Rangeland Monitoring

Basic things to monitor

- Precipitation
- Livestock kinds, classes, numbers
- Percentage of calf crop and weaning weights
- Grazing periods for each pasture
- Photo points
- Ground cover changes
- Plant community changes

Rangeland Monitoring

Clearly stated goals and objectives provide framework for:

- What to monitor
- Where to monitor
- How often to monitor

Data is collected to help decision makers determine if the current management strategy is meeting the goals and objectives

Rangeland Monitoring

- Monitor changes that occur on the land each year
- Management decisions should be based on monitoring data
- The conservation plan will continue to evolve through planning, implementing, and monitoring

Date	Feb-81	Nov-81	Jan-83	Nov-84	Nov-85	Dec-87	Dec-89	Nov-90	Nov-93	Nov-95	Nov-99
Bare Ground	2	5	5	3	16	7	6	4	3	1	1
Litter		23	22	31	28	30	26	33	31	34	42
Live Vegetation (basal)		8	6	13	12	8	3	15	7	3	3
Shrubby Buckwheat	37	36	32	34	38	32	30	37	27	25	37
Guajilla	13	18	15	21	24	16	20	20	22	26	15
Hopseed Bush	27	32	28	32	33	40	28	13	22	34	35
Rayless Goldeneye	7	3	7	1	14	10	9	10	2	3	5
Sideoats Grama	10	9	8	20	22	19	9	16	16	19	13

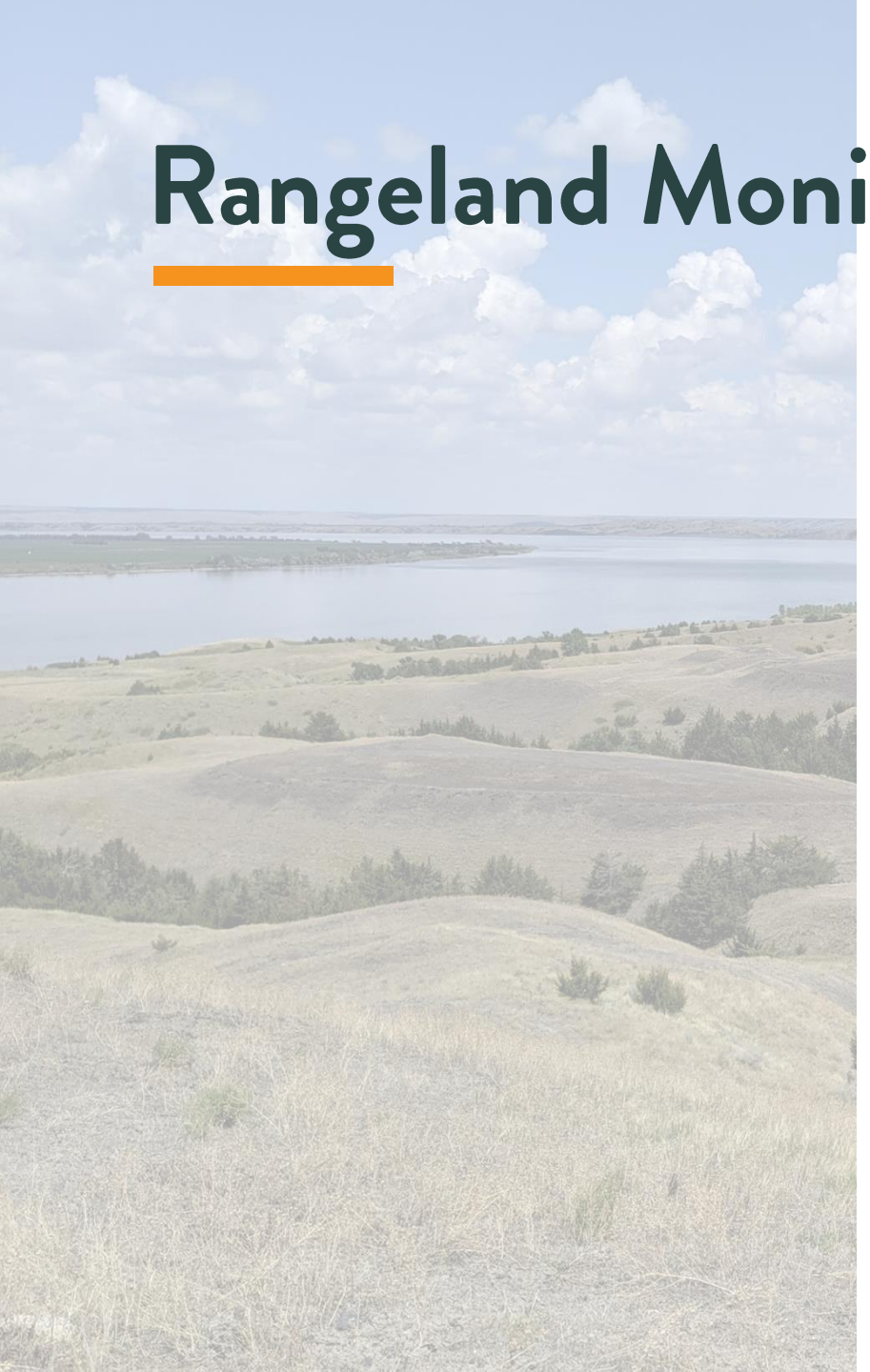
Rangeland Monitoring

Most monitoring is focused on whether the planned grazing management is achieving plant community goals and objectives

Rangeland Monitoring

- Monitored sites are carefully selected to represent larger key areas
  - Each ecological site
  - Evaluate the effectiveness of a planned practice (brush management)

- Attributes being monitored should have demonstrable relationships to desired resource outputs or processes (healthier animals)



Rangeland Monitoring

Many management plans include objectives for multiple resource benefits (wildlife, water quality, reduced erosion)

Rangeland Monitoring

Repeated measurements or observations are taken over time to establish whether changes in selected resource attributes have occurred (photo points)

Attributes of rangeland ecosystems can be measured or observed → is what you are monitoring a reliable indicator of resource protection

Examples

Surface soil compaction is known to reduce infiltration and increase runoff

- Reduces vegetation production
- Changes species composition
- Increases soil erosion

Soil compaction levels can be monitored over time to establish trends toward greater or less compaction if:

- Site-specific studies can identify the level of soil compaction that result in undesirable changes in vegetation or soil stability (site-specific)
- Small areas of compaction around livestock watering area are not typically significant

Data Collection Methods

Photo Point

Vegetation Transect

Ecological Site Identification

Precipitation Monitoring

Photo Point

To determine the location of a fixed photo point

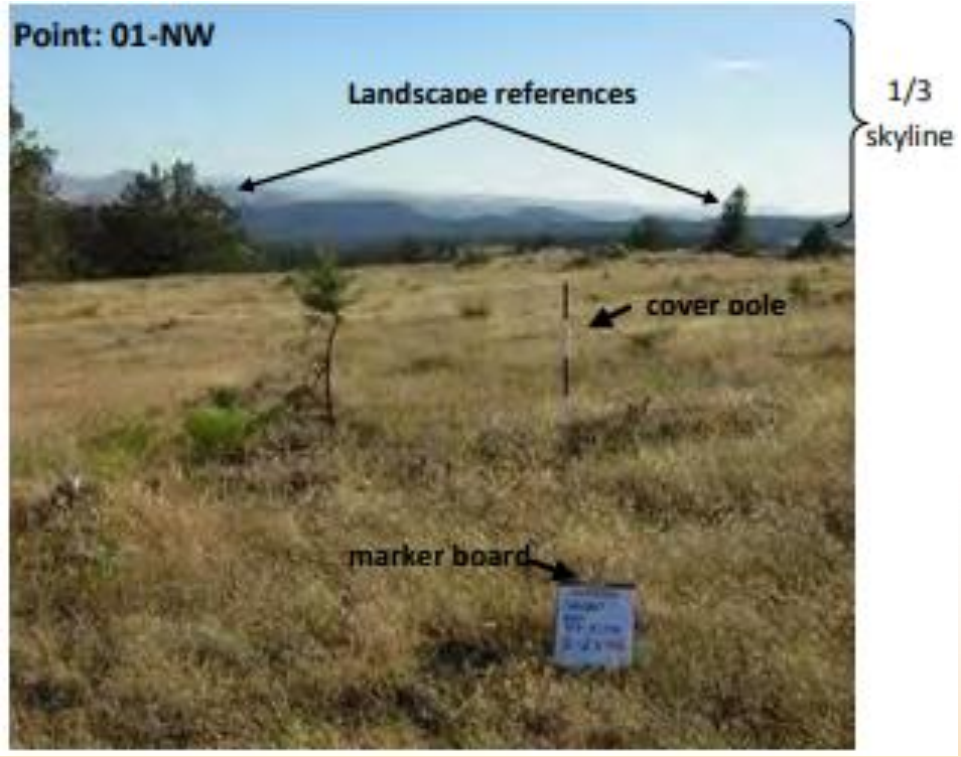
- Will the changes be visible in photo
- Will the photo capture the area of interest
- Can the location be reached conveniently and consistently
- Will the location of the point need to change over time

Figure 1—Photo point monitoring of a leafy spurge infestation before (A) and after (B) the introduction of copper leafy spurge flea beetles. *(Photos adapted from Norman E. Rees, USDA ARS, www.forestryimages.org)*

Photo Point

To establish a photo point

- Mark each photo point location with a stake or marker
- Record GPS coordinates for each photo point location
- Record detailed directions for locating and taking photo points
- Develop a photo point map



Video

Vegetation Transect

A transect is a line on the ground where sample points are established for collecting soil and vegetation data

- Locate transects in area(s) representative of the vegetation for the whole ecological site
- Lay out a 100’ or 100m measuring tape

G: 24-26

Vegetation Transect

- Place a 9.6 sq/ft hoop or square down at every 10’ or 10m (10 sampling sections)
- Cut the current year growth within the hoop or square
- Place green matter in bags and weigh in grams

- Common calculation for arid and semi arid areas
  - 9.6 sq/ft = .89 sq/meter
  - Production is measured in grams
  - Total grams per each 9.6 sq/ft * 10 = pounds/acre

video

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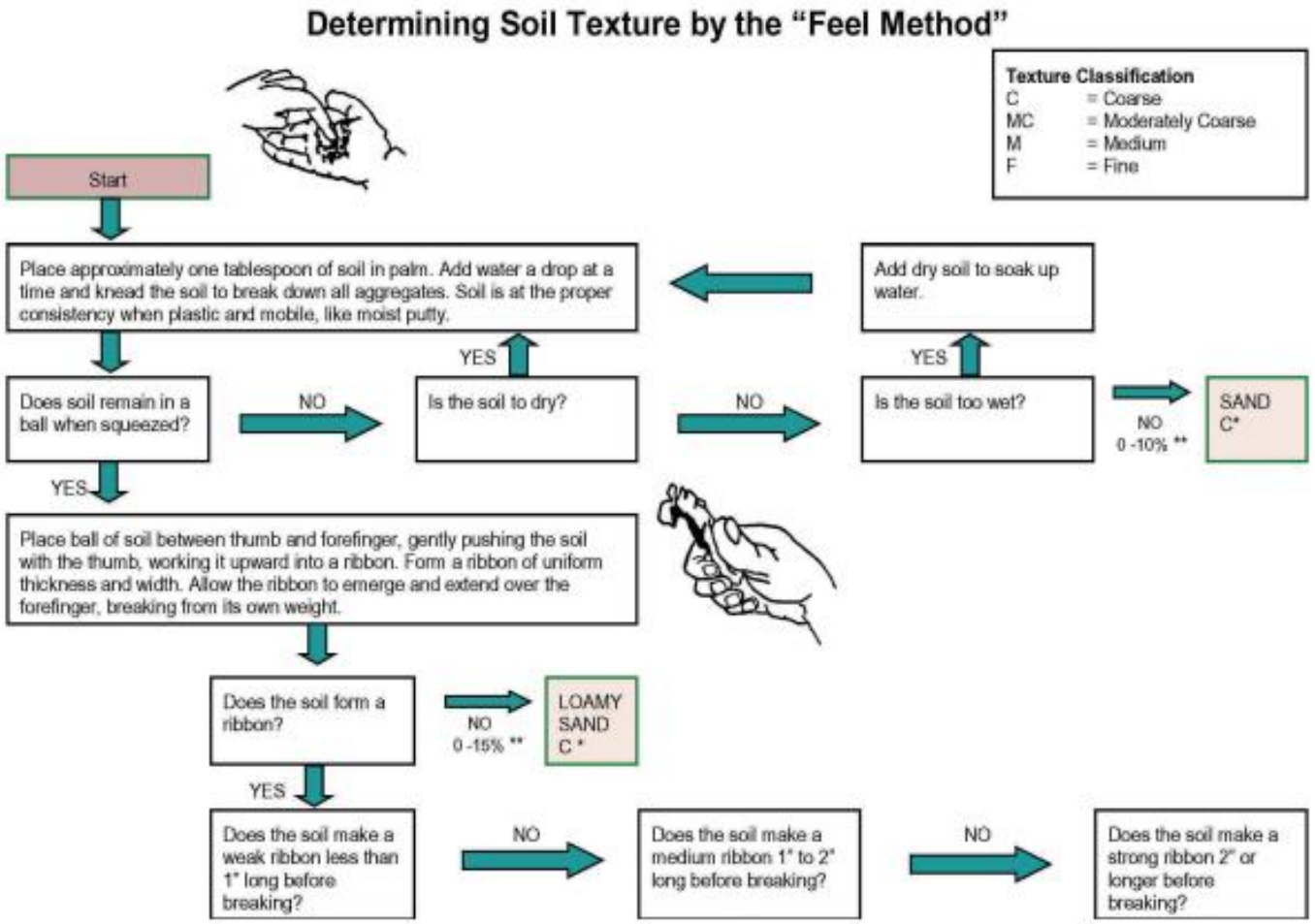
Ecological Site Identification

When digging a soil pit select a site that is representative of each plant community

- Dig a pit that is at least 1 meter (3 ft) deep
- As you remove soil place the soil in piles that correspond with the soil layers and depth
- Determine the types of soil horizons present and the depths at which horizons are located

video

Ecological Site Identification



Precipitation Monitoring

- Monitoring precipitation will help determine how variable rain is
- Changes can be made to management plans based on precipitation
- A rain gauge collects water falling and records the change over time in rainfall depth

video

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THANK YOU

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