

# Overview of Fire Effects on Avian Communities

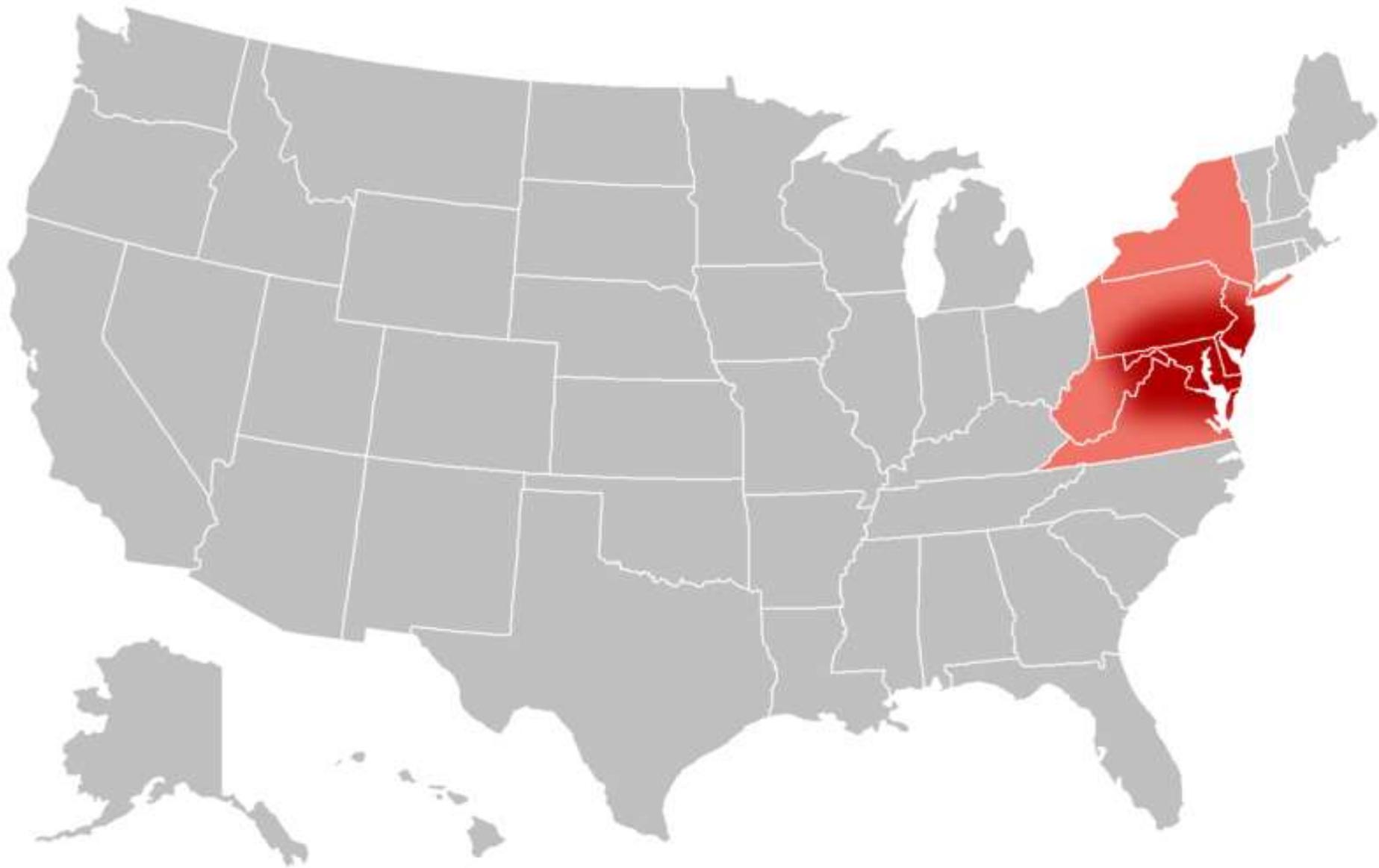
A Mid-Atlantic Coastal Plain Perspective

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Salisbury University

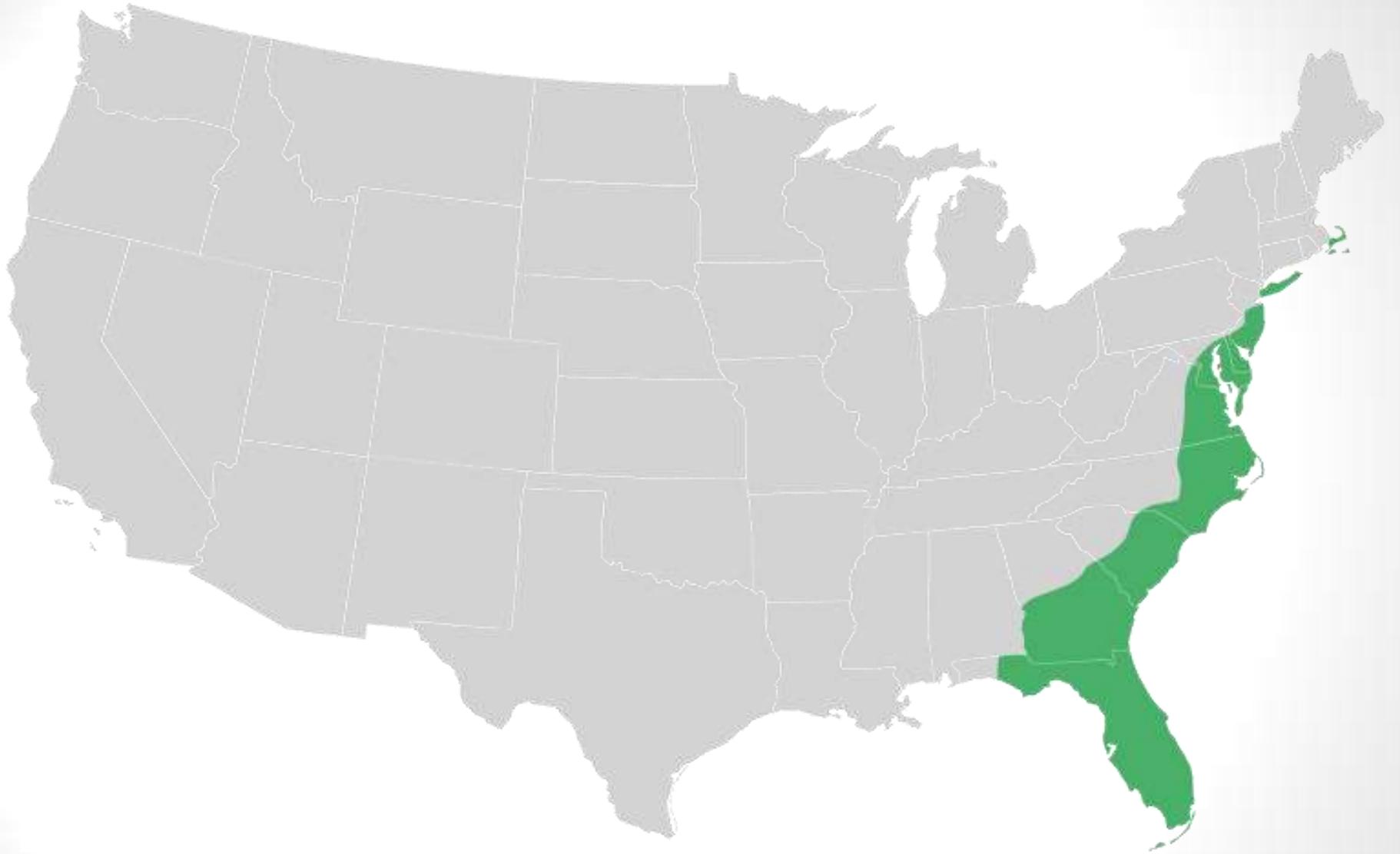






Mid-Atlantic States (one of many definitions)

[http://en.wikipedia.org/wiki/File:US\\_Mid-Atlantic\\_states.png](http://en.wikipedia.org/wiki/File:US_Mid-Atlantic_states.png)



Atlantic Coastal Plain

[http://en.wikipedia.org/wiki/File:Atlantic\\_Coastal\\_Plain.svg](http://en.wikipedia.org/wiki/File:Atlantic_Coastal_Plain.svg)

# Birds of the Mid-Atlantic

State	Number of Species
Delaware <a href="http://www.dosbirds.org/statelist">www.dosbirds.org/statelist</a>	405
Maryland <a href="http://www.mdbirds.org/mddcrc/pdf/mdlist.pdf">www.mdbirds.org/mddcrc/pdf/mdlist.pdf</a>	447
New Jersey <a href="http://njbrc.net/documents/NJStateList.pdf">http://njbrc.net/documents/NJStateList.pdf</a>	468
New York <a href="http://nybirds.org/Publications/ChecklistNYS.htm">http://nybirds.org/Publications/ChecklistNYS.htm</a>	480
Pennsylvania <a href="http://birdcountry.us/State Bird Lists/Pennsylvania Bird List.pdf">http://birdcountry.us/State Bird Lists/Pennsylvania Bird List.pdf</a>	407
Virginia <a href="http://www.bubo.org/Checklists/virginia-avian-records-committee-varcom.html">http://www.bubo.org/Checklists/virginia-avian-records-committee-varcom.html</a>	455
West Virginia <a href="http://www.brooksbirdclub.org/records.html">http://www.brooksbirdclub.org/records.html</a>	358

# Extinct Birds of the Mid-Atlantic



# Heath Hen

An extinct “fire bird”

“Fire created the Heath Hens’ home, just as it creates the Greater Prairie-Chickens’ home. Set by lightning strikes, Native Americans and, on Martha’s Vineyard, blueberry farmers, fire kept forests from establishing themselves, thus generating the brushy scrub-oak and berry-bush barrens Heath Hens needed for foraging and nesting, as well as the meadows needed for booming grounds or leks.”

--Christopher Cokinos  
*Hope is the Thing with Feathers* (2000)







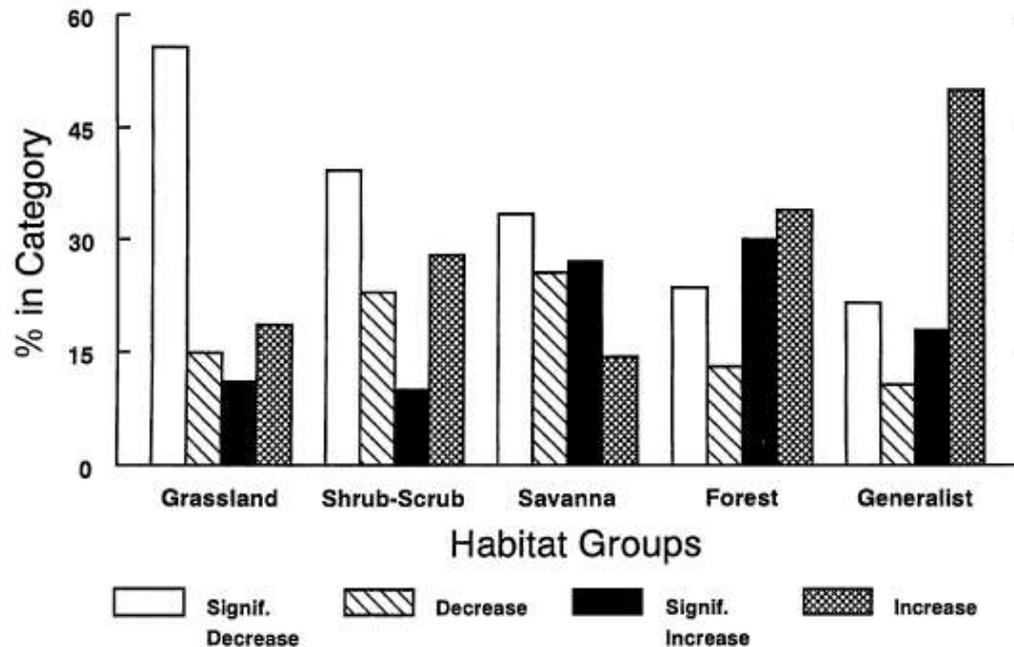
**PRAIRIE CHICKEN  
MANAGEMENT  
AREA**



- SOCIETY OF TYMPANUCHUS CUPIDO PINNATUS, LTD.
- DANE COUNTY CONSERVATION LEAGUE
- WISCONSIN DEPARTMENT OF NATURAL RESOURCES

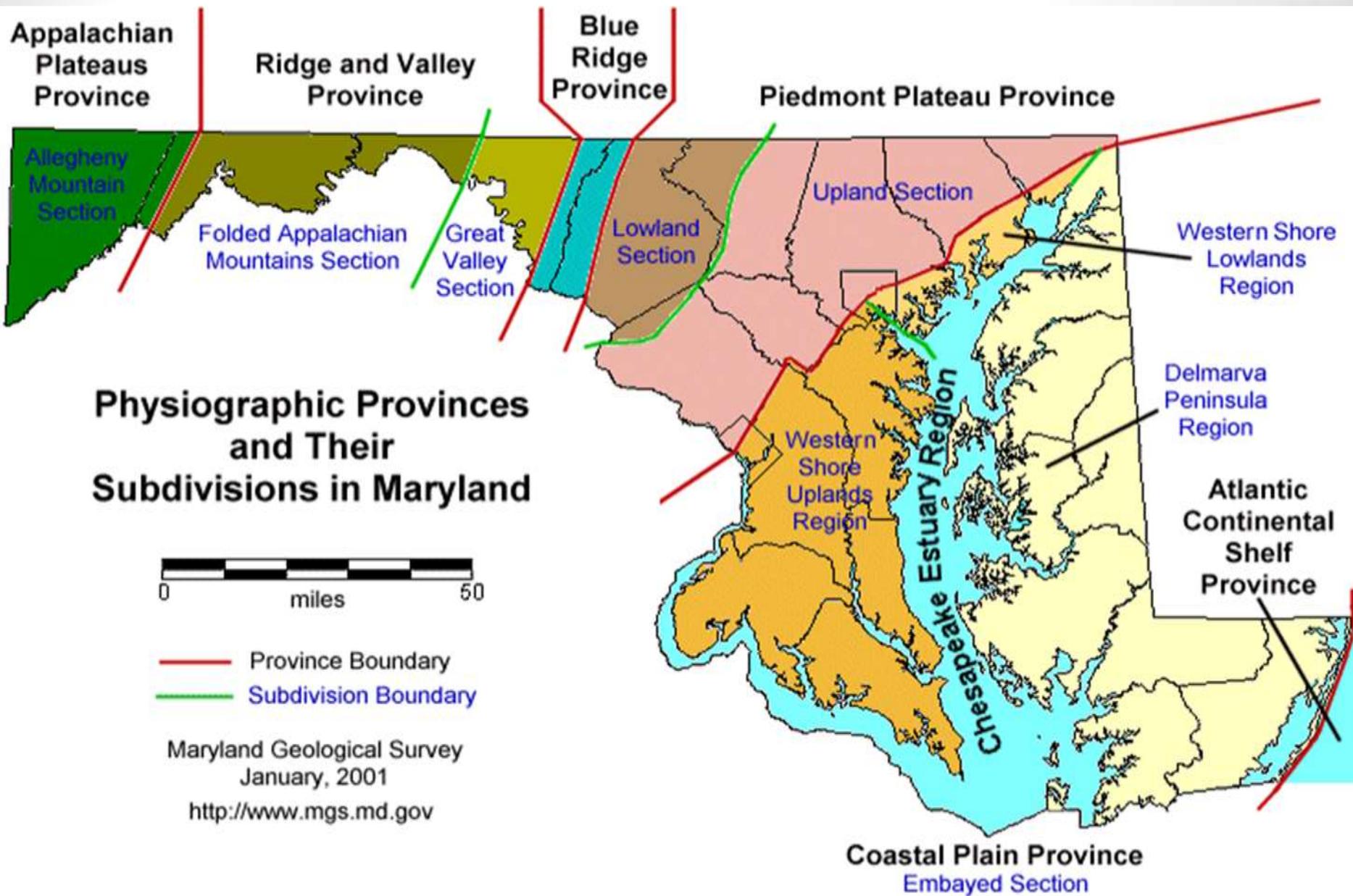


“40% of North American bird species associated with some type of disturbance-mediated habitats were significantly decreasing between 1966 and 1998.”



**Figure 1** Status of North American birds in five habitat groups with respect to trends in abundance from 1966–1998. Trends from the North American Breeding Bird Survey (see text for explanation of survey, how species were assigned to habitat groups, and how trends were estimated and significance was determined).

Brawn et al. 2001. The Role of Disturbance in the Ecology and Conservation of Birds. Annual Review of Ecology and Systematics 32: 251-276.



# Maryland Bird Habitats Influenced by Disturbance

- Loblolly Pine Woodland
- Shrub Meadow
- Fallow Field



Ellison, W.G. 2010. *Second Atlas of the Breeding Birds of Maryland and the District of Columbia*. The Johns Hopkins University Press.

# Loblolly Pine Woodland in MD

- Medium to tall open woodland
- Loblolly Pine, Willow Oak, American Holly, Sweet Gum
- Chuck-will's-widow
- Brown-headed Nuthatch
- Yellow-throated Warbler
- Pine Warbler
- Red-cockaded Woodpecker



Ellison, W.G. 2010. *Second Atlas of the Breeding Birds of Maryland and the District of Columbia*. The Johns Hopkins University Press.









Maryland has one species—but has lost the other two—that are nearly endemic to the Southeastern Pine Savannas.



# Engstrom et al. (1984)

- 15-year study of fire suppression
- Florida pine woodland
- Loss of herbaceous understory
- Hardwood encroachment
- Loggerhead Shrike and Bachman's Sparrow lost within 9 years



# Shrub Meadow in MD

- Late successional grasses, forbs, and shrubs
  - Sweet gum, oaks, cherry, sassafras
  - Goldenrod, asters
  - Fescue, switchgrass, broomsedge
- Northern Bobwhite, American Woodcock, White-eyed Vireo, Gray Catbird, Brown Thrasher, Cedar Waxwing, Prairie Warbler, Yellow-breasted Chat, Eastern Towhee, Field Sparrow, Blue Grosbeak, Indigo Bunting, American Goldfinch
- Many of these species occur in young pine plantations also.
- Succession continues in the absence of disturbance.

Ellison, W.G. 2010. *Second Atlas of the Breeding Birds of Maryland and the District of Columbia*. The Johns Hopkins University Press.









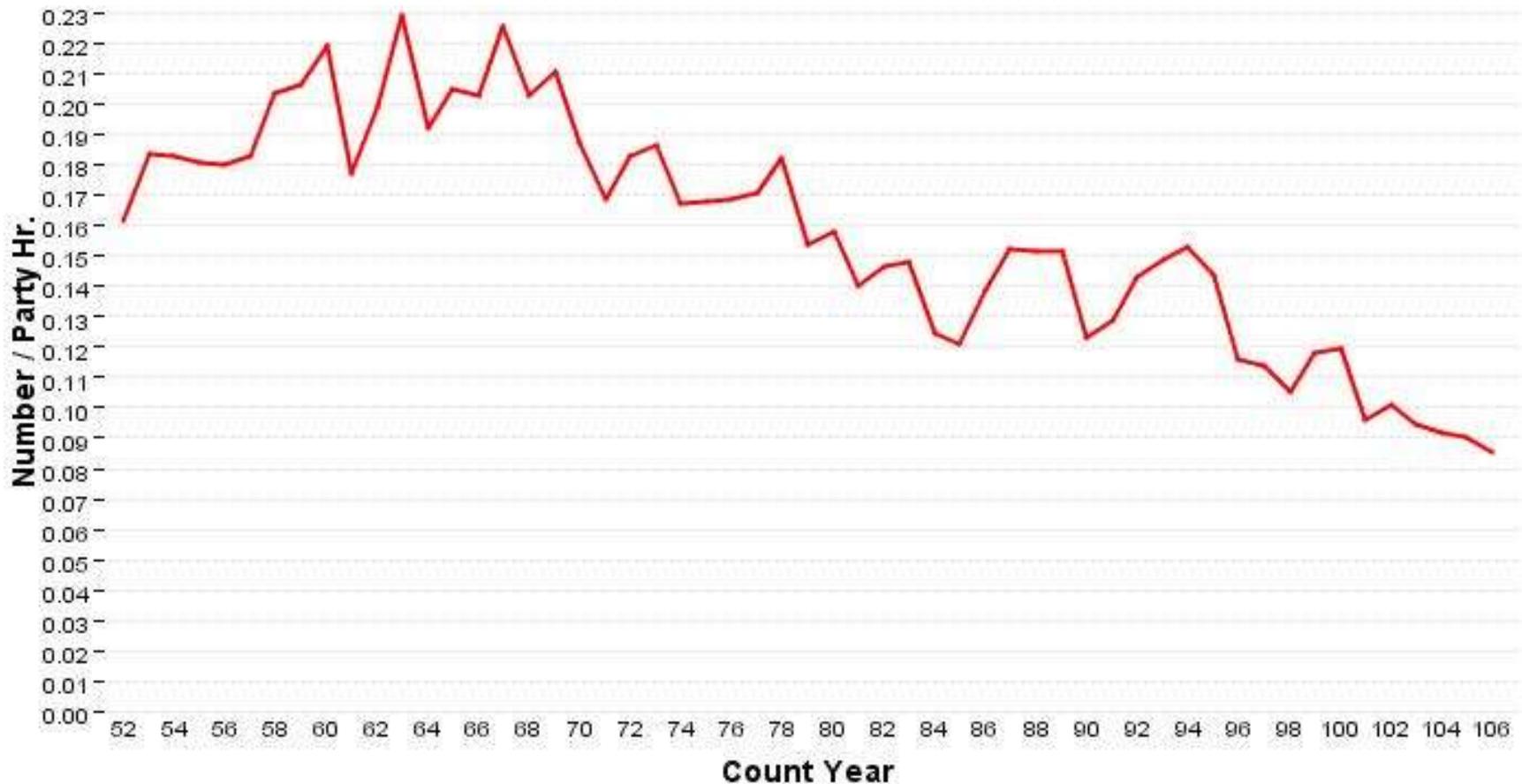






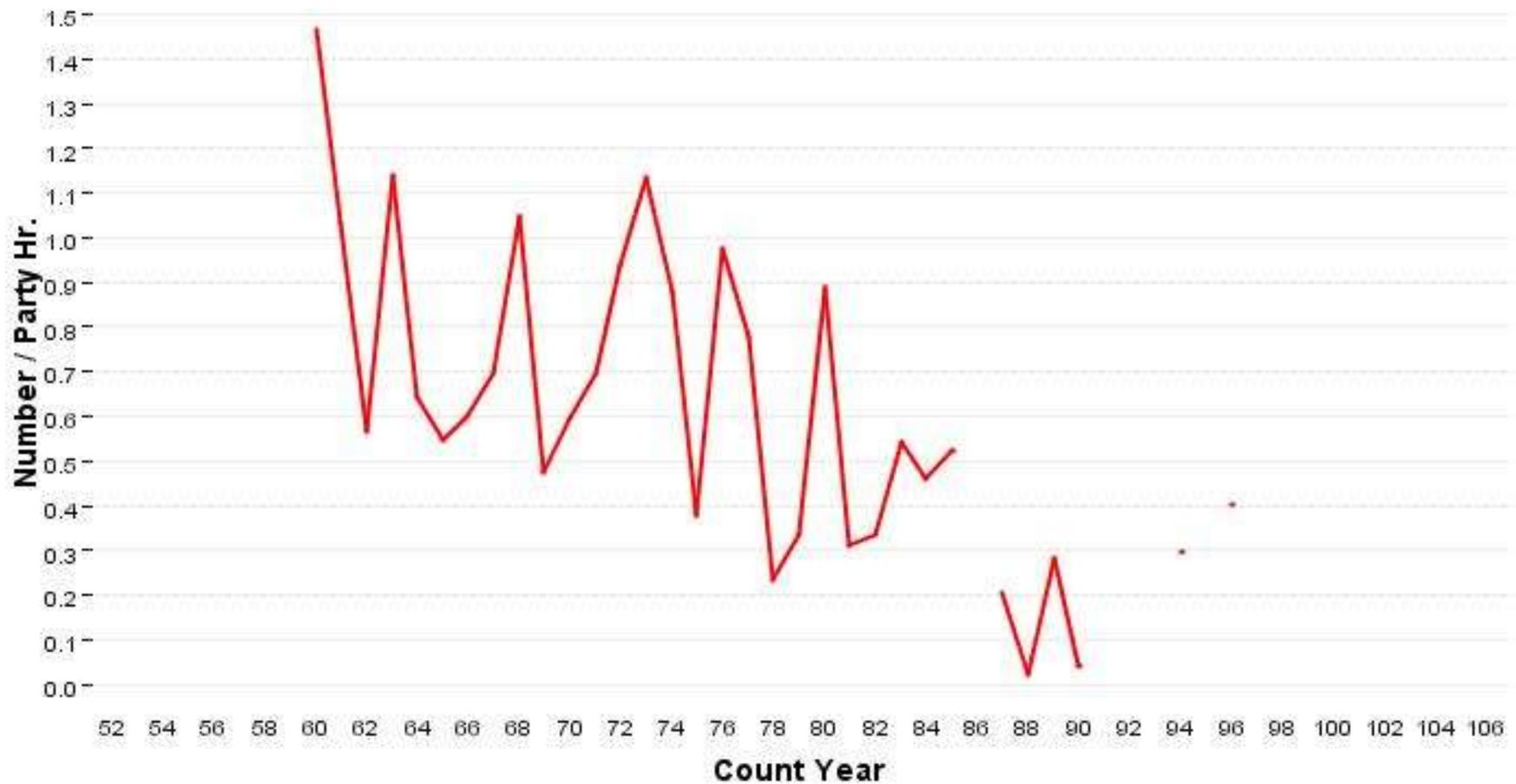
# CBC Trends

Loggerhead Shrike, US, From Count 52 to 106



# CBC Trends

Northern Bobwhite, Tyler, From Count 52 to 106



# Fallow Fields in MD

- Some are planted to warm weather prairie grasses.
- Others may contain many non-native grasses and forbs.
- Northern Bobwhite, Common Yellowthroat, Grasshopper Sparrow, Indigo Bunting, Blue Grosbeak, Dickcissel, Eastern Meadowlark, Red-winged Blackbird
- Have become uncommon
  - Modern agricultural practices
  - Development
  - Succession
- Succession continues in the absence of disturbance.

Ellison, W.G. 2010. *Second Atlas of the Breeding Birds of Maryland and the District of Columbia*. The Johns Hopkins University Press.













# Chester River Field Research Center Queen Anne's Co, MD



Courtesy of Dan Small

# Restoration

1999 - present

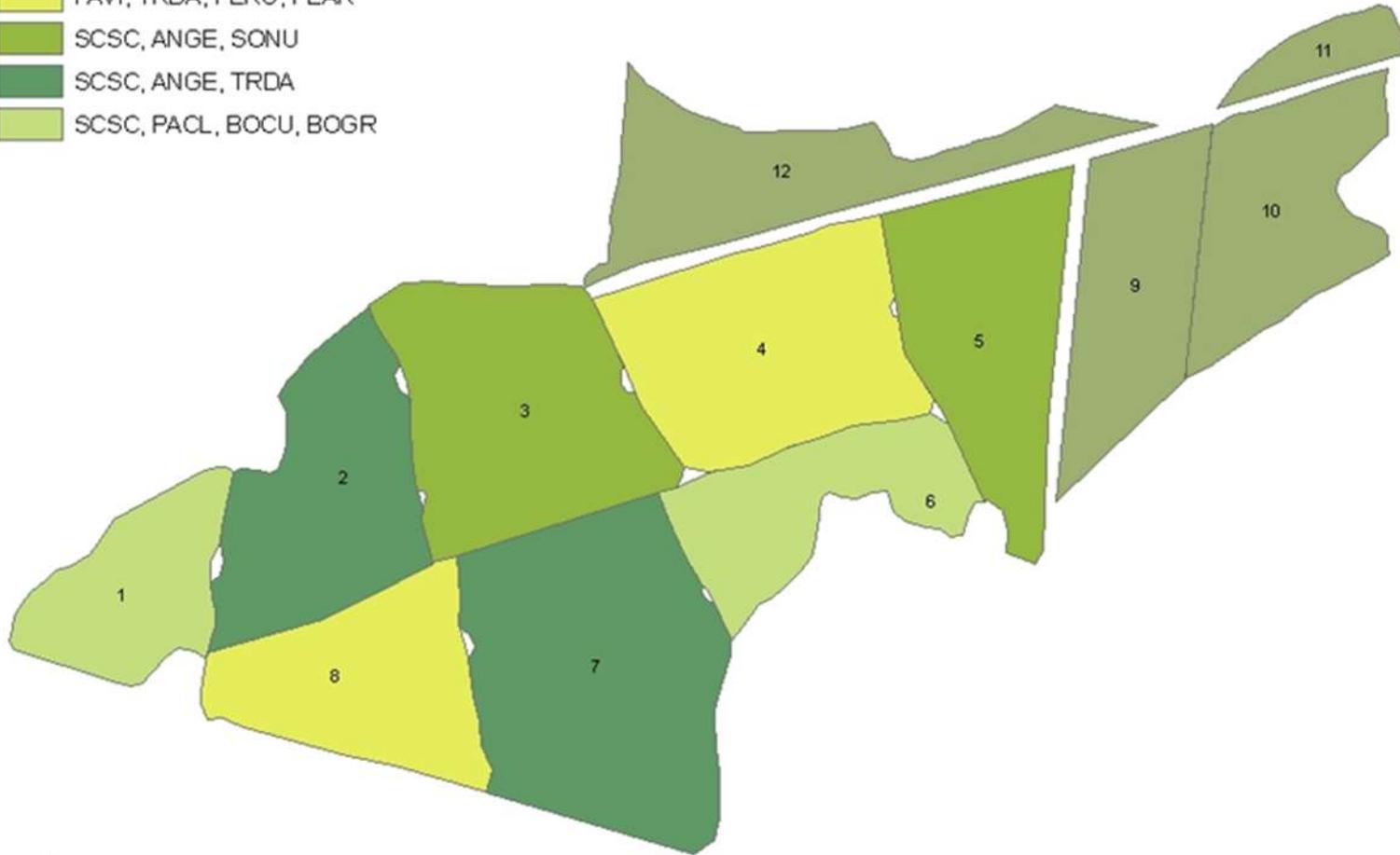
- 228 acres converted to native warm season grasses
- Fields were enrolled in state and federal conservation programs
- Experimental design - 12 fields
- Fields were planted in replicate fashion
- Combinations of grass species and planting rates designed to attain varying heights

Field #	Seed Mix	Grasses	Seed Rate (lbs/acre)
1 and 6	Short	Little Bluestem	4
		Sideoats Grama Grass	2
		Deer-Tongue Grass	2
		Blue Grama Grass †	?
2 and 7	Moderately Short	Little Bluestem	4
		Big Bluestem	2
		Eastern Gama Grass	2
3 and 5	Tall	Little Bluestem	2
		Big Bluestem	2
		Indian Grass	4
4 and 8	Moderately Tall	Eastern Gama Grass	4
		Switch Grass	2
		Red Fescue*	2
		Tall Fescue*†	?
9 through 12	Mid-height	Coastal Panicum	4
		Little Bluestem	3
		Indian Grass	1

Courtesy of Dan Small, Chino Farms, QA Co, MD

**Legend**

-  CRFRC Fields 1 - 12
-  PAAM, SCSC, SONU
-  PAVI, TRDA, FERU, FEAR
-  SCSC, ANGE, SONU
-  SCSC, ANGE, TRDA
-  SCSC, PACL, BOCU, BOGR



Courtesy of Dan Small, Chino Farms, QA Co, MD

# Management

## Challenges:

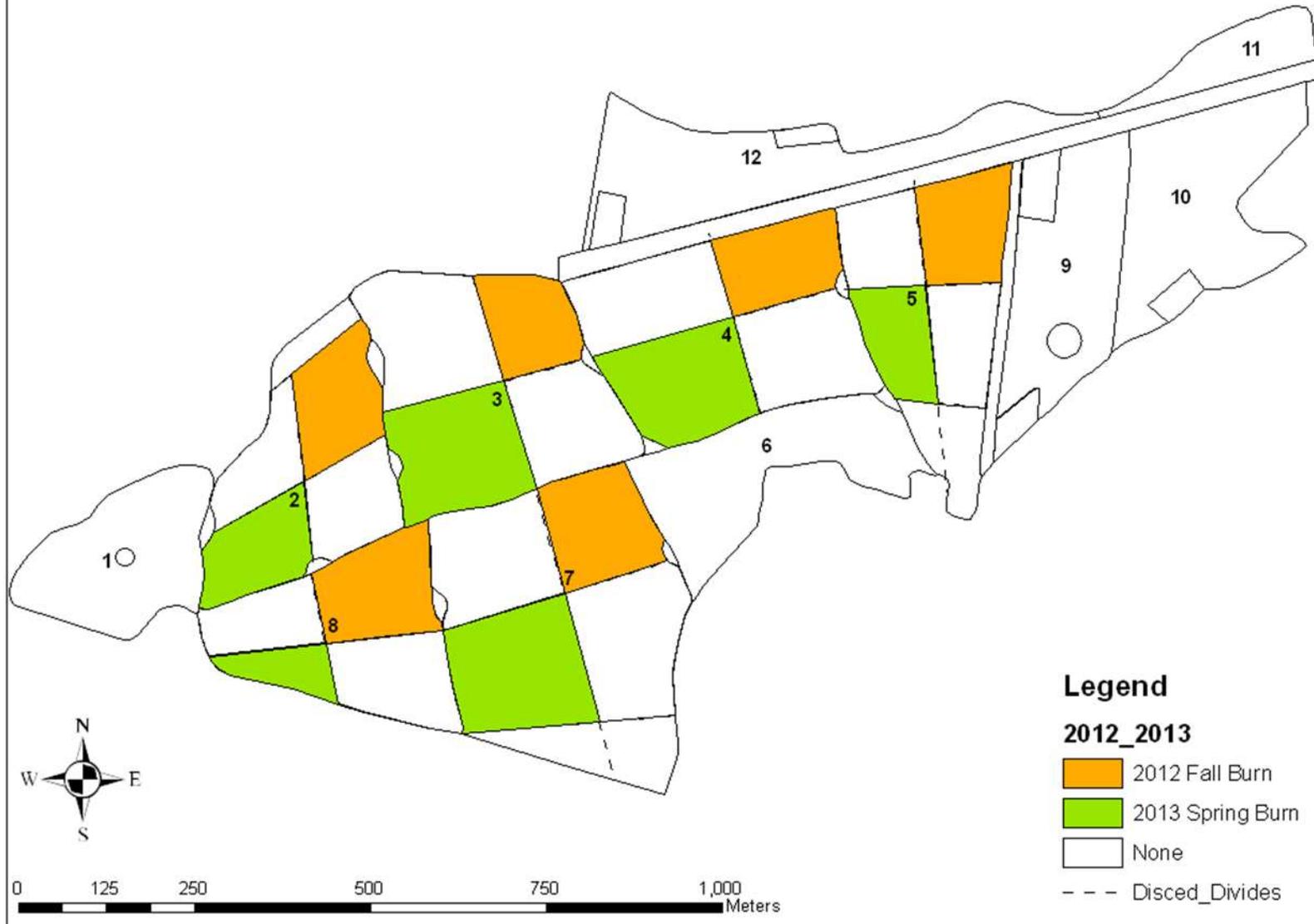
- How to maintain high plant biodiversity?
- How to control dominating species?

## Methods:

- Fire
- Disking
- Chemical herbicides
- Rotational Grazing

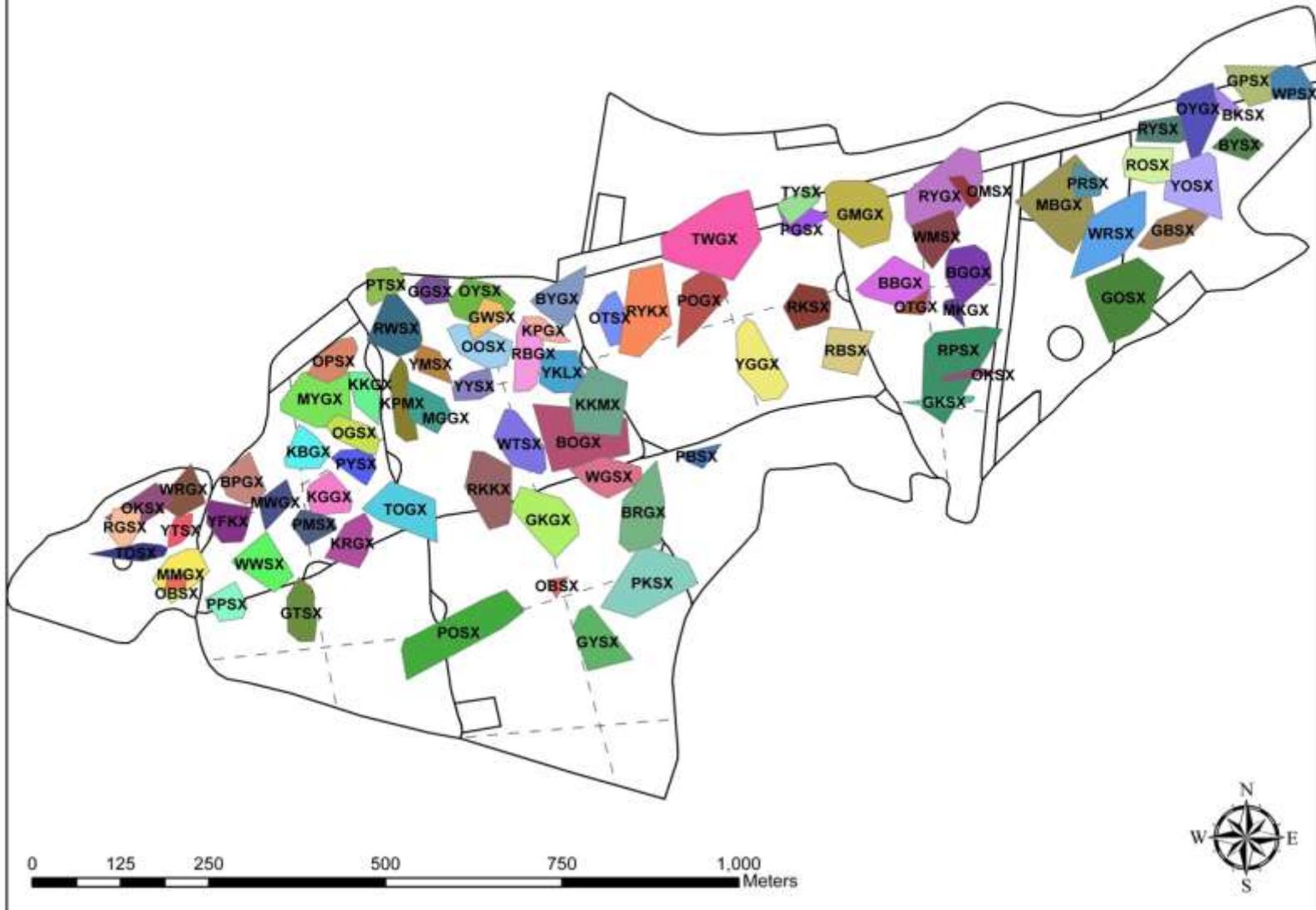


# CRFRC 2012/2013 Management



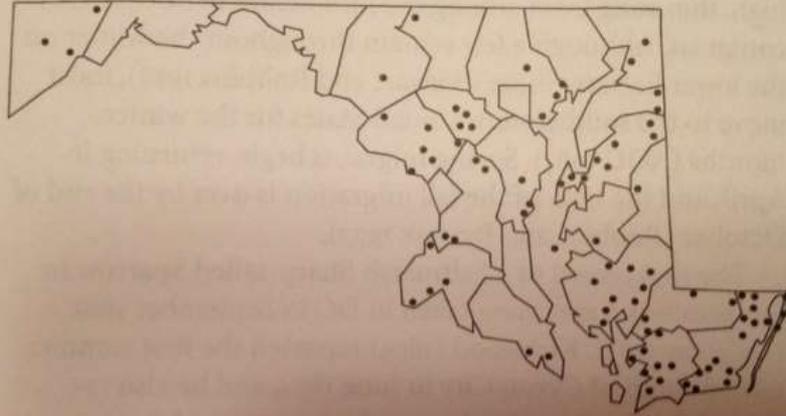
Courtesy of Dan Small, Chester River Field Research Center (Chino Farms), QA Co, MD

# 2012 CRFRS GRSP Territory Map

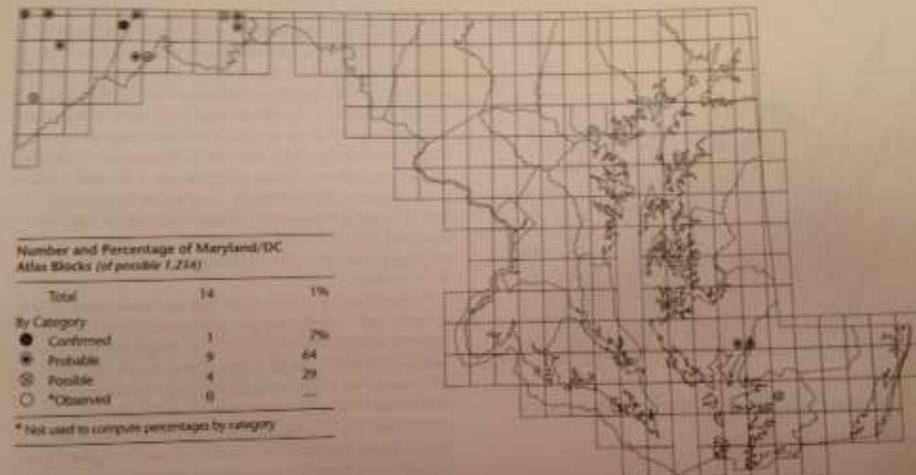


Courtesy of Dan Small, Chino Farms, QA Co, MD

# Henslow's Sparrow



Breeding Distribution, 1958



Atlas Distribution, 1983-1987



# Henslow's Sparrow

- Wet meadows, weedy fallow fields
- Management recommendations
  - Multiyear accumulation of litter (Robins, 1971)
  - Standing dead vegetation (Zimmerman, 1988)
  - Scattered medium and heavy-stemmed forbs or shrubs (Hands et al., 1989)
  - Periodic disturbance to set back succession and retain dense, low vegetation

Robbins, C.S. and E.A.T. Blom. 1996. *Atlas of the Breeding Birds of Maryland and the District of Columbia*. University of Pittsburg Press.



Courtesy of Dan Small, Chino Farms, QA Co, MD