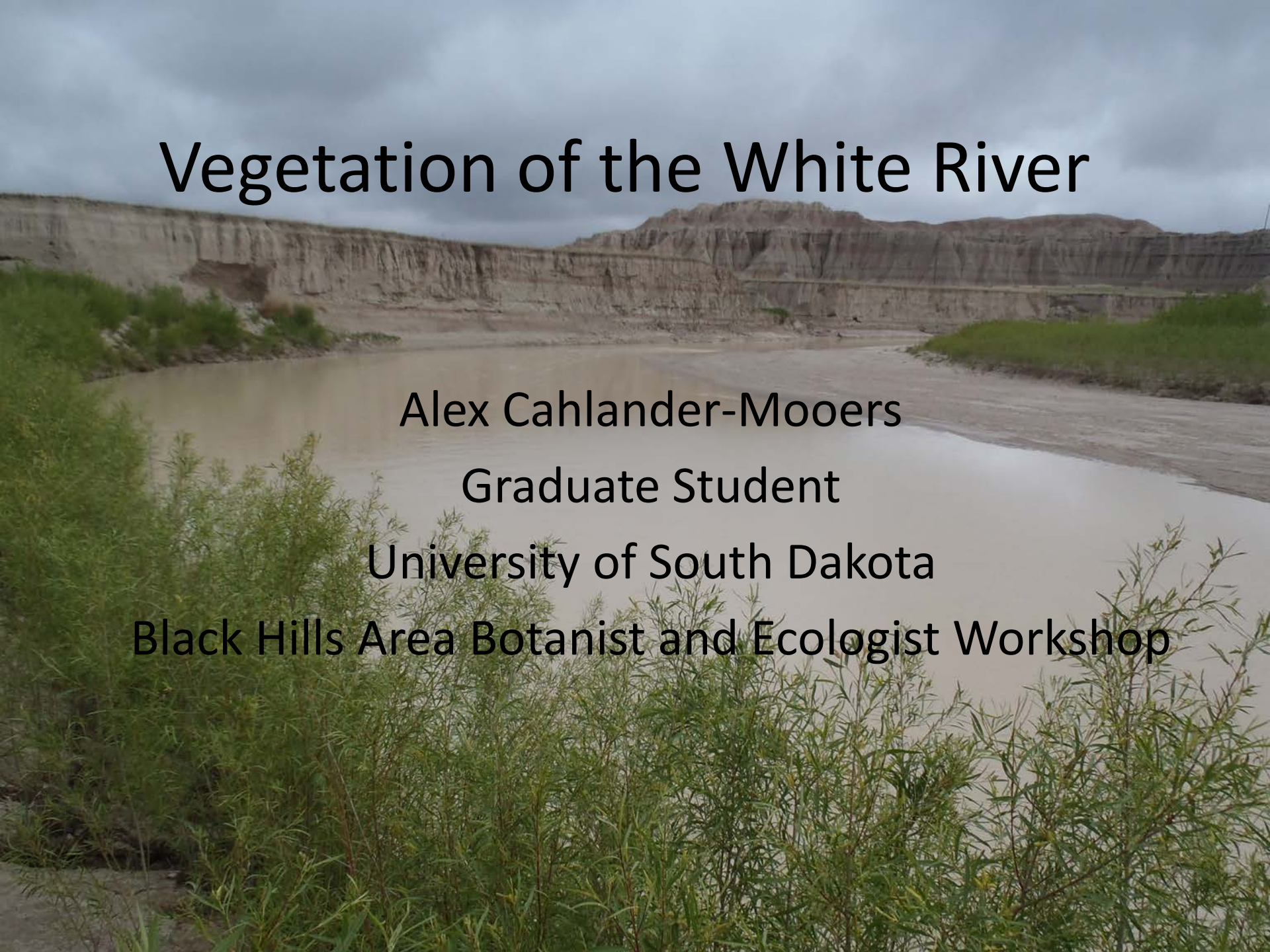

Vegetation of the White River

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Black Hills Area Botanist and Ecologist Workshop

Project Overview

- Three primary objectives
  - Land cover mapping of the riparian corridor
  - Historical analysis of the floodplain
  - Vegetation surveys
- Compare among ecoregions
- Two year study
  - One field season complete

The White River

- Completely unregulated
  - Second longest unregulated river in the lower 48
  - Yellowstone is the first
- Natural channel and plant community dynamics
  - Point bar and channel cutoff community establishment
  - Floods and droughts

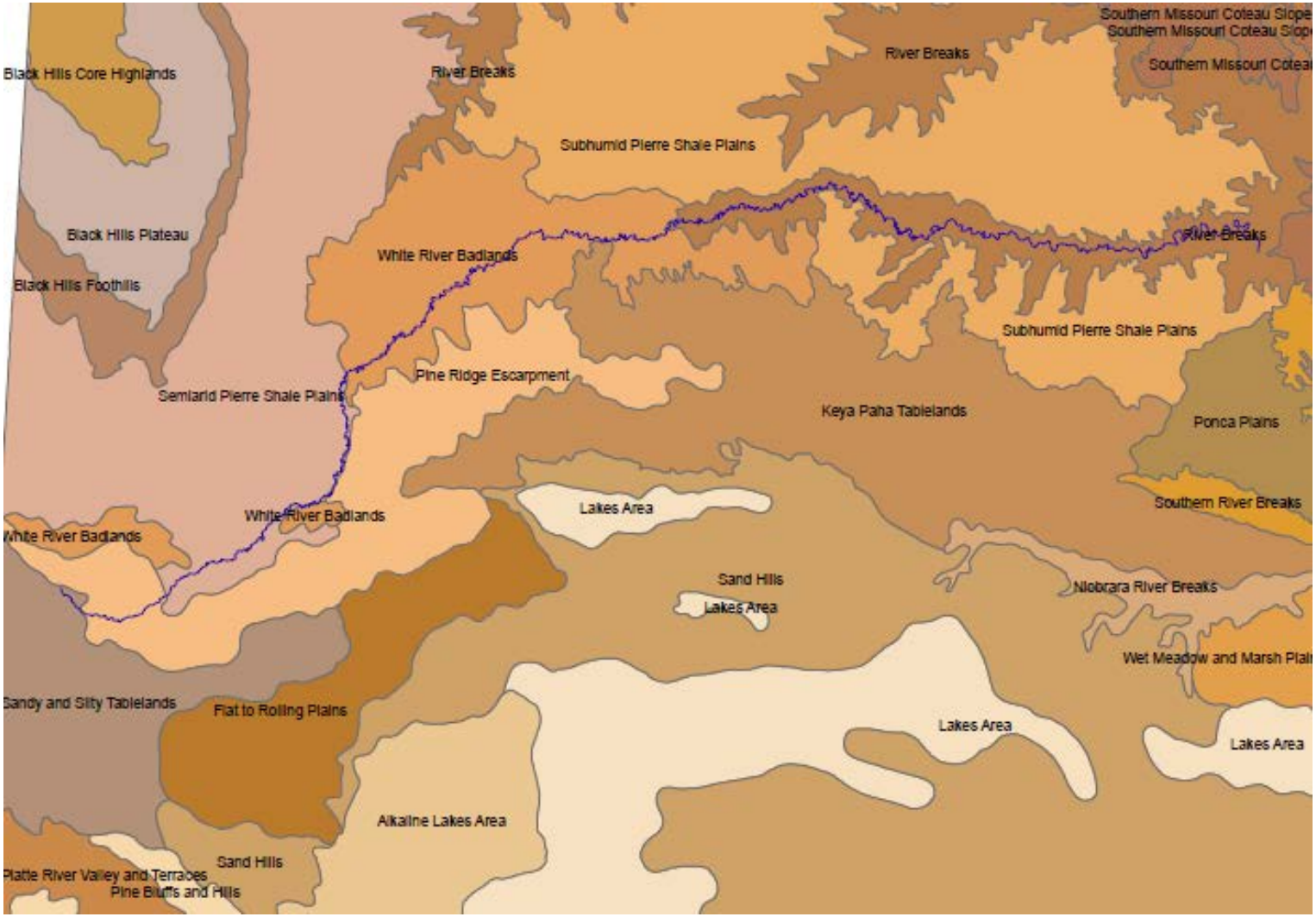
Why Study the White?

- Conservation
  - Listed as area of concern by SDGFP
  - Woodland habitats
    - Birds and terrestrial species
    - Woody inputs to the aquatic system
- Few unregulated rivers left to study
  - At this scale
  - Historic scale
- For science
  - The vegetation of the river has never been thoroughly documented or studied

Rivers of North America

- "Plants" section for the White River (unabridged)
  - "Submersed and emergent vegetation is rare in the White (Fryda 2001). Riparian vegetation includes grasses (41%), willows (36%), and other shrubs and trees (cottonwood, horsetail, green ash, wild grape, box elder, Russian olive, wild rose)."

White River Ecoregions



Semiarid Pierre Shale Plains

- Also includes a small portion of Pine Ridge Escarpment
- Mixed grass prairie with a dominance of short-grass species

White River Badlands

River Breaks

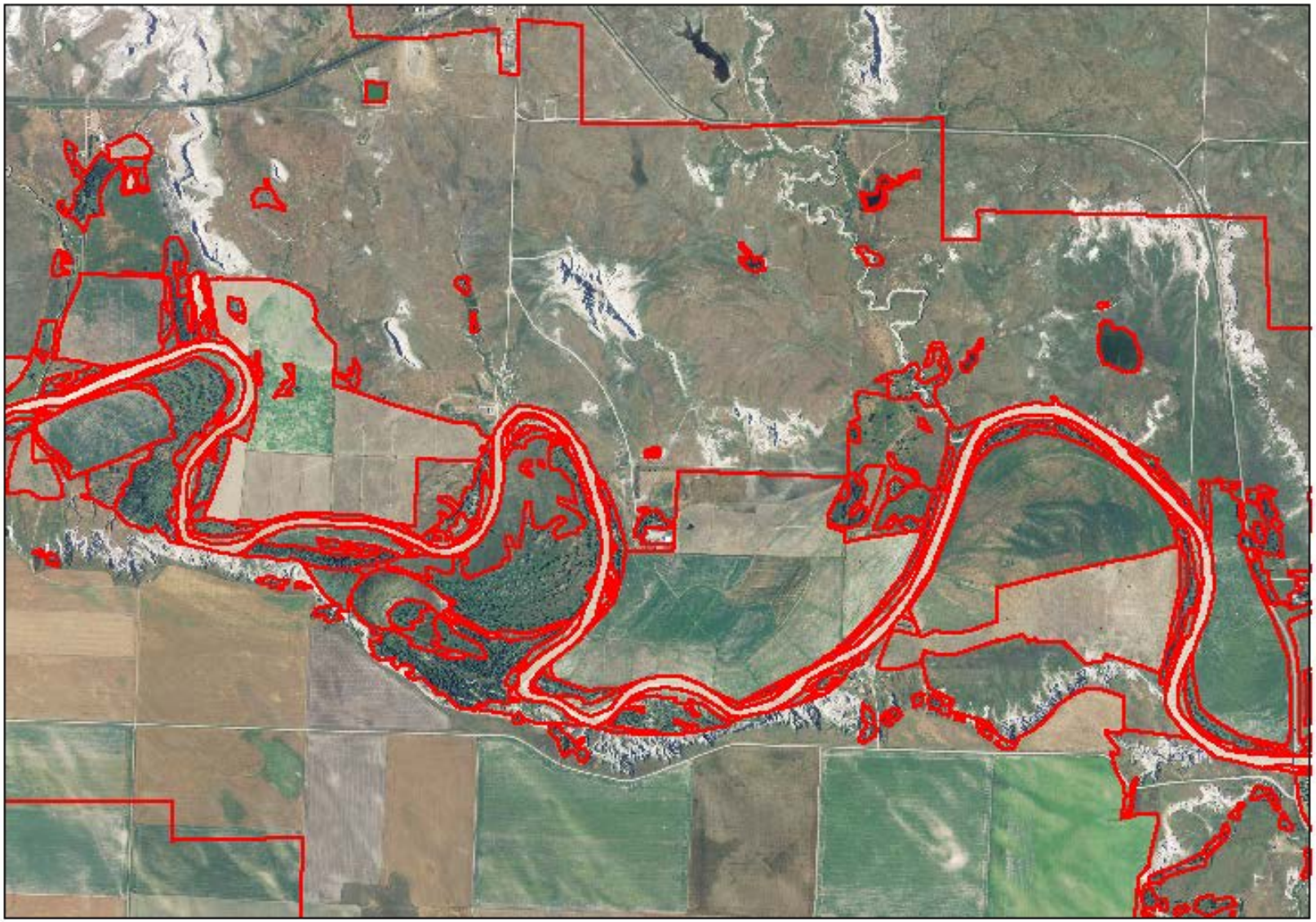
- Broken terraces from the Missouri River and Major tributaries
- “Haven for wildlife”
- Persistent floodplain forests

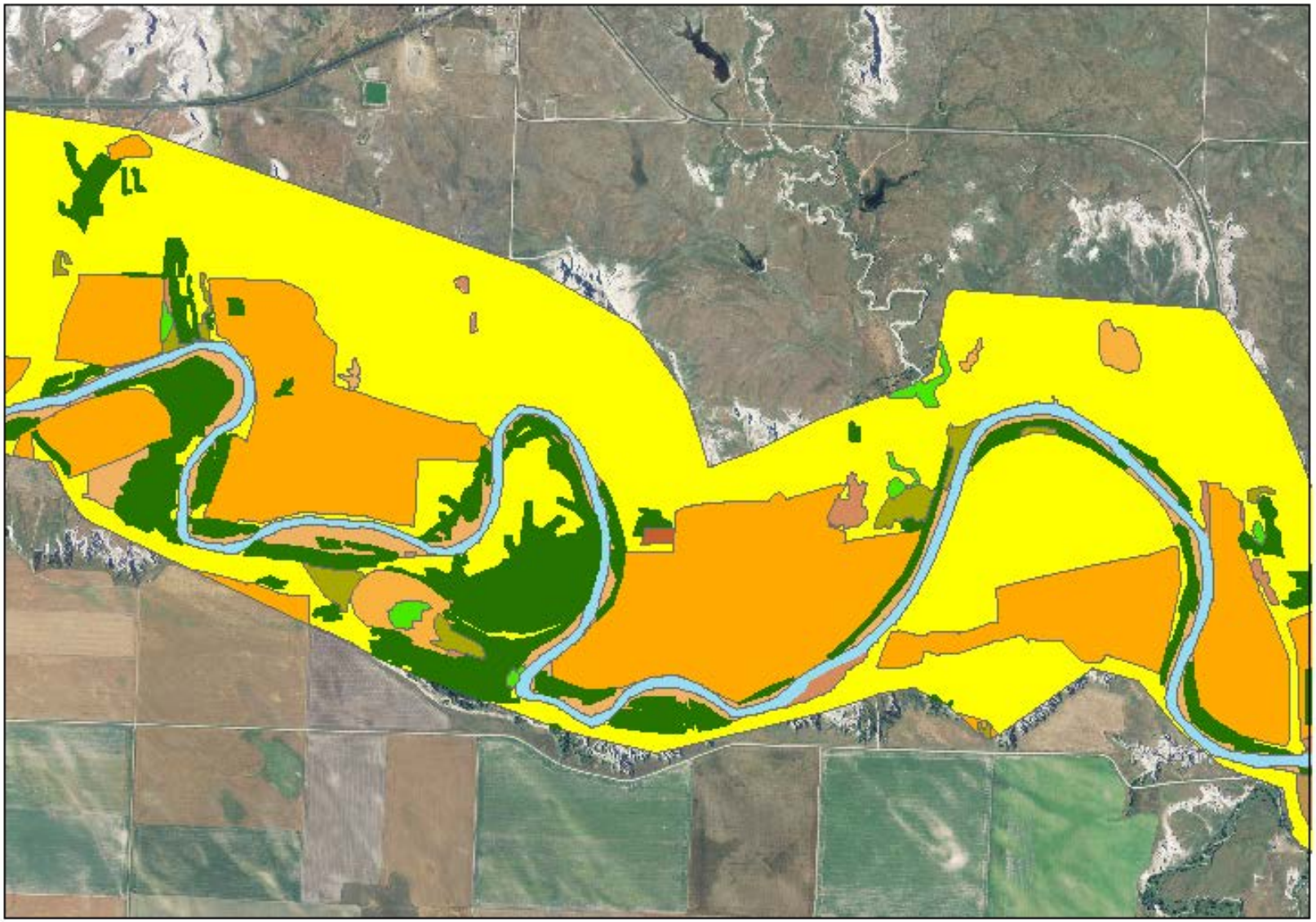
Delta

- Last section of River Breaks
- Altered hydrology from reservoir levels at Lake Francis Case

Land Cover of the Riparian Corridor

- Mapped at 1:5000 scale
- 0.25 ha minimum mapping unit
- “Heads up” approach
- Clipped to floodplain





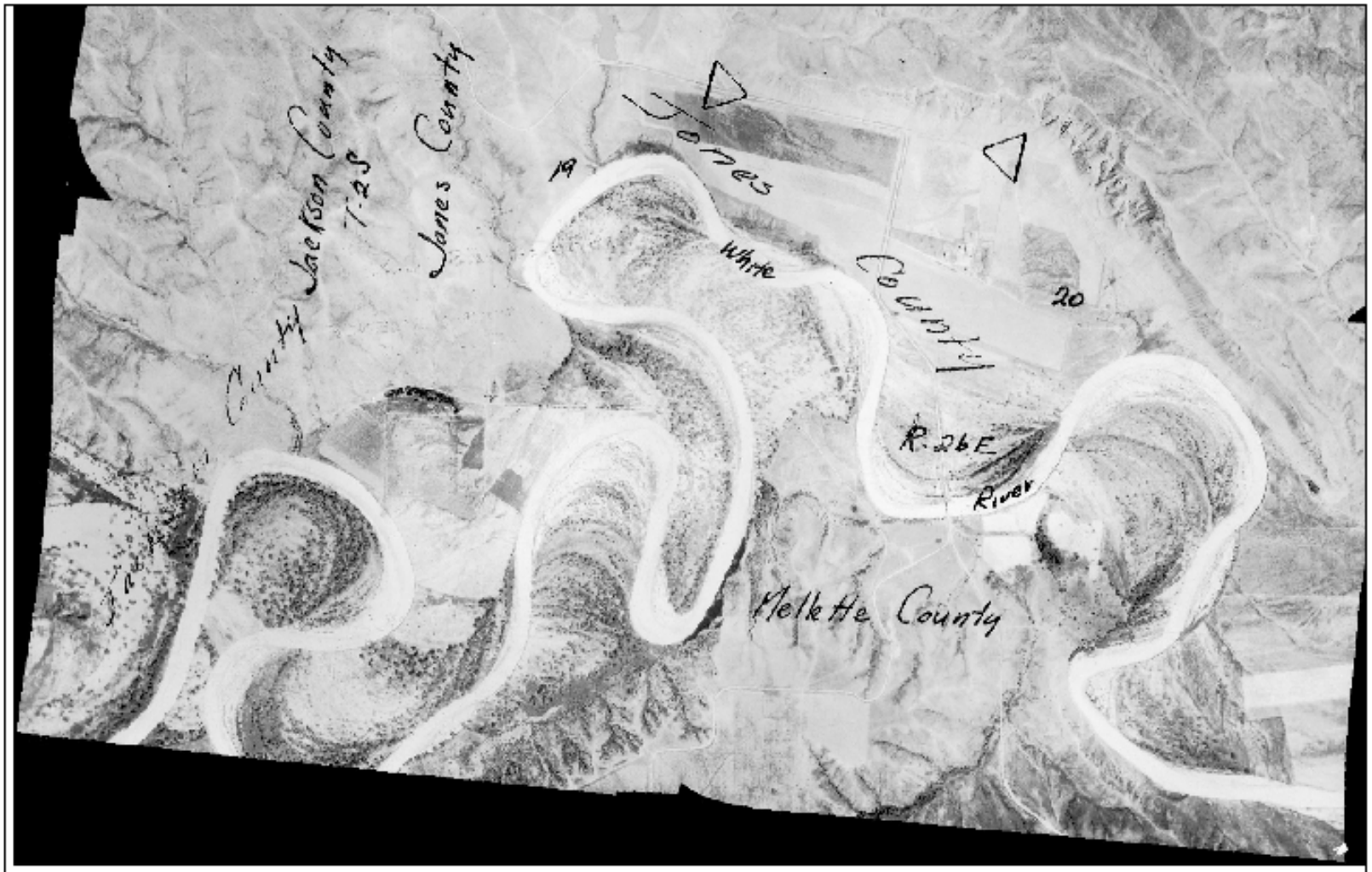
Mapping Results

	Pierre Shale	Badlands	River Breaks	Delta
Area (ha)	14625	19517	31584	1581
Channel	**1.1**	**5.3**	**8.8**	**6.3**
Grassland	45.1	70.2	30.1	6.4
Wet Meadow	0.0	1.1	3.2	0.5
Hay/Field	29.1	10.7	30.4	9.7
Herbaceous Total	**74.3**	**82.1**	**63.8**	**40.7**
Marsh	0.0	0.1	0.4	24.2
Forest	13.6	6.6	18.0	41.7
Woodland	5.3	3.4	4.7	1.3
Shrubland	1.7	1.2	0.6	0.9
Forest Total	**20.5**	**11.2**	**22.6**	**43.9**
Other	4.1	1.4	4.8	9.1

Percent composition of land cover for each ecoregion

Historic Land Cover and Channel Dynamics

- Same methods as current land cover
- Aerial photography from the 1930s to present for selected reaches
- Changes in floodplain
  - Channel
  - Land cover/communities
- Early stages of the project
  - No results yet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T-2-S
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19
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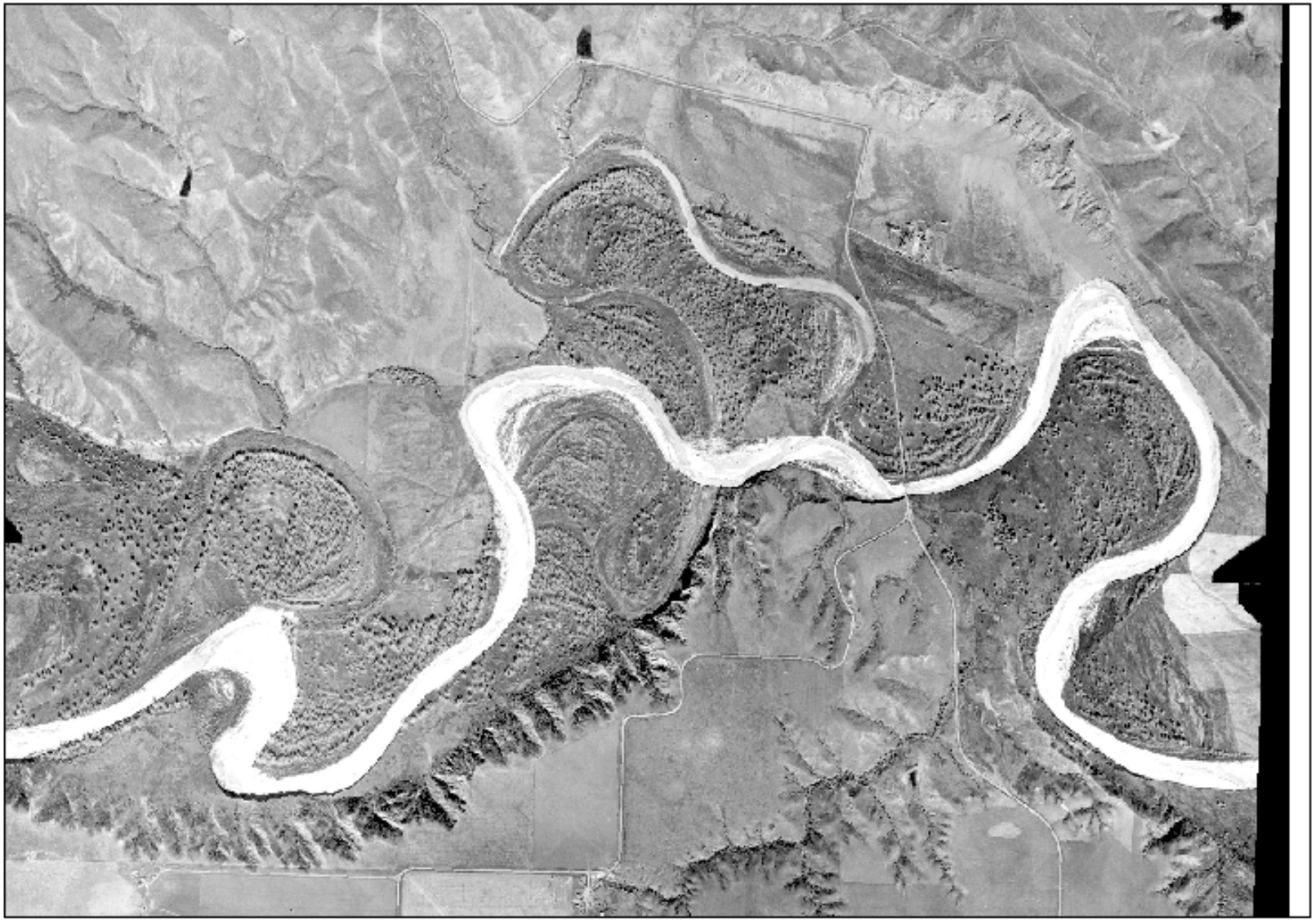
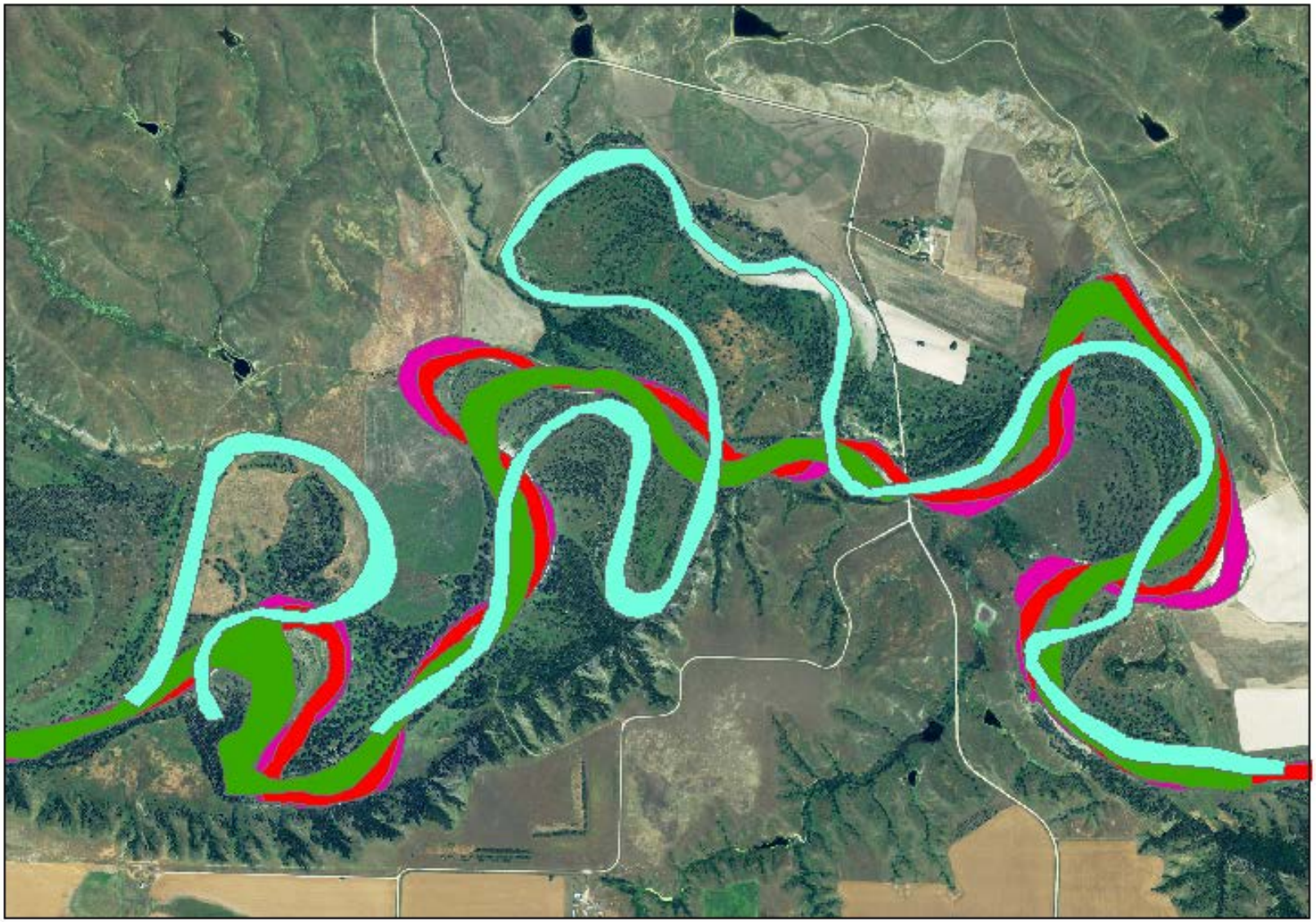
20
R. 26 E.
River
Pelkette County

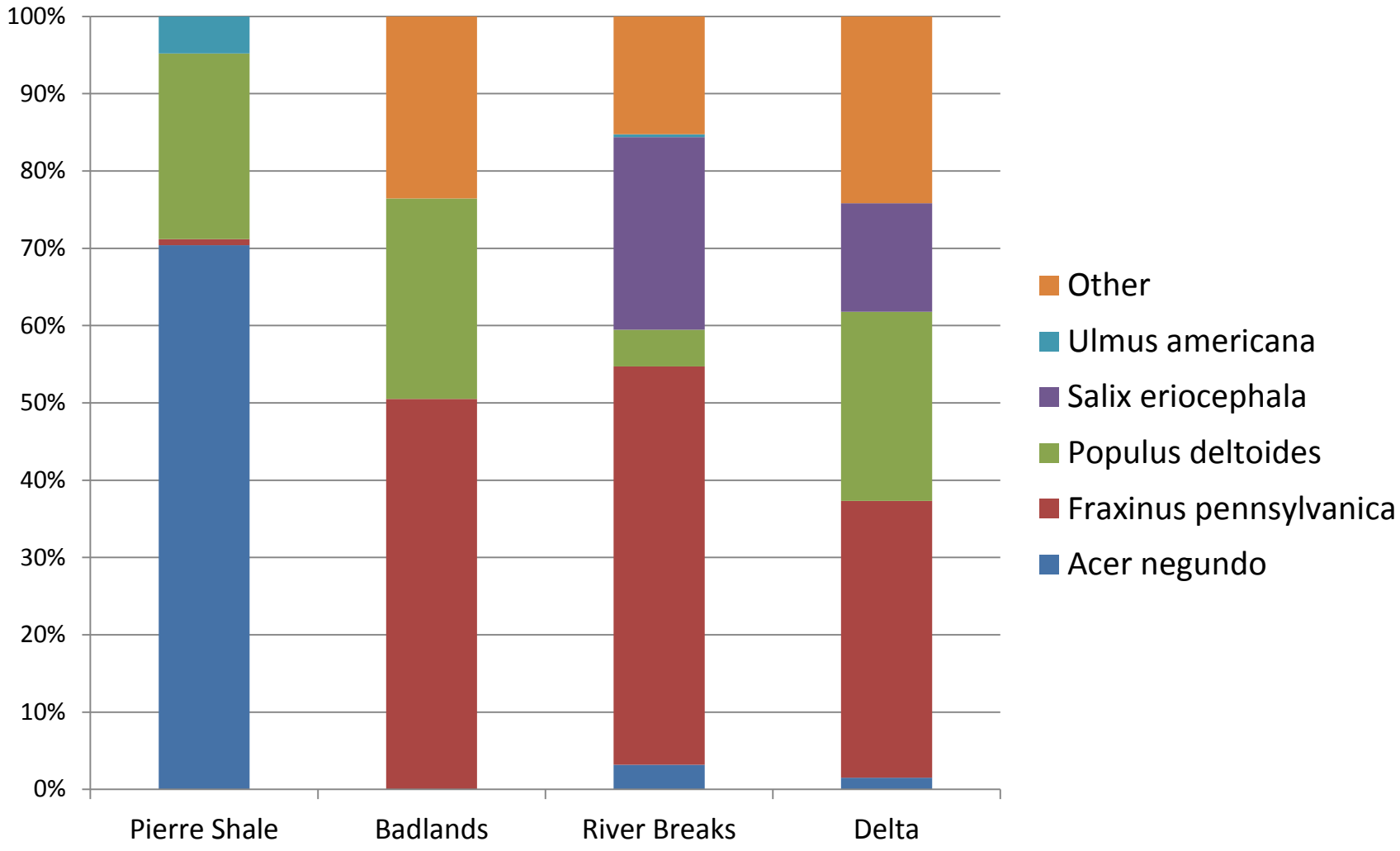




Vegetation of the White

- Vegetation surveys of dominant communities along the river
- Woody structure
  - 5 x 25m macroplot
  - DBH
- Herbaceous composition
  - 0.5 x 1 m microplot
  - Percent cover

Results: Forest Composition



Results: Herbaceous/Understory Composition

- Pierre Shale
  - *Bromus intermis, Phalaris arundinacea, Solidago gigantea*
- Badlands
  - *Agropyron smithii, Shepherdia argentea, Stipa viridula, Panicum virgatum, Eleocharis palustris*
- River Breaks
  - *Bromus inermis, Helianthus petiolaris, Solidago canadensis, Shepherdia argentea, Vitis riparia*
- Delta
  - *Typha sp., Equisetum arvense, Apocynum cannabinum, Vitis riparia, Rumex crispus,* woody seedlings

Acknowledgements

- Alanna Robinson, Field assistant
- Mark Dixon, Advisor
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- Terry Harris, Buffalo Gap National Grassland
- Various landowners

Questions?