User Manual for Grass Snap (Android Version)

Grass Snap is a useful tool when monitoring your pastures and grasslands. Grass Snap will take you through the monitoring process step-by-step.

Grass Snap meets the requirements for the NRCS Nebraska CSP monitoring activity (PLT-02), but is flexible and can be adapted for most monitoring systems.

The Photo Point, Photo Plots, and Nebraska Grazing Indexes for the Sandhills and western native range can be recorded for each transect. The app stamps the pasture/transect name, GPS location, date, and direction looking on each photo point, plot, and data.

Photo Point- landscape view

Photo Plot- detail view

What is Photo-Monitoring?

Photo-monitoring is the simplest way to monitor short- or long-term changes in pasture and rangeland. This orderly collection, analysis, and interpretation of resource data can evaluate progress towards meeting management objectives quickly and easily. Photographs alone provide a wealth of information, but must be accompanied with other information such as plant and weather data to realize the full potential.

Photographs of the same site over time allow you to see differences at a glance. A photograph is truly "worth a thousand words". Photo-monitoring is repeatable and makes it easy to compare year to year changes in vegetation cover, growth, and density.

Photographs can show:
      -the condition of the pasture
      -type and relative abundance of species
      -ground cover and standing forage
      -evidence of erosion (wind or water)
      -effects of fire, late freeze, drought, hail, grasshoppers
      -healing of problem areas (washouts, control of cedar trees).

Practice, practice, practice before using Grass Snap in the pasture!

Make sure you understand how to use Grass Snap before monitoring.

At a minimum, photographs should include a Photo Point and Photo Plot. For more intense monitoring, a Photo Point can be accompanied with several Photo Plots of that area. A picture is qualitative, so other methods are needed for quantitative data.

Downloading Grass Snap to your Android Device

To download the Grass Snap app on your Android smart device, open the "Play Store" icon on your smart device.
Search for "Grass Snap". Touch the Grass Snap icon.
Click on "FREE" and then "INSTALL".
Click on "OPEN" or exit out to your main screen. The Grass Snap icon should be on your main screen.

Click on the Grass Snap icon to open. The main menu of Grass Snap should appear.

The Main Menu has four buttons (Add new transect, Albums, Maps, and Update Existing), a link to open the NebGuide on monitoring grasslands (book icon), videos on how to use the four buttons (question mark icon), and button (top right hand corner, three squares) has information about the app and feedback/suggestions.
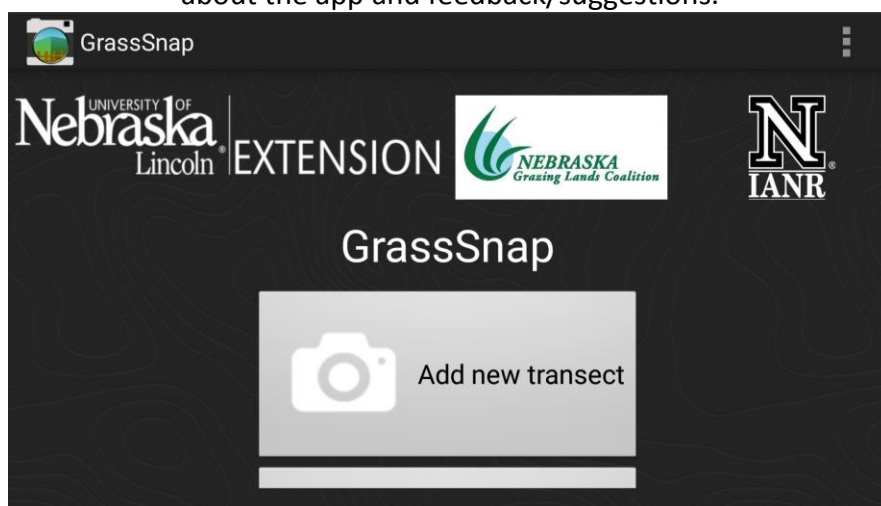
Let's cover the four buttons on the main menu. Use your finger to scroll down to see all of the four buttons.

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The "Add new transect" will be the first button you choose when you begin monitoring.

The "Albums" button stores all your photographs and data in pasture/transect folders by date.

The "Maps" button shows your monitoring sites on google maps or lists the GPS coordinates for each transect.

The "Update Existing" button will be used after the first year. Your pasture name and GPS location will be saved (unless you delete the folders in the albums).

Add New Transect

Once you press the "Add new transect" button, Grass Snap will ask you to enter your transect name (or pasture name). You will type in the name of the pasture or monitoring site. Bring up the keyboard by touching the blank line.

Enter the pasture name correctly, as this name will be used to name the photographs, data, and folders. The pasture name will also be available for future monitoring of the site.
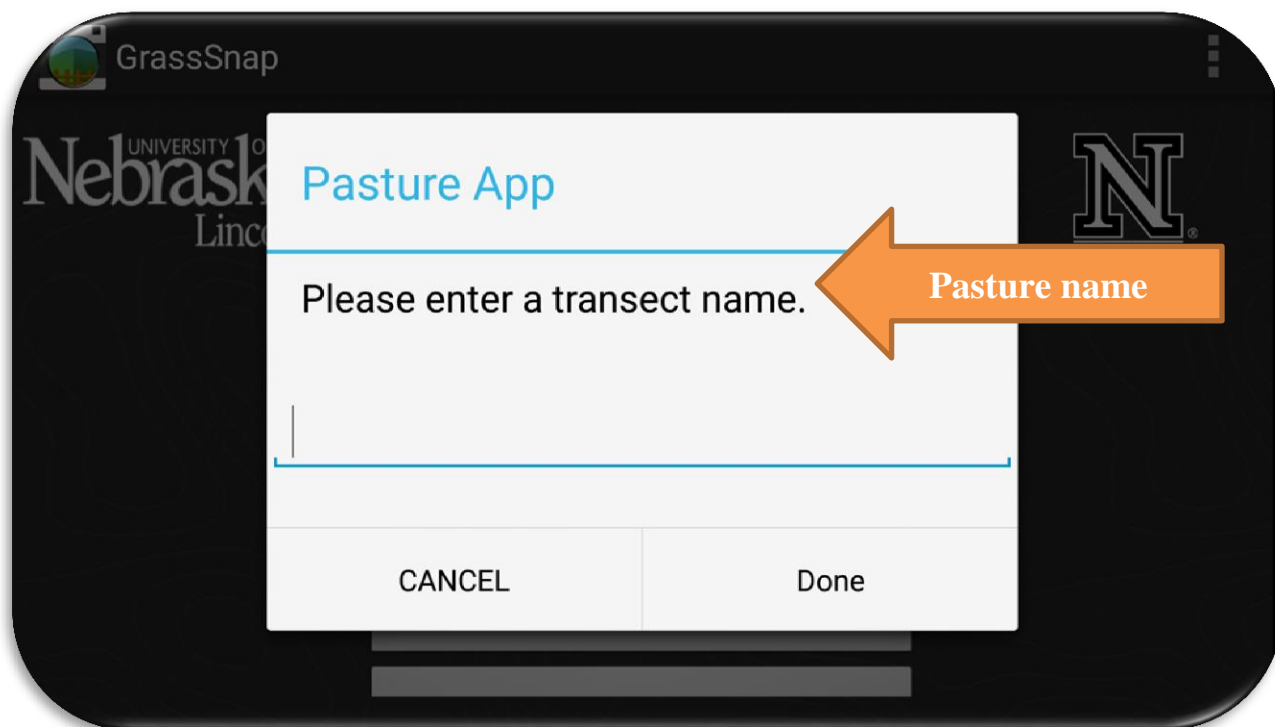
The transect name could also be the name of the pasture you are monitoring.
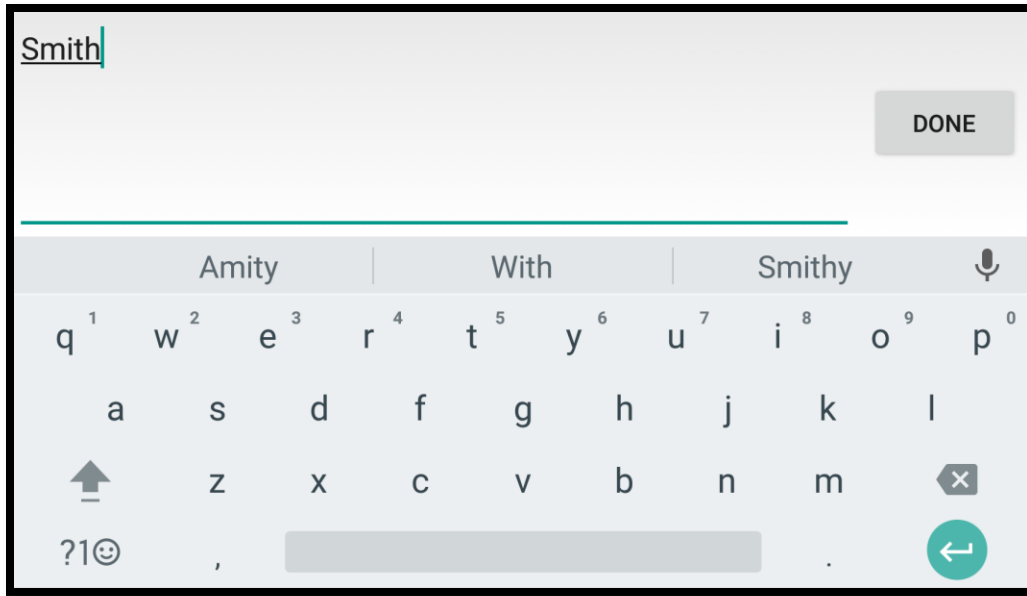
Press "CANCEL" to go back to the Main Menu. Press "DONE" when you are finished entering the pasture name.

A warning will pop up to make sure your name is correct. If the name is not typed correctly, press "NO" to go back. Press "YES" to continue.

If you have cell service, Grass Snap will automatically enter the GPS coordinates of the monitoring site. If you have cell service, and want to manually enter the GPS coordinates, exit Grass Snap, go to "Settings", go to "Locations", and click "OFF".

If this screen comes up, touch "Manually Enter" to enter your GPS coordinates.
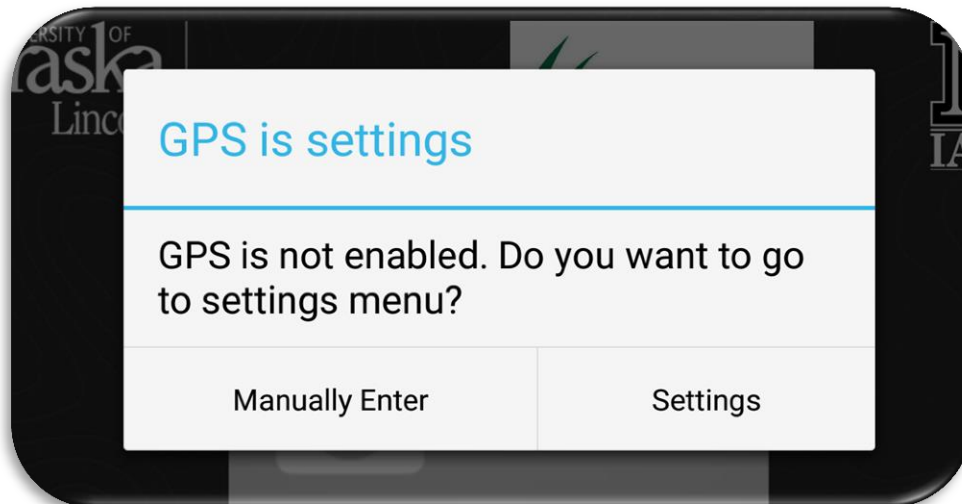
If you do not have cell service, Grass Snap will ask you to enter your GSP coordinates.

Symbols of GPS coordinates: ° is degrees, ' is minutes, and " is seconds.

There are two types of GPS coordinates, depending on your GPS settings. You will choose one:

1) "DM/DMS" stands for "Degree-Minutes/Degree-Minute-Second". Your coordinates will look similar to this:

Degree Minutes:	N 41$^°$ 58.663' W 100$^°$ 34.435'
Degree Minute Seconds:	N 41$^°$ 58' 39" W 100$^°$ 34' 25"

Touch the white box to type in your numbers. Press the lower keyboard icon (bottom right hand side) to remove the keyboard.
Touch "Sec" to open up the seconds box.

If you are unsure, click on the "HELP DMS" on the top right hand corner.

2) "Decimal Degrees" is a pair of numbers. Grass Snap will convert and record all data in Decimal Degrees. I would suggest changing the settings on your GPS unit to "Decimal Degrees" before you begin monitoring.

        Your coordinates will look similar to this:

        Decimal Degrees: 41.977745   -100.573833

Click on "HELP DECIMAL" if you are unsure how to enter the GPS coordinates.

Press "DONE" when you are finished entering your GPS coordinates for your field marker.

You may also "SKIP" entering your GPS location. However, all future photos taken for this pasture will have the GPS coordinates 0,0.

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It is very important you enter your GPS coordinates for your field marker correctly the first time.

*When you go back to monitor, make sure YOUR UNITS MATCH.*

Enter decimal degrees into a GPS device set for degrees-decimal minutes will alter your location.

Now Grass Snap will take you through the four steps to monitor your pasture.

PHOTO POINT- step 1

Take a photo looking out, known as a Photo Point. The Photo Point is a landscape view of the pasture. Standing at your field marker, look out to the horizon. Pick a point on the horizon and center your photo at this point. The land should account for ¾ of the picture, and the sky ¼ of the pictures.

Press the CLICK button on the right hand side to take a picture.
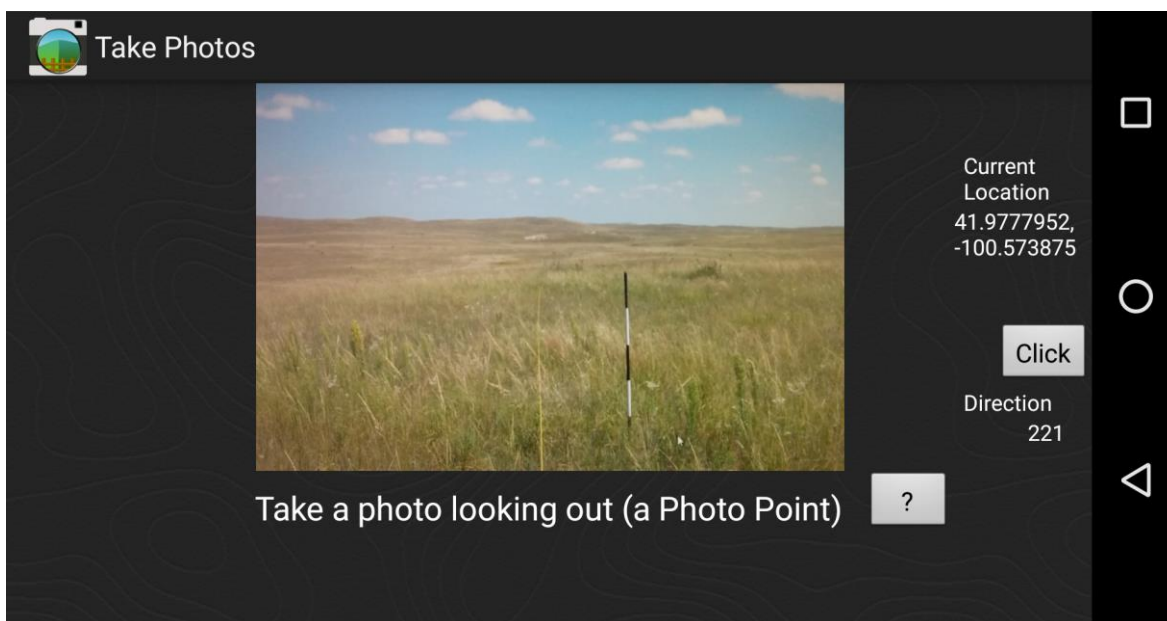
Press "KEEP" to save this picture. Press "RETAKE" if you do not like your picture and wish to take a new photo point picture. You will only take one (1) Photo Point picture per transect.

PHOTO PLOTS- step 2

Next, Grass Snap asks you to take Photo Plot pictures. A Photo Plot is a detailed picture of the ground to record plant density, plant residue/litter, ground cover, or plant composition.

Looking straight down at the grass and soil. (A plot frame in the picture will give you reference to plant size and is recommended for all photo plot pictures.)

Press the CLICK button on the right hand side to take a Photo Plot picture.

Press "KEEP" if to save this picture. Press "RETAKE" if you do not like your picture and wish to redo the photo plot picture.
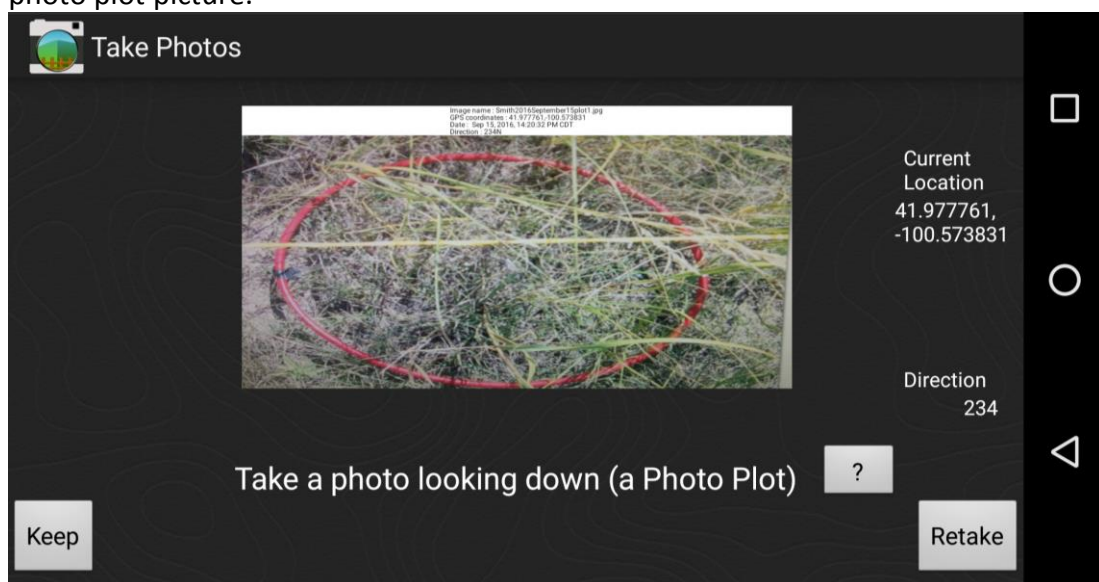
Grass Snap allows up to five (5) Photo Plots per transect. Press "ADD PLOTS" to take another photo plot picture. Press "DONE" when you are finished taking your Photo Plot pictures. In the upper left hand corner, the number of plot pictures remaining will help you keep track of how many plot pictures you have taken.
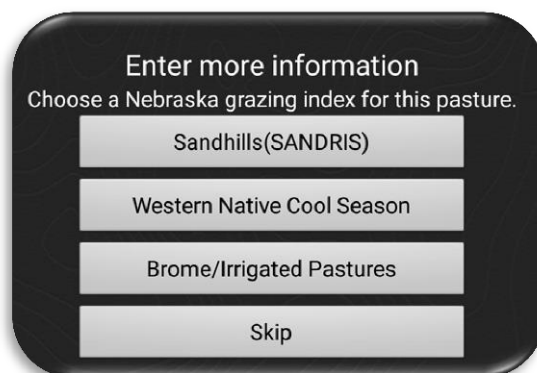
A total of six pictures can be saved in Grass Snap. However, if your monitoring system uses a different system than one photo point and several photo plots, you can use Grass Snap to capture your pictures. Just remember the pictures will be named Point, Plot 1, Plot 2, Plot 3, Plot 4, and Plot 5.

A warning will pop up if you have not taken all five Photo Plot pictures. Press "YES" if you are finished. Press "NO" if you did not mean to leave this screen.

NEBRASKA GRAZING INDEX- step 3

Nebraska grazing indexes for the Sandhills and Western Native Cool Season pastures are available on Grass Snap. A grazing index helps producers set up grazing rotations based on when they grazed the previous year, precipitation, and residual.

Choose from the following four options:
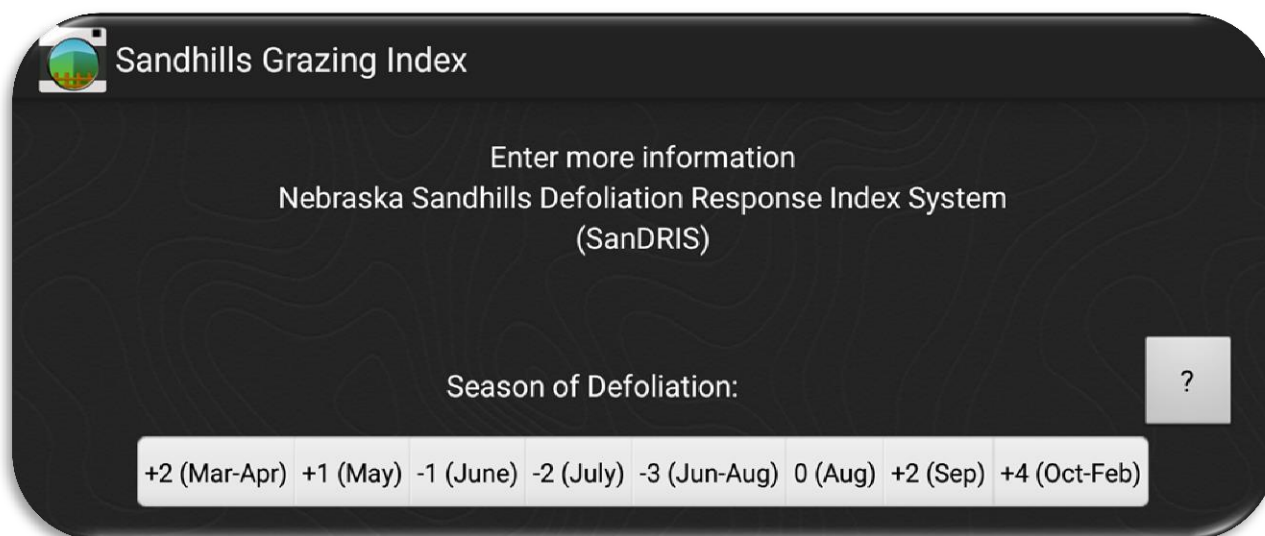
1) SanDRIS (Sandhills Defoliation Response Index System) is for warm-season dominated Sandhill pastures. More information can be found at http://drought.unl.edu/ranchplan/BeforeDrought/GrazingStrategy/DecisionSupportToolsforGrazing/SandhillsDefoliationResponseIndex.aspx .

   Touch the "Sandhills (SanDRIS)" button. Touch the box to highlight your selection for Season of Defoliation, Precipitation Regime (October to September), and End-of-Season Residual. Touch the *?* button at the end of the row for more detailed information about that category.

   Write observations in the "Comment" box. Touch the box to bring up the keyboard. Type in your comments. Press the lower keyboard icon in the lower right-hand corner to lower the keyboard.
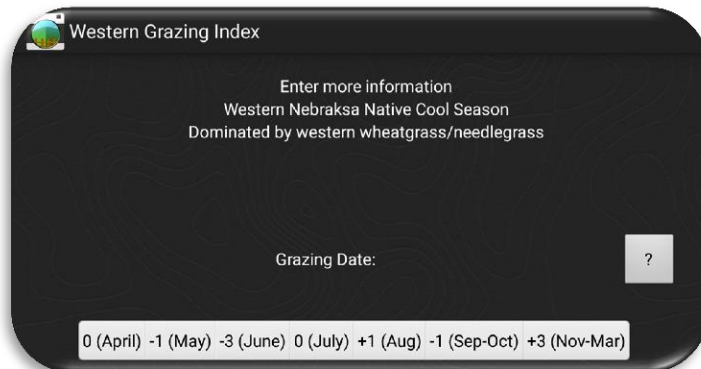   KEEP SCROLLING TO THE BOTTOM.
   Press "DONE" to continue.
   A warning will come up to make sure you didn't exit too soon. You can go back and make corrections or changes by selecting "Hold On!". Select "DONE" if you are finished.
   Your data will be saved with your photographs in the "Albums". (Continue to Step 4 to finish.)

2) For Western Nebraska Native Cool-season dominated pastures, there is the "Western Native Cool Season" button.

Touch the box to highlight your selection for Grazing Date, Precipitation (April to June), and Stubble Height of key species. Touch the *?* button at the end of the row for more detailed information about that category.)

Write observations in the "Comment" box. Touch the gray box to bring up the keyboard. Type in your comments. Press the lower keyboard icon in the lower right-hand corner to lower the keyboard. Press "DONE" to continue.

A warning will come up to make sure you didn't exit too soon. You can go back and make corrections or changes by selecting "Hold On!". Select "DONE" if you are finished.

Your data will be saved with your photographs in the "Albums". (Continue to Step 4 to finish.)

3) Grazing management information for smooth "Brome and Irrigated pastures" is also available.

4) If none of your pastures fall into these ecosystems, press "SKIP" to proceed to the next step.

NEBRASKA APPARENT TREND SCORE- step 4

The Apparent TREND is for estimating what you have now based on the potential of a standard ecological site. Comparing and looking back (usually 5-10 years) will show trend, if your management

decisions are improving or harming your pasture health compared to the standard ecological site description.

This TREND score is specific for Nebraska, and may be required for the CSP monitoring activity (PLT-02).

Choose an ecological site (range site) by touching WETLAND. Scroll to pick from one of the Nebraska sites. Touch "Reference Plant Community" to type in the indicator species. Record your current calendar year's precipitation.

Choose the number in each category that best suits your observation. Touch the *?* button at the end of the row for more detailed information about that category. The app will total your score.

Add comments by touching the box and bringing up the keyboard. Type in your comments. Press the lower keyboard icon in the lower right-hand corner to lower the keyboard or DONE.
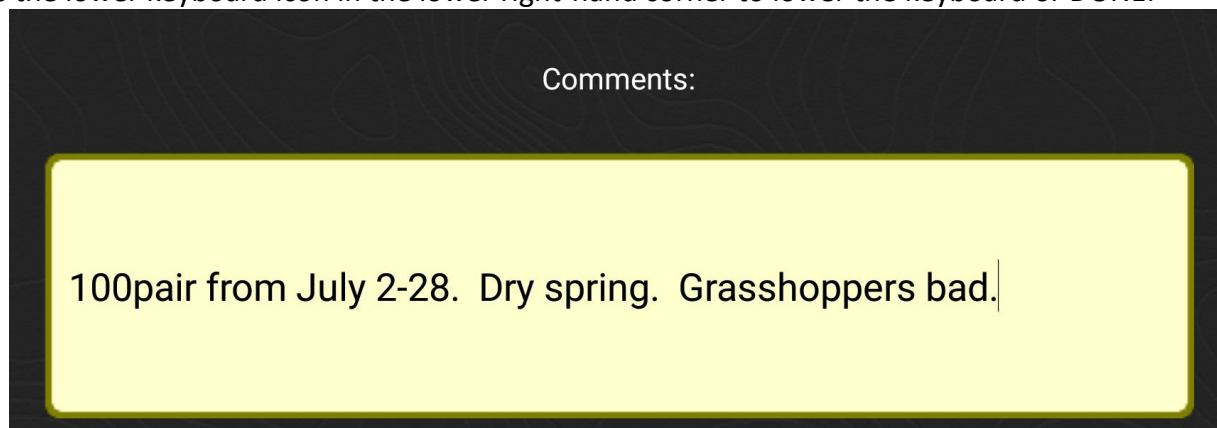
Scroll down to the bottom.

Choose "SKIP" if you want to go back to the grazing indexes. Pick "DONE" if you are finished. A warning will pop up- choose "Done" if you are finished. Choose "Hold On!" if you need to enter more information.

Press "DONE" to continue. Your data will be saved with your photographs in the "Albums".

Success! You have completed monitoring your transect. Go back to the main menu to view your photographs and data in the "Albums".

Albums

When you add a new transect (i.e. pasture) or update existing pastures, the photographs and data are stored under the "Album" button.

Each transect name has its own folder. Click on a folder to open. If you have monitored at multiple dates, multiple sub-folders will be here. The photo point, photo plot(s), and grazing index and Apparent TREND data are stored here.
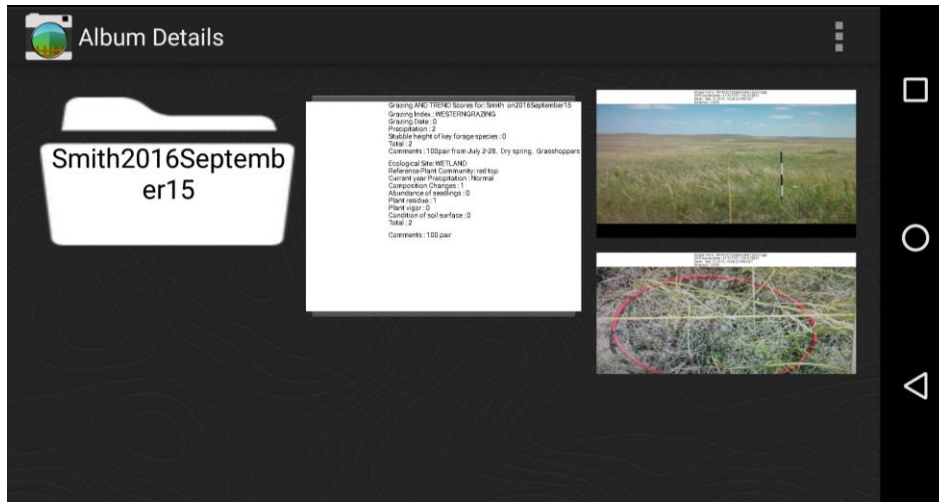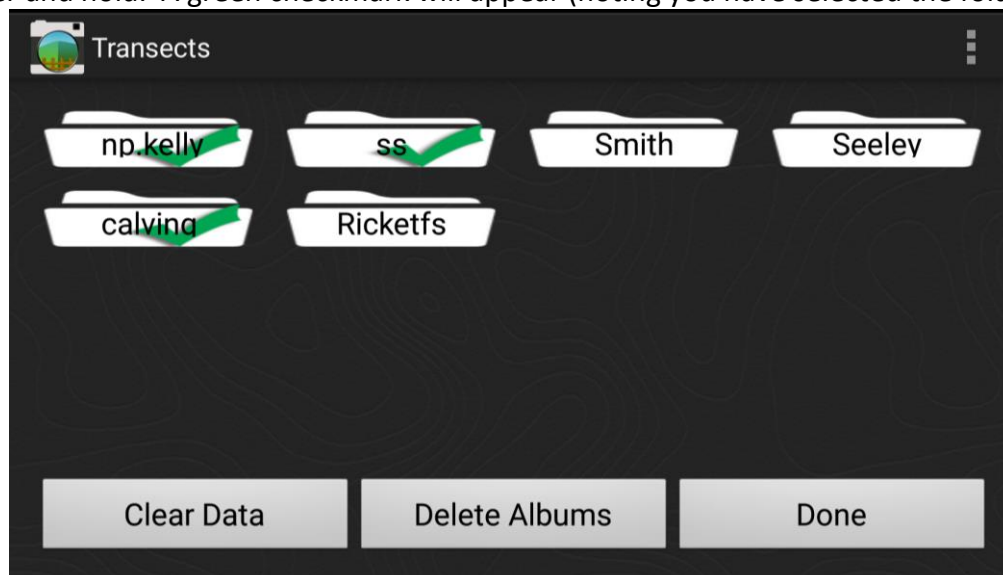

　　　Touch the pictures to open a larger version. The grazing index and Apparent TREND data can be magnified by touching the data screen with two fingers, then moving your fingers apart.

EDITING ALBUMS
CLEARING PHOTOS, DELETING ALBUMS

From the Main Menu, press the ALBUM button.

Touch a folder and hold. A green checkmark will appear (noting you have selected the folder).

You have three options:

     1) **<u>Clear Data</u>**- choose this option AFTER you have downloaded the folders (with photographs and data) to another computer.

        This option helps free storage on your device by deleting the pictures/data in the folder.

        Grass Snap will keep the folder and original overlay picture when you go to monitor again next year.

     2) **<u>Delete Albums</u>**- if you are NEVER monitoring this pasture again, you may delete the album.

        The album will be deleted, as well as the overlay photograph. I use delete albums, if I have practicing on Grass Snap and have created test runs.

     3) **<u>Done</u>**- choose this option if you want to leave with no changes.

Maps

When you add a new transect (i.e. pasture) or update existing pastures, the GPS coordinates are recorded.

     The MAP VIEW is an easy way to visualize your monitoring sites on a google map.

    You may zoom in or out. Touch two fingers to the map and spreading them (zoom in) or bring your fingers together (zoom out).
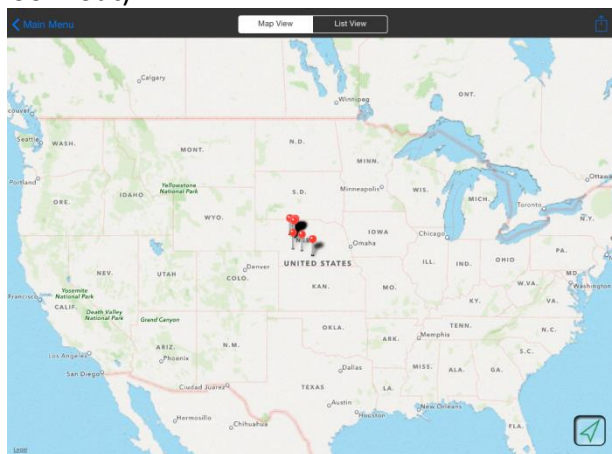
The LIST VIEW has all the transects with their corresponding GPS coordinates (in decimal degrees). The LIST VIEW is helpful when you return to monitor your transects the next year. This will help you find your permanent field markers.
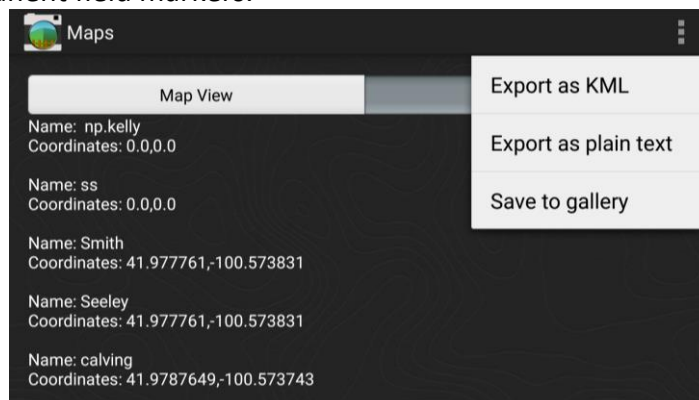
To export the GPS coordinates, select the THREE SQUARE icon (top right hand corner). If your email is set up on your smart device, you may email the coordinates as KML or plain text. Otherwise, you can save the coordinates to the "GALLERY" on your smart device.


Update Existing

After your initial monitoring of the transect, choose the "UPDATE EXISTING" button to monitor. You may scroll up or down to find your transect (i.e. pasture) name. Select the transect you wish to monitor from the list of names.
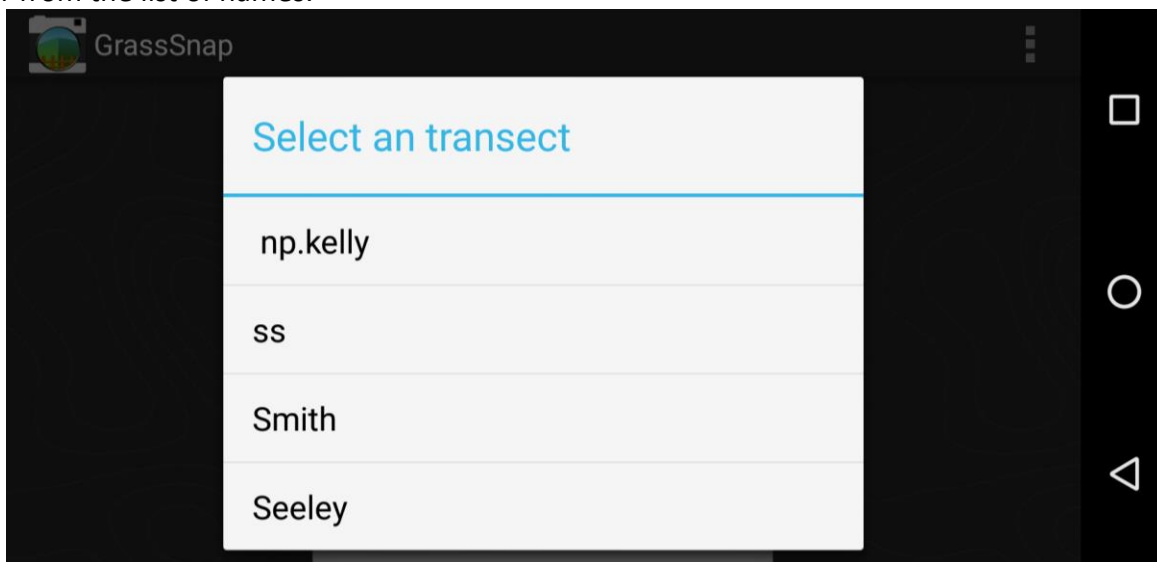
"UPDATE EXISTING" follows the same steps as "ADD NEW TRANSECT" with a few exceptions. Your original GPS coordinates will be saved (on the left hand side). If you have cell service, you will be able to view your current GPS location (on the right hand side). The original direction is also on the left hand side.

Touch the OVERLAY button to activate a transparency of the original photo point. If you are at the same permanent field marker, looking in the same direction, your OVERLAY transparency of the horizon should line up.

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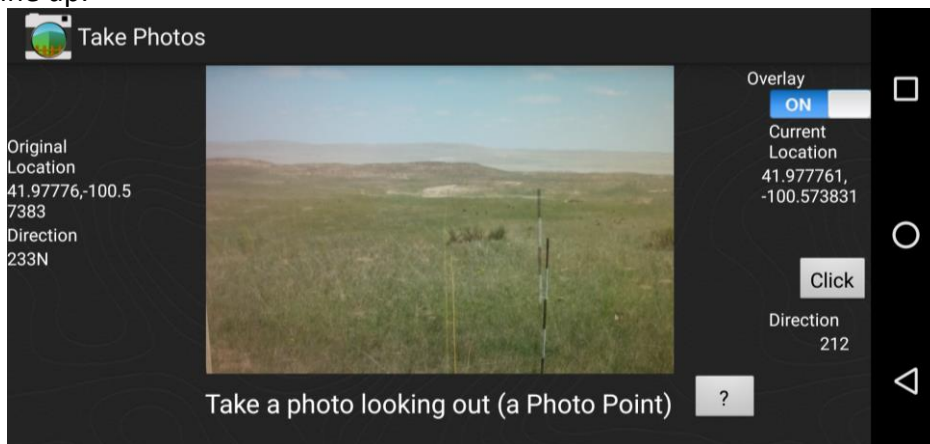
Continue to take a photo point, photo plot(s), and enter data in the grazing index and/or Apparent TREND. For more detailed steps, see Steps 1-4 under "Add New Transect".

DOWNLOADING DATA to YOUR COMPUTER

I would suggest coping or moving the pictures/data to My Documents on your computer. You will free up memory on your smart device, and the bigger pictures are easier to view on a computer monitor.

There are two ways to download your data.

The first way is download an app called "File Transfer" for Android devices.

If the "File Transfer" app does not work with your device, here is another way.

A) Shut down your Android device and restart it. My device would not bring up the pastures I monitored that day, unless I shut down.

B) Plug in the cable used to charge your phone and insert the USB end into your computer.

C) On your phone, swipe down. Tap on the notification "USB for…". From the list, choose "Transfer files."
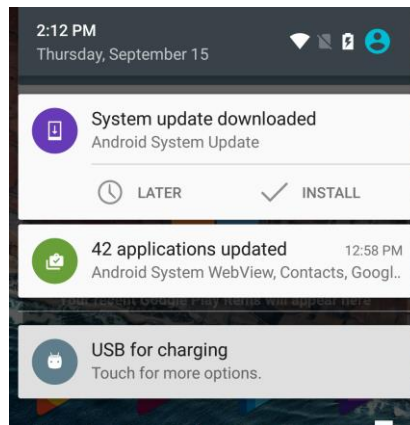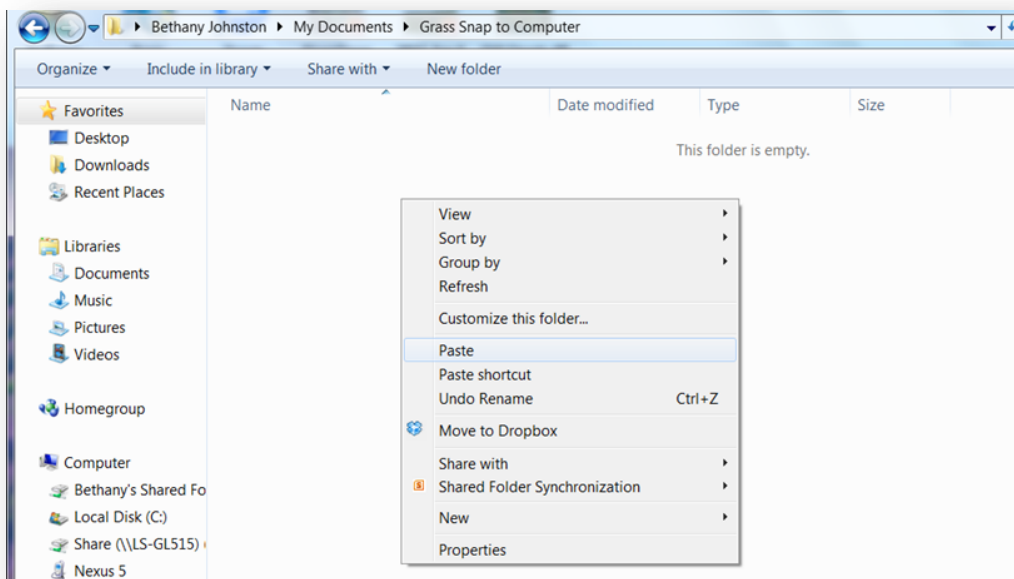

D) A file transfer will open on your computer. (If not, under "My Computer", click on your smart device (just like you would a flash drive", then "internal storage".

E) Open the Grass Snap folder. Select your files and COPY.
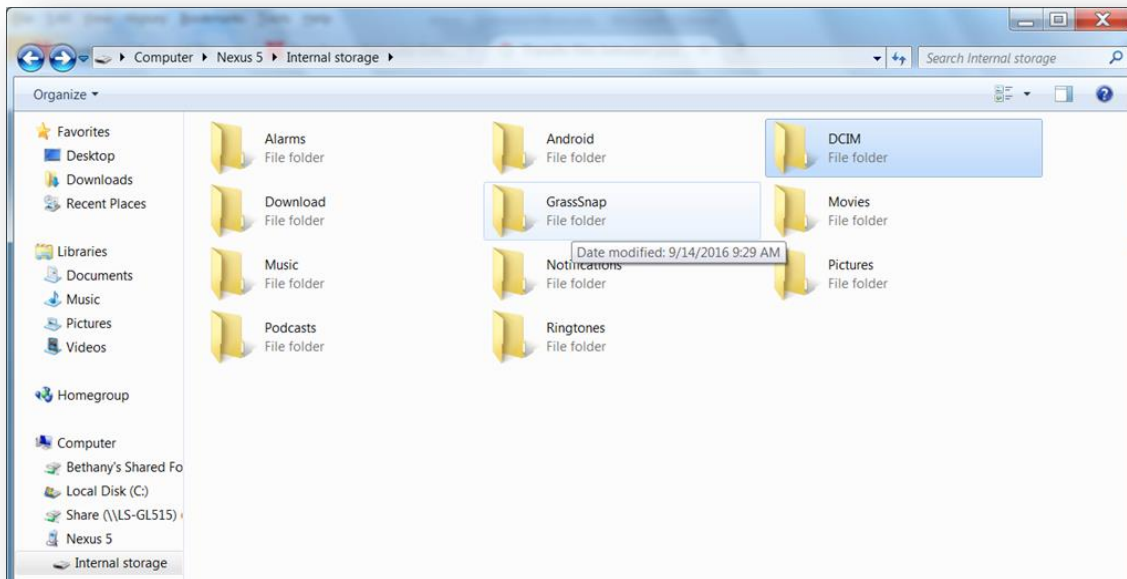
F) Create a folder on your computer for your files. (I created a folder called "GrassSnap to Computer".)
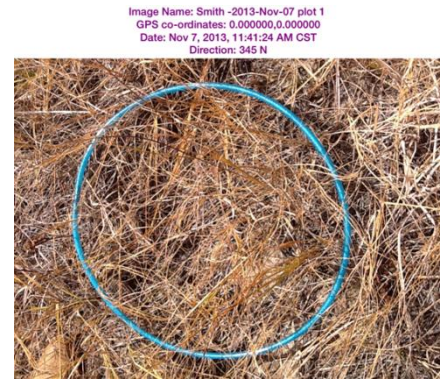Open the folder and PASTE in the files you selected.

G) Now that you are done, eject your device and unplug the USB cable.

Using your Collected Data

Monitoring grasslands provides valuable information, if we choose to use it. Data collected over multiple years helps managers decide if their grazing practices are headed in the right direction.

Photographs are good reminders of what the year looked like. The data also secures precipitation amounts, grazing dates, and how much grass was left after grazing. Looking over multiple years at the same location allows you to view changes. No two years of grass production is the same. Monitoring makes us focus on what we have, and helps us look ahead. Decisions we make this year will impact the health and production of the grass next year.

Image Name: Smith -2013-Nov-07 plot 1
GPS co-ordinates: 0.000000,0.000000
Date: Nov 7, 2013, 11:41:24 AM CST
Direction: 345 N

Below is advice from two rangeland specialists on what to do with your photo-point monitoring data:

> *"I think a few things they should be looking for are trends (multiple years); either positive or negative. It is also important to remember that change in range can happen fairly slowly.*
>
> *If changes are happening, then it is important to look back at management and try to figure out why those changes happened. Put the pieces together.*
>
> *Sometimes things like drought, hail, or other disturbance can result in visible changes fairly quickly, but stay the course through these… 2 steps forward, 1 back. That's OK.*
>
> *Key multiple years changes to look for are desirable grass species, increased cover, plant density, litter/residue, productivity, etc. Local precipitation records are also important to complement the monitoring data."*

"The photos will be good reminders of what the year looked like. The data should be able to give a ranch manager a range of production potential and what the plants are on their place compared to what it should be. With time they will be able to make their own stocking rate; which is what they are really after (proper stocking rate keeps the land productive). They already know that each year does not have the same grass production, but they'll never have a handle on what that amount is without the collected data. After a while they will really pay attention to healthy plants and fall precipitation. They will really learn best how to stock and when to set the "trigger points" of when to increase, or more likely to decrease, animals based on rainfall, hail, grasshoppers, early frosts."

If Grass Snap has been helpful in your monitoring operation, we would appreciate your feedback and comments (send to **bjohnston3@unl.edu** or fill out "Feedback" on the app).