

IDENTIFICATION OF INTERFLOW PATHWAYS AND POTENTIAL WETLAND SITES IN THE KELLY HAYFIELDS



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♦ SPRING 2011 PROGRESS REPORT

The primary goals of this collaborative effort are: 1) to inventory the Kelly Hayfields for the location of stream channels and wetland areas that existed prior to homesteading and 2) evaluate the utility of wetland criteria developed on the Elk Ranch Hayfields for identification of historic wetland areas in the Antelope Flats area. Successful identification of pre-existing stream and wetland locations will enhance National Park Service restoration efforts of the Kelly Hayfields and other abandoned agricultural lands within Grand Teton National Park.

The following objectives serve as the guideline for this study.

1. Identify areas within Antelope Flats and the Kelly Hayfields that may have contained active stream channels and wetlands before homesteading began in the early 20th Century.
2. Describe present day vegetation and soil characteristics at representative sites within potential channels and wetland sites and compare these outcomes to wetland criteria developed at the Elk Ranch Hayfields.
3. Stratify the inventory sites from highest to lowest potential based on wetland criteria for groundwater monitoring.

4. Install and instrument shallow groundwater wells at high potential sites to confirm/reject wetland designation.

5. Refine/amend Elk Ranch riparian criteria.

2010 Field Season:

An initial survey grid was anchored along the eastern flank of Blacktail Butte and extended roughly east/southeast across the Kelly Hayfields (Figure 1) based on a field reconnaissance completed with Park Service biologists in May 2010. Over the next 3 months 23 hand excavated soil pits and 8 mechanically drilled bore holes were used to describe subsurface stratigraphy, soil texture and the presence/absence of redoximorphic features at randomly located points along the transect lines (Figure 1). A GPS location of each soil pit and bore hole was recorded to aid in the accomplishment of objectives 2 and 3.

A 50g soil sample was removed from layers with apparent textural changes or inclusions of glacial/stream debris in each pit and bore hole. Collected material was bagged separately and taken to the Animal and Range Sciences laboratory, Montana State University – Bozeman campus for pH, textural and total organic carbon analysis. Information included in this report must be viewed as preliminary because full analyses of the nearly 100 individual samples will not be completed until January 2011.

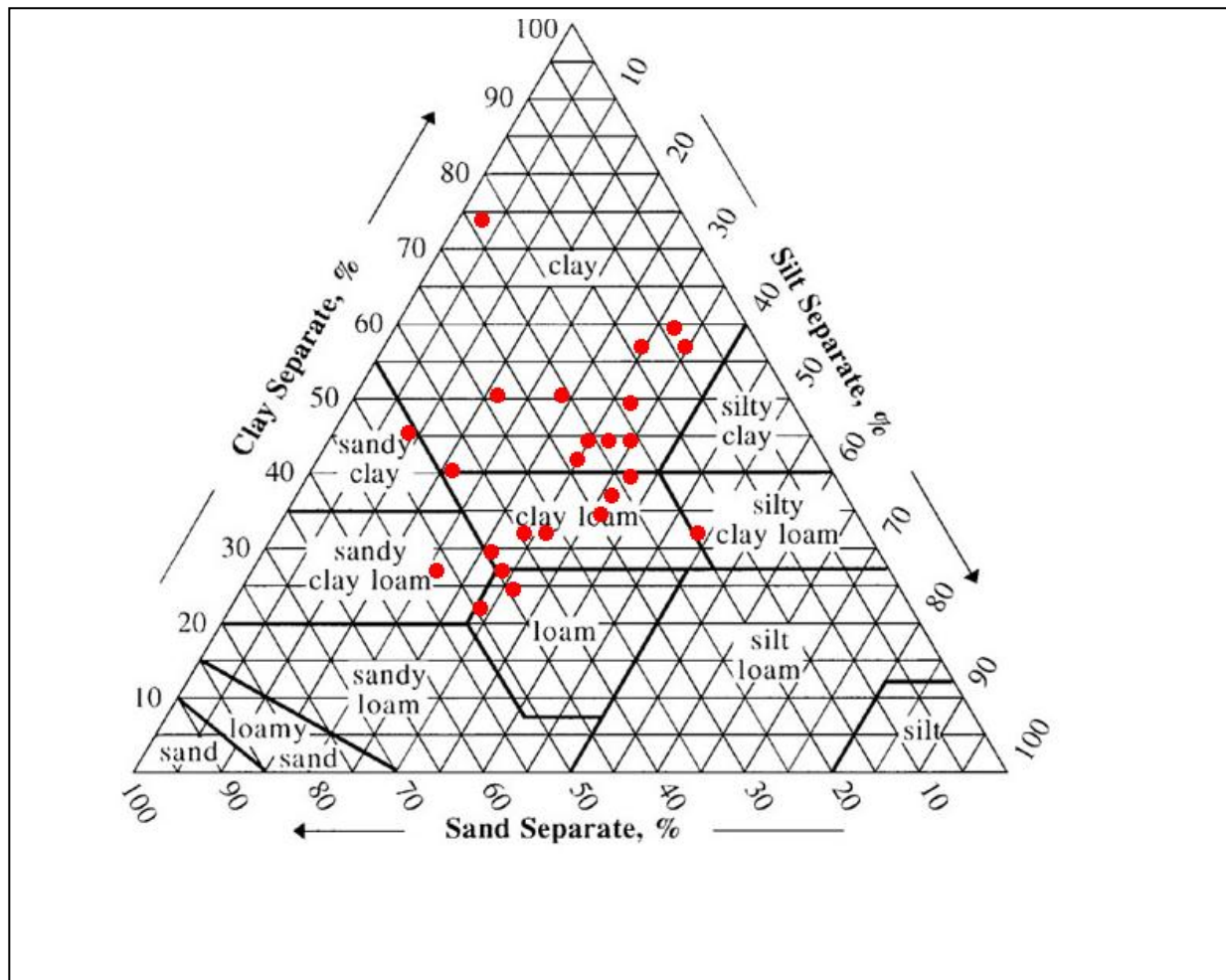


Figure 2. Description of texture for soils occurring in the Kelly hayfields, Grand Teton National Park. Samples represent continuum from surface to depths of 40+ inches.

2011 Field Season:

Plant community composition at each of the soil pit locations is being measured. This information will be used to confirm/amend the interpretation of historic wetland patterns in the Kelly hayfields. Further refinement of the wetland diagnostic criteria developed at the Elk Ranch can be accomplished with the same vegetation analysis. Soil sampling is being done to increase the reliability of interpretations developed during the initial soil

survey (2010). The data is still being collected for analysis at Montana State University in Bozeman MT.

Outcomes:

1. Soil/hydrologic information platform for re-design of 2011 field season sampling protocol.
2. Subset of 2010 soils and channel profile data used to develop a Masters level research program.