

BIOL432 Assignment 1 Report

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GitHub repository for BIOL432 Assignment 1 (https://github.com/SBootss/BIOL432_Assignment1)

Setup

Loading libraries

Loading libraries for use in assignment:

```
library(dplyr)
```

```
##  
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':  
##  
## filter, lag
```

```
## The following objects are masked from 'package:base':  
##  
## intersect, setdiff, setequal, union
```

```
library(ggplot2)
```

Loading default plotting theme

```
source("http://bit.ly/theme_pub")  
theme_set(theme_pub())
```

Generating data and estimating limb volume

R Script #1

The following script creates a data frame of 100 randomly sampled values for each of the variables organism, limb-width, limb-length and observer. The data frame is then exported to a csv called 'measurements.csv'.

```
source('dataGenerato.R')
```

R Script #2

The following script adds a “Volume” column, estimating limb-volume from limb-width and limb-length with the assumption that the organism’s limbs are cylindrical. The script overrides the original measurements.csv file with the new one including volume estimates.

```
source('volumeEstimator.R')
```

Loading data

Importing limb volume data from measurements.csv:

```
LimbData<-read.csv("measurements.csv")
```

Sorting data using dplyr

By species:

```
LimbData %>%  
  arrange(Organism)
```

##	Organism	Limb_width	Limb_length	Observer	Volume
## 1	Alois gorus	6.785557	29.52975	Lee N	1067.8754
## 2	Alois gorus	6.518064	31.98207	Lee N	1067.1701
## 3	Alois gorus	8.029719	37.64523	Lee N	1906.3405
## 4	Alois gorus	4.562951	28.22030	Mike R	461.4696
## 5	Alois gorus	4.000972	28.22570	Lee N	354.8670
## 6	Alois gorus	9.444699	30.14558	Sam B	2111.9803
## 7	Alois gorus	8.972326	32.68559	Sam B	2066.5997
## 8	Alois gorus	7.705967	33.38166	Mike R	1556.8690
## 9	Alois gorus	9.971449	32.08303	Sam B	2505.4275
## 10	Alois gorus	6.431763	31.02211	Lee N	1007.9088
## 11	Alois gorus	6.451524	32.67852	Mike R	1068.2598
## 12	Alois gorus	10.702706	29.66052	Sam B	2668.4300
## 13	Alois gorus	8.265021	27.34622	Sam B	1467.1522
## 14	Alois gorus	8.560933	23.80171	Lee N	1370.0622
## 15	Alois gorus	5.387517	40.78054	Sam B	929.6515
## 16	Alois gorus	6.934553	29.44342	Sam B	1112.0264
## 17	Alois gorus	10.518580	25.29155	Mike R	2197.7562
## 18	Alois gorus	8.560797	37.49364	Lee N	2158.1216
## 19	Alois gorus	8.121689	30.00446	Sam B	1554.4201
## 20	Alois gorus	8.067644	41.73071	Sam B	2133.2372
## 21	Alois gorus	9.530325	27.39663	Lee N	1954.3507
## 22	Alois gorus	9.747507	39.96828	Sam B	2982.5822
## 23	Alois gorus	6.124179	40.53236	Mike R	1193.9537
## 24	Alois gorus	7.586411	35.27736	Sam B	1594.6255
## 25	Babius busteria	11.282547	35.44134	Mike R	3543.3518
## 26	Babius busteria	9.527949	30.45778	Lee N	2171.6355
## 27	Babius busteria	4.270614	30.80083	Mike R	441.1974
## 28	Babius busteria	8.900486	28.94937	Mike R	1801.1772
## 29	Babius busteria	9.623791	29.41192	Lee N	2139.4667
## 30	Babius busteria	11.846130	23.72239	Mike R	2614.5756
## 31	Babius busteria	12.380730	25.46397	Sam B	3065.5506
## 32	Babius busteria	9.643333	14.93453	Mike R	1090.7767
## 33	Babius busteria	9.950043	33.95577	Mike R	2640.3007
## 34	Babius busteria	4.820332	26.42685	Mike R	482.2688
## 35	Babius busteria	7.857736	23.94082	Lee N	1160.9775
## 36	Babius busteria	8.788819	20.67589	Sam B	1254.3396
## 37	Babius busteria	6.326452	37.72568	Lee N	1185.8982
## 38	Babius busteria	6.399220	33.69635	Sam B	1083.7442
## 39	Babius busteria	9.647486	22.44429	Mike R	1640.6804
## 40	Babius busteria	9.012599	28.63319	Lee N	1826.6684
## 41	Babius busteria	7.320403	21.83338	Lee N	918.9268
## 42	Babius busteria	7.747767	33.17067	Lee N	1563.8576
## 43	Babius busteria	5.875977	29.60991	Lee N	802.9474
## 44	Babius busteria	9.493598	30.68464	Lee N	2172.0635
## 45	Felis bingus	7.913127	37.18024	Sam B	1828.5141
## 46	Felis bingus	6.342199	21.41190	Lee N	676.4332
## 47	Felis bingus	9.047865	31.30612	Mike R	2012.8496
## 48	Felis bingus	8.371895	42.22421	Sam B	2324.3363
## 49	Felis bingus	8.132326	36.51179	Sam B	1896.4988
## 50	Felis bingus	5.908381	33.12830	Sam B	908.2931
## 51	Felis bingus	6.153675	27.95617	Sam B	831.4511

## 52	Felis bingus	8.562402	25.16977	Sam B 1449.3070
## 53	Felis bingus	9.915618	33.50866	Lee N 2587.5367
## 54	Felis bingus	6.628480	35.45340	Lee N 1223.4205
## 55	Felis bingus	9.131987	34.55362	Lee N 2263.1533
## 56	Felis bingus	5.940509	36.91567	Lee N 1023.1706
## 57	Felis bingus	12.088902	23.52084	Mike R 2699.7051
## 58	Felis bingus	3.746261	32.51398	Sam B 358.3901
## 59	Felis bingus	10.641437	35.87268	Sam B 3190.4669
## 60	Felis bingus	6.133290	29.51911	Mike R 872.1277
## 61	Felis bingus	5.719330	26.21354	Mike R 673.4507
## 62	Felis bingus	8.748947	30.30355	Lee N 1821.7761
## 63	Felis bingus	5.153508	38.43704	Sam B 801.7626
## 64	Felis bingus	9.544390	27.71285	Mike R 1982.7475
## 65	Felis bingus	8.058693	27.67766	Mike R 1411.7199
## 66	Felis lilacus	7.392085	23.91996	Mike R 1026.5599
## 67	Felis lilacus	9.218998	28.93624	Sam B 1931.5211
## 68	Felis lilacus	9.969012	17.54851	Lee N 1369.7282
## 69	Felis lilacus	8.387778	26.29771	Sam B 1453.1207
## 70	Felis lilacus	8.749673	35.56346	Sam B 2138.3440
## 71	Felis lilacus	3.708630	20.93394	Sam B 226.1350
## 72	Felis lilacus	9.447224	38.51855	Sam B 2700.0276
## 73	Felis lilacus	3.343178	22.45933	Sam B 197.1541
## 74	Felis lilacus	9.310157	34.54994	Lee N 2352.0752
## 75	Felis lilacus	7.389150	18.16668	Mike R 779.0304
## 76	Felis lilacus	7.377083	30.75200	Sam B 1314.4151
## 77	Felis lilacus	3.996534	33.17290	Lee N 416.1410
## 78	Felis lilacus	11.242344	24.36627	Mike R 2418.7592
## 79	Felis lilacus	10.605205	42.17959	Lee N 3725.8935
## 80	Felis lilacus	8.357218	30.17040	Lee N 1654.9866
## 81	Felis lilacus	7.728383	32.44454	Mike R 1521.9791
## 82	Polka dotdeadius	5.940968	29.89003	Mike R 828.5729
## 83	Polka dotdeadius	7.857406	34.09647	Mike R 1653.3229
## 84	Polka dotdeadius	5.260362	18.10477	Sam B 393.4723
## 85	Polka dotdeadius	6.932884	26.65574	Mike R 1006.2560
## 86	Polka dotdeadius	10.674896	19.94432	Sam B 1784.9928
## 87	Polka dotdeadius	7.628079	27.51920	Lee N 1257.6391
## 88	Polka dotdeadius	7.218228	29.68898	Lee N 1214.9160
## 89	Polka dotdeadius	7.386475	27.93317	Lee N 1196.9734
## 90	Polka dotdeadius	5.719096	25.66800	Sam B 659.3814
## 91	Polka dotdeadius	8.826686	37.16848	Sam B 2274.3645
## 92	Polka dotdeadius	9.308741	31.05364	Lee N 2113.4126
## 93	Polka dotdeadius	10.498876	20.91892	Sam B 1810.9847
## 94	Polka dotdeadius	8.362663	29.16084	Sam B 1601.6923
## 95	Polka dotdeadius	6.835866	24.20524	Mike R 888.3547
## 96	Polka dotdeadius	8.315501	33.87201	Sam B 1839.5338
## 97	Polka dotdeadius	8.450271	23.29846	Sam B 1306.6473
## 98	Polka dotdeadius	5.757274	29.84971	Lee N 777.0764
## 99	Polka dotdeadius	4.917620	28.16319	Sam B 534.9111
## 100	Polka dotdeadius	9.349292	34.42306	Lee N 2363.1797

By observer:

```
LimbData %>%  
  arrange(Observer)
```

##	Organism	Limb_width	Limb_length	Observer	Volume
## 1	Alois gorus	6.785557	29.52975	Lee N	1067.8754
## 2	Felis bingus	6.342199	21.41190	Lee N	676.4332
## 3	Alois gorus	6.518064	31.98207	Lee N	1067.1701
## 4	Babius busteria	9.527949	30.45778	Lee N	2171.6355
## 5	Alois gorus	8.029719	37.64523	Lee N	1906.3405
## 6	Alois gorus	4.000972	28.22570	Lee N	354.8670
## 7	Felis lilacus	9.969012	17.54851	Lee N	1369.7282
## 8	Babius busteria	9.623791	29.41192	Lee N	2139.4667
## 9	Polka dotdeadius	7.628079	27.51920	Lee N	1257.6391
## 10	Polka dotdeadius	7.218228	29.68898	Lee N	1214.9160
## 11	Polka dotdeadius	7.386475	27.93317	Lee N	1196.9734
## 12	Felis lilacus	9.310157	34.54994	Lee N	2352.0752
## 13	Felis bingus	9.915618	33.50866	Lee N	2587.5367
## 14	Felis bingus	6.628480	35.45340	Lee N	1223.4205
## 15	Polka dotdeadius	9.308741	31.05364	Lee N	2113.4126
## 16	Felis bingus	9.131987	34.55362	Lee N	2263.1533
## 17	Felis bingus	5.940509	36.91567	Lee N	1023.1706
## 18	Babius busteria	7.857736	23.94082	Lee N	1160.9775
## 19	Alois gorus	6.431763	31.02211	Lee N	1007.9088
## 20	Babius busteria	6.326452	37.72568	Lee N	1185.8982
## 21	Alois gorus	8.560933	23.80171	Lee N	1370.0622
## 22	Alois gorus	8.560797	37.49364	Lee N	2158.1216
## 23	Alois gorus	9.530325	27.39663	Lee N	1954.3507
## 24	Felis lilacus	3.996534	33.17290	Lee N	416.1410
## 25	Babius busteria	9.012599	28.63319	Lee N	1826.6684
## 26	Babius busteria	7.320403	21.83338	Lee N	918.9268
## 27	Felis lilacus	10.605205	42.17959	Lee N	3725.8935
## 28	Felis bingus	8.748947	30.30355	Lee N	1821.7761
## 29	Polka dotdeadius	5.757274	29.84971	Lee N	777.0764
## 30	Babius busteria	7.747767	33.17067	Lee N	1563.8576
## 31	Babius busteria	5.875977	29.60991	Lee N	802.9474
## 32	Polka dotdeadius	9.349292	34.42306	Lee N	2363.1797
## 33	Felis lilacus	8.357218	30.17040	Lee N	1654.9866
## 34	Babius busteria	9.493598	30.68464	Lee N	2172.0635
## 35	Babius busteria	11.282547	35.44134	Mike R	3543.3518
## 36	Felis lilacus	7.392085	23.91996	Mike R	1026.5599
## 37	Felis bingus	9.047865	31.30612	Mike R	2012.8496
## 38	Alois gorus	4.562951	28.22030	Mike R	461.4696
## 39	Babius busteria	4.270614	30.80083	Mike R	441.1974
## 40	Polka dotdeadius	5.940968	29.89003	Mike R	828.5729
## 41	Polka dotdeadius	7.857406	34.09647	Mike R	1653.3229
## 42	Babius busteria	8.900486	28.94937	Mike R	1801.1772
## 43	Polka dotdeadius	6.932884	26.65574	Mike R	1006.2560
## 44	Babius busteria	11.846130	23.72239	Mike R	2614.5756
## 45	Alois gorus	7.705967	33.38166	Mike R	1556.8690
## 46	Babius busteria	9.643333	14.93453	Mike R	1090.7767
## 47	Babius busteria	9.950043	33.95577	Mike R	2640.3007
## 48	Babius busteria	4.820332	26.42685	Mike R	482.2688
## 49	Alois gorus	6.451524	32.67852	Mike R	1068.2598
## 50	Felis bingus	12.088902	23.52084	Mike R	2699.7051
## 51	Felis lilacus	7.389150	18.16668	Mike R	779.0304

## 52	Felis bingus	6.133290	29.51911	Mike R	872.1277
## 53	Alois gorus	10.518580	25.29155	Mike R	2197.7562
## 54	Felis bingus	5.719330	26.21354	Mike R	673.4507
## 55	Polka dotdeadius	6.835866	24.20524	Mike R	888.3547
## 56	Felis lilacus	11.242344	24.36627	Mike R	2418.7592
## 57	Babius busteria	9.647486	22.44429	Mike R	1640.6804
## 58	Alois gorus	6.124179	40.53236	Mike R	1193.9537
## 59	Felis lilacus	7.728383	32.44454	Mike R	1521.9791
## 60	Felis bingus	9.544390	27.71285	Mike R	1982.7475
## 61	Felis bingus	8.058693	27.67766	Mike R	1411.7199
## 62	Felis bingus	7.913127	37.18024	Sam B	1828.5141
## 63	Felis bingus	8.371895	42.22421	Sam B	2324.3363
## 64	Felis lilacus	9.218998	28.93624	Sam B	1931.5211
## 65	Polka dotdeadius	5.260362	18.10477	Sam B	393.4723
## 66	Polka dotdeadius	10.674896	19.94432	Sam B	1784.9928
## 67	Felis lilacus	8.387778	26.29771	Sam B	1453.1207
## 68	Alois gorus	9.444699	30.14558	Sam B	2111.9803
## 69	Felis lilacus	8.749673	35.56346	Sam B	2138.3440
## 70	Felis bingus	8.132326	36.51179	Sam B	1896.4988
## 71	Felis lilacus	3.708630	20.93394	Sam B	226.1350
## 72	Alois gorus	8.972326	32.68559	Sam B	2066.5997
## 73	Felis lilacus	9.447224	38.51855	Sam B	2700.0276
## 74	Felis bingus	5.908381	33.12830	Sam B	908.2931
## 75	Felis lilacus	3.343178	22.45933	Sam B	197.1541
## 76	Felis bingus	6.153675	27.95617	Sam B	831.4511
## 77	Polka dotdeadius	5.719096	25.66800	Sam B	659.3814
## 78	Babius busteria	12.380730	25.46397	Sam B	3065.5506
## 79	Felis bingus	8.562402	25.16977	Sam B	1449.3070
## 80	Alois gorus	9.971449	32.08303	Sam B	2505.4275
## 81	Polka dotdeadius	8.826686	37.16848	Sam B	2274.3645
## 82	Polka dotdeadius	10.498876	20.91892	Sam B	1810.9847
## 83	Babius busteria	8.788819	20.67589	Sam B	1254.3396
## 84	Alois gorus	10.702706	29.66052	Sam B	2668.4300
## 85	Alois gorus	8.265021	27.34622	Sam B	1467.1522
## 86	Felis bingus	3.746261	32.51398	Sam B	358.3901
## 87	Alois gorus	5.387517	40.78054	Sam B	929.6515
## 88	Felis bingus	10.641437	35.87268	Sam B	3190.4669
## 89	Alois gorus	6.934553	29.44342	Sam B	1112.0264
## 90	Polka dotdeadius	8.362663	29.16084	Sam B	1601.6923
## 91	Alois gorus	8.121689	30.00446	Sam B	1554.4201
## 92	Babius busteria	6.399220	33.69635	Sam B	1083.7442
## 93	Felis lilacus	7.377083	30.75200	Sam B	1314.4151
## 94	Alois gorus	8.067644	41.73071	Sam B	2133.2372
## 95	Polka dotdeadius	8.315501	33.87201	Sam B	1839.5338
## 96	Polka dotdeadius	8.450271	23.29846	Sam B	1306.6473
## 97	Alois gorus	9.747507	39.96828	Sam B	2982.5822
## 98	Polka dotdeadius	4.917620	28.16319	Sam B	534.9111
## 99	Felis bingus	5.153508	38.43704	Sam B	801.7626
## 100	Alois gorus	7.586411	35.27736	Sam B	1594.6255

By limb volume:

```
LimbData %>%  
  arrange(Volume)
```


##	Organism	Limb_width	Limb_length	Observer	Volume
## 1	Felis lilacus	3.343178	22.45933	Sam B	197.1541
## 2	Felis lilacus	3.708630	20.93394	Sam B	226.1350
## 3	Alois gorus	4.000972	28.22570	Lee N	354.8670
## 4	Felis bingus	3.746261	32.51398	Sam B	358.3901
## 5	Polka dotdeadius	5.260362	18.10477	Sam B	393.4723
## 6	Felis lilacus	3.996534	33.17290	Lee N	416.1410
## 7	Babius busteria	4.270614	30.80083	Mike R	441.1974
## 8	Alois gorus	4.562951	28.22030	Mike R	461.4696
## 9	Babius busteria	4.820332	26.42685	Mike R	482.2688
## 10	Polka dotdeadius	4.917620	28.16319	Sam B	534.9111
## 11	Polka dotdeadius	5.719096	25.66800	Sam B	659.3814
## 12	Felis bingus	5.719330	26.21354	Mike R	673.4507
## 13	Felis bingus	6.342199	21.41190	Lee N	676.4332
## 14	Polka dotdeadius	5.757274	29.84971	Lee N	777.0764
## 15	Felis lilacus	7.389150	18.16668	Mike R	779.0304
## 16	Felis bingus	5.153508	38.43704	Sam B	801.7626
## 17	Babius busteria	5.875977	29.60991	Lee N	802.9474
## 18	Polka dotdeadius	5.940968	29.89003	Mike R	828.5729
## 19	Felis bingus	6.153675	27.95617	Sam B	831.4511
## 20	Felis bingus	6.133290	29.51911	Mike R	872.1277
## 21	Polka dotdeadius	6.835866	24.20524	Mike R	888.3547
## 22	Felis bingus	5.908381	33.12830	Sam B	908.2931
## 23	Babius busteria	7.320403	21.83338	Lee N	918.9268
## 24	Alois gorus	5.387517	40.78054	Sam B	929.6515
## 25	Polka dotdeadius	6.932884	26.65574	Mike R	1006.2560
## 26	Alois gorus	6.431763	31.02211	Lee N	1007.9088
## 27	Felis bingus	5.940509	36.91567	Lee N	1023.1706
## 28	Felis lilacus	7.392085	23.91996	Mike R	1026.5599
## 29	Alois gorus	6.518064	31.98207	Lee N	1067.1701
## 30	Alois gorus	6.785557	29.52975	Lee N	1067.8754
## 31	Alois gorus	6.451524	32.67852	Mike R	1068.2598
## 32	Babius busteria	6.399220	33.69635	Sam B	1083.7442
## 33	Babius busteria	9.643333	14.93453	Mike R	1090.7767
## 34	Alois gorus	6.934553	29.44342	Sam B	1112.0264
## 35	Babius busteria	7.857736	23.94082	Lee N	1160.9775
## 36	Babius busteria	6.326452	37.72568	Lee N	1185.8982
## 37	Alois gorus	6.124179	40.53236	Mike R	1193.9537
## 38	Polka dotdeadius	7.386475	27.93317	Lee N	1196.9734
## 39	Polka dotdeadius	7.218228	29.68898	Lee N	1214.9160
## 40	Felis bingus	6.628480	35.45340	Lee N	1223.4205
## 41	Babius busteria	8.788819	20.67589	Sam B	1254.3396
## 42	Polka dotdeadius	7.628079	27.51920	Lee N	1257.6391
## 43	Polka dotdeadius	8.450271	23.29846	Sam B	1306.6473
## 44	Felis lilacus	7.377083	30.75200	Sam B	1314.4151
## 45	Felis lilacus	9.969012	17.54851	Lee N	1369.7282
## 46	Alois gorus	8.560933	23.80171	Lee N	1370.0622
## 47	Felis bingus	8.058693	27.67766	Mike R	1411.7199
## 48	Felis bingus	8.562402	25.16977	Sam B	1449.3070
## 49	Felis lilacus	8.387778	26.29771	Sam B	1453.1207
## 50	Alois gorus	8.265021	27.34622	Sam B	1467.1522
## 51	Felis lilacus	7.728383	32.44454	Mike R	1521.9791

## 52	Alois gorus	8.121689	30.00446	Sam B	1554.4201
## 53	Alois gorus	7.705967	33.38166	Mike R	1556.8690
## 54	Babius busteria	7.747767	33.17067	Lee N	1563.8576
## 55	Alois gorus	7.586411	35.27736	Sam B	1594.6255
## 56	Polka dotdeadius	8.362663	29.16084	Sam B	1601.6923
## 57	Babius busteria	9.647486	22.44429	Mike R	1640.6804
## 58	Polka dotdeadius	7.857406	34.09647	Mike R	1653.3229
## 59	Felis lilacus	8.357218	30.17040	Lee N	1654.9866
## 60	Polka dotdeadius	10.674896	19.94432	Sam B	1784.9928
## 61	Babius busteria	8.900486	28.94937	Mike R	1801.1772
## 62	Polka dotdeadius	10.498876	20.91892	Sam B	1810.9847
## 63	Felis bingus	8.748947	30.30355	Lee N	1821.7761
## 64	Babius busteria	9.012599	28.63319	Lee N	1826.6684
## 65	Felis bingus	7.913127	37.18024	Sam B	1828.5141
## 66	Polka dotdeadius	8.315501	33.87201	Sam B	1839.5338
## 67	Felis bingus	8.132326	36.51179	Sam B	1896.4988
## 68	Alois gorus	8.029719	37.64523	Lee N	1906.3405
## 69	Felis lilacus	9.218998	28.93624	Sam B	1931.5211
## 70	Alois gorus	9.530325	27.39663	Lee N	1954.3507
## 71	Felis bingus	9.544390	27.71285	Mike R	1982.7475
## 72	Felis bingus	9.047865	31.30612	Mike R	2012.8496
## 73	Alois gorus	8.972326	32.68559	Sam B	2066.5997
## 74	Alois gorus	9.444699	30.14558	Sam B	2111.9803
## 75	Polka dotdeadius	9.308741	31.05364	Lee N	2113.4126
## 76	Alois gorus	8.067644	41.73071	Sam B	2133.2372
## 77	Felis lilacus	8.749673	35.56346	Sam B	2138.3440
## 78	Babius busteria	9.623791	29.41192	Lee N	2139.4667
## 79	Alois gorus	8.560797	37.49364	Lee N	2158.1216
## 80	Babius busteria	9.527949	30.45778	Lee N	2171.6355
## 81	Babius busteria	9.493598	30.68464	Lee N	2172.0635
## 82	Alois gorus	10.518580	25.29155	Mike R	2197.7562
## 83	Felis bingus	9.131987	34.55362	Lee N	2263.1533
## 84	Polka dotdeadius	8.826686	37.16848	Sam B	2274.3645
## 85	Felis bingus	8.371895	42.22421	Sam B	2324.3363
## 86	Felis lilacus	9.310157	34.54994	Lee N	2352.0752
## 87	Polka dotdeadius	9.349292	34.42306	Lee N	2363.1797
## 88	Felis lilacus	11.242344	24.36627	Mike R	2418.7592
## 89	Alois gorus	9.971449	32.08303	Sam B	2505.4275
## 90	Felis bingus	9.915618	33.50866	Lee N	2587.5367
## 91	Babius busteria	11.846130	23.72239	Mike R	2614.5756
## 92	Babius busteria	9.950043	33.95577	Mike R	2640.3007
## 93	Alois gorus	10.702706	29.66052	Sam B	2668.4300
## 94	Felis bingus	12.088902	23.52084	Mike R	2699.7051
## 95	Felis lilacus	9.447224	38.51855	Sam B	2700.0276
## 96	Alois gorus	9.747507	39.96828	Sam B	2982.5822
## 97	Babius busteria	12.380730	25.46397	Sam B	3065.5506
## 98	Felis bingus	10.641437	35.87268	Sam B	3190.4669
## 99	Babius busteria	11.282547	35.44134	Mike R	3543.3518
## 100	Felis lilacus	10.605205	42.17959	Lee N	3725.8935

Creating summary tables

A table showing average limb-volume by species:

```
LimbVolSpecAvg<-LimbData %>%
  group_by(Organism) %>%
  summarise("Average Limb Volume (cm^3)"=mean(Volume))

LimbVolSpecAvg
```

```
## # A tibble: 5 × 2
##   Organism      `Average Limb Volume (cm^3)`
##   <chr>                <dbl>
## 1 Alois gorus          1604.
## 2 Babius busteria      1680.
## 3 Felis bingus         1564.
## 4 Felis lilacus        1577.
## 5 Polka dotdeadius     1342.
```

A table showing number of observations for each combination of species and observer:

```
LimbVolSpObCount<-LimbData %>%
  count(Organism, Observer)

LimbVolSpObCount
```

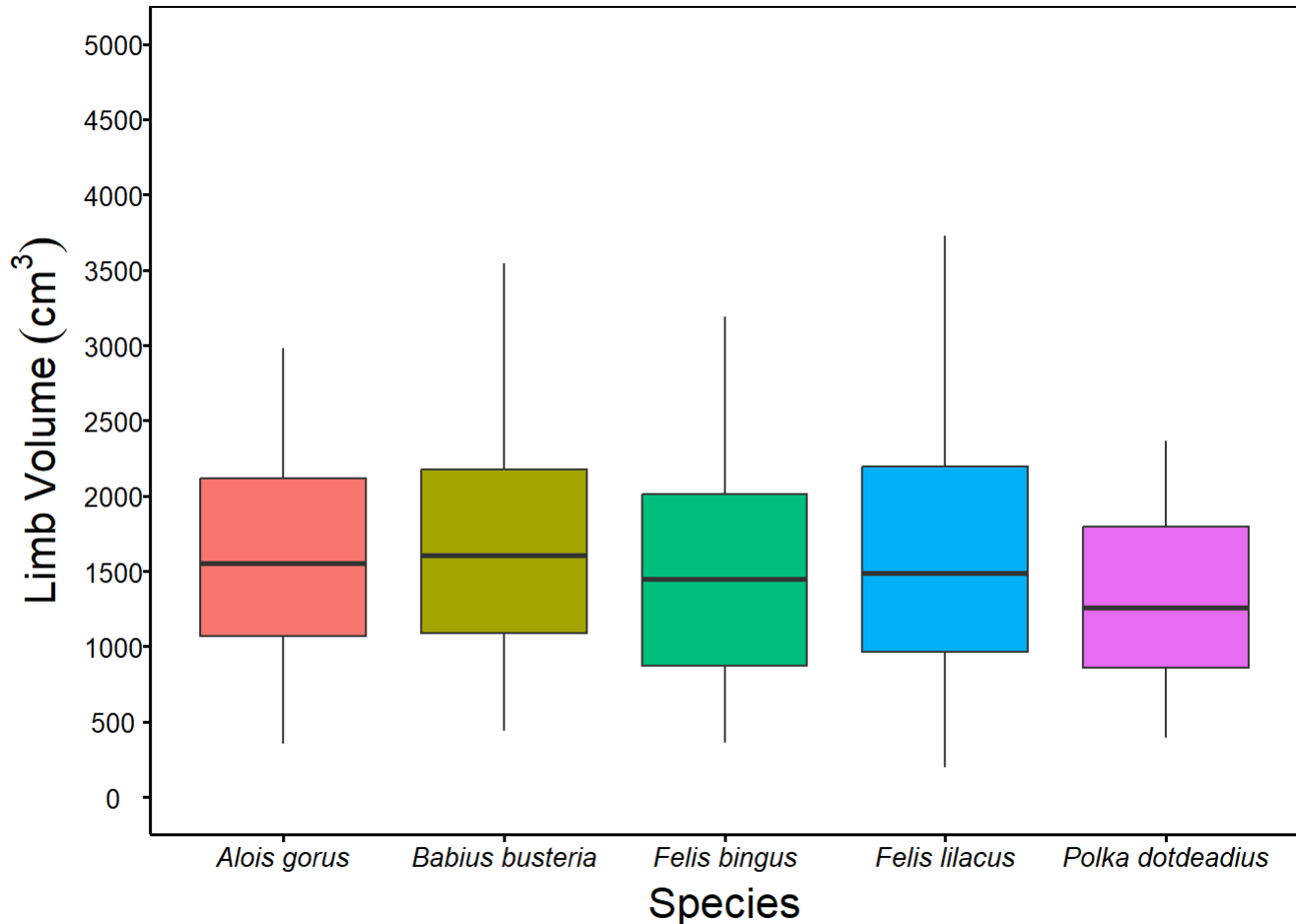
```
##      Organism Observer  n
## 1    Alois gorus   Lee N   8
## 2    Alois gorus   Mike R   5
## 3    Alois gorus   Sam B  11
## 4  Babius busteria   Lee N   9
## 5  Babius busteria   Mike R   8
## 6  Babius busteria   Sam B   3
## 7    Felis bingus   Lee N   6
## 8    Felis bingus   Mike R   6
## 9    Felis bingus   Sam B   9
## 10   Felis lilacus   Lee N   5
## 11   Felis lilacus   Mike R   4
## 12   Felis lilacus   Sam B   7
## 13 Polka dotdeadius   Lee N   6
## 14 Polka dotdeadius   Mike R   4
## 15 Polka dotdeadius   Sam B   9
```

Figures summarizing limb volume data

Box plot comparing limb volumes between species

```
VolBoxPlot<-ggplot(LimbData, aes(Organism, Volume, fill=Organism)) +  
  geom_boxplot()+  
  labs(x="Species", y=expression(Limb~Volume~(cm^3)))+ scale_y_continuous(limits=c(0,5000),break  
s= seq(0,5000, by=500))+  
  theme(axis.ticks=element_line(), axis.text.x=element_text(face="italic"))
```

VolBoxPlot



Frequency histograms of limb volume for each

species

```
FreqHist<-ggplot(LimbData, aes(x=Volume, fill=Organism))+  
  geom_histogram(binwidth=500)+  
  labs(x=expression(Limb~Volume~(cm^3)),y="Frequency")+  
  scale_y_continuous(limits=c(0,10),  
                    breaks=seq(0,10, by=2))+  
  theme(axis.ticks=element_line(), strip.text=element_text(face="italic"))+  
  facet_grid(.~Organism)
```

FreqHist

