Vegetation and Waterfowl Response to Imazapyr-control of Alternanthera philoxeroides in Western TN

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Rm 160, Plant Biotech Bldg.

Moist-soil Management
- 1940s Illinois River Valley
- Mid-latitude and Southern states
- Traditional Management

A. philoxeroides
- History
- Impacts
  - Native Wetland Plants
  - Wildlife
  - Economic
- Control

Allen et al. 2007

- Imazapyr and Triclopyr amine
- Timing and Rate
- Alligatorweed & Native Wetland Species
- Effects on diversity

Objectives

- Quantify response of vegetation communities in imazapyr treated and control plots
- Compare waterfowl use between plots treated with imazapyr and control plots.
- Compare food availability between plots treated with imazapyr and control plots.

Study Area
Objective 1

Vegetation Response to Herbicides

- Early/late growing season
- Quadrats (10/plot)
- % cover
- % litter
- Heights @ corners, mean

Gray et al. 1999

Objective 2

Density and Behavior

- Logistics
  - Late November-late February
  - Survey 1x/week
  - Sunrise to sunrise
- Surveys
- Distance sampling
- Behaviors
  - Alert, Agonistic, Courtship, Foraging, Locomotion, Maintenance
- Covariates
- Disturbances

Objective 3

Food Sampling
- Food Availability:
  - November-February
  - Samples
  - Sampling tools


Objective 3

Sample Processing
- Sample Preparation
- Washing/Air Drying
- Food Resource Biomass
  - Macro-invertebrates
  - Main soil seeds and tubers
- Recovery Bias


Results

Vegetation Composition in Early and Late Growing Seasons 2011-2012

2011

2012
Food Availability for Imazapyr treatment vs Control Plots Nov-Feb 2011-2012

Food Availability for Imazapyr Treatment vs Control Plots Jan-Feb 2013

Year of Treatment

- No treatment effect:
  - Other dabblers: $F = 0.64$, $p = 0.4358$
  - Mallards: $F = 0.17$, $p = 0.7297$

- Depth effect:
  - Both guilds: High percentage used ≤ 21cm

Repeated Measures ANOVA

- Mallards Jan-Feb 2012
- Other than mallards Jan-Feb 2012
Year after Treatment

- No treatment effect:
  - Other dabblers: $F = 0.36$, $p = 0.7595$
  - Mallards: $F = 0.33$, $p = 0.6061$
- Depth effect:
  - Both guilds
  - High percentage used ≤ 21cm

Repeated Measures ANOVA

Discussion/Management Implications

- Imazapyr effective tool for moist-soil management
- mirrors: Alten et al. 2007
- Expense/residual effects
- Year 1 treated plots and food
- Cypress: tubers
- Seeds: annual/establishing seeds
- Waterfowl densities
  - No treatment effect
  - Depth important for dabblers

Repeated Measures ANOVA

Implications/Future Work

- Compare behaviors
- Response by species
- Multiple blocks staggered for flooding
- Smaller food items could be key
\begin{acknowledgments}

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