

# Good luck finding that plot again: data reproducibility in field ecology.

C. A. Cole, Ph.D.

[cac13@psu.edu](mailto:cac13@psu.edu)

E+D: Ecology + Design

Department of Landscape Architecture

# Error abounds - bench science data envy

- ▶ Journal papers make field biology look neat and clean
- ▶ Could not be further from the truth...or perhaps it's just me

# Water level recorders - big and tall...



- ▶ Tussey Ridge
  - ▶ I-99 construction. GPS'd the sites of six wetlands. Water level recorders in each.
  - ▶ Could not find two sites consistently. Eventually...never got back to one.
  - ▶ Where was the site?
  - ▶ Access changed due to road construction



# Latitude and longitude

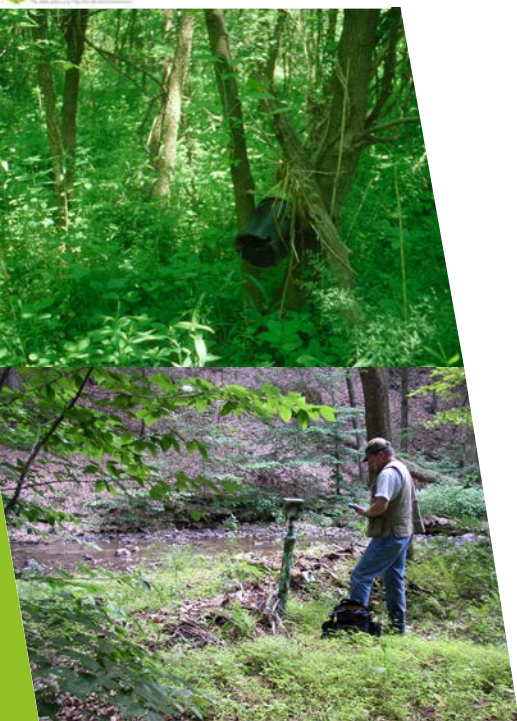
- ▶ Research project to assess wetland mitigation sites
- ▶ Collected federal and state permit files. Supposed to have site location data.
- ▶ Often, the lat/long coordinates led to absolutely nothing aquatic.
- ▶ Recent surface mining permit
  - ▶ Someone's yard





# Getting to a site to collect the data

- ▶ Ice and snow.
  - ▶ Water level recorders would wrap every 524 readings. Easy to lose data in winter.
  - ▶ Led me to try some stupid driving tricks to get to iced-in sites. Spoiler - data is not worth your life.
- ▶ Floods
  - ▶ Could move things around drastically.





# Weather and the unexpected

- ▶ Thunderstorms
- ▶ Tornadoes
- ▶ Hail
- ▶ Earthquakes
- ▶ Tank fire, helicopter fire, machinegun fire :  
Fort Drum

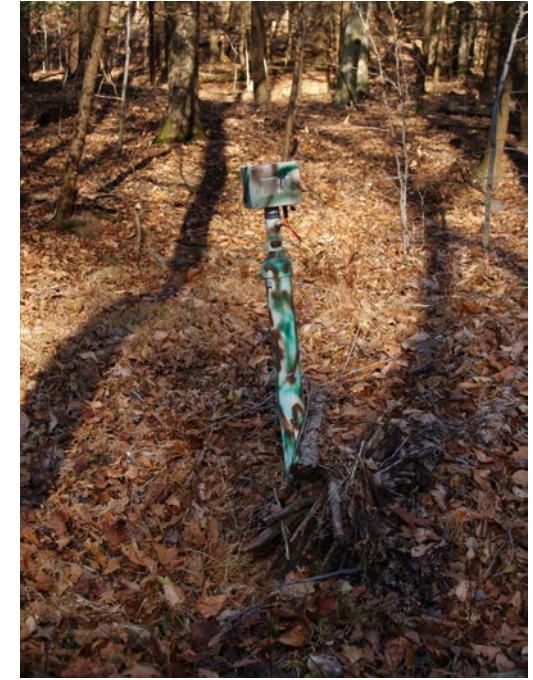




# Human intervention

- ▶ Mowing down your data
- ▶ Flagging removed
- ▶ Plots trampled





## Other sources of missing data

- ▶ Woodchuck - dining on my samples
- ▶ Bear damage



# Different people playing with the data

(data from Dr. Sarah Goslee)

## ► ECCR (*Echinochloa crus-galli*)

barnyardgrass  
barn yard grass  
barn yd grass  
barnyard gr  
barnyard  
barnyard grass  
byard grass  
barnyrd grass  
barnyd grass  
brn yd grs  
brn.yd grass

## ► STME2 (*Stellaria media*)

common chickweed  
c chick  
com chick  
c chk  
c.chick  
chickweed  
chick weed  
cmn chk  
cmn chk wd  
cmn chk weed  
cmn chkweed  
cmn chkwd  
cmn chlk  
com chickweed  
common chick  
common chck  
comm chck  
comncw

# And more...

## ► PLMA2 (*Plantago major*)

common plantain  
b pltn  
bl plantn  
bl plntn  
Bl plntn  
bl plnt  
brd plantain  
brd plnth  
brd plntn  
brd plhtn  
brd plntr  
brd pltn  
broad plantain  
plantain broad  
Broad Plantain  
Broad leaf Plantain  
Broad-leaf Plantain  
BRoadleaf plantain  
broadleaf plantain  
boradleaf plantain  
broadleaf plantian  
broad leaf plantain  
broad leafed plantain  
braodleaf plantain  
btplntn

## ► LOPE (*Lolium perenne*)

perennial ryegrass  
pernnial ryegrass  
perrenial ryegrass  
perennial rye  
pernn ryegrass  
perenial rye  
perrenial rye  
perennial rye grass  
perrenial rye grass  
p rye  
p. rye  
per rye  
per ryegrass  
rye grass  
peren rye  
prg  
PRG  
rye  
ryegrass

# When things are really small...or not in flower





# Unexpected stuff

