LPCI Vegetation Monitoring for LEPC Habitat

Gene A. Fults USDA NRCS WNTSC
Reggie Blackwell CNTSC
Philip Barbour CNTSC
Marcus Miller WNTSC

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.

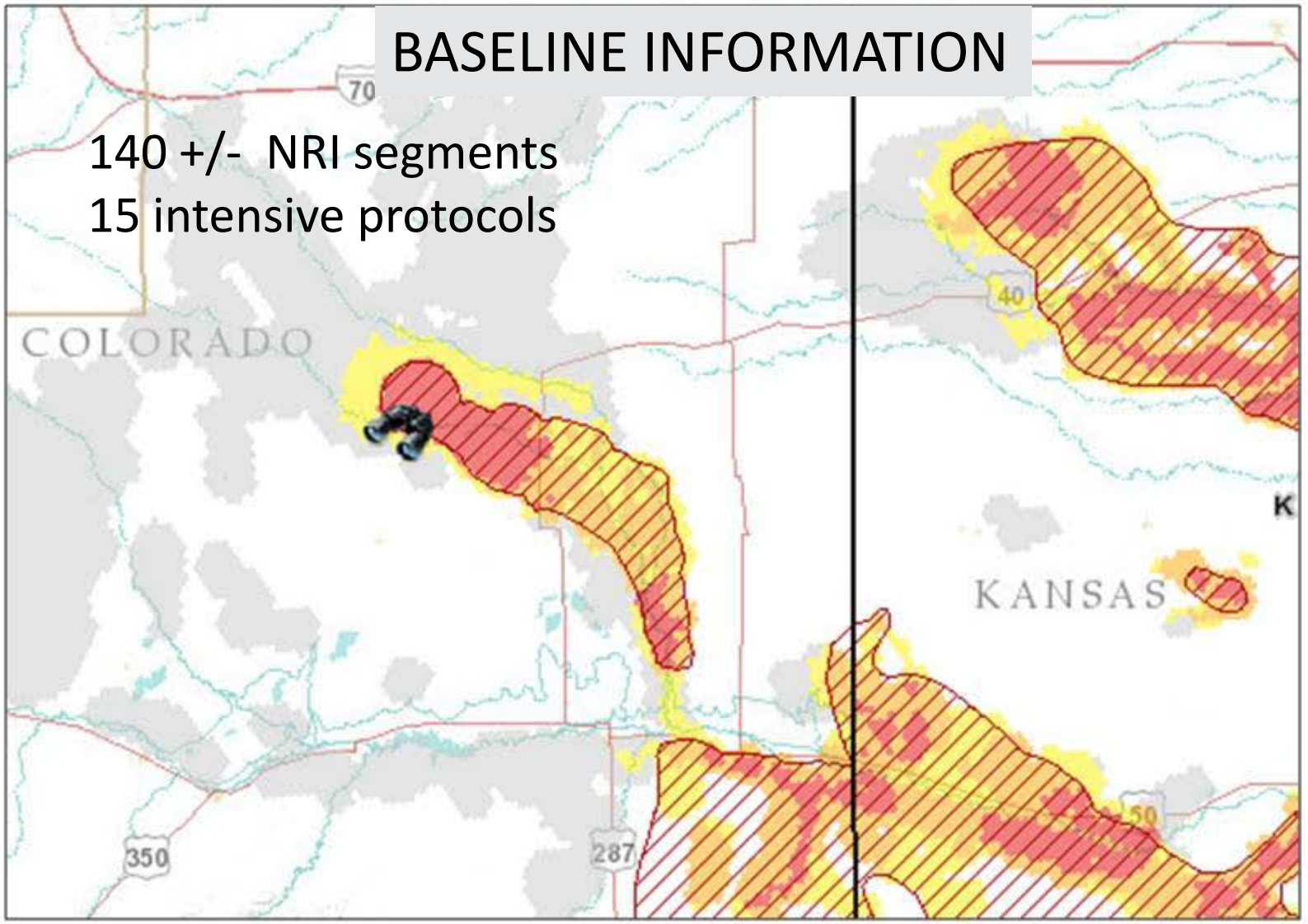
NRCS will seek to develop Wildlife Habitat Evaluation Guidelines that are specific to the three major habitat types (i.e., mixed-grass prairie, sand sagebrush prairie, and shinnery oak grasslands) but are **consistent** across the range of the LPC. This approach will ensure that baseline information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



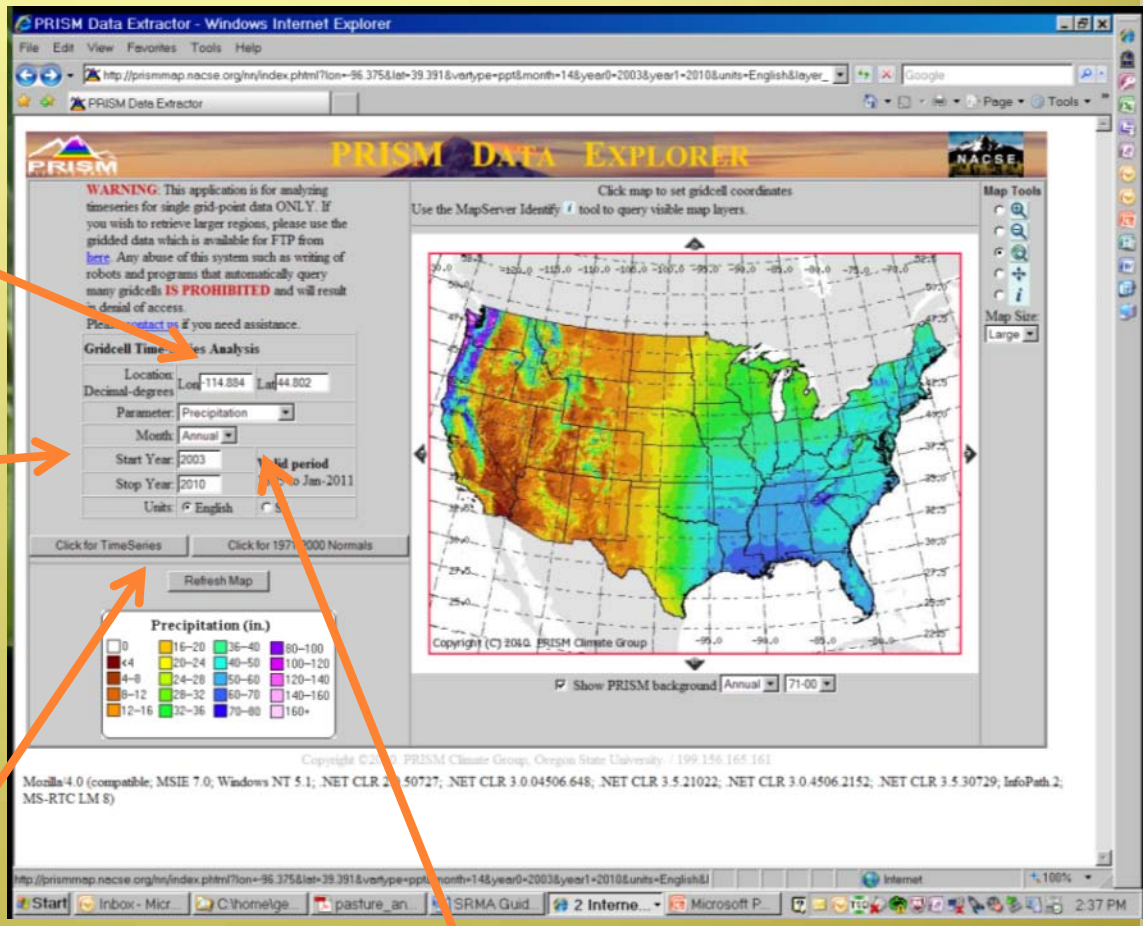
http://www.kars.ku.edu/maps/sgpchat/
Connected with segment area of on-site grazing land study NRI

Step 1.
www.prism.oregonstate.edu

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

Step 3. Enter longitude and latitude

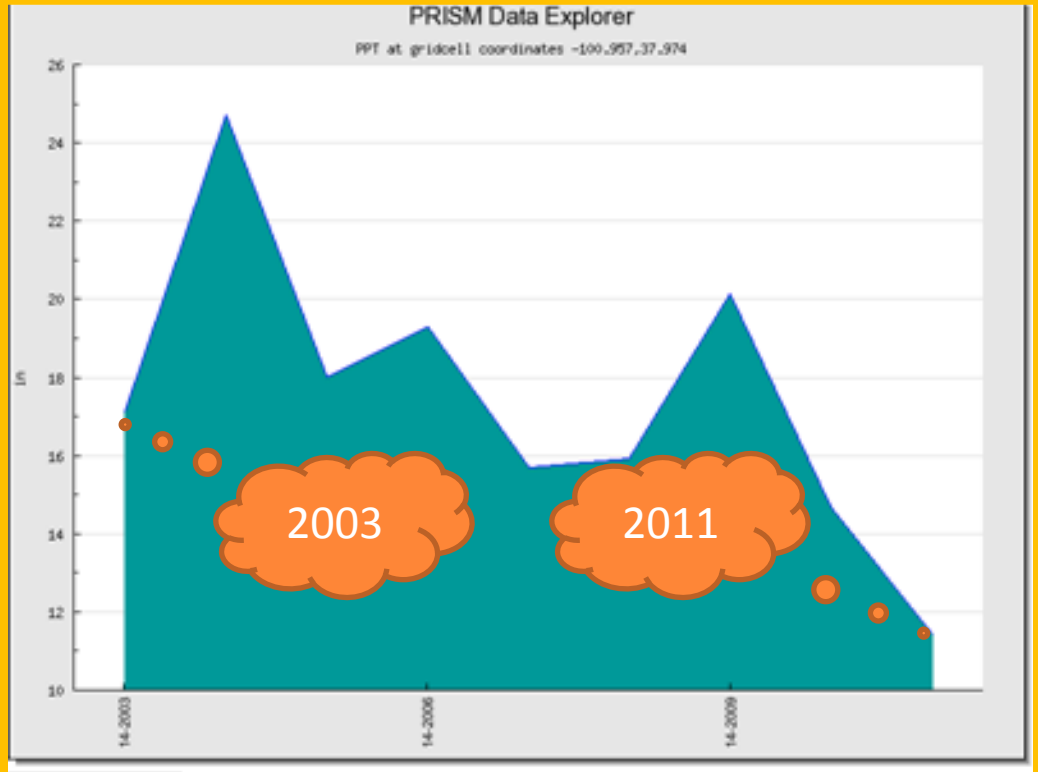
Step 4.
Parameter = precipitation.
Month = annual.
Start year = 2008.
(Ideally the start year should be 3 years prior to data collection year)
Stop year = 2012 (or year of data collection).



Step 5.
Click for Time Series.

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

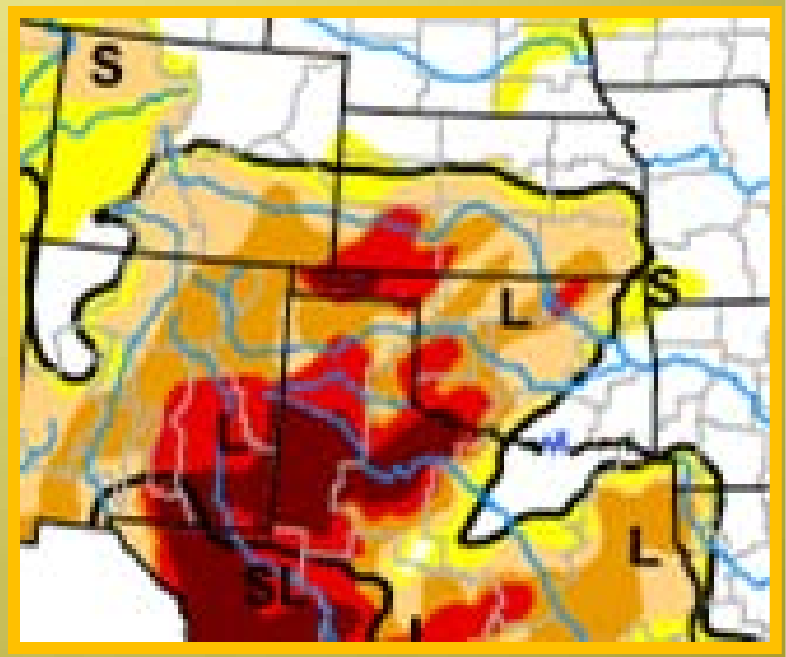
PRISM multi-year for Garden City, KS



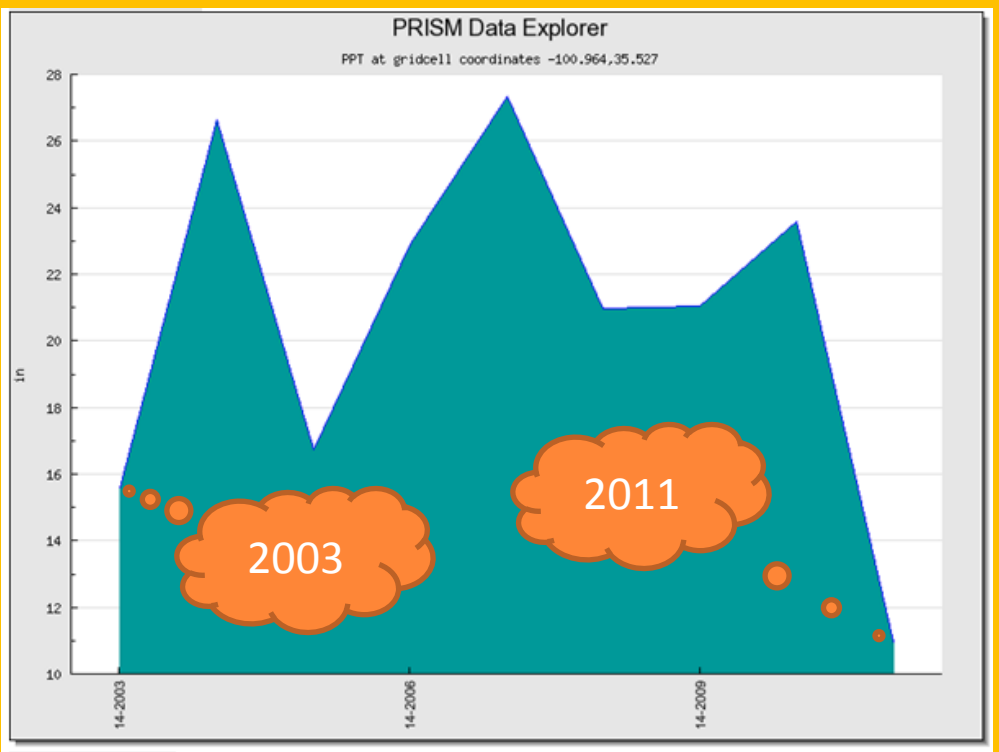
Year	Month	Value
2003	14	17.14
2004	14	24.74
2005	14	18.01
2006	14	19.28
2007	14	15.68
2008	14	15.92
2009	14	20.14
2010	14	14.67
2011	14	11.43

Time: 1 seconds

Drought Monitor map



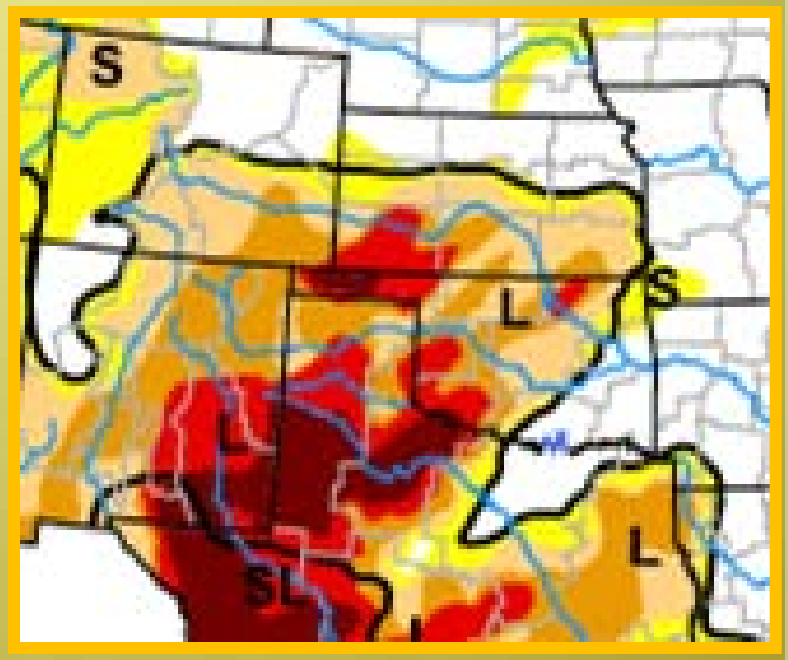
PRISM multi-year for Pampa, TX



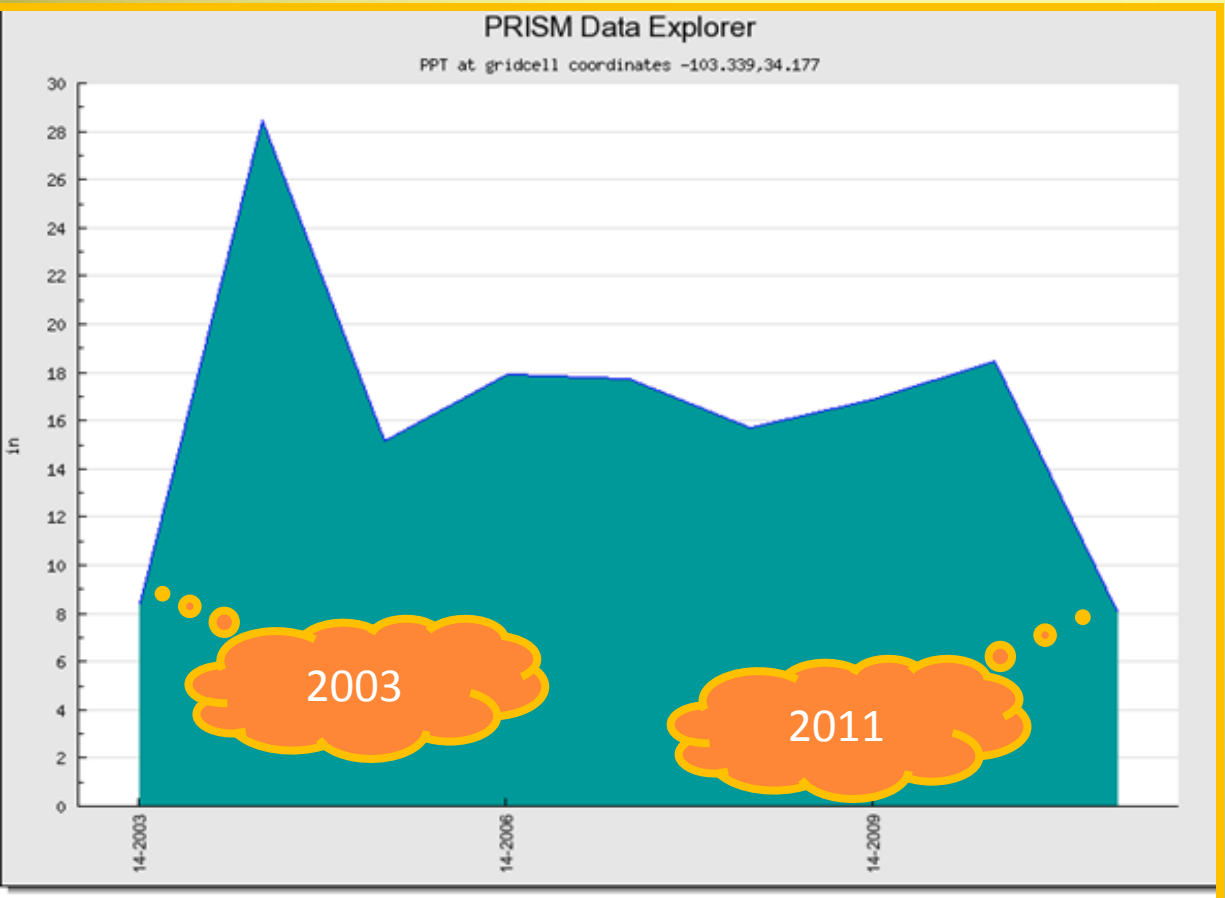
Year	Month	Value
2003	14	15.60
2004	14	26.64
2005	14	16.74
2006	14	22.91
2007	14	27.32
2008	14	20.97
2009	14	21.05
2010	14	23.59
2011	14	10.94

Time: 1 seconds

Drought Monitor map

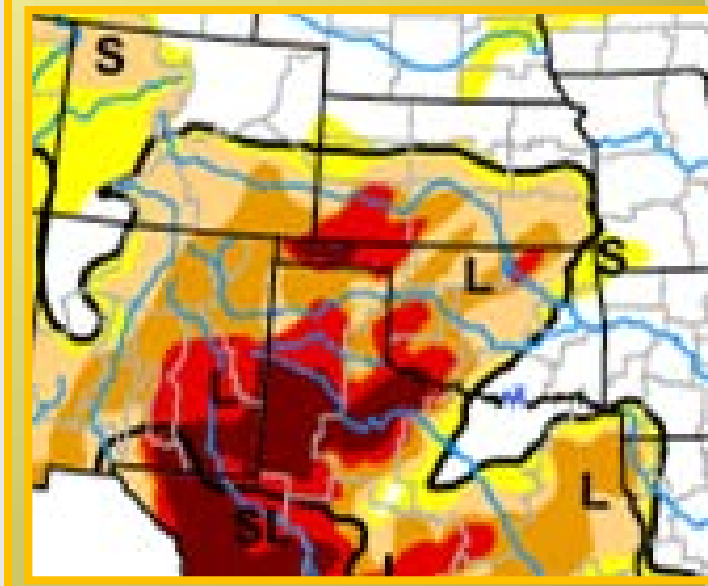


PRISM multi-year Portales, NM



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

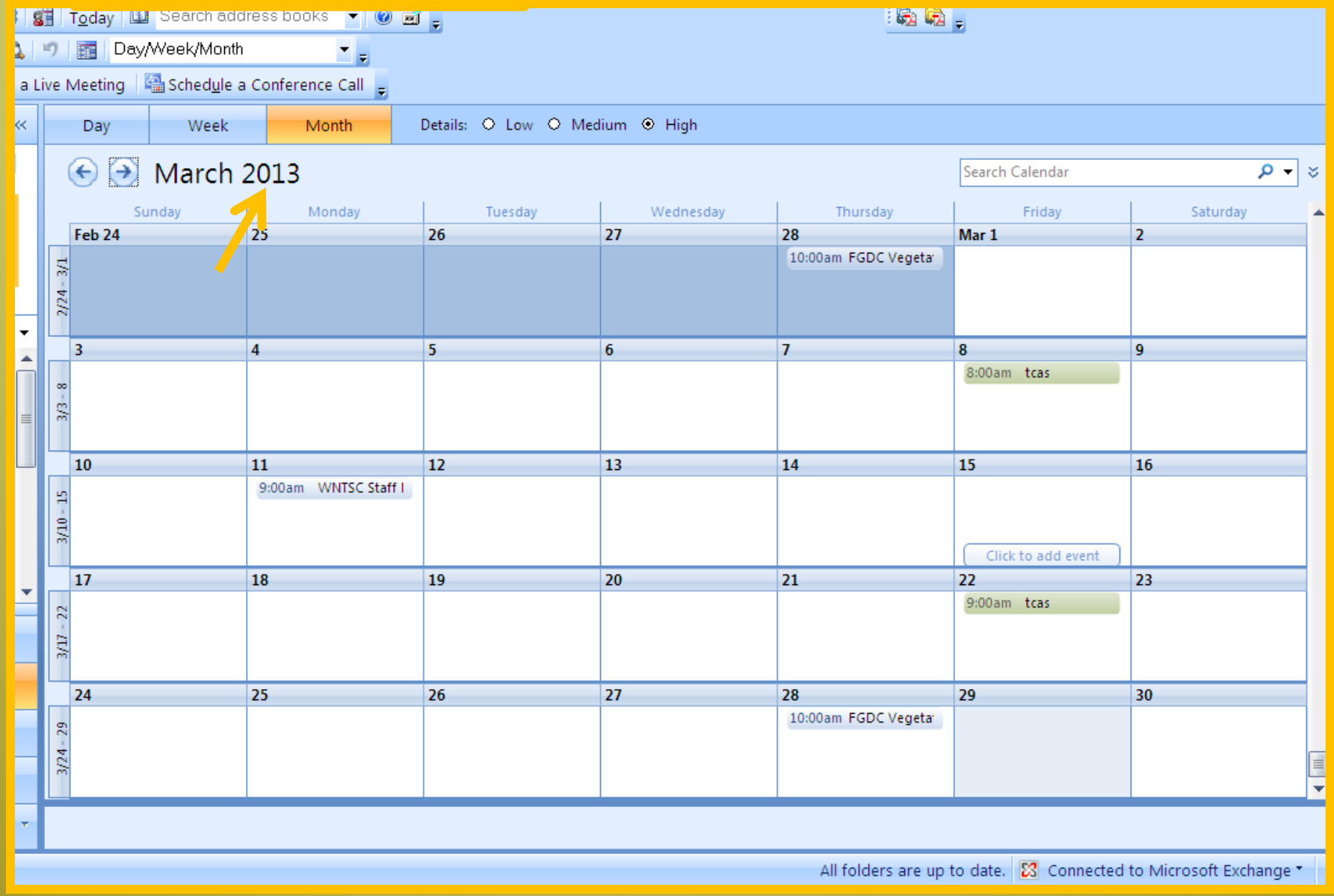


Monitoring Protocol

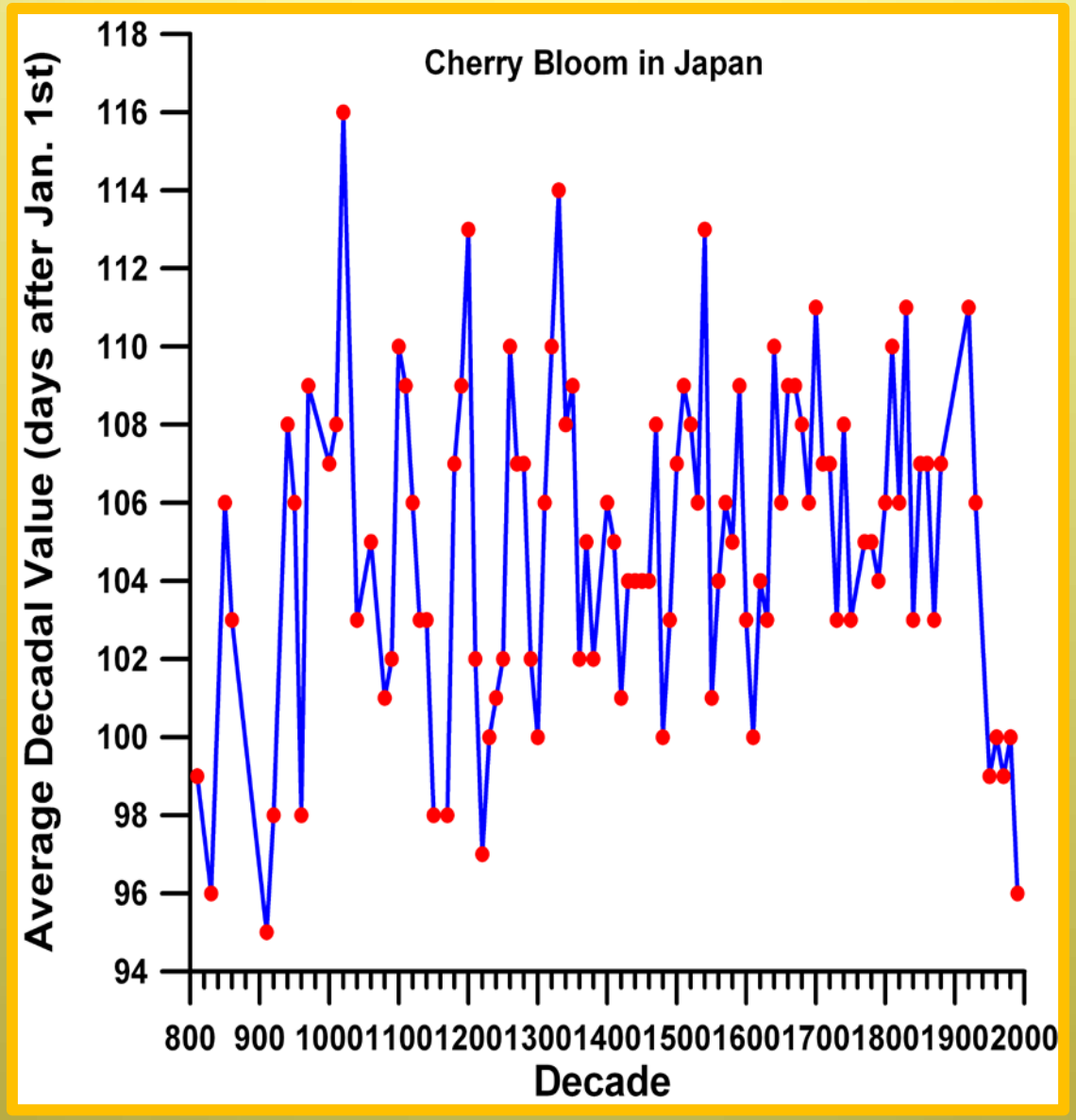
- Prescribed Grazing Plan inventory
- Past and present weather
- Careful to avoid disturbance
- Pick a monitoring site
- Schedule follow-up (rates of changing phenology)

New Appointment

Set reminder to pop up 10 days in advance

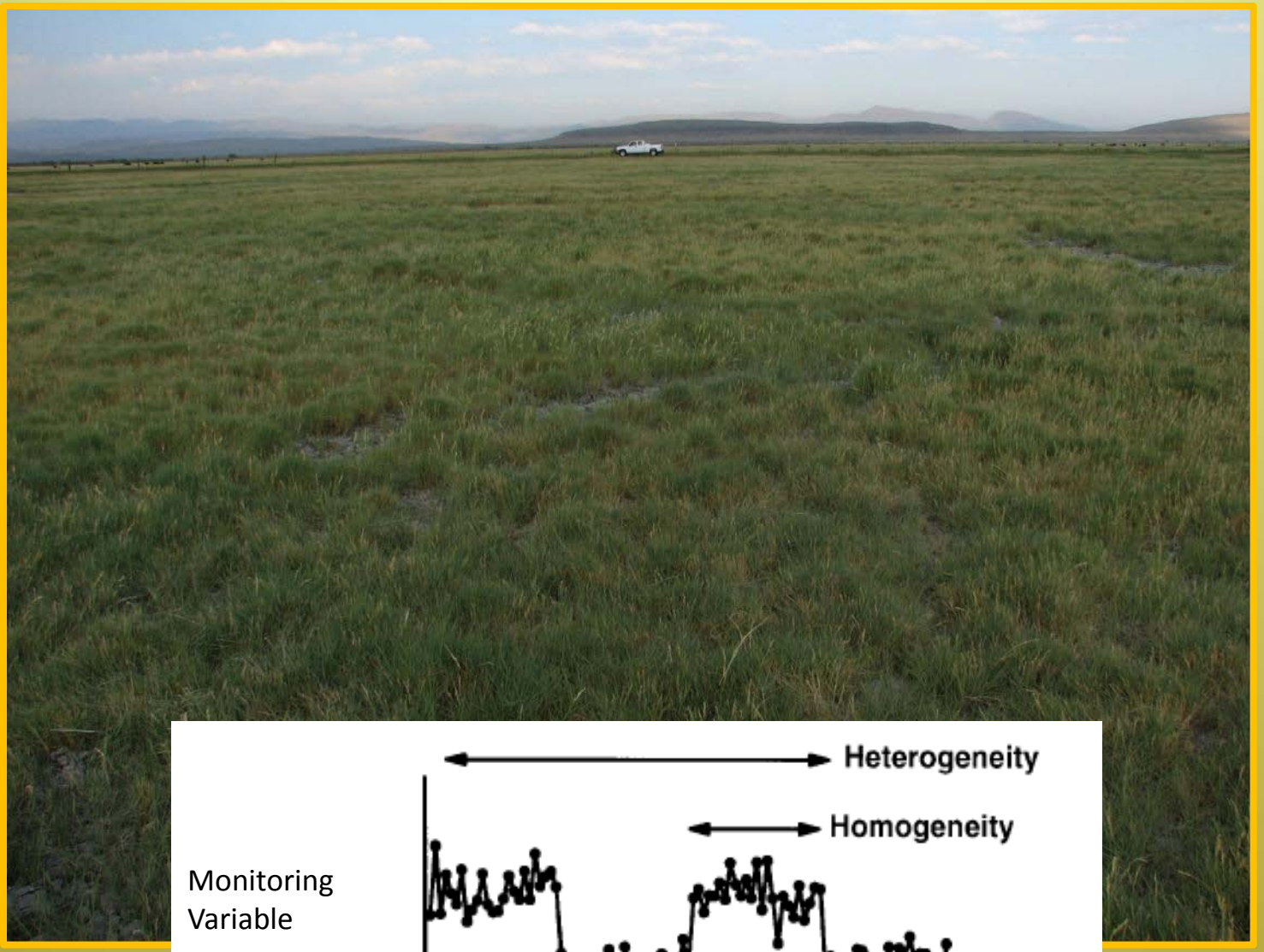


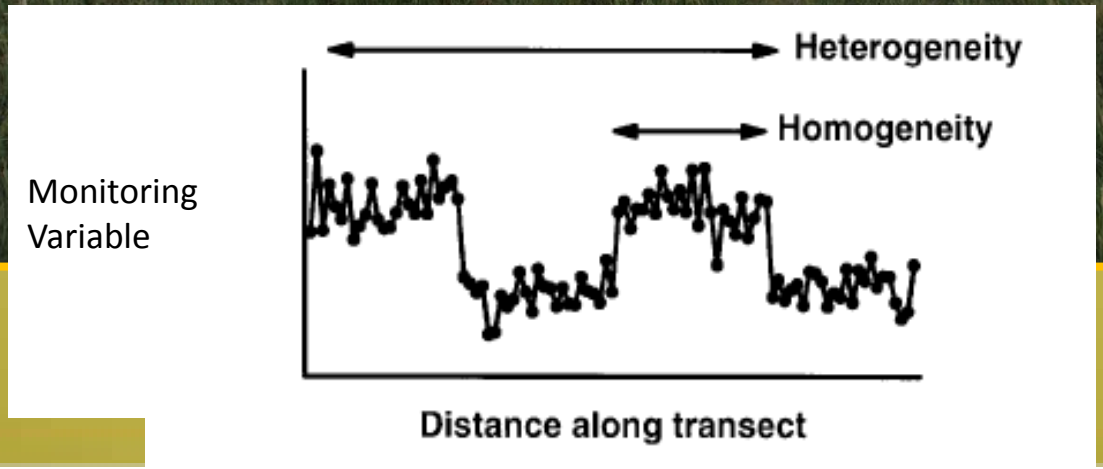
Decadal Averaged Cherry Bloom in Kyoto, Japan



Difference between Inventory and Monitoring

Monitor Captures Change





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:

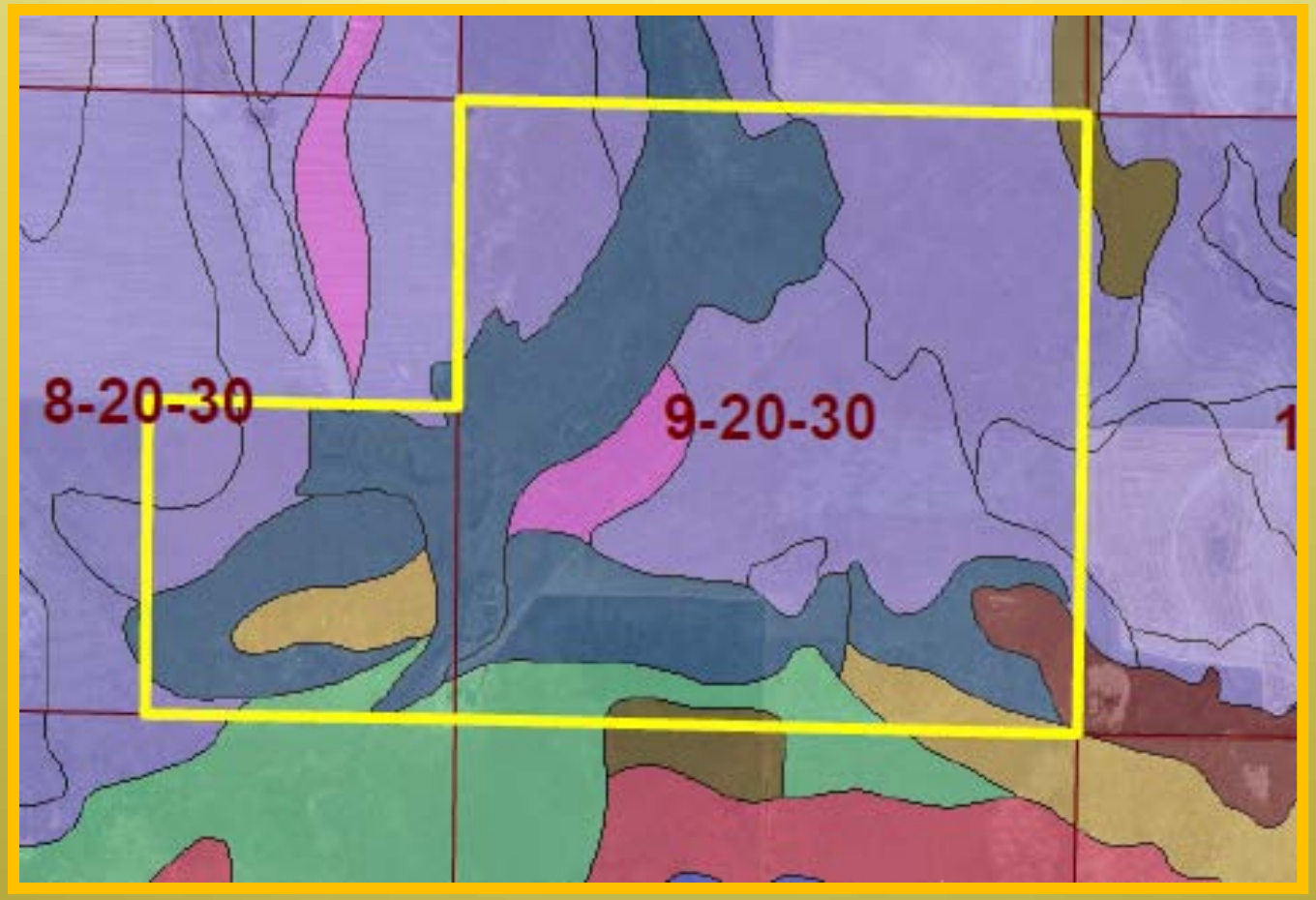
4. Review Ecological Site Descriptions when multiple rated ES occur within the treatment area. If expected management responses are similar then monitor only one ES. Otherwise, all rated ESs will be monitored

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

Deflation Depression

Back slope

Lee slope

40-50% cover

Upper slope

Crest

Brink

Slip-face

< 10 % cover

Lower slope

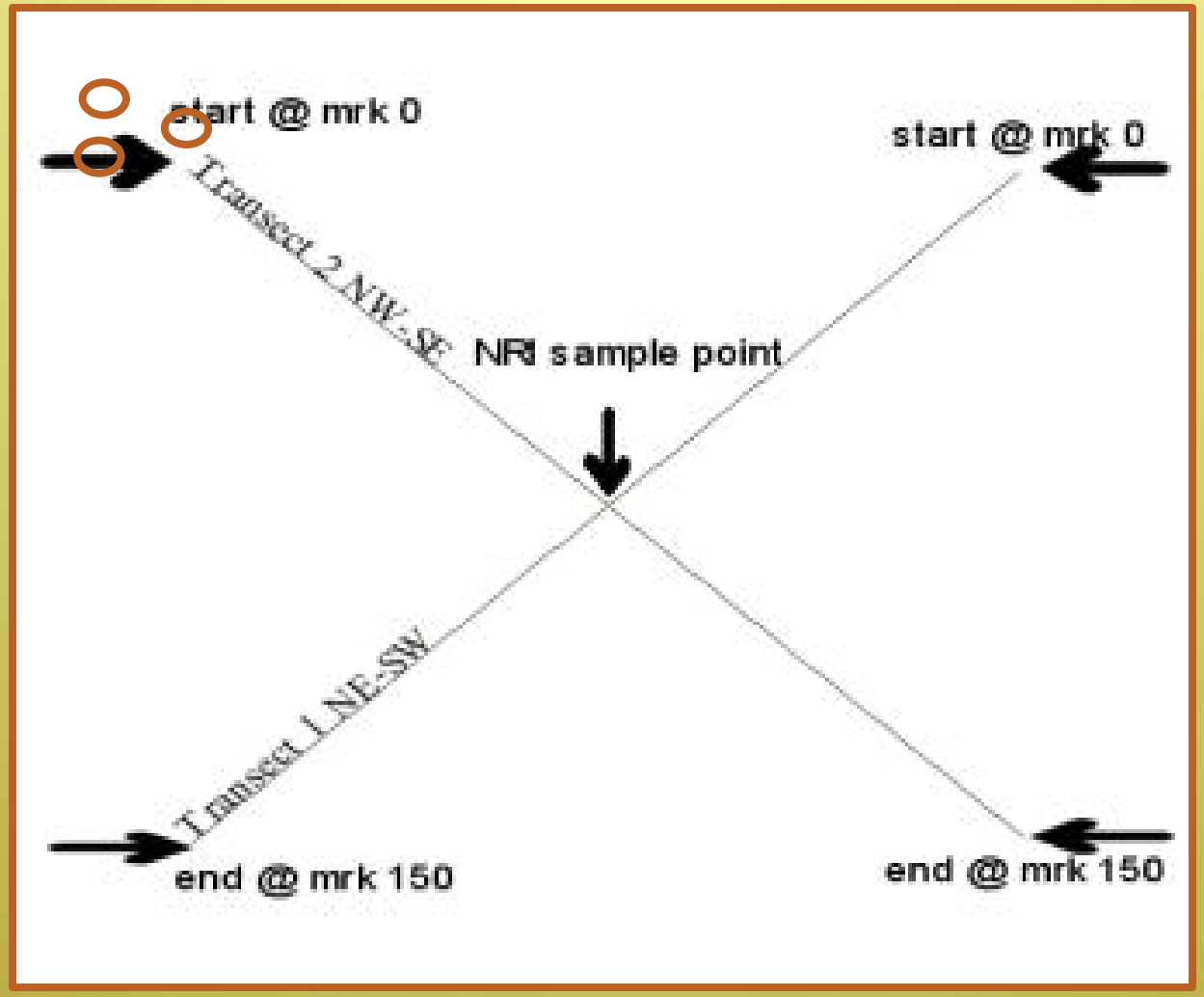
Dune migration


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

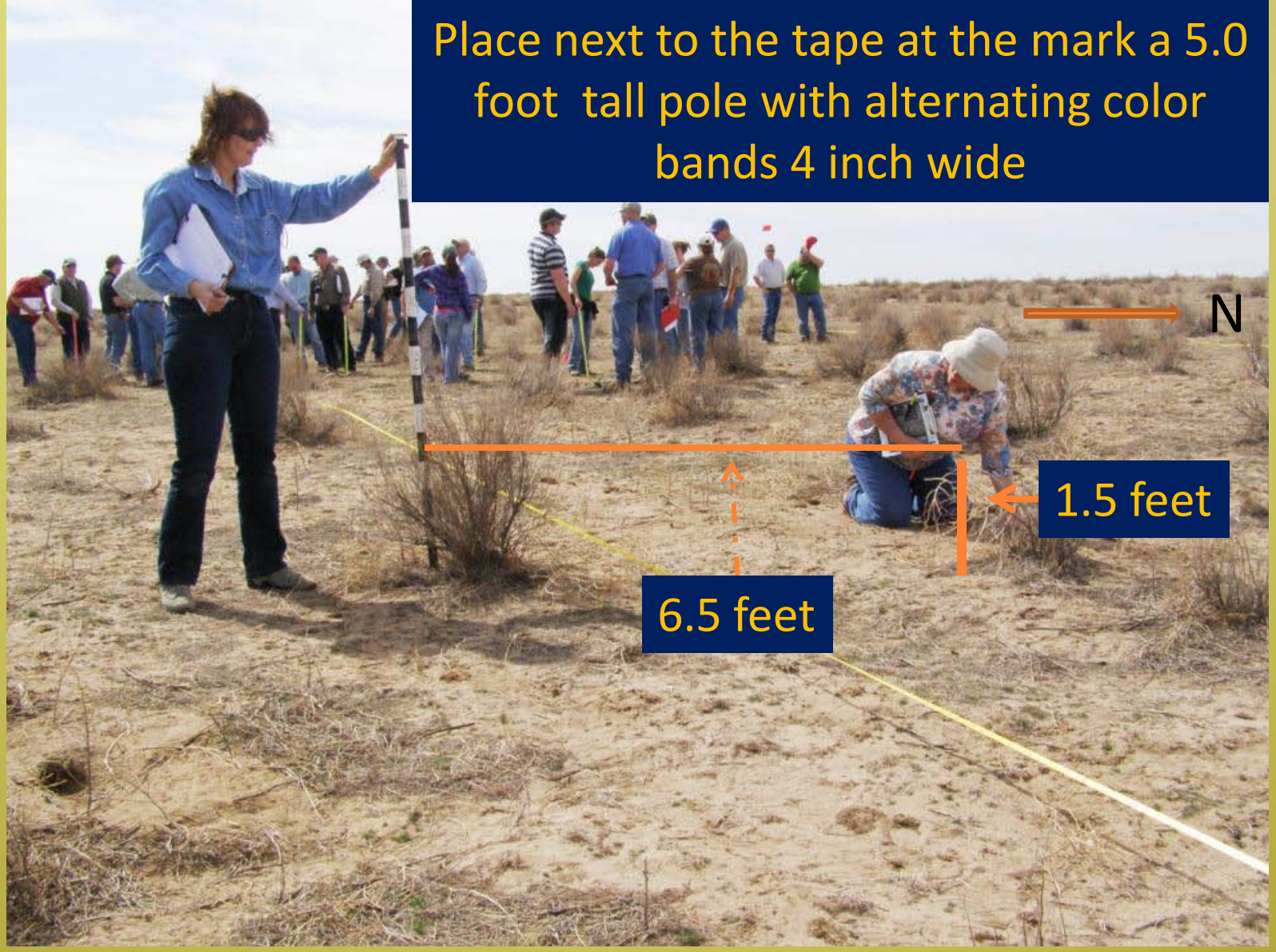
Suggested file name

R042XC005NM_031212_PG3_f3t1_xxx

ESD#_Date_phenology_field_transect_contract #

PLANT HEIGHT

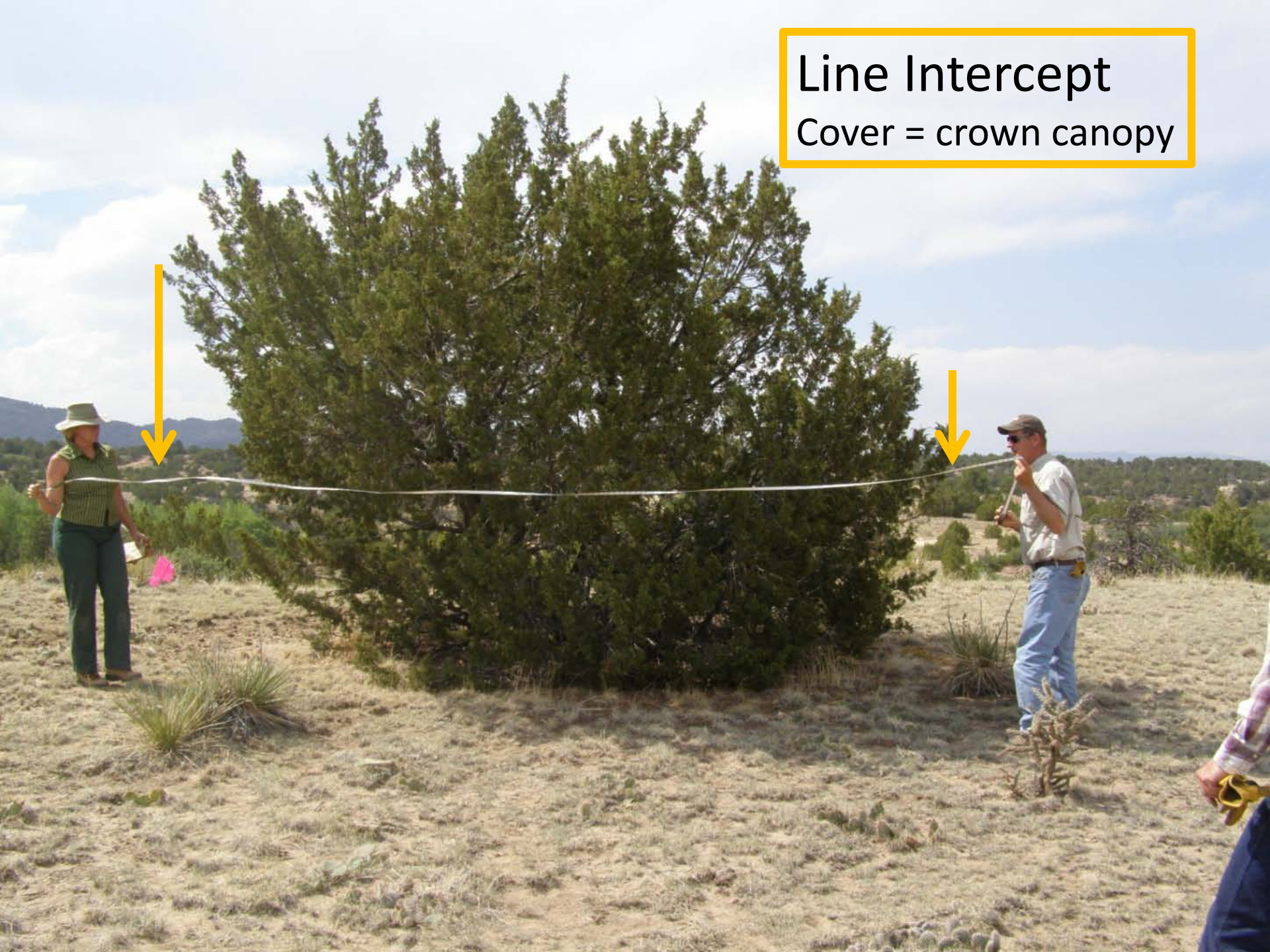
Tallest woody and
Tallest herbaceous
At each mark



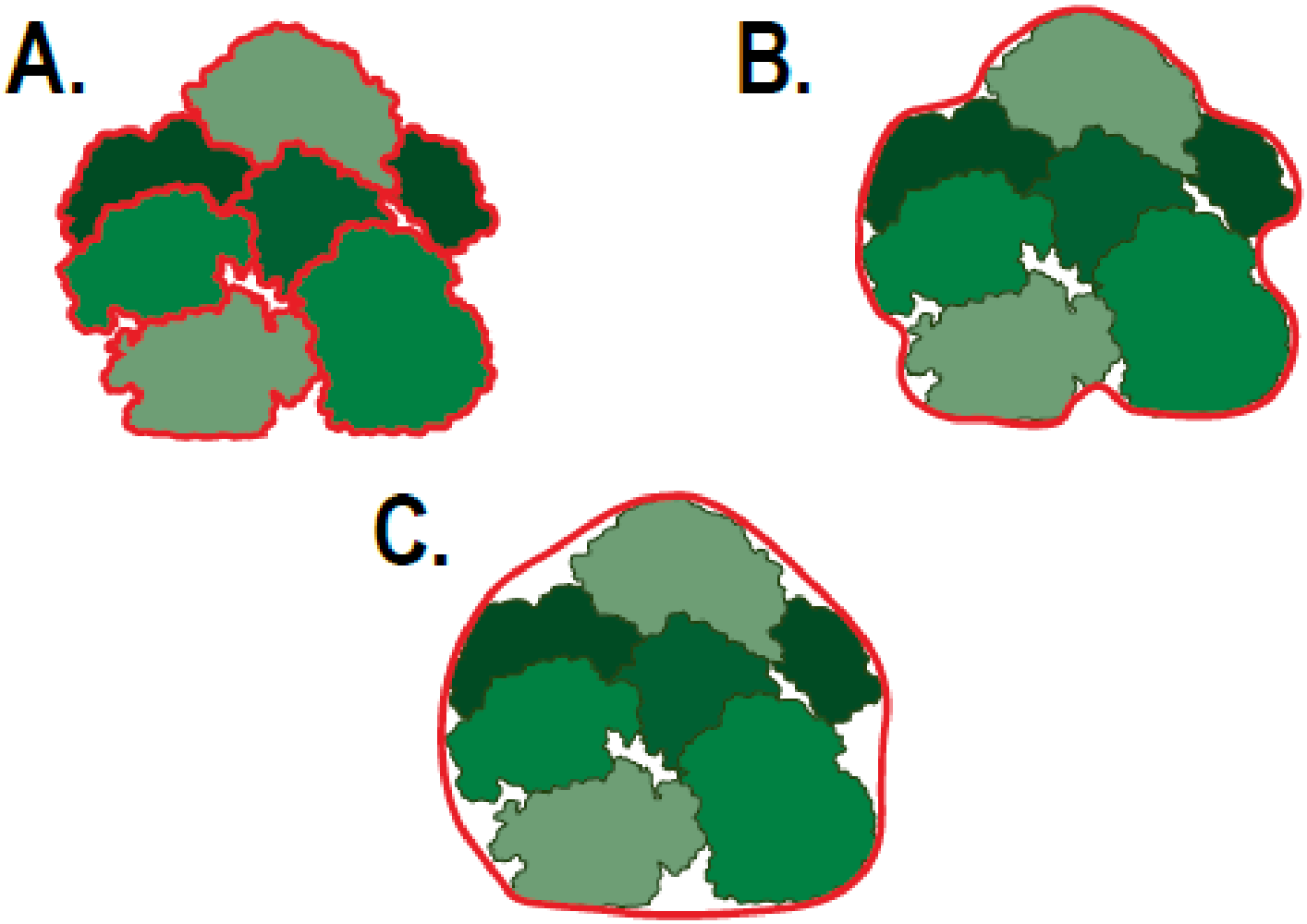
Visual Obstruction Reading (VOR)

Point Intercept 

Line Intercept 


Line Intercept
Cover = crown canopy

A. = foliar canopy point intercept

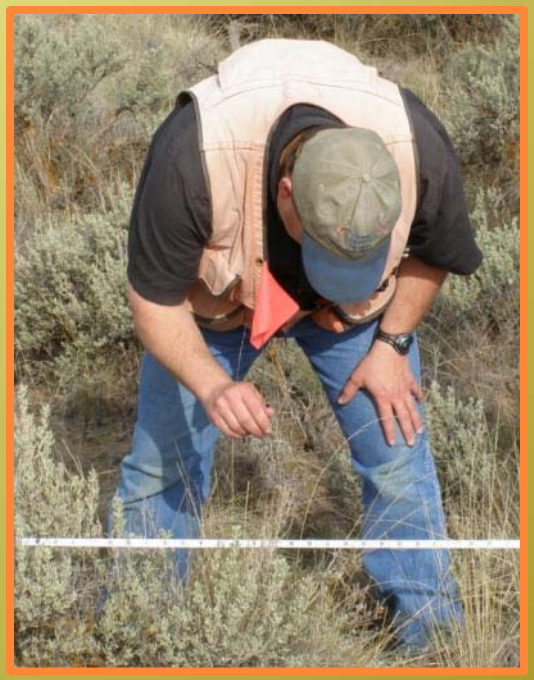


B. And C. = crown canopy bias

Pin flag

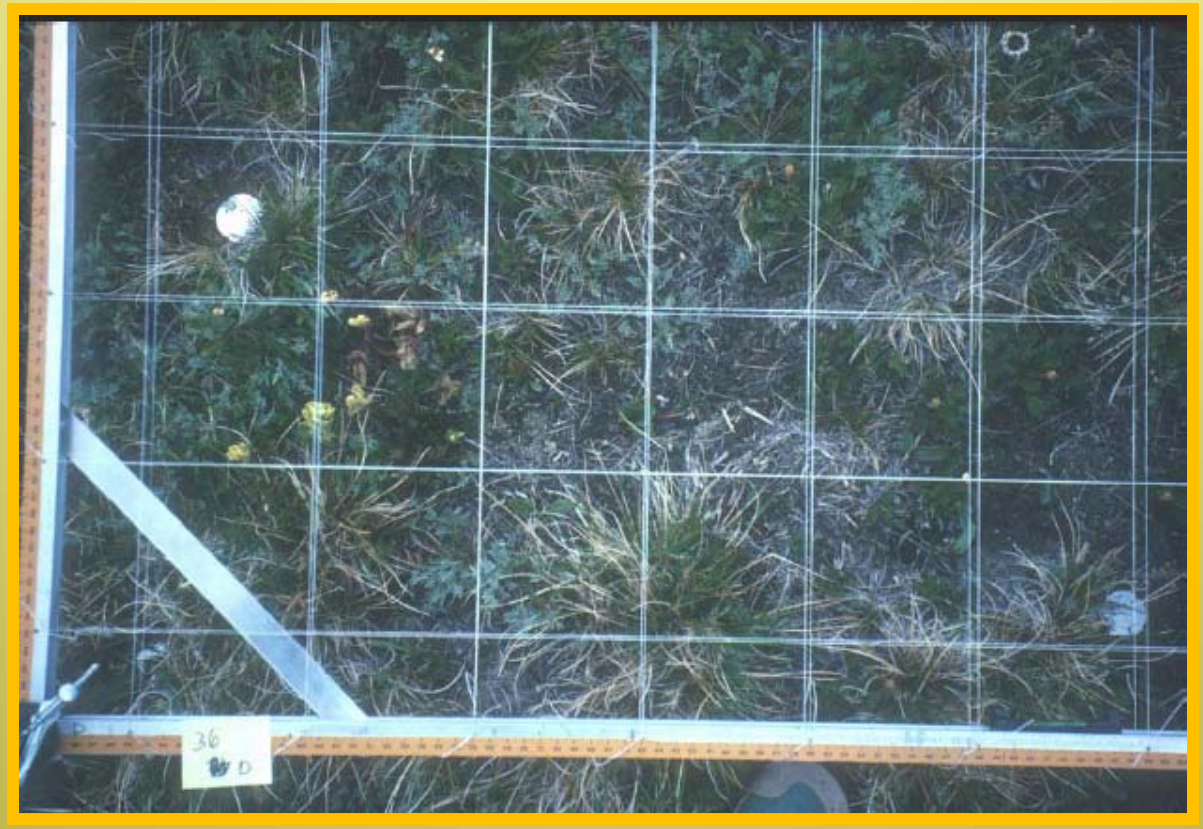
Point Intercept
foliar cover composition

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.



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)

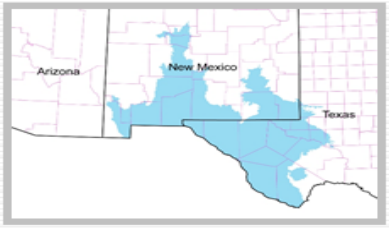
ECOLOGICAL SITE CHARACTERISTICS

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

SHINNERY OAK PHENOLOGY

- **SO1** - BUD SWELL
- **SO2** - FLOWERING CATKINS
- **SO3** - PISTILLATE FLOWERS &/OR LATERAL BUD FORMATION IN LEAF AXILS
- **SO4** - LEAVES < 4 CM
- **SO5** - LEAVES > 4 CM
- **SO6** - ACORNS DISTINGUISHED FROM CAP
- **SO7** - ACRONS GREEN
- **SO8** - ACORNS SEPARATE FROM CAP
- **SO9** - 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?