Improving Farm Profitability by "Farming the Best and Conserving the Rest"

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Outline

A Changing Midwest Landscape…

- Natural Resource Challenges in the 21st Century
- Precision Conservation (PC)

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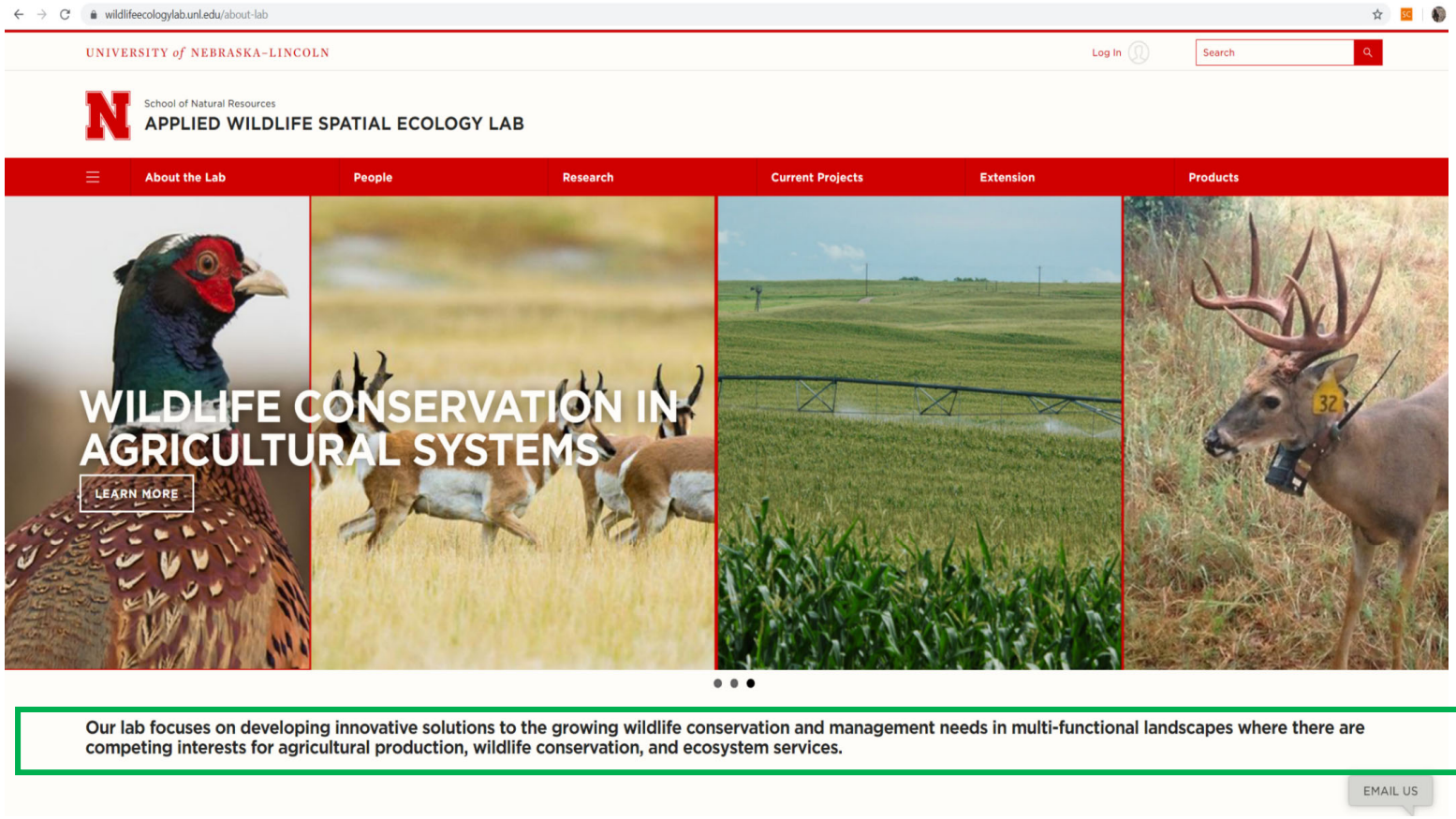
Check Out Our Lab!



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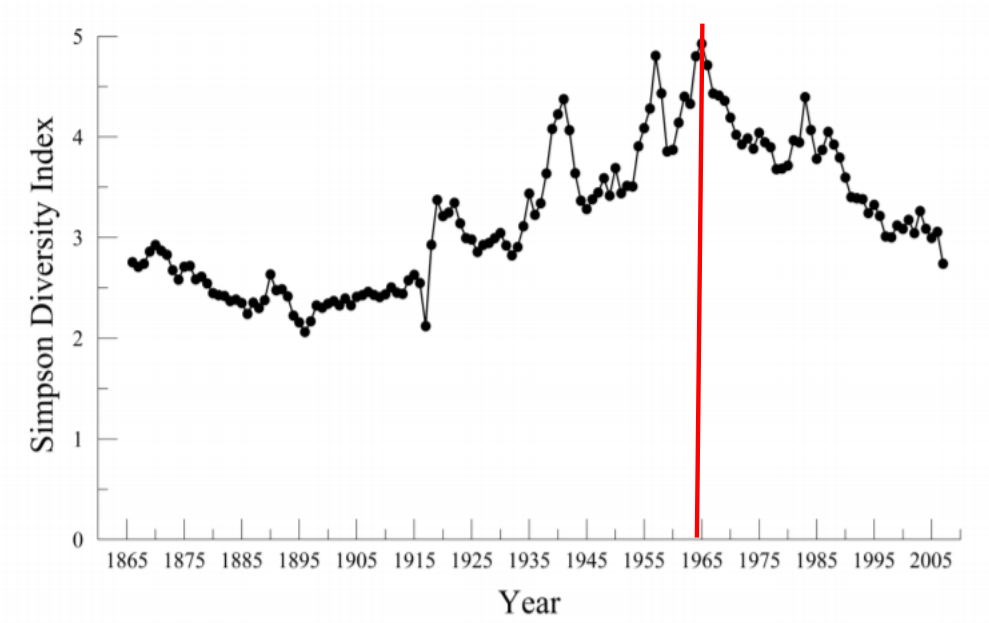
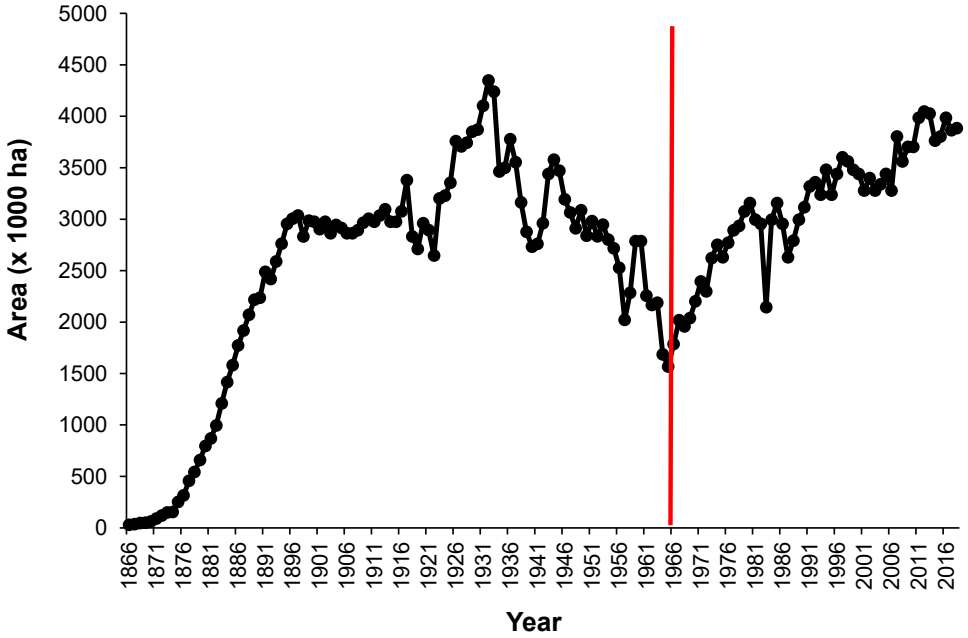
A Changing Midwest Landscape:

What Challenges Do We Face in the 21st Century?

Challenges: Ag Landscape Simplification





Hiller et al. 2009

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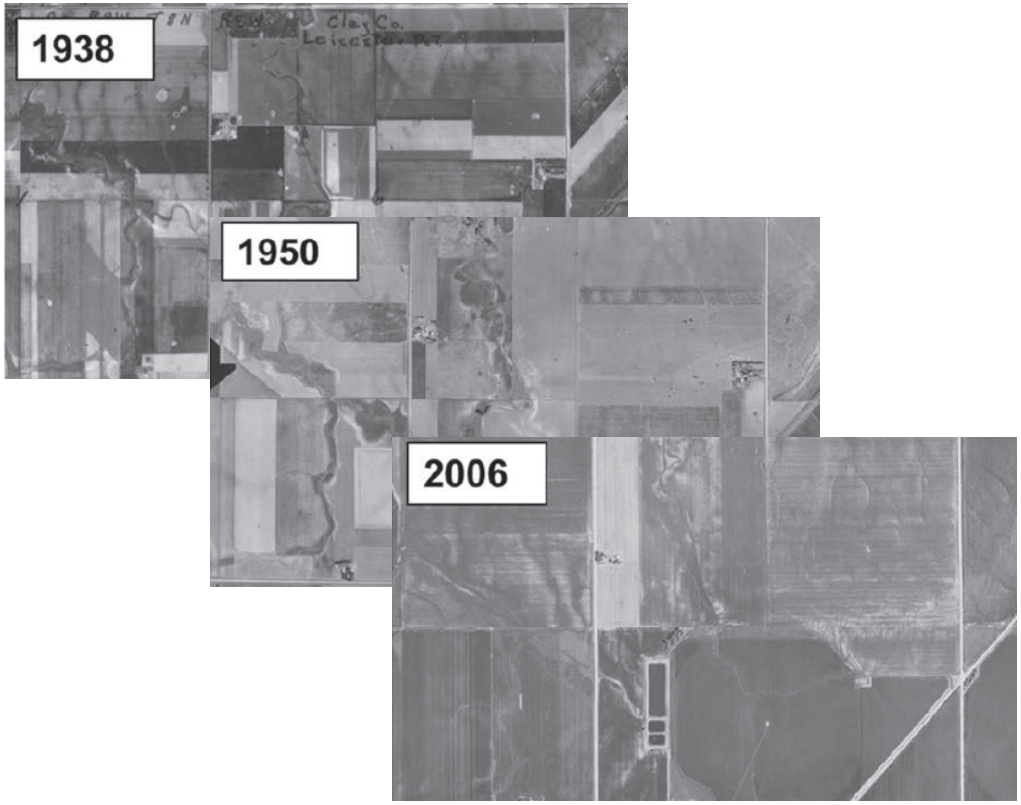
Challenges: Ag Landscape Simplification



Clay Center, NE; Powell 2015

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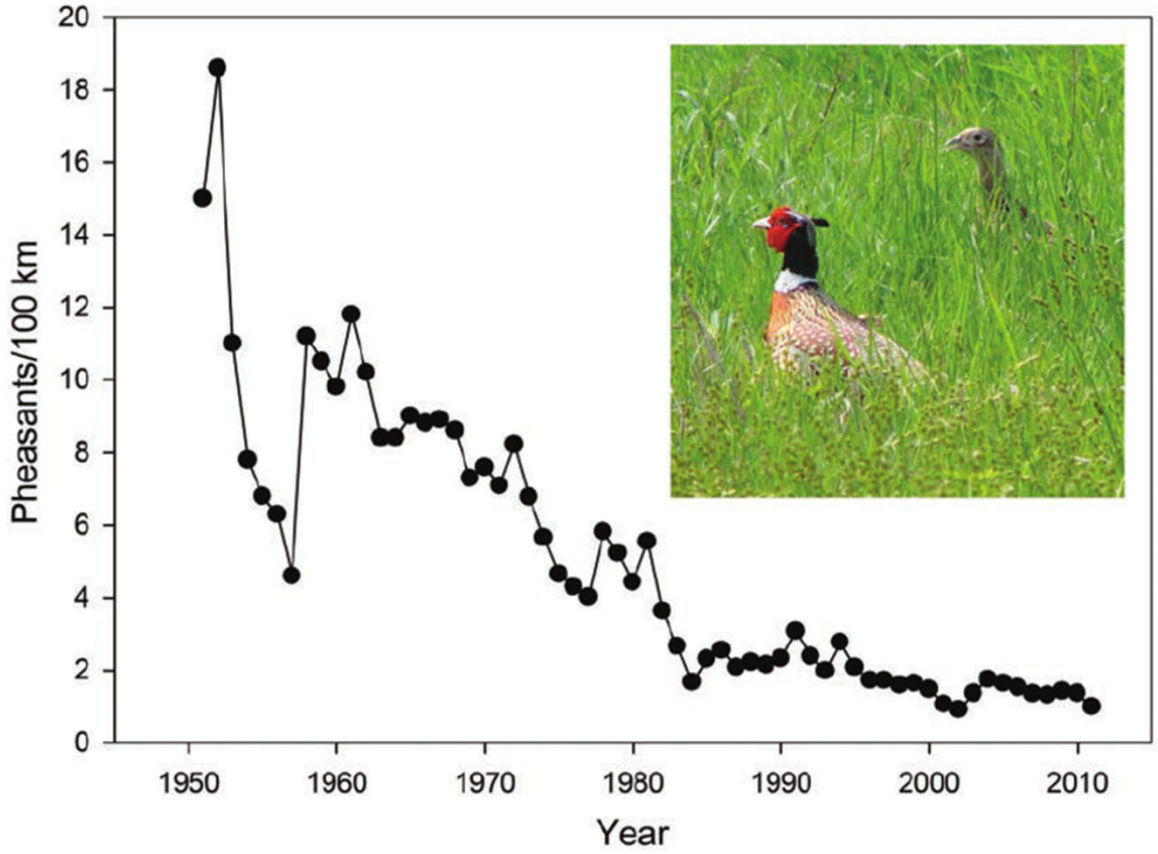
Challenges: Declining Pheasant Populations



Credit: Powell 2015

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Pheasant Hunting is a $32 million business in Nebraska annually

Trickle down effect to small communities in Nebraska that historically relied on hunting season to boost their economy

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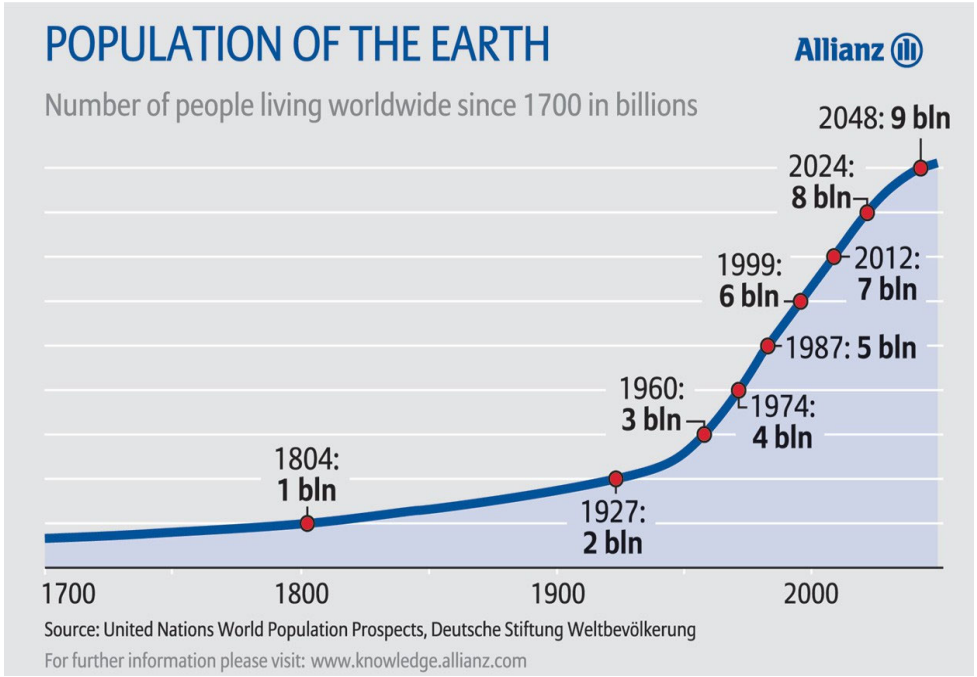
Credit: Nebraska Pheasants Forever, David Wilson, National Pheasant Management Plan 2013

Challenges: Growing World Population



Expected 9.7 billion people

by 2050 will require

50% ⬆ in food production

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Challenges: Water Quality Issues

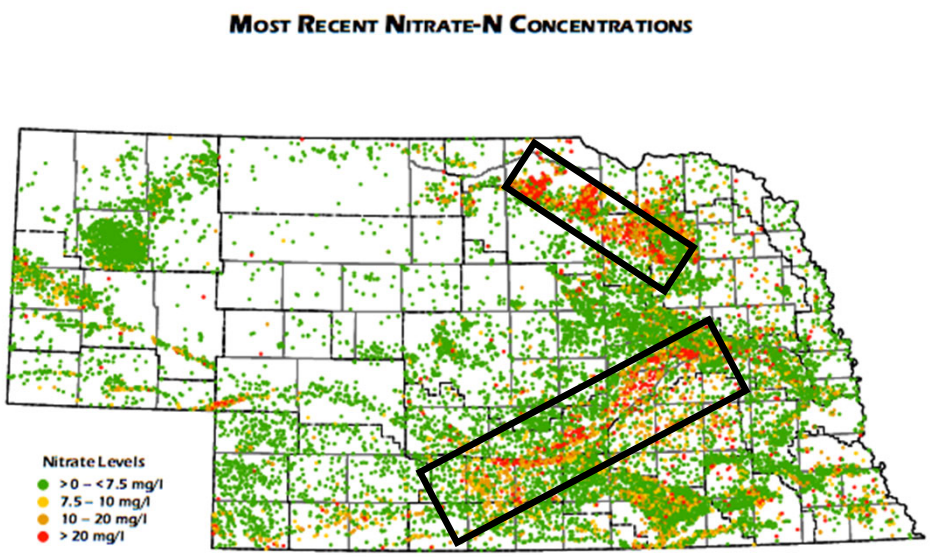

Figure 11. Most recent recorded Nitrate-N concentrations of 20,306 wells from 1994-2014. (Source: Quality-Assessed Agrichemical Database for Nebraska Groundwater, 2015) *Empty areas indicate no data reported, not the absence of nitrate in groundwater.*

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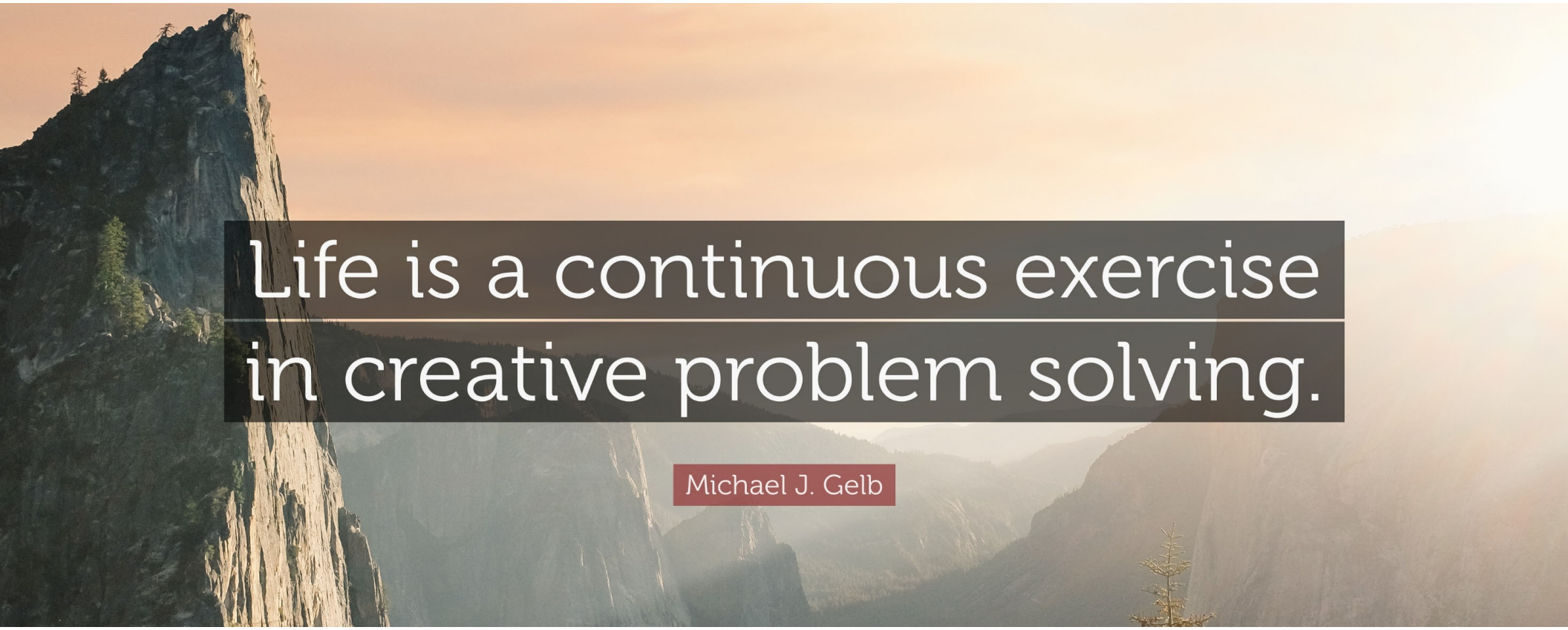

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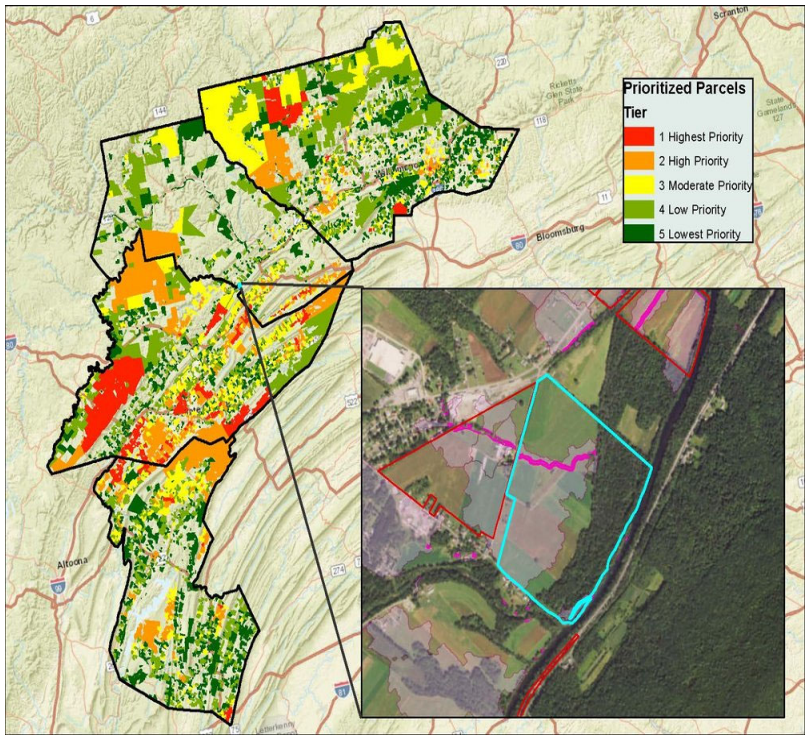
Precision Conservation Delivery – Multi-Scale Approach

Local (or Field) Scale

Regional Scale



Credit: https://precisionagricultu.re/ and Chesapeake Conservancy

Precision Agriculture

(The Future of Farming)

1) **Increase farm production**:
   - Efficiency
   - Productivity
   - Profitability ($$$)

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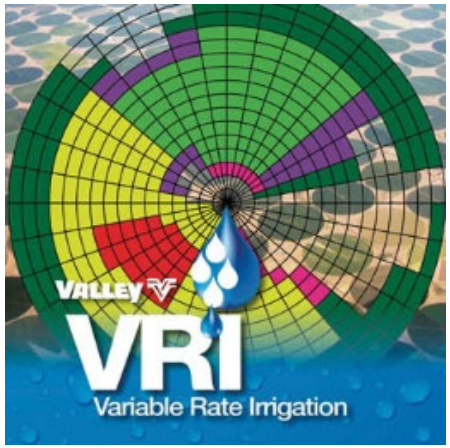
Credit: iStock

Precision Agriculture

(The Future of Farming)

2) ⬇ impacts on wildlife and the environment



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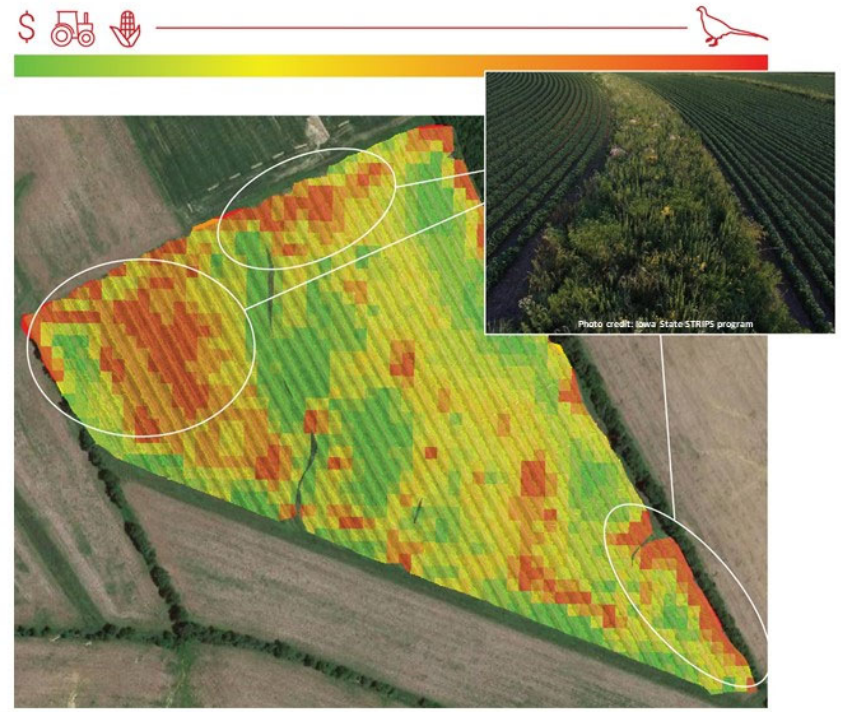
Where Does Precision Conservation Fit Into Farming?



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Precision Conservation

(The Future of Sustainable Farming)

1) Balance competing interests (i.e., production, wildlife)

Credit: ISU Prairie Strips

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Precision Conservation

(The Future of Sustainable Farming)

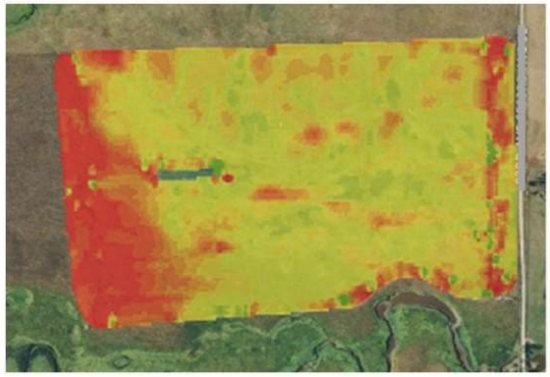
2) **Improves landscape diversity (e.g., prairie strips in Iowa)**

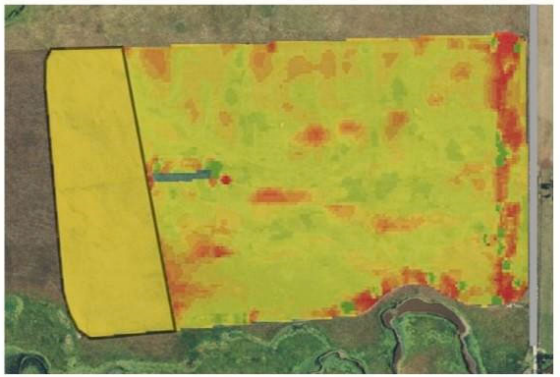
- **2.1-fold** ⬆ in native bird species richness
- **37%** ⬇ in total water runoff
- **20x** ⬆ in soil retention

Credit: ISU Prairie Strips

Precision Conservation Delivery –
Multi-Scale Approach

Local Scale
(Sub-field Analysis)





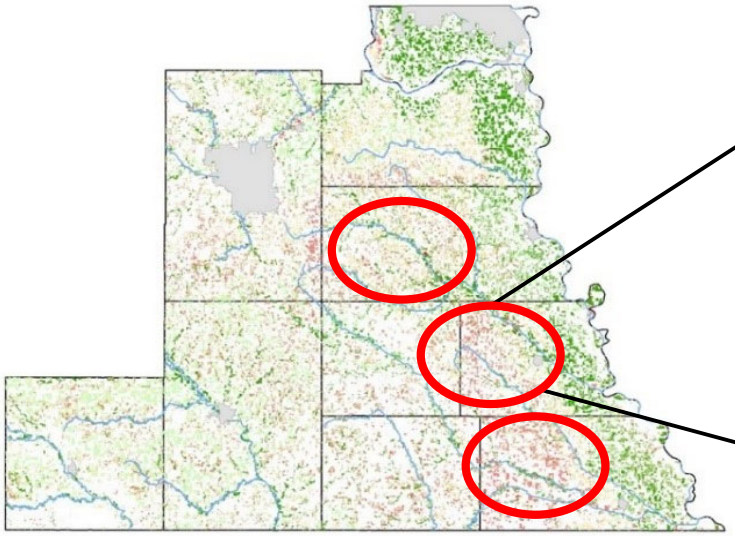
Before: 2015 Corn Production	
Average Yield:	155.2 bu/ac
Profit:	($50.05)/ac
ROI:	-8.4%

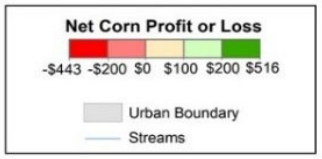
After: 2017 Plan w/Pasture	
Average Yield:	177.7 bu/ac
Profit:	$13.74/ac
ROI:	2.8%

Credit: Melissa Shockman (PF)

Precision Conservation Delivery –
Multi-Scale Approach

Regional Scale
(Hot Spot Analysis)





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Targeted Conservation Delivery – Producer Relations

Understanding Conservation Decisions of Agriculture Producers

LILY A. SWEIKERT,[1,2] *South Dakota State University, Department of Natural Resource Management, Box 2140B, SNP 138, North Campus Drive, Brookings, SD 57007-1696, USA*

LARRY M. GIGLIOTTI, *U.S. Geological Survey, South Dakota Cooperative Fish and Wildlife Unit, South Dakota State University, Department of Natural Resource Management, Box 2140B, SNP 201C, North Campus Drive, Brookings, SD 57007-1696, USA*

Absentee landowners of agricultural land: Influences upon land management decision making and information usage

P. Petrzelka and A. Armstrong

Nebraska farmers and farmland owners' attitudes of targeted conservation

Credit: Nebraska Pheasants Forever

Precision Conservation

(The Future of Sustainable Farming)

Reduce Habitat Loss

Increase Profits ($$$)

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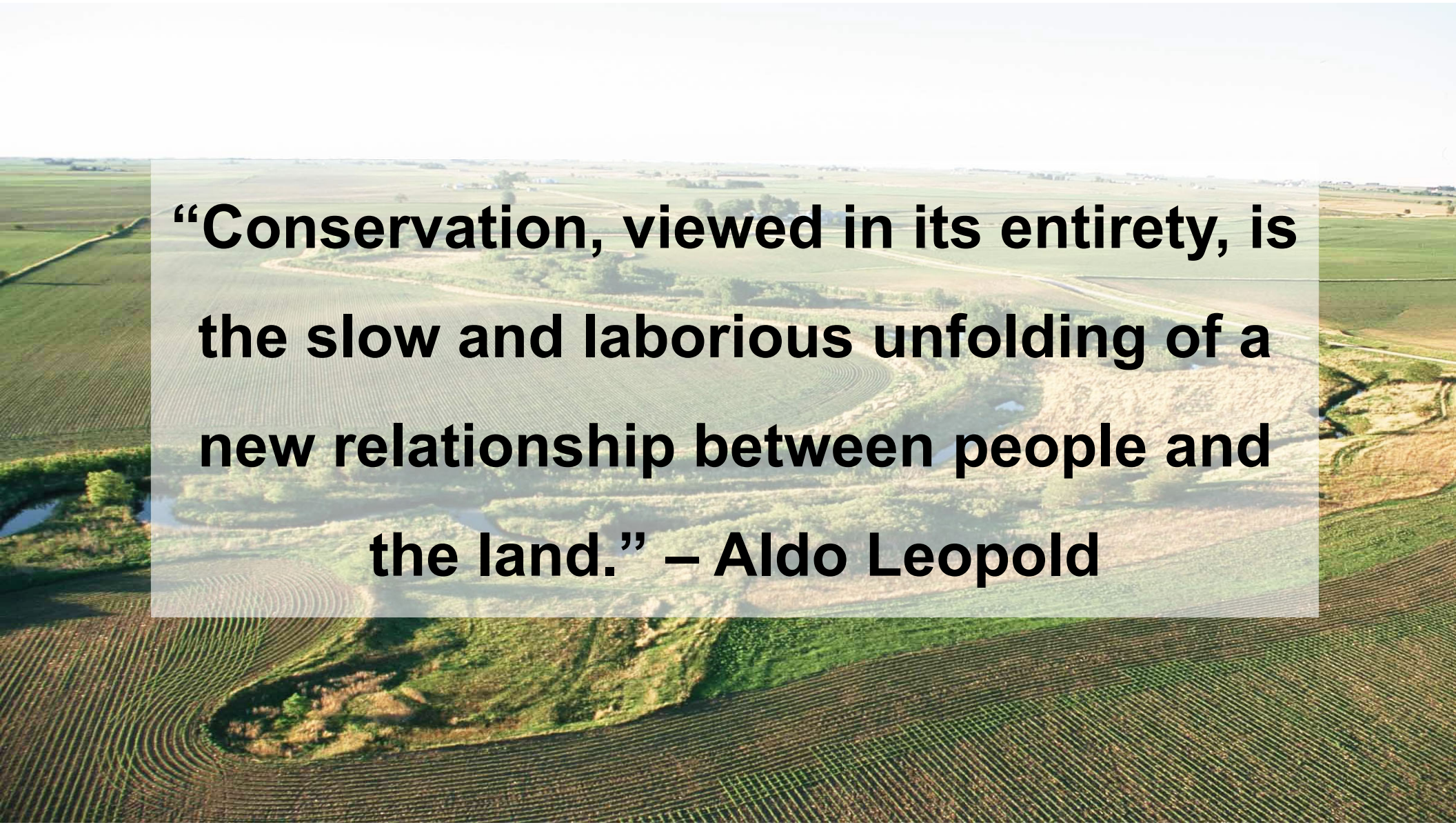
Credit: Ryan Heiniger

Precision Conservation

(The Future of Sustainable Farming)

Reduce Soil Erosion and Water Runoff

Leave a Lasting Legacy!


“Conservation, viewed in its entirety, is the slow and laborious unfolding of a new relationship between people and the land.” – Aldo Leopold

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