Long-term decline and short term crash of the once abundant Rusty Blackbird

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WINTER PLUMAGE

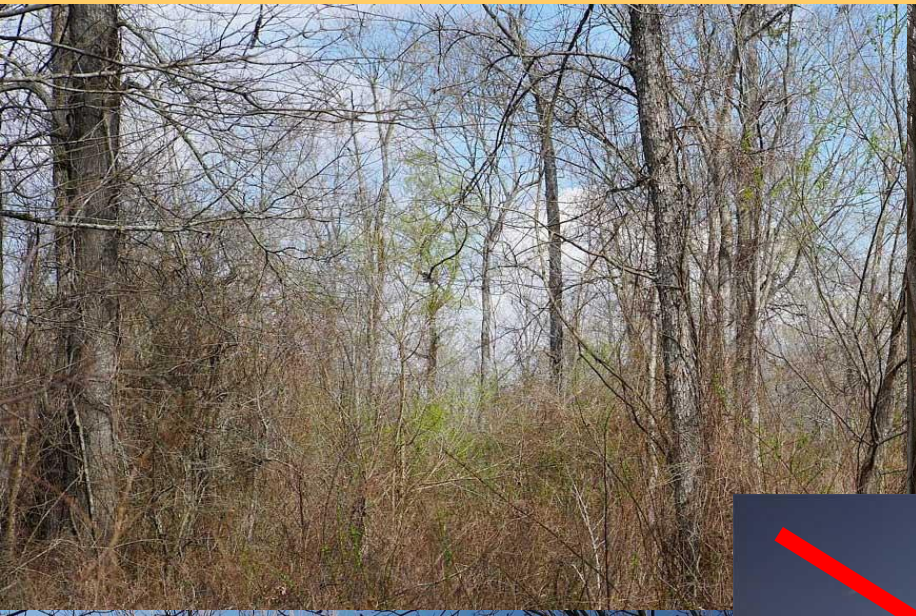
A Rusty Blackbird Primer

- Breeds Across Boreal Forest
- Winters throughout Southeast U.S. in wooded wetlands
- Numbers and distribution vary between and within winters – a lot.
- Feeds on invertebrates (mainly) at the edge of small puddles by flipping leaves and matted vegetation

Primer continued

- Highly neophobic
- Often quiet –easy to miss
- Often forages in single species flocks
- Different from most other blackbirds

Day-time Habitats

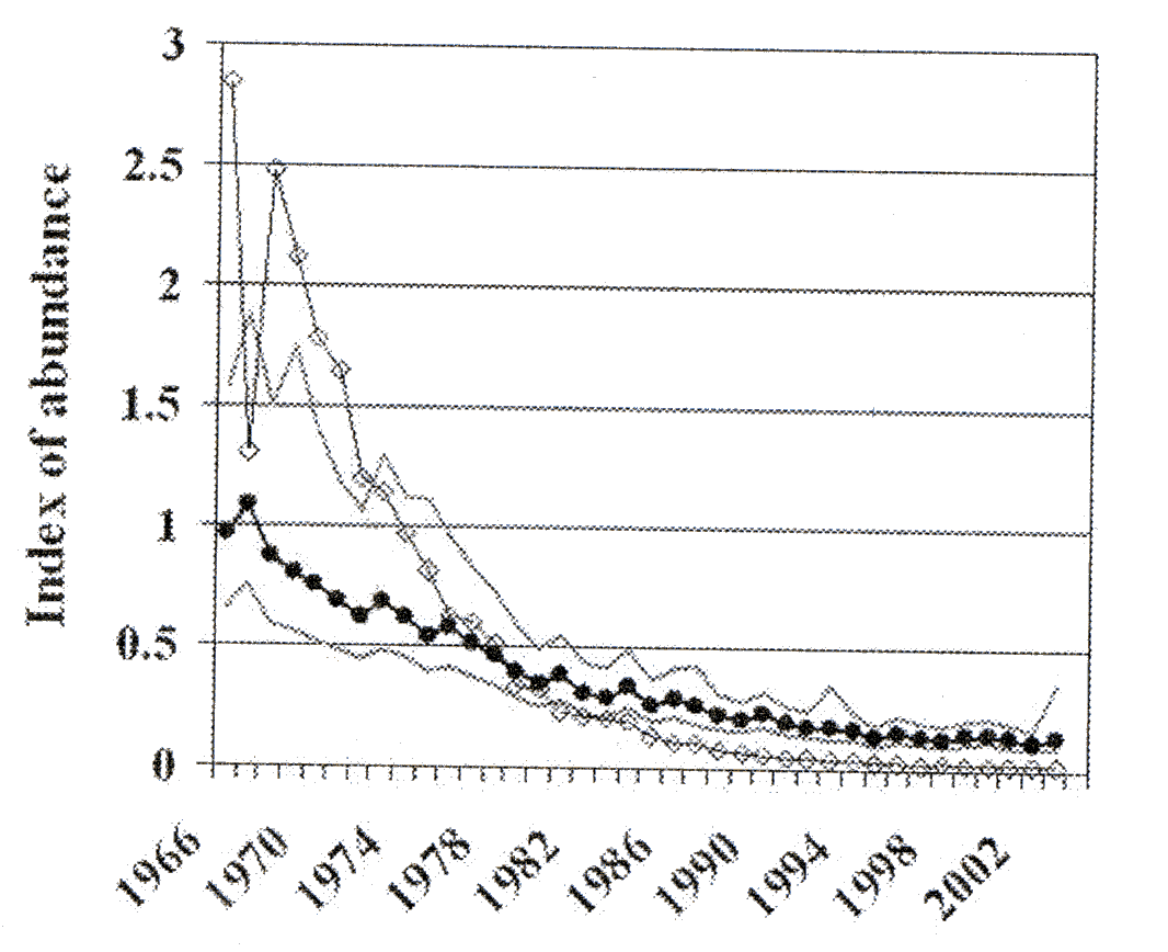


Common Birds Go Extinct

“The time to protect a bird is when it is still common”

Willard Van Name coined and
Rosalie Edge popularized

Rusty Blackbird: The decline as we think we know it



In the Beginning…..

“On the first day of May 1880, as I stood on an iron bridge crossing a sluggish stream of Tonwanda Swamp, I saw the Rusty Grakles constantly trooping by in immense numbers…The sombre wave, this constantly rolling on, must have carried hundreds of thousands over this highway in a day….on being alarmed, either in the fields or in the bushes, these Grakles would rise in a dense, black cloud, and with a rumbling sound like that of distant thunder”

J. H. Langille
As quoted in Beadslee and Mitchell (1965) Birds of the Niagara Frontier region

One of the most familiar sights to the New England schoolboy, and one which assures him that spring is really at hand, is a tree full of blackbirds, all facing the same way and each one singing at the top of its voice. These are rusty blackbirds

…

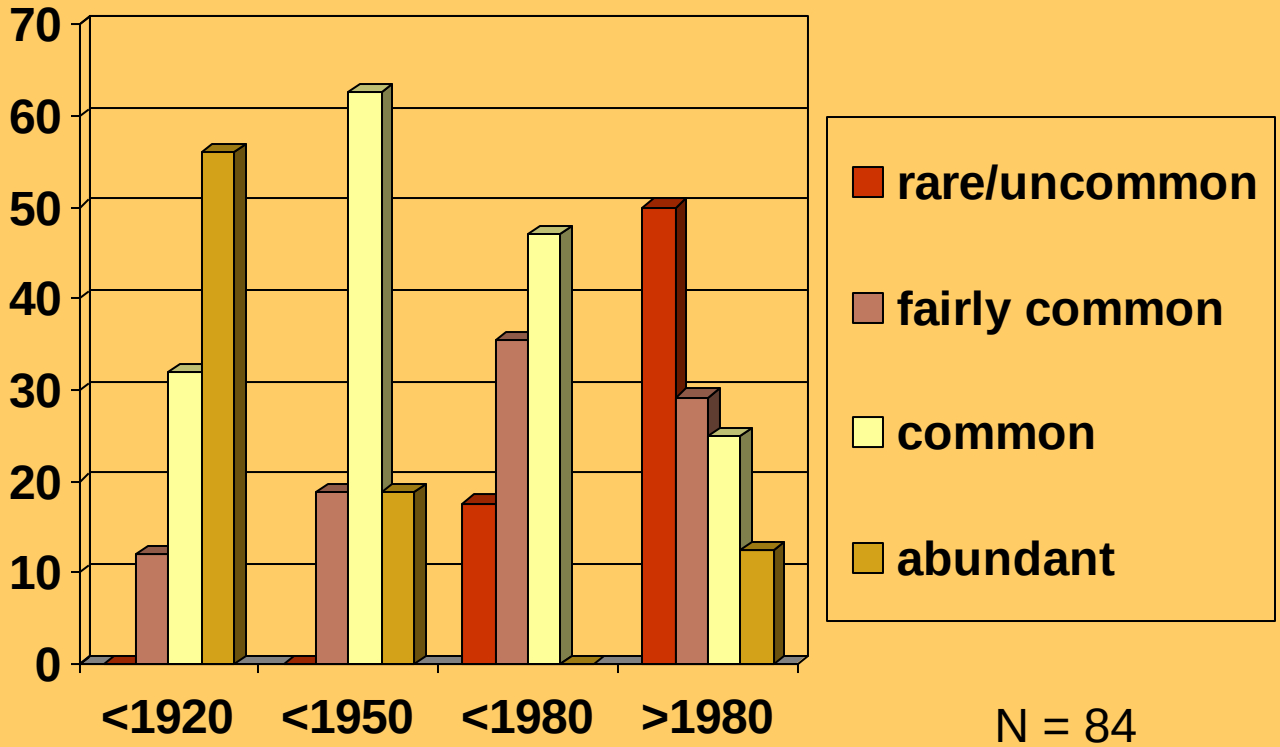
In their migration they are seen in immense numbers, especially in the Mississippi Valley.

F. E. Beal (1890). Food of the bobolink, blackbirds and grackles.

An enormously abundant migrant…The thousands of Grackles have been increased to tens of thousands. They blacken the fields and cloud the air. The bare trees on which they alight are foliated by them. Their incessant jingling songs drown the music of the Meadow Larks and produce, dreamy, far-away-effect, as of myriads of distant sleigh bells

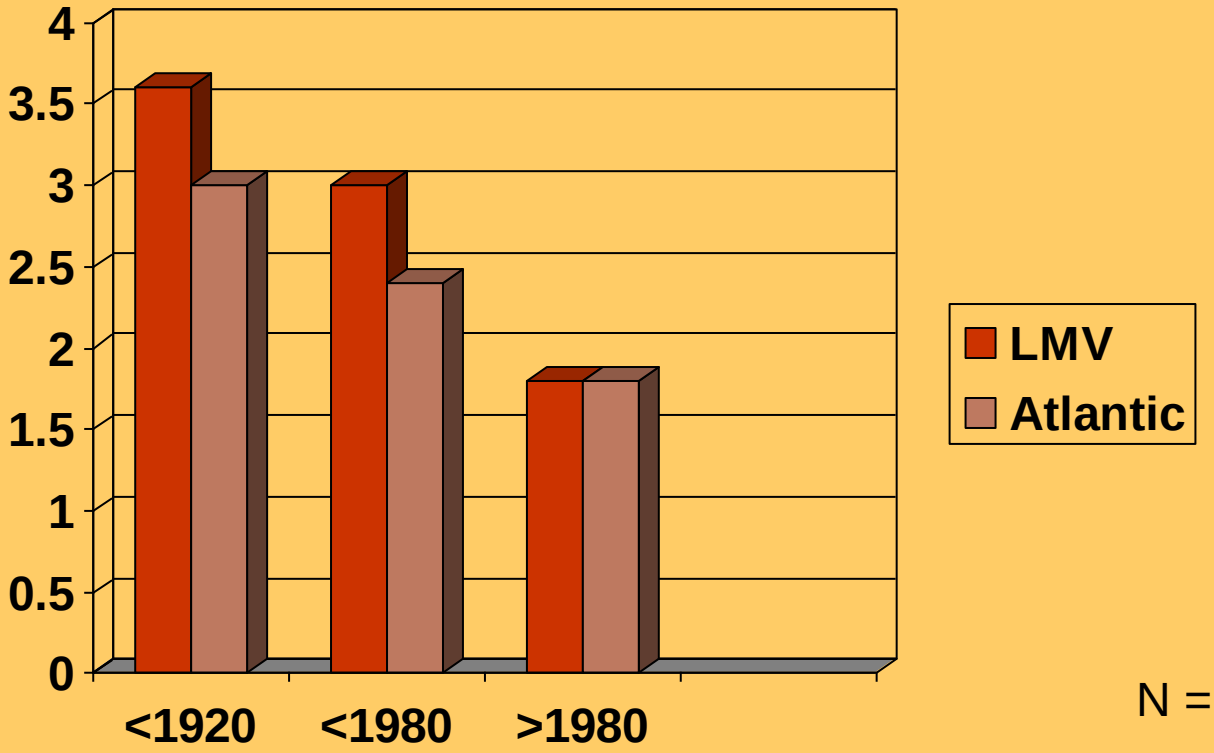
E.E. Thompson (1891) Birds of Manitoba

Change in Abundance Class State Accounts



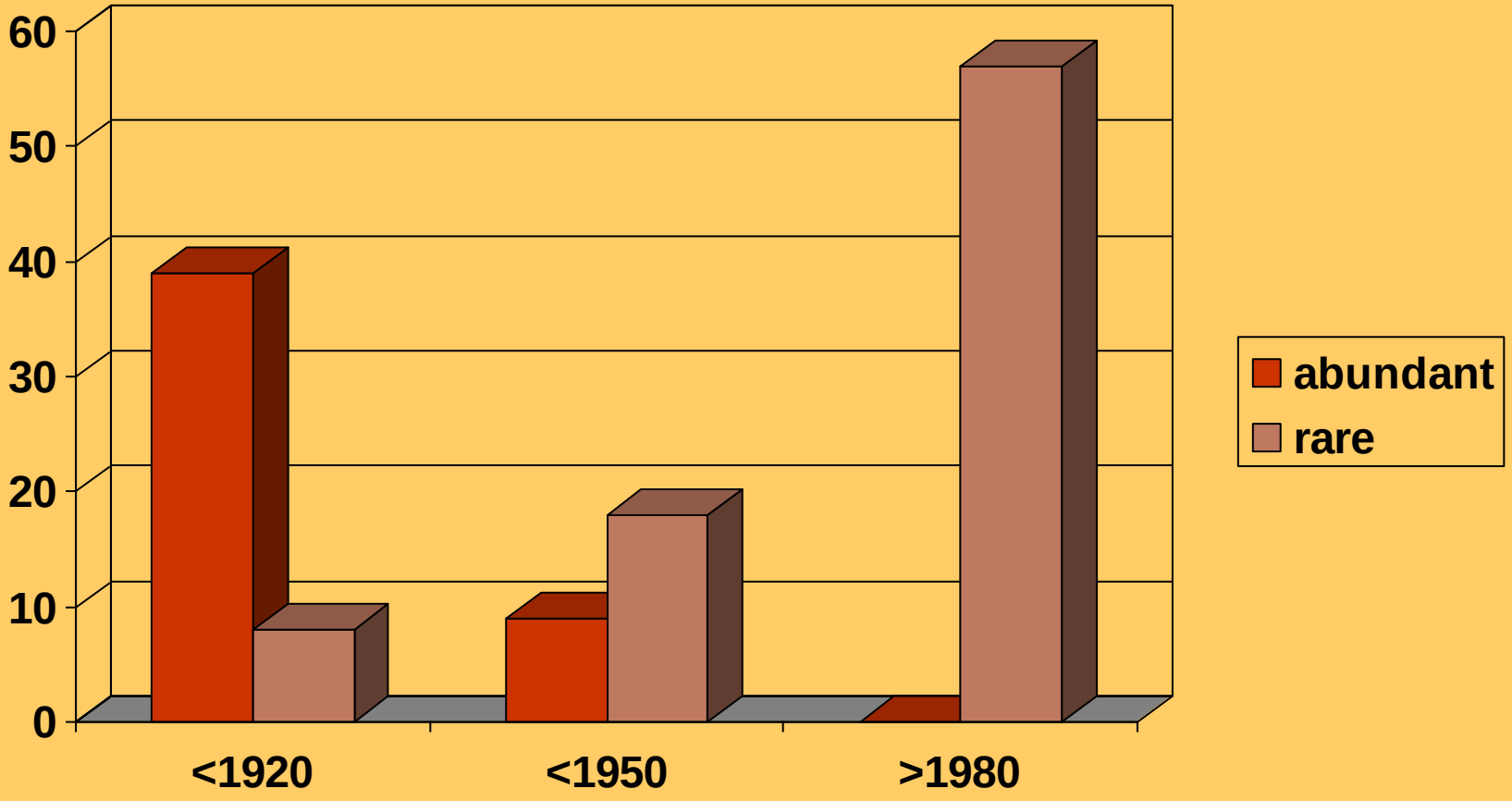
N = 84

Geography of Long-term Winter Declines



N = 17,17

Autumn Migration Checklists



N = 307

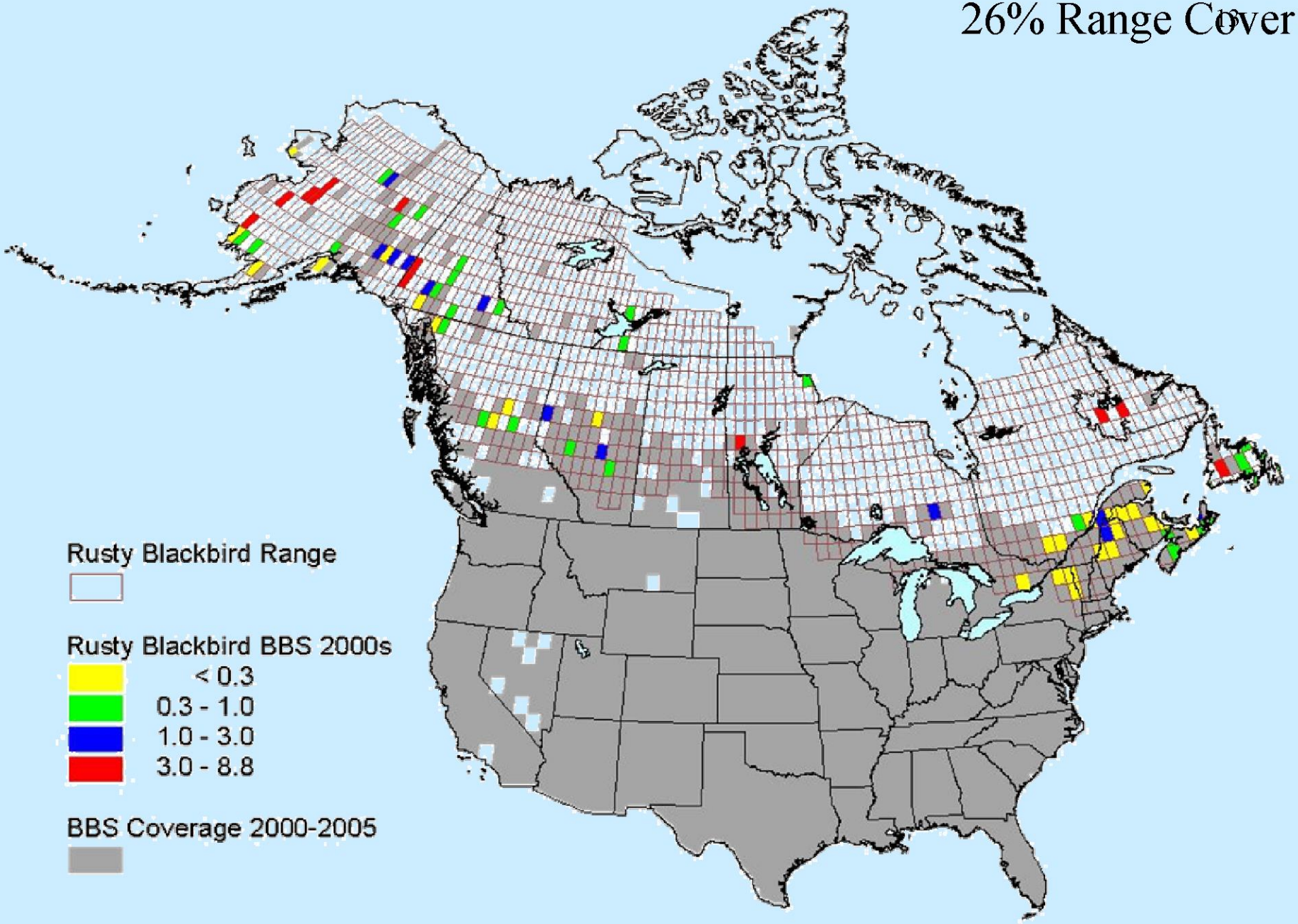
Take Home Message

By the beginning of the 80-90% decline estimated by BBS and BBC,

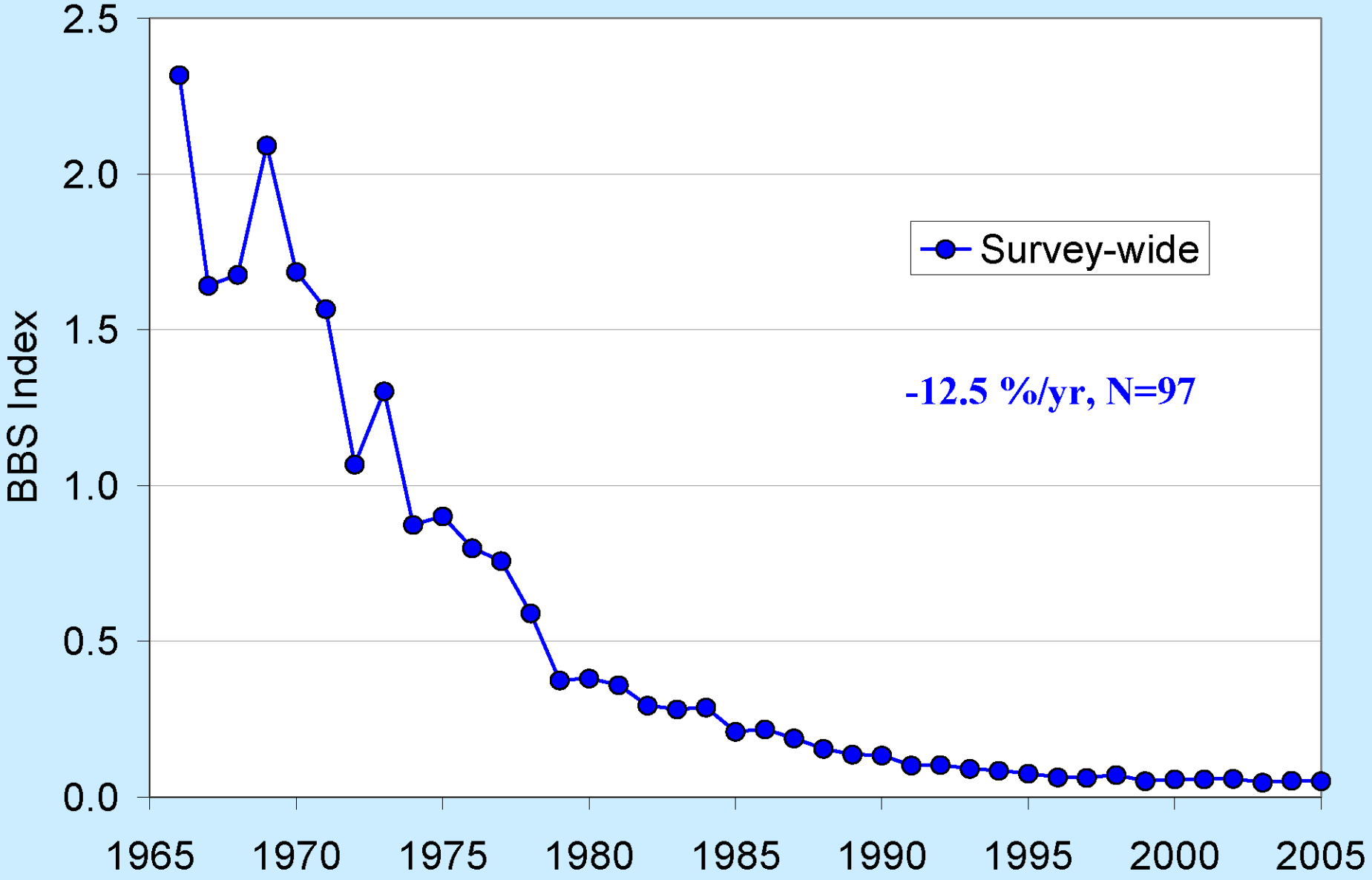
the Rusty Grakle had apparently already gone from abundant to uncommon in most areas

Monitoring Data

What the BBS has to say


26% Range Cover
Rusty Blackbird Range
Rusty Blackbird BBS 2000s
< 0.3
0.3 - 1.0
1.0 - 3.0
3.0 - 8.8
BBS Coverage 2000-2005

Rusty Blackbird



BBS Trends

Region	USGS 1966–2005			CWS 1968–2005		
	Trend	P	N	Trend	P	N
Survey-wide	**-12.5**	**	**97**			
	(**-19.0**	*	**103**)			
Canada	**-12.8**	**	**74**	**-10.6**	*	**211**
Alaska	6.3		28			
Yukon	**-9.6**	**n**	7			
British Columbia	-33.0		7	**-18.1**	*	**22**
Alberta				-15.0		21
Ontario	**-14.9**	**	**11**	**-19.7**	**n**	**29**
Quebec	**-9.8**	**	**15**	-4.9		35
New York	2.5		7			
New Hampshire	-0.2		6			
Maine	28.0		9			
New Brunswick	**-9.3**	**	**17**	**-14.0**	*	**24**
Nova Scotia	-3.8		20	**-7.8**	*	**26**
Newfoundland & Labrador	**-11.1**	*	**16**	-7.1		24

n P<0.1; * P<0.05; ** P<0.01

Other Surveys

- McKenzie Pipeline
- EPOQ checklist and OOT migration counts
- Central Boreal Surveys
- Recent to historic comparison – no declines
- 11/25 year data – declines and possible cycles
- Few detections in areas where species was previously common

Other surveys continued…

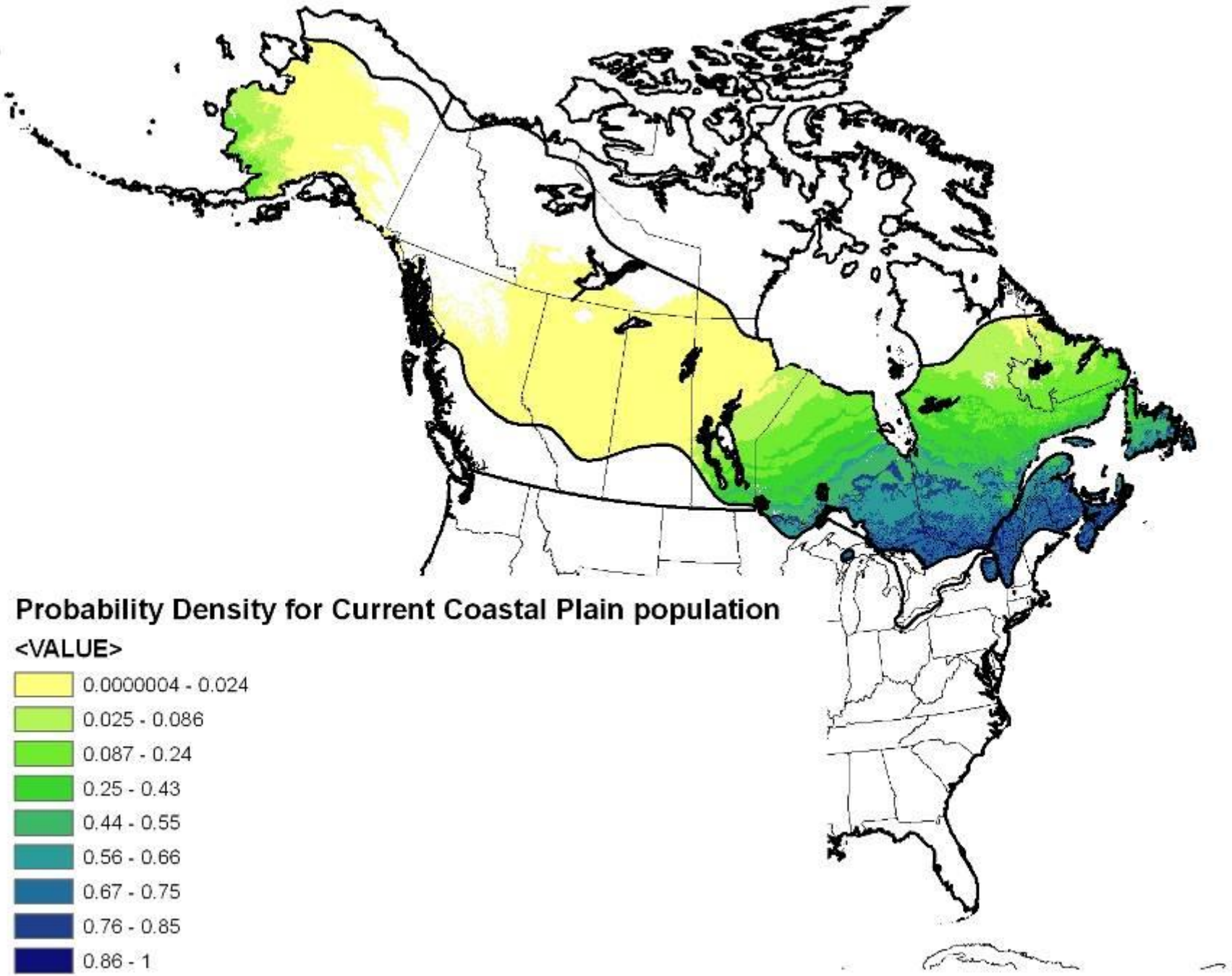
- Ontario Breeding Bird Atlas
- Maine Surveys
- Maritimes BBA
- 20 year comparison- range retraction in south – no decrease in north
- Recent-historical comparison – large range retraction
- Large decline and range retraction

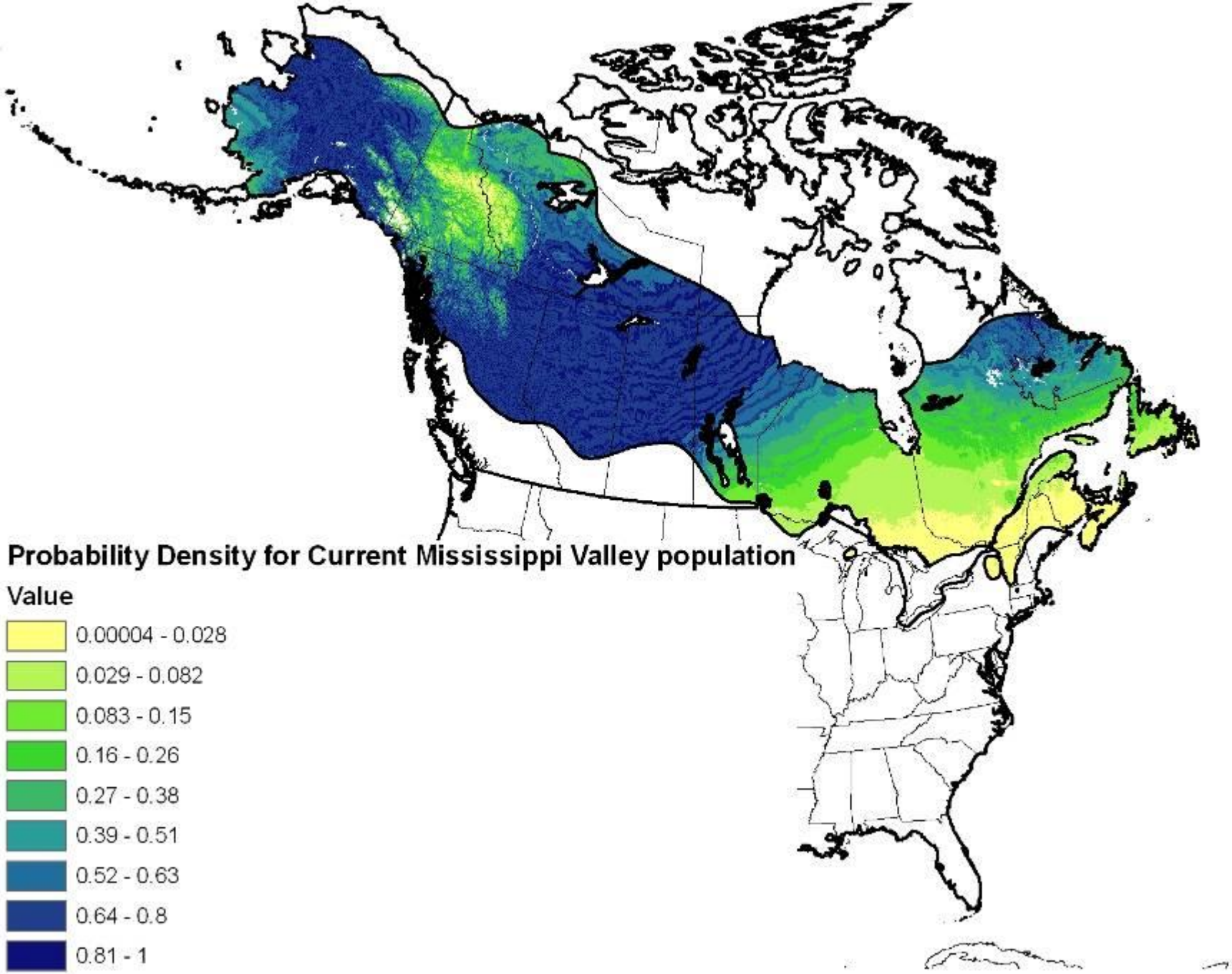
Breeding Season Overview

- Sharp decline in BBS data
- No ability to discern geographic structure
- Biased coverage
- Local range contractions and disappearances from southern boreal
- Some evidence of stability in northern boreal
- Possible population cycles

Migratory Connectivity

Establishing the connections between particular regions or populations on breeding and non-breeding grounds


Probability Density for Current Coastal Plain population
<VALUE>
0.0000004 - 0.024
0.025 - 0.086
0.087 - 0.24
0.25 - 0.43
0.44 - 0.55
0.56 - 0.66
0.67 - 0.75
0.76 - 0.85
0.86 - 1


Probability Density for Current Mississippi Valley population
Value
0.00004 - 0.028
0.029 - 0.082
0.083 - 0.15
0.16 - 0.26
0.27 - 0.38
0.39 - 0.51
0.52 - 0.63
0.64 - 0.8
0.81 - 1

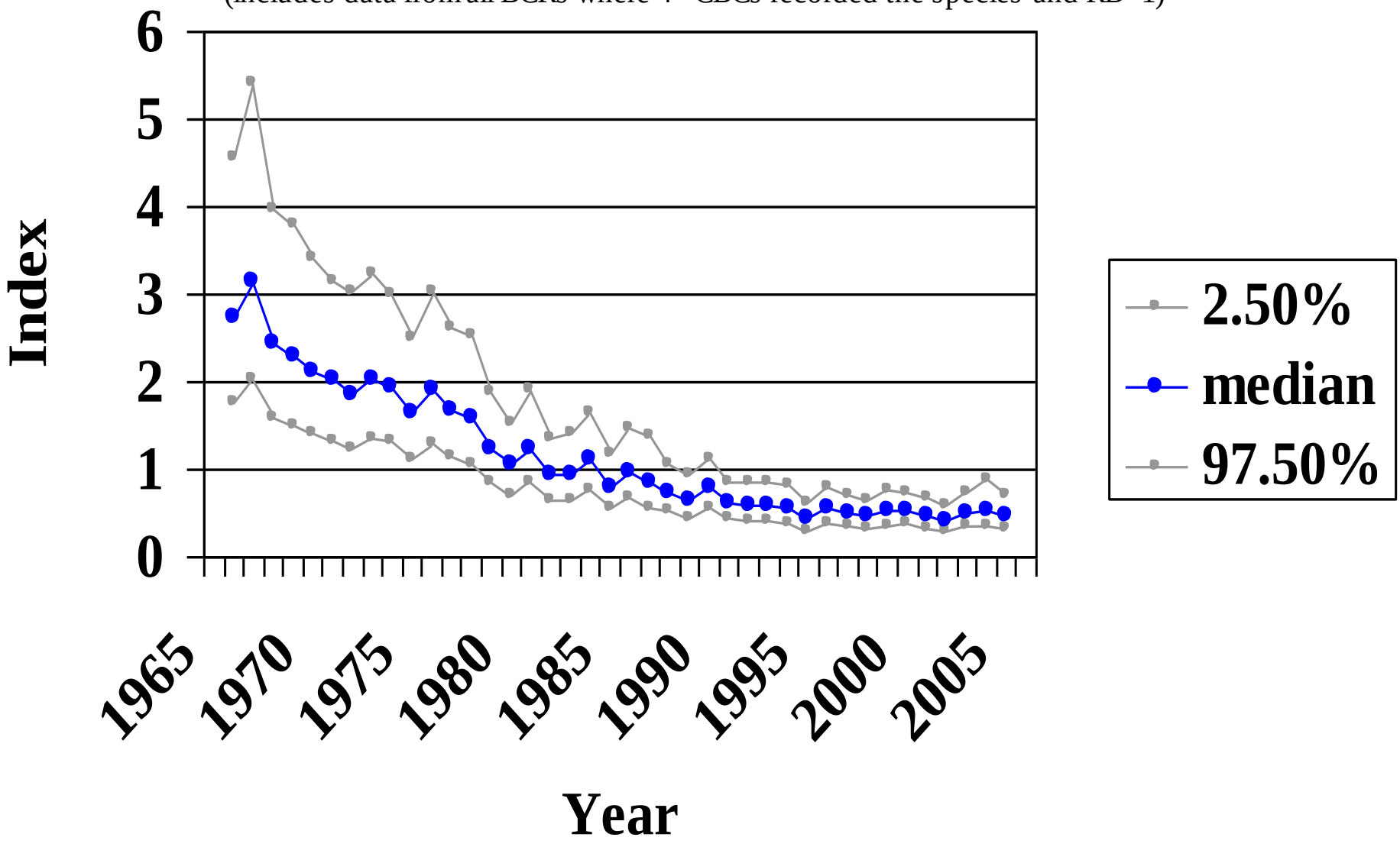
What is happening on the wintering grounds?

Insights from Christmas Bird Count Data

Rusty Blackbird

Composite Index, counts 66-105

(includes data from all BCRs where 4+ CBCs recorded the species and RD>1)



Rusty Blackbird BBS vs. CBC Trends

Survey-wide, 1966-2005

Survey	Trend (% change/yr)	2.5% CI (% change/yr)	97.5% CI (% change/yr)	Variance	P	N	R.A.	Range Covered
CBC	-4.5	-5.7	-3.3	0.363		1611	0.48	100.0
BBS	-12.5	-18.8	-6.2	10.295	0.0002	97	0.26	27.31

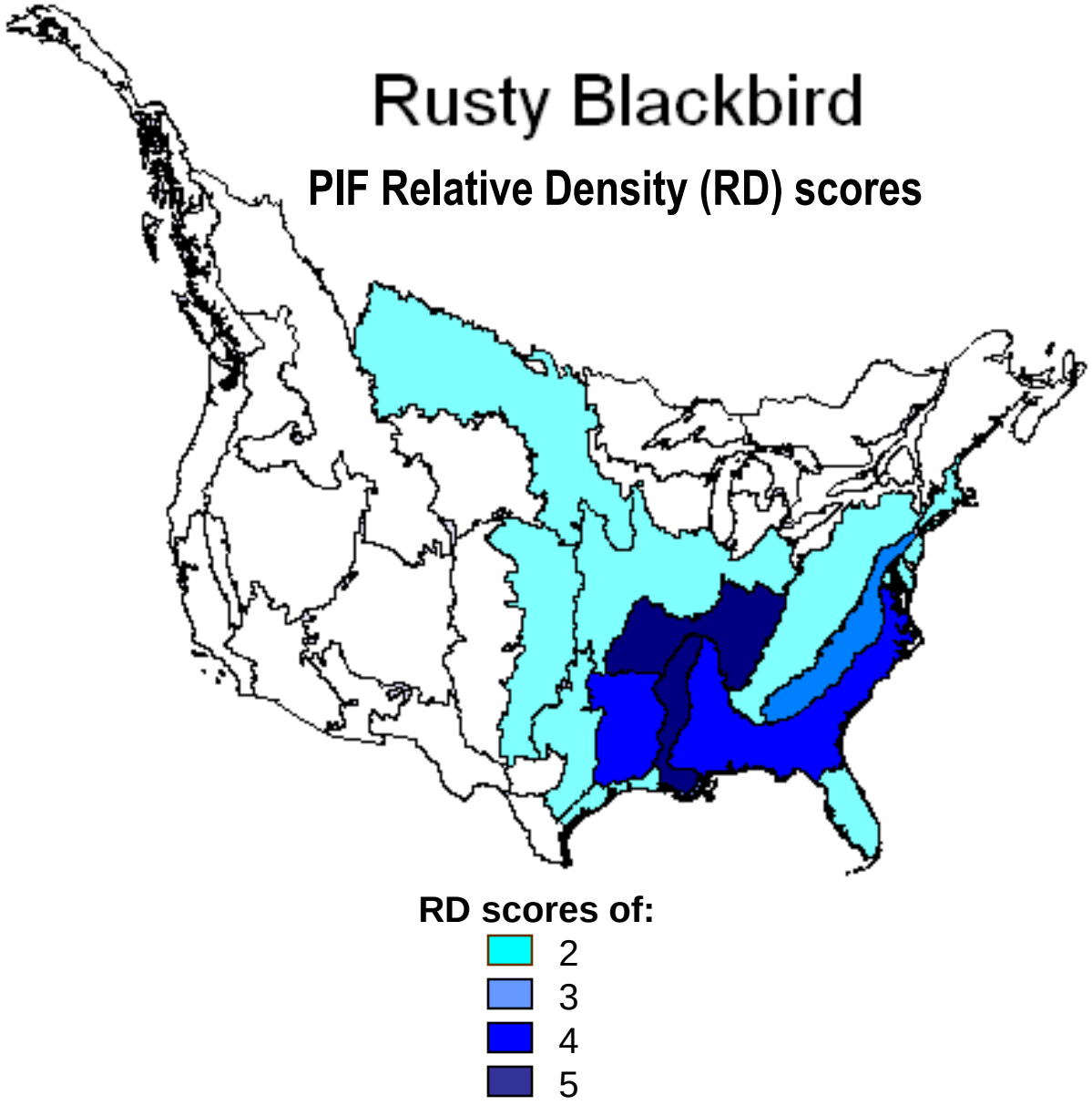
Rusty Blackbird CBC Trends

40-yr trends in core of early-winter range; where RD scores > 1

BCR	Name+	Trend (% change/yr)	2.5% CI (% change/yr)	97.5% CI (% change/yr)	N	Median abund.	RD
11	Prairie Potholes	-4.7	-7.2	-1.8	85	0.20	3.3
19	Central Mixed-grass Prairie	-5.2	-10.1	-0.3	44	0.57	9.4
21	Oaks and Prairies	-5.1	-9.2	-1.3	35	0.35	5.8
22	Eastern Tallgrass Prairie	-2.1	-4.1	-0.3	191	0.46	7.5
24	Central Hardwoods	-4.9	-7.6	-2.0	83	3.40	56.8
25	Western Gulf Coastal Plain / Ouachitas	-5.3	-8.8	-1.4	44	1.85	30.2
26	Mississippi Alluvial Valley	-4.9	-8.0	-1.8	41	5.99	100.0
27	Southeastern Coastal Plain	-3.7	-5.5	-1.4	112	2.94	48.4
28	Appalachian Mountains	-3.8	-6.0	-1.4	167	0.24	4.0
29	Piedmont	-5.9	-8.5	-3.3	92	1.13	18.4
30	New England / Mid-Atlantic coast	-4.4	-6.1	-2.6	131	0.29	4.9
31	Peninsular Florida	-15.6	-19.9	-11.6	51	0.36	5.8
37	Gulf Coastal Prairie	-10.0	-13.1	-6.5	40	0.34	5.5

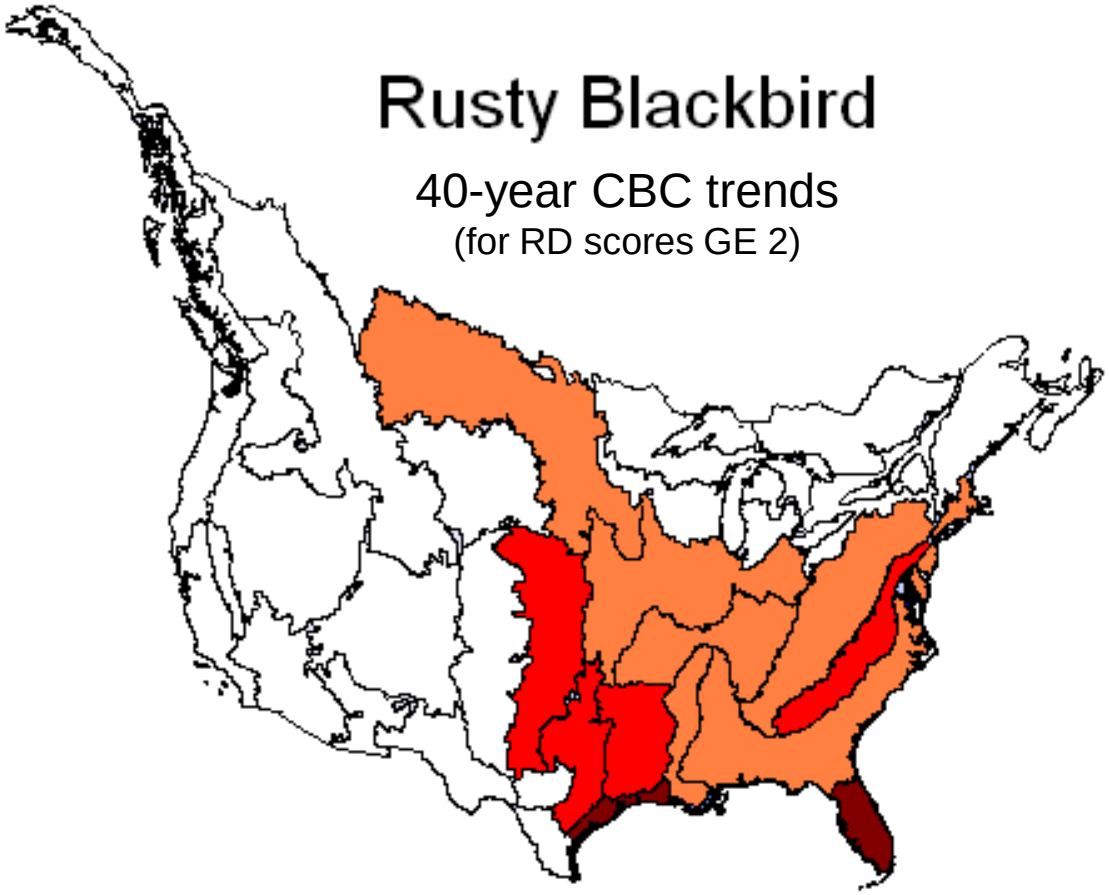
Rusty Blackbird

PIF Relative Density (RD) scores



Rusty Blackbird

40-year CBC trends
(for RD scores GE 2)



Annual declines of:

- GE 10% per year
- 5 – 10% per year
- 2 – 5% per year

CBC Overview

- CBC data shows steep decline –not as steep as BBS
- Accelerated decline in early 1970s
- Little geographic structure to decline

The Decline: Hypotheses and Predictions

Winter habitat loss

- **Abundance correlates with de- and afforestation.**
- **Predictions can be refined as details of habitat quality are developed from studies. Should include changes in hydrology and forest composition.**

Blackbird control

- **Mortality from formal and informal control efforts is sufficient to have an impact on population processes.**
- **Geographic and temporal pattern in declines correlates with major blackbird control efforts.**

The Decline: Hypotheses and Predictions

Hypothesis	Prediction
Breeding habitat loss	• **Steeper decline in areas where habitat has been converted.**
Wetlands drying	• **Steeper declines, lower fitness, and lower food availability in wetlands with the strongest effect of drying (e.g., smaller bodies of water).** • **Fitness correlates: Low chick growth rate and fledging mass.**
Methyl mercury & wetland acidification	• **Steeper declines and low fitness in regions with higher MeHg contamination or acidification.** • **High levels of MeHg in tissues from these regions.** • **Fitness correlates: low adult survival and chick growth rates, high nest failure and other reproductive anomalies. For acidification, egg shell thinning and skeletal deformities in chicks.**

And now the rest of the story …