

LPCI Vegetation Monitoring for LEPC Habitat

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CEAP Conservation Benefits of Rangeland Practices
Chapters 1, 3, 6 & 8

West, Neil E. , (2003) 'History of Rangeland Monitoring
in the U.S.A.', Arid Land Research and Management,
17:4, 495 – 545
(1891 to present)

USFWS 06-11 Conference Report for NRCS LPCI

APPENDIX III - LPCI Science Support Element Monitoring LPCI Effectiveness

Baseline assessments of vegetation will be collected at project areas **consistent** with NRCS **NRI protocols** to assess vegetation response at the individual ranch level. In turn, as multiple projects are completed a portfolio of habitat change can readily be quantified and linked back to changes in abundance and/or distribution of populations.

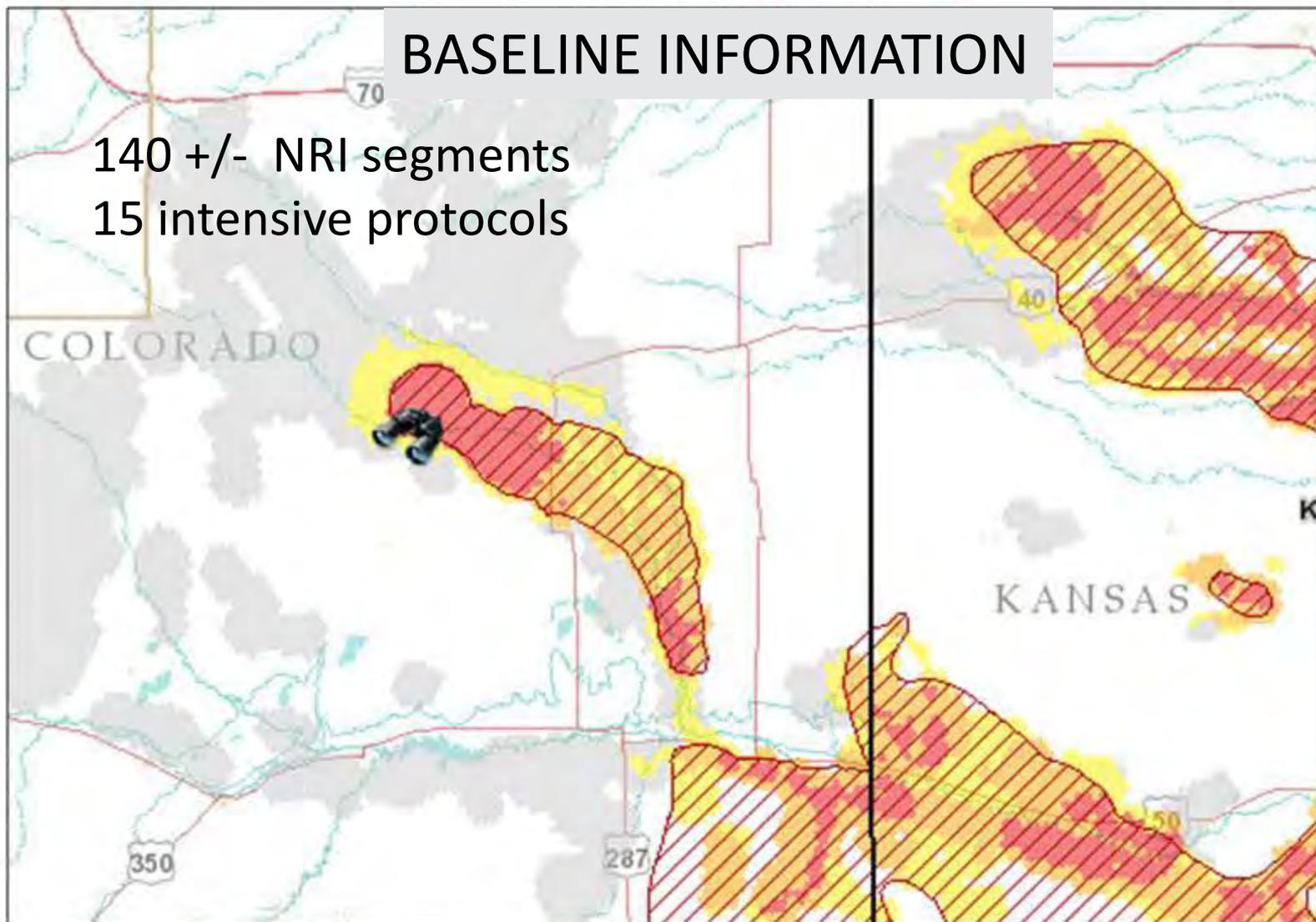
NRCS will seek to develop Wildlife Habitat Evaluation Guidelines that are specific to the three major habitat types (i.e., mixed-grass prairie, sand sagebrush prairie, and shinnery oak grasslands) but are **consistent** across the range of the LPC. This approach will ensure that baseline information is reported **consistently** both internally and to partners.

Rationale: Field Consistency

- A. Baseline information
- B. Monitoring Protocol
- C. Vegetation Protocol
- D. Field Preparation

BASELINE INFORMATION

140 +/- NRI segments
15 intensive protocols



<http://www.kars.ku.edu/maps/sgpchat/>
Connected with segment area of on-site grazing land study NRI

PRISM Climate Group - Windows Internet Explorer

File Edit View Favorites Tools Help

http://www.prism.oregonstate.edu/

PRISM CLIMATE GROUP

HOME PRODUCTS PROJECTS DOCUMENTATION HELP | Print Friendly

TERMS OF USE

What's New

1/26/2011: Added [US Virgin Islands](#) data.

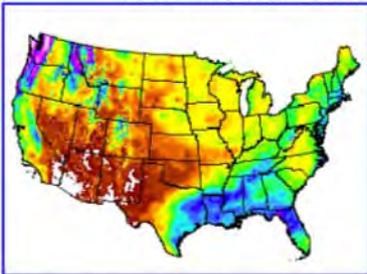
[Complete History](#)

Quick Links

- [Data Alerts!](#)
- [Monthly Data](#)
- [800m Normals \(1971-2000\)](#)
- [Internet Map Server](#)

Latest PRISM Data - Jan 2011

[Precipitation](#)
[Max Temp](#)
[Min Temp](#)
[Dewpoint](#)
[PPT %](#)



Click to see full-size map. [More...](#)

The data sets available on this web site were created using the PRISM (Parameter-elevation Regressions on Independent Slopes Model) climate mapping system, developed by Dr. Christopher Daly, PRISM Climate Group director. PRISM is a unique knowledge-based system that uses point measurements of precipitation, temperature, and other climatic factors to produce continuous, digital grid estimates of monthly, yearly, and event-based climatic parameters. Continuously updated, this unique analytical tool incorporates point data, a digital elevation model, and expert knowledge of complex climatic extremes, including rain shadows, coastal effects, and temperature inversions. PRISM data sets are recognized worldwide as the highest-quality spatial climate data sets currently available. PRISM is the USDA's official climatological data.

Important notice:

PRISM data sets were developed through projects funded mostly by the [USDA Natural Resources Conservation Service](#), [USDA Forest Service](#), [NOAA Office of Global Programs](#), and others. However, there is little operational funding for maintaining and updating or expanding the data sets. Data are provided as a public service for a limited time. If you find them valuable, please consider doing your part to support the PRISM Climate Group. [Contact Us](#) for details at 541-737-2531.

Use this site to [access](#) up-to-date and historical monthly climate data sets and graphics for the US, [explore](#) our data online with our Internet Map Server, [view](#) related papers and presentations, or [contact](#) us.

Best viewed with Internet Explorer 5.0+ or Netscape 6.0+ (Updated 6 May 2007.)

OSU Oregon State University

Start | Inbox - Micr... | C:\home\lge... | pasture_an... | SRMA Guid... | 2 Interne...

Step 1.
www.prism.oregonstate.edu

Step 2. Click on explore our data online with Internet Map Server.

Step 3. Enter longitude and latitude

Step 4.
Parameter = precipitation.
Month = annual.
Start year = 2008.
(Ideally the start year should be 3 years prior to data collection year)
Stop year = 2012 (or year of data collection).

Step 5.
Click for Time Series.

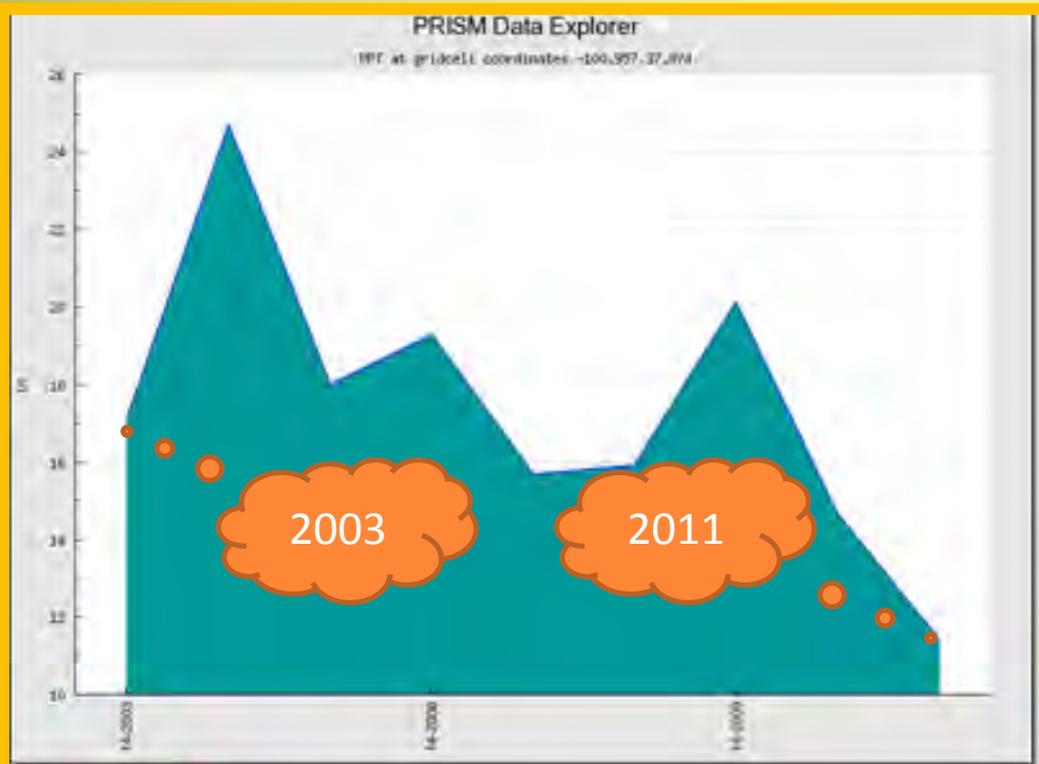
Optional Step 6. Month = All. Start/Stop year is year of collection. Click Time Series.

The screenshot shows the PRISM Data Explorer web application. The main form is titled "Gridcell Time Series Analysis" and contains the following fields:

- Location: Lon: -114.884, Lat: 44.802
- Parameter: Precipitation
- Month: Annual
- Start Year: 2003
- Stop Year: 2010
- Unit: English

Below the form is a "Refresh Map" button and a legend for "Precipitation (in.)". The legend shows color-coded ranges from 0 to 160+ inches. The map on the right displays a color-coded precipitation map of the United States. The interface also includes a warning message and a "Click for Time Series" button.

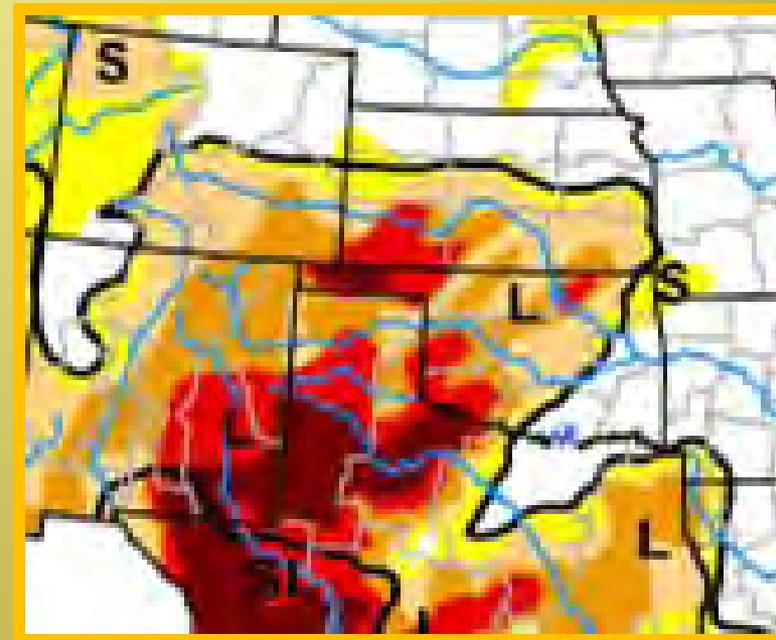
PRISM multi-year for Garden City, KS



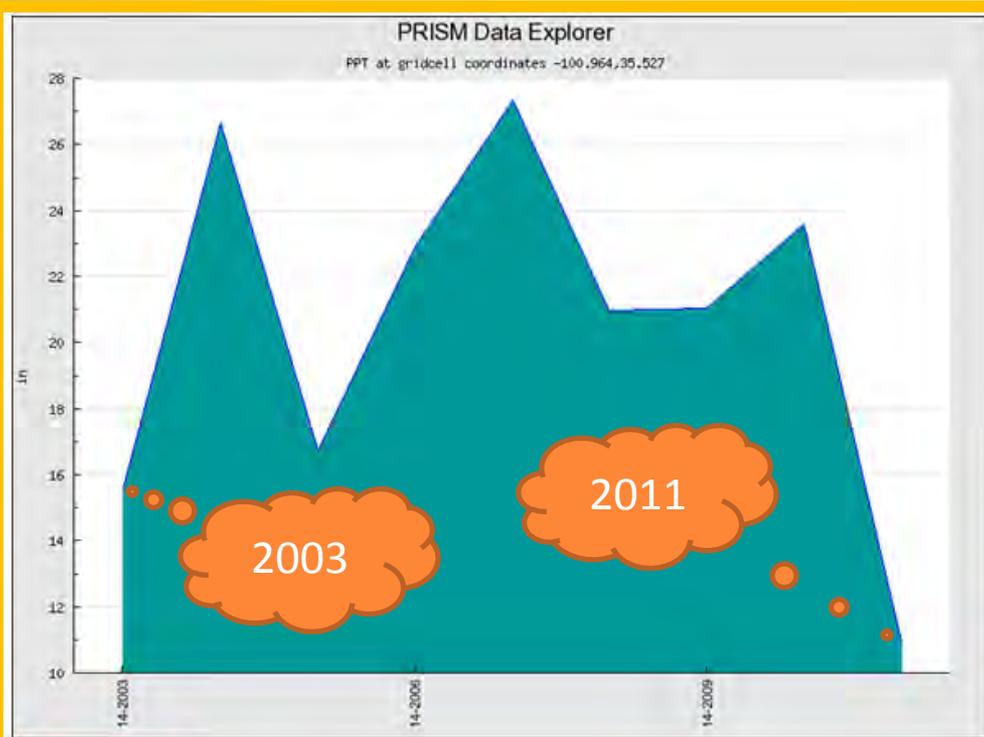
Year	Month	Value
2003	14	17.14
2004	14	24.74
2005	14	18.01
2006	14	19.28
2007	14	15.68
2008	14	15.92
2009	14	20.14
2010	14	14.67
2011	14	11.43

Time 1 seconds

Drought Monitor map



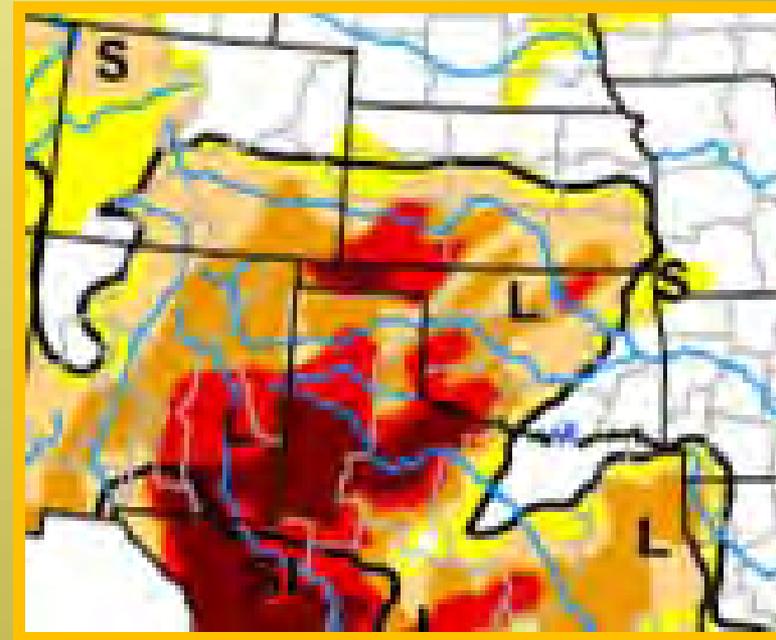
PRISM multi-year for Pampa, TX



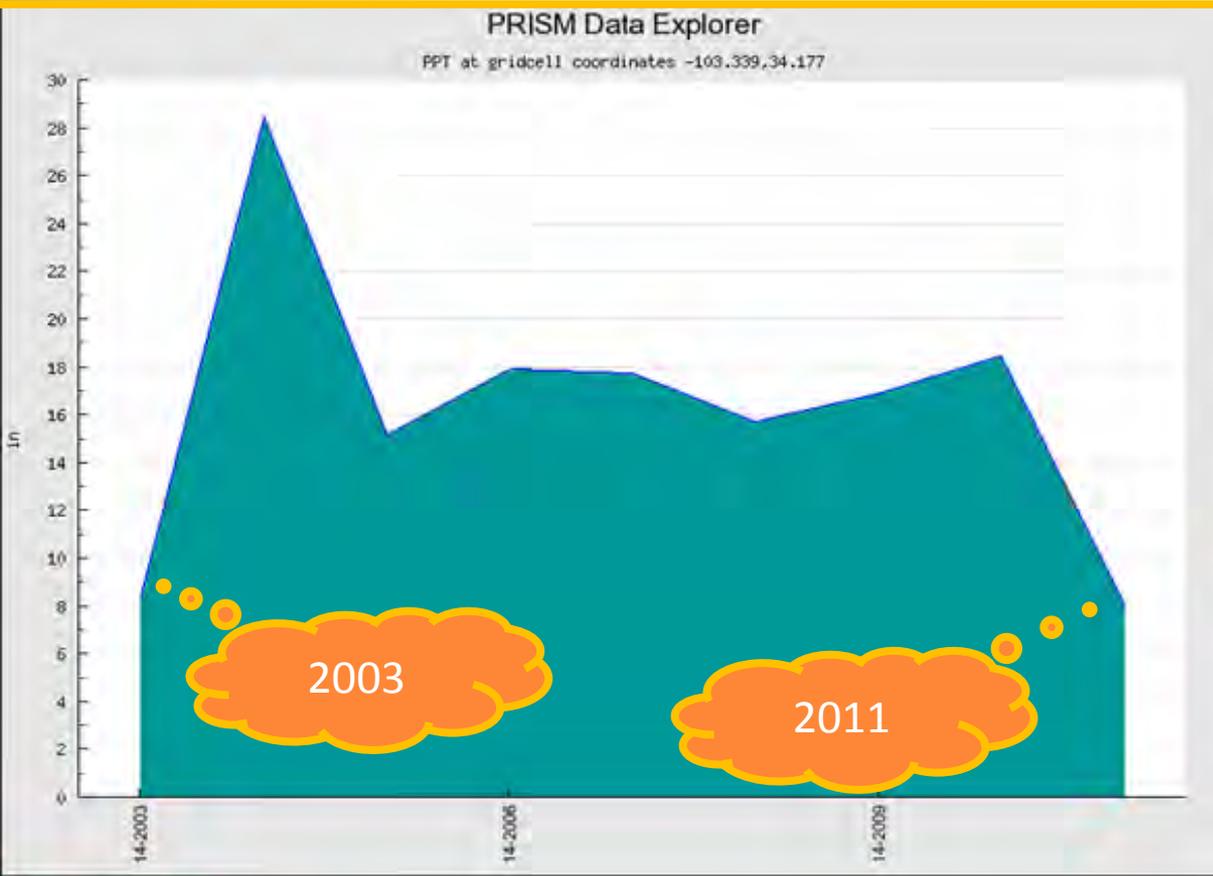
Year	Month	Value
2003	14	15.60
2004	14	26.64
2005	14	16.74
2006	14	22.91
2007	14	27.32
2008	14	20.97
2009	14	21.05
2010	14	23.59
2011	14	10.94

Time: 1 seconds

Drought Monitor map

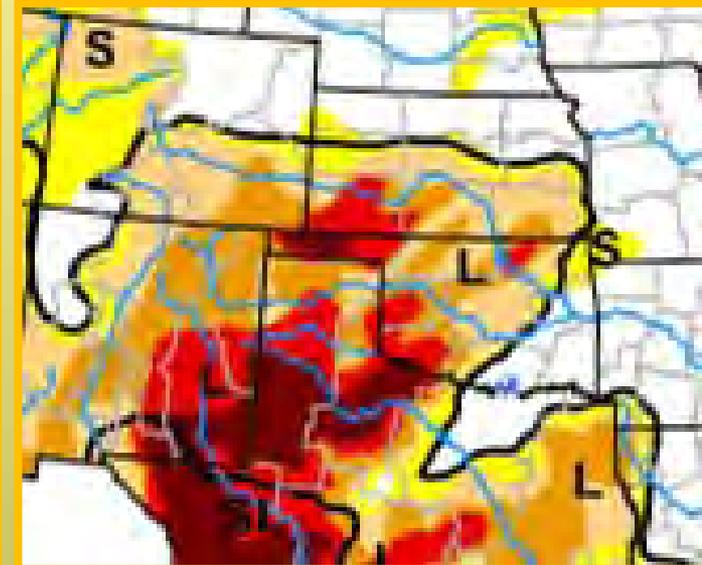


PRISM multi-year Portales, NM



Year	Month	Value
2003	14	8.43
2004	14	28.45
2005	14	15.15
2006	14	17.89
2007	14	17.74
2008	14	15.69
2009	14	16.88
2010	14	18.47
2011	14	8.09

Drought Monitor map





Monitoring Protocol

- Prescribed Grazing Plan inventory
- Past and present weather
- Careful to avoid disturbance
- Pick a monitoring site
- Schedule follow-up (rates of changing phenology)

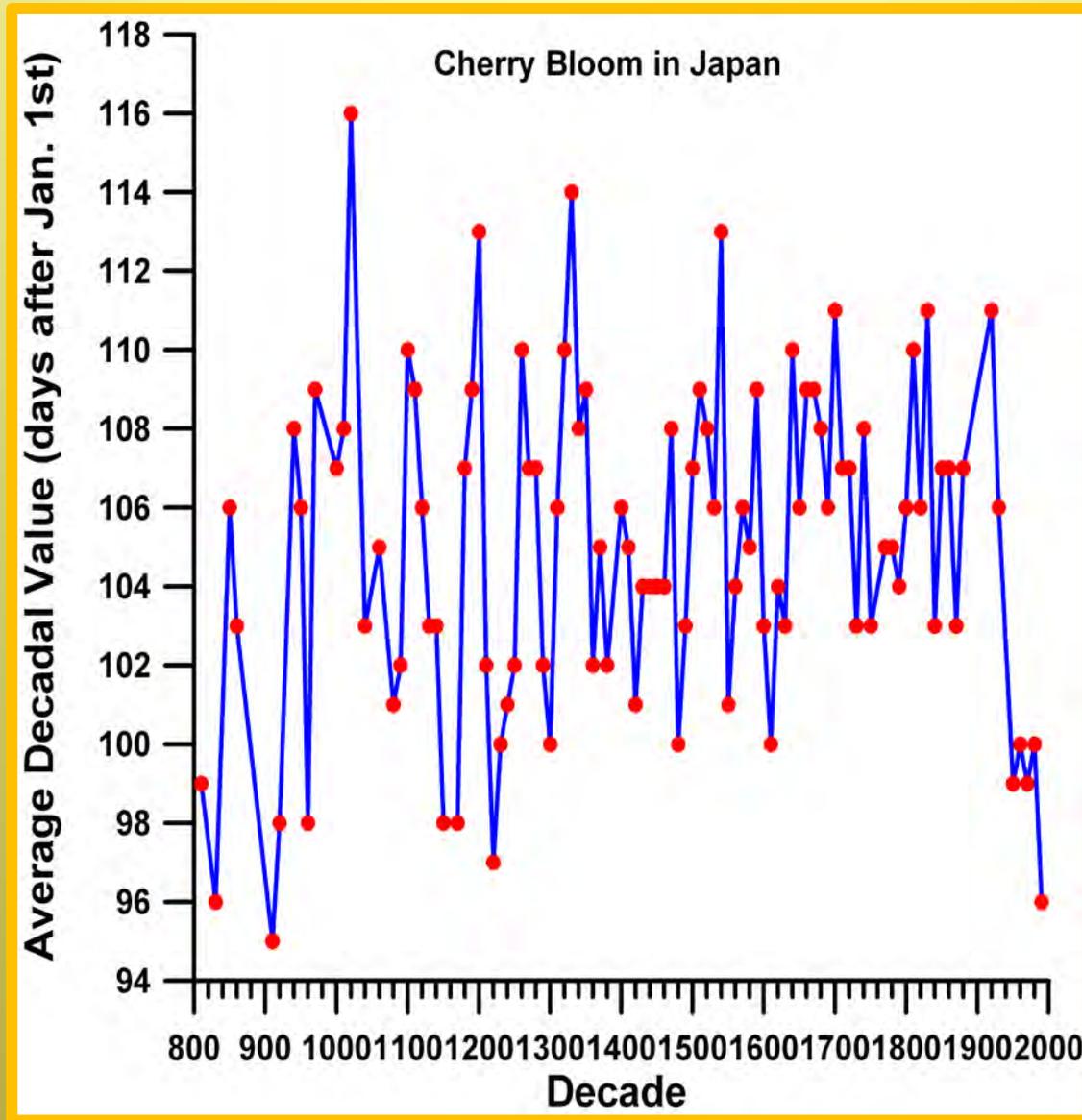
New Appointment

Set reminder to pop up 10 days in advance

The screenshot displays the Microsoft Outlook calendar interface. At the top, there are navigation buttons for 'Day', 'Week', and 'Month', with 'Month' selected. Below this, the calendar title is 'March 2013'. A yellow arrow points to the date '25' in the 'Monday' column. The calendar grid shows dates from February 24 to March 30. Several appointments are visible: '10:00am FGDC Vegeta' on Feb 28 and Mar 28, '8:00am tcas' on Mar 8, and '9:00am WNTSC Staff I' on Mar 11. A 'Click to add event.' button is visible on Mar 22. The status bar at the bottom indicates 'All folders are up to date.' and 'Connected to Microsoft Exchange'.

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Feb 24	25	26	27	28	Mar 1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

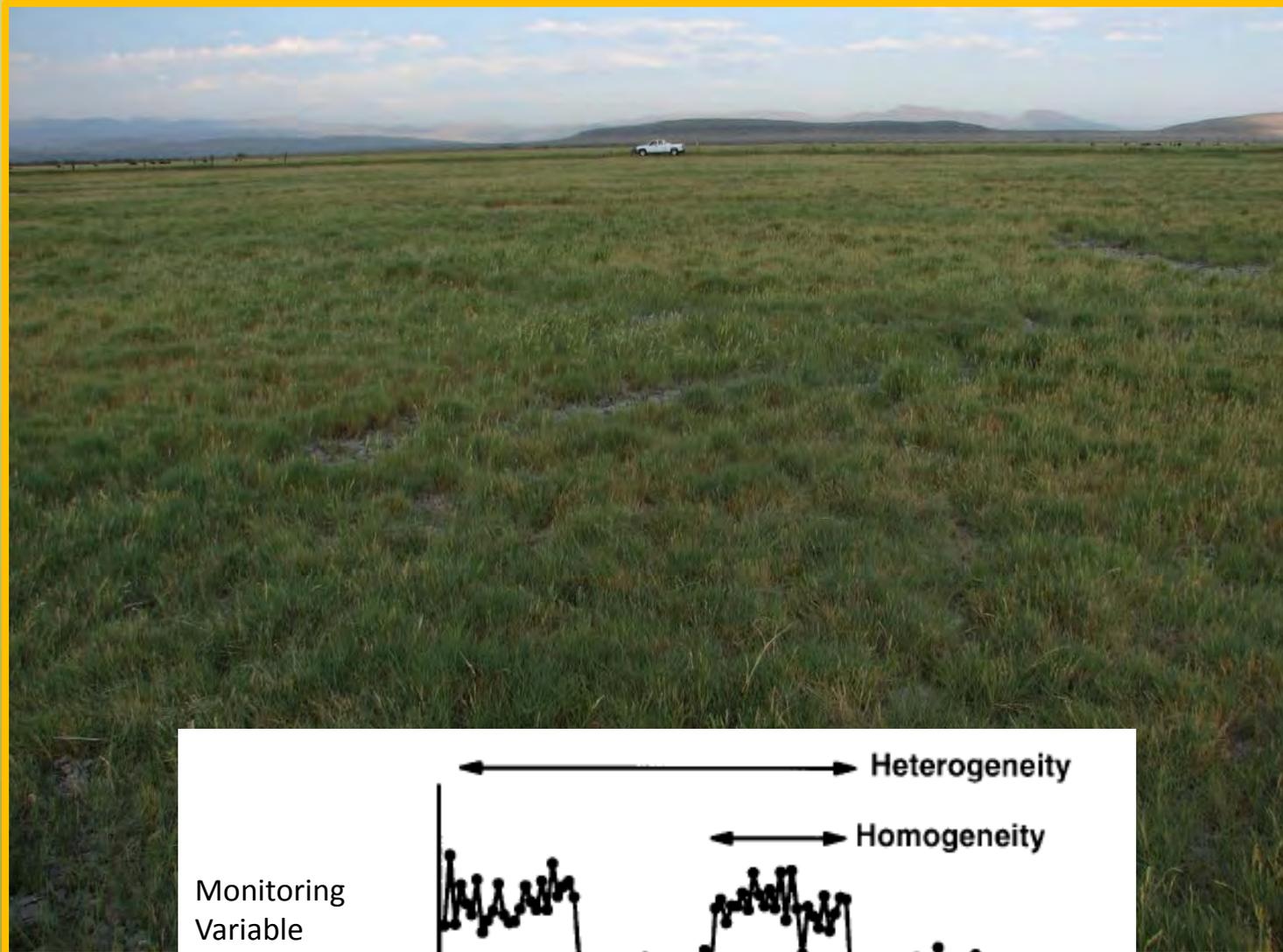
Decadal Averaged Cherry Bloom in Kyoto, Japan



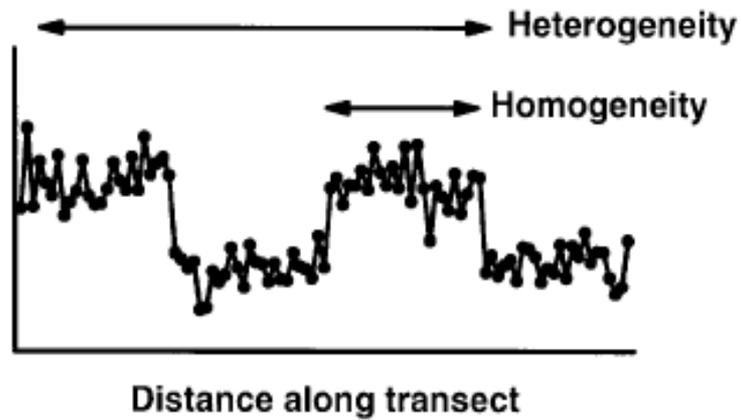
Difference between Inventory and Monitoring

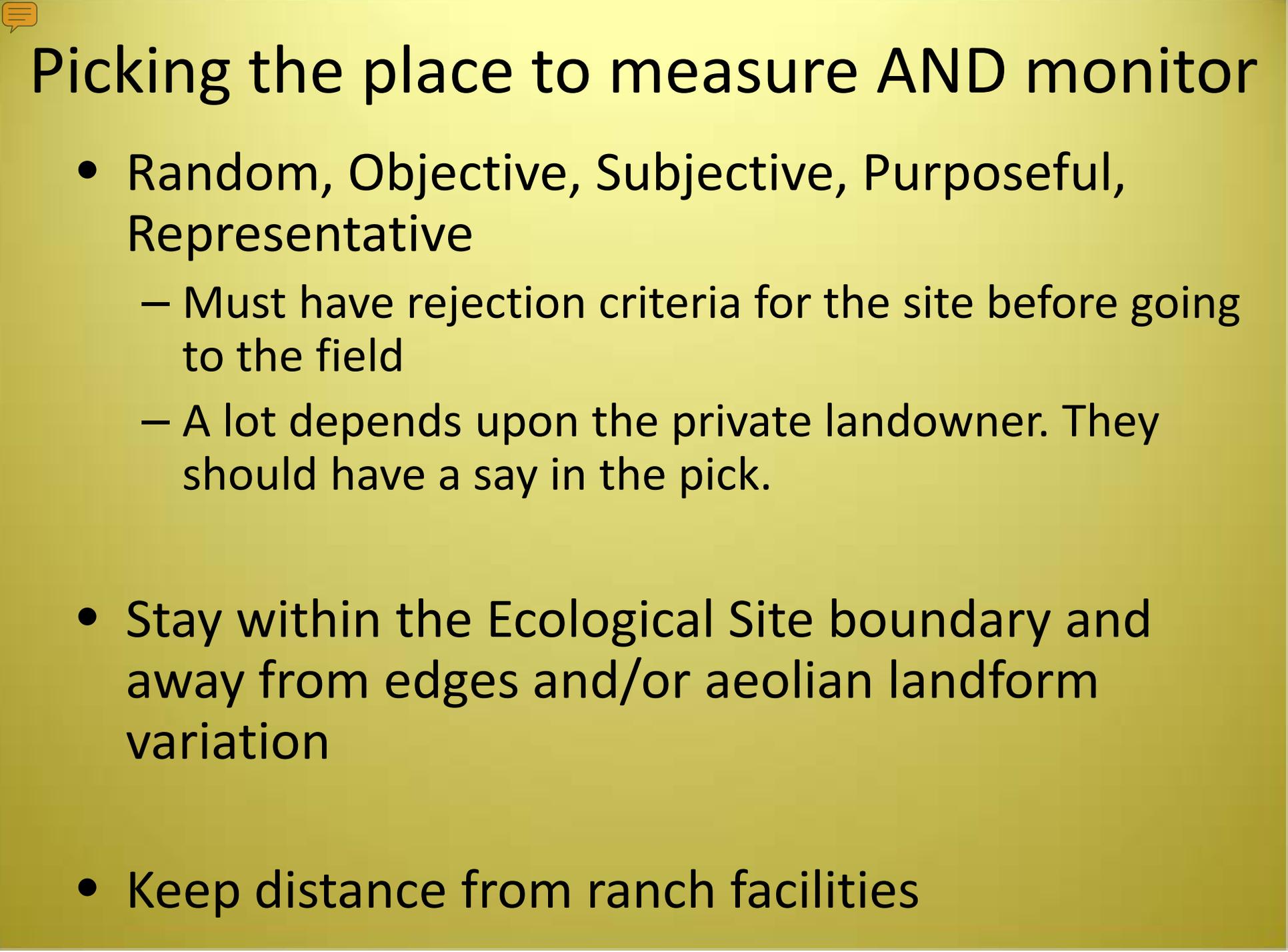


Monitor Captures Change



Monitoring
Variable





Picking the place to measure AND monitor

- Random, Objective, Subjective, Purposeful, Representative
 - Must have rejection criteria for the site before going to the field
 - A lot depends upon the private landowner. They should have a say in the pick.
- Stay within the Ecological Site boundary and away from edges and/or aeolian landform variation
- Keep distance from ranch facilities

Monitor 2 transects/treatment area/ecological site/year

Considerations:

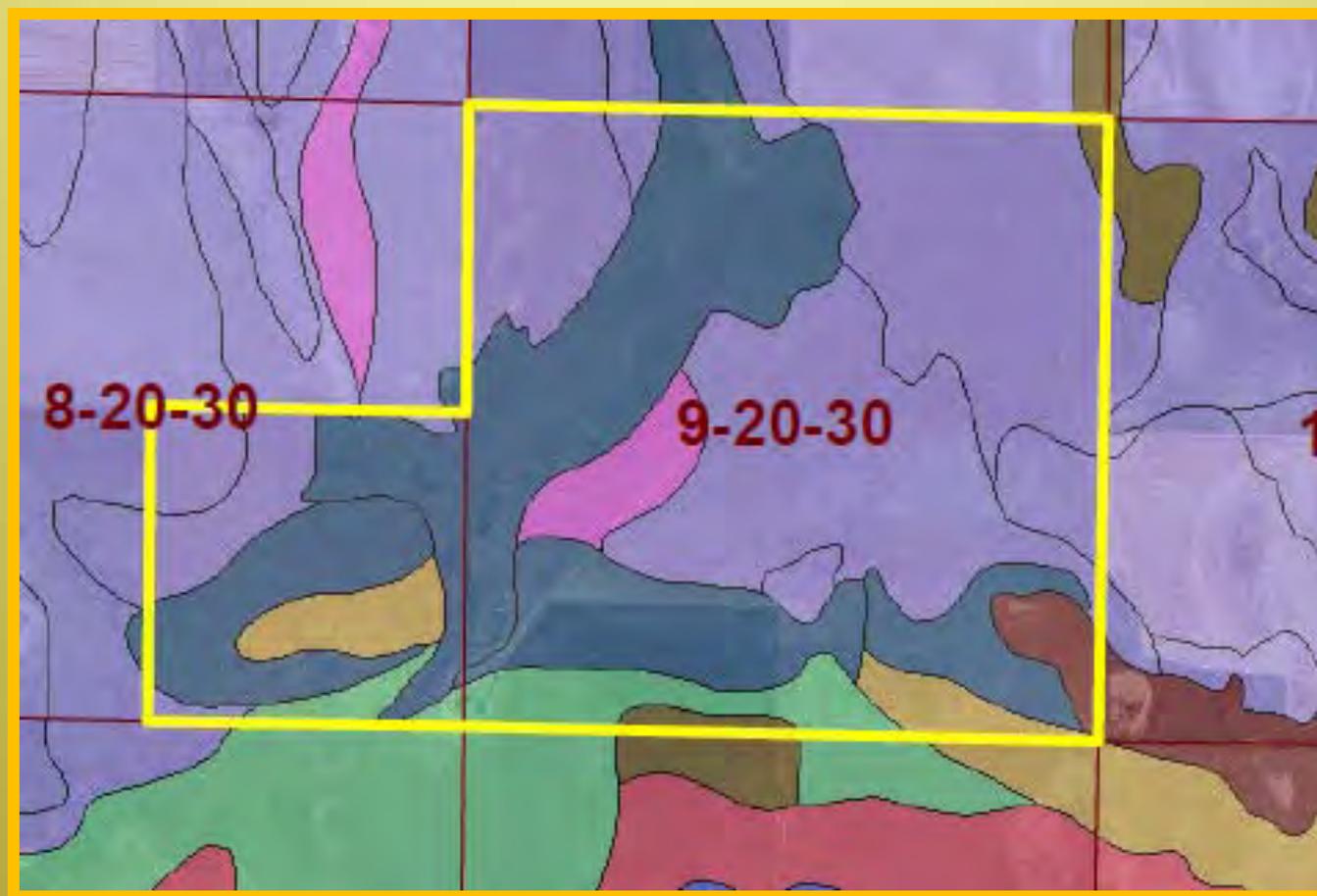
1. Monitor the Ecological Site (ES) rated HIGH for LEPC use or highest rated ES
2. Nesting and Brood Raising habitat will be prioritized over Leks
3. The ES that is the KEY AREA as identified in the Prescribed Grazing Plan

Monitor 2 transects/treatment area/ecological site/year

Considerations:

4. Review Ecological Site Descriptions when multiple rated ES occur within the treatment area. If expected management responses are similar then monitor only one ES. Otherwise, all rated ESs will be monitored
5. Expected change in monitored indicators will occur relatively fast due to treatment
6. Accessibility
7. Relative size

Picking the place to Monitor





BLM PHOTO



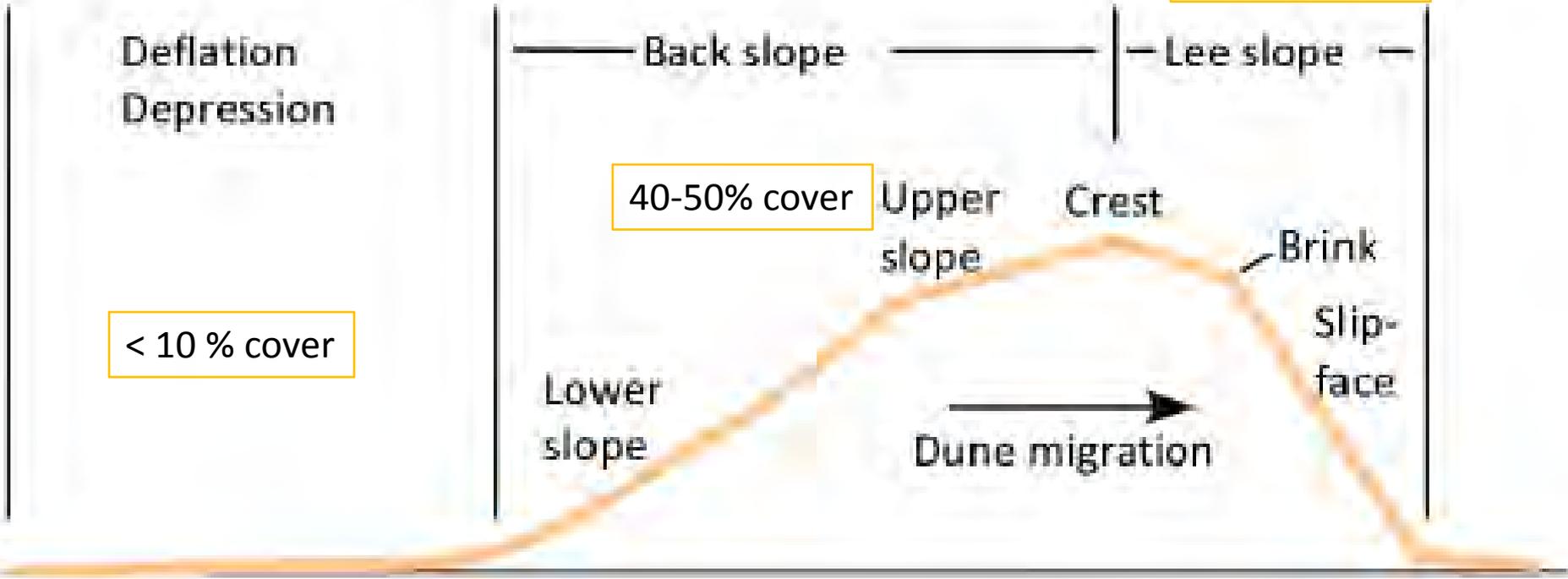
Wind direction

Direction of growth



Crest has cover changes due to sporadic annuals

50-75% cover



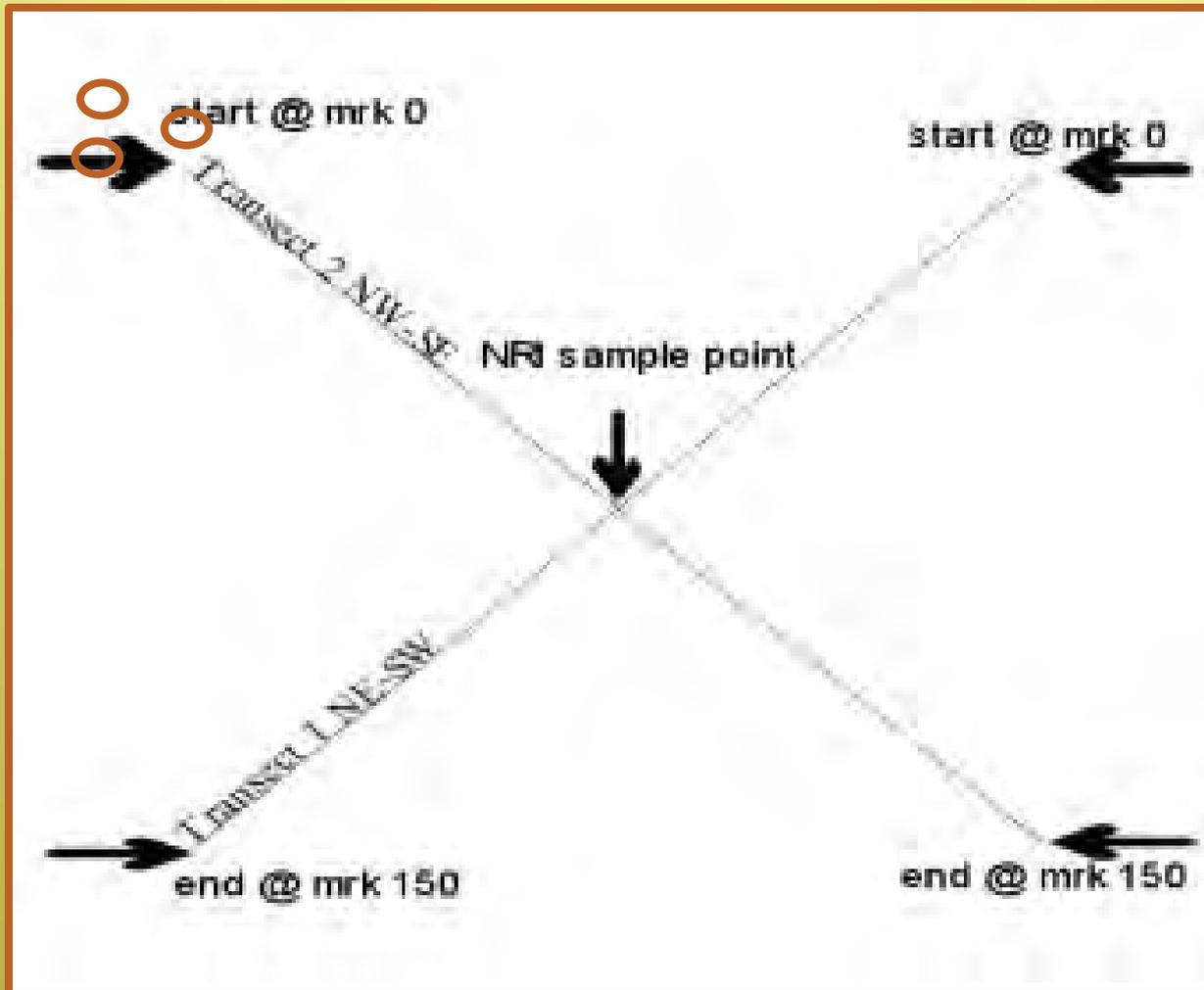


BLM PHOTO

Vegetation Protocol

- Photos
- Plant Height
- Visual Obstruction Reading (VOR)
- Line Point Intercept
- Phenological condition

Standard NRI Transect Layout



Two single 150 foot transects with a NE to SW orientation. 0.0 foot mark at the NE end.



Layout the tape close to the ground
Keep it straight
More consistent from year to year



Photo Monitoring 'DON'T'S'

No shadows, people, hands, glare

Photo board not obscured or floppy in the wind



At least one photo of the site centered down the transect tape with photo board visible



Brite Hue Blue
paper color name

Additional photos at the site would not need photo board



Suggested file name

R042XC005NM_031212_PG3_f3t1_XXX

ESD#_Date_phenology_field_transect_contract #

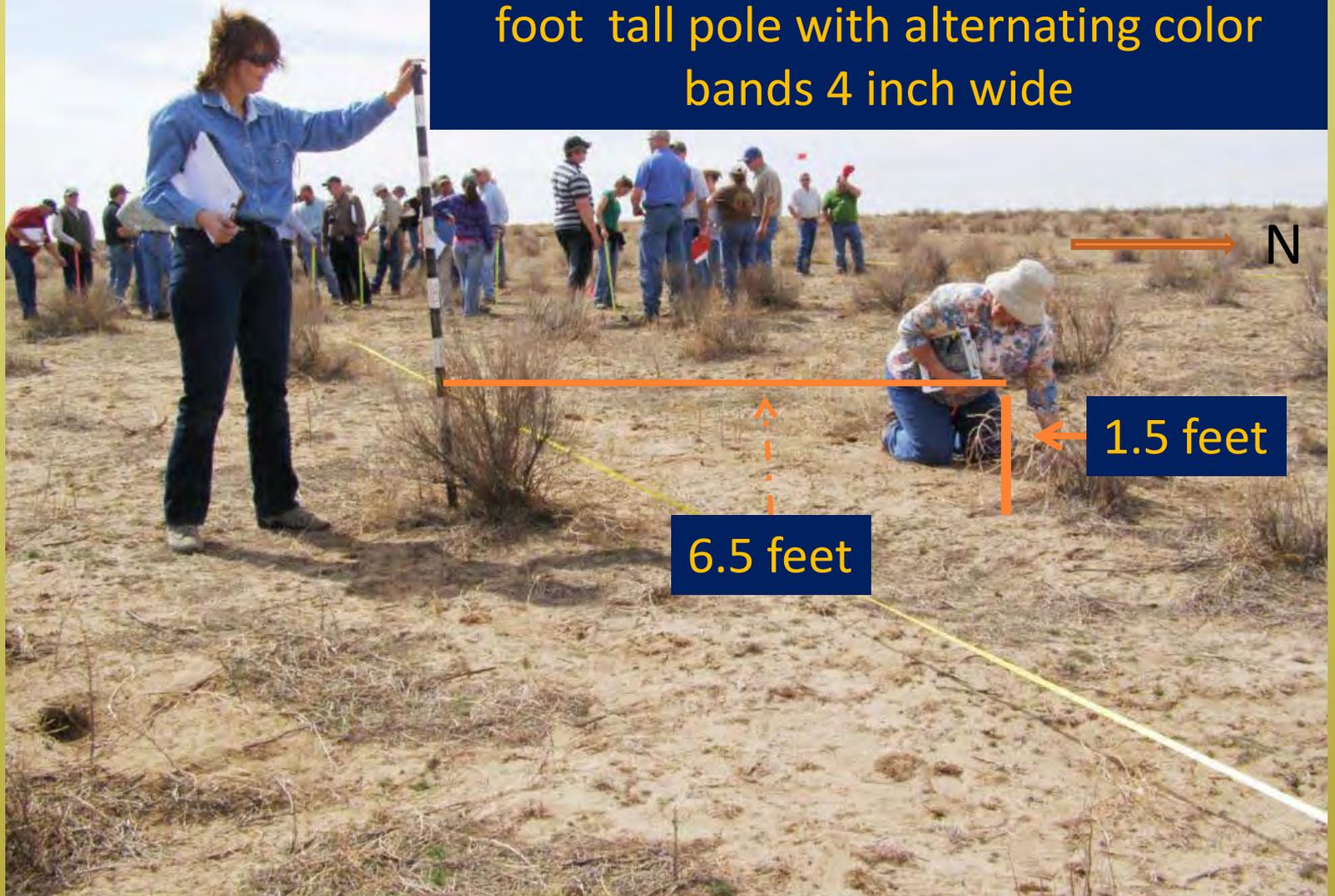


**PLANT
HEIGHT**

Tallest woody and
Tallest herbaceous
At each mark



Place next to the tape at the mark a 5.0 foot tall pole with alternating color bands 4 inch wide



Visual Obstruction Reading (VOR)

Point Intercept



Line Intercept

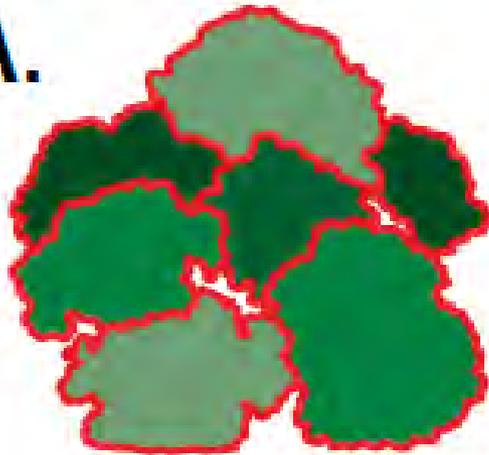


Line Intercept
Cover = crown canopy



A. = foliar canopy point intercept

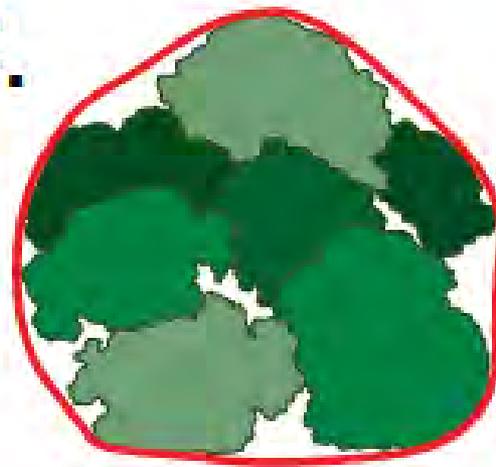
A.



B.



C.



B. And C. = crown canopy bias



Pin flag



Point Intercept
foliar cover composition



Includes tall shrub and tree



3 ft. intervals

Parallax apparent displacement or difference in the apparent position of an object viewed along two different lines of sight.



a.) vision left of center



b.) vision centered



c.) vision right of center

Foliar Canopy Layer Structure %

Growth Form	1st hit	2nd hit	3rd hit	4th hit	5th hit	6th hit	basal
PG	25	14	4	2	0	0	0
SG	0	0	4	1	0	0	0
FO	8	10	6	0	0	0	0
SH	18	0	0	0	0	0	0
SS	14	2	0	0	0	0	0
SO	6	4	0	0	0	0	0
HL	10	2	6	0	0	0	0
WL	6	2	0	0	0	0	0
BG	0	0	0	0	0	0	14

BG Bare Ground different form open ground habitat term

**UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE**

ECOLOGICAL SITE DESCRIPTION (New Format Report)

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site Name: Sandy

Site ID: R042XA051NM

Major Land Resource Area: 042-Southern Desertic Basins, Plains, and Mountains



Structure and Cover:

Ground Cover

Vegetative Cover	Minimum	Maximum
Grass / Grasslike	20%	20%
Forb		
Shrub/ Vine	5%	5%
Tree		
Non-Vascular Plants		
Biological Crust		
Non-Vegetative Cover	Minimum	Maximum
Litter	5%	5%
Surface Fragments > 0.25" and <= 3"	10%	10%
Surface Fragments > 3"		
Bedrock		
Water		
Bare Ground	60%	60%



GRASS phenology

Annual oat just past PG2
entering PG3

- **GR1** -GREEN LEAVES BEFORE BOOT
- **GR2**- BOOT STAGE
- **GR3**- SEED SOFT DOUGH TO RIPE
- **GR4**- SEED DESIMINATION
- **GR5**- WINTER DORMANCY CURED



FORB Phenology



- **FO1**- GREEN BEFORE FLOWERING
- **FO2** - FULL BLOOM PETALS FALLING
- **FO3** - FRUIT RIPENING
- **FO4** - FRUIT RIPE TRANSITIONAL TO FALL DORMANCY
- **FO5** - SEED DESIMINATION TRANSITIONAL TO WINTER DORMANCY

SHRUB Phenology

- **SH1** - GREEN LEAVES ONLY TRANSITIONAL TO FULL LEAF STAGE
- **SH2** - FLOWERS IN BUD, GREEN FLOWERING STAGE
- **SH3** - FLOWERS OPEN TRANSITIONAL TO FRUIT FORM
- **SH4** - SEED MATURITY TRANSITIONAL TO FALL DORMANCY
* = GREEN FRUIT WT
- **SH5** - WINTER DORMANCY TRANSITIONAL TO CURED LEAVES
** = DRY FRUIT WEIGHT

SAND SAGEBRUSH PHENOLOGY

- **SS1** - BUDS SWOLLEN
- **SS2** - EARLY LEAF DEVELOPMENT
- **SS3** - STEM ELONGATION, FULL LEAF
- **SS4** – FLOWERING
- **SS5** – SEED MATURITY
- **SS6** - EARLY LEAF SENESCENCE
- **SS7** - DORMANCY

Shinnery oak leaf phenology

April 27th



4-27



5-4



5-11



5-18



5-25



6-1



6-1

June 8th

SHINNERY OAK PHENOLOGY

- **S01** - BUD SWELL
- **S02** - FLOWERING CATKINS
- **S03** - PISTILLATE FLOWERS &/OR LATERAL BUD FORMATION IN LEAF AXILS
- **S04** - LEAVES < 4 CM
- **S05** - LEAVES > 4 CM
- **S06** - ACORNS DISTINGUISHED FROM CAP
- **S07** - ACORNS GREEN
- **S08** - ACORNS SEPARATE FROM CAP
- **S09** - DORMANCY

Reporting Monitoring Data

- Field Office maintains data and reports the transect pairs by ESD. Contract identification, landowner confidentiality stays at the field office level.
- First year data will be submitted with second year data. 1st, 2nd and 3rd year data will be submitted together...
- Monitoring period is during the growing season. A field office with 1 LPCI contract will report sooner than a field office with 10 contracts



Technical Summary

- Plant height, growth habit, percent litter are most consistent indicators for grassland bird use (Fisher and Davis JWM 2010)
- Meets data requirements of the new Ecological Site Description format
- Tied to phenology (plant community and animal variation of seasonal use) for regional comparisons
- ‘minimum’... You can always do more!

Consistency Summary

- Employees differ in their present plant identification knowledge
- An employee will know more plants in 3 years than one does today. We don't want you to get better. Do it the same from year to year.



Participation Summary

- Landowners can easily become involved with straight forward measurement protocols
- Protocols are based on accepted rangeland monitoring design. Accepted by NRCS, BLM, USFS, ARS, and others.

Questions?

