



CRP Values for Nongame Birds

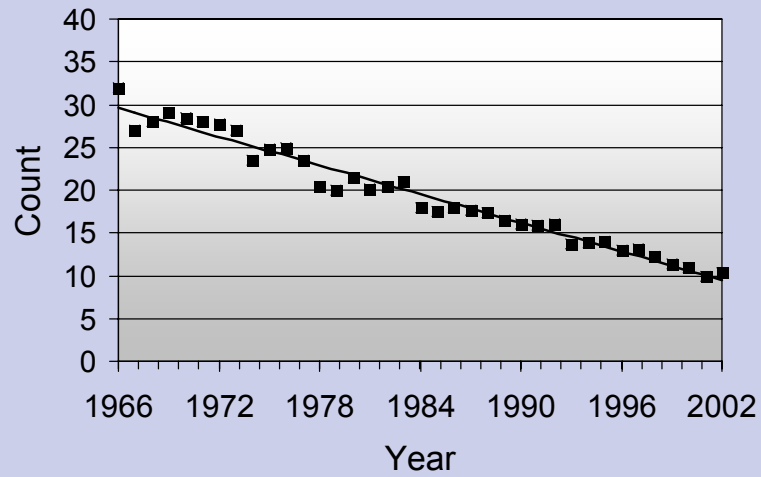
Douglas H. Johnson and Lawrence D. Igl
U.S. Geological Survey
Northern Prairie Wildlife Research Center
Jamestown, North Dakota

Grassland birds are declining

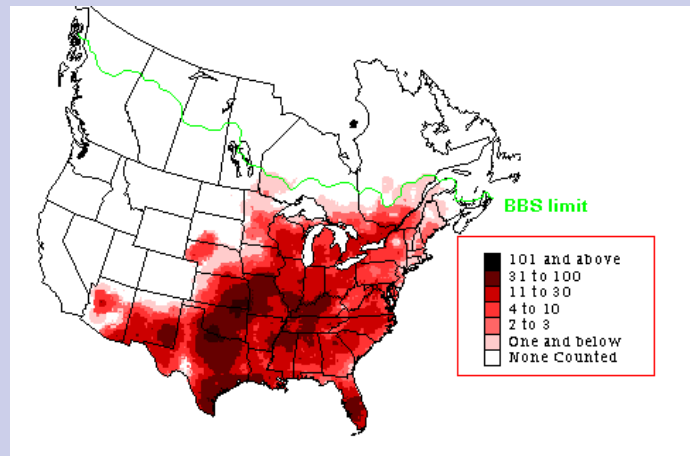
Grassland species have shown greater and more consistent patterns of population decline at the continental level than other ecological guilds in North America

(Droege and Sauer 1994, Samson and Knopf 1994)

North American Breeding Bird Survey: 1966-2002

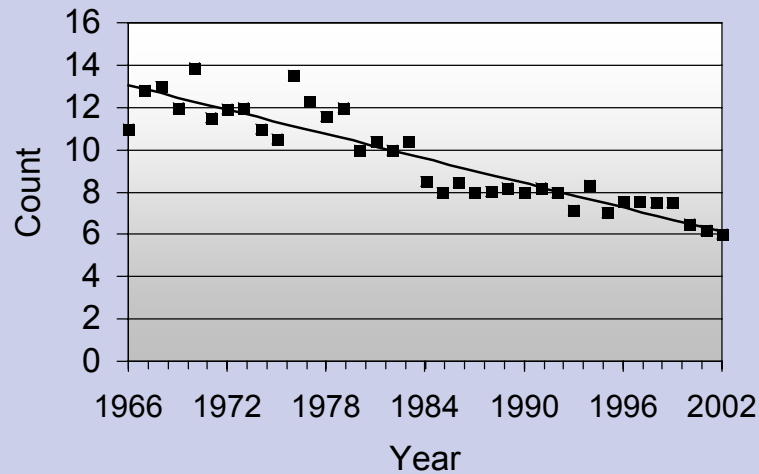


Eastern Meadowlark

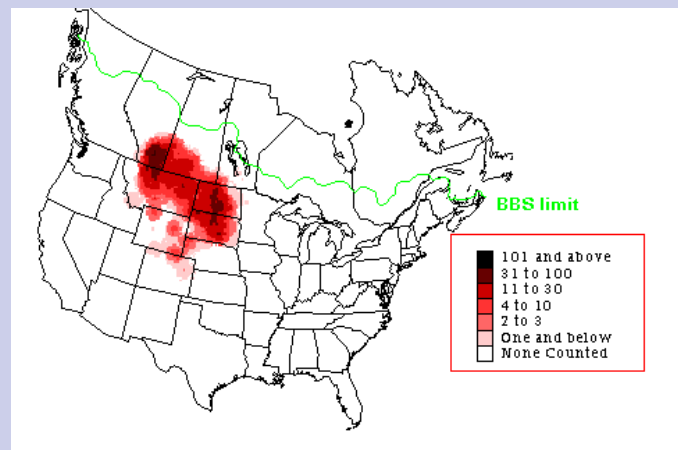


Estimated decline of 2.9% per year

North American Breeding Bird Survey: 1966-2002

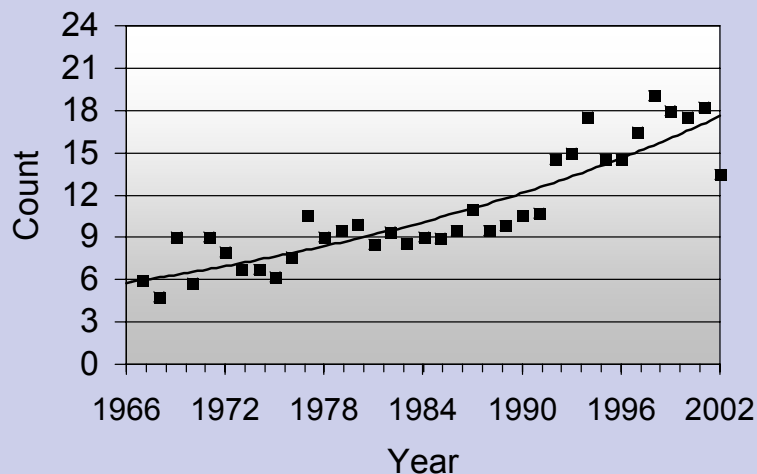


Chestnut-collared Longspur



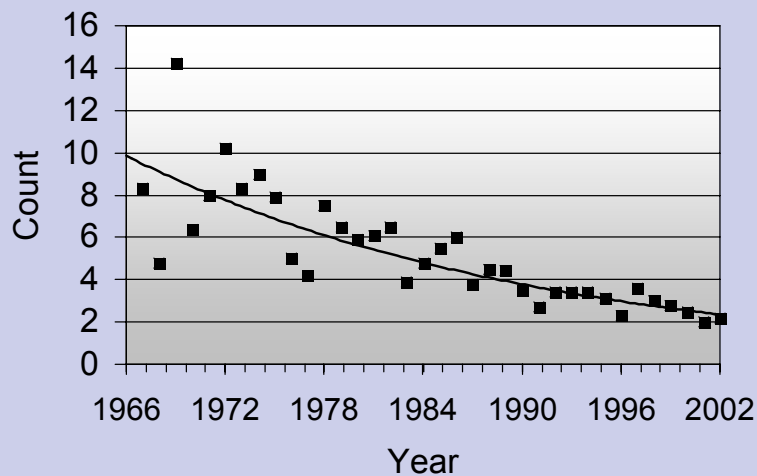
Estimated decline of 2.4% per year

North American Breeding Bird Survey—North Dakota



House Wren

+3.1% per year



Baird's Sparrow

-2.9% per year

North American Breeding Bird Survey: 1966-2002

Trends	No. of grassland species	
	Significant	Non-significant
Declining	18	7
Increasing	2	1

Sauer et al. (2003)

Conservation Reserve Program: A long-term cropland retirement program



Objectives of the Conservation Reserve Program

1. Adjust commodity supplies to demands
2. Conserve and improve soil and water resources
3. Enhance fish and wildlife habitat

CRP Background

- Administered by the U.S.D.A.
- First authorized by the Food Security Act of 1985
- Farmers enroll land for 10 – 15 years in exchange for annual rental payments and financial assistance.
- Prior to 2002, commercial use of the land was prohibited, although haying or grazing was permitted during drought or deluge

CRP Enrollment (as of September 2003)

Location	Area Enrolled
Minnesota	702,000 ha
Montana	1,381,000 ha
North Dakota	1,351,000 ha
South Dakota	580,000 ha
U.S.	13,837,000 ha

<http://www.fsa.usda.gov/dafp/cepd/stats/Sep2003.pdf>

Some other CRP studies

Study	No. Years	Location
Berthelsen and Smith (1995)	2	Texas
King and Savidge (1995)	2	Nebraska
Granfors et al. (1996)	2	Kansas
Millenbah et al. (1996)	1	Michigan
Patterson and Best (1996)	3	Iowa
Delisle and Savidge (1997)	4	Nebraska
Klute et al. (1997)	1	Kansas
Robel et al. (1998)	4	Kansas
Hughes et al. (1999)	2	Kansas
McCoy et al. (2001)	3	Missouri
Best et al. (1997)	5	6 states

Our CRP study is the most extensive

Initiated in 1990

Ongoing

4 states

9 counties

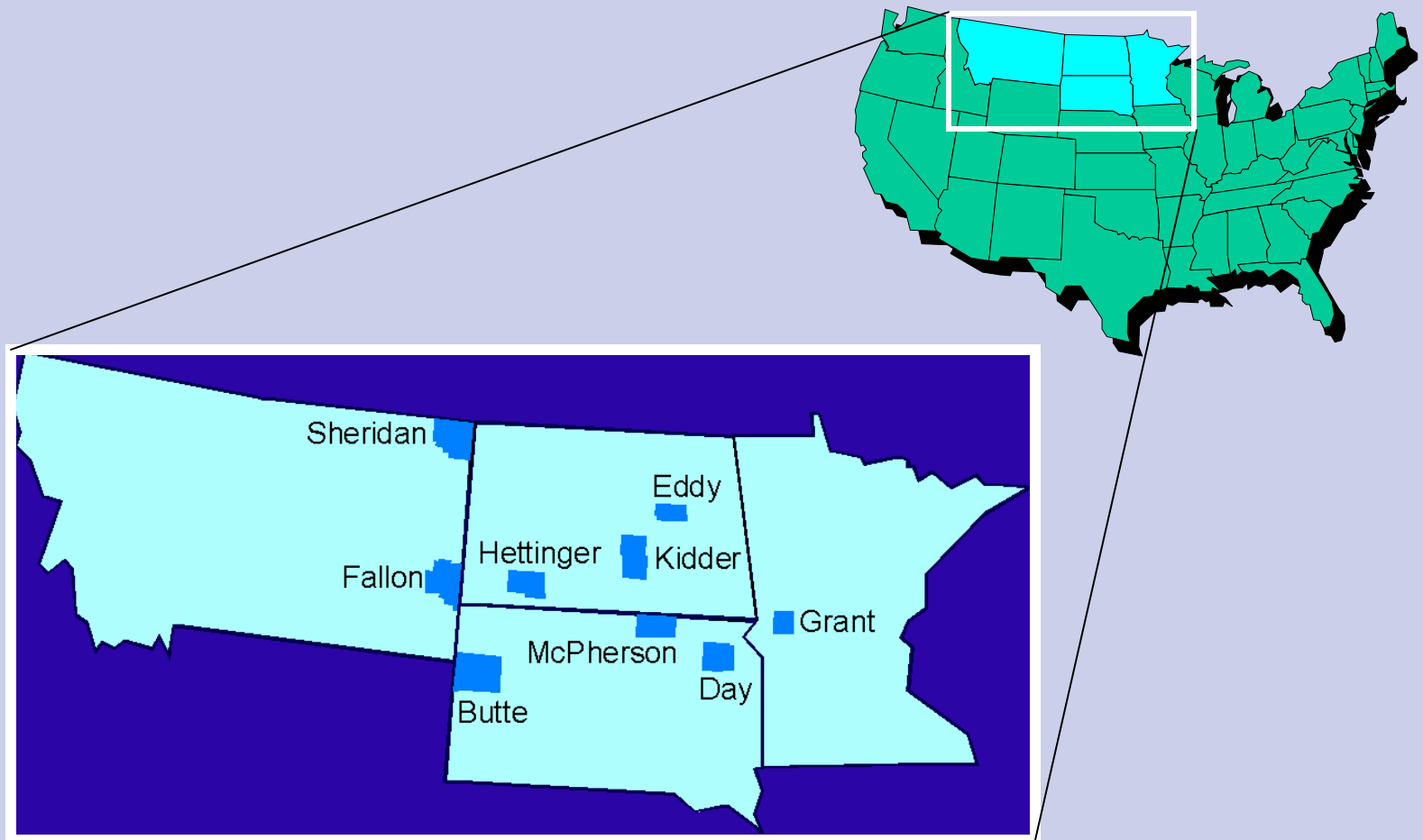
30-40 fields / county

300-400 fields / year

<1 to 98 ha in size

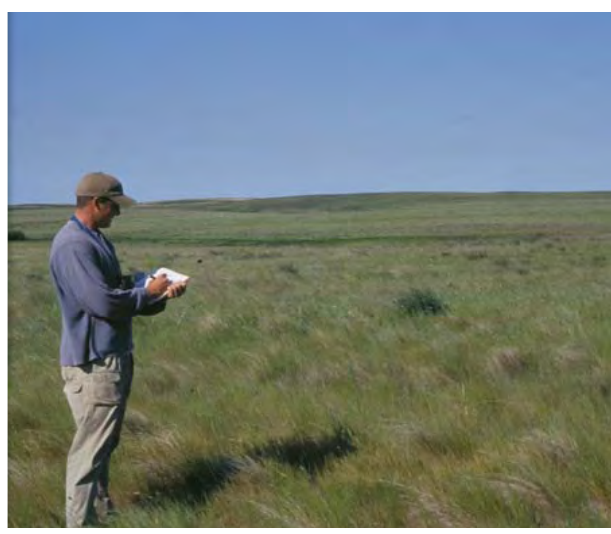
5,000-6,000 ha / year

CRP Study



Nine counties

Variety of Conservation Practices and vegetation types



Bird Survey Methodology

Modified Transect Survey

(Area Count)



Early findings

Lots of grassland birds use CRP fields

Johnson, D. H., and M. D. Schwartz. 1993.
The Conservation Reserve Program and
grassland birds. *Conservation Biology* 7:934-
937.

Early findings

Bird use varies by habitat features

Johnson, D. H., and M. D. Schwartz. 1993.
The Conservation Reserve Program: Habitat
for grassland birds. Great Plains Research
3:273-295.

Later findings

Many species are much more common in
CRP fields than in cropland

Johnson, D. H., and L. D. Igl. 1995.
Contributions of the Conservation Reserve
Program to Populations of Grassland Birds.
Wilson Bulletin 107:709-718.

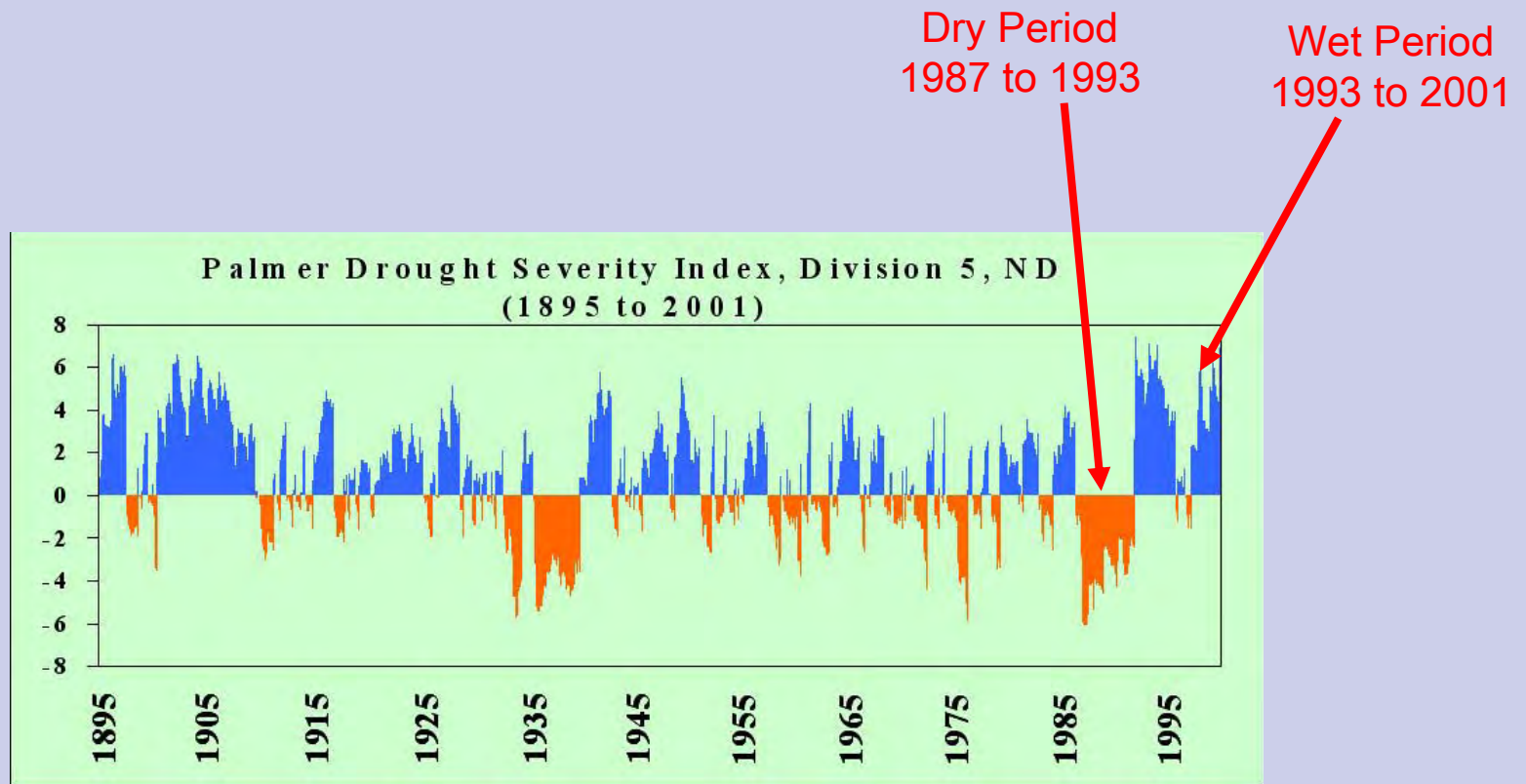
What would happen to breeding populations if CRP reverted to cropland? Many species would decline.

Species	Population in		State Pop.	%Change
	CRP (x1000)	Crop (x1000)		
Lark Bunting	210.9	21.2	1113.4	-17.0
Grasshopper Sparrow	205.7	12.4	945.2	-20.5
Savannah Sparrow	187.3	17.8	1420.9	-11.9
Western Meadowlark	93.8	10.2	445.2	-18.8
Bobolink	72.8	31.2	387.9	-10.7
Clay-colored Sparrow	54.3	3.0	592.9	-9.1
Dickcissel	10.1	1.2	52.0	-17.1
Sedge Wren	15.8	0.0	61.0	-25.8

What would happen to breeding populations if CRP reverted to cropland? A few would increase.

Species	Population in		State Pop.	%Change
	CRP (x1000)	Crop (x1000)		
Killdeer	0.8	14.5	13.7	+4.9
Horned Lark	20.1	316.2	3041.8	+9.7
Vesper Sparrow	15.0	30.2	661.4	+2.3
Chestnut-collared Longspur	3.1	22.3	1529.0	+1.3

Temporal Dynamics



Wet-Dry Cycle

Species composition has changed over time

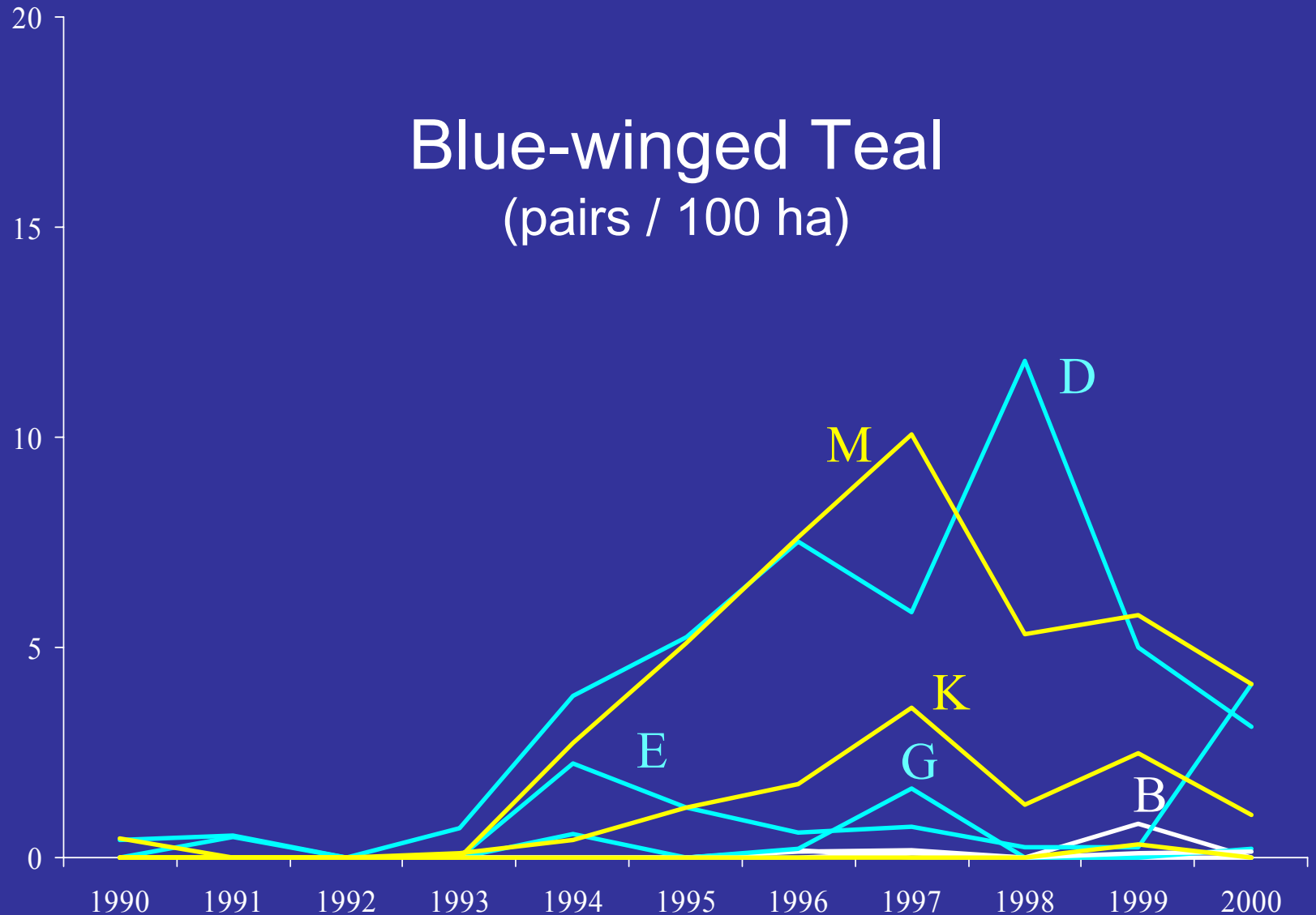
1990-1991

1999-2003

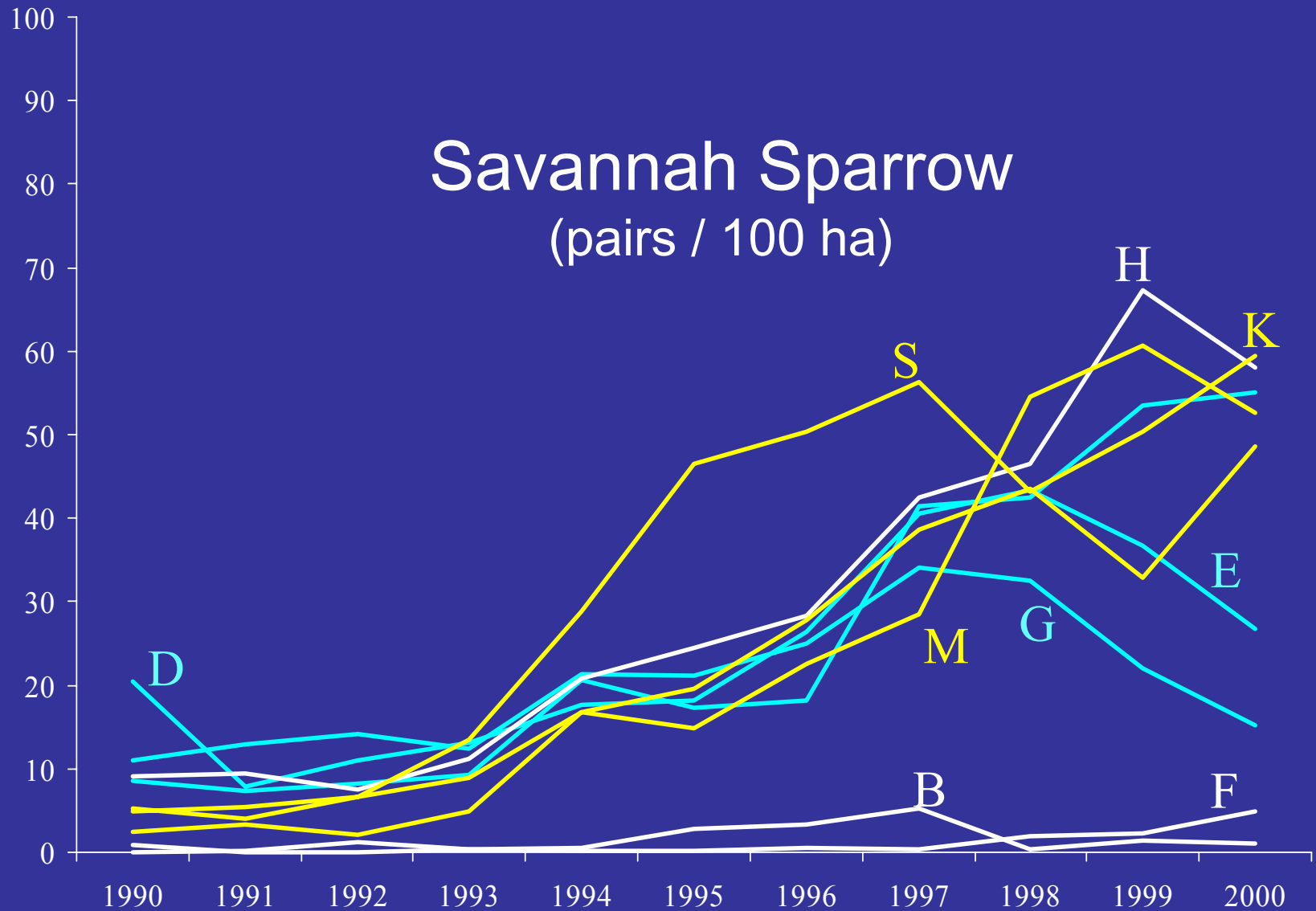
Species	pairs / 100 ha	Species	pairs / 100 ha
Lark Bunting	22.4	Savannah Sparrow	38.3 ←
Grasshopper Sparrow	21.2	Grasshopper Sparrow	25.8
Red-winged Blackbird	16.4	Clay-colored Sparrow	20.8
Western Meadowlark	7.8	Red-winged Blackbird	18.2
Horned Lark	7.3	Bobolink	17.9
Savannah Sparrow	6.1 ←	Sedge Wren	8.4
Brown-headed Cowbird	5.5	Western Meadowlark	8.3

Blue-winged Teal

(pairs / 100 ha)

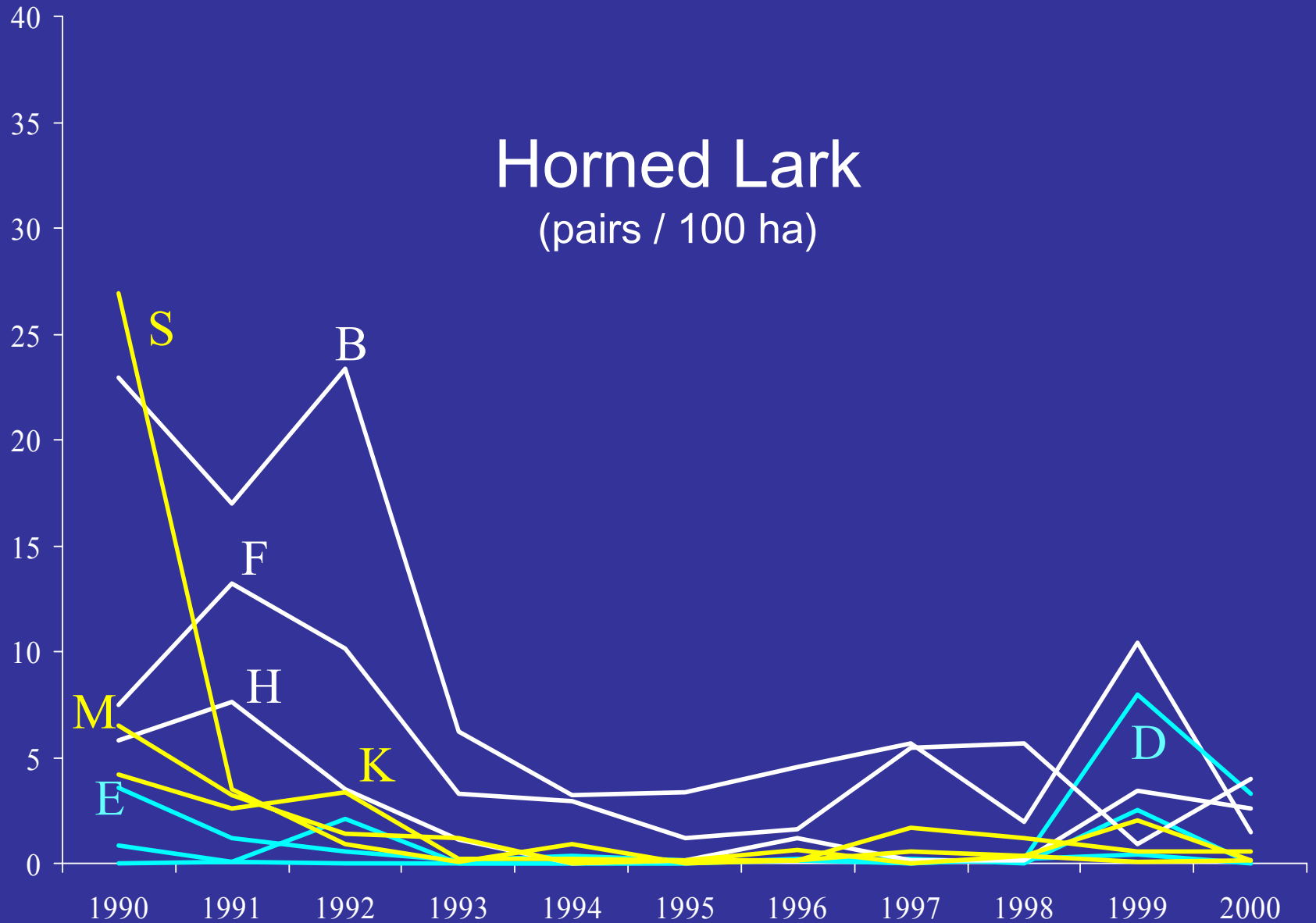


Savannah Sparrow (pairs / 100 ha)



Horned Lark

(pairs / 100 ha)

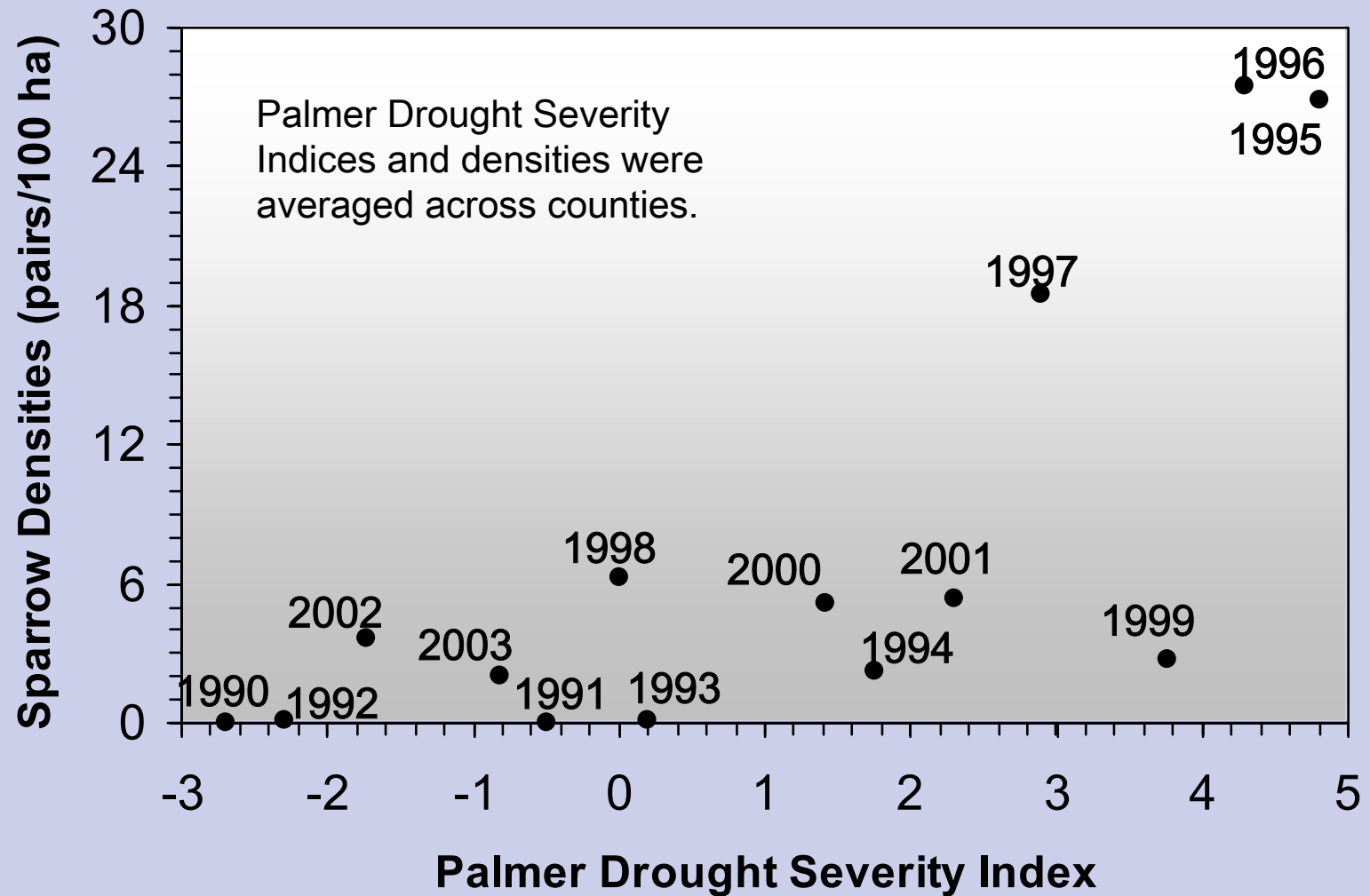


Later findings

Populations of Le Conte's Sparrows in CRP fields exploded when the drought ended

Igl, L. D., and D. H. Johnson. 1999. Le Conte's Sparrows breeding in Conservation Reserve Program fields: precipitation and patterns of population change. *Studies in Avian Biology* 19:178-186.

Le Conte's Sparrow Response to Moisture



Later findings

Our CRP study provided the most extensive assessment of area sensitivity in breeding grassland birds

Johnson, D. H., and L. D. Igl. 2001. Area requirements of grassland birds: a regional perspective Auk 118:24-34.

Area-sensitive Species (favored large grasslands)

Northern Harrier

Sedge Wren

Clay-colored Sparrow

Grasshopper Sparrow

Baird's Sparrow

Le Conte's Sparrow

Bobolink

Weak or ambivalent
evidence of area
sensitivity

Eastern Kingbird

Common Yellowthroat

Savannah Sparrow

Western Meadowlark

Favored small grasslands
(inversely area sensitive;
edge species)

Mourning Dove

Brown-headed Cowbird

Recent work

Breeding bird use of planted fields is
influenced by the planting mixture

CRP Seeding Mixture - Native vs. Introduced

EFFECTS OF SEEDING MIXTURES ON ABUNDANCE OF BREEDING BIRDS



Annual Report 2003

U.S. Geological Survey
Northern Prairie Wildlife Research Center
Jamestown, ND 58401



EFFECTS OF SEEDING MIXTURES ON ABUNDANCE OF BREEDING BIRDS



ANNUAL REPORT 2002

EFFECTS OF SEEDING MIXTURES ON ABUNDANCE OF BREEDING BIRDS

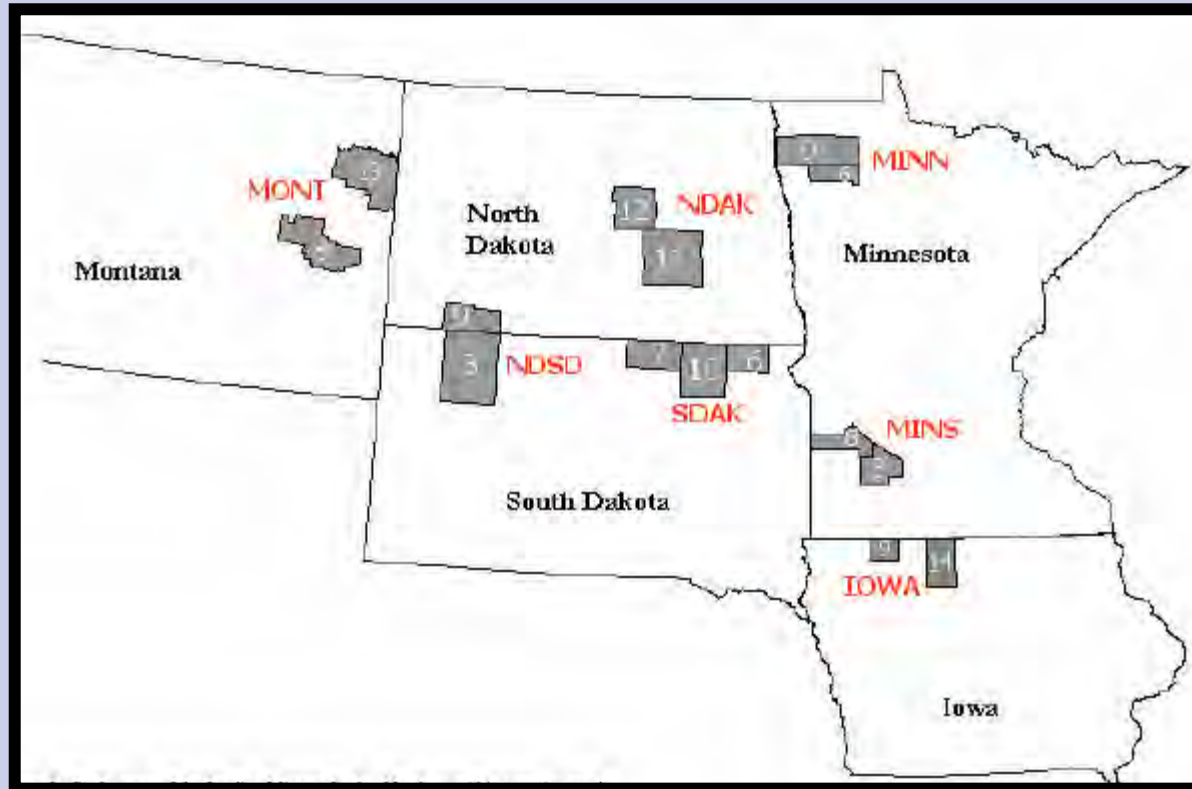
ANNUAL REPORT

2001





CRP Seeding Mixture



CRP Seeding-mixture Study (Pairs / 100 ha): 2003

Species	Introduced	Native
Bobolink	34.7	13.8
Savannah Sparrow	21.7	21.3
Sedge Wren	16.4	16.4
Grasshopper Sparrow	14.0	17.2
Red-winged Blackbird	13.9	7.7
Western Meadowlark	6.1	7.4
Le Conte's Sparrow	4.7	2.4

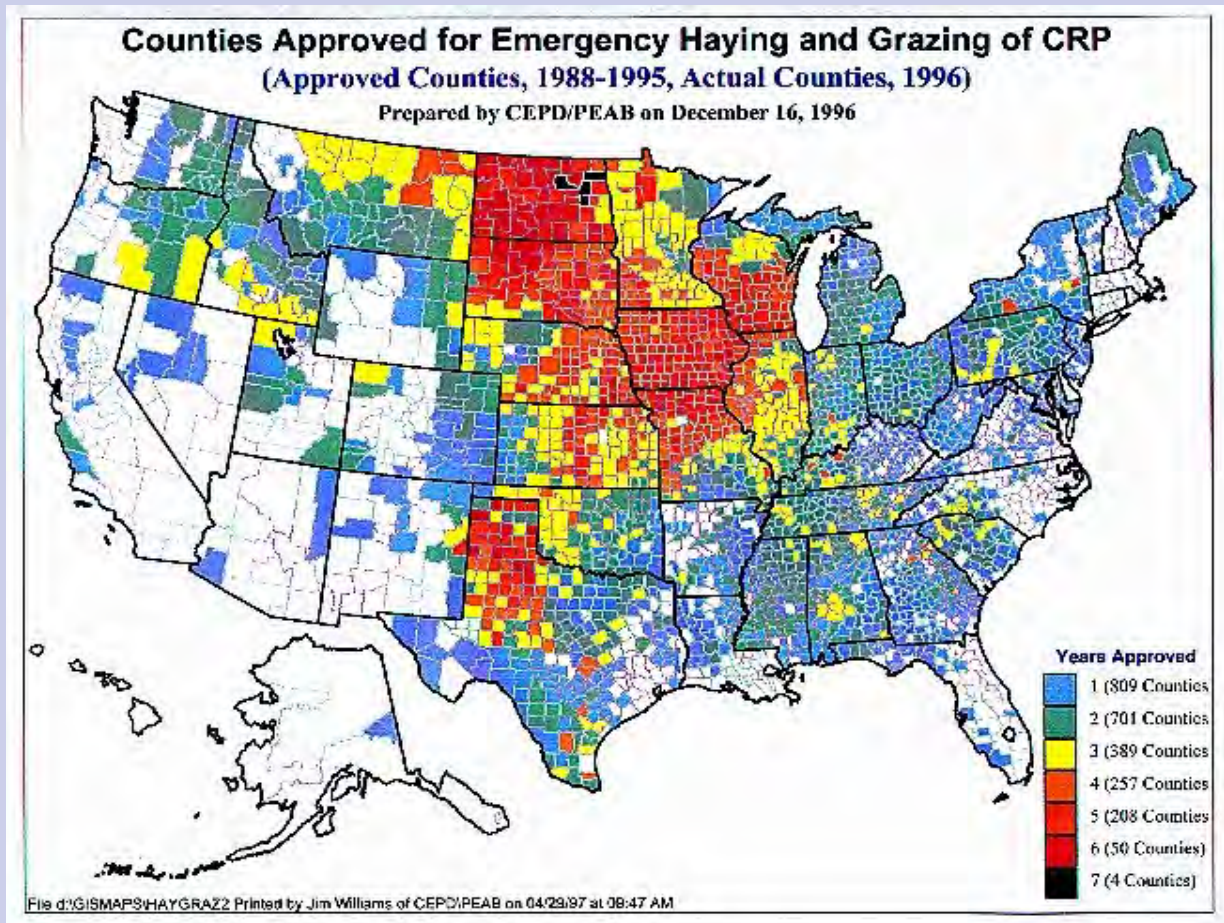
CRP Seeding Mixture

- Both native and introduced seeding mixtures provided habitat for grassland birds
- Because bird species vary in their responses to planting type and resulting vegetation structure, management goals may need to target specific groups of grassland birds and the habitats that they require.

Recent work

Species respond differently to haying of CRP fields; some effects are delayed

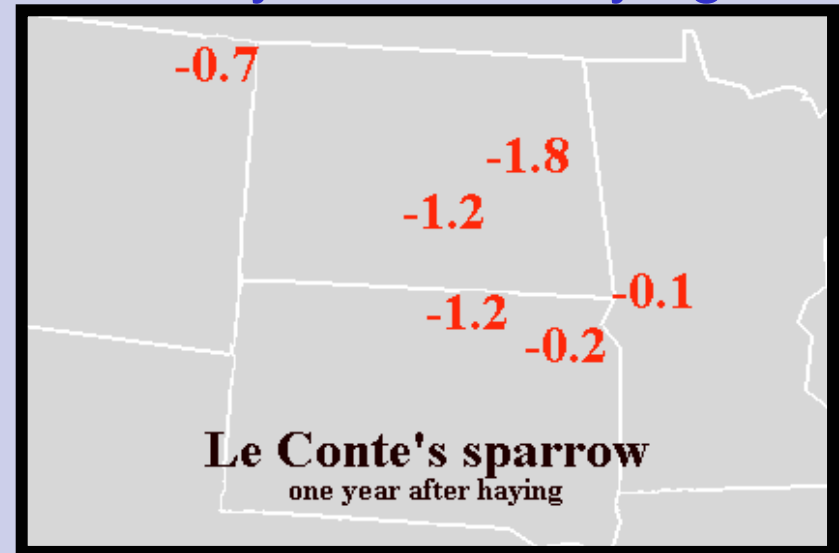
Spatial and Temporal Variation and Management of CRP grasslands



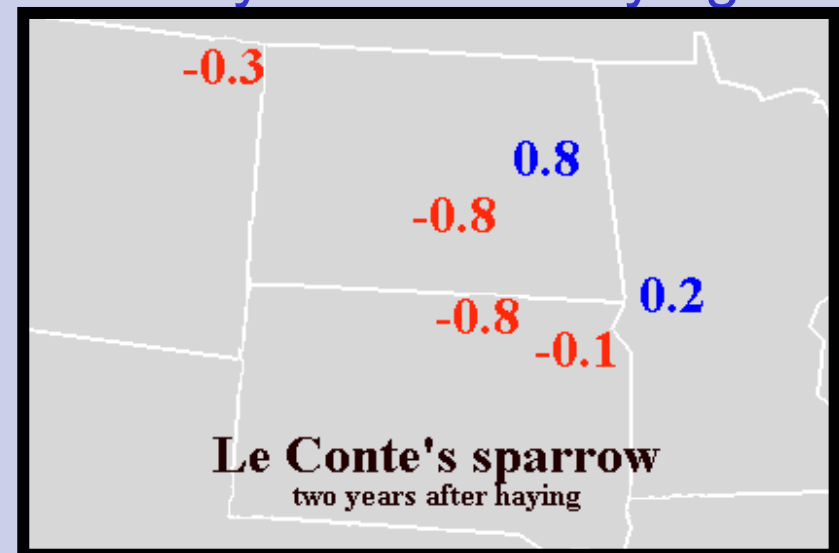
Emergency Haying and Grazing During Years of Drought and Deluge

Le Conte's Sparrows
were reduced
for two years

One year after haying

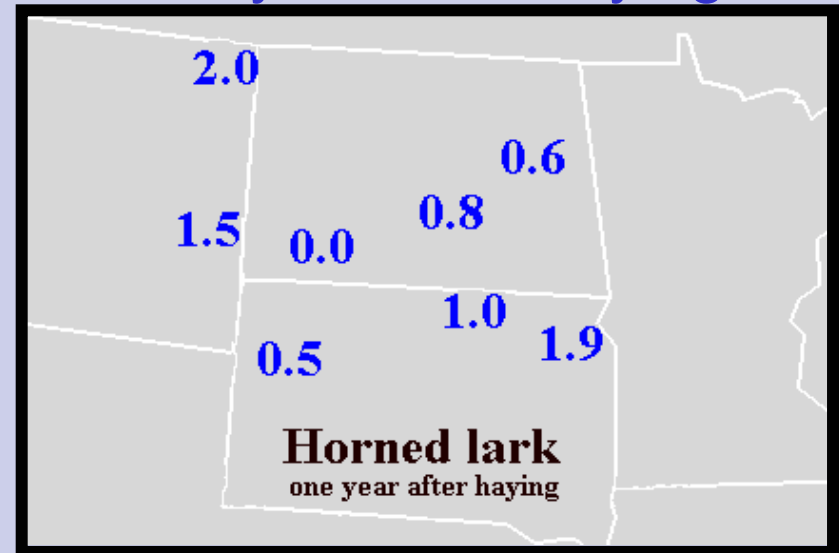


Two years after haying

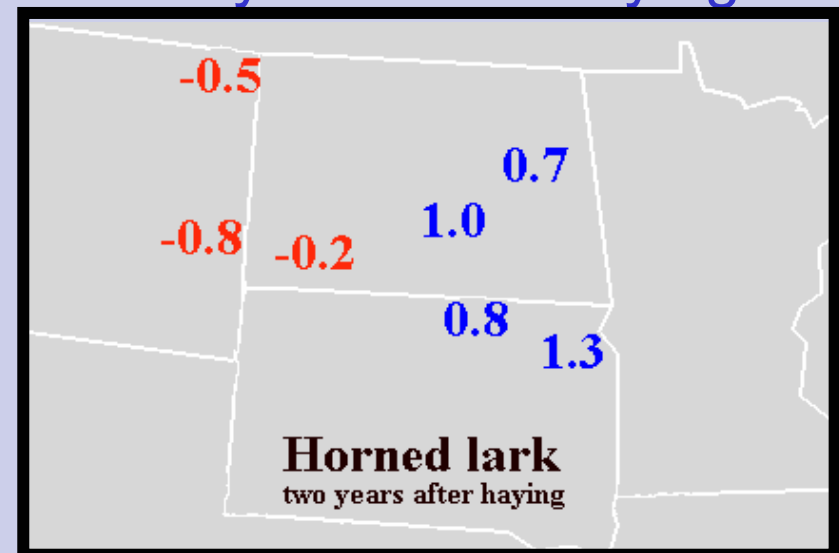


Horned Larks
responded positively
to haying

One year after haying

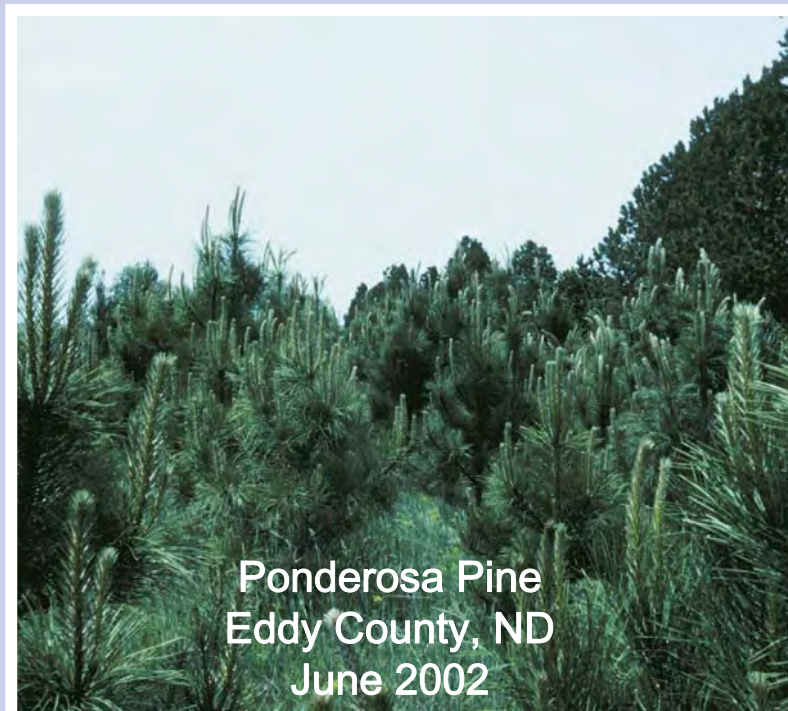


Two years after haying



Continuing and Future Work

1. The effects of emergency haying and grazing on grassland birds.
2. the influence of landscape features on bird use of CRP fields
3. The influence of introduced versus native plantings on bird use of CRP fields
4. Temporal patterns of area sensitivity
5. Comparison of point count vs. area count methodologies



6. Tree Encroachment into Idle CRP fields

Acknowledgments

Collaborators

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