

**CBC analysis:
Applying 100 years of Citizen Science
to understand the Decline
of the Rusty Blackbird**

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Methods used for analysis of CBC data:

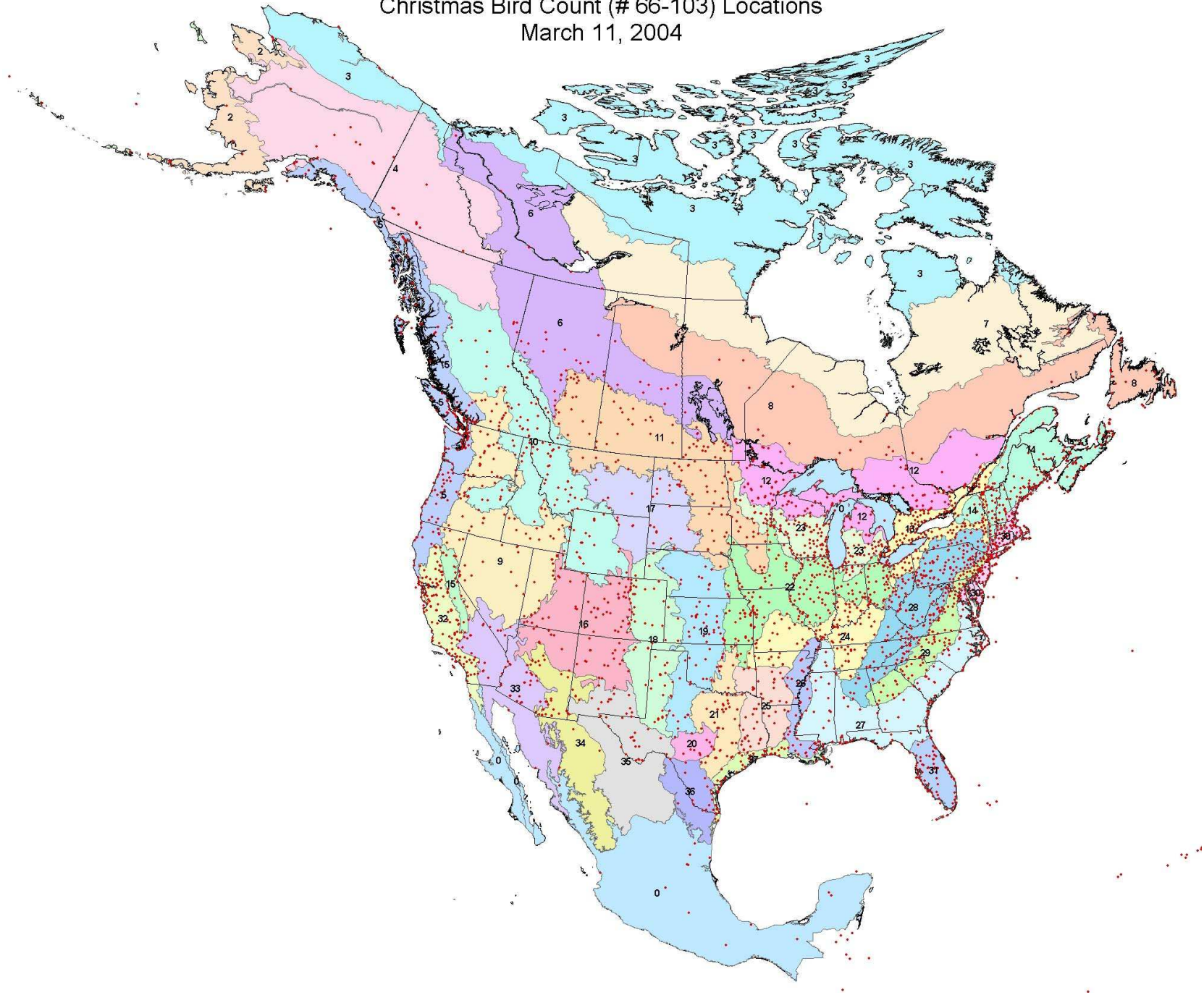
- Hierarchical analysis
- Bayesian model
- Fit with Markov Chain procedures
 - re-sampling from existing data
- Geographic structuring by BCRs

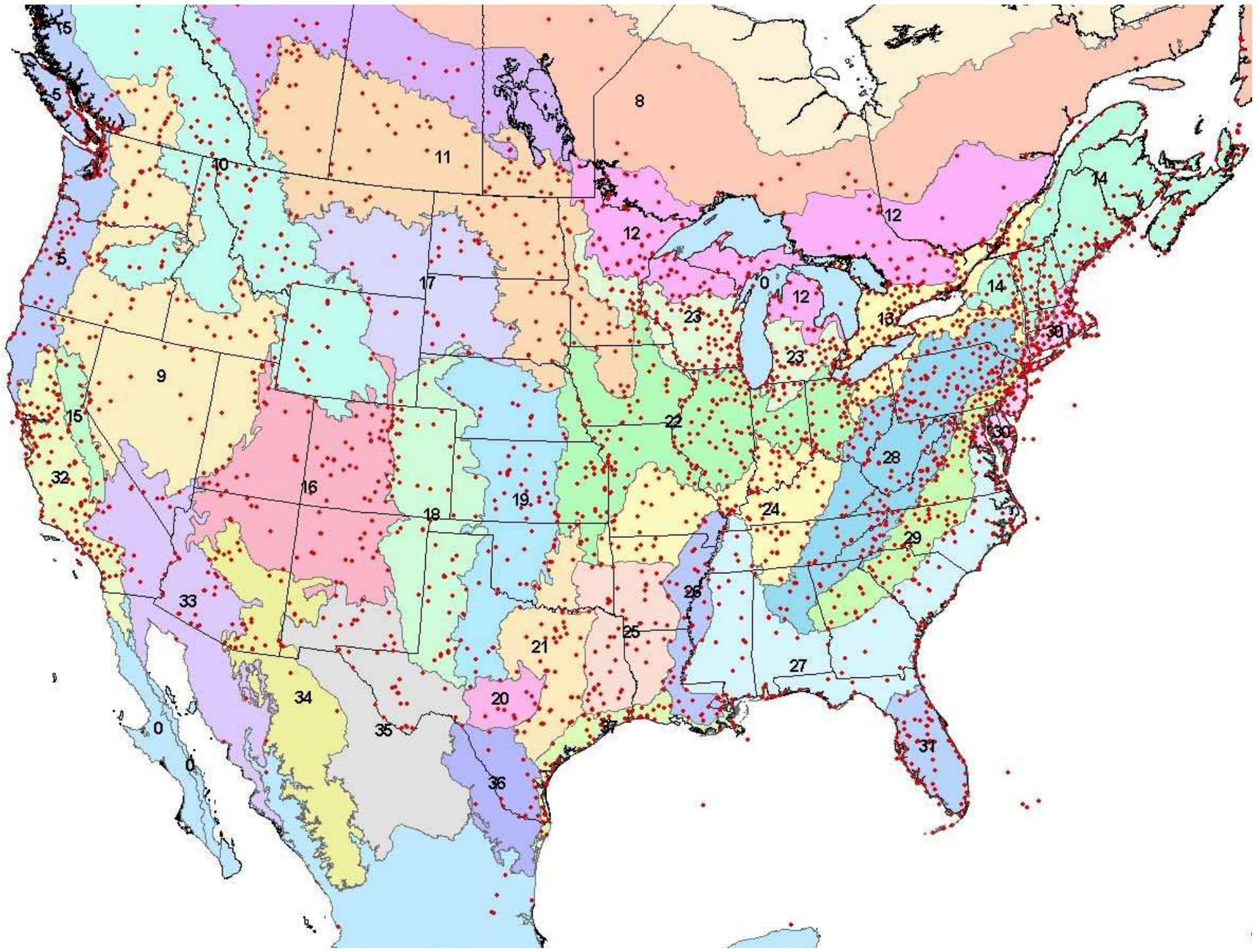
Distribution of CBCs by BCR

(# circles per strata & percentage of strata's area covered by CBCs)

BCR	Name	# CBCs	%	BCR	Name	# CBCs	%
1	Aleutian/bering Sea Islands	3	13	20	Edwards Plateau	8	6.23
2	Western Alaska	12	2	21	Oaks and Prairies	47	11.1
3	Arctic Plains and Mountains	13	0.2	22	Eastern Tallgrass Prairie	240	20.5
4	Northwestern Interior Forest	26	0.8	23	Prairie Hardwood Transition	146	29
5	Northern Pacific Rainforest	176	15	24	Central Hardwoods	102	15.4
6	Boreal Taiga Plains	46	1.5	25	West Gulf Coastal Plain/ouachitas	53	11.4
7	Taiga Shield and Hudson Plains	4	0.1	26	Mississippi Alluvial Valley	45	18
8	Boreal Softwood Shield	47	1.4	27	Southeastern Coastal Plain	132	12.2
9	Great Basin	116	7	28	Appalachian Mountains	228	24.5
10	Northern Rockies	114	5.5	29	Piedmont	104	25.5
11	Prairie Potholes	127	6.6	30	New England/mid-atlantic Coast	158	95.8
12	Boreal Hardwood Transition	138	10	31	Peninsular Florida	75	36.5
13	Lower Great Lakes/ St. Lawrence Plain	194	44	32	Coastal California	123	31.7
14	Atlantic Northern Forest	163	20	33	Sonoran and Mojave Deserts	50	5.6
15	Sierra Nevada	11	9.5	34	Sierra Madre Occidental	30	4
16	Southern Rockies/colorado Plateau	78	6.9	35	Chihuahuan Desert	37	3.67
17	Badlands and Prairies	31	3.9	36	Tamaulipan Brushlands	15	4.5
18	Shortgrass Prairie	62	7.4	37	Gulf Coastal Prairie	61	40.1
19	Central Mixed Grass Prairie	67	7.7				

BCRs
Christmas Bird Count (# 66-103) Locations
March 11, 2004

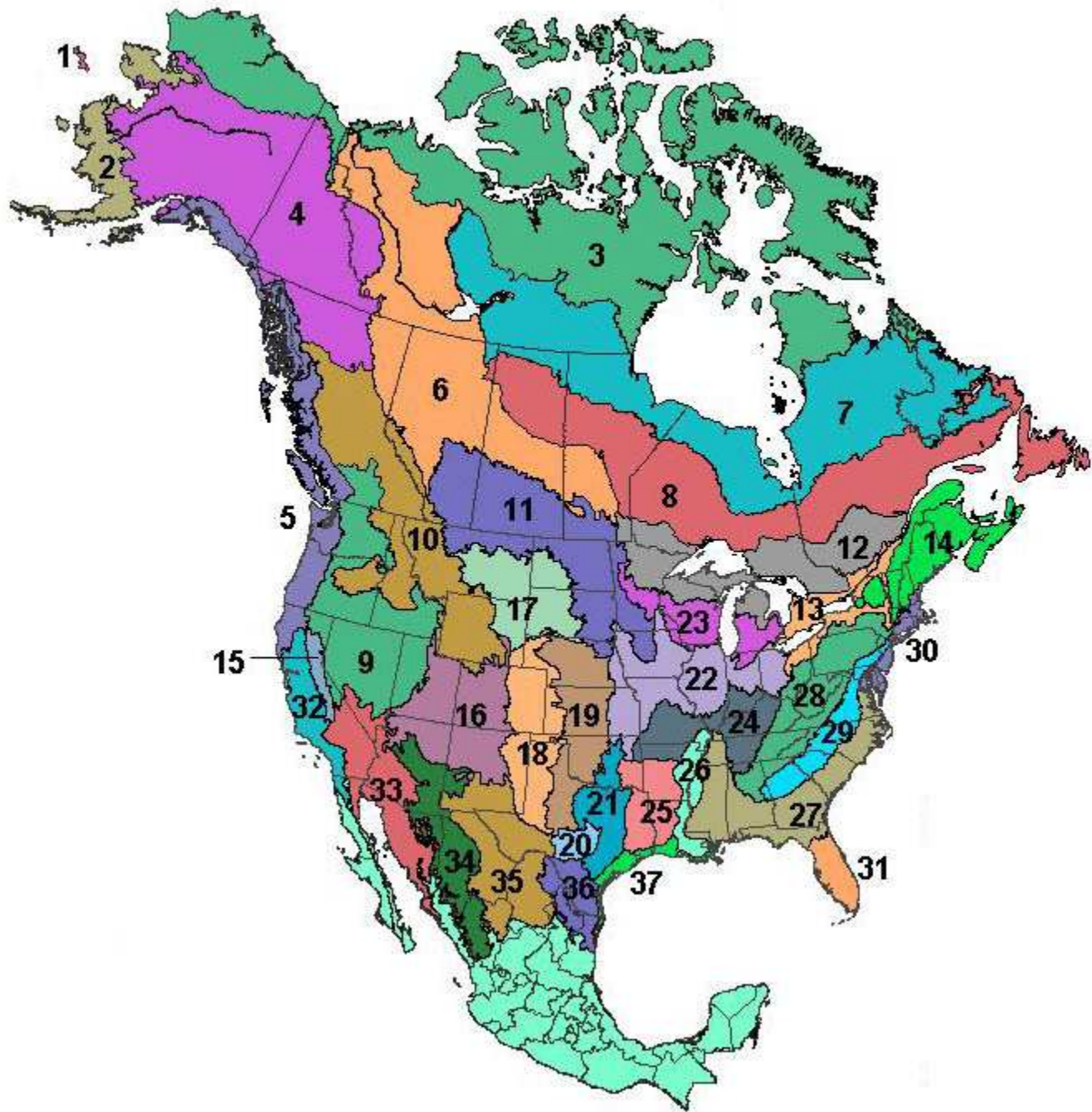




Rusty Blackbird BBS vs. CBC Trends

40 years, Survey-wide, 1966-2005

	Trend	2.5% CI	97.5% CI	Variance	P	N	R.A.	% Range
Survey	(% change/yr)	(% change/yr)	(% change/yr)					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 BBS Trends

Survey-wide, 1966-2005

		Trend	2.5% CI	97.5% CI	P	N	R.A.	RD
BCR	Name ⁺	(% change/yr)	(% change/yr)	(% change/yr)				
4	Northwestern Interior Forest	7.3	-15.5	30.1	0.54	27	0.65	100.0
6	Boreal Taiga Plains	-13.6	-26.1	-1.1	0.12	7	0.06	9.2
8	Boreal Softwood Shield	-12.5	-19.8	-5.2	0.03	6	0.36	55.4
10	Northern Rockies	-43.2	*****	13.6	0.20	6	0.05	7.7
12	Boreal Hardwood Transition	-14.1	-18.3	-9.9	0.00	14	0.2	30.8
13	L. Gr. Lakes / St. Lawrence Pl.	41.5	32.4	50.6	0.07	3	0.13	20.0
14	Atlantic Northern Forest	-5	-10.2	0.2	0.06	66	0.2	30.8

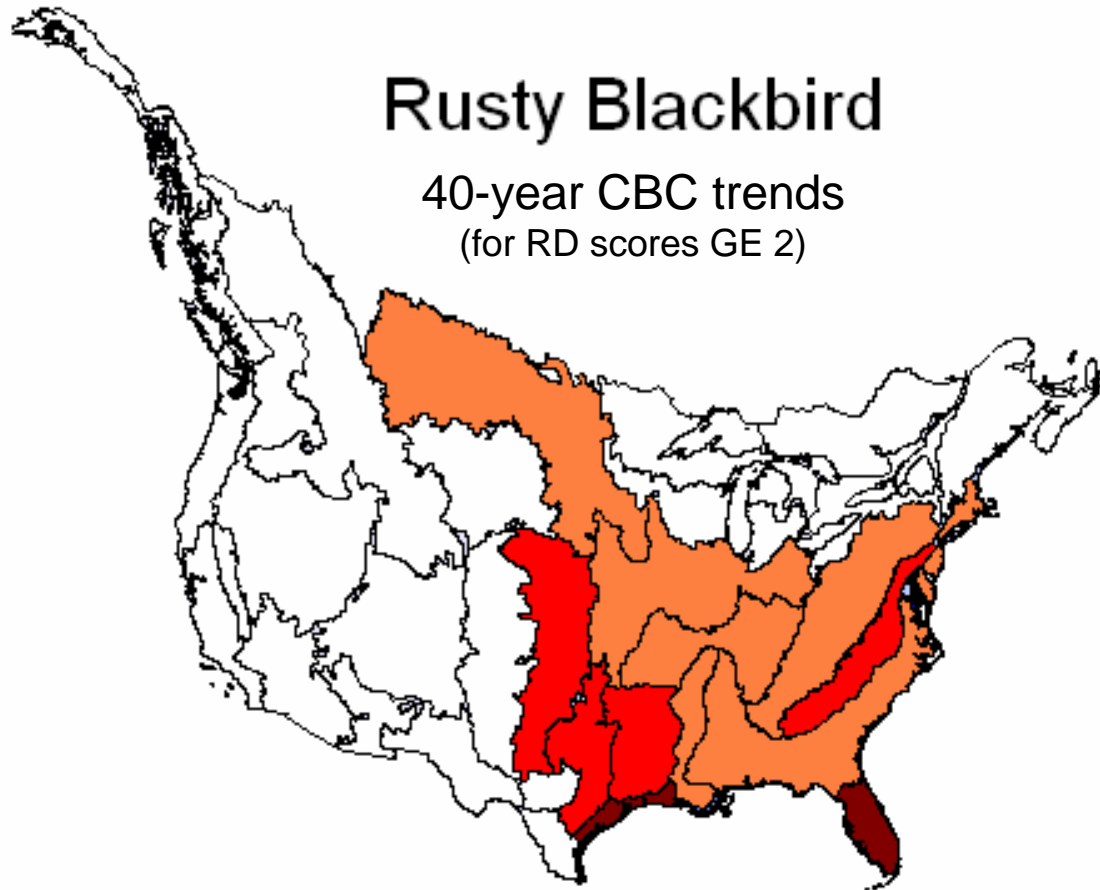
Rusty Blackbird CBC Trends

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




		Trend	2.5% CI	97.5% CI	N	Median abund.	RD
BCR	Name ⁺	(% change/yr)	(% change/yr)	(% change/yr)			
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

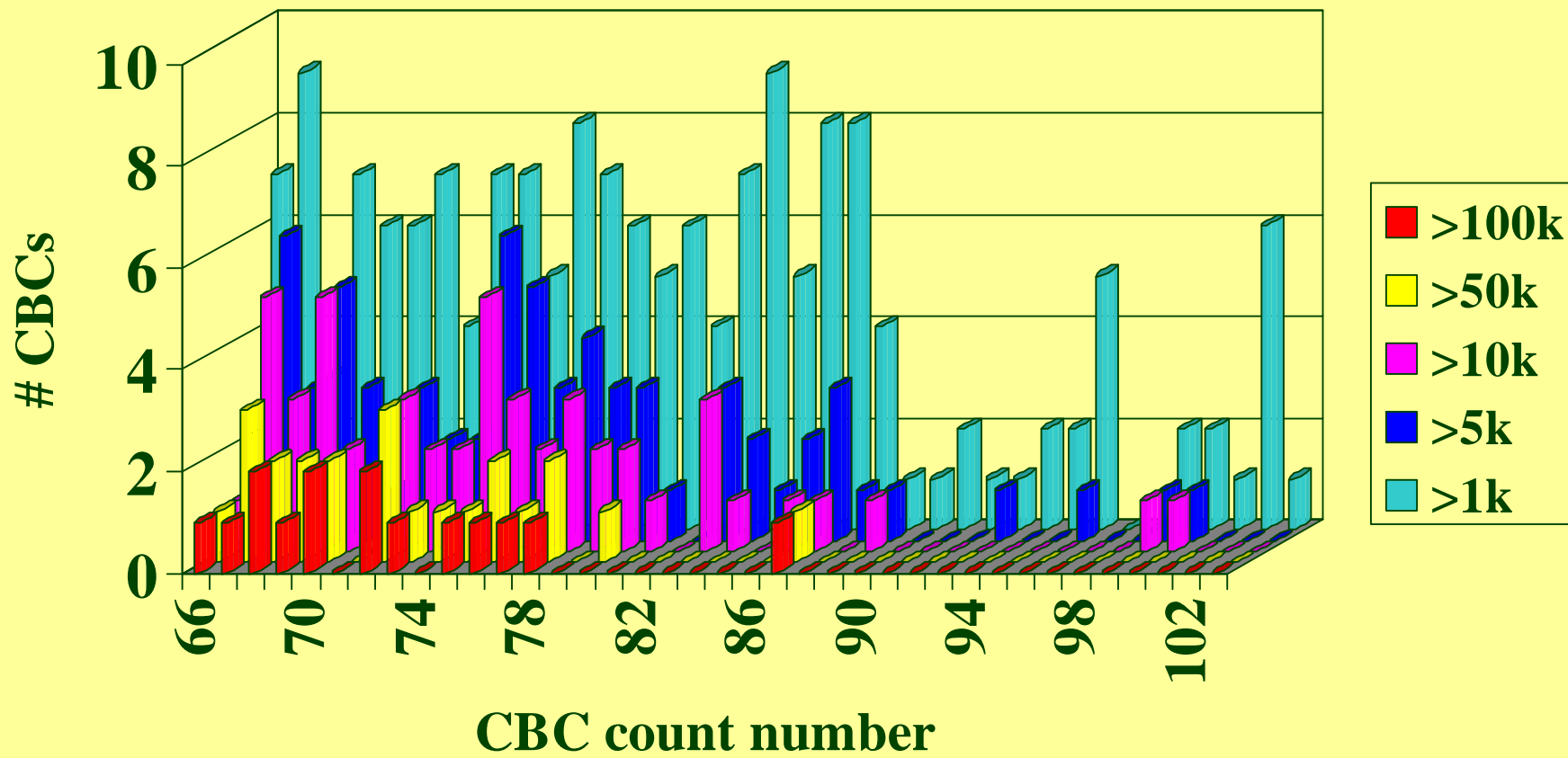
40-year CBC trends
(for RD scores GE 2)



Annual declines of:

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

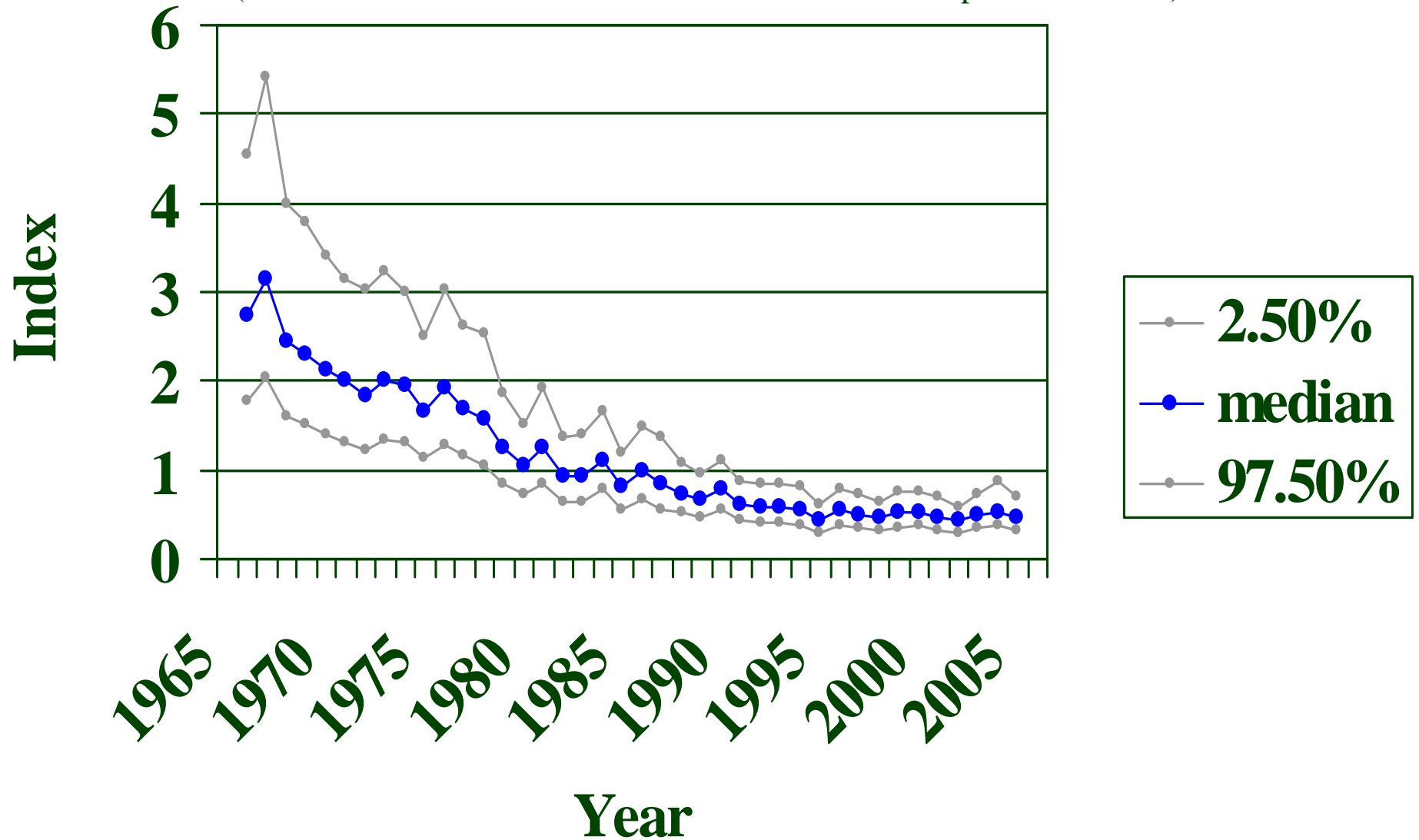
Rusty Blackbird



Rusty Blackbird

Composite Index, counts 66-105

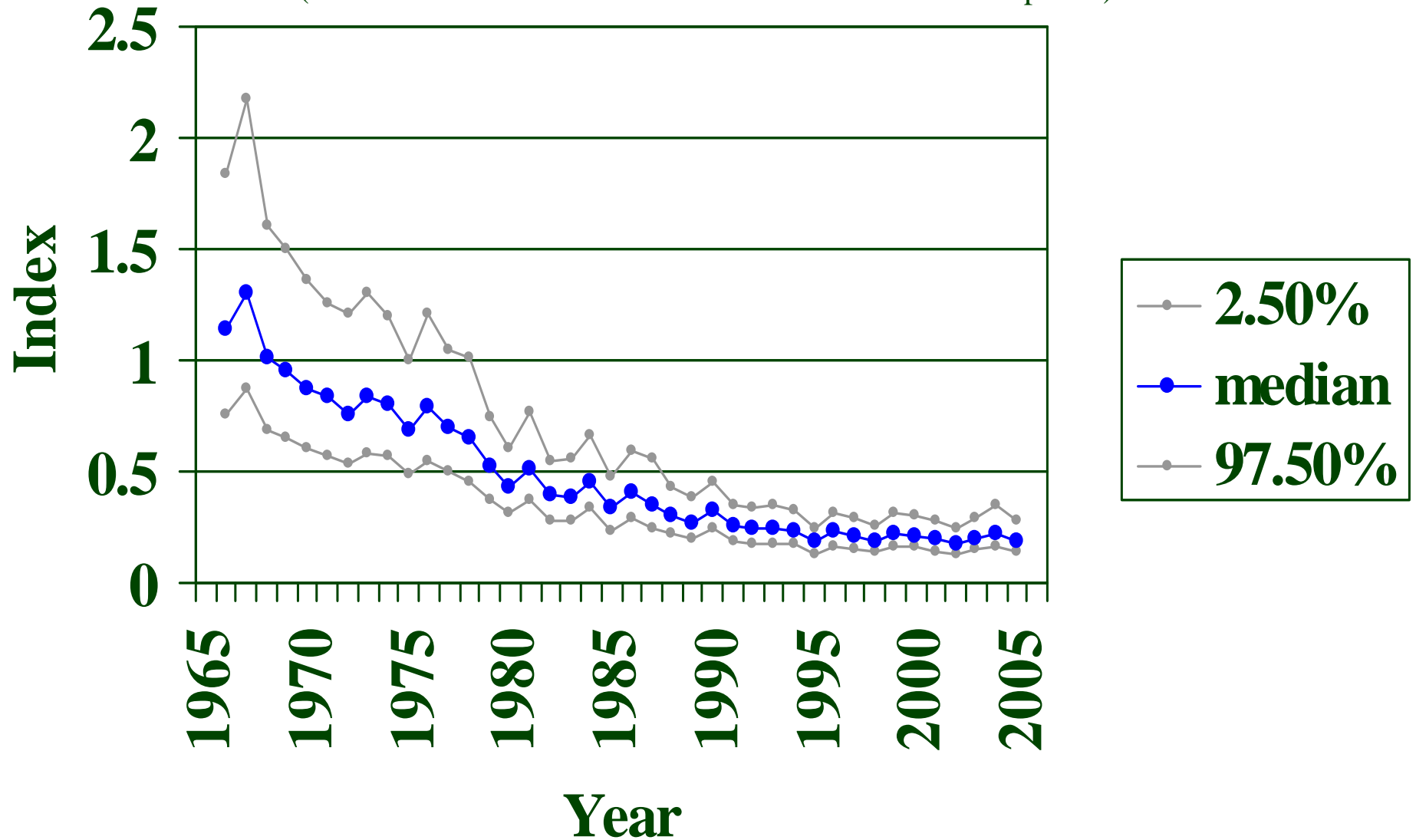
(includes data from all BCRs where 4+ CBCs recorded the species and RD>1)



Rusty Blackbird

Composite Index, counts 66-105

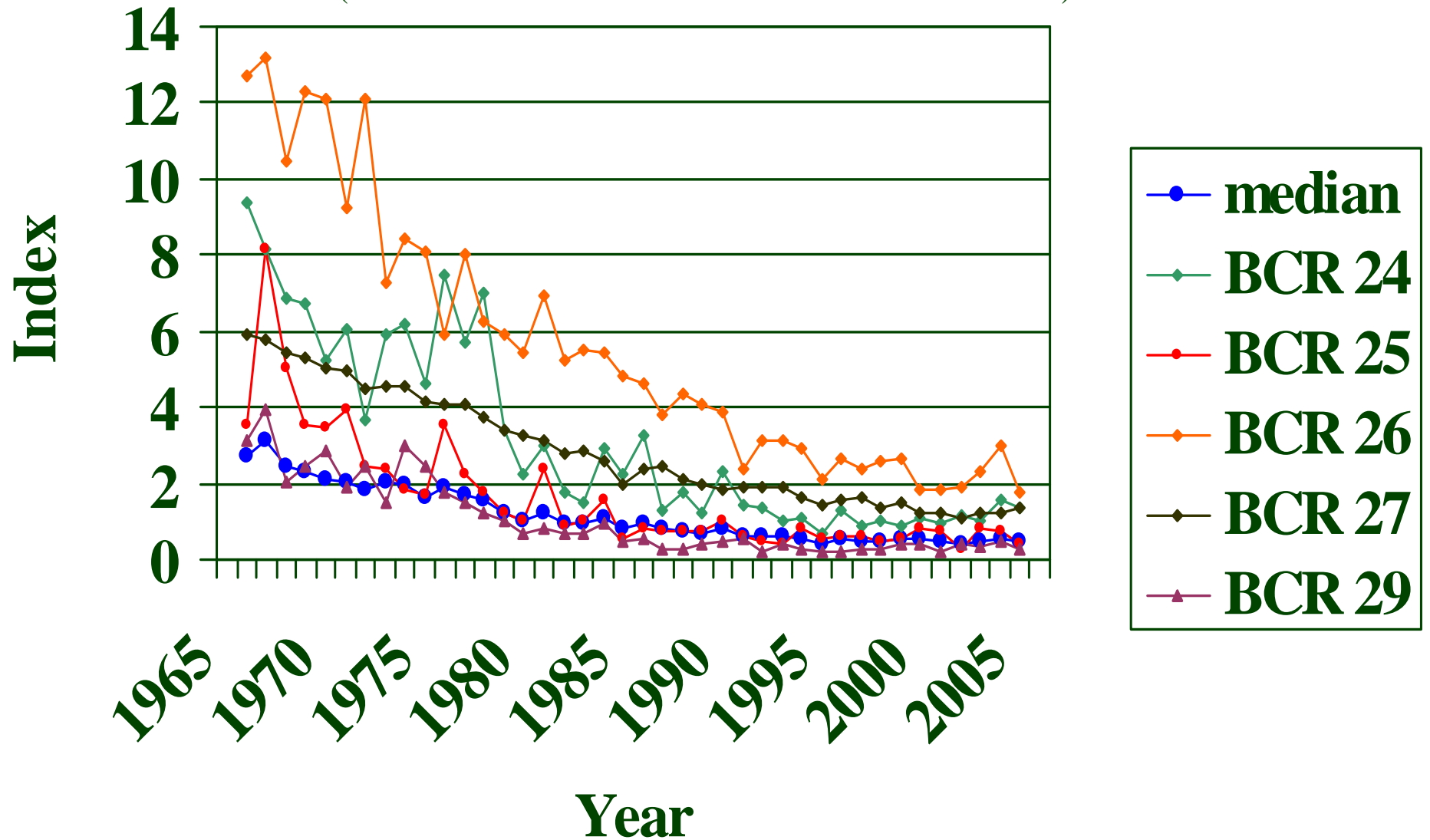
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Rusty Blackbird

Composite Index, counts 66-105

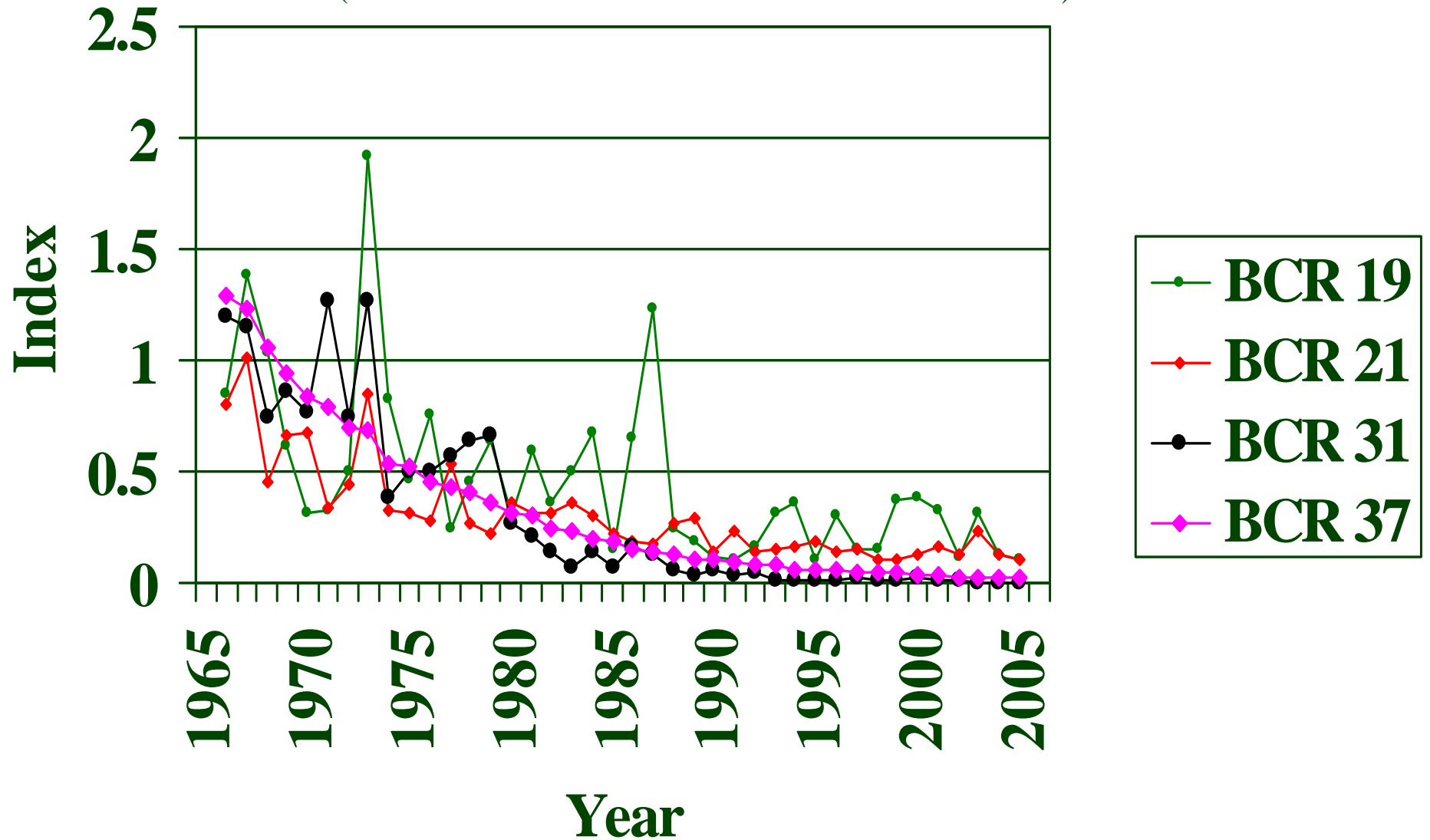
(data from BCRs where 4+ CBCs recorded RUBL and RD>1)



Rusty Blackbird

Composite Index, counts 66-105

(data from BCRs where 4+ CBCs recorded RUBL and RD>1)



Rusty Blackbird

Composite Index, counts 66-105

(data from BCRs where 4+ CBCs recorded RUBL and RD>1)

