



2024 NRI Grazing Land Webinar

Overview

February 13, 2024

Erik Suffridge

USDA-NRCS NRI Grazing Lands National Leader

Ames, Iowa





Today's Presenters

- ☐ Patrick Flanagan – National Statistician/NRI Technical Team Leader (NRCS)**
- ☐ Erik Suffridge – NRI Grazing Lands National Leader (NRCS)**
- ☐ Todd Krueger – Senior Systems Analyst – Iowa State University (ISU) Center for Survey Statistics and Methodology (CSSM)**





Agenda

- Introduction/Overview - Suffridge**
- Welcome - Flanagan**
- Training Sessions - Suffridge**
- Quality Assurance - Suffridge**
- Other - Suffridge**
- What's New in 2024? - Krueger**





Welcome

- ❑ **2024 Will be a Better Year than in the past**
 - National Trainings – In the Field!
 - Effect on Data Quality?

- ❑ **Grazing Land On-Site: 98.7% completed**
 - 77.8% complete & reviewed
- ❑ **BLM On-Site: 99.8% complete**
 - 75.6% complete & reviewed





Welcome

❑ Need for Grazing Land (GL) On-Site Data

- Primary NRI - Limited GL Health Info
- Info to target areas most in need
- Vegetation, Resource Concerns, Practices

❑ Importance of Training

- Everyone collecting the same things
- Instructions are complicated
- Small data set (comparatively)





Data Quality

□ Variance

- Sampling variance
- Error - unbiased

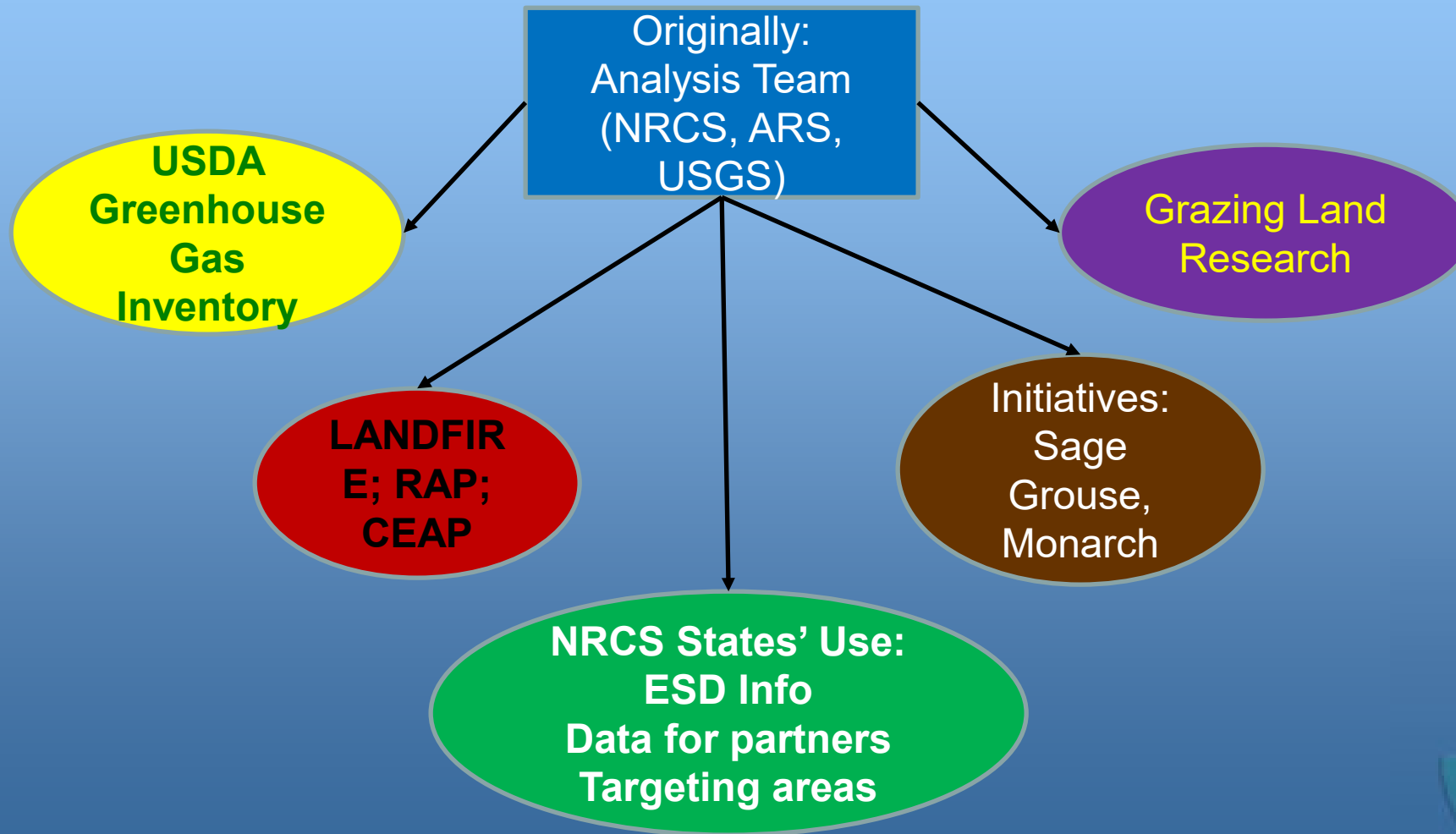
□ Bias

- Error in one direction (e.g., collection bias)
- Enemy of the estimates





On-Site Data Use





Ex: Data Usage

Non-Federal Rangeland Health Attributes

Choose a Rangeland Health Attribute for the Map below ⓘ

Biotic Integrity

Choose a Survey Period for the Map below

2004-2018

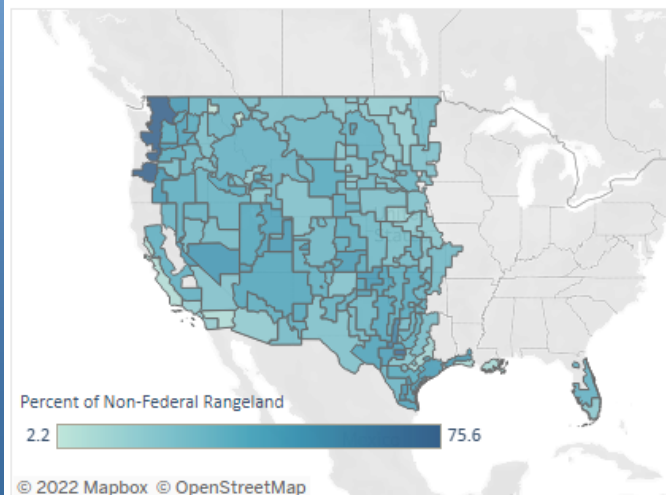
Choose a Departure from Reference Conditions Category for the Map below

Slight to Moderate

Choose a MLRA polygon on the map in order to show data for all health attributes for the selected MLRA and survey period.

Orange bars indicate the 95% confidence interval ⓘ for the estimate and are faded when that interval includes 0.

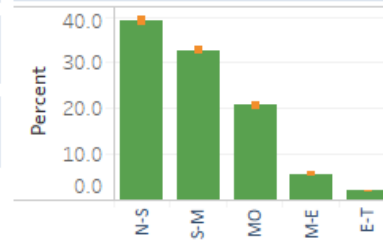
Data source: 2004 - 2018 NRI On-Site Rangeland Sample.



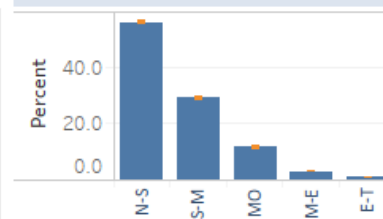
Or choose a MLRA from the drop down list, choose "All" for national totals

All

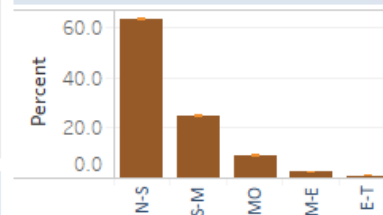
2004-2018 Biotic Integrity Departure from Reference Conditions Categories for MLRA All



2004-2018 Hydrologic Function Departure from Reference Conditions Categories for MLRA All



2004-2018 Soil and Site Stability Departure from Reference Conditions Categories for MLRA All





Difficult but Important





FY24 Training Sessions

- Back to in-person training**
 - Feb 27-29: Tucson, AZ
 - Mar 12-14: Lafayette, LA
 - Apr 30-May 2: Tooele, UT
 - Jun 25-27: Dover, NH
- NRCS employees register in AgLearn**
- Contractors**
 - State NRCS POC sends to Erik a list (name and email address)





Quality Assurance for NRI Grazing Land Surveys

- Training
- Calibration
- In-field reviews
- Review of collected data





Training Policy and Collection Authorization, HB Sec. 2.4

- Handbook of Instructions Section 2.4
- Authorization/Certification





Calibration, App. E

- Conducted for:**
 - Line Point Intercept
 - Gap Intercept
 - Plant Height
 - Soil Aggregate Stability (Optional for pasture)
 - Species Composition by Weight (Plant Production – Not done for pasture)
 - Double sampling methods (if used)
 - Plant production protocol
- Minimum requirement**
 - During training session
 - Two additional calibrations during field season
 - (1 additional if fewer than 15 PSUs assigned)
- See NRI Grazing Land Instructions Appendix E**





In-Field Reviews, HB

Sec. 2.1

- Spot-checking data collectors, HB Sec. 2.1**
- QA Plan**
 - Field supervisor visits at least 5% of segments completed by each crew (minimum of 1 if fewer than 20 segments)
 - Field crew may or may not be present
 - Field crews keep field supervisors apprised of their schedules
 - Collected data is compared with the field site





Review of Collected Data

- 1. Process formalized in 2015 with Grazing Land Review Complete application**
- 2. Download review tables using the Grazing Land Review Tables application**
- 3. Follow the Data Review Guidance Document linked on the site**
- 4. Edit the data with the web-based NRI Grazing Land Survey Instrument**
- 5. Mark reviewed segments as Review Complete (RC) using the Grazing Land Review Complete application**

Applications are linked on the NRI Grazing Land website:

<https://grazingland.cssm.iastate.edu/>





Other

Site Locations:

- maps > gps

Handbook of Instructions





Handheld Device:

- One approved, NRCS-issued:
 - Samsung Galaxy XCover6 Pro
 - Bad Elf Flex Mini GNSS receiver
- Android OS CASI App

Photos:

- XCover6 Pro camera (approved option)
- No change to photo protocols

XCover6 Pro Preparation and Maintenance

- User Guide coming soon





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In-Field Reviews, HB Sec. 2.1

- ❑ **Spot-checking data collectors, HB Sec. 2.1**
- ❑ **QA Plan**
 - Field supervisor visits at least 5% of segments completed by each crew (minimum of 1 if fewer than 20 segments)
 - Field crew may or may not be present
 - Field crews keep field supervisors apprised of their schedules
 - Collected data is compared with the field site
 - In-field Review Check List provided (See Appendix C of the NRI Grazing Land On-Site Study QA Plan)





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What's New in 2024?

- New Field Hardware**
- BLM Sample Changes**
- Android CASI Software Improvements**



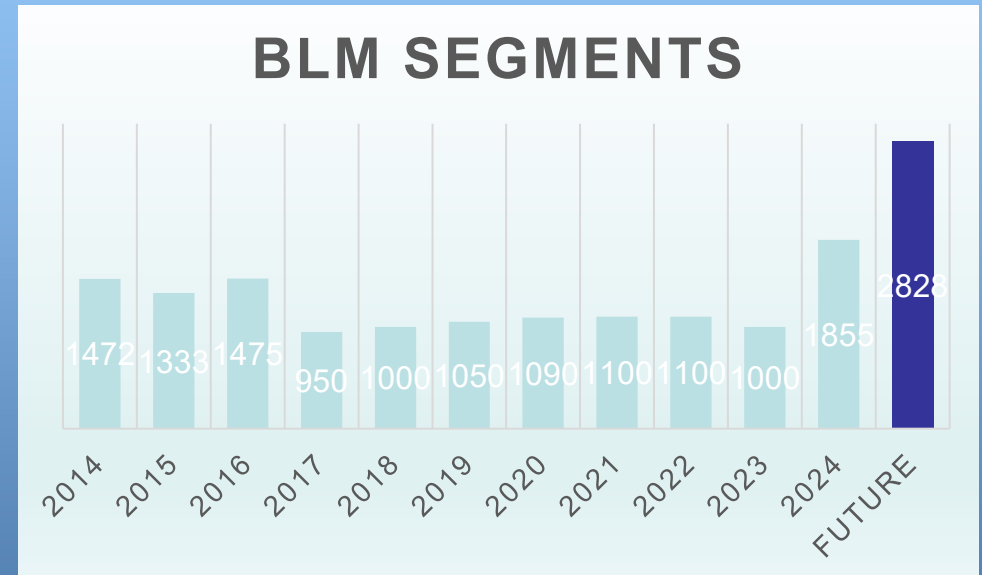
New Field Devices

- ❑ **Samsung Galaxy XCover 6 Pro Android Phone (with no SIM card)**
 - Will need to undergo the one-time registration process
- ❑ **Bad Elf Flex Mini Bluetooth GPS**
- ❑ **NOT new: SD card (did you remember to transfer it over from the outgoing Trimble TDC600?)**



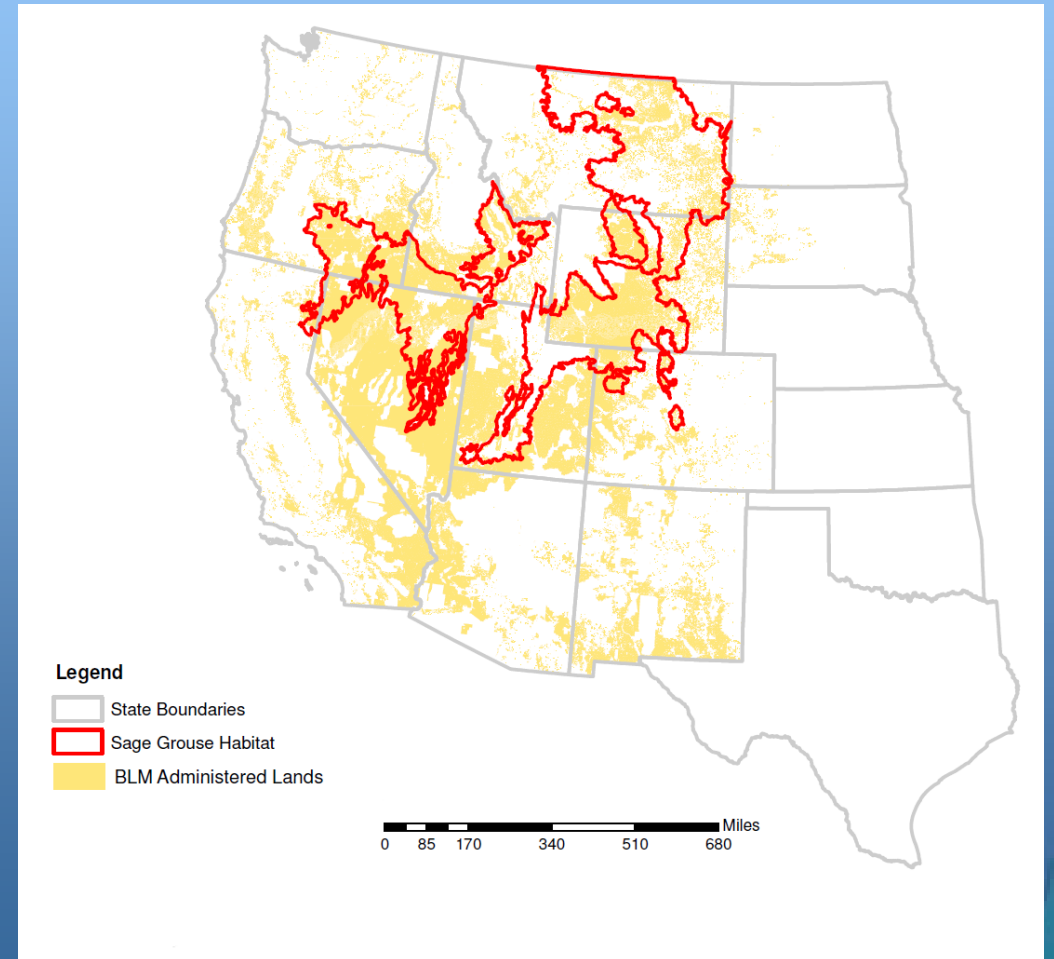
BLM Sample Changes - Size

- ❑ 13 states in the west have been collecting data on BLM managed land since 2011
- ❑ The BLM sample increases from 1000 segments in 2023 to 1855 segments in 2024
- ❑ Future years may have up to 2828 BLM segments, depending on funding



BLM Sample Changes - Spread

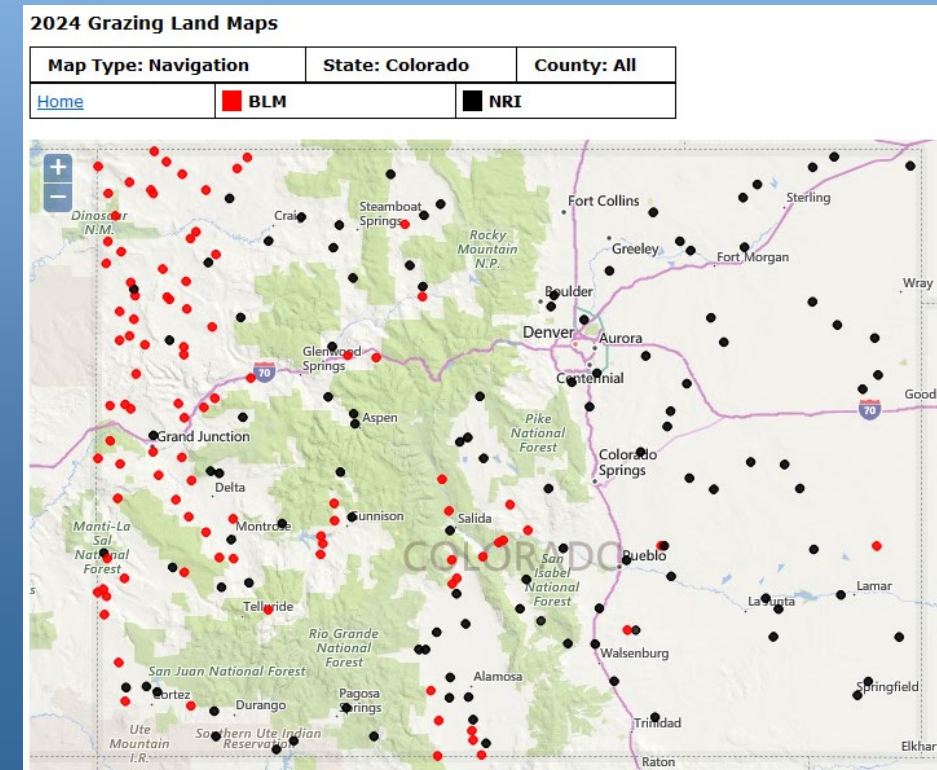
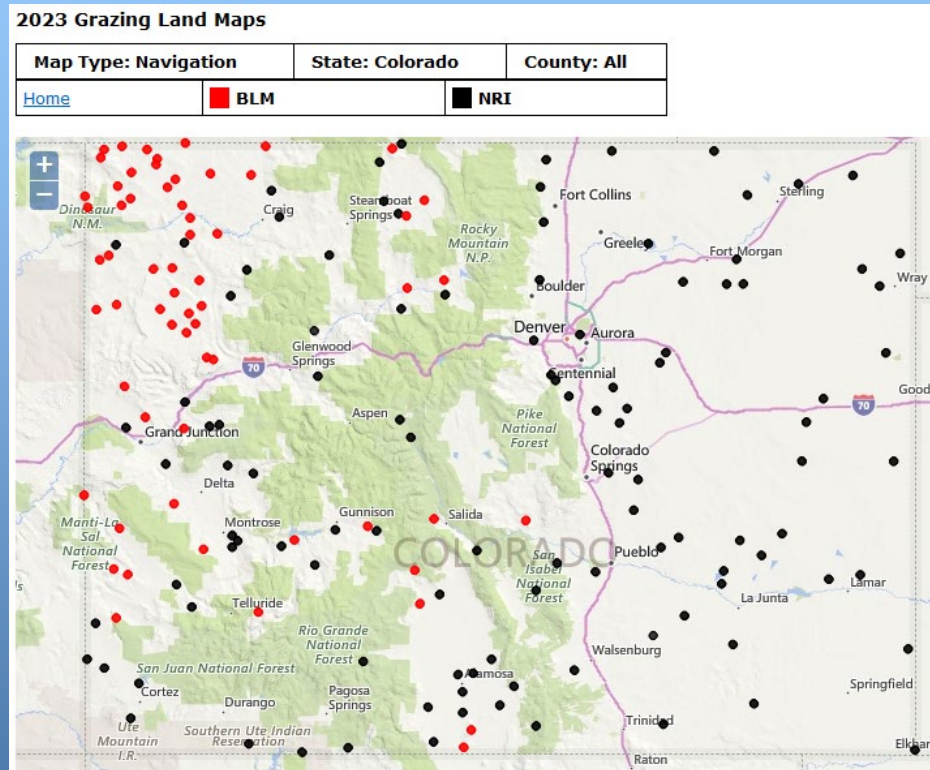
- ❑ BLM samples from 2014-2023 had more segments in greater sage grouse (SG) priority habitat areas
- ❑ BLM samples from 2024-2033 will have the same, high density across all BLM managed land
- ❑ States with lots of non-SG priority habitat land will see a significant increase in segments



BLM Sample Changes - Spread

❑ The density of BLM segments (in red) in the northwest, Sage Grouse portion of Colorado is about the same 2023 vs 2024

• The density of segments in non-Sage Grouse areas has increased to match the Sage Grouse areas



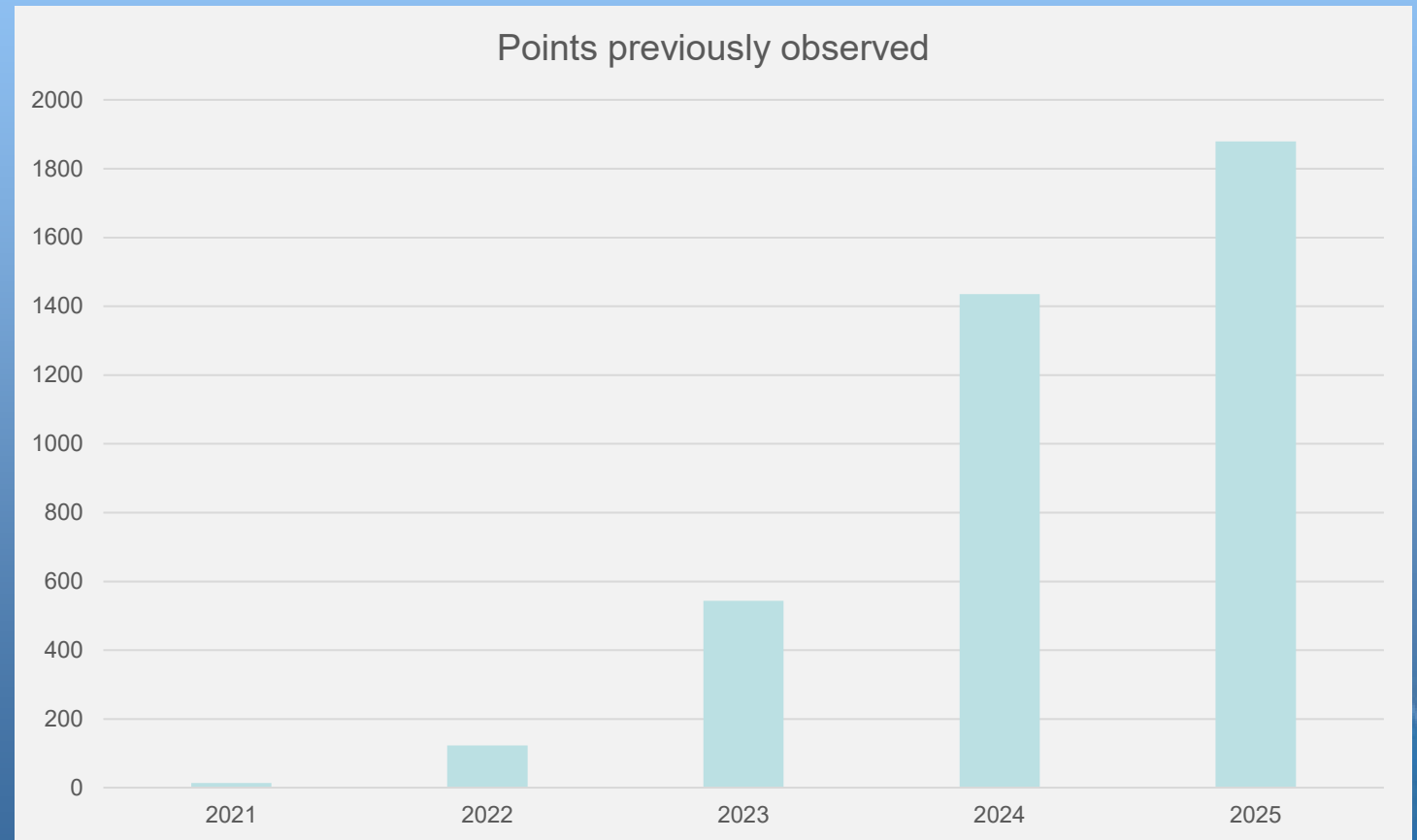
BLM Sample Changes - Revisits

- ❑ Also new for 2024-2033 BLM: revisits to previously collected segments and points
- ❑ Goal was 55% revisited (30% of revisits from 10-years prior and 70% of revisits from 5-years prior) and 45% new
- ❑ There was often not enough revisit segments available in some areas – shortages were replaced by new segments

State	BLM Segments 2024	30% of revisits 10-year prior (16.5% of total)	70% of revisits 5-year prior (38.5% of total)	45% new segments
Arizona	129	21	33	75
California	183	30	58	95
Colorado	95	16	23	56
Idaho	131	22	38	71
Montana	77	11	28	38
Nevada	481	80	124	277
New Mexico	146	24	28	94
North Dakota	2	0	0	2
Oregon	159	27	43	89
South Dakota	3	2	1	0
Utah	261	43	42	176
Washington	2	0	0	2
Wyoming	186	29	60	97
	1855	305	478	1072

More Revisits in NRI Sample

- ❑ Revisits in the NRI sample are allowed to occur randomly with a minimum 5-year gap
- ❑ Due to the way the 2021-2025 NRI 5-year sample is selected, 2024 will see more points that were previously sampled and observed than in previous years



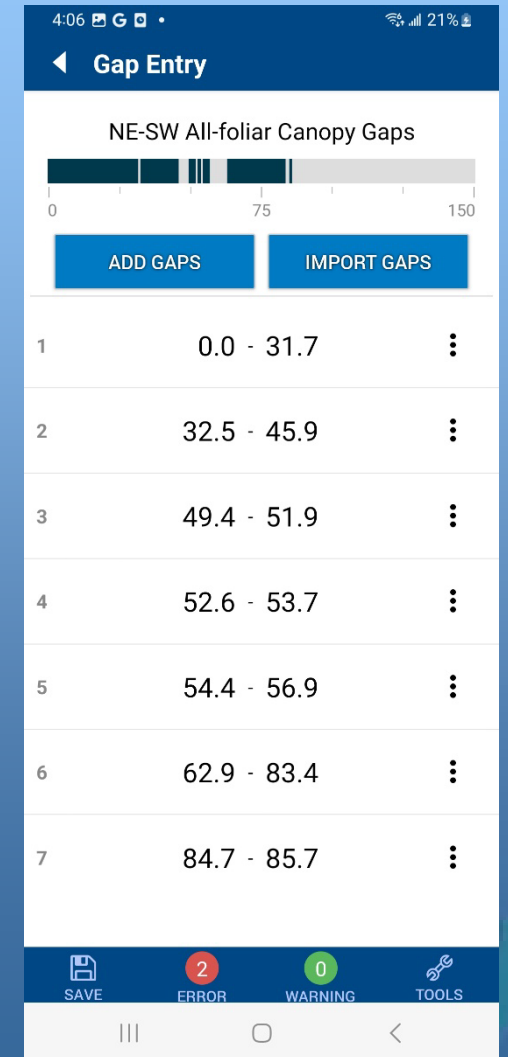
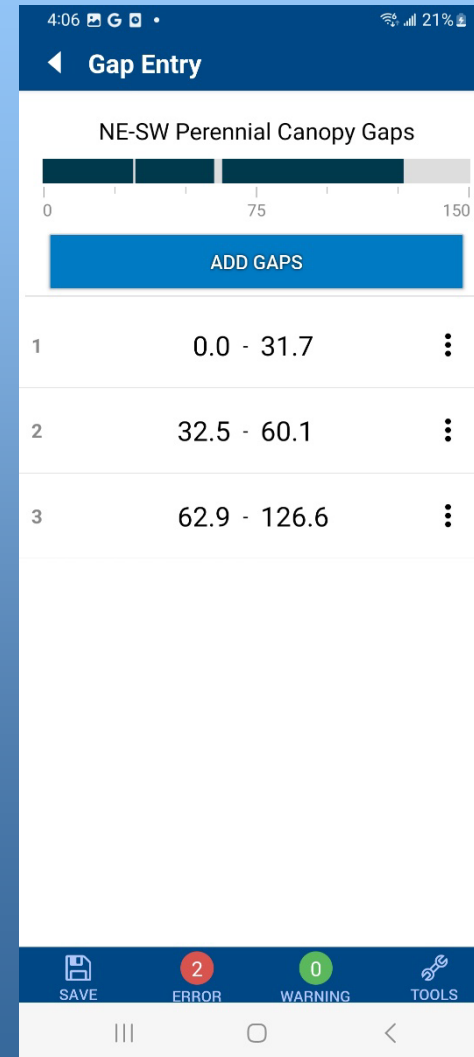
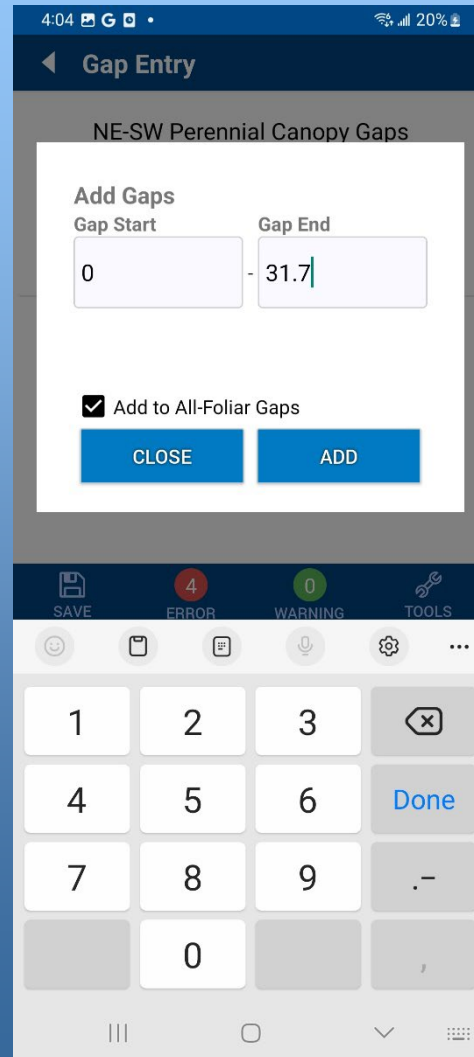
Android CASI Improvements

- ❑ **Changes to the Android CASI software include:**
 - **Gap Intercept entry redesigned**
 - **Point Intercept improvements to speed entry**
 - **Communications and backup improvements**
 - **Other improvements and fixes**



Android CASI – Gap Intercept

- The old Android Gap Intercept screen utilized a pop-up to add one gap at a time
- Perennial and All-foliar Gap entry was on different screens
- Checkboxes allowed one to add a gap to both types
- Those recording both types of gap in one walk of the line had to go back and forth between several



Android CASI – Gap Intercept

- ❑ The new Gap Intercept screen has both Perennial and All-foliar entry on one page, like the old Windows Mobile CASI did
- ❑ Blank rows are allowed to help manage and align entries
- ❑ Individual gaps can be copied from the Perennial side to the All-foliar side

3:47 96%

Gap Intercept

NE-SW NW-SE

Perennial canopy N Y

All-foliar canopy gaps? N Y

Different? N Y

Perennial gaps				All-foliar gaps		
#	Start	End	Copy	Start	End	
1			→			
2			→			
3			→			
4			→			
5			→			
6			→			
7			→			
8			→			

SAVE ERROR 4 WARNING 0 TOOLS

4:19 100%

Gap Intercept

NE-SW NW-SE

Perennial canopy N Y

All-foliar canopy gaps? N Y

Different? N Y

Perennial gaps				All-foliar gaps		
#	Start	End	Copy	Start	End	
1	0	31.7	→	0	31.7	
2	32.5	60.1	→	32.5	45.9	
3			→	49.4	51.9	
4			→	52.6	53.7	
5			→	54.4	56.9	
6	62.9	126.6	→	62.9	83.4	
7			→	84.7	85.7	
8			→			

SAVE ERROR 2 WARNING 0 TOOLS

Android CASI – Gap Intercept

- As before, data gathers are allowed to indicate there is no difference between Perennial and All-foliar
- All entries are then automatically copied

Perennial gaps				All-foliar gaps	
#	Start	End	Copy	Start	End
1	0	2.1	→	0	2.1
2	2.2	5.6	→	2.2	5.6
3	7.3	9.8	→	7.3	9.8
4	11.2	20.8	→	11.2	20.8
5			→		
6			→		
7			→		
8			→		

- Basal gap input, which is rarely done anymore, can be accessed via a special button next to Notes

#	Start	End
1		
2		
3		
4		
5		
6		
7		
8		

Android CASI – Point Intercept

Point Intercept

NE-SW						NW-SE	
0.1						CLEAR	
1	2	3	4	5	6	BASAL	BR/W
NONE	LITTER	UNKNOWN	LC/M/RF				
Mk	Hits					Basal	
0							

Point Intercept

NE-SW						NW-SE	
3.2						CLEAR	
1	2	3	4	5	6	BASAL	BR/W
NONE	LITTER	UNKNOWN	LC/M/RF				
Mk	Hits					Basal	
0 POPR None							
3 SPCR							
6							
9							
12							

Litter

- HL (Herbaceous Litter)
- WL (Woody Litter)
- NL (Non-plant Litter)
- Cancel

Point Intercept

NE-SW						NW-SE	
0.1						CLEAR	
1	2	3	4	5	6	BASAL	NONE
HL	WL	NL	UNK	LC/M/RF			
Mk	Hits					Basal	
0							

Changes to the top section of the Point Intercept Screen:

- NONE moves up beside BASAL, Bedrock/Water moves down a row
- LITTER goes from a button that activates a (relatively slow) pop-up choice list to three fixed buttons
- There is a slight change to some of the button sizes

Android CASI – Point Intercept

- As before, only the buttons allowable for that hit are enabled

Point Intercept

NE-SW NW-SE

0.1 : CLEAR

1	2	3	4	5	6	BASAL	NONE
HL	WL	NL	UNK	LC/M/RF	BR/W		

Mk Hits Basal

0

3

Mark 0, Hit 1

Point Intercept

NE-SW NW-SE

0.2 : CLEAR

1	2	3	4	5	6	BASAL	NONE
HL	WL	NL	UNK	LC/M/RF	BR/W		

Mk Hits Basal

0 POPR

3

Mark 0, Hit 2

Point Intercept

NE-SW NW-SE

0.b : CLEAR

1	2	3	4	5	6	BASAL	NONE
HL	WL	NL	UNK	LC/M/RF	BR/W		

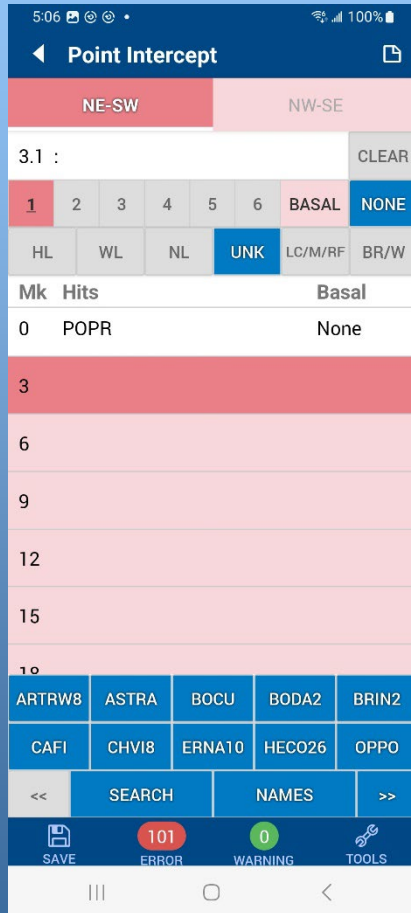
Mk Hits Basal

0 POPR

3

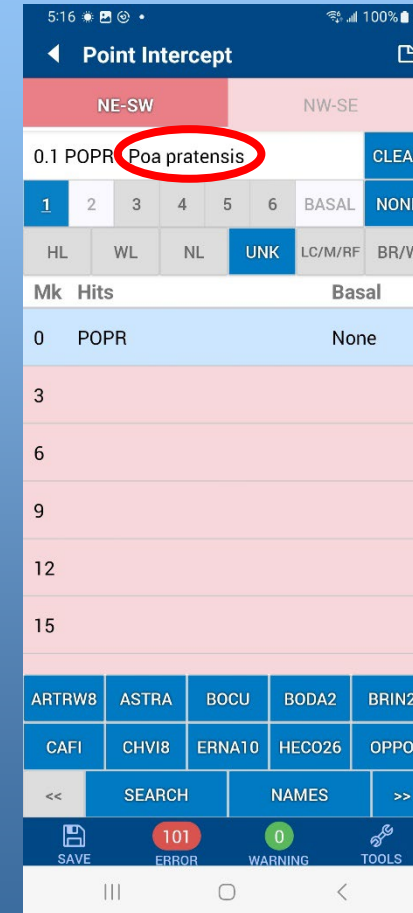
Mark 0, Hit
BASAL

Android CASI – Point Intercept



Mark 3, Hit 1

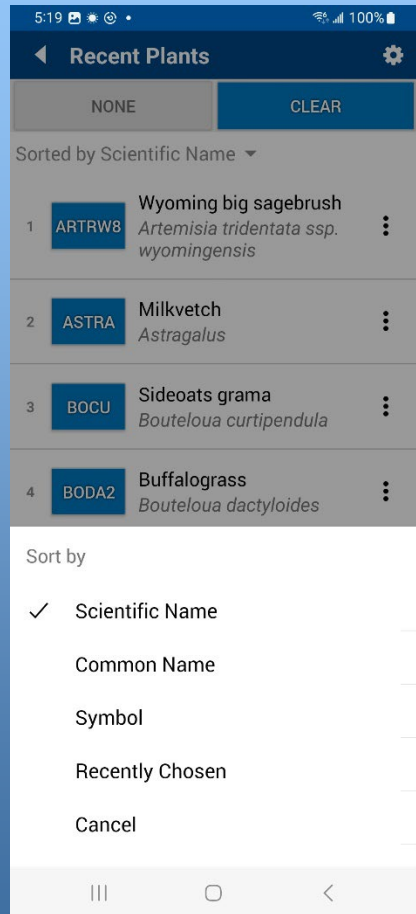
- After a **BASAL** selection is made, the current entry will automatically move to the next mark
- The screen will scroll if necessary to keep the current mark in view



Mark 0, Hit 1

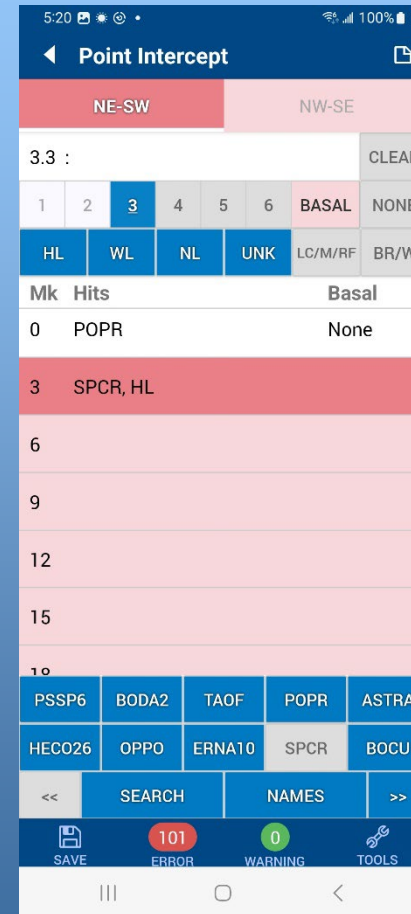
- Scientific name will now show on the top line next to the plant code
- Entry of **Bedrock** or **Water** will automatically fill **BASAL=None** if not already entered

Android CASI – Point Intercept

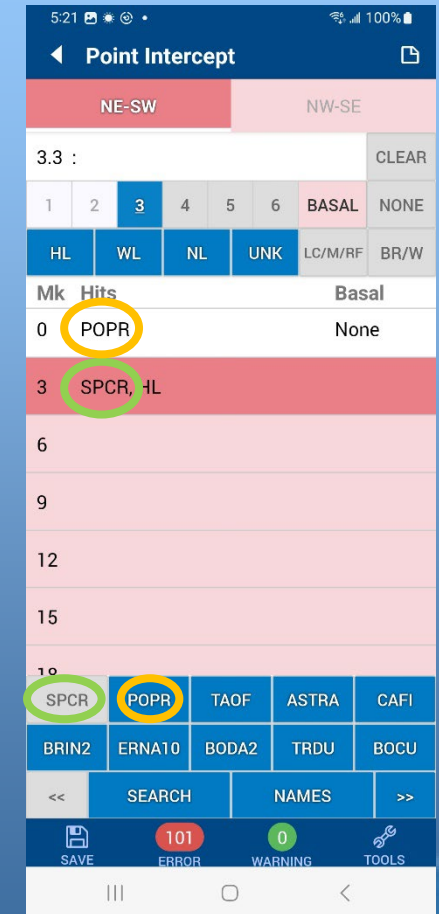


- Changing the sort of the Recent Plants List (accessed by the NAMES button) will now also change the sort of the plant buttons at the bottom of the Point Intercept page

- This will allow you to sort the plant buttons by



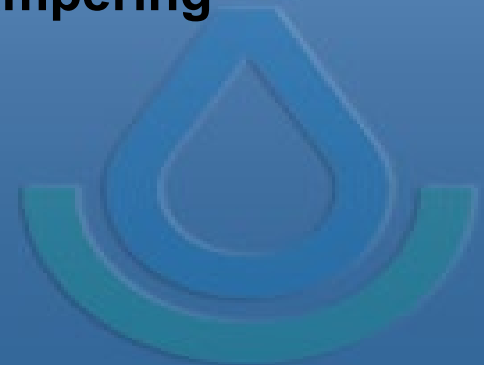
Sorted by
Common Name



Sorted by
Recently Chosen

Android CASI – Communications and Backup

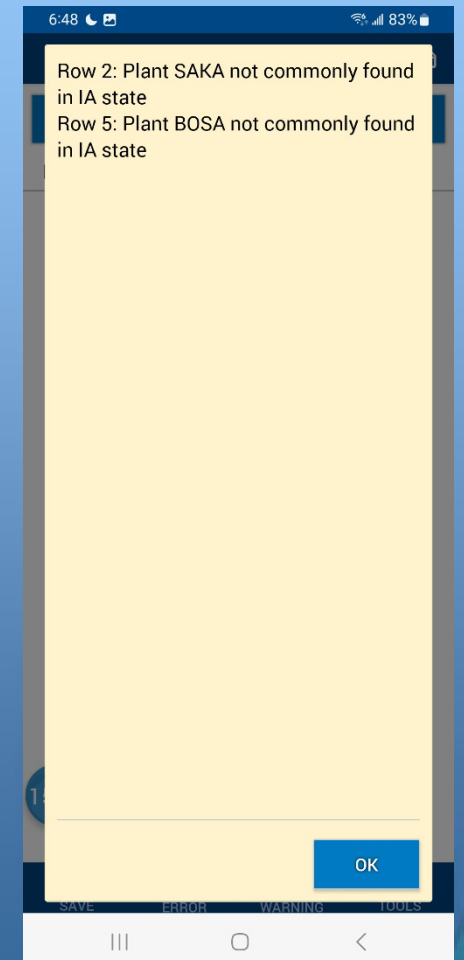
- ❑ There were a few rare but serious problems encountered last year in communications from the device to the server
- ❑ Several changes have been made to prevent future problems
 - Prevent accidental double click on segment check-in and check-out buttons
 - Disable check-in buttons until server has fully responded to initial connection
 - Improve processing of response from server on result of check-in attempt
 - Increase the number of backups saved on the device and to the storage card
- ❑ A warning message will now be shown if no SD card is in the device
- ❑ Also
 - The CASI will no longer automatically query the first county in the state
 - Production data will be obfuscated while on the device to prevent tampering



Android CASI – New warnings

- ❑ In Plant Census, if an entered plant is not on the state plant list a warning will be shown
- ❑ This is warning only – the data gather should double check that they have identified the correct plant

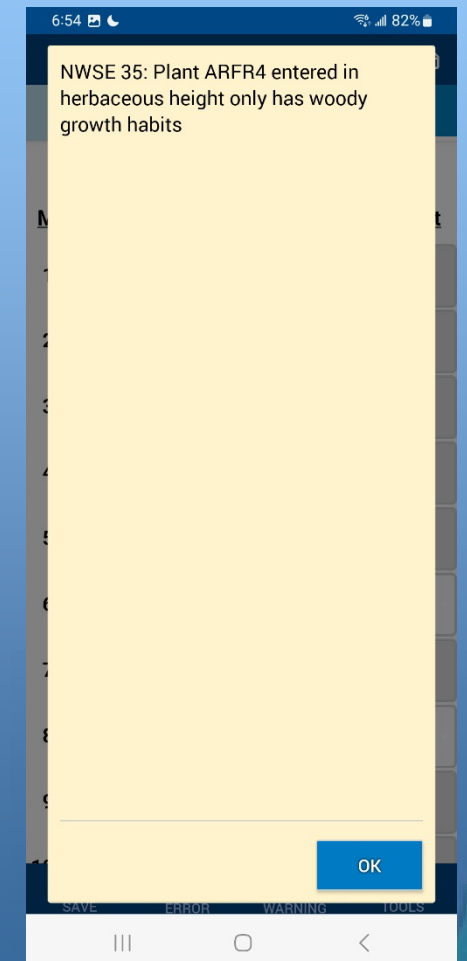
Row	Code	Tally
1	BRTE	>1000
2	SAKA	11-100
3	SPCR	101-500
4	TRDU	11-100
5	BOSA	11-100
6	POPR	>1000
7	ASTRA	11-100
8	HECO26	101-500
9		
10		



Android CASI – New warnings

- ❑ In Plant Height, a warning will be shown if the growth habit of a plant does not fit the column
- ❑ For the Herbaceous column, it will complain if the plant's growth habits are only Shrub, Subshrub, or Tree
- ❑ For the Woody column, it will complain if the plant's growth habits are only Forb/herb, Graminoid, Nonvascular, or Lichenous
- ❑ These are warnings only

NE-SW		NW-SE		
Herbaceous		Woody		
Mk	Plant	Height	Plant	Height
15	BRTE	18 in	NONE	
25	BOGR2	24 in	NONE	
35	ARFR4	27 in	NONE	
45	BOGR2	18 in	NONE	
55	ACHY	17 in	NONE	
65	BOGR2	14 in	OPPO	4 in
75	BOGR2	13 in	NONE	
85	BOGR2	21 in	OPPO	4 in
95	BOGR2	16 in	NONE	



Android CASI – Numbering RH Indicators

❑ The Rangeland Health indicators have been numbered to match the numbers used throughout the IIRH Version 5 document

1:25 Rangeland Health

EX = Extreme ME = Moderate to Extreme MO = Moderate SM = Slight to Moderate NS = None to Slight

1. Rills

EX	ME	MO	SM	NS
----	----	----	----	----

2. Water Flow Patterns

EX	ME	MO	SM	NS
----	----	----	----	----

3. Pedestals and/or Terracettes

EX	ME	MO	SM	NS
----	----	----	----	----

4. Bare Ground

EX	ME	MO	SM	NS
----	----	----	----	----

5. Gullies

EX	ME	MO	SM	NS
----	----	----	----	----

6. Wind-Scoured and/or Depositional Areas

EX	ME	MO	SM	NS
----	----	----	----	----

7. Litter Movement

EX	ME	MO	SM	NS
----	----	----	----	----

8. Soil Surface Resistance to Erosion

EX	ME	MO	SM	NS
----	----	----	----	----

SAVE 23 ERROR 0 WARNING TOOLS

1:25 Rangeland Health

EX = Extreme ME = Moderate to Extreme MO = Moderate SM = Slight to Moderate NS = None to Slight

9. Soil Surface Loss and Degradation

EX	ME	MO	SM	NS
----	----	----	----	----

10. Effects of Plant Community Composition and Distribution on Infiltration

EX	ME	MO	SM	NS
----	----	----	----	----

11. Compaction Layer

EX	ME	MO	SM	NS
----	----	----	----	----

12. Functional/Structural Groups (FSGs)

EX	ME	MO	SM	NS
----	----	----	----	----

12a. FSG: Relative dominance

EX	ME	MO	SM	NS
----	----	----	----	----

12b. FSG: FSGs not expected at the site

EX	ME	MO	SM	NS
----	----	----	----	----

12c. FSG: Number of expected FSGs

EX	ME	MO	SM	NS
----	----	----	----	----

12d. FSG: Total combined no. of species

EX	ME	MO	SM	NS
----	----	----	----	----

SAVE 23 ERROR 0 WARNING TOOLS

1:26 Rangeland Health

EX = Extreme ME = Moderate to Extreme MO = Moderate SM = Slight to Moderate NS = None to Slight

14. Litter Cover and Depth

EX	ME	MO	SM	NS
----	----	----	----	----

15. Annual Production

EX	ME	MO	SM	NS
----	----	----	----	----

16. Invasive Plants

EX	ME	MO	SM	NS
----	----	----	----	----

17. Vigor with an Emphasis on Reproductive Capability of Perennial Plants

EX	ME	MO	SM	NS
----	----	----	----	----

Final Rating

Soil/Site Stability [DETAILS](#)

0	0	0	0	0
EX	ME	MO	SM	NS

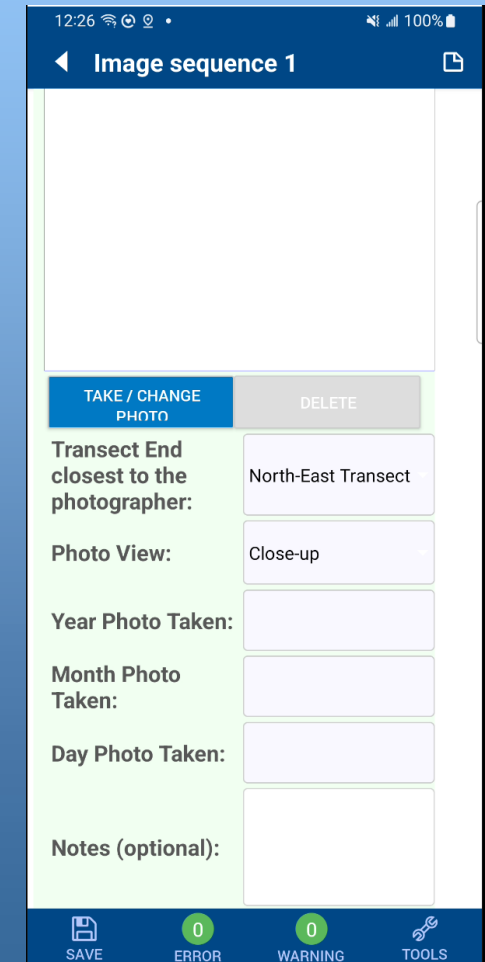
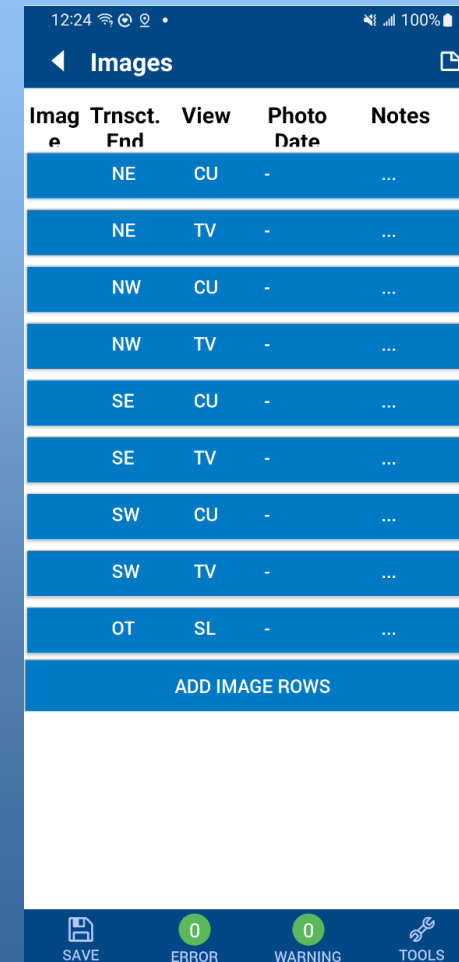
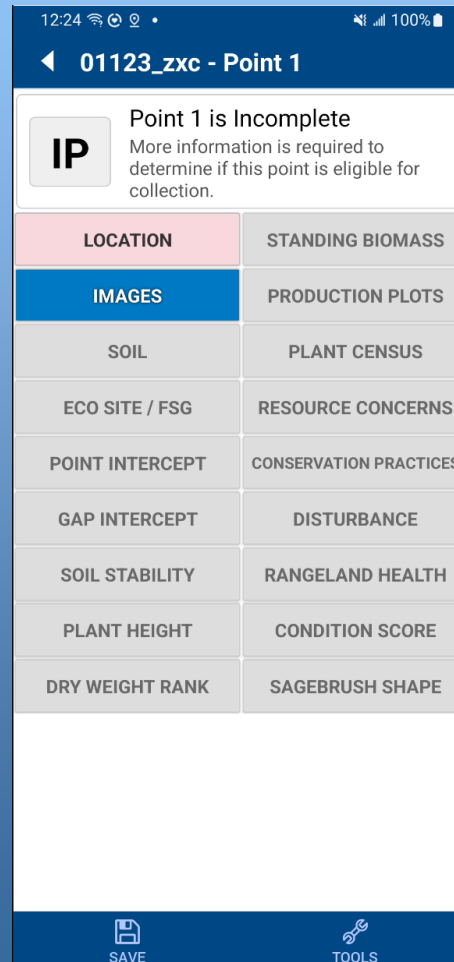
Hydrologic Function [DETAILS](#)

0	0	0	0	0
---	---	---	---	---

SAVE 23 ERROR 0 WARNING TOOLS

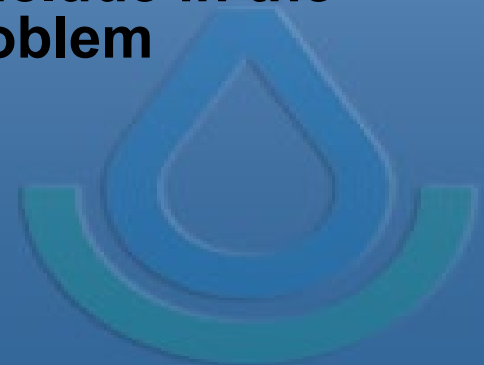
Android CASI – Onsite photos with CASI

- ❑ We are still working on a project to take, tag, and submit onsite photos using the CASI device's camera
- ❑ This feature **IS NOT READY**
- ❑ Photos will be automatically tagged with all necessary information except notes
- ❑ Photos will go back and forth to the server with the rest of the data – no need to keep track of and upload photos separately



Remember to...

- ❑ **Approve 2024 roles using Account Manager on the web site**
 - **As is done every year, each state's Grazing Manager will need to approve/deny access to Grazing Land web applications**
 - **Users that had a prior year's access must be re-approved for 2024**
- ❑ **Download Spatial Data and Site Maps when they become available**
 - **Spatial Data and BLM Site Maps are available now, NRI Site Maps are coming**
- ❑ **Get devices updated and working before heading out to a training session**
- ❑ **Get support by emailing nri-graze-help@iastate.edu**
 - **Data gatherers in field with a phone can also send a text message to "nri-graze-help@iastate.edu" instead of a phone number; please include in the message a call back number and a short description of the problem**





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