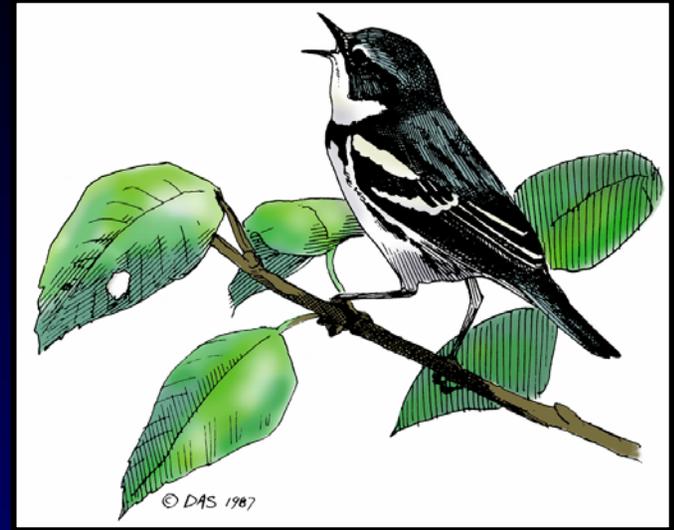


Cerulean Warbler: Population Status and Breeding Season Monitoring



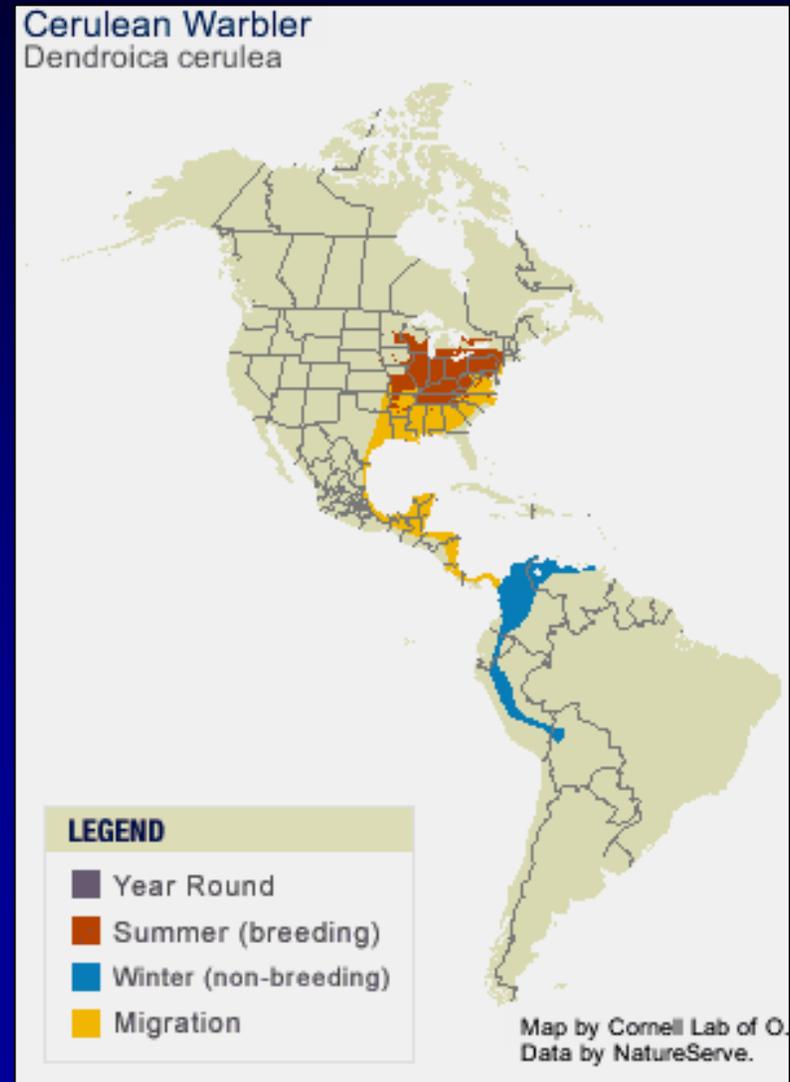
Kenneth V. Rosenberg
Cornell Lab of Ornithology

Cerulean Warbler Technical Group

November 16, 2006

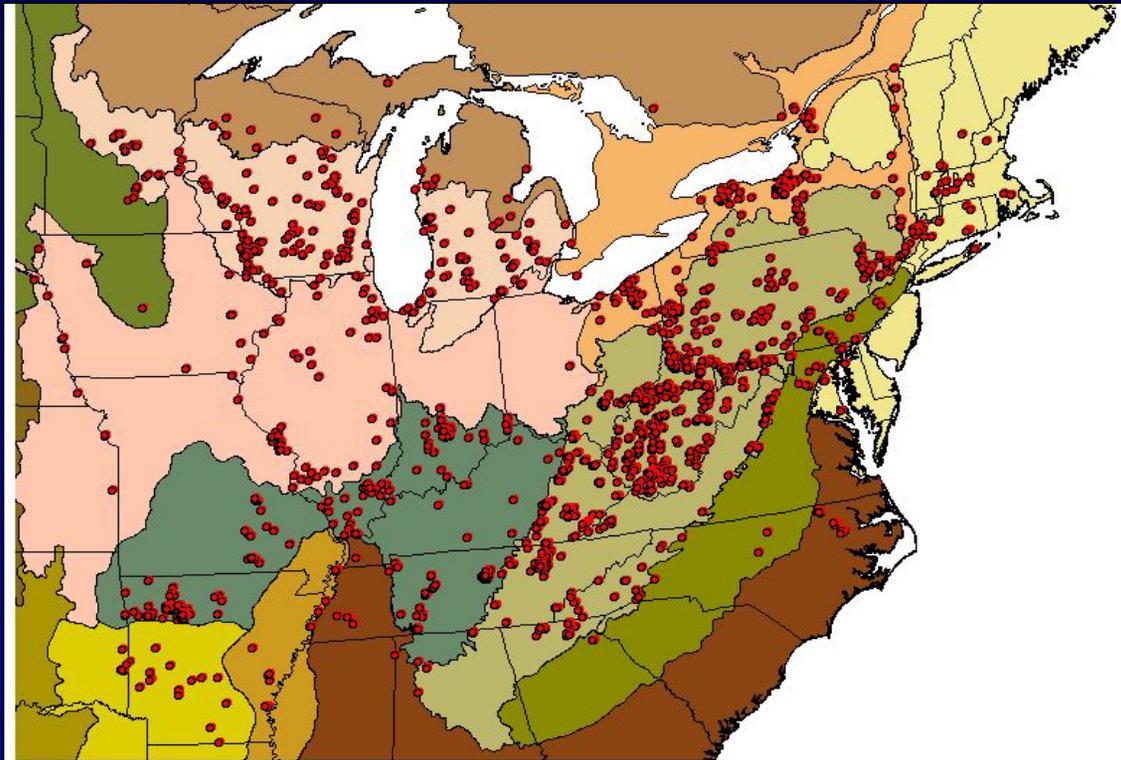
Cerulean Warbler: distribution

- Breeds in eastern North America
- Winters on east slopes of the Andes in northern South America
- Migrates through Central America and Gulf Coast

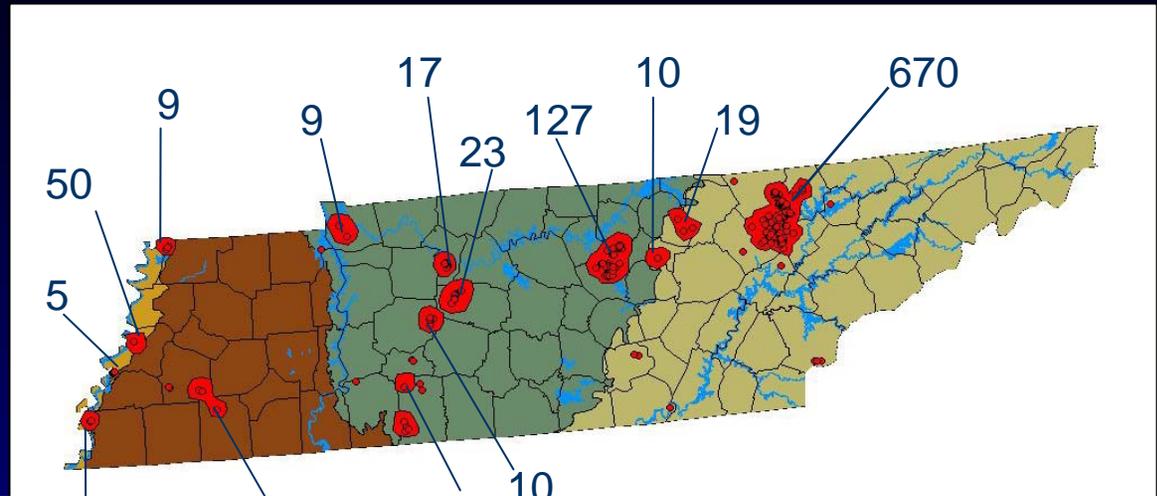


Detailed Breeding Distribution

- Cerulean Warbler Atlas Project (1996-2003)
- Over 3,000 sites surveyed with Ceruleans
- Largely restricted to Central Hardwoods biome



Population Concentrations



<u>No. pairs</u>	<u>State/Prov</u>	<u>Site</u>
430	TN	Royal Blue Wildlife Management Area
325	NY	Montezuma Wetlands Complex
300	IL	Kaskaskia River
240	TN	Center Hill Lake, Edgar Evins State Park
200	IN	Big Oaks NWR
200	IL	Shawnee National Forest
200	ON	Queens Univ. Biological Station
175	MI	Kalamazoo River, Allegan St. Game Area
165	NY	Alleghany St. Pk. And vicinity
145	TN	Frozen Head State Park

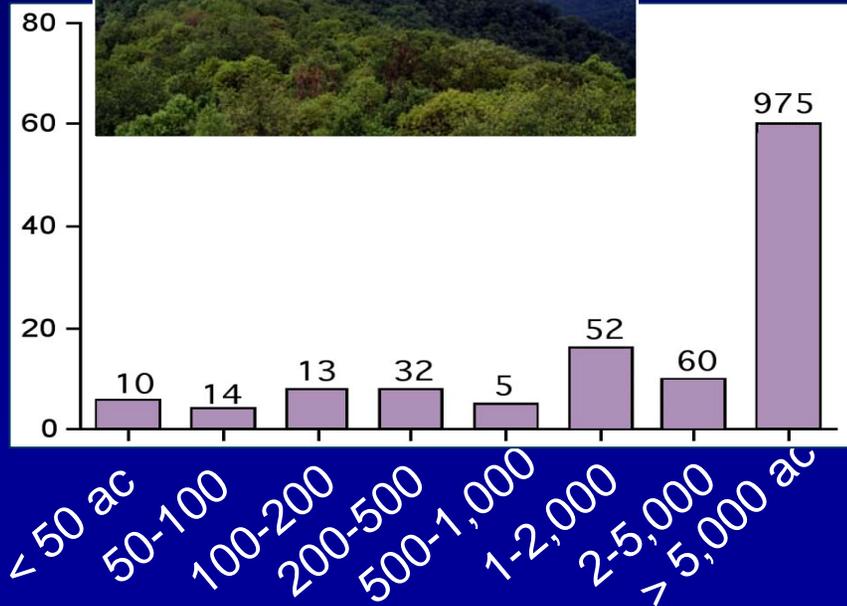
General Habitat Relationships

- Large tracts of mature deciduous forest
- Ridge tops, floodplain and mesic cove forests.
- Common denominator = emergent, structurally diverse canopy

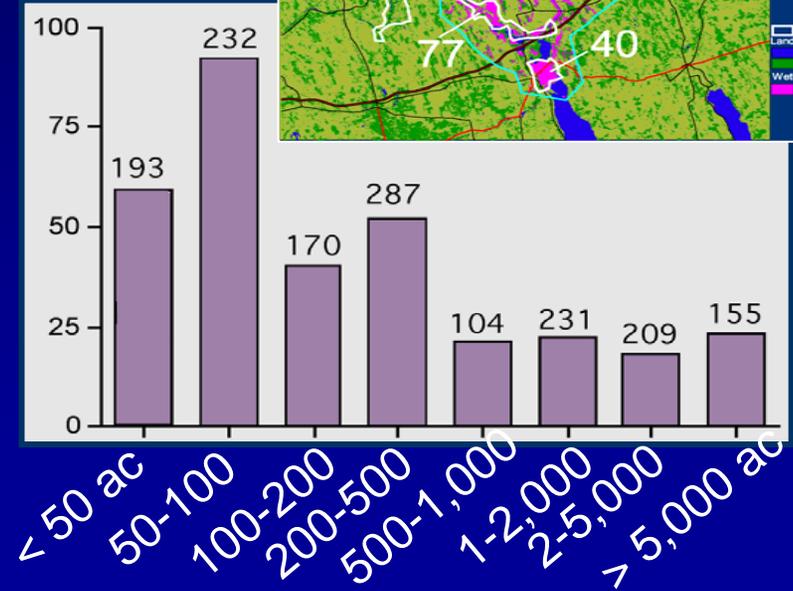


Variation in Area Sensitivity?

Southeast



Northeast



Breeding Season Monitoring

Priorities

- Expand breeding season distribution surveys
 - Fill in gaps in core of range (private lands)
 - Refine global and regional population estimates
- Expand and refine monitoring capabilities
 - Evaluate credibility of BBS
 - Monitor trends at population “hot spots”
- Combine monitoring with predictive models
 - Use modeling to direct inventory and monitoring
 - Use survey results to refine model development

Breeding Season Monitoring

Action Plan

- Expand CEWAP in core of range
 - Partner with private industrial forest landowners 
 - Use initial models to target habitats 
 - Seek multi-state funding (NFWF) 
 - Use results to expand and refine regional models
- Enhance credibility of BBS
 - USGS refine analyses and address roadside bias 
 - Assure complete BBS coverage (esp. in core of range) 

Breeding Season Monitoring

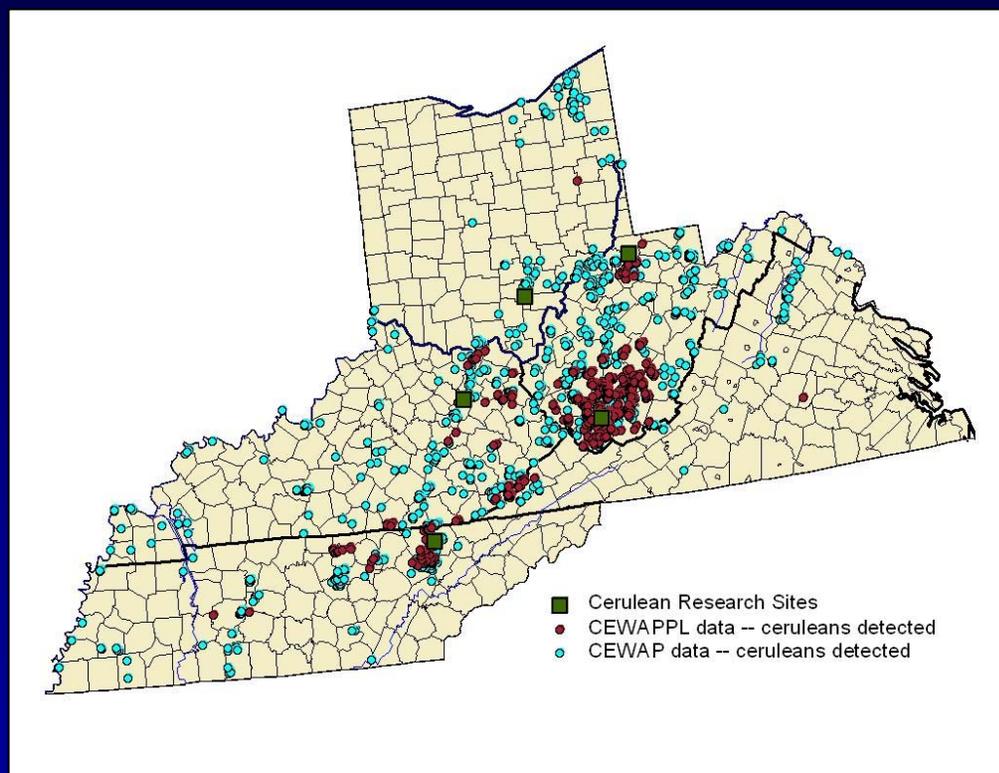
Action Plan

- Develop new monitoring methodologies to supplement BBS
 - Identify and re-conduct historical surveys
 - Develop site-based monitoring, esp. at hot spots
- Develop range-wide modeling strategy
 - Combine basic models of Knudson, Thogmartin, Buehler, Sauer, Dettmers →
 - Refine regional models for BCR planning →

Surveys on Private Lands (2003-2006)

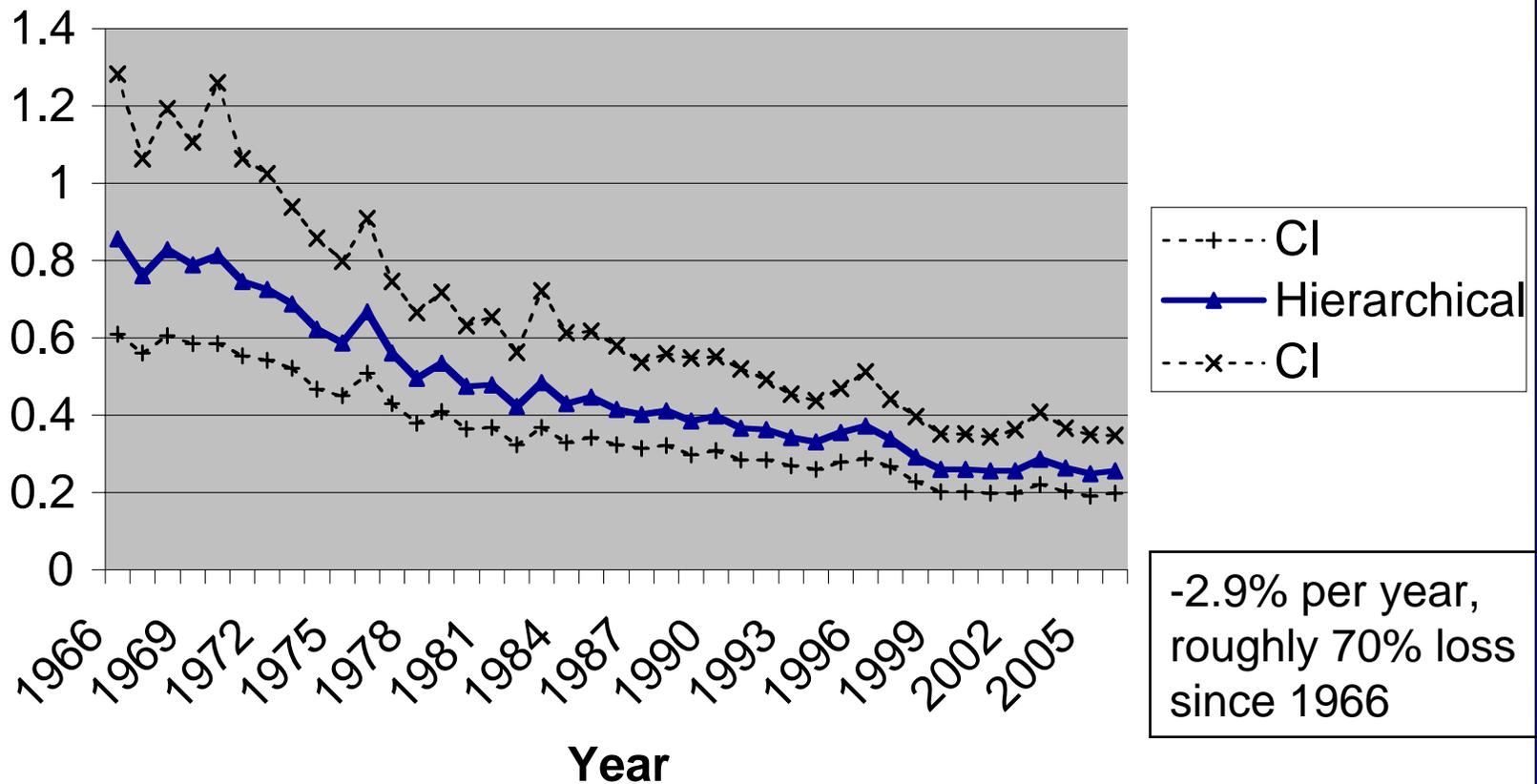
Proactive partnership with industry – NFWF grant to NCASI

- Landowners conducted surveys at 2,200 sites
- Ceruleans were located at roughly 30% of all sites surveyed
- Stratified random sampling in 2006 (Buehler model)
- Will incorporate results into regional models



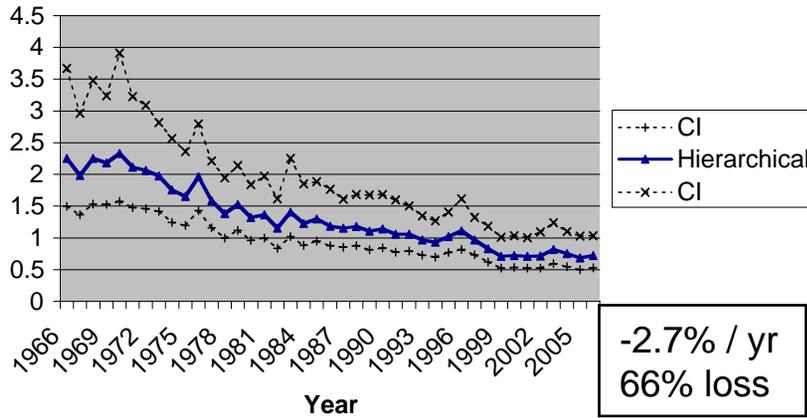
Population Trend (BBS –2006)

Cerulean Warbler (Survey-Wide)

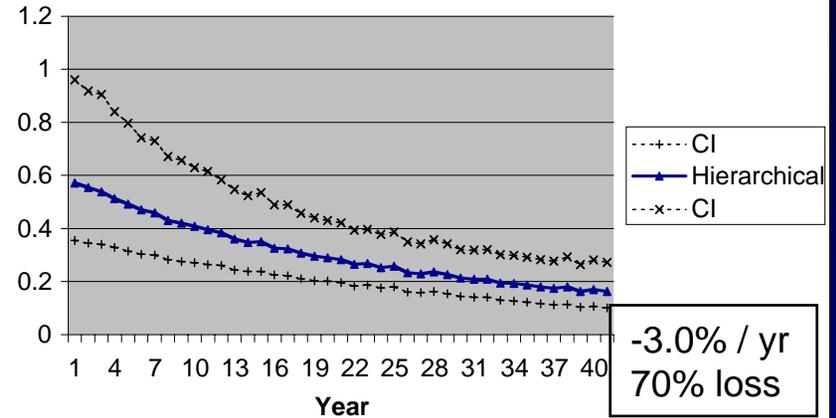


Consistency in Regional Trends

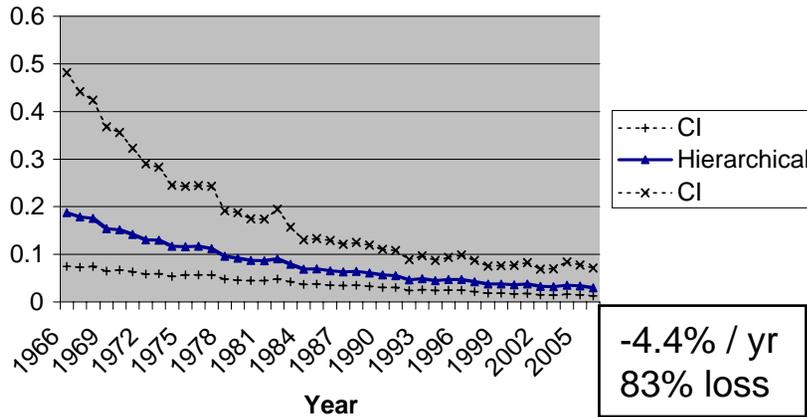
Cerulean Warbler (Appalachians S2)



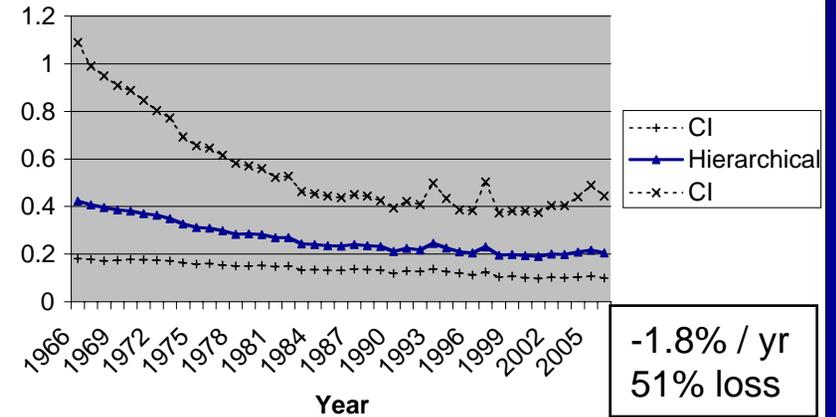
Cerulean Warbler (Central Hardwoods S2)



Cerulean Warbler (Prairie Hardwood Trans S2)



Cerulean Warbler (Great Lakes/St Lawrence S1)



Population Trend Exercise

What was the true historical population trend for Cerulean Warblers rangewide 1966-2005?

Panelists had 100 points to distribute among predetermined categories to reflect their certainty or uncertainty.

**LESS DECLINE than BBS credible interval
($<2.0\%/yr$ or a positive trend)**

**WITHIN BBS credible interval
(between -2.0% & $-4.2\%/yr$)**

**MORE DECLINE than BBS credible interval
($>4.2\%/yr$ decline)**

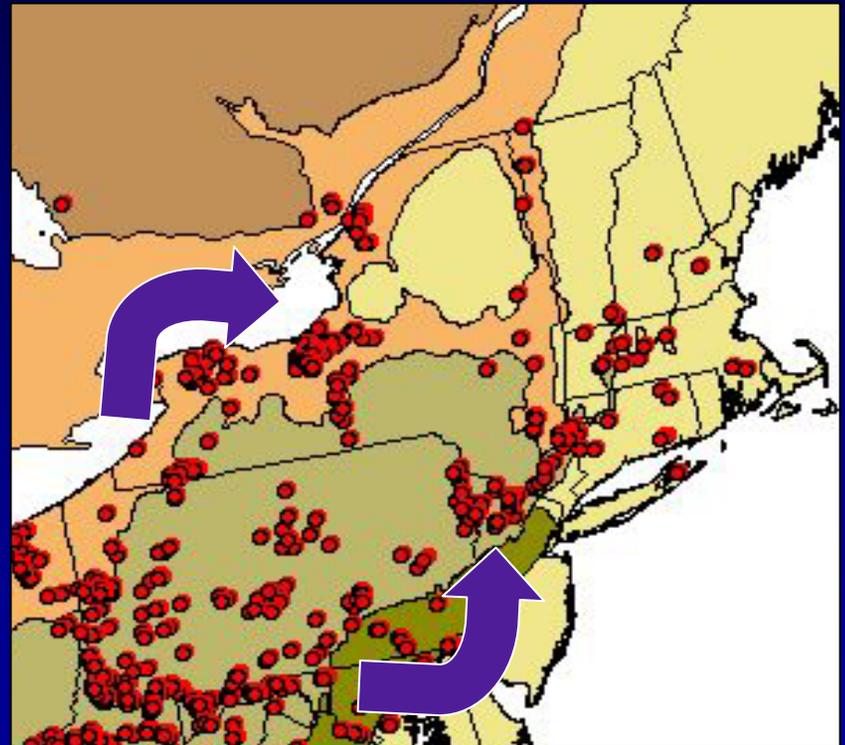
Population Trend Exercise Results

Strong confidence that true trend is within credible interval of BBS trend

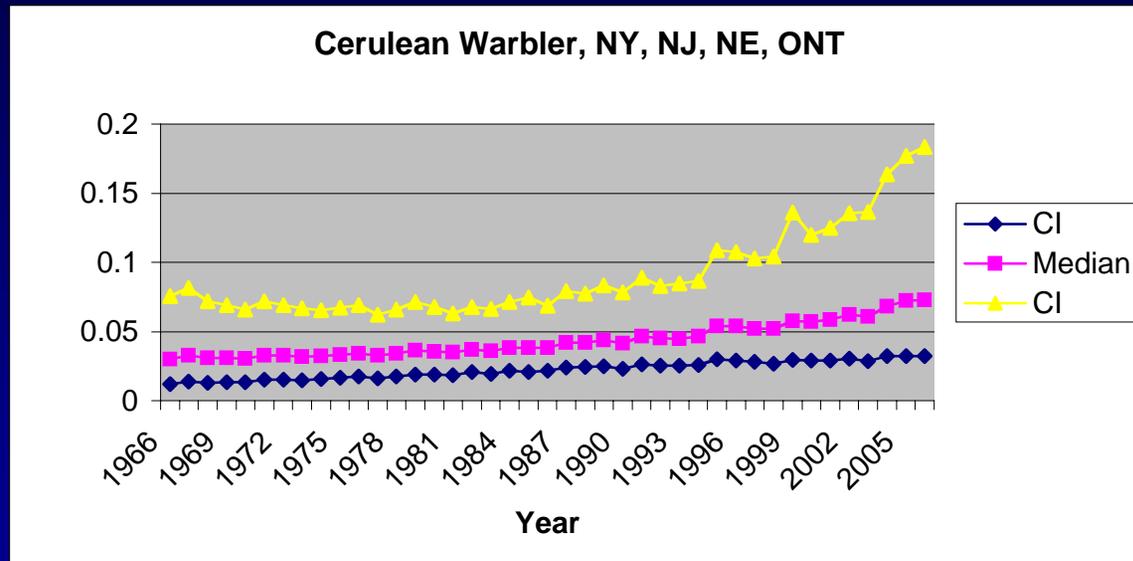
Less decline than BBS c.i. ($<2.0\%/yr$ decline or positive)	20	10	10	20	20	3	5	5	10	15
Within BBS c.i. (between -2.0 and $-4.2\%/yr$)	70	80	80	60	75	95	80	75	80	75
More decline than BBS c.i. ($>4.2\%/yr$ decline)	10	10	10	20	5	2	15	20	10	10

Are Ceruleans still expanding into Northeast?

- Expansion into NY, NJ, New England, e. Ontario during mid-20th century
- Poor BBS coverage
- Recent local declines?
- Repeated Breeding Bird Atlases



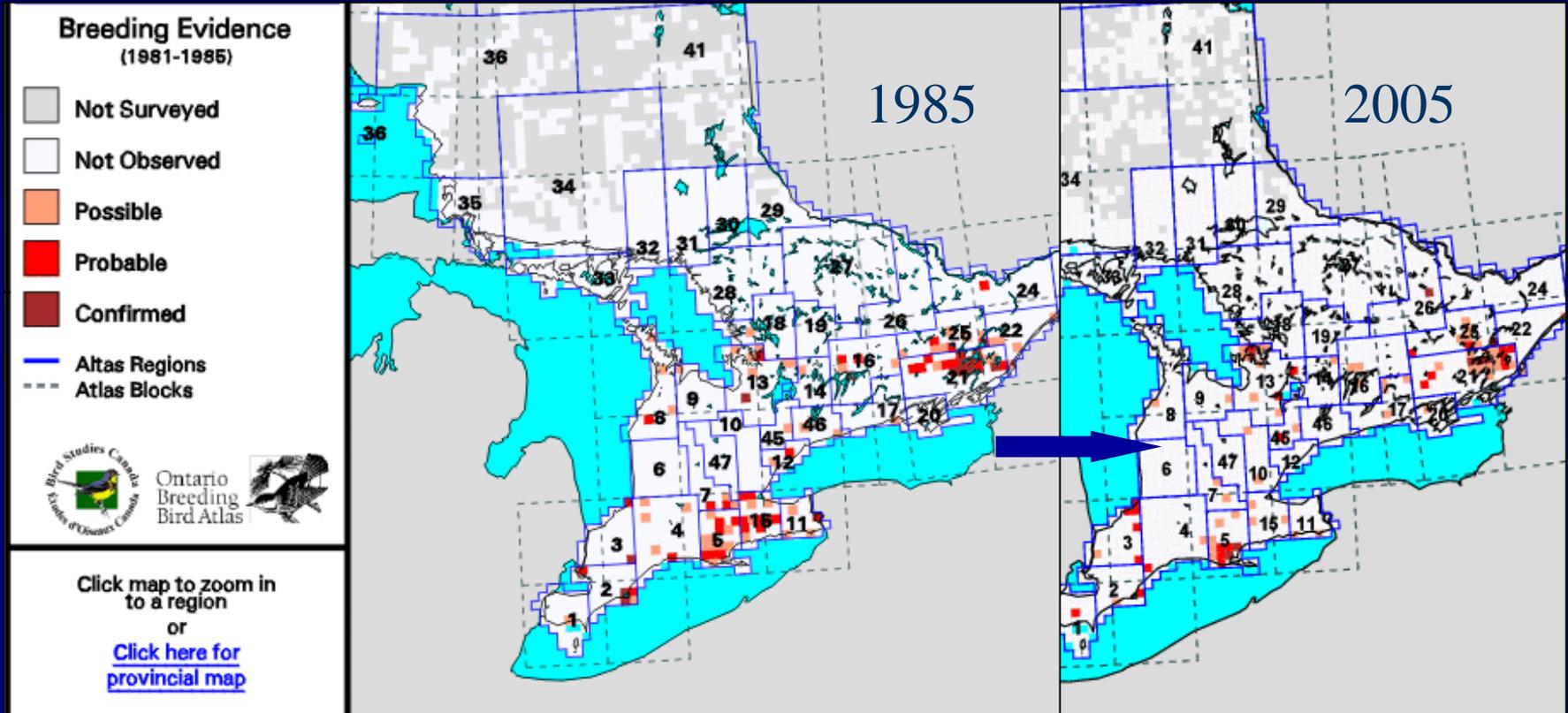
BBS Trends for NY, NJ, New England, and Ontario



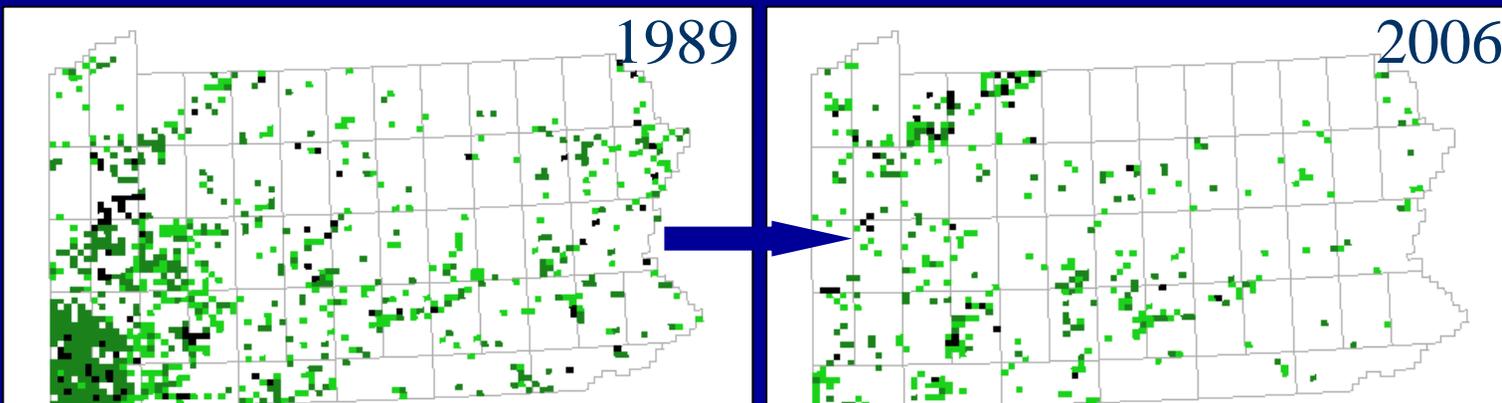
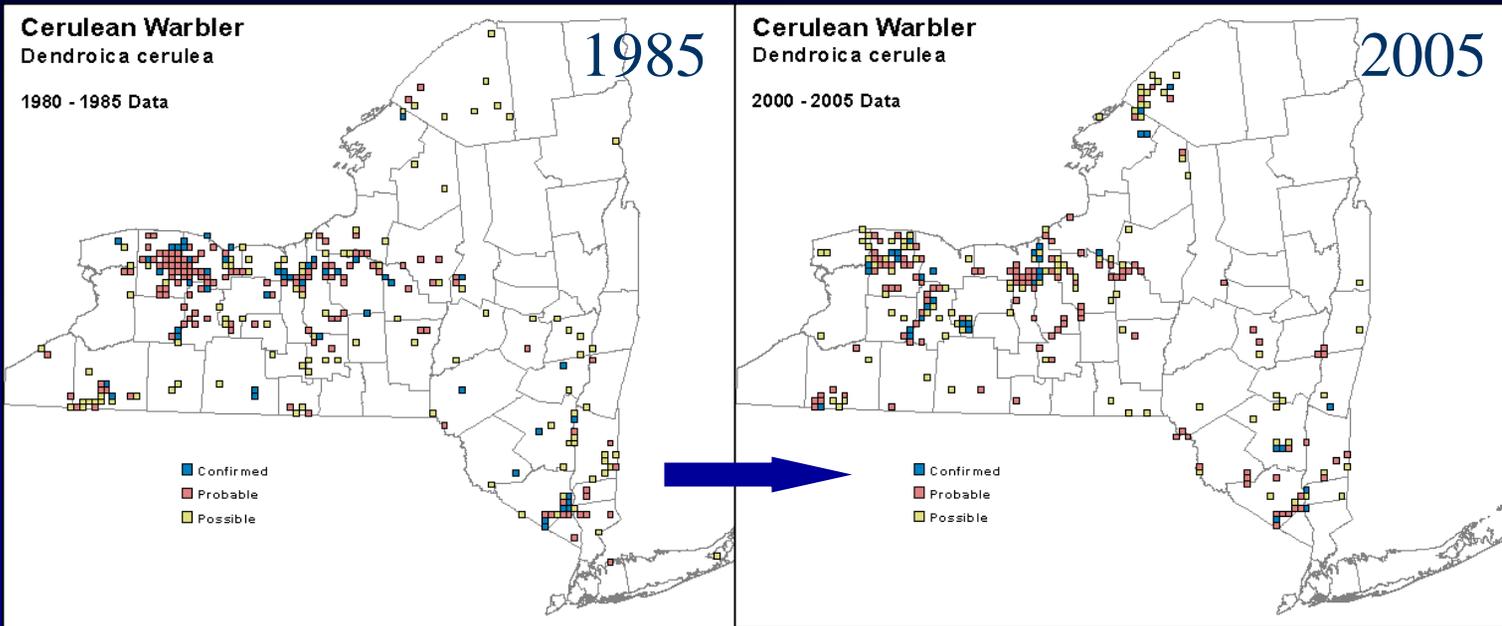
Trend = +2.2% per year since 1966 – NS

Change in Distribution: Ontario

13% decline in number of blocks with breeding evidence



Change in Distribution: NY + PA



Population Status

- BBS – Declines in core of range
- 70% population loss since 1966
- Historic expansion to Northeast – but recent declines?
- Geographic variation in habitat use and area-sensitivity



Breeding Season Monitoring

Goal: Improve monitoring for trends, habitat modeling, and population estimation

- Run BBS routes regularly; address biases
- Build monitoring capacity on private lands, off-road, and edge of range – occupancy monitoring?
- Develop and refine range-wide predictive models
- Evaluate parameters for PIF pop estimates
- Establish population goal through CWTG

