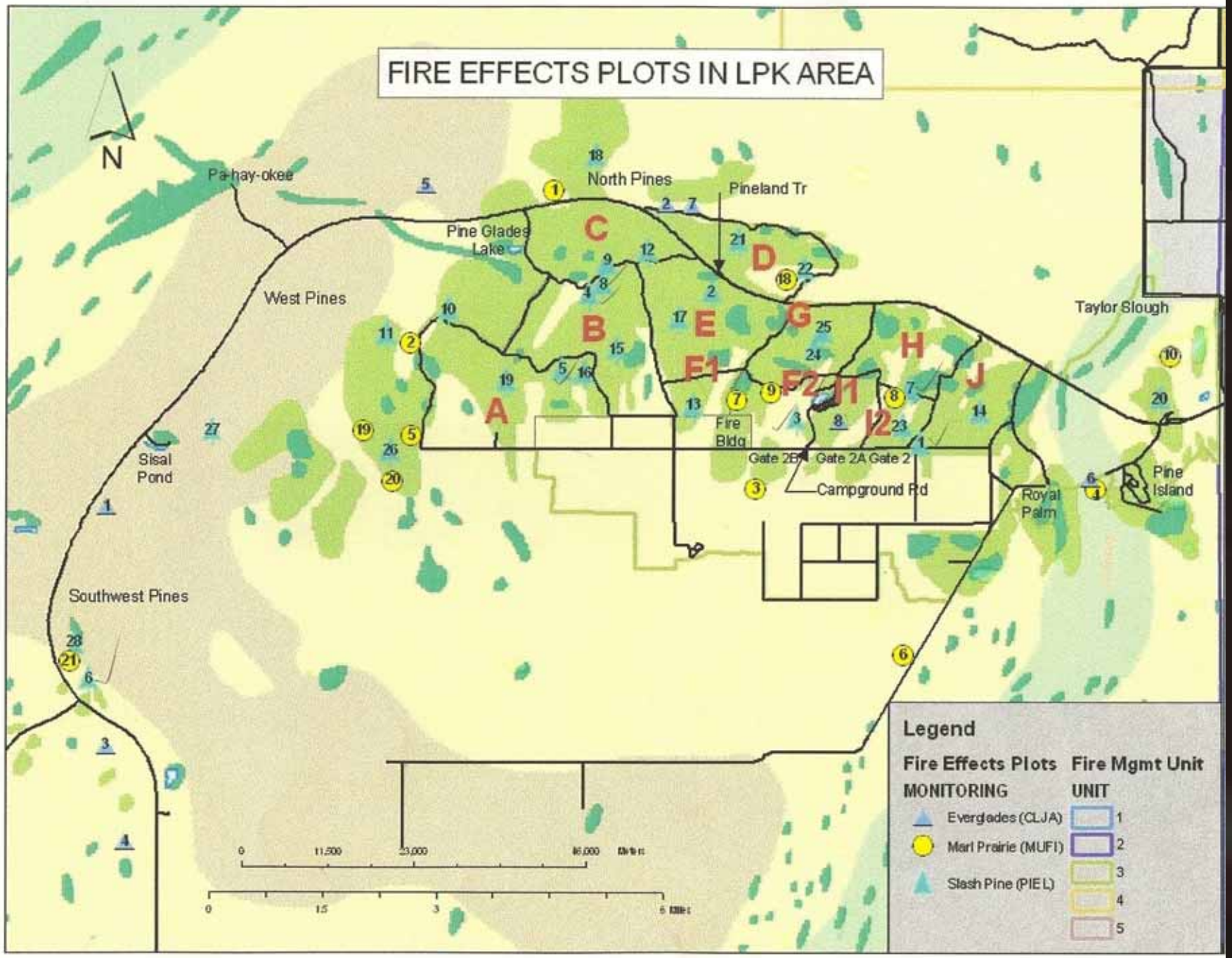
Background

In 1999. Everglades National Park initiated a Fire Monitoring Program in Slash Pine Savannas in Long Pine Key with distinct management goals.

Habitat Management Goals

- **Promote an open and uneven aged Slash Pine overstory**
- **Decrease hardwood understory shrub density**
- **Increase herbaceous density and diversity**
- **Promote heterogeneity of habitat**
- **Protect and maintain organic substrate**
- **Protect and maintain endemic species**

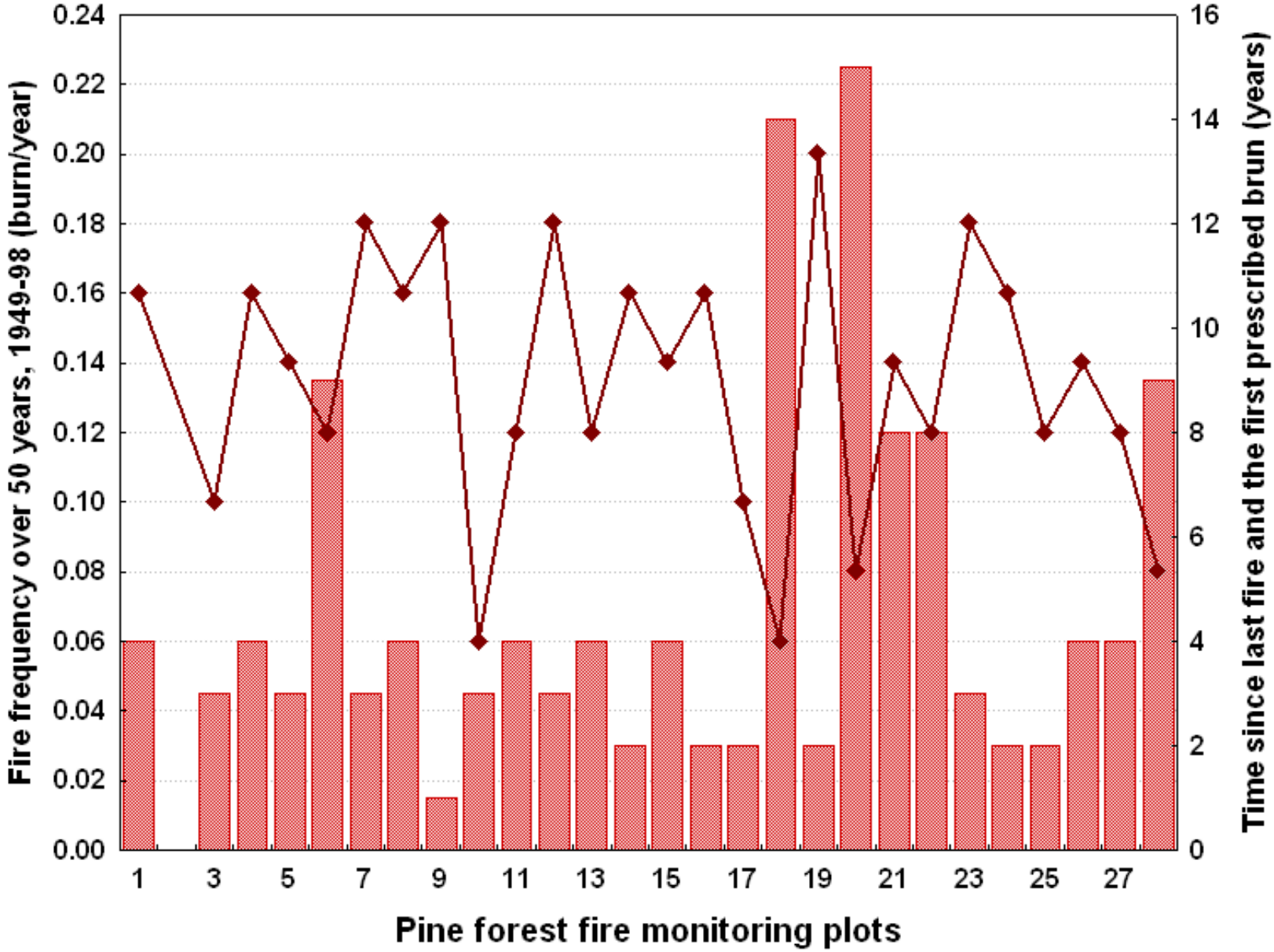
- **Twenty eight fire monitoring plots were established in different fire units.**
- **The fire effects monitoring sampling design followed Fire Monitoring Handbook (FMH) protocols.**


FIRE EFFECTS PLOTS IN LPK AREA
N
Pa-hay-okee
North Pines
Pineland Tr
Pine Glades Lake
West Pines
Taylor Slough
Sisal Pond
Southwest Pines
Fire Bldg
Gate 2B
Gate 2A
Gate 2
Campground Rd
Royal Palm
Pine Island
A
B
C
D
E
E1
E2
F1
F2
G
H
I
I2
J
Legend
Fire Effects Plots
MONITORING
Everglades (CLJA)
Marl Prairie (MUFI)
Slash Pine (PIEL)
Fire Mgmt Unit
UNIT
1
2
3
4
5

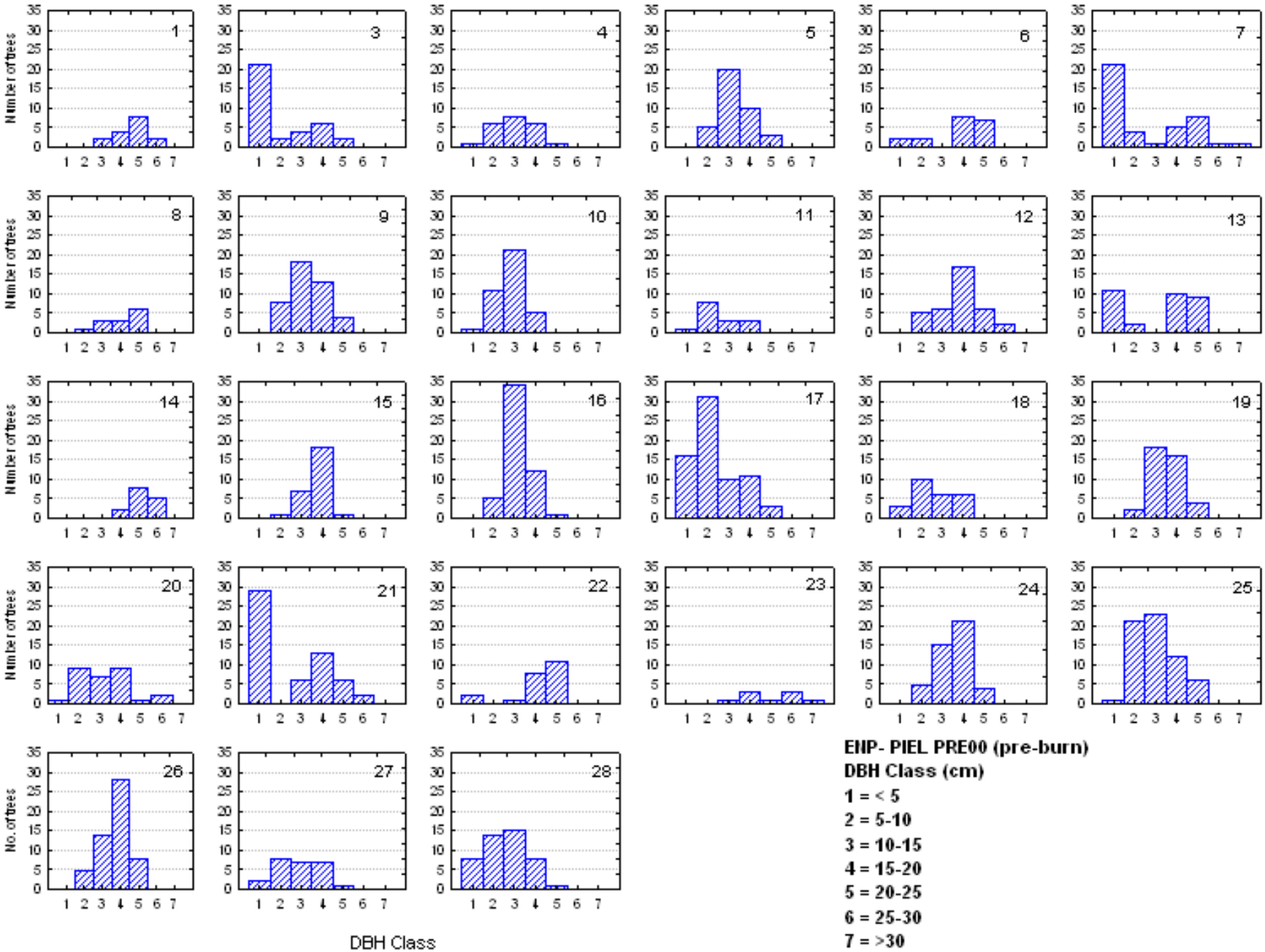
ENP Fire Effects Monitoring Plots

	Pineland	Cladium	Muhly	Coastal
00PR02	2	1	1	2
00PR01	9	9	9	16
00 PRE	27	2	21	15
01POST	27	2	21	15
01YR01	26	2	21	15
01YR02	26	2	18	15
02POST	16	1	5	3
02YR01	13		2	1
02YR02	11		2	
03POST	6			
03YR01	2			
04POST	1			
04YR01	1			

Fire frequency over 50 years, 1949-98, and time between last fire and the first prescribed burn (TSLF)



Pre-burn tree density & size distribution

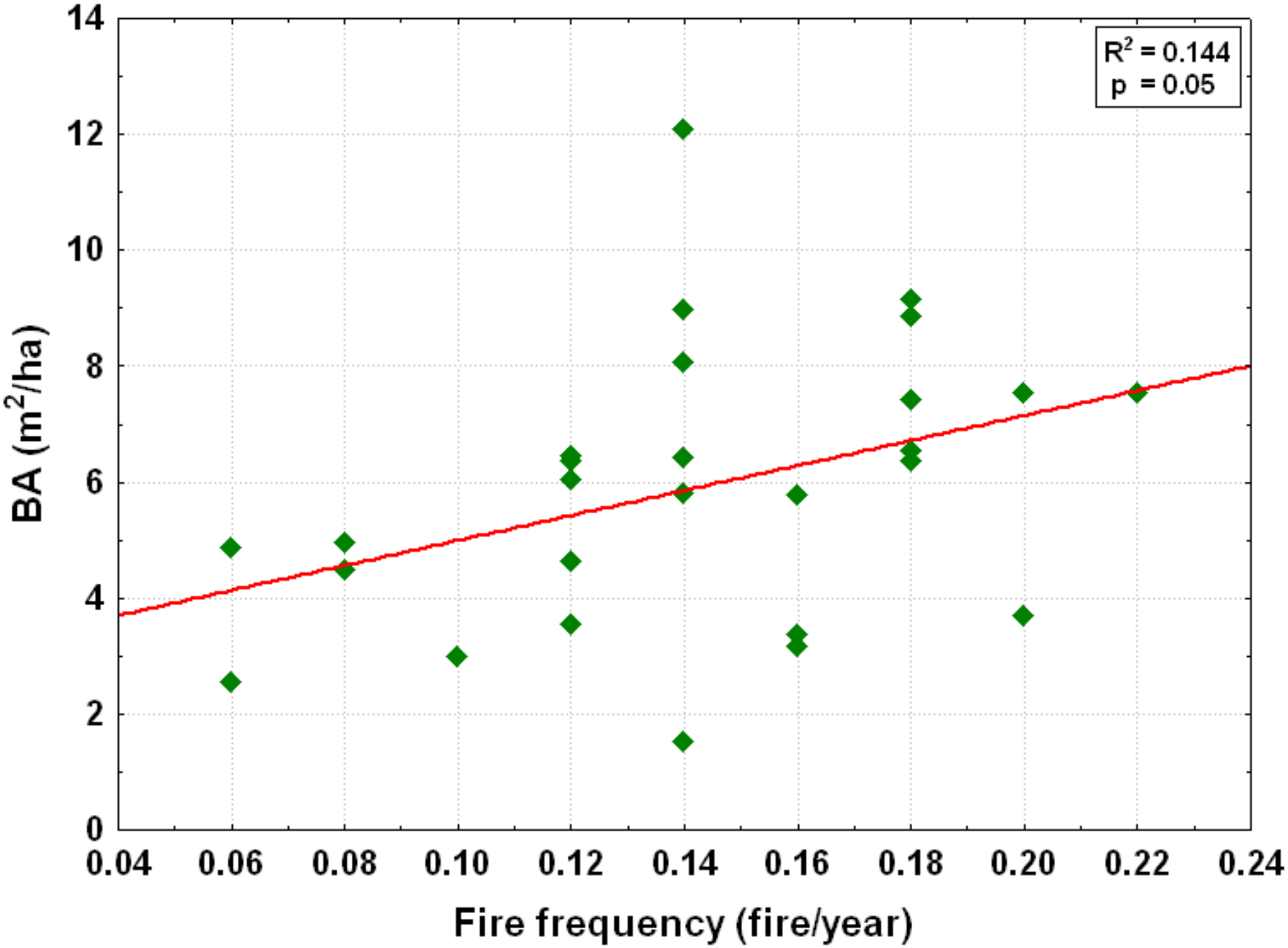


ENP- PIEL PRE00 (pre-burn)

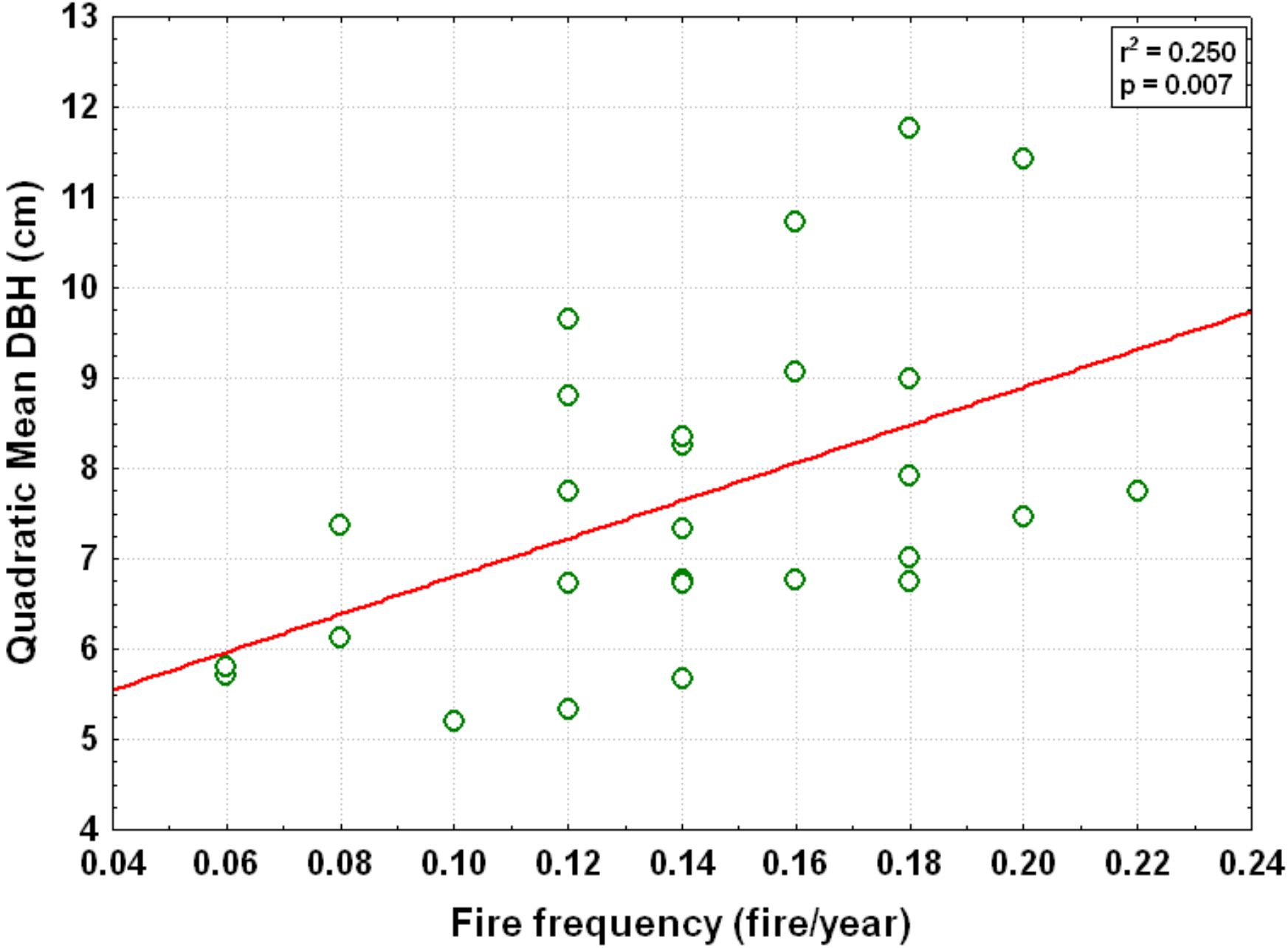
DBH Class (cm)

1 = < 5
2 = 5-10
3 = 10-15
4 = 15-20
5 = 20-25
6 = 25-30
7 = >30

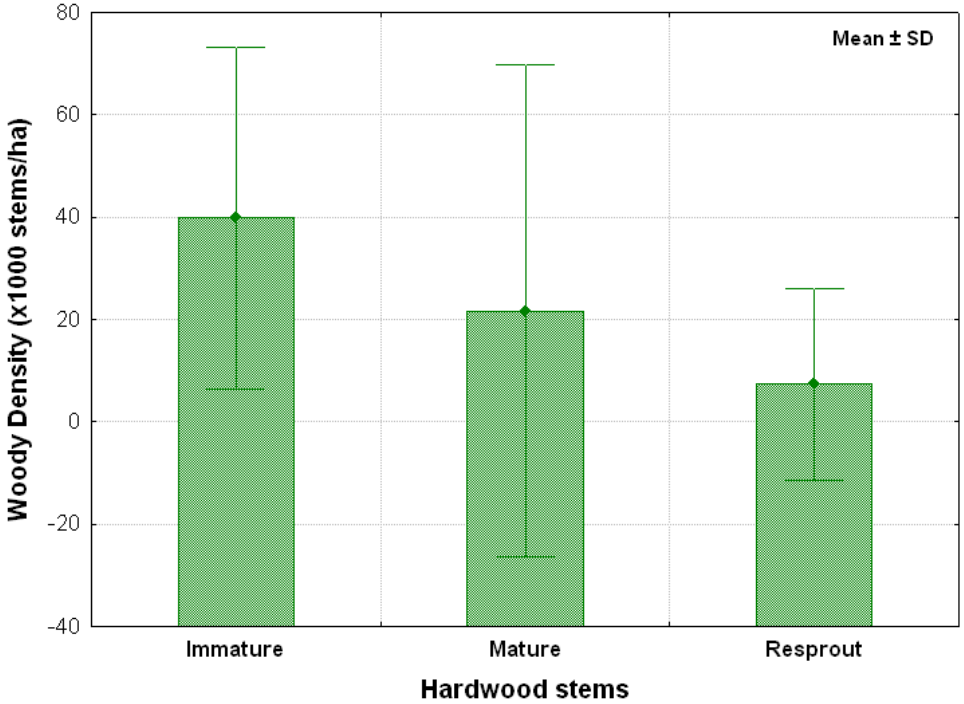
Total Basal Area (m^2/ha) vs Fire Frequency (1949-98)

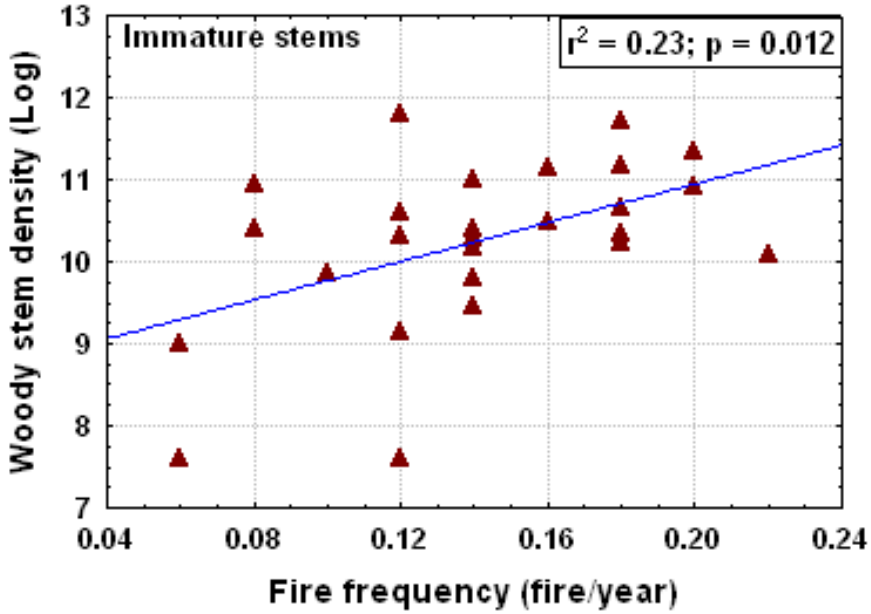


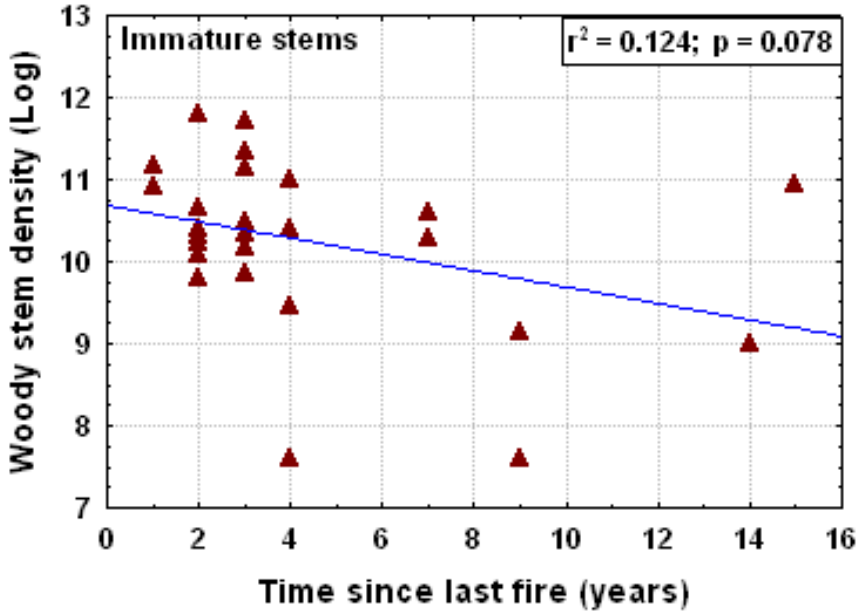
Quadratic mean DBH vs Fire Frequency (1949-98)



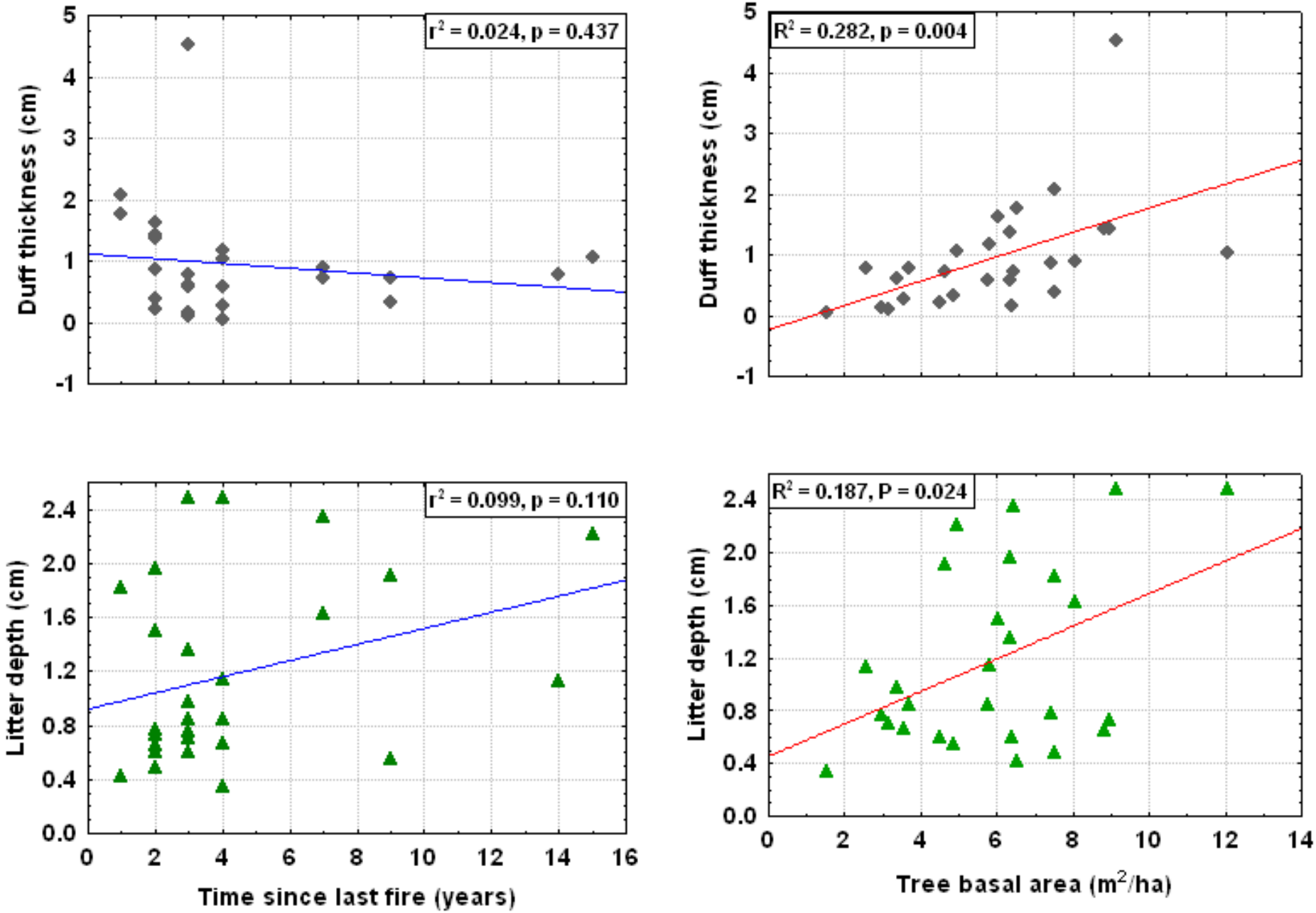
Pre-burn Woody Stem (hardwood) Density in Pine Plots



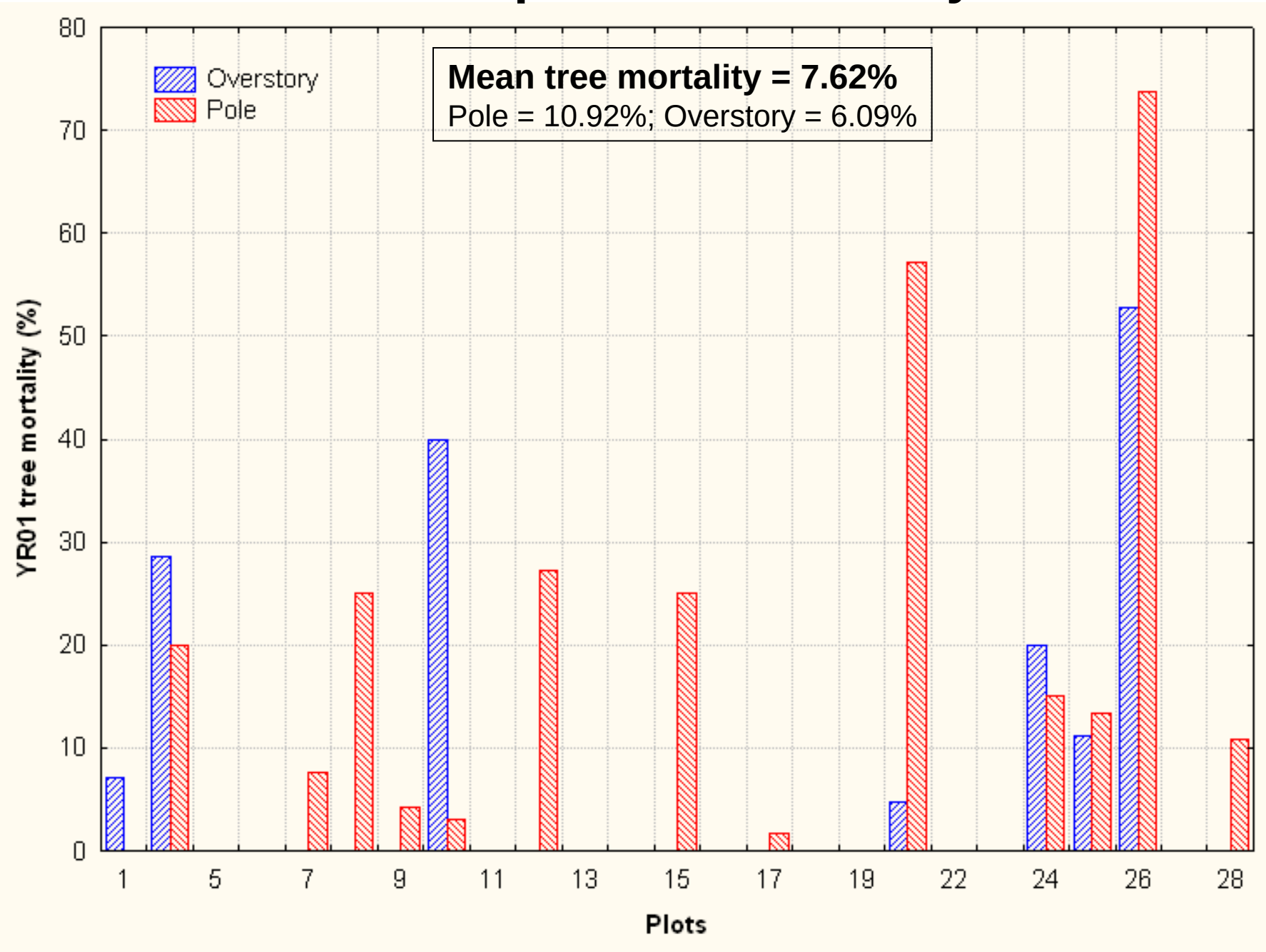




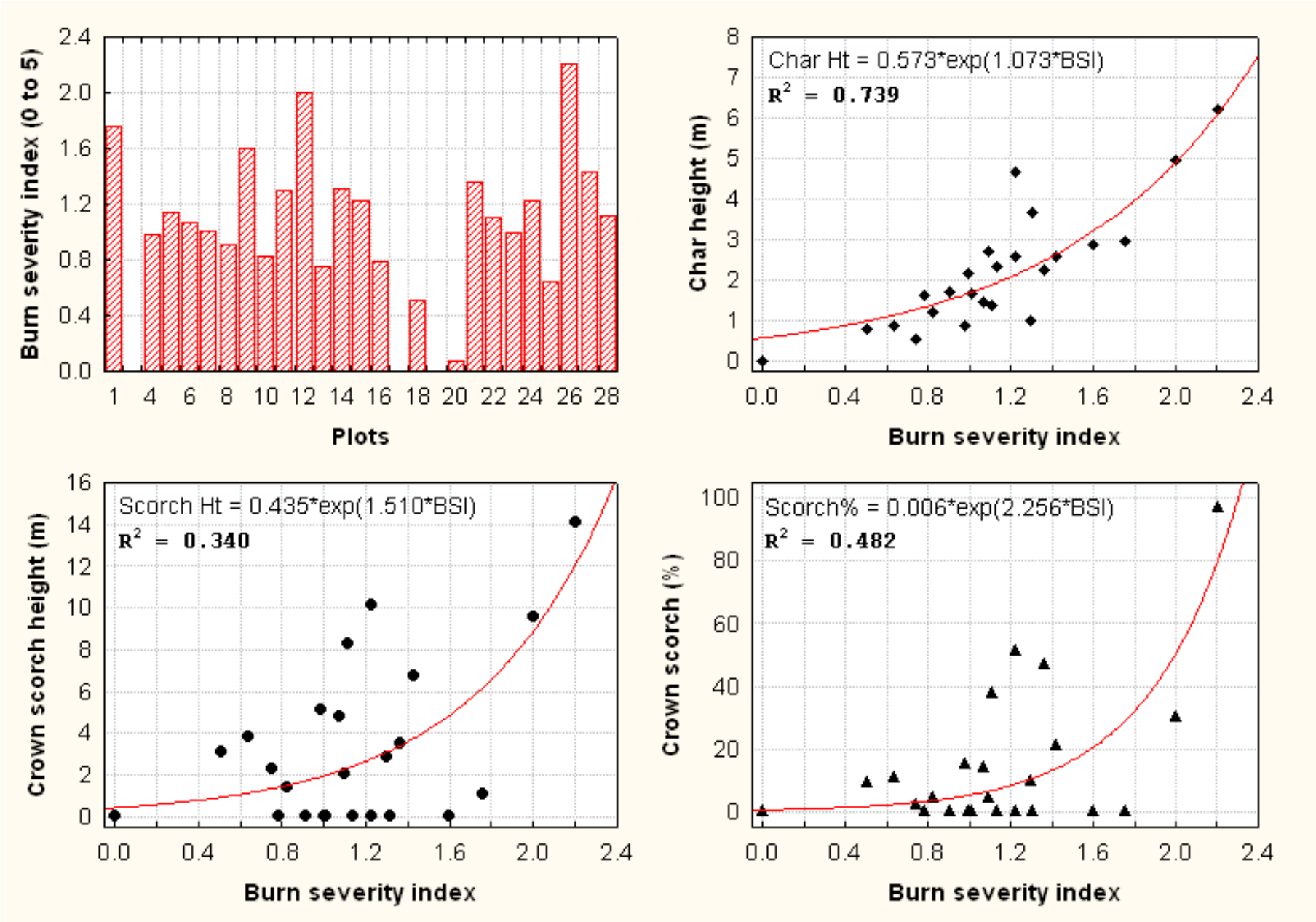
Pre-burn - Litter & Duff depth



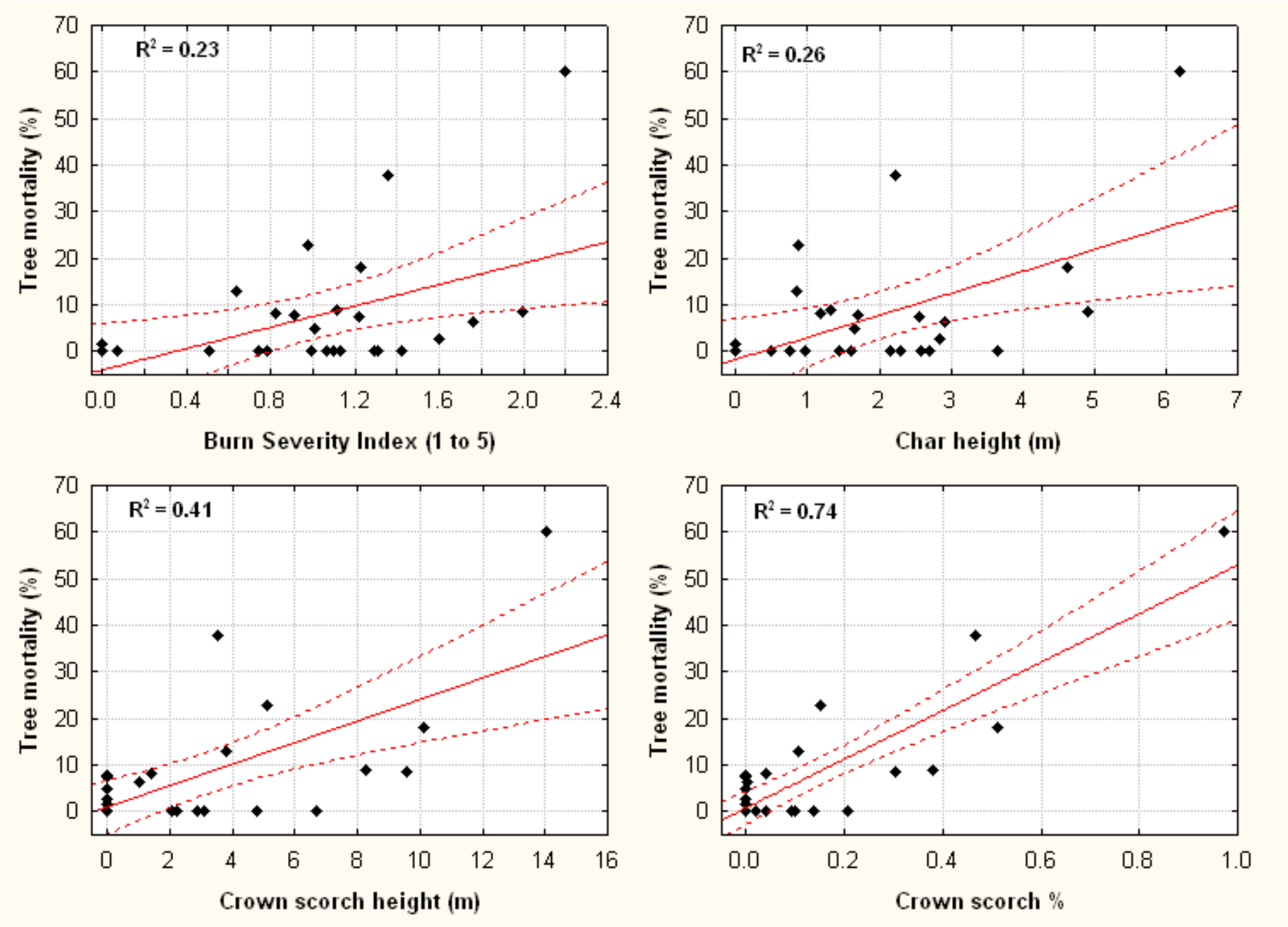
YR01 - pine tree mortality



01POST – Burn Severity



Burn severity vs Pine tree mortality



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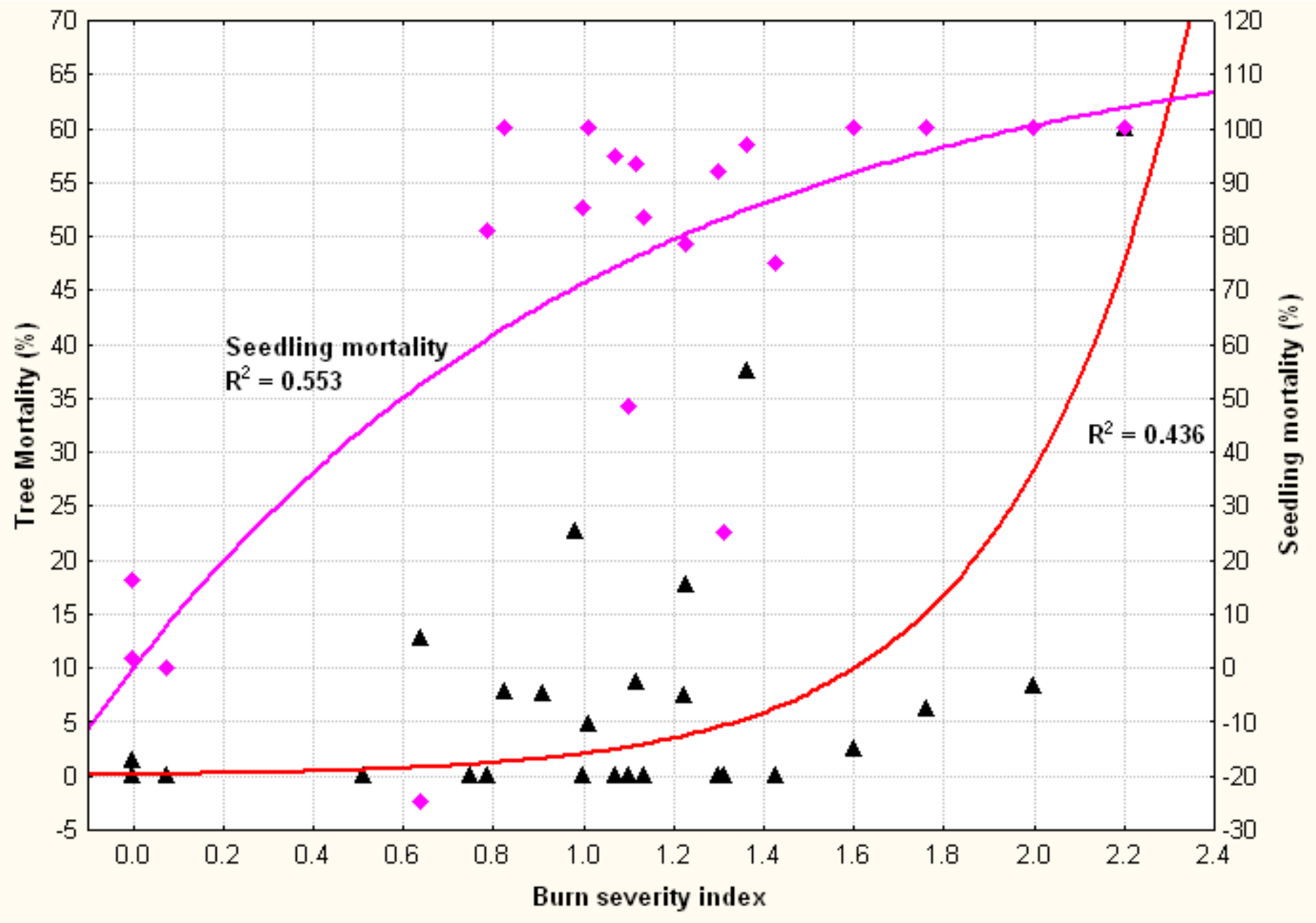
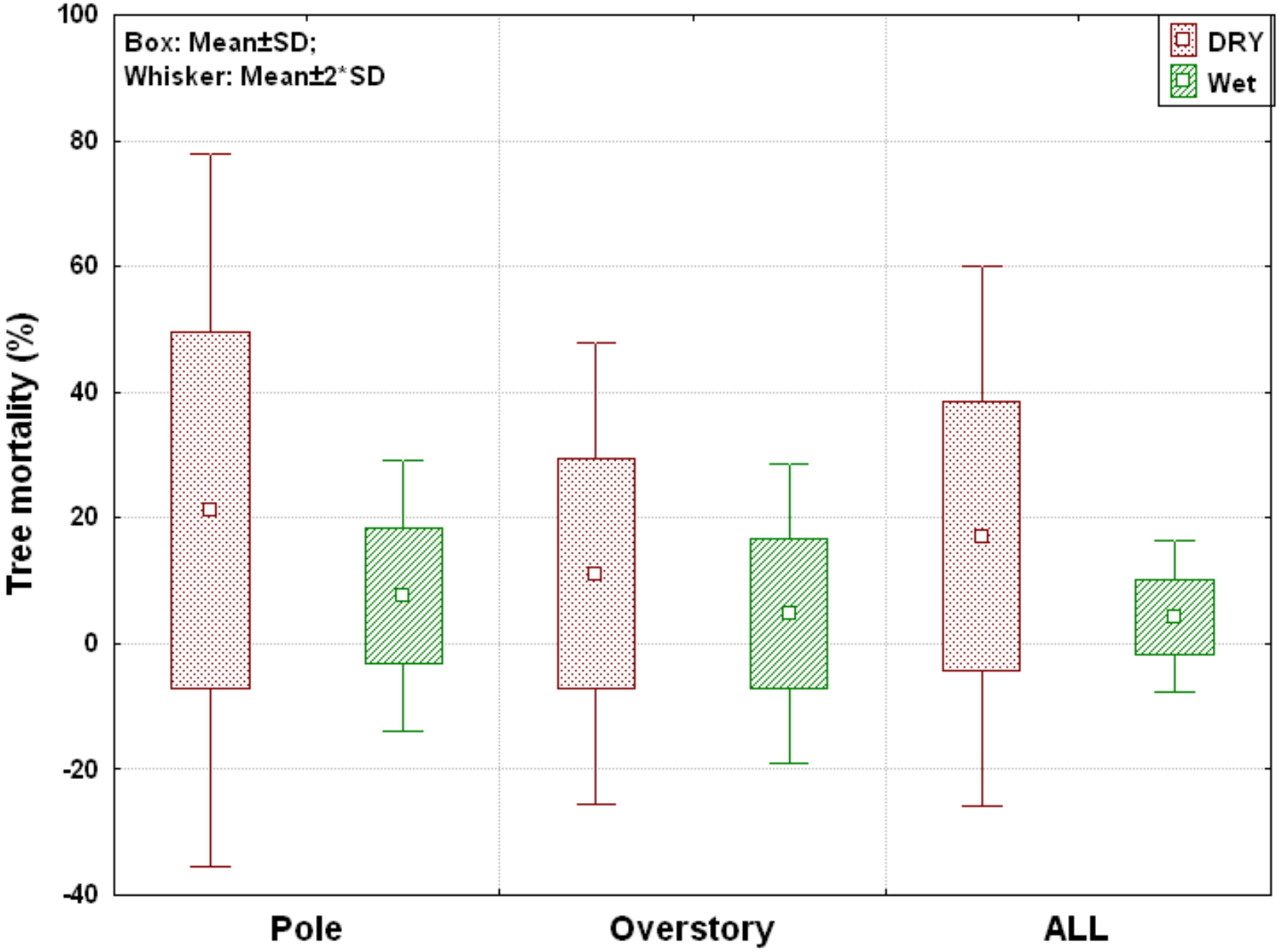
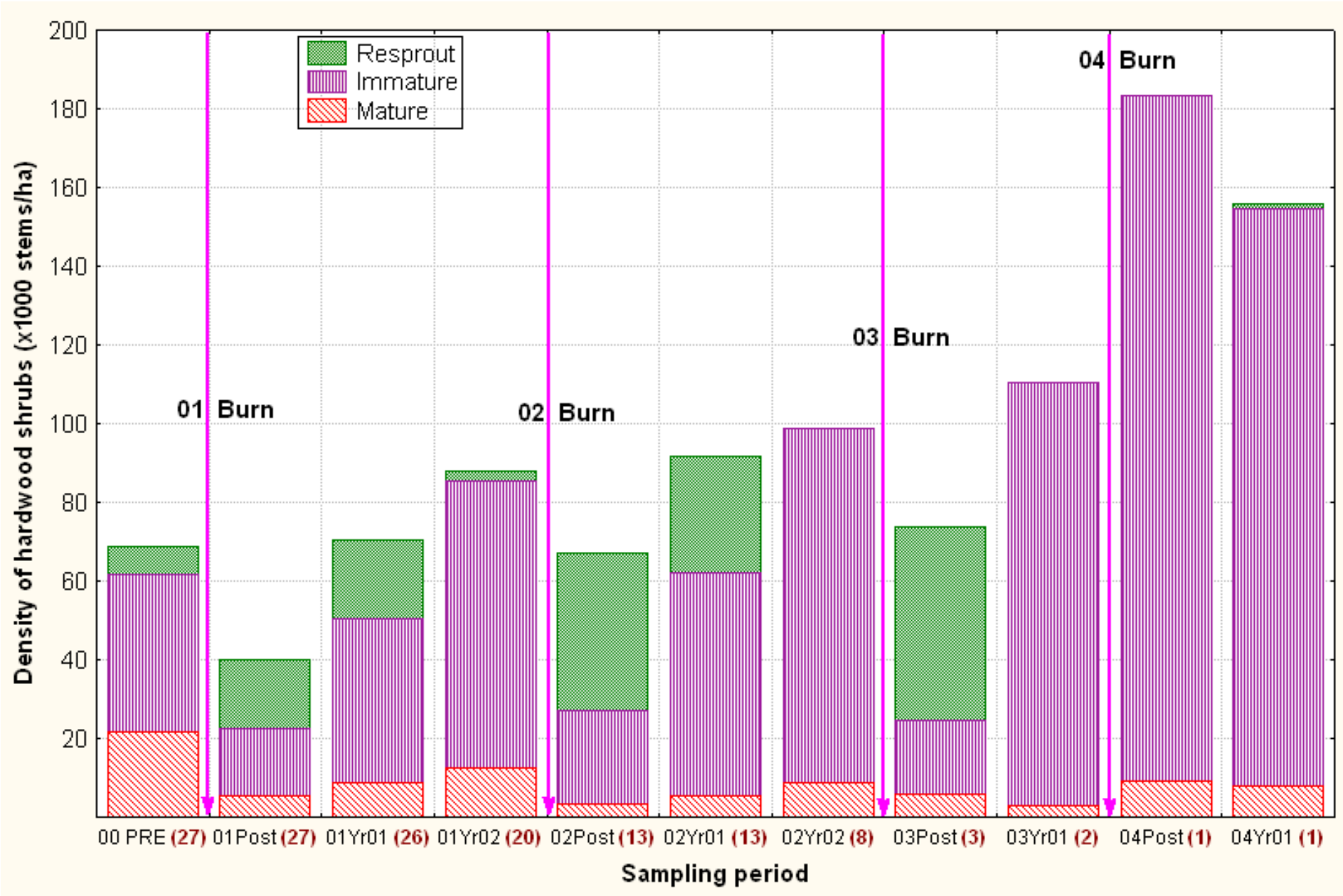


Mean tree mortality in plots burned in Dry (April, May) and Wet (June, July) season



Woody plants in pine plots



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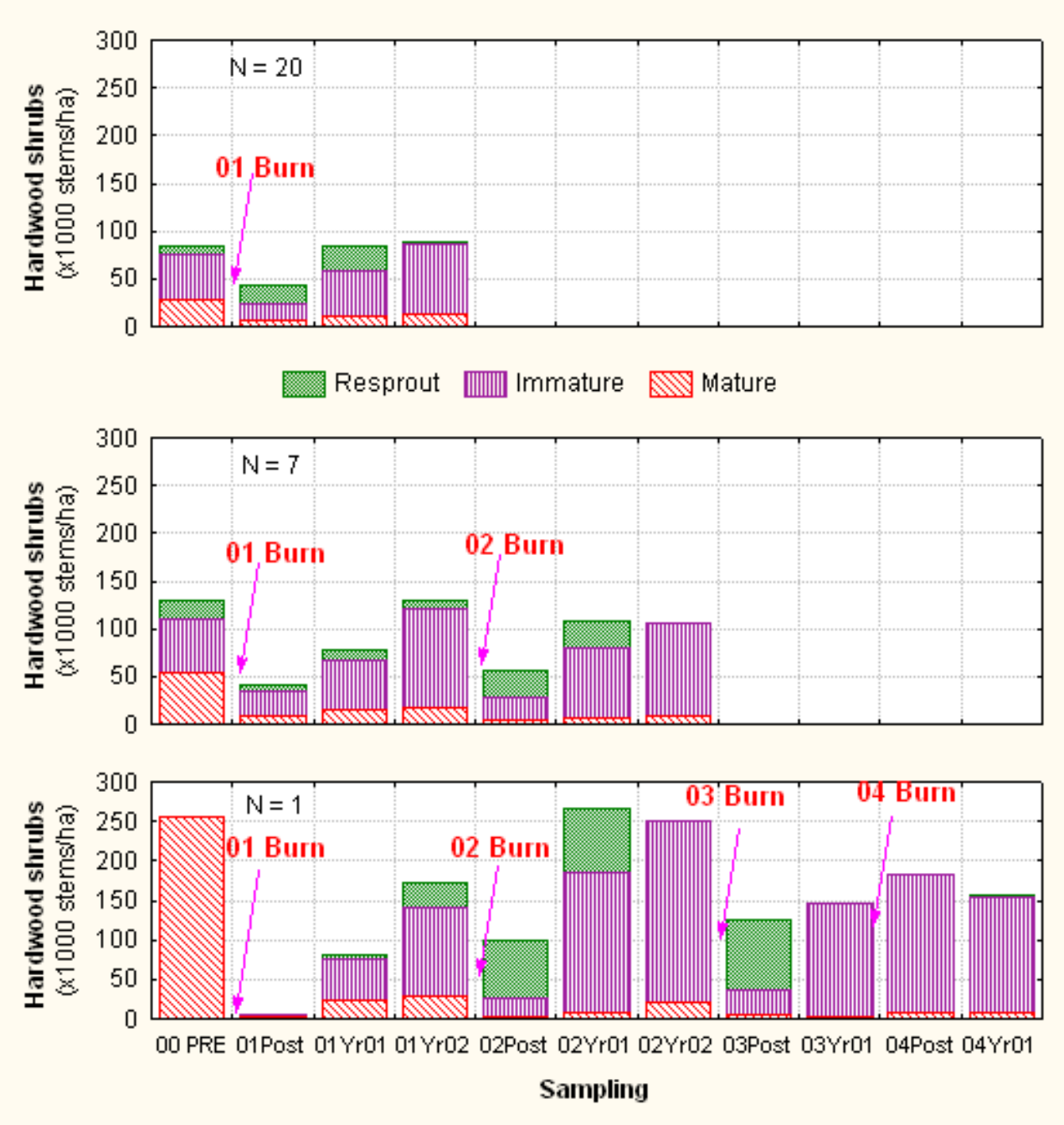
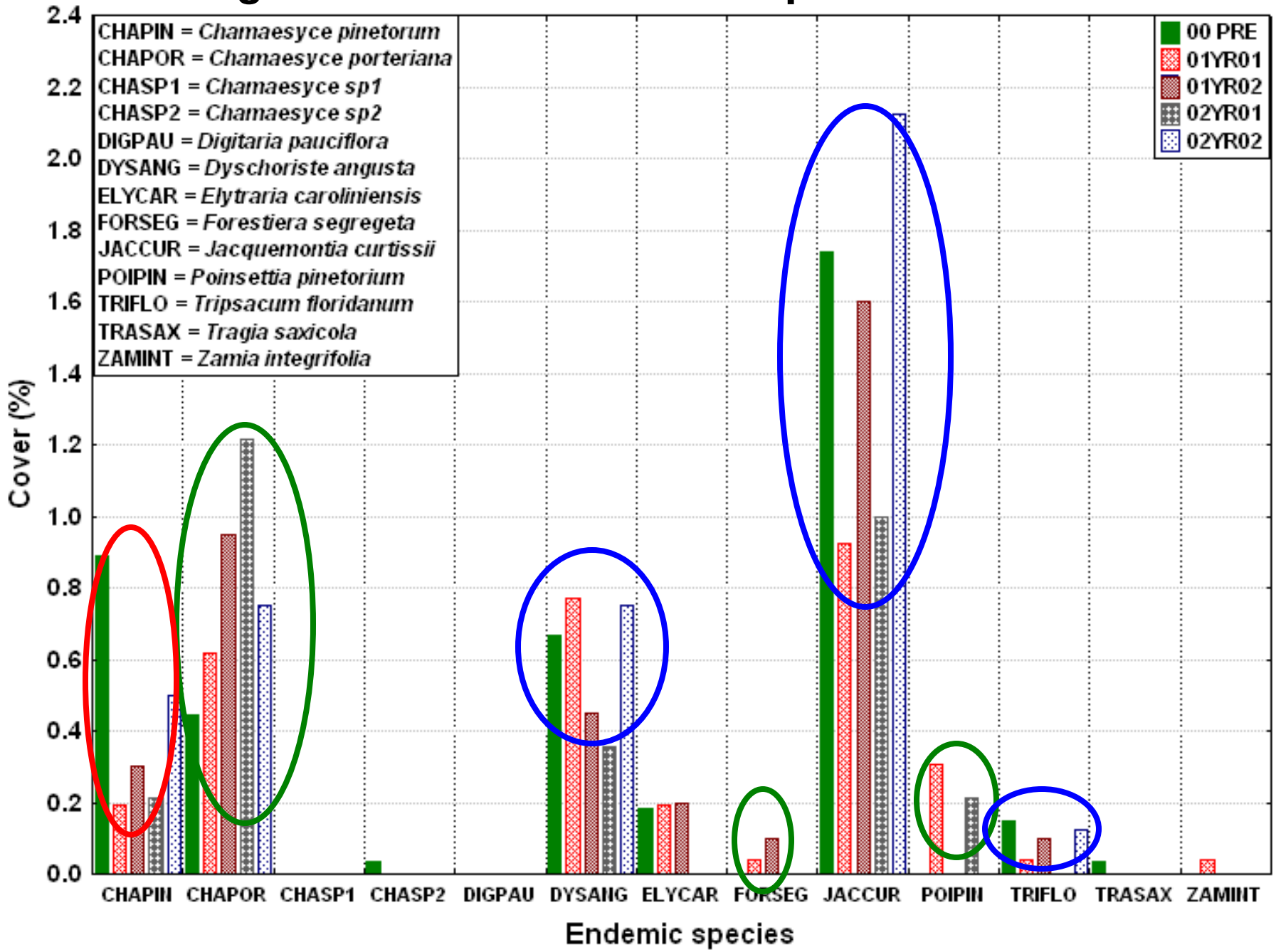


Change in Cover of Endemic Species in Pine Plots



Summary & Recommendations

- **Tree size distribution among plots varies greatly, resulting in large among plot variation in their response (e. g. tree mortality) to the fire.**
  - **Relatively large plots would reduce the variance.**

- **Repeated burning in every two years significantly reduced mature shrub density. However, measure of shrub density in three categories had some limitations and might have affected the results.**
  - **Instead, shrub cover, when measured with height, would be a better indicator of community structure --- an emergent character that determines fuel loads and their connectivity, both important for fire behavior. It is also of major interest in terms of community development.**

Summary & Recommendations (Contd.)

- **Shrub and herb layer biomass are important fuels, and their measurements will help in predicting fire behavior and its effects.**
  - **Site-specific allometeric equations for shrub species present in Long Pine Key pine rocklands should be developed.**
  - **A model depicting the relationship between herb cover and herb layer biomass will also help to predict the herb layer fuel loads.**

Thank you