

Please interrupt me with questions



Monitoring for Beavers

Our objectives:

- Know where beavers are living.
- Map beaver built structures.
- Track activity and structures over time.



What are we looking for?

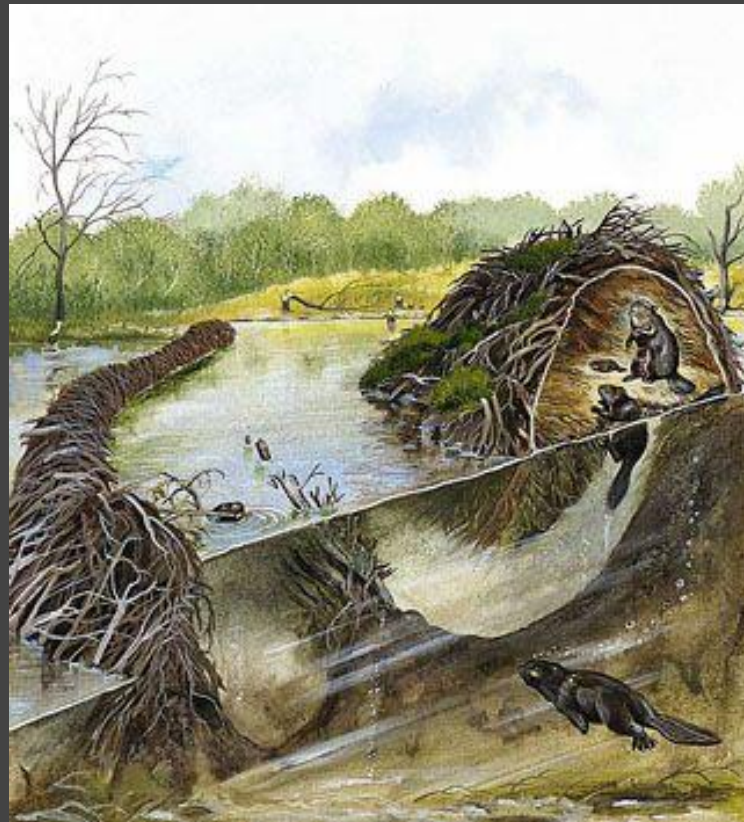
The chances of you seeing actual beaver are pretty low! However, what really matters to us is how they are changing the landscape. If you want to see a beaver, visit a site EARLY in the morning or at DUSK.

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BEAVER DAMS

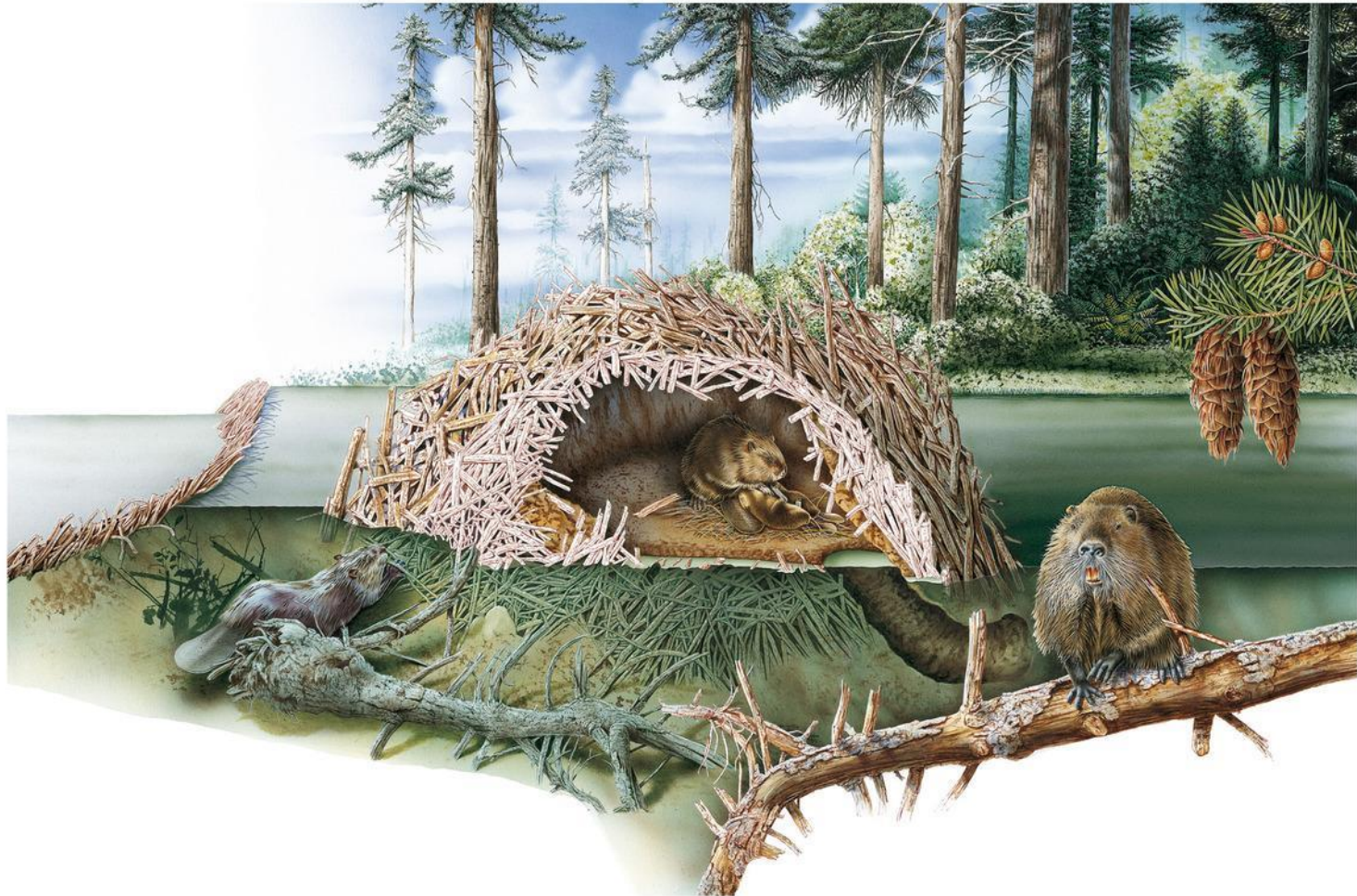
BEAVER LODGES

Other signs...





# Beaver Dams and Lodges





# Beaver Dams - out in open wilderness





# Beaver Dams - in the middle of the city





# Beaver Dams - in the middle of the city





# Beaver Dams (viewing from upstream)





# Beaver Dams (viewing from downstream)





# Beaver Lodges





# Beaver Lodges





# Beaver Lodges

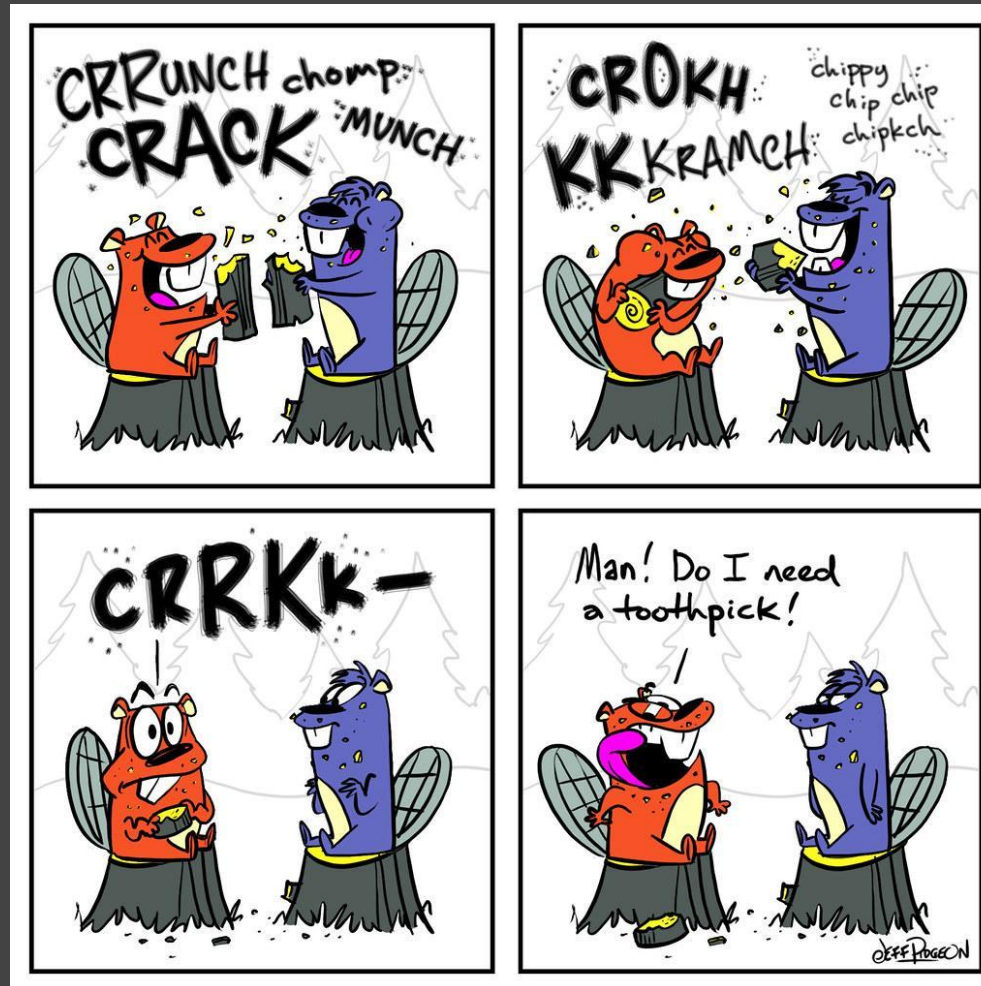




# Beaver Lodges

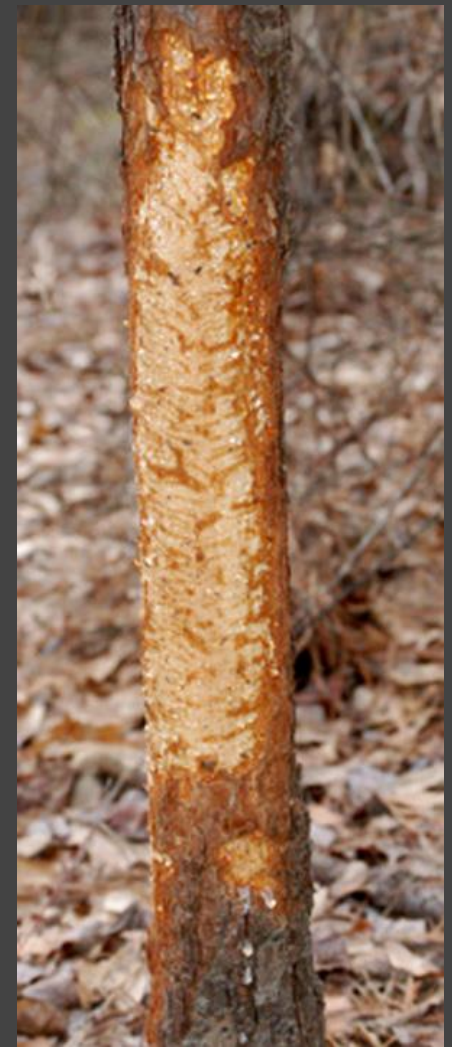


# Signs of Beaver - not part of the protocol, but good to take note!





# Signs of Beaver - Chews





# Signs of Beaver - Chews



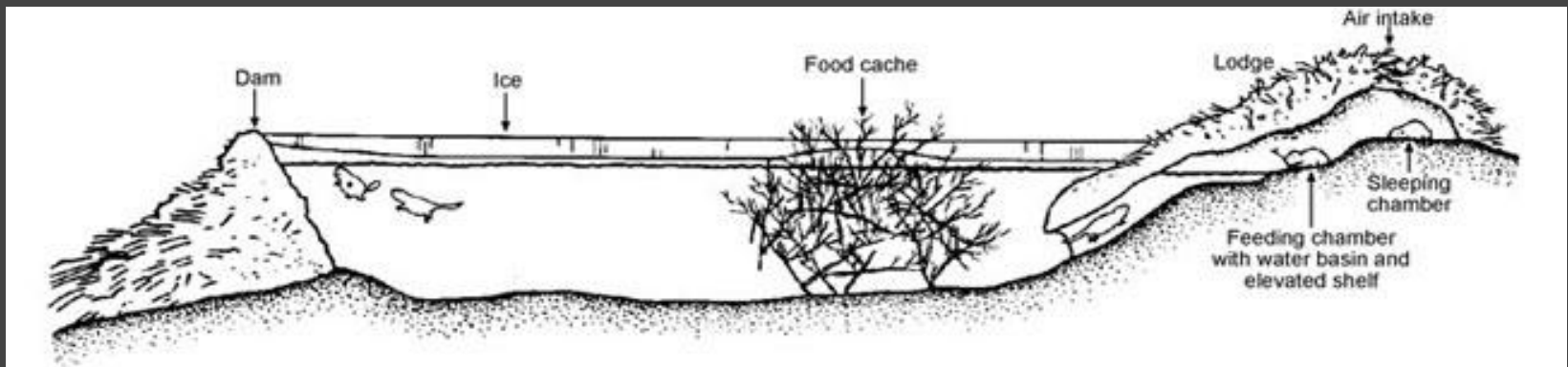


# Signs of Beaver - slides





# Signs of Beaver - cache





# Signs of Beaver - freshly cleaned sticks





# Beaver Lodges





# Flow structures



- Designed to control water levels in areas with active beavers
- Pipes, cages and fencing may be found in streams/ponds
- Please do not disturb! These are installed to reduce human/beaver conflicts.



Take out your Protocols!



# Collecting Data



1. Single observations while you're out and about
  1. Formal survey for an entire stream reach



# Survey Protocol. Gear

★ = we can provide

| Gear for the survey:                 |                                       | Gear for you:          |                          |
|--------------------------------------|---------------------------------------|------------------------|--------------------------|
| USING PAPER:                         | USING A TABLETPHONE:                  |                        |                          |
| - clipboard<br>★                     | - activated cellular/GPS<br>★         | - waders or boots<br>★ | - hat and sunglasses     |
| - camera, whiteboard, dry erase<br>★ | - camera on phone/tablet enabled<br>★ | - backpack             | - water and snack        |
| - map and sharpie/pencil<br>★        | - whiteboard, dry erase pen<br>★      | - long pants and shirt | - optional walking stick |
| - datasheet and pencil<br>★          | - App loaded, logged-in<br>★          | - dry clothes in car   |                          |



# Arrive at your site PREPARED

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1. Dress for the weather
2. Wear appropriate footwear
3. Bring a backpack with a snack and water.
4. Polarized sunglasses help reduce glare in the sun!





# Survey Protocol. Starting Survey

## *Starting survey:*



1. Orient yourself with your map and plan a route.
1. Fill out date, observers, and site name (unit or stream-mile if needed).
1. Go to starting point and record START on map (or log START on App).







**Amphibian Egg Mass Survey  
Central Hedges Creek  
Tualatin, Oregon**

-  City of Tualatin Property
-  TWC Preserve or Easement Boundary

Feet  
0 105 210 420  
Grid and Projection: UTM Zone 10, NAD83  
Imagery: July 2010



Feb 2016



# Survey Protocol. Starting Survey

## *During survey:*

1. Avoid going in the stream and stirring up sediment.
1. Move slowly and methodically **up-stream**. Go a little ways up smaller streams that flow into the main-stream if possible. Stay on the map, within the boundaries of the property.





# Safety Lesson

1. Watch where you step and slowly lower yourself into water or mud.
2. Be careful around blackberry.
3. Remember to have quick release buckles accessible at all times (for example, please do not wear coats over waders).





# Safety Lesson



If you do “overtop” in waders and can’t get your head above water, use quick release and **ditch your waders**



# Survey Protocol. Recording data.

## ***Recording data:***

1. When a dam or lodge is located, stop to record data.
2. On whiteboard, write the date & stream name (or identifying stream reach).
3. Take a photo with the whiteboard close (readable) to the photographer, include person holding board near or on top of dam/lodge for scale. Try to capture entire feature in photo.





# Survey Protocol. Recording data.

## Explanations of data categories:

1. Staff gauge. These are water level markers found at some sites.
2. Lodge present. Take a photo to identify.
3. Dam present. Take a photo to identify.
  - a. Composition - select all materials seen (Wood/Mud/Grass/Cobble).
  - b. Active Dam - fresh mud or clean sticks present. Your best guess.
  - c. Dam Intact - water is being held back by dam.
  - d. Water level difference - estimate difference, by foot.
  - e. Dam length - estimate by foot, include landforms between dam sections. See diagram.
  - f. Dam wider than channel - dam is either confined to channel, or built beyond banks (or in wetland)
  - g. Stream incised - bank walls eroded and stream bed low, “tall bank walls”.
  - h. Overflow at dam - water flowing above top of dam. See diagram.



# Paper Data Sheet

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                       |                     |                                            |             |                             |                             |                 |                                    |                        |                               |                 |                                |                       |                     |                                            |             |                             |                             |                 |                                    |                        |                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------|---------------------|--------------------------------------------|-------------|-----------------------------|-----------------------------|-----------------|------------------------------------|------------------------|-------------------------------|-----------------|--------------------------------|-----------------------|---------------------|--------------------------------------------|-------------|-----------------------------|-----------------------------|-----------------|------------------------------------|------------------------|-------------------------------|
| Date:                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                | Stream/Reach:         |                     |                                            |             | Start Time:                 |                             | End time:       |                                    |                        |                               |                 |                                |                       |                     |                                            |             |                             |                             |                 |                                    |                        |                               |
| Field notes:                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                |                       |                     |                                            |             | Observers:                  |                             |                 |                                    |                        |                               |                 |                                |                       |                     |                                            |             |                             |                             |                 |                                    |                        |                               |
| <table border="1"> <tr> <td>LOCATION LETTER</td> <td>STAFF GAUGE (in ft) if present</td> <td>LODGE PRESENT? *photo</td> <td>DAM PRESENT? *photo</td> <td>Dam composition (Wood/ Mud/ Grass/ cobble)</td> <td>Active Dam?</td> <td>Dam Intact (holding water)?</td> <td>Water Level Difference (ft)</td> <td>Dam Length (ft)</td> <td>Is the dam wider than the channel?</td> <td>Is the stream incised?</td> <td>Is there overflow at the dam?</td> </tr> </table> |                                |                       |                     |                                            |             |                             |                             |                 |                                    |                        |                               | LOCATION LETTER | STAFF GAUGE (in ft) if present | LODGE PRESENT? *photo | DAM PRESENT? *photo | Dam composition (Wood/ Mud/ Grass/ cobble) | Active Dam? | Dam Intact (holding water)? | Water Level Difference (ft) | Dam Length (ft) | Is the dam wider than the channel? | Is the stream incised? | Is there overflow at the dam? |
| LOCATION LETTER                                                                                                                                                                                                                                                                                                                                                                                                                                                    | STAFF GAUGE (in ft) if present | LODGE PRESENT? *photo | DAM PRESENT? *photo | Dam composition (Wood/ Mud/ Grass/ cobble) | Active Dam? | Dam Intact (holding water)? | Water Level Difference (ft) | Dam Length (ft) | Is the dam wider than the channel? | Is the stream incised? | Is there overflow at the dam? |                 |                                |                       |                     |                                            |             |                             |                             |                 |                                    |                        |                               |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                | Y / N                 | Y / N               | Wo / Mu / Gr / Co                          | Y / N / ?   | Y / N / ?                   |                             |                 | Y / N / ?                          | Y / N / ?              | Y / N / ?                     |                 |                                |                       |                     |                                            |             |                             |                             |                 |                                    |                        |                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Lat: 4 .....                   |                       |                     |                                            | Notes       |                             |                             |                 |                                    |                        |                               |                 |                                |                       |                     |                                            |             |                             |                             |                 |                                    |                        |                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Long: -12 .....                |                       |                     |                                            |             |                             |                             |                 |                                    |                        |                               |                 |                                |                       |                     |                                            |             |                             |                             |                 |                                    |                        |                               |
| B                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                | Y / N                 | Y / N               | Wo / Mu / Gr / Co                          | Y / N / ?   | Y / N / ?                   |                             |                 | Y / N / ?                          | Y / N / ?              | Y / N / ?                     |                 |                                |                       |                     |                                            |             |                             |                             |                 |                                    |                        |                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Lat: 4 .....                   |                       |                     |                                            | Notes       |                             |                             |                 |                                    |                        |                               |                 |                                |                       |                     |                                            |             |                             |                             |                 |                                    |                        |                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Long: -12 .....                |                       |                     |                                            |             |                             |                             |                 |                                    |                        |                               |                 |                                |                       |                     |                                            |             |                             |                             |                 |                                    |                        |                               |



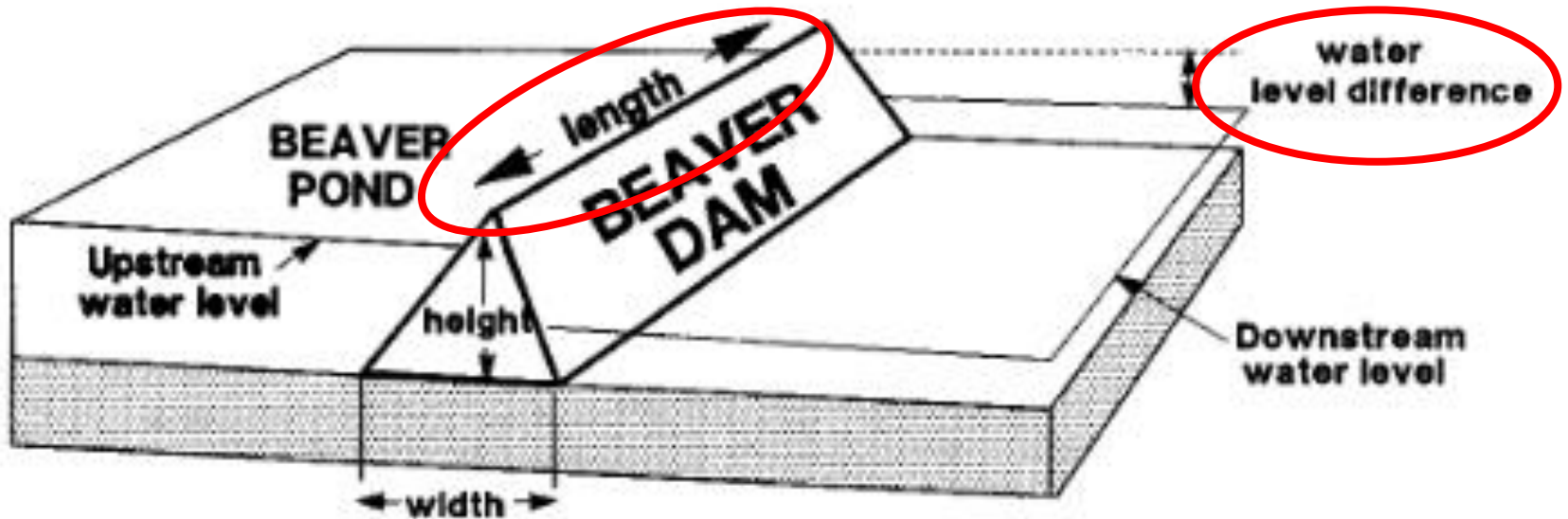
This is a Staff Gauge (it marks water levels)



**TRY TO CONVERT TO FEET - IF YOU CAN'T, LET IT GO!**



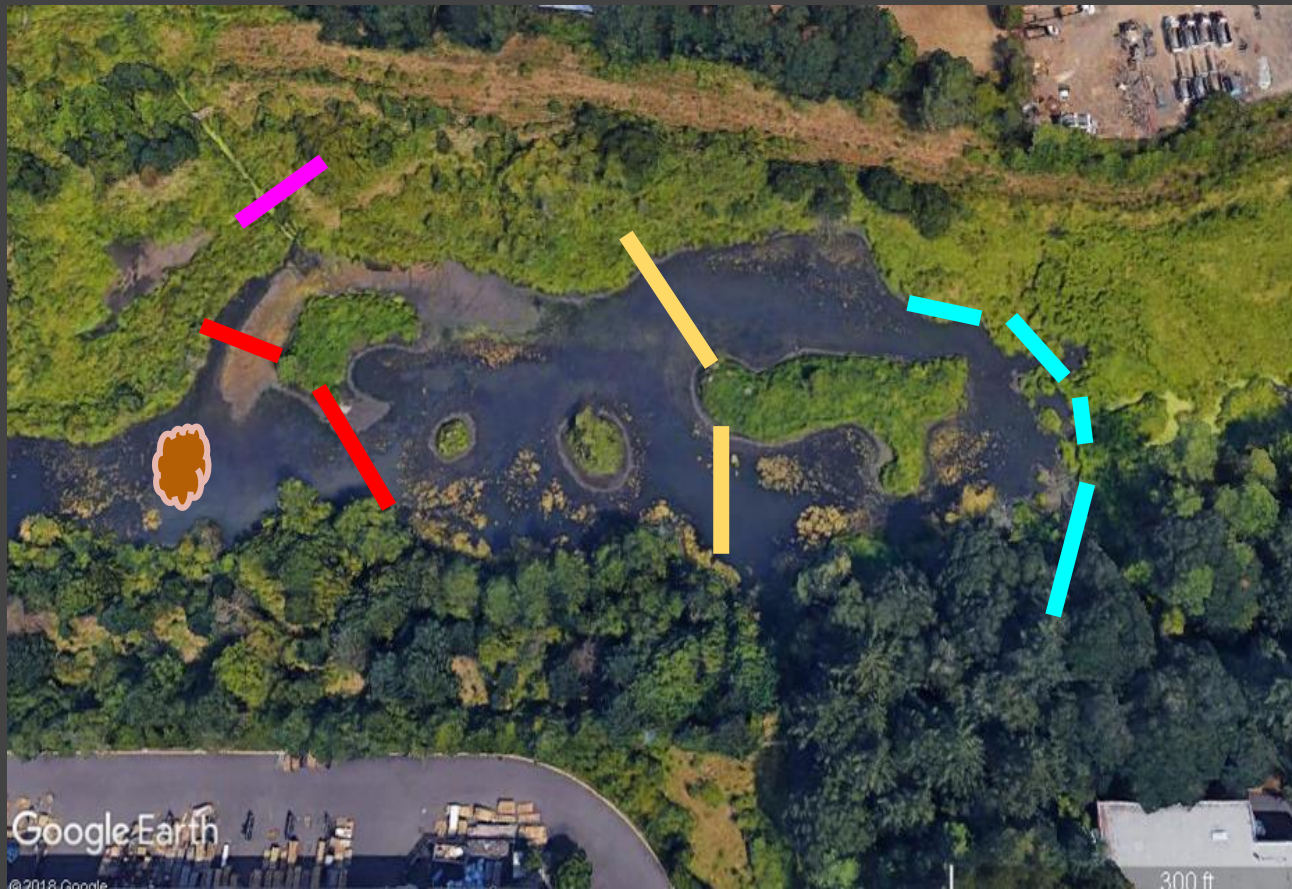
# Survey Protocol. Recording data.





# What counts as a dam?

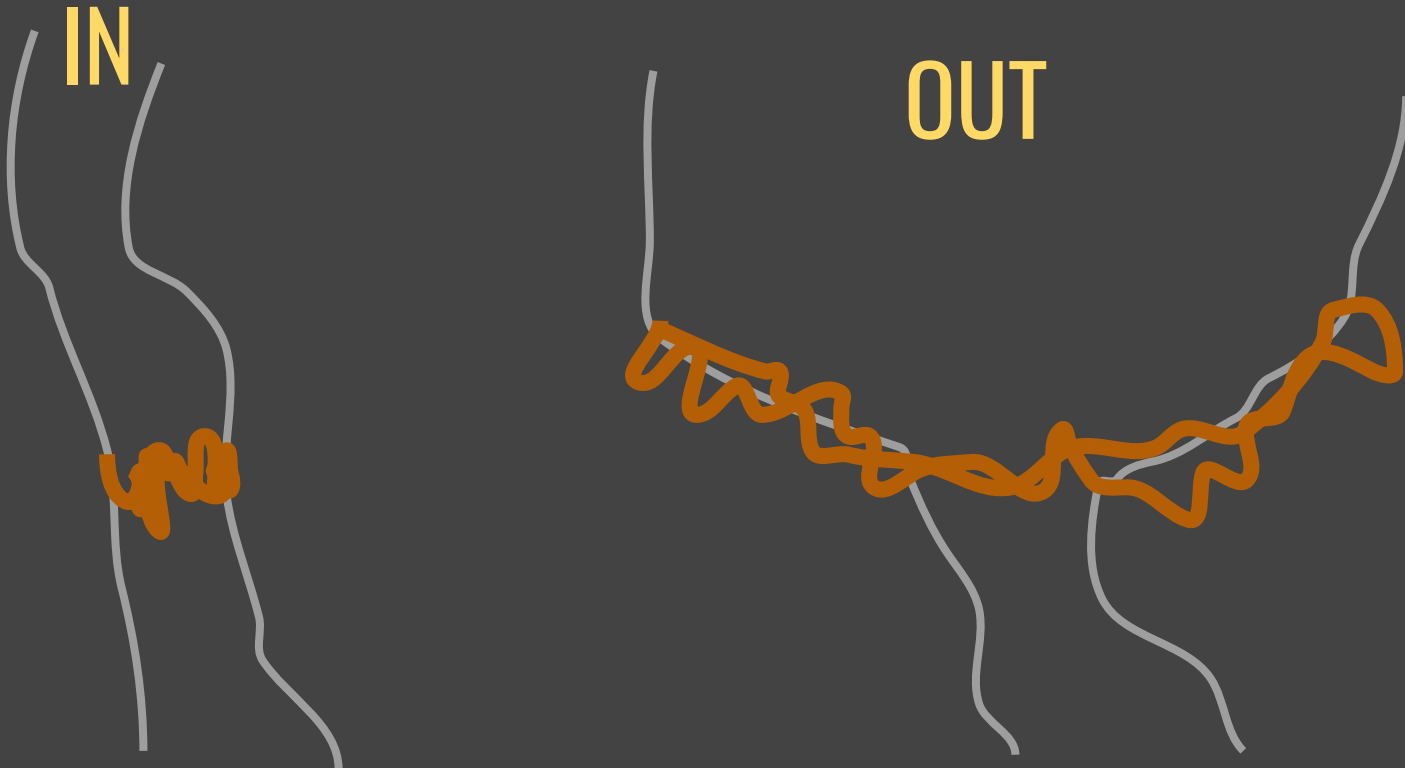
1. Intact or not intact, holding water or not.
2. Multiple dam sections count as one dam if they're holding water at the same level





# Survey Protocol. Is the dam wider than the channel?

1. The dam is within the banks of the stream
2. The dam is out in the floodplain, part of a wide wetland, the pond is wider than the stream below.





# Survey Protocol. Recording data.

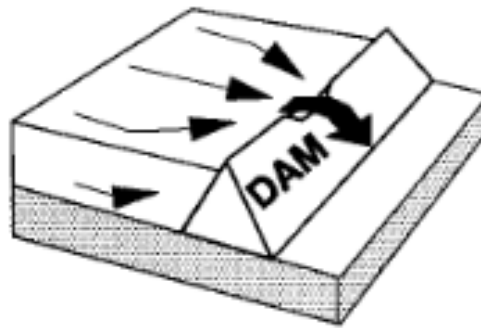


# Survey Protocol. Types of flow.

**OVERFLOW**



**GAPFLOW**



**THROUGH FLOW**



**UNDER FLOW**





# How to take photos?





# How to take photos?





# How to take photos?





# How to take photos?





# How to take photos?





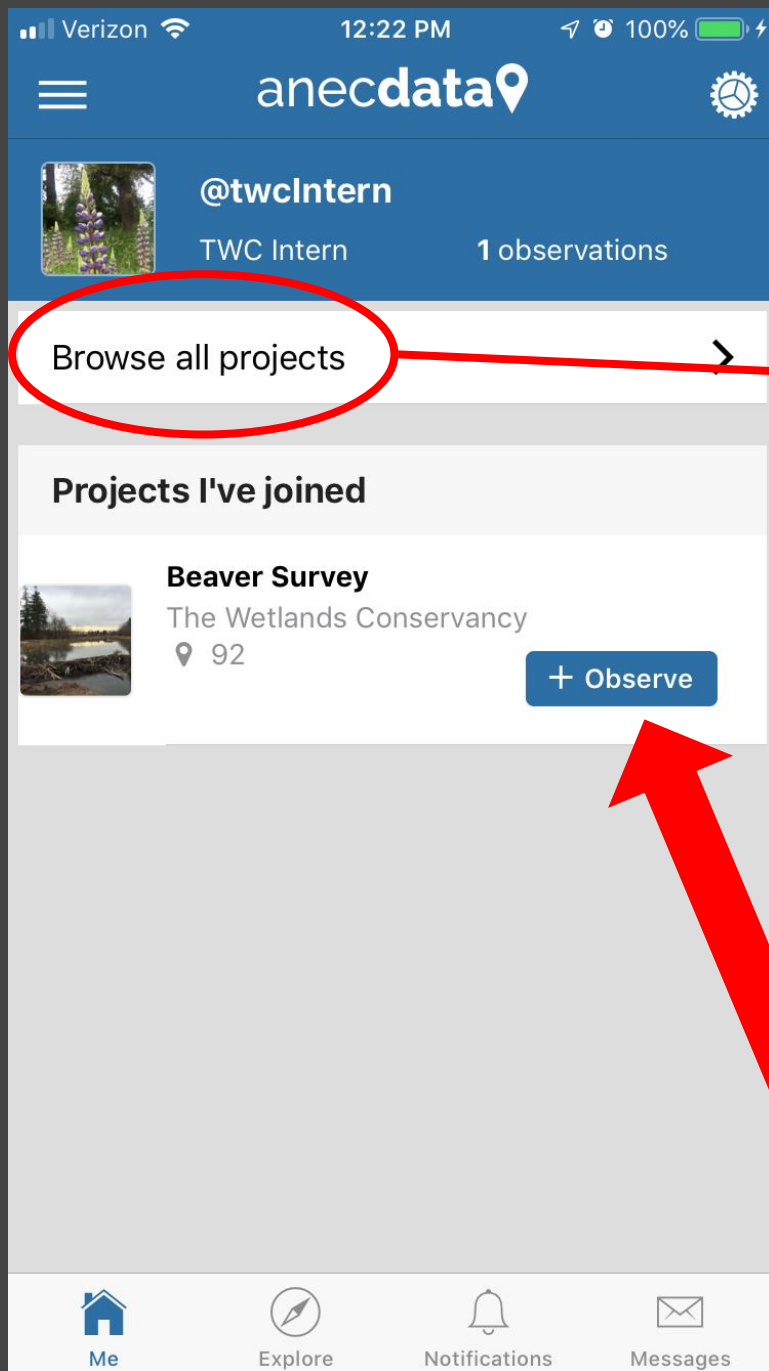
# How-To Anecdata

\*Open the app from your phone.

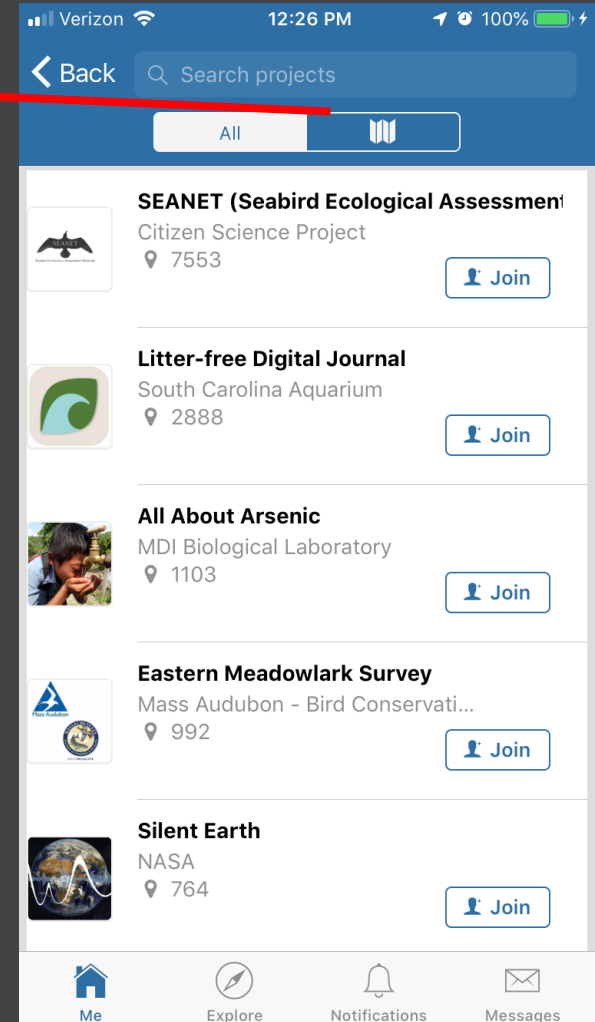
\*Only one person per survey will need to record data.







# How-To Anecdota





# How-To Anecdata

Automatically finds your location  
and enters the date and the time!

Generally ignore this!

The screenshot shows the Anecdata app interface. At the top, a green header bar contains a back arrow, the word 'Observe', and a 'Save' button. Below the header, a profile section for 'Beaver Survey' includes a circular profile picture and the survey name. A location entry card displays a pin icon, the address '4640 SW Macadam Ave, Portland, OR, ...', coordinates 'Lat: 45.489 | Lng: -122.672 | Accuracy: 65m', and a right-pointing arrow. Below this, a date and time entry card shows a calendar icon and 'Jul 17, 2019 1:25pm'. A red arrow points from the text 'Automatically finds your location and enters the date and the time!' to the location entry card. Below the date/time card is a 'DATA POINT INFORMATION' section with a trash icon. It contains two radio button options: 'Start Location' and 'End Location'. Below these is a 'Location Letter' field. A text prompt 'Begin data entry below for this location' is followed by a 'Staff gauge level' input field with a unit of 'ft'. At the bottom of the form is an 'Add a photo' button with a camera icon. The bottom navigation bar features four icons: 'Me' (house), 'Explore' (compass), 'Notifications' (bell), and 'Messages' (envelope).

Verizon 1:26 PM 69%

< Back Observe Save

Beaver Survey

4640 SW Macadam Ave, Portland, OR, ...  
Lat: 45.489 | Lng: -122.672 | Accuracy: 65m

Jul 17, 2019 1:25pm

DATA POINT INFORMATION

☐ Start Location

☐ End Location

Location Letter

Begin data entry below for this location

Staff gauge level ft

Add a photo

Me Explore Notifications Messages

# How-To Anecdota

All about the Dam!

Verizon 1:26 PM 69%

< Back Observe Save

Staff gauge level ft

☐ Lodge?

☐ Dam?

The following questions pertain only to DAMS.

Dam composition includes which of the following?

☐ Wood

☐ Grass


☐ Mud

☐ Cobble

Active Dam? Choose ▾

Dam intact, holding water? Choose ▾

Water Level Difference ft

 Add a photo

Me Explore Notifications Messages

Y/N/? .

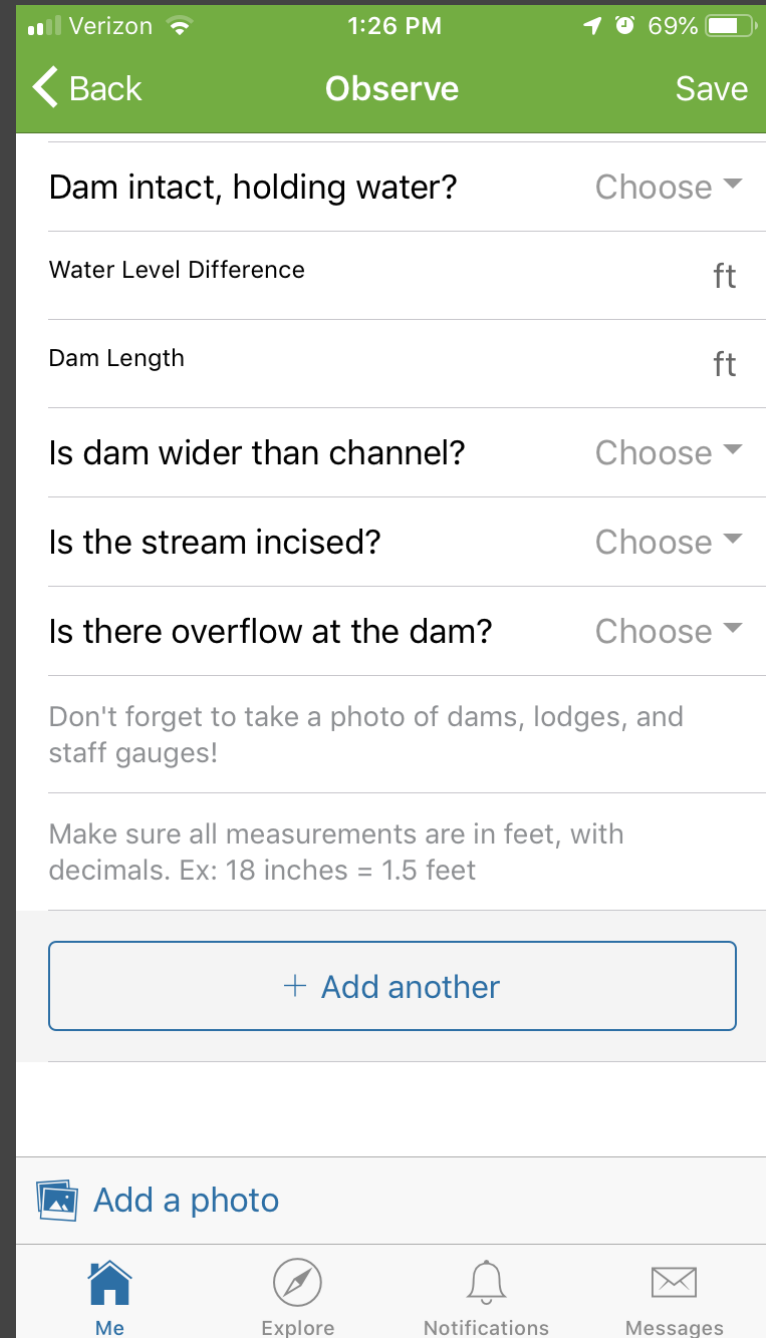


# How-To Anecdota

All about the Dam!

Remember: measurements  
are in feet. No metric units,  
no inches. Estimate.

18 inches = 1.5 feet



Verizon 1:26 PM 69%

< Back Observe Save

Dam intact, holding water? Choose ▾

Water Level Difference ft

Dam Length ft

Is dam wider than channel? Choose ▾

Is the stream incised? Choose ▾

Is there overflow at the dam? Choose ▾

Don't forget to take a photo of dams, lodges, and staff gauges!

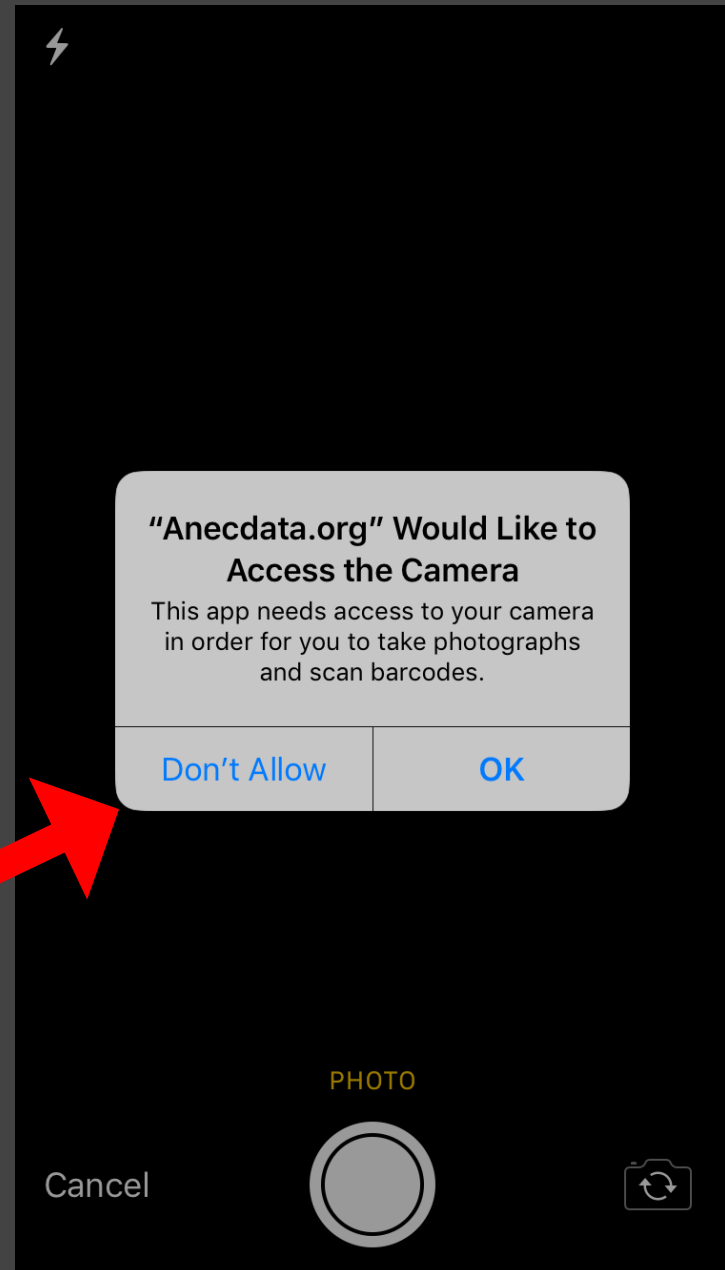
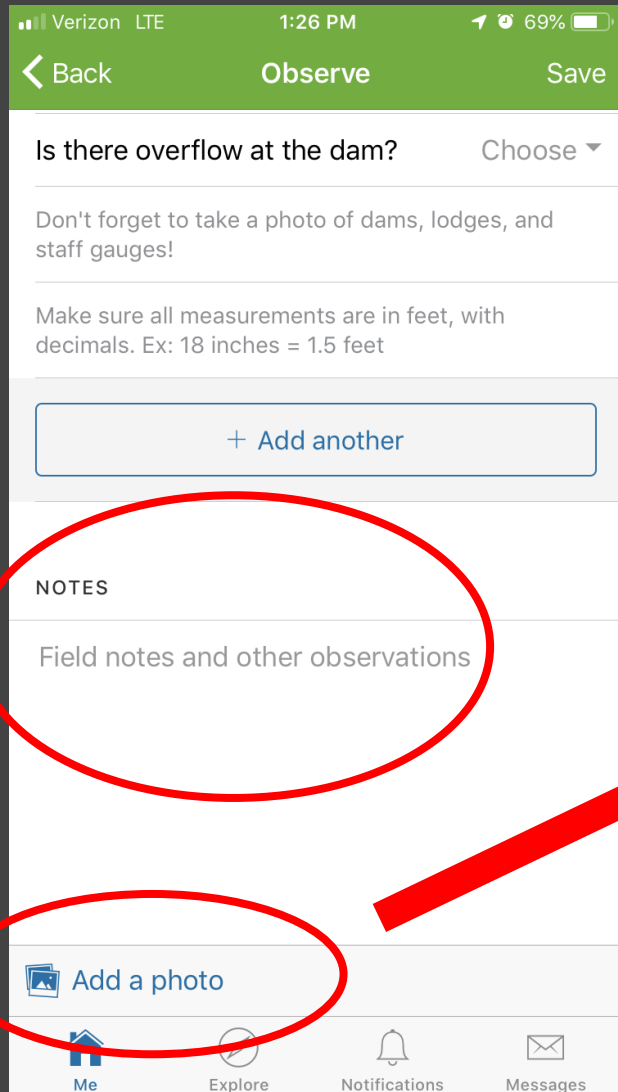
Make sure all measurements are in feet, with decimals. Ex: 18 inches = 1.5 feet

+ Add another

Add a photo

Me Explore Notifications Messages

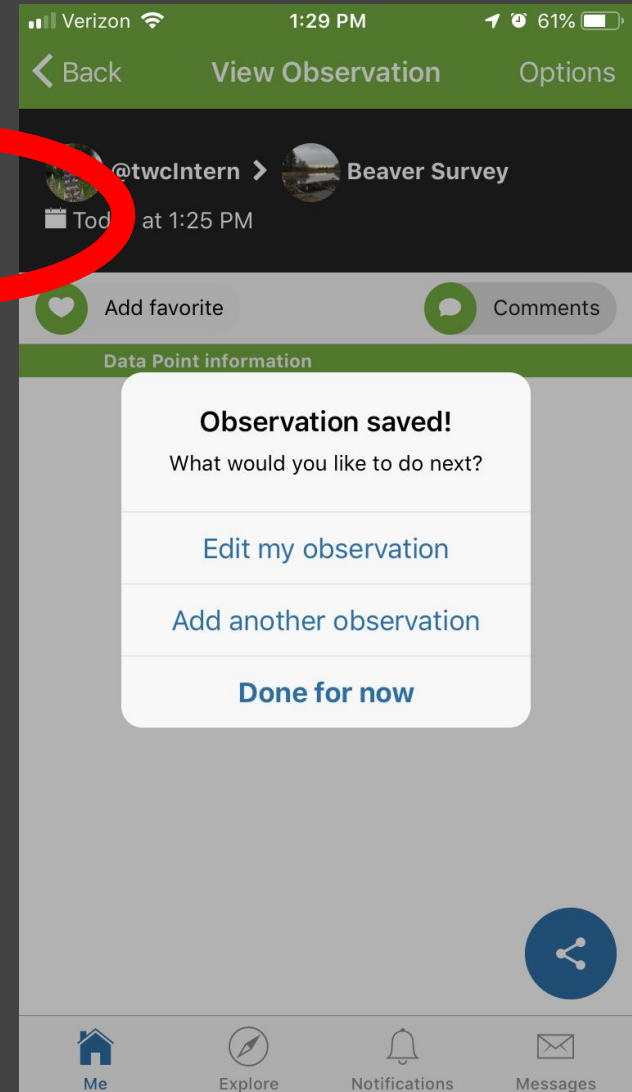
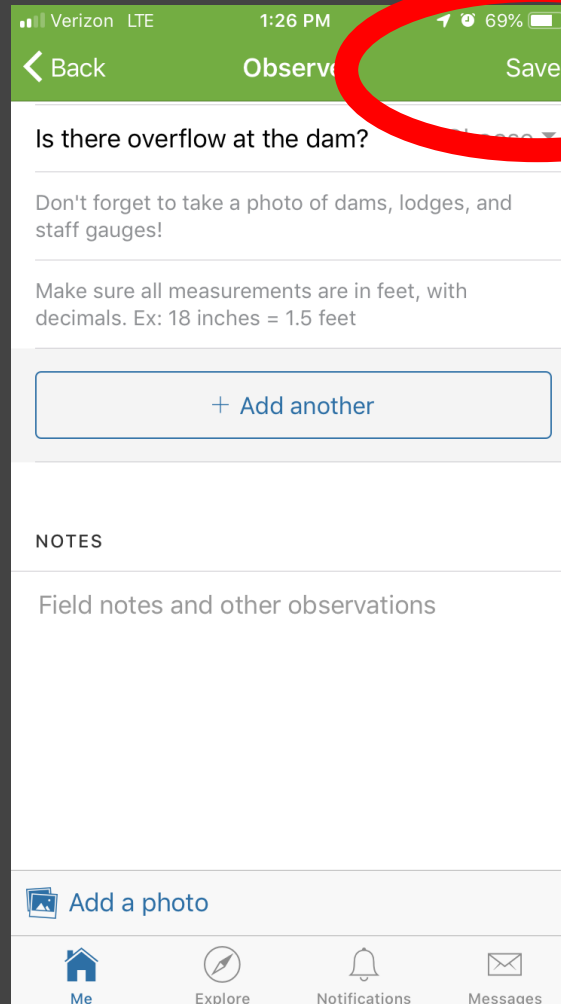
# How-To Anecdata





# How-To Anecdota

Take photo,  
hit SAVE

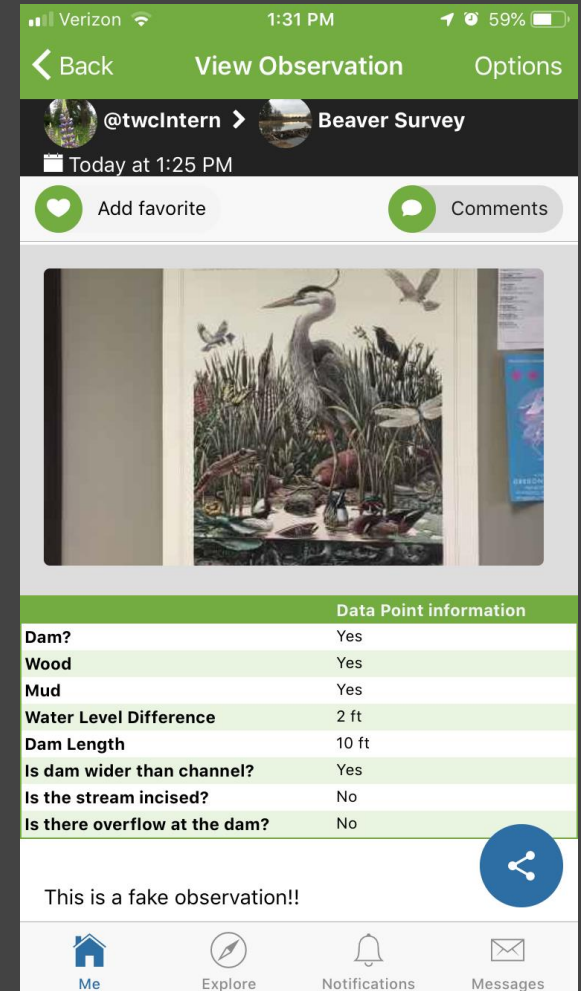
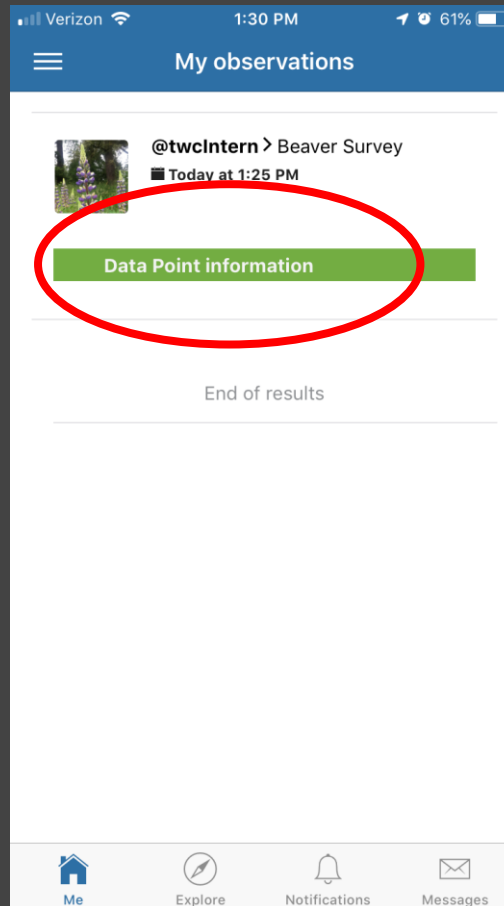
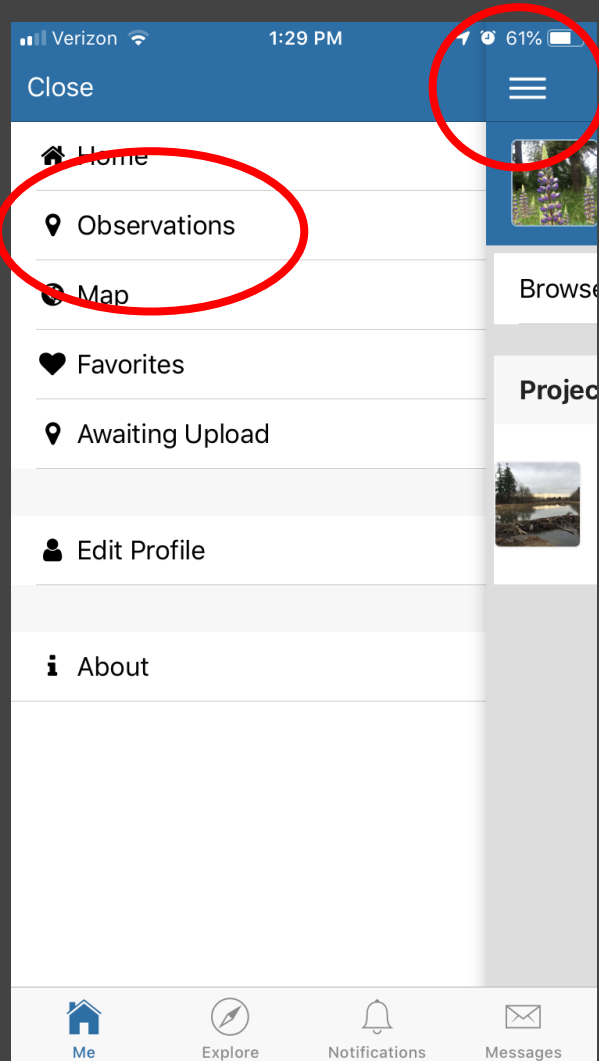


How-To Anecdotal

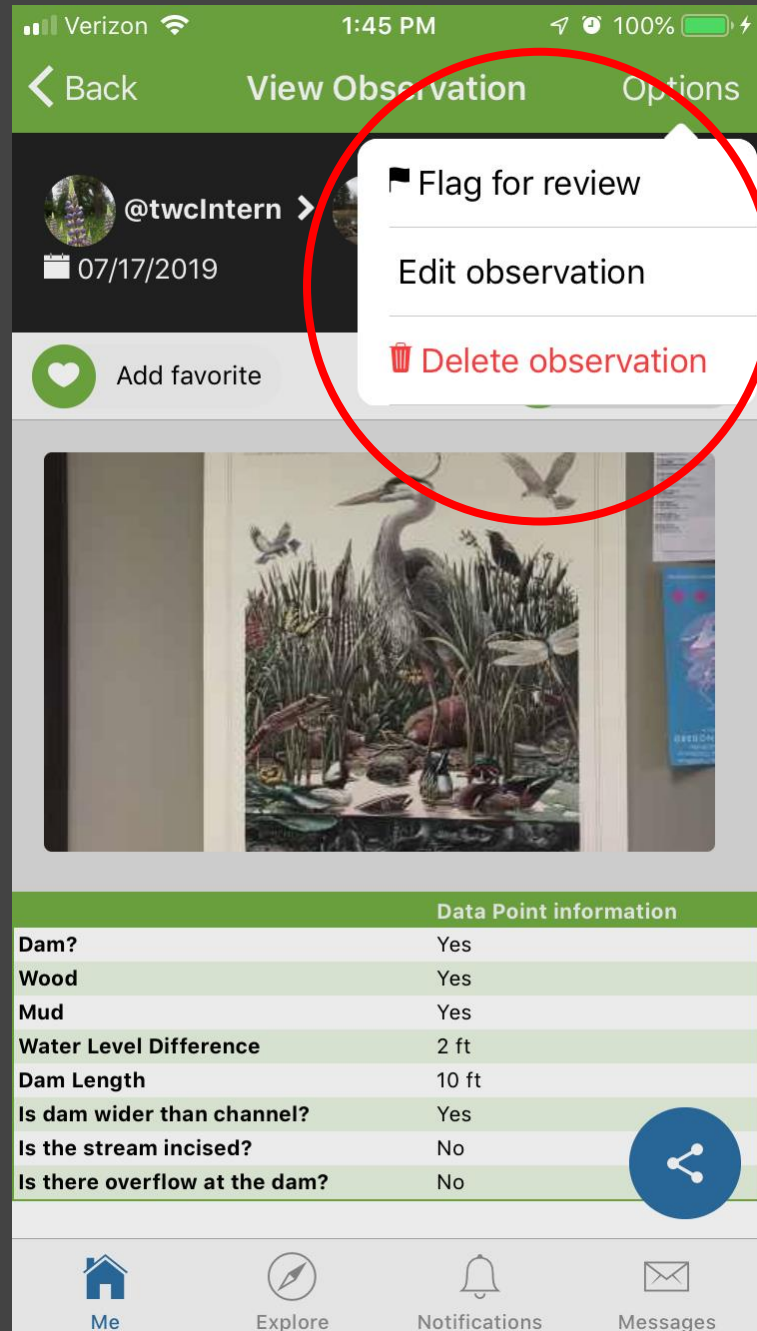
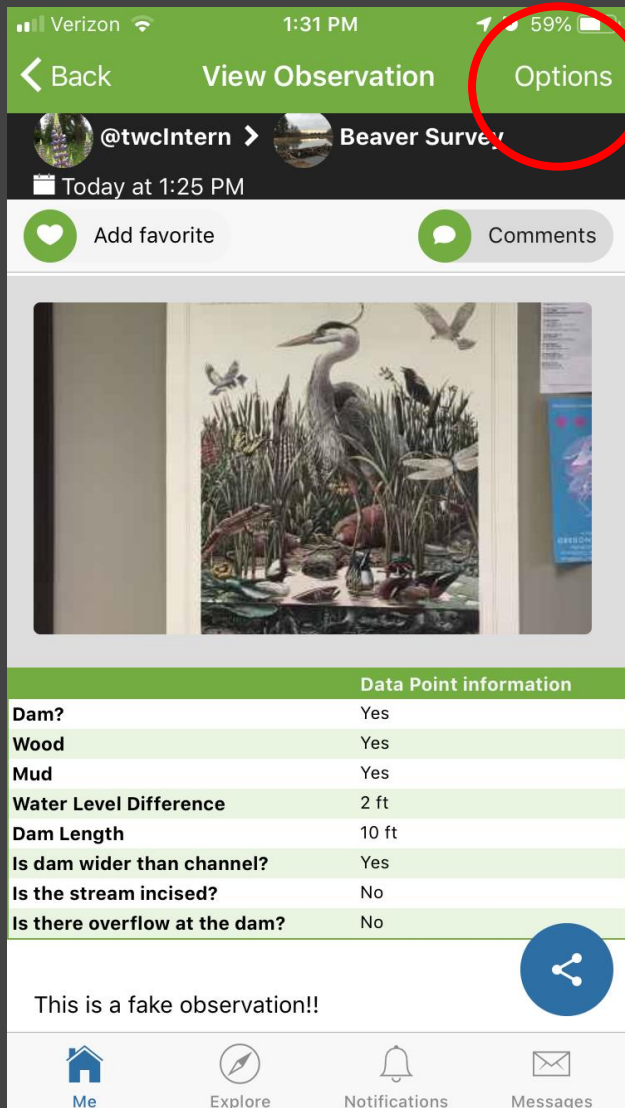
**Boom! You've made an  
observation!**



# How-To Anecdota



# How-To Anecdata





# Survey Protocol. Ending Survey

After you finish your survey or if you need to leave:

1. Record any extra notes/observations.
2. Leave site and get home safely!



Any questions?

\*we'll email you with next steps

