Instructors
Dr. Jonathan Pauli
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221 Russell Laboratories

Dr. Scott Lutz
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A231 Russell Laboratories

Office Hours: By appointment

Time and Location
Lecture Monday 8:45-10:45 AM (104, Russell Labs)
Lab Tuesday-Thursday 7:45-10:45 AM (A228, Russell Labs, unless specified otherwise)

Overview
FWE561 is a survey of the techniques and methodologies that wildlife biologists use to conduct research, and make management decisions. Biologists have many techniques in their 'toolbox'. We will discuss current techniques we think you are likely to use early in your career. A biologist's choice of a technique is dependent on the question they're answering and hypothesis they're testing, but almost always subject to logistical constraints.

We have organized the course using a week-by-week approach, highlighting both traditional and "cutting-edge" techniques used to study free-ranging animal populations. A highlight of the course is the emphasis on pairing hands-on activities in the field with data organization and summary. Included is a detailed course syllabus that contains a description of goals, lecture and lab topics, and activities, covered each week.

Weekly Topics

Week	Date	Lecture	Instructor	Lab
1	9/2	***Classes canceled***	NA	***Classes canceled***
2	9/8	Labor Day ***Labs only, no Lecture***	JNP	Intro to course and data management -- compass, GPS, radio telemetry
3	9/15	Outside projects / GIS and GPS	JNP	ArcGIS exercise
4	9/22	Animal capture and immobilization*	JNP	Mammal captures (meet @ Bill's Woods)
5	9/28	Telemetry I	JNP	Tracking squirrels (meet @ Bill's Woods)
6	10/5	Vegetation survey*	JNP	Vegetation survey (meet @ Bill's Woods)
7	10/13	Animal behavior	JNP	Turkey observations (meet @ 0730)
9	10/19	Indices	RSL	Carnivore indices
10	10/26	Occupancy models I	RSL	Occupancy problem sets
11	11/2	Occupancy models II*	RSL	Occupancy problem sets
12	11/9	Disease ecology	GL	Necropsy
13	11/16	Non-invasive sampling	JNP	DNA analysis of carnivore scat
14	11/23	Herptile surveys	GL	Thanksgiving Break ***Lecture only, no lab***
15	12/30	Stable isotopes (SI)*	JNP	SI analysis of squirrels
16	12/7	Telemetry II*	JNP	Analysis of squirrel home ranges

*"full" lab write-up required; brief reports should be submitted for the remaining weeks (see details below)

FWE 561 Projects

1. Radio tracking squirrels*
   [*extra credit* Live captures*]
2. Vegetation Sampling
3. Stable isotope sampling
4. Canid occupancy
   [*extra credit* Cameras*]
5. Canid ID via DNA

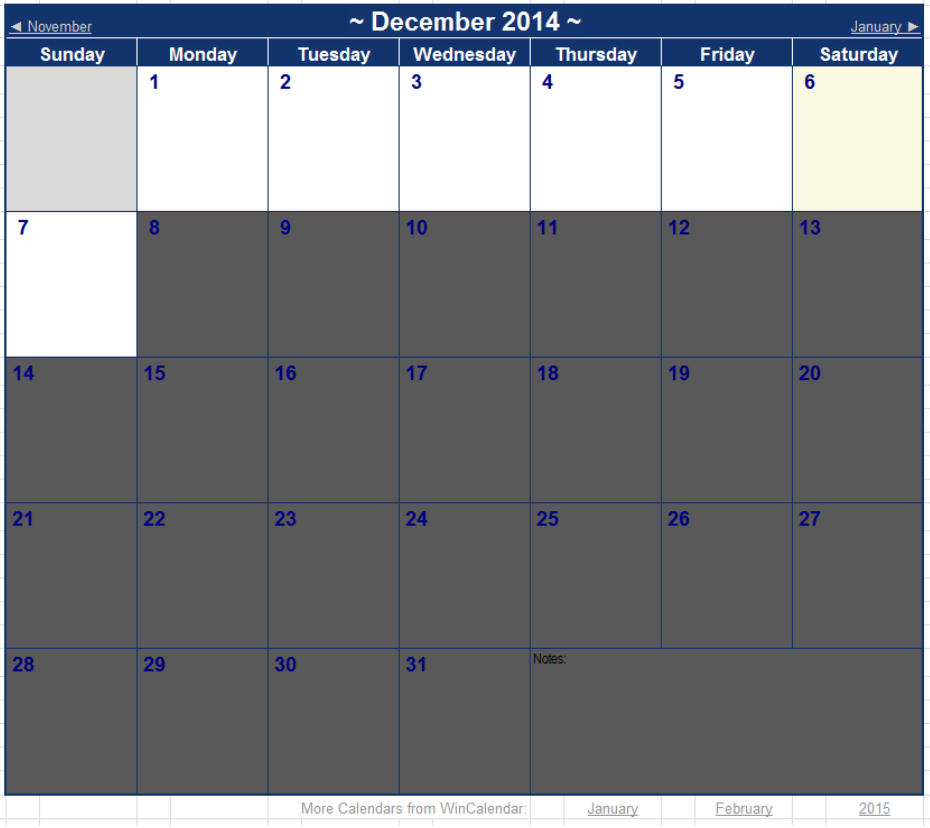
1. Squirrel radio-telemetry

You will radio-track your squirrels a minimum of 5 times during the semester and ensure that your lab's squirrel has been relocated at least 2x per week for our home range

extra credit: Live captures

- Traps will be opened by class @ 745 AM
- Some animals might be handled in the field
- Grids will be shut, and the majority of animals handled, at 4 PM on M, T, W, R

1. Squirrel radio-telemetry



◄ November | ~ December 2014 ~ | January ►

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	Notes:		

More Calendars from WinCalendar: January February 2015

SQUIRREL RELOCATION FORM

ID_____

Animal ID_____ Date_____ Time _____

Station 1 UTM: 0302182 E, 4773055 N Bearing: _____

Station 2 UTM: 0301957 E, 4773013 N Bearing: _____

Station 3 UTM: 0301905 E, 4773169 N Bearing: _____

Relocation Loc (UTM Z-15T) E_____

N_____

Collector's name _____

VISUALLY RELOCATED (Circle one) Yes No

Describe location of squirrel:

Describe Behavior:

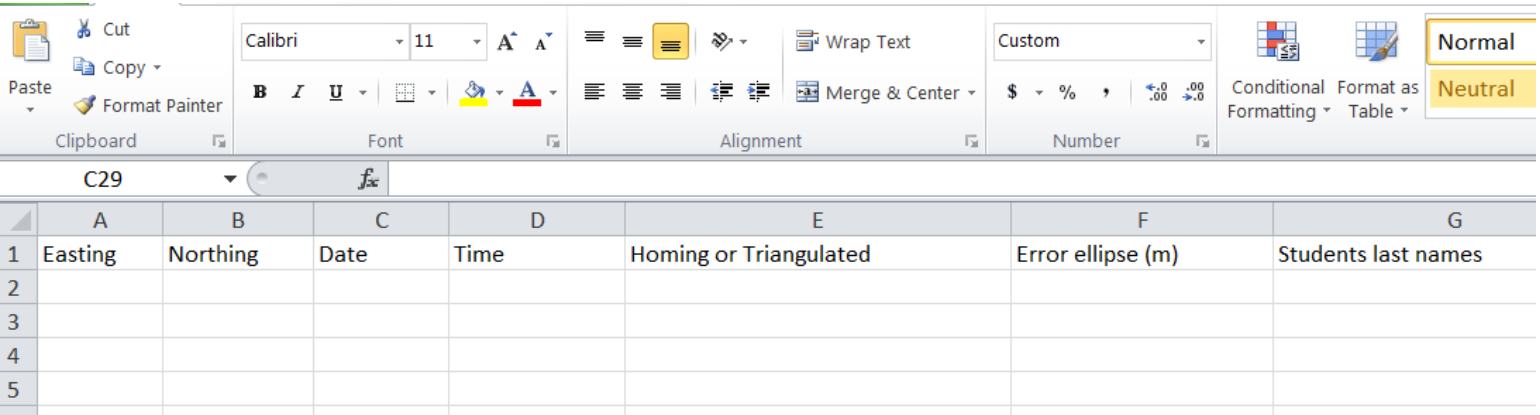
SURVIVAL (Circle one) Alive Deceased

Body Condition:

IF DECEASED:

Avian predation

Unknown Other



Cut Copy Format Painter — Paste — Clipboard

Calibri 11 — Font

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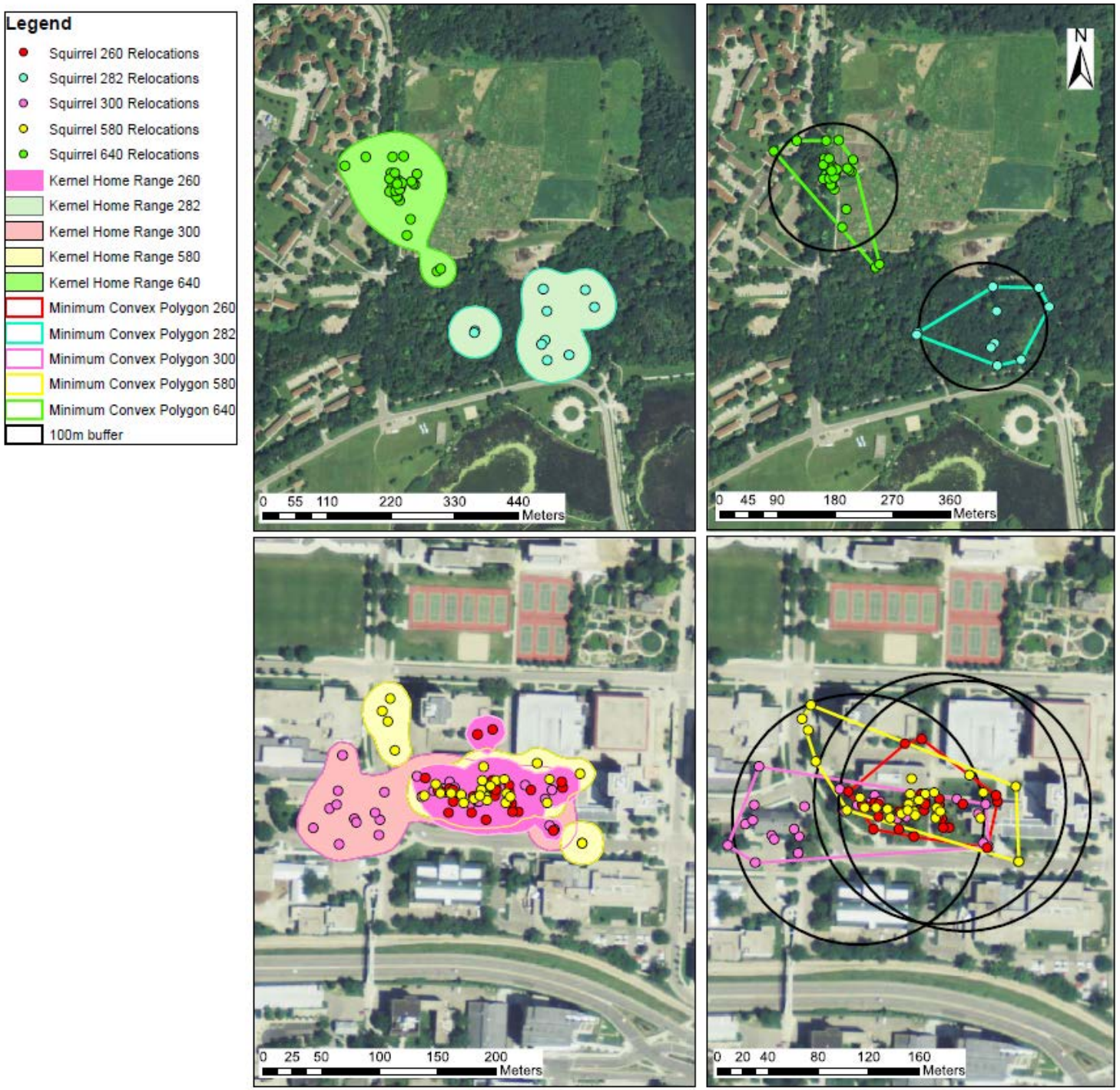
Custom — Number

Conditional Formatting Format as Table

Normal Neutral

C29

	A	B	C	D	E	F	G
1	Easting	Northing	Date	Time	Homing or Triangulated	Error ellipse (m)	Students last names
2							
3							
4							
5							


Legend
Squirrel 260 Relocations
Squirrel 282 Relocations
Squirrel 300 Relocations
Squirrel 580 Relocations
Squirrel 640 Relocations
Kernel Home Range 260
Kernel Home Range 282
Kernel Home Range 300
Kernel Home Range 580
Kernel Home Range 640
Minimum Convex Polygon 260
Minimum Convex Polygon 282
Minimum Convex Polygon 300
Minimum Convex Polygon 580
Minimum Convex Polygon 640
100m buffer
0 55 110 220 330 440
Meters
N
0 45 90 180 270 360
Meters
0 25 50 100 150 200
Meters
0 20 40 80 120 160
Meters

2. Vegetation surveys

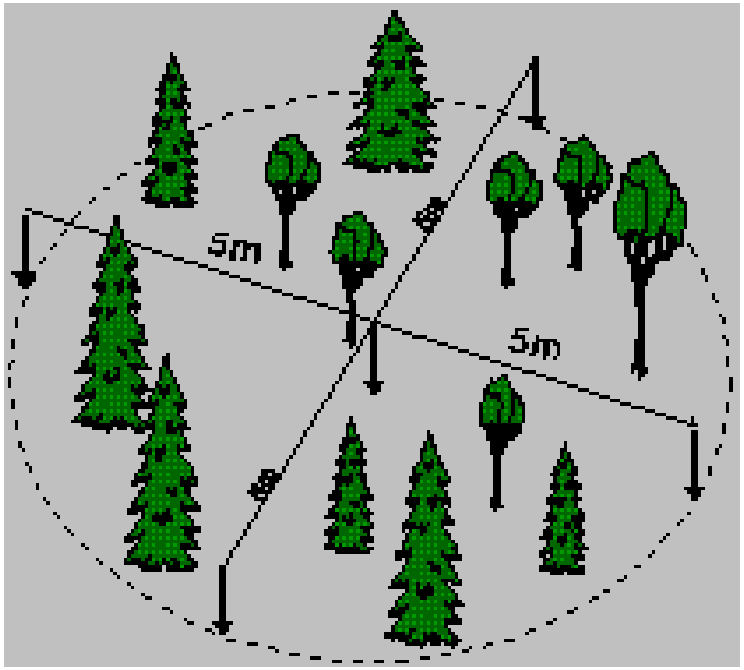


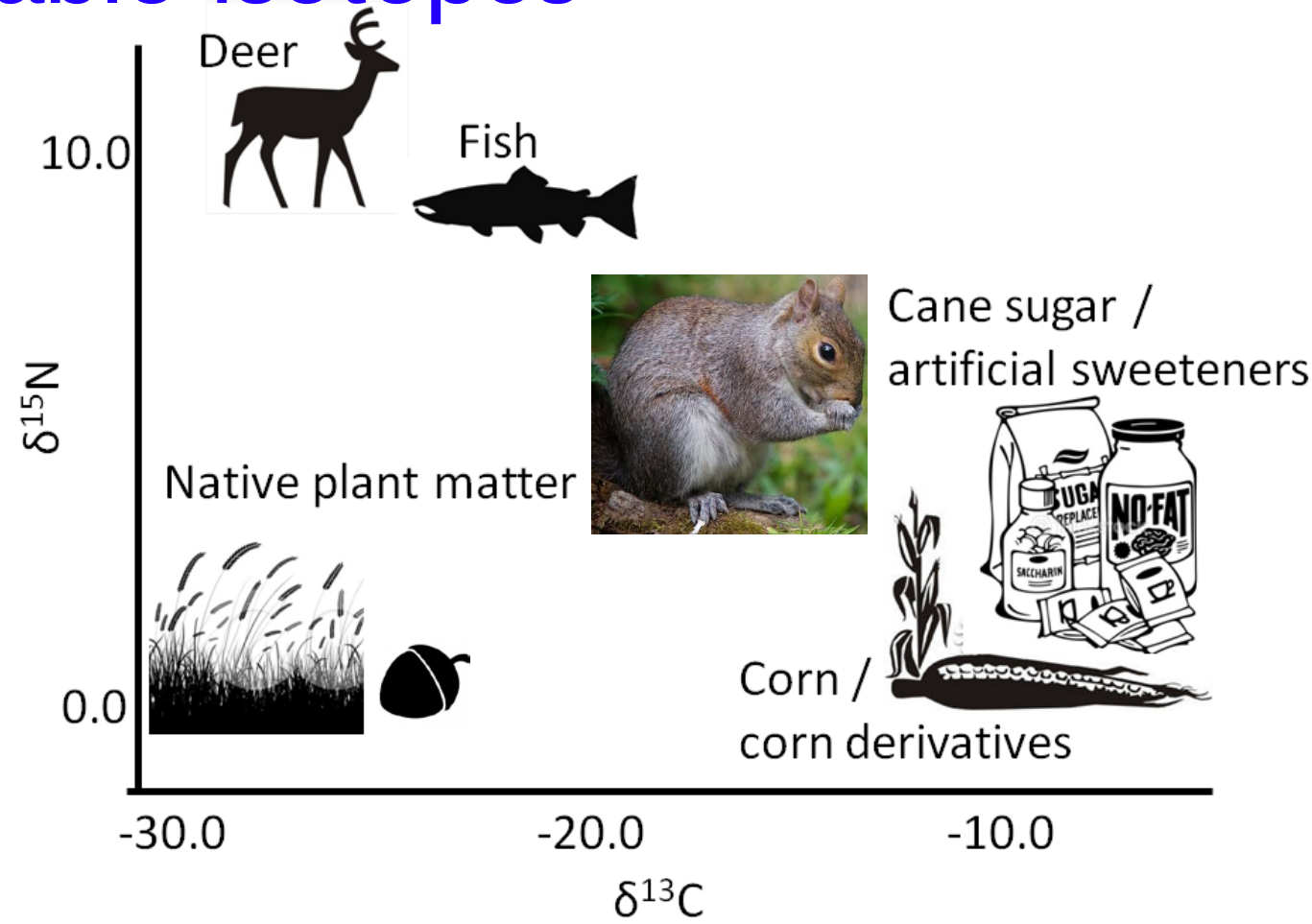
Table 1. Gray squirrel use versus availability of tree species estimated using Manly's Alpha. Squirrels were captured by UW students in Bill's Woods in September 2015.

Tree Species	Manly's *a* (%)	1/m (%)	Squirrel Behavior
American Elm	53	33	Selection
White Ash	25	33	Avoidance/neutral
White Oak	21	33	Avoidance/neutral

Table 2. Gray squirrels' use of tree species versus availability of the tree species in Bill's Woods estimated using Manly's Alpha based on the number of trees counted per species.

Tree Species	Manly's *a* (%)	1/m (%)	Squirrel Behavior
American Elm	50	8	Selection
White Ash	15	8	Avoidance/neutral
White Oak	0	8	Avoidance/neutral

3. Stable isotopes



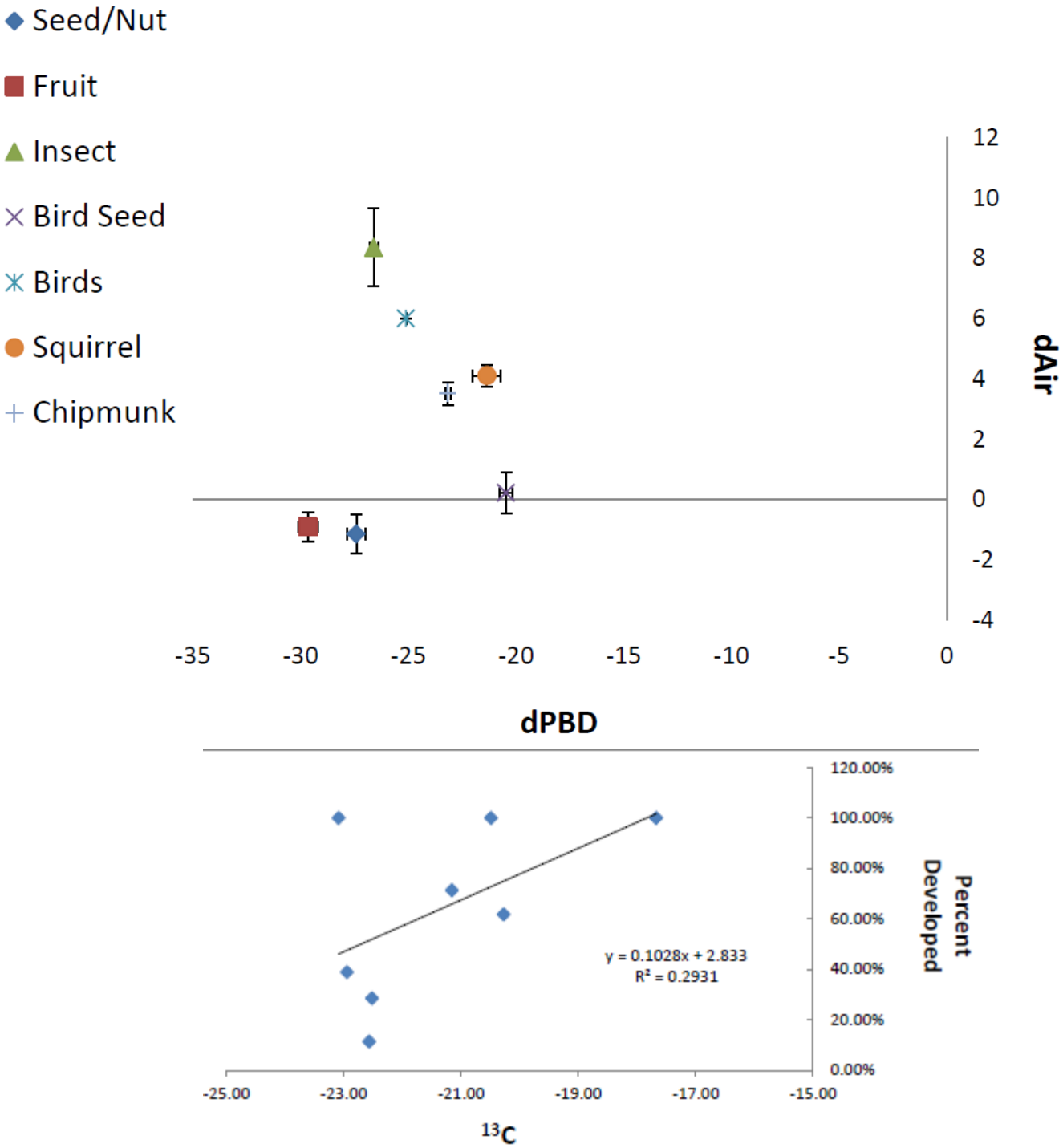
What do we need to collect?

Hair (and blood?) from chipmunks and squirrels that we capture

Bill's Woods vs. campus

Annual variation

Sex- or age-based differences


Seed/Nut
Fruit
Insect
Bird Seed
Birds
Squirrel
Chipmunk
12
10
8
6
4
2
0
-2
-4
dAir
-35
-30
-25
-20
-15
-10
-5
0
dPBD
120.00%
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
Percent Developed
y = 0.1028x + 2.833
R² = 0.2931
-25.00
-23.00
-21.00
-19.00
-17.00
-15.00
13C

- Labs that were actually both hands-on (e.g. out in Bills woods or squirrels) and computer based really gave the feel for how this technique would be utilized in the "real world"
- Outdoor lab was fun and I liked gaining the field experience and applying what we learned in lecture with hands-on techniques outdoors.
- Hands-on work in labs was very satisfactory. I learned a lot more by doing labs than sitting in lecture.
- I really enjoyed the outdoor labs because they were generally a good experience.