Fire effects on insect populations in managed pines

Andrea Cole, Tessa Bauman, Ryan Nadel and Lori Eckhardt

Forest Health Cooperative, Forest Health Dynamics Laboratory, School of Forestry and Wildlife Sciences, Auburn University, Auburn, Alabama, USA

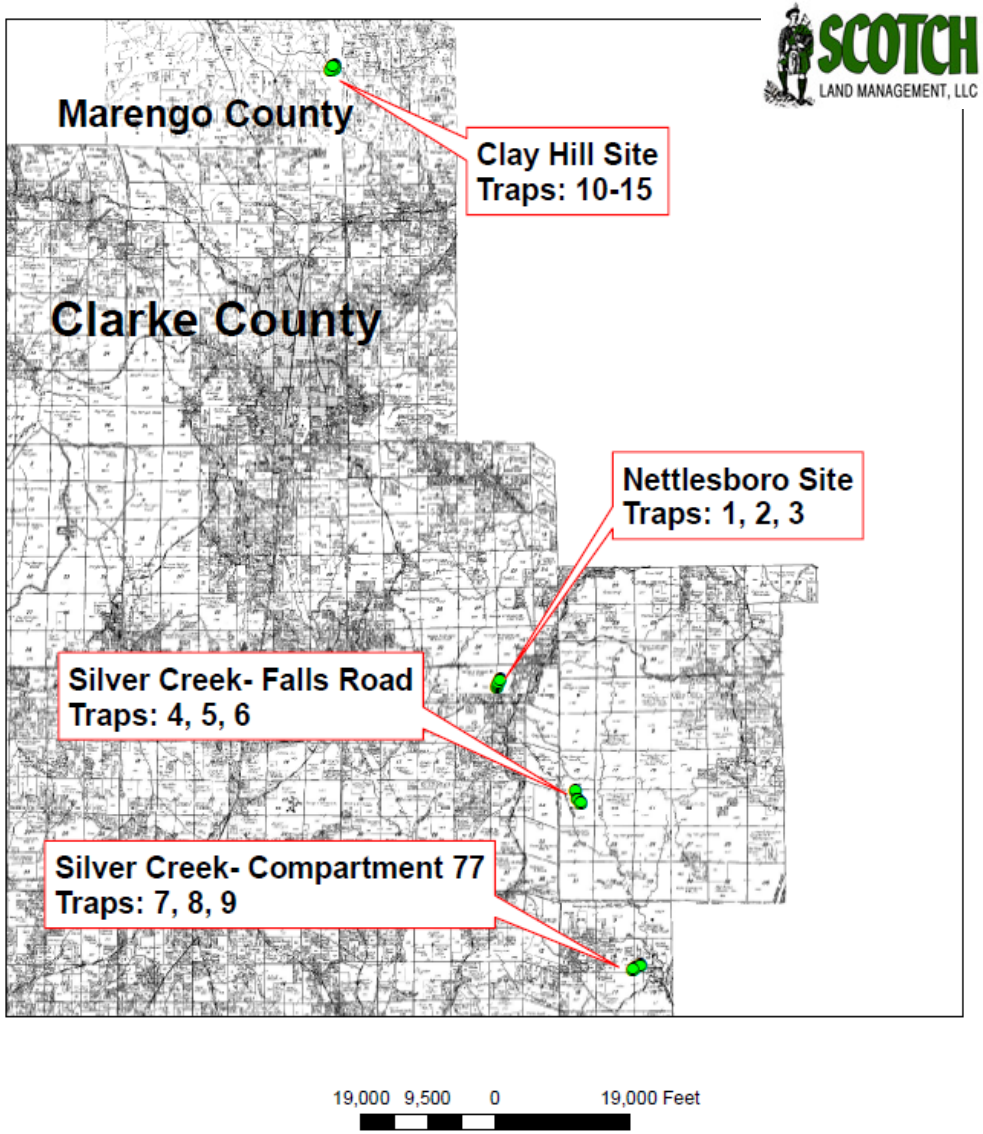
Burn Study: Forest Health Co-op

- Management of insects using fire
- Five Treatments
  - 2 to 3 year burn
  - Symptomatic area not burned
  - Unmanaged control
  - Burned
  - Unburned
- Scotch Management
  - Clark and Marengo Counties, Alabama

Forest Health Cooperative Objectives

- Quantify the populations of root and lower stem colonizing beetles and other pine bark beetles across different burning regimes
- Compare populations among sites under various treatments
- Relate management methods to changes in insect populations

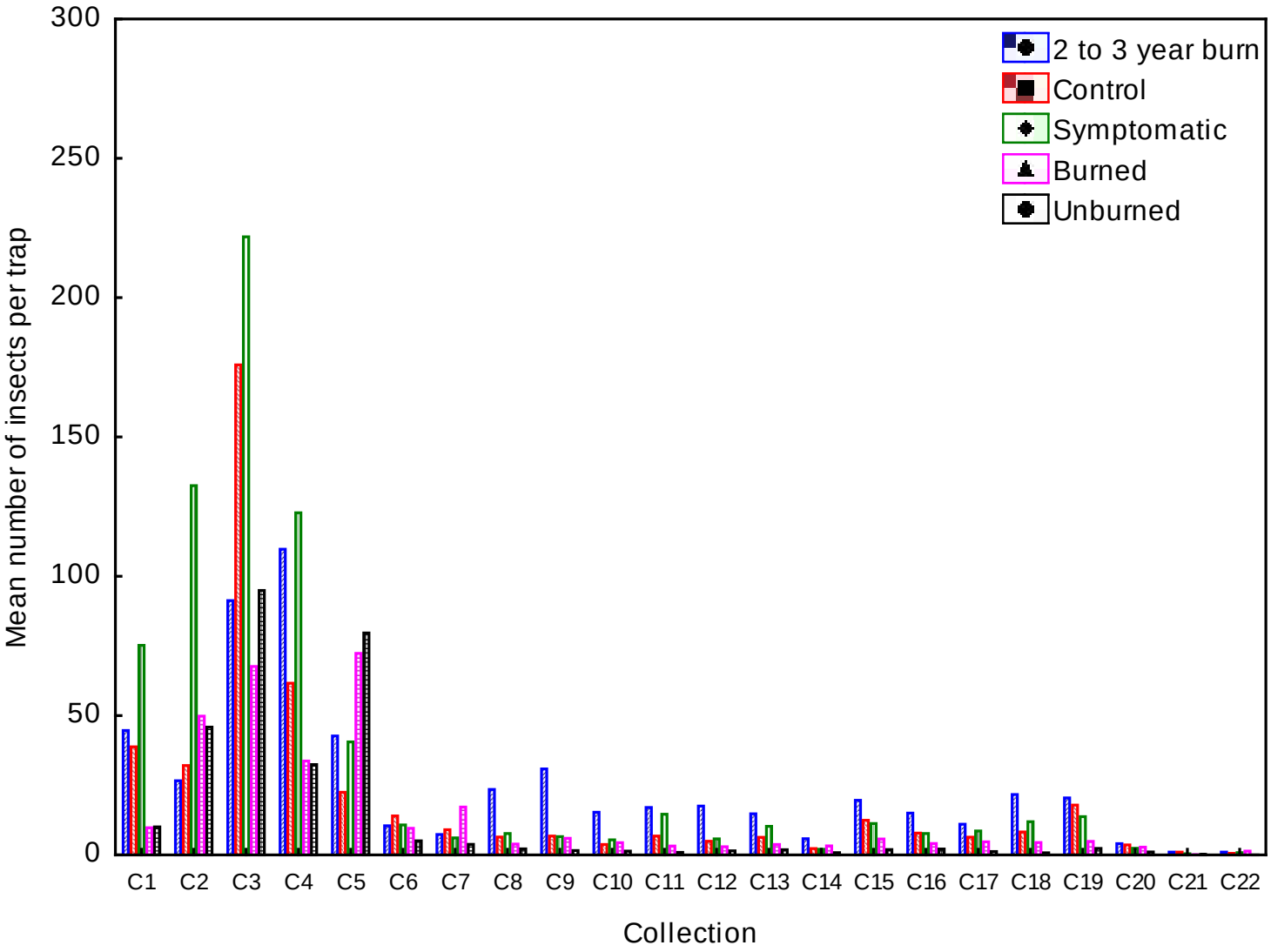
Study Sites


SCOTCH
LAND MANAGEMENT, LLC
Marengo County
Clay Hill Site
Traps: 10-15
Clarke County
Nettlesboro Site
Traps: 1, 2, 3
Silver Creek- Falls Road
Traps: 4, 5, 6
Silver Creek- Compartment 77
Traps: 7, 8, 9
19,000 9,500 0 19,000 Feet

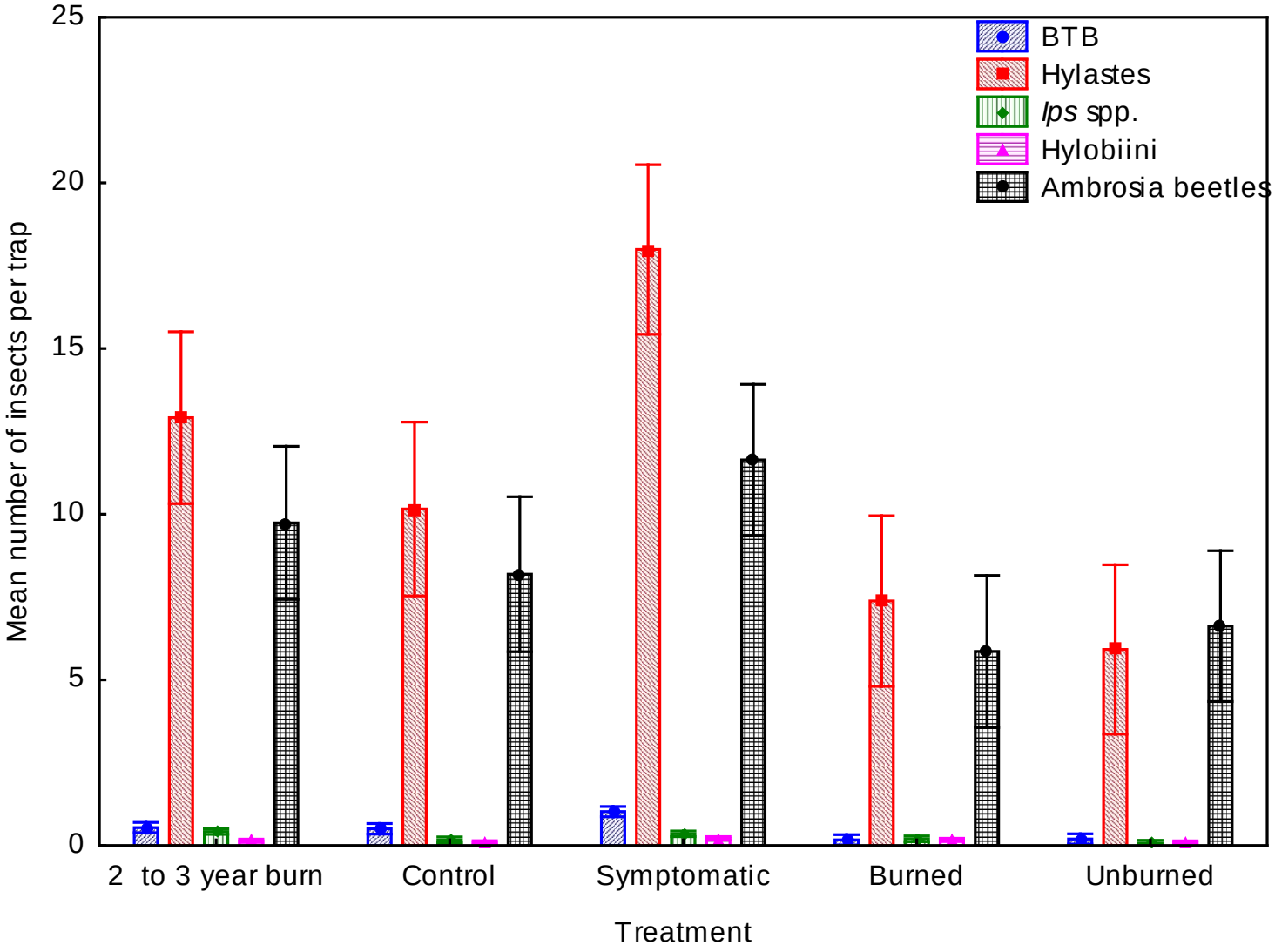
Study Timeline

- Trap installation February 2014
- Insect collections began March 2014
- Burn treatment on April 2014
- Traps reinstalled on April 2014
- Traps removed March 2015

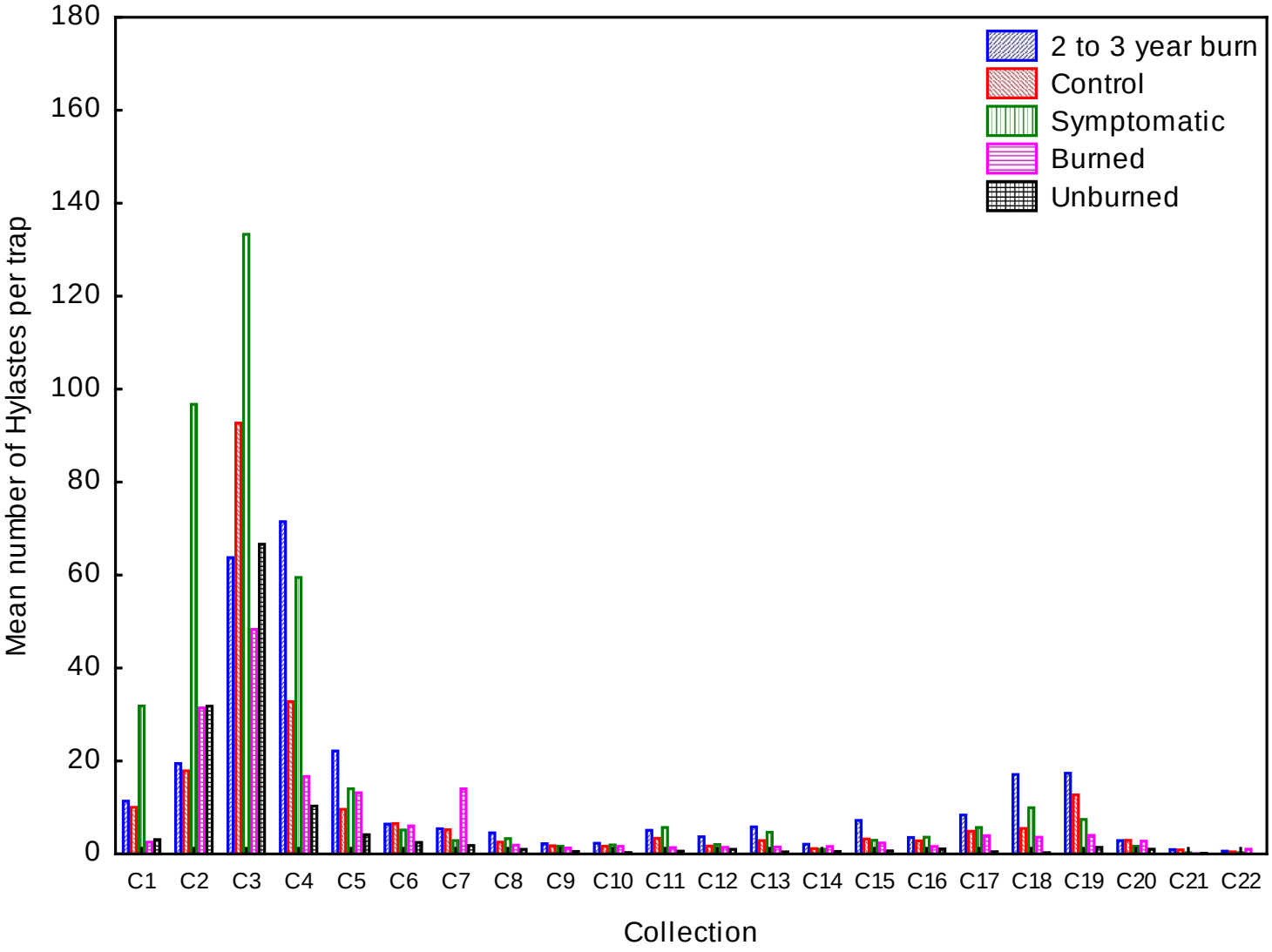
Results


2 to 3 year burn
Control
Symptomatic
Burned
Unburned
Mean number of insects per trap
0
50
100
150
200
250
300
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
Collection

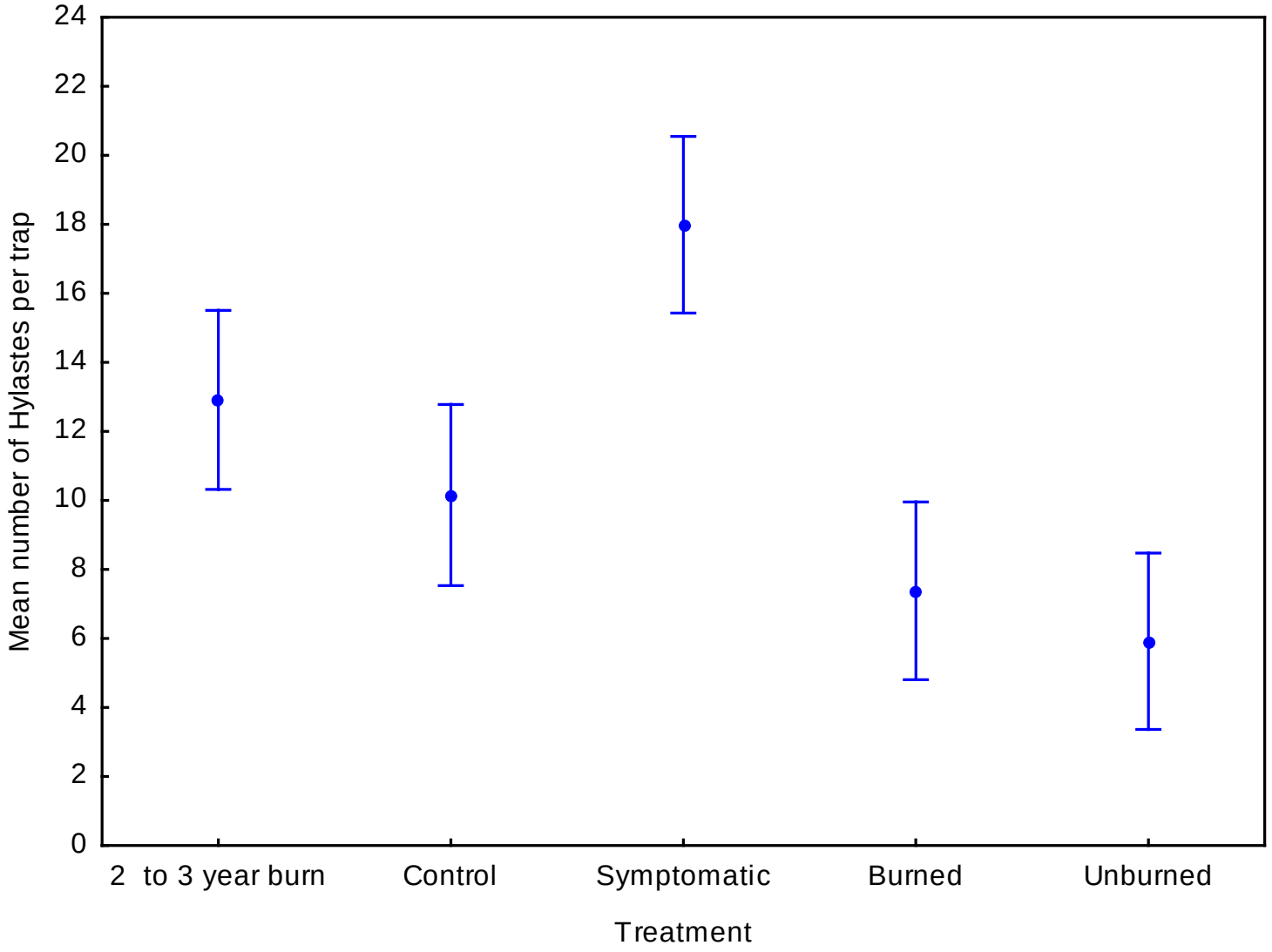
Results


25
20
15
10
5
0
Mean number of insects per trap
BTB
Hylastes
Ips spp.
Hylobiini
Ambrosia beetles
2 to 3 year burn
Control
Symptomatic
Burned
Unburned
Treatment

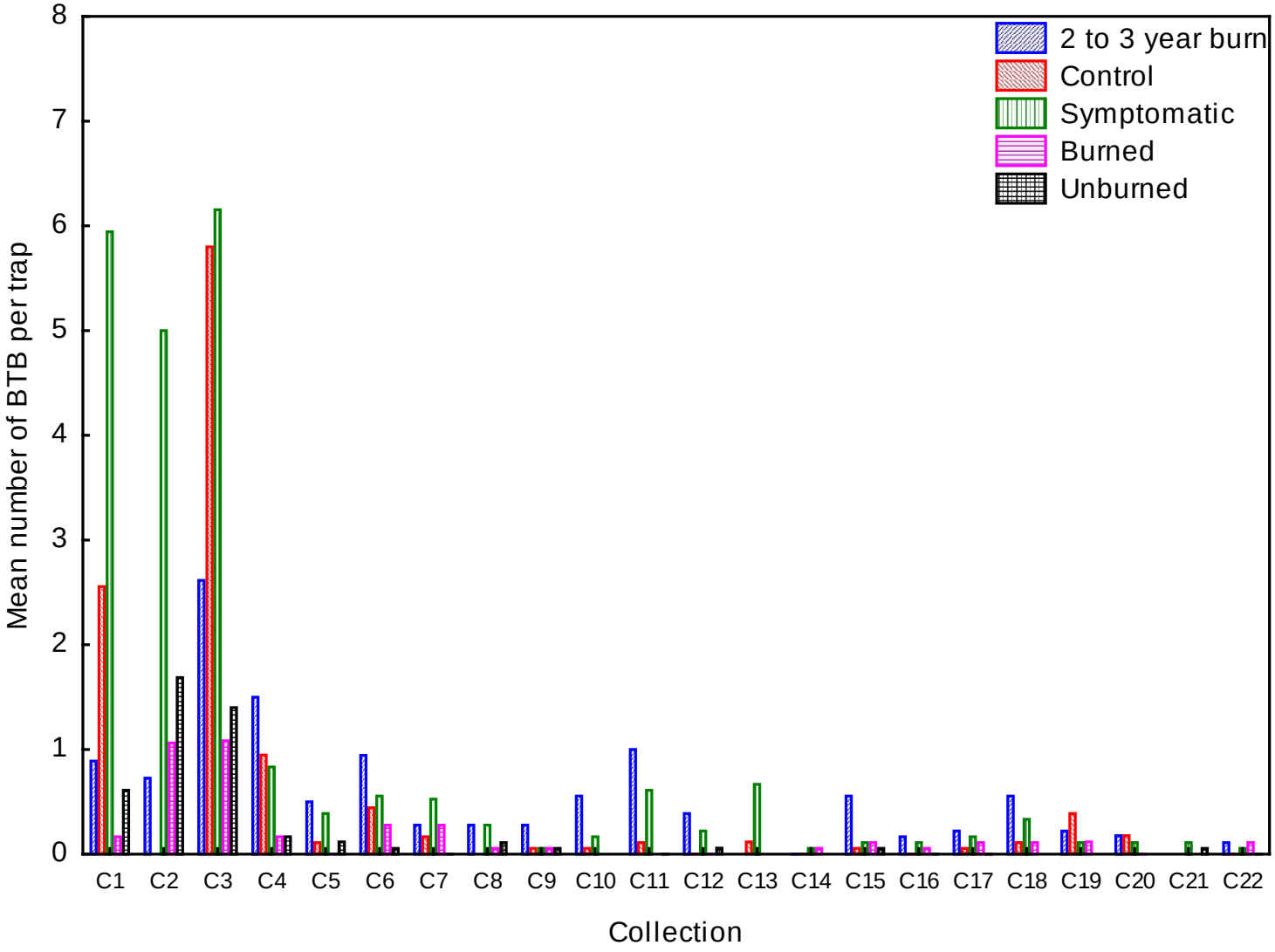
Hylastes


Mean number of Hylastes per trap
180
160
140
120
100
80
60
40
20
0
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
Collection
2 to 3 year burn
Control
Symptomatic
Burned
Unburned

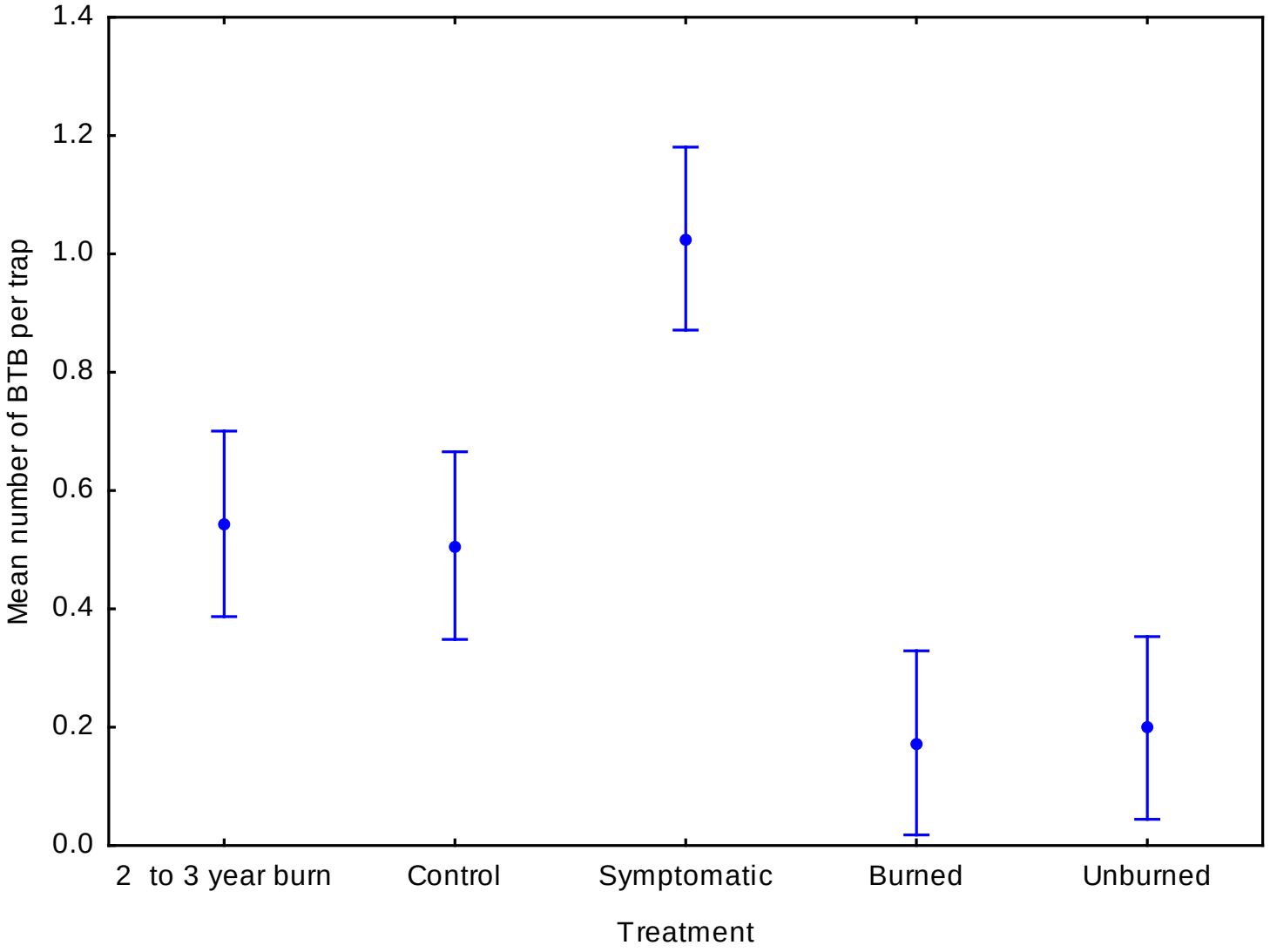
Hylastes


Mean number of Hylastes per trap
24
22
20
18
16
14
12
10
8
6
4
2
0
2 to 3 year burn
Control
Symptomatic
Burned
Unburned
Treatment

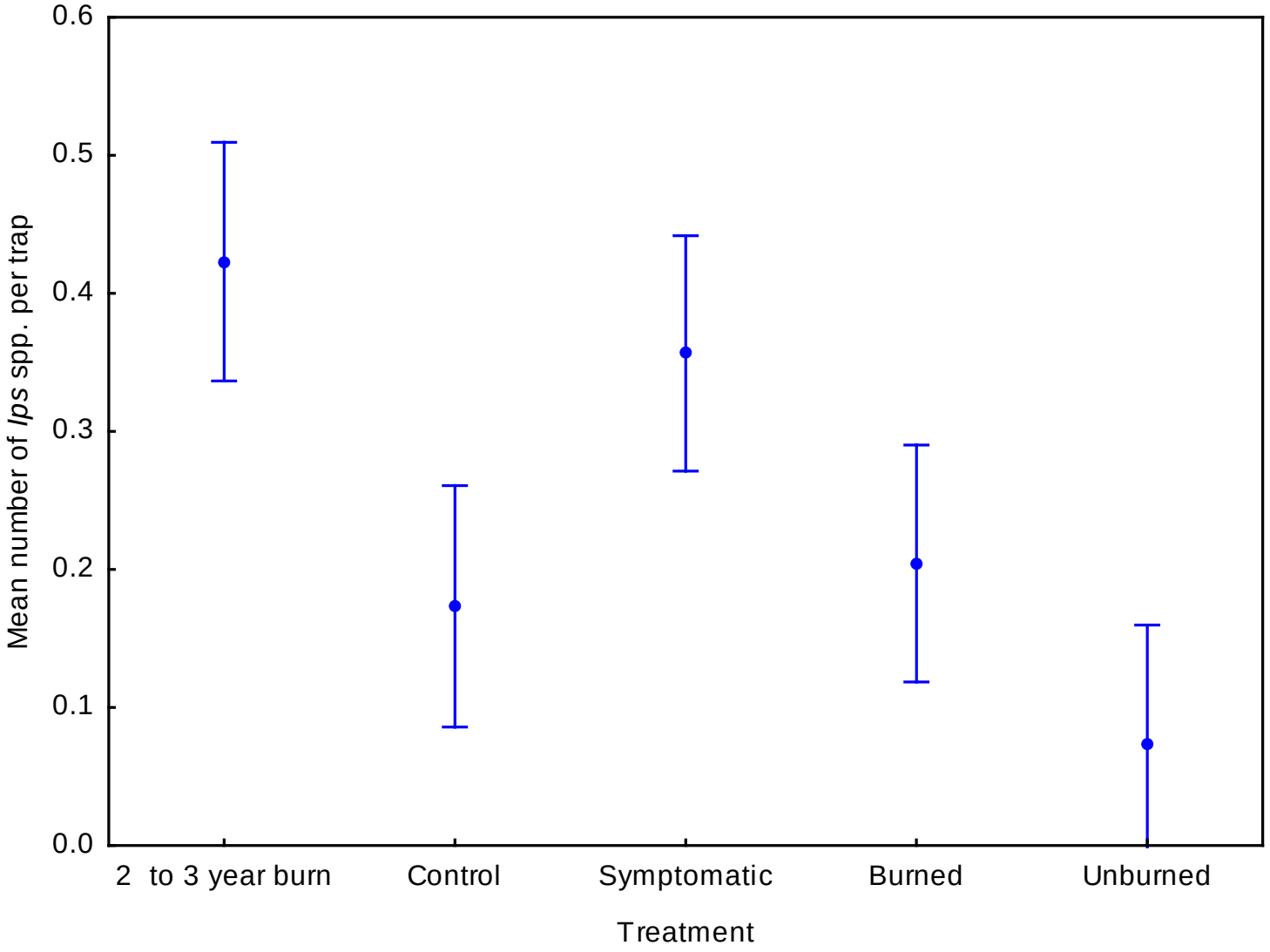
BTB


2 to 3 year burn
Control
Symptomatic
Burned
Unburned
Mean number of BTB per trap
0
1
2
3
4
5
6
7
8
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
Collection

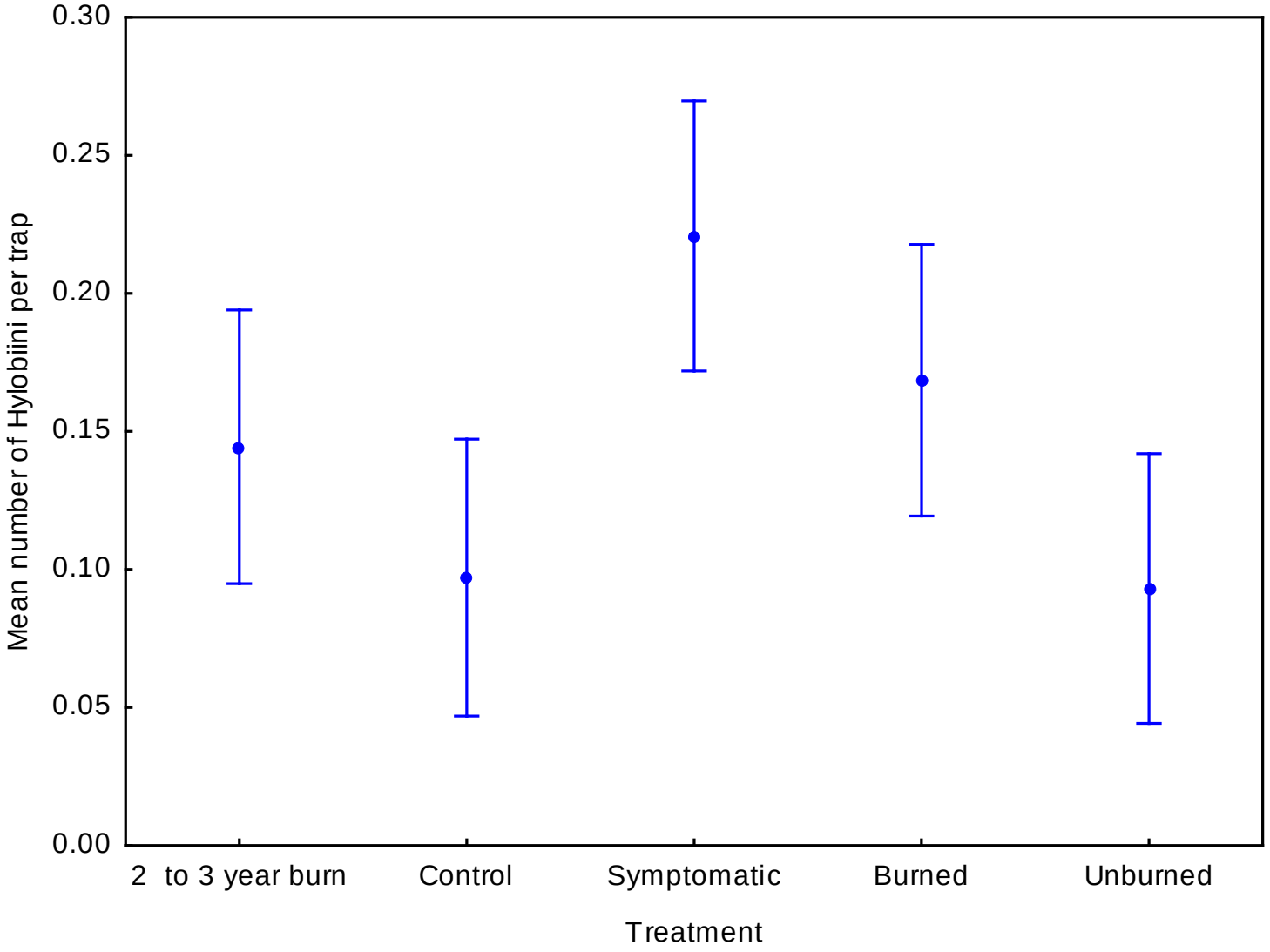
BTB


1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Mean number of BTB per trap
2 to 3 year burn
Control
Symptomatic
Burned
Unburned
Treatment

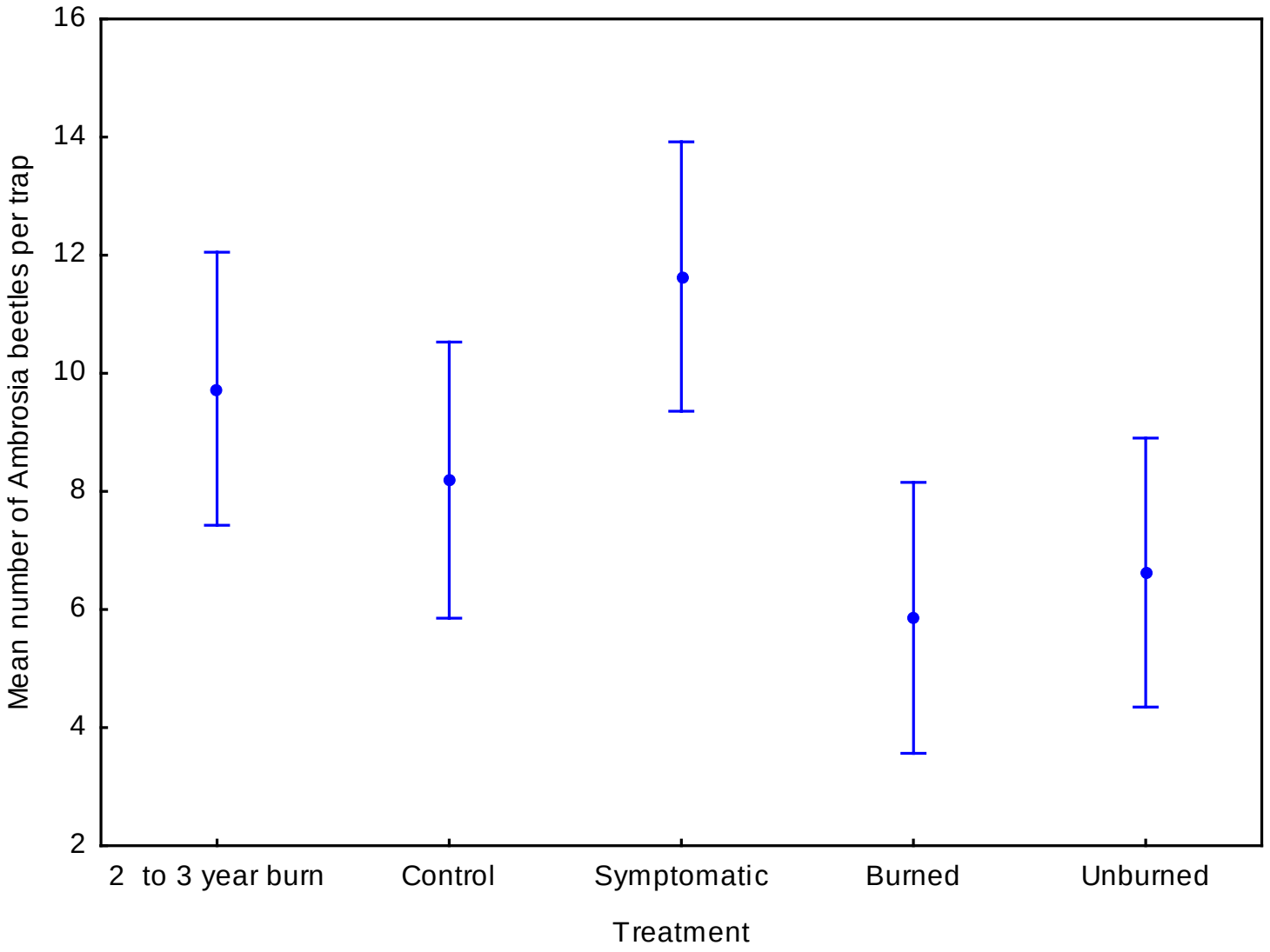
Ips spp.


0.6
0.5
0.4
0.3
0.2
0.1
0.0
Mean number of Ips spp. per trap
2 to 3 year burn
Control
Symptomatic
Burned
Unburned
Treatment

Weevils


0.30
0.25
0.20
0.15
0.10
0.05
0.00
Mean number of Hylobiini per trap
2 to 3 year burn
Control
Symptomatic
Burned
Unburned
Treatment

Ambrosia beetles



Conclusions

- Pest insect numbers were highest in the symptomatic and burned areas
- Pest insect numbers were lowest in the unburned area

Acknowledgments

Paul Padgett
John Gates

SCOTCH LAND MANAGEMENT, LLC

Adam Trautwig
Jeff Chieppa
Ashton Newman
Cora Yates
Cody Hartzog
Wilson Strickland