

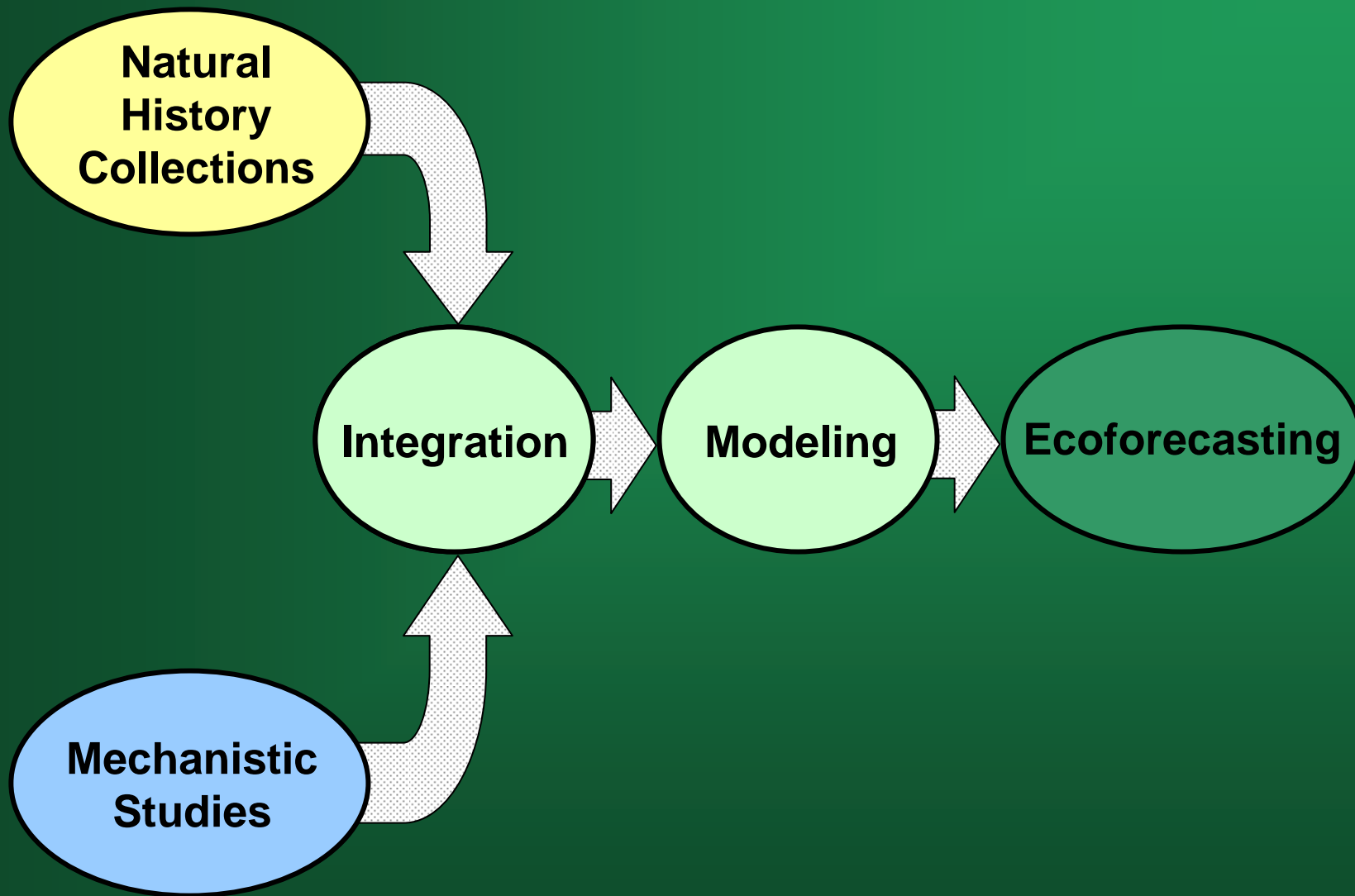
KSU Plants and Insects: Accessing and Applying Historical Specimen Data

Carolyn J. Ferguson

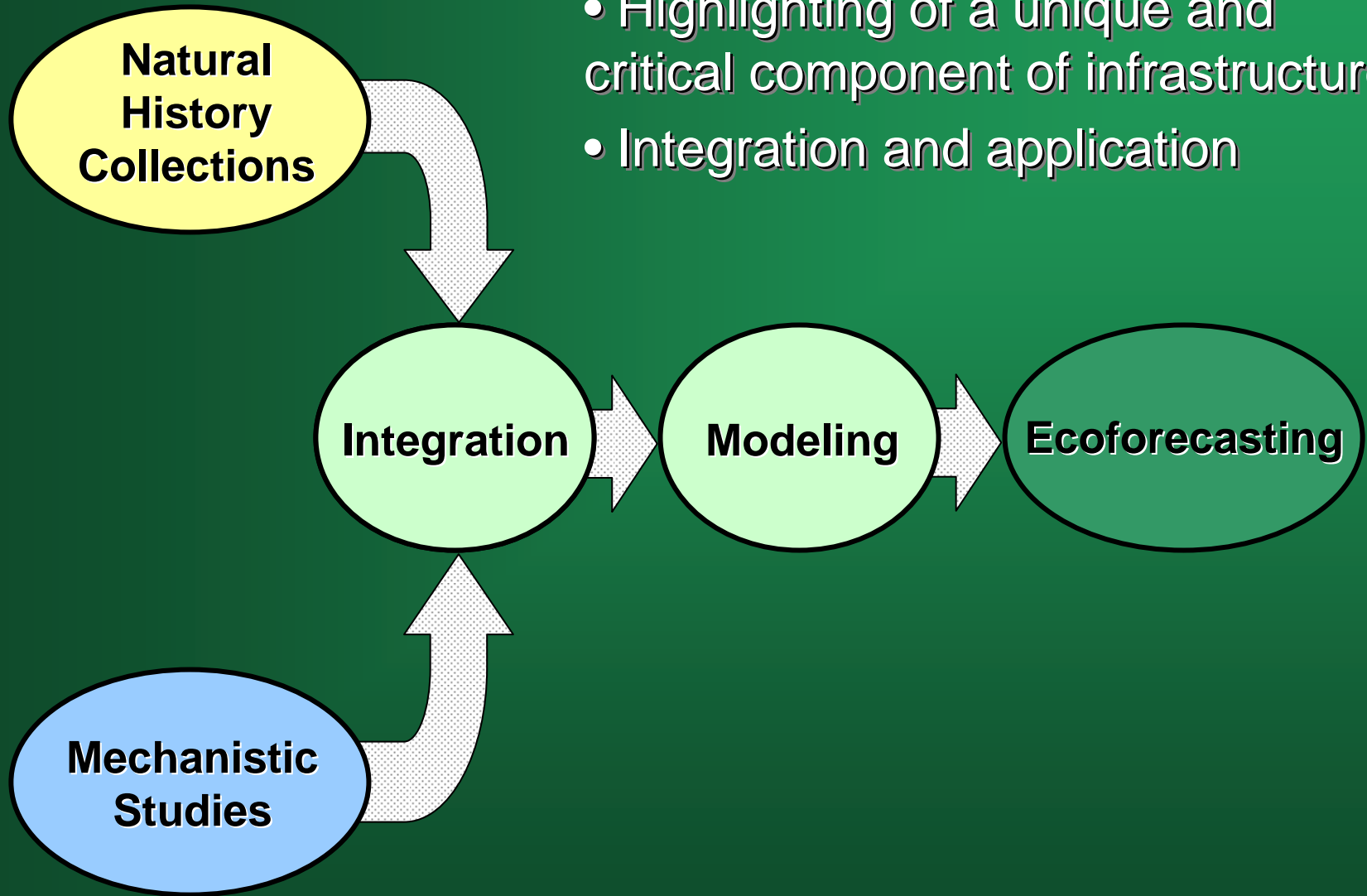
Herbarium and Division of Biology

Kansas State University





- Highlighting of a unique and critical component of infrastructure
- Integration and application



The KSU Herbarium (KSC)

The Museum of Entomological and Prairie Arthropod Research (KSU-MEPAR)

- ca. 200,000 and 838,000 specimens, respectively
- founded 1870s
- noteworthy strengths
 - biota of the Central Plains
 - material of agronomic interest
 - historical specimens



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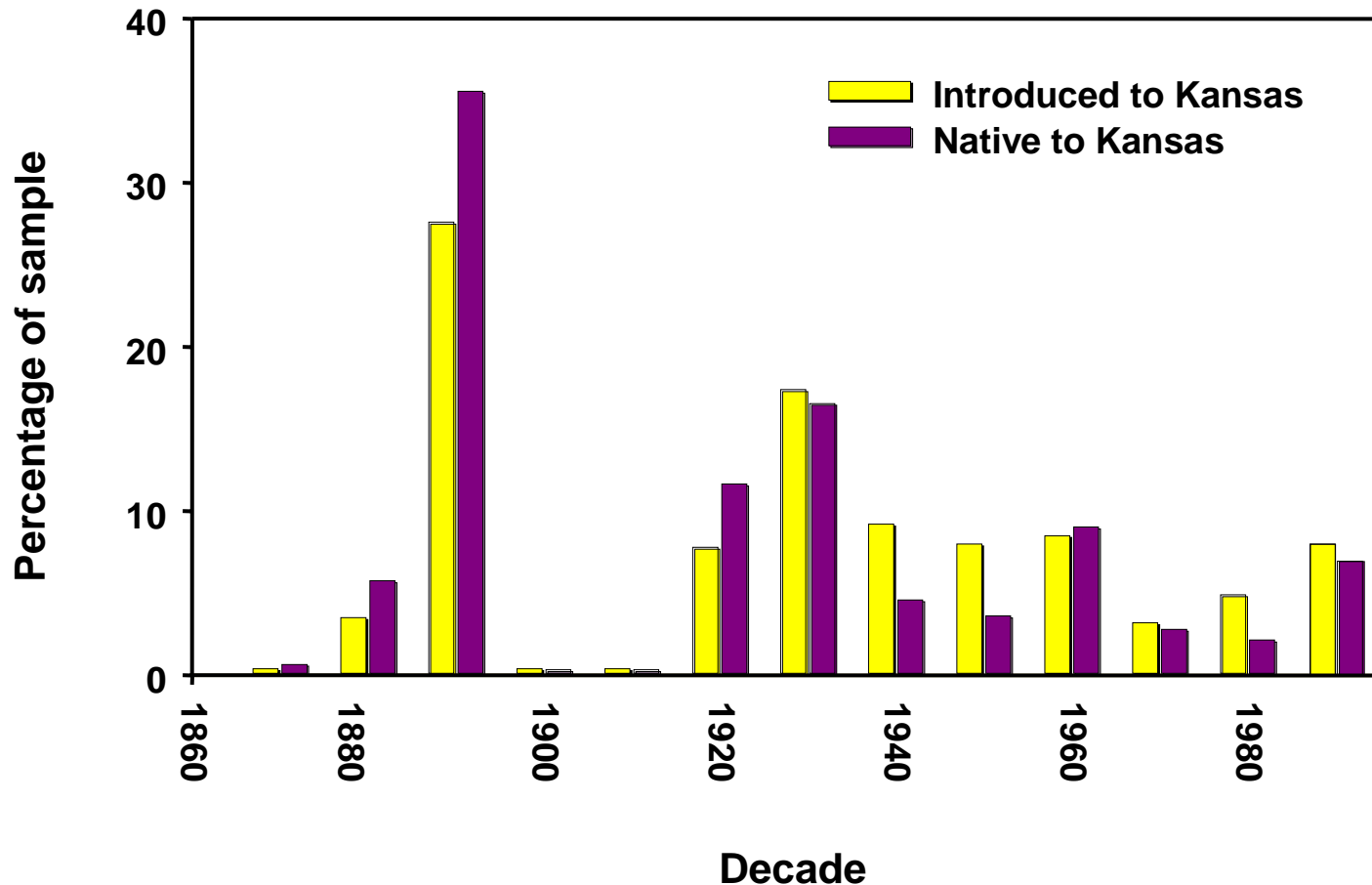


Analysis of collecting patterns (Herbarium, Kansas only)

Peaks in collecting activity in the 1890s, 1930s

Spatial patterns

Prather et al., 2004; Woods et al., 2005



Complementarity of collections: e.g., KSC and KANU

- collecting pattern for R.L. McGregor Herbarium, University of Kansas (KANU), peak 1970s
- historical component: e.g., 76% of first records of exotic plant species are housed at KSU (prior to 1940, 94%)
- potential for data mining, contextual inferences of floristic patterns...integration

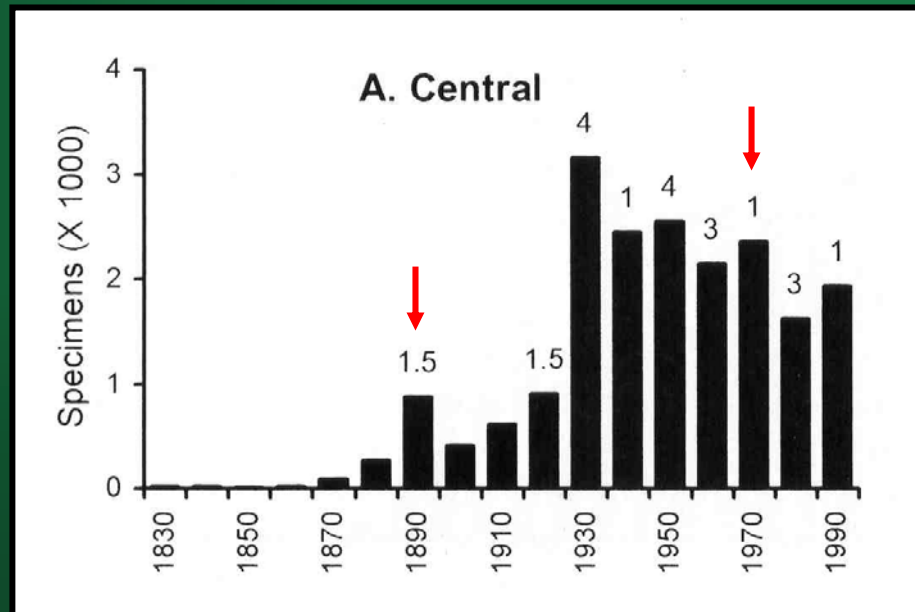




Photo: University Archives, KSU
1900, then K.S.A.C.

Albert Spear Hitchcock,
KSC Curator 1892-1901
Specimen exchange
>13,000 Kansas collections

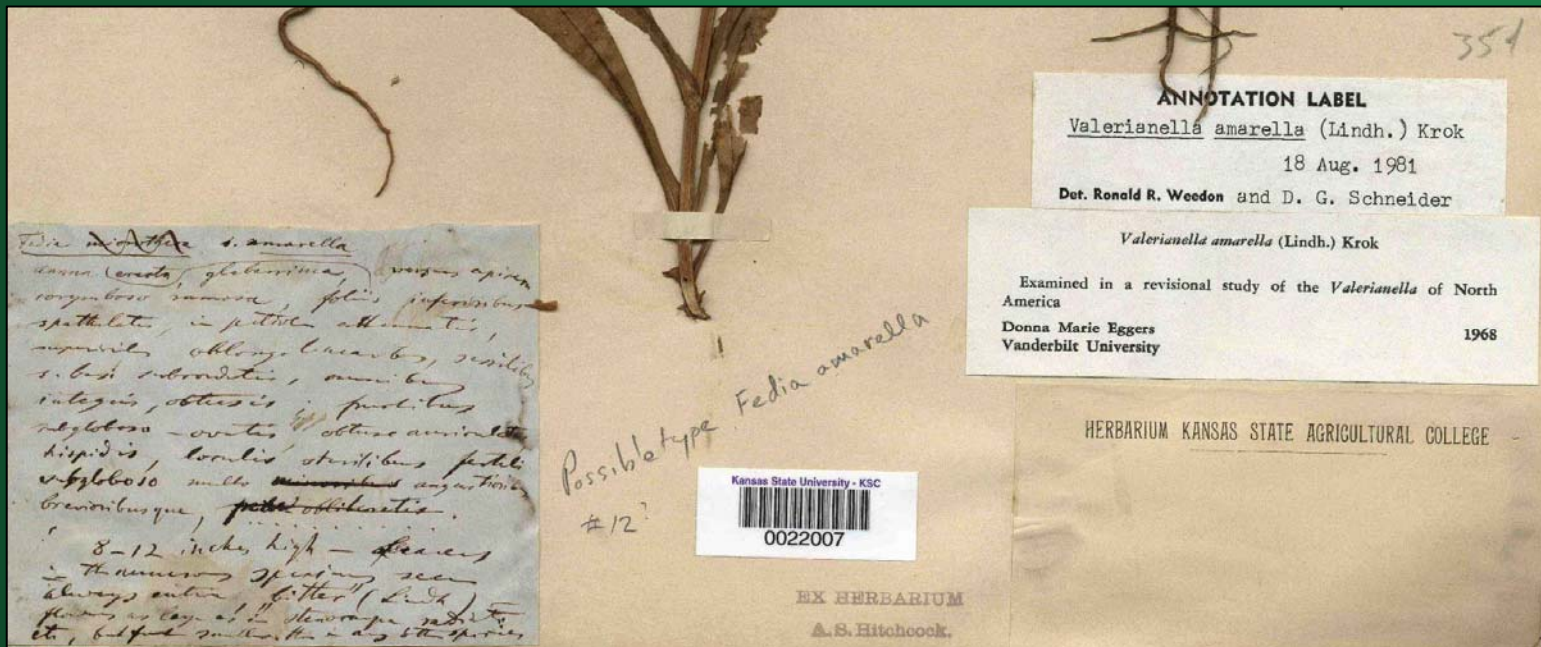
E. A. Popenoe,
KSU-MEPAR Curator 1879+



Benefits of historical specimens

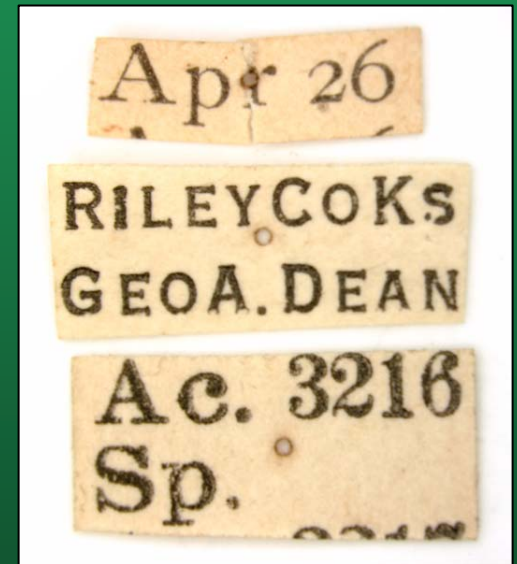
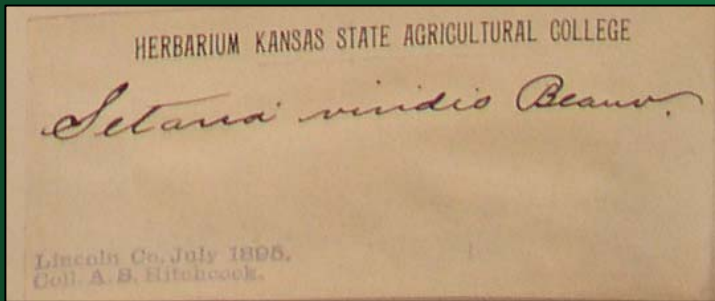
- annotation history, associated data
- baseline data for studies of change
- in the case of KSC, fairly even collecting *at the county level* in the late 1800s (insect data?)

...challenges?



Precision of locality data

- e.g., some specimens include locality only to county, or list the nearest town with no indication of relative placement
- 105 counties in Kansas (106)
- distributional patterns



Mapping application (plants and insects)

Available over the web (ArcView-based, developed by S. Mohandass)

Currently county level

Kansas State Herbarium

Advanced Search | K-State Herbarium | Kansas State University | Ecoforecasting | Help

Select a Taxon

Family: Cyperaceae
Genus: Scleria
Species: triglomerata
Submit

Free Text Search

Family:
Genus:
Search

Map Contents

41.51mi

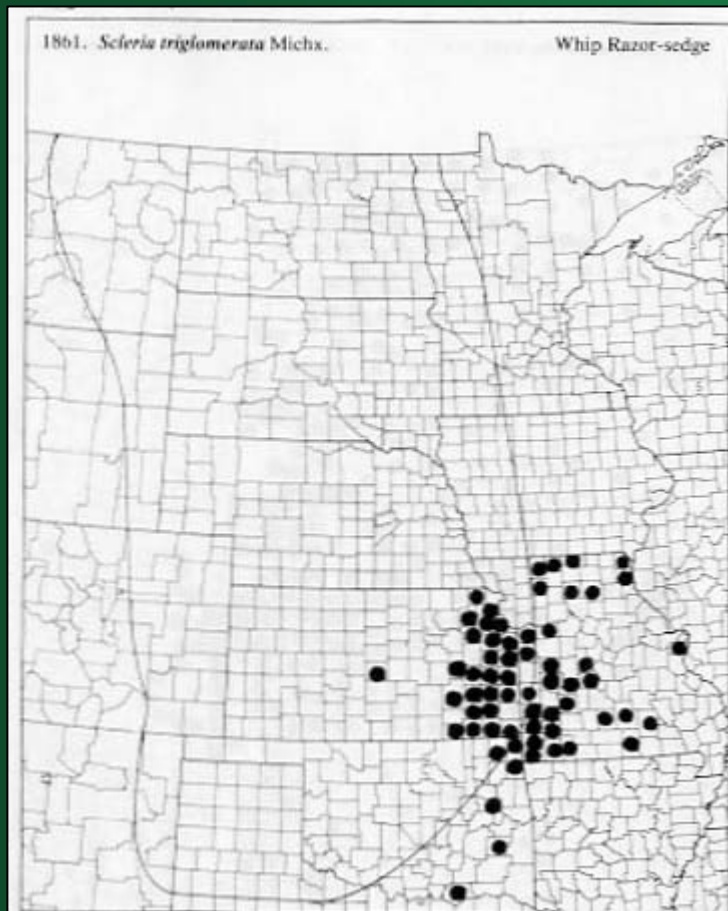


	KSC	KSU-MEPAR
Databasing initiated	2006 (2001)	2007
Specimens databased	>80,000	23,800
Priority groups	Kansas vascular plants (complete); all other ongoing	Orthoptera (grasshoppers; complete); Cicadellidae (leafhoppers) ongoing
Major funding	KS NSF-EPSCoR, NSF, KSU's Targeted Excellence	

Integration, application to a diversity of studies

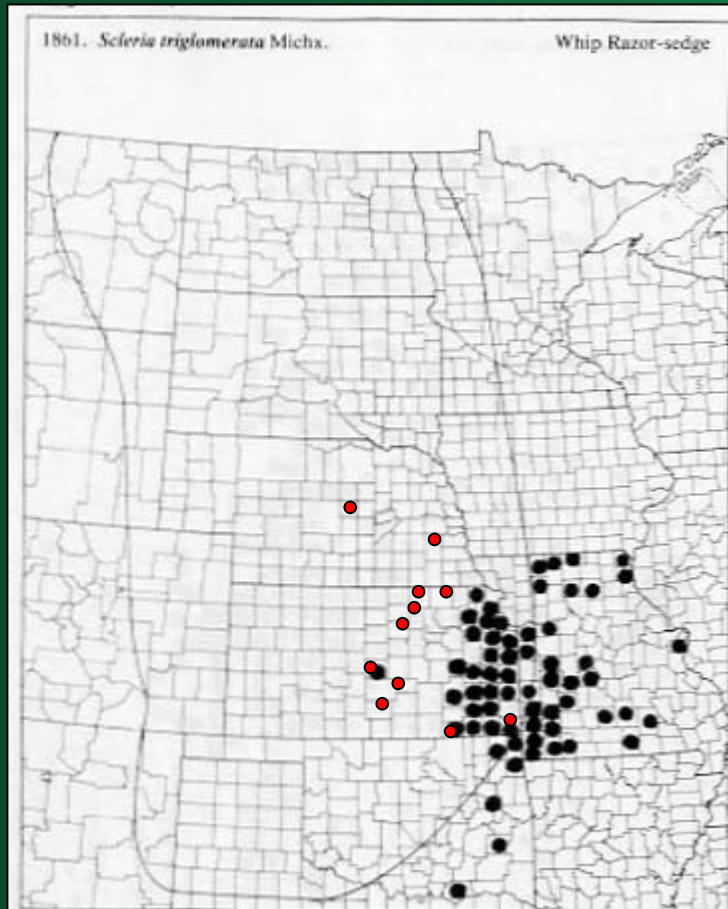
- patterns of collecting, collecting biases for Central Plains collections
- targeted floristic inventory (informed by related ecological forecasting work)
 - gaps in floristic knowledge
 - new findings on taxon distribution patterns (phytogeography)
- sampling for studies requiring time series
- potential in light of upcoming integration of complementary collections

The Carolinian element in the Sandhills Flora: *Scleria triglomerata*



Reported by Barker (1968) as an eastern species not extending west of the Flint Hills.

The Carolinian element in the Sandhills Flora: *Scleria triglomerata*

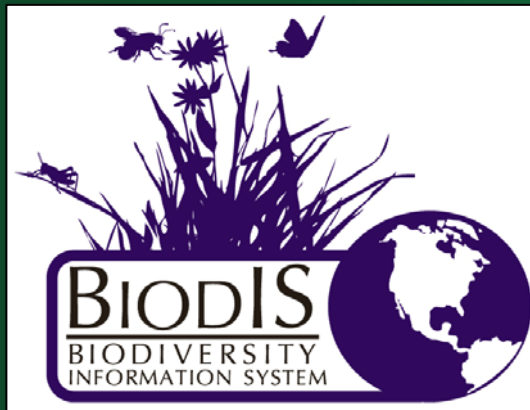
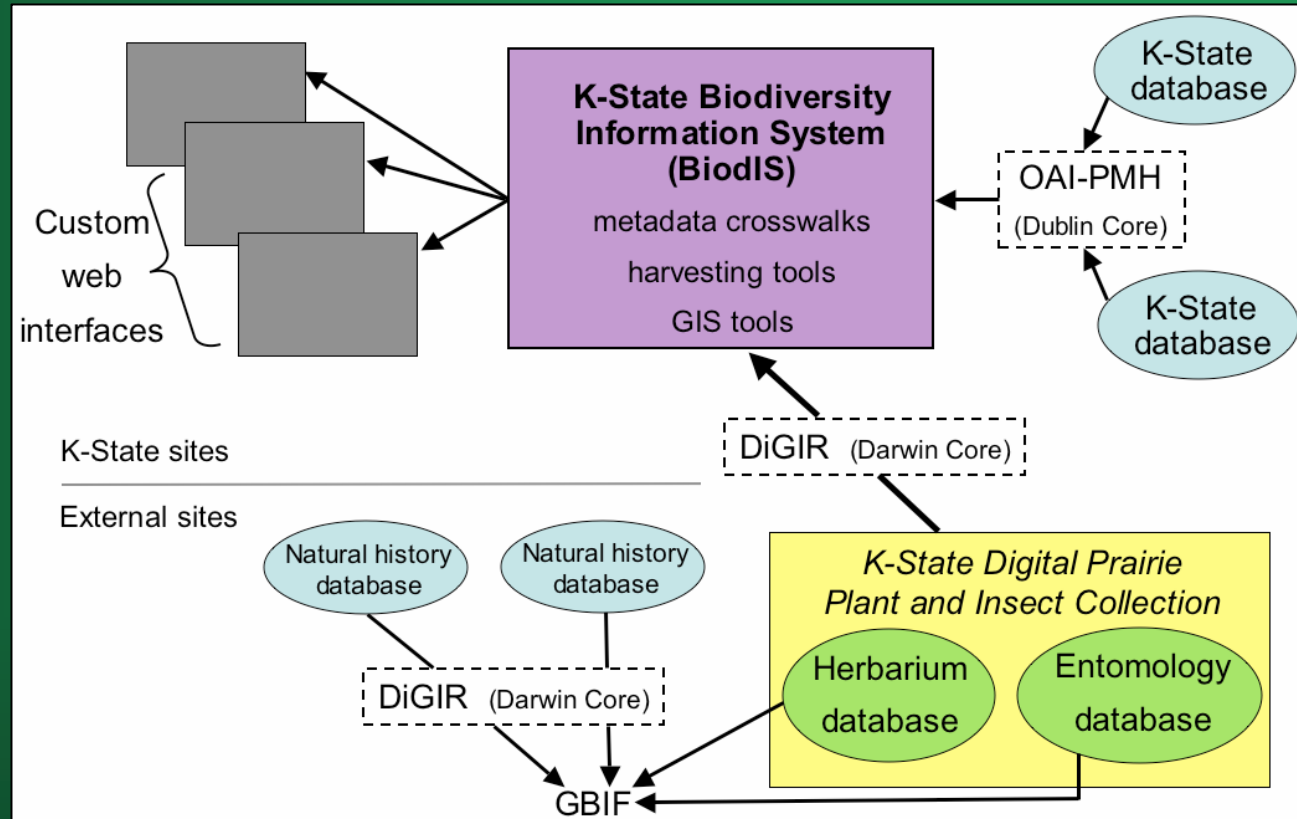


First found in Nebraska in 1997 in Platte River valley and in Sandhills in 1999.

Broader integration within KSU: The KSU Biodiversity Information System (BiodIS)

Collaborative:

- collections
- KSU Libraries



Related education and outreach

- diagnostics (including toxicology)
- digital key for Cyperaceae (Konza Prairie)
- REU program, other student training
- curriculum development, etc.



Acknowledgements

Herbarium: Mark Mayfield, Steven Rolfsmeier, Susan Rolfsmeier, Teresa Woods

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Office of Mediated Education: Shivakumar Mohandass

KSU Libraries: Michael Haddock, David Allen, Harish Maringanti, Jenny Oleen

Photo: T. Woods, KSU Herbarium

