Assignment 7 Answer Key

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2. Portal Data Review (25 points)

```
[1] "2a"
```

```
# A tibble: 3,027 x 5
    year month   day species_id weight
   <dbl> <dbl> <dbl> <chr>       <dbl>
 1  1977     8    19 DO             52
 2  1977    10    17 DO             33
 3  1977    10    17 DO             50
 4  1977    10    17 DO             48
 5  1977    10    17 DO             31
 6  1977    10    18 DO             41
 7  1977    11    12 DO             44
 8  1977    11    12 DO             48
 9  1977    11    14 DO             39
10  1977    12    10 DO             40
# i 3,017 more rows
```

```
[1] "2b"
```

```
# A tibble: 5,150 x 3
    year species_id hindfoot_length
   <dbl> <chr>                <dbl>
 1  1995 PP                      23
 2  1995 PP                      22
 3  1995 PP                      22
 4  1995 PP                      21
 5  1995 PP                      21
 6  1995 PP                      20
 7  1995 PP                      22
```

```
 8  1995 PP                      24
 9  1995 PP                      22
10  1995 PP                      22
# i 5,140 more rows
```

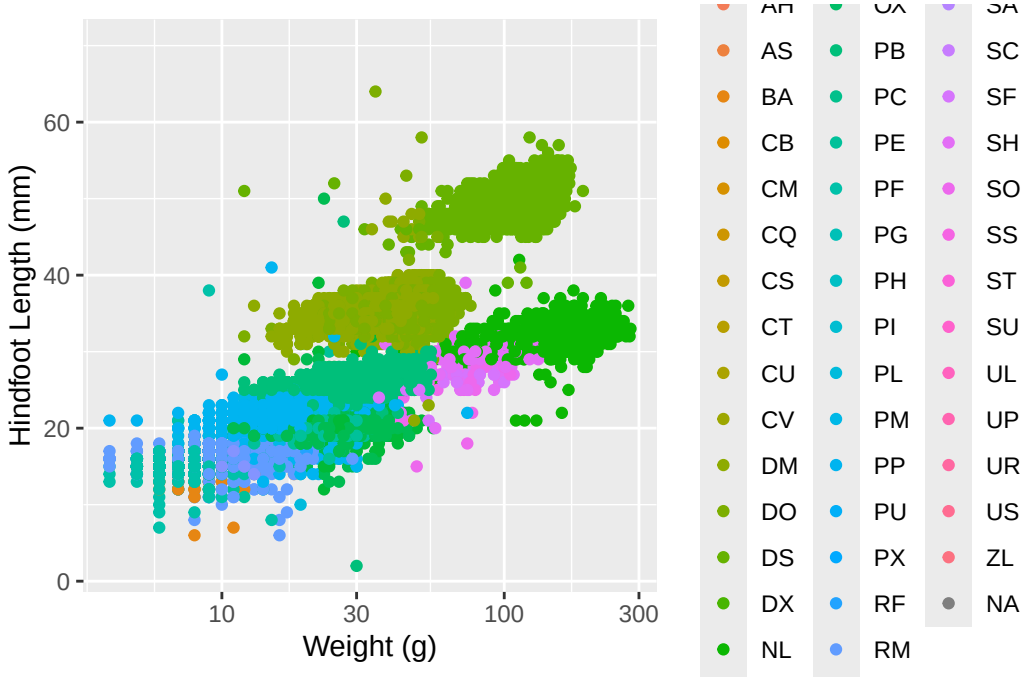
```
[1] "2c"
```

```
# A tibble: 340 x 3
# Groups:   species_id [25]
   species_id  year mean_hf
   <chr>      <dbl>   <dbl>
 1 AH          1999    35
 2 AH          2000    31
 3 BA          1989    13
 4 BA          1990    13.8
 5 BA          1991    12.9
 6 BA          1992    12
 7 DM          1977    35.7
 8 DM          1978    36.1
 9 DM          1979    35.9
10 DM          1980    35.8
# i 330 more rows
```

```
[1] "2d"
```

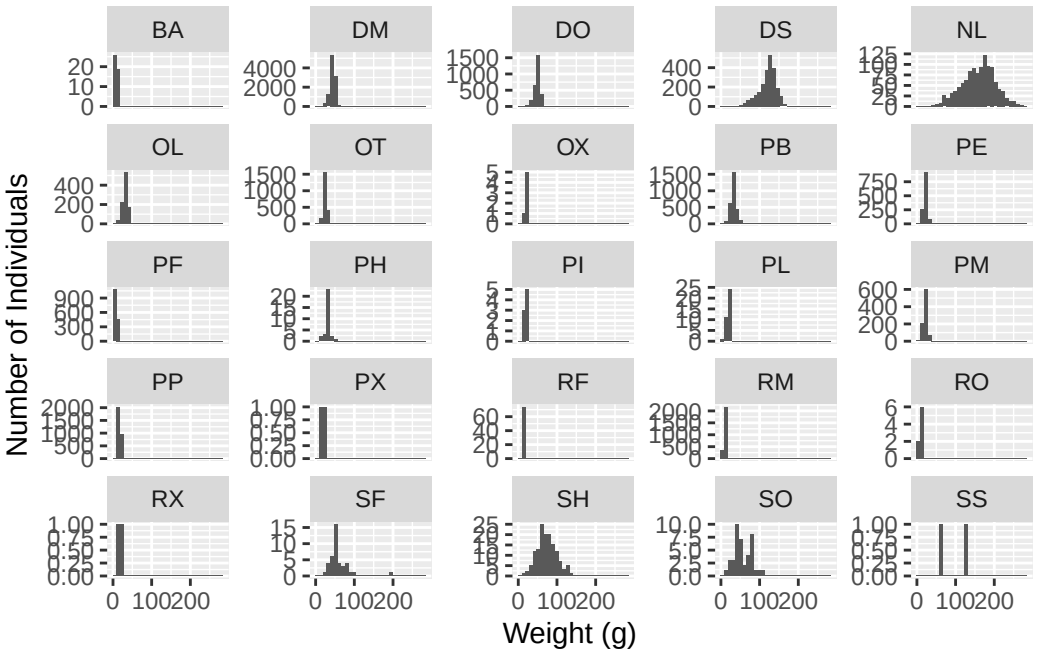
```
# A tibble: 16,167 x 5
    year genus     species     weight plot_type
   <dbl> <chr>     <chr>        <dbl> <chr>
 1  1977 Dipodomys merriami        NA Control
 2  1977 Dipodomys merriami        NA Rodent Exclosure
 3  1977 Dipodomys merriami        NA Long-term Krat Exclosure
 4  1977 Dipodomys merriami        NA Spectab exclosure
 5  1977 Dipodomys merriami        NA Spectab exclosure
 6  1977 Dipodomys spectabilis     NA Rodent Exclosure
 7  1977 Dipodomys merriami        NA Rodent Exclosure
 8  1977 Dipodomys merriami        NA Long-term Krat Exclosure
 9  1977 Dipodomys merriami        NA Control
10  1977 Dipodomys merriami        NA Short-term Krat Exclosure
# i 16,157 more rows
```

```
[1] "2e"
```



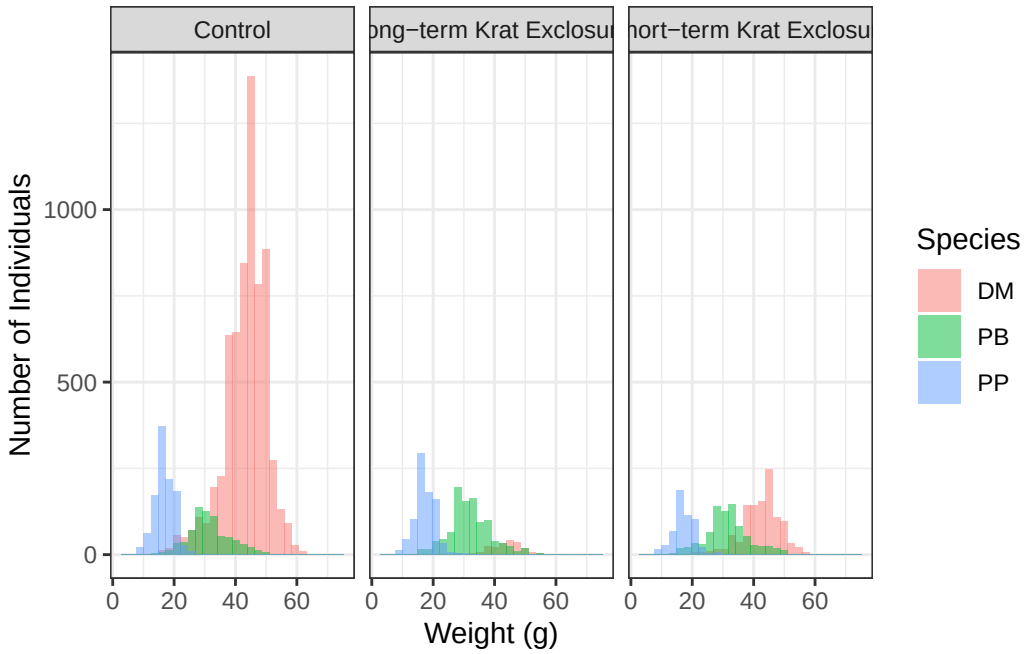

```
[1] "2f"
```

```
# A tibble: 32,283 x 9
   record_id month   day  year plot_id species_id sex   hindfoot_length weight
       <dbl> <dbl> <dbl> <dbl>   <dbl> <chr>      <chr>             <dbl>  <dbl>
 1        63     8    19  1977       3 DM         M                    35     40
 2        64     8    19  1977       7 DM         M                    37     48
 3        65     8    19  1977       4 DM         F                    34     29
 4        66     8    19  1977       4 DM         F                    35     46
 5        67     8    19  1977       7 DM         M                    35     36
 6        68     8    19  1977       8 DO         F                    32     52
 7        69     8    19  1977       2 PF         M                    15      8
 8        70     8    19  1977       3 OX         F                    21     22
 9        71     8    19  1977       7 DM         F                    36     35
10        74     8    19  1977       8 PF         M                    12      7
# i 32,273 more rows
```




```
[1] "2g, optional"
```

```
# A tibble: 13,415 x 10
   record_id month   day  year plot_id species_id sex   hindfoot_length weight
       <dbl> <dbl> <dbl> <dbl>   <dbl> <chr>      <chr>             <dbl>  <dbl>
 1         3     7    16  1977       2 DM         F                    37     NA
 2         5     7    16  1977       3 DM         M                    35     NA
 3        13     7    16  1977       3 DM         M                    35     NA
 4        14     7    16  1977       8 DM         <NA>                 NA     NA
 5        15     7    16  1977       6 DM         F                    36     NA
 6        16     7    16  1977       4 DM         F                    36     NA
 7        18     7    16  1977       2 PP         M                    22     NA
 8        21     7    17  1977      14 DM         F                    34     NA
 9        23     7    17  1977      13 DM         M                    36     NA
10        26     7    17  1977      15 DM         M                    31     NA
# i 13,405 more rows
# i 1 more variable: plot_type <chr>
```

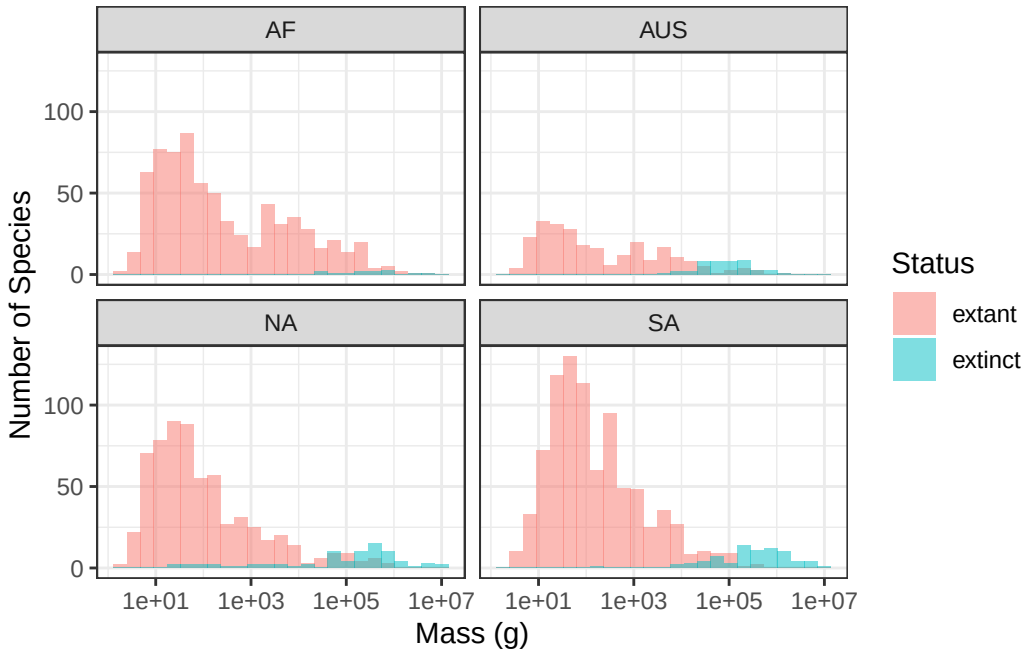


3. Megafaunal Extinction (35 points)

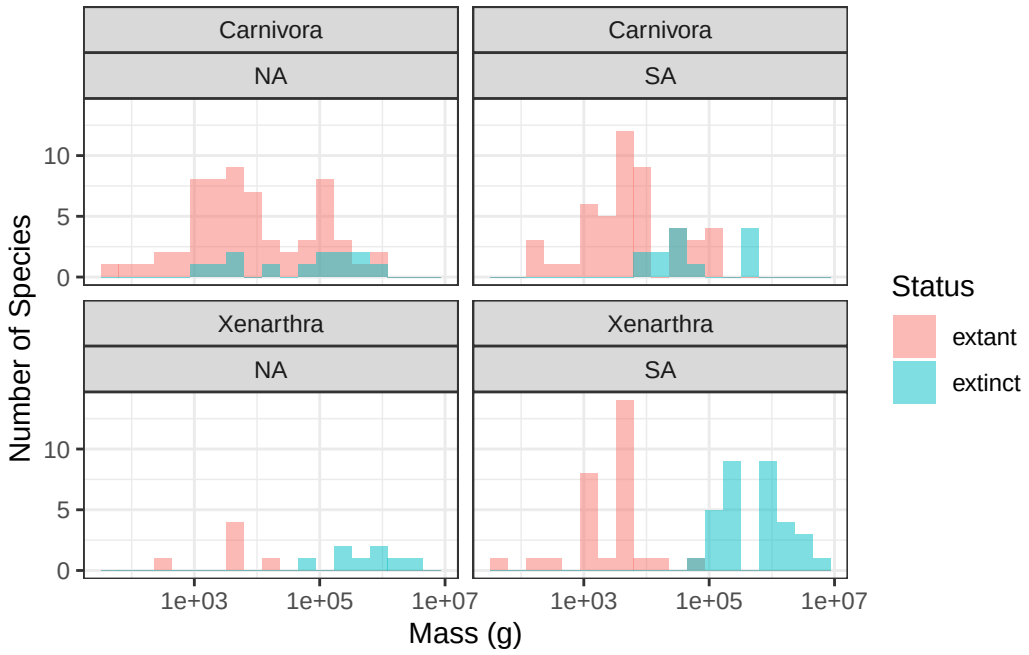
```
[1] "3a"
```

```
# A tibble: 5,731 x 8
   continent status  order        family  genus      species      mass reference
   <chr>     <chr>   <chr>        <chr>   <chr>      <chr>       <dbl> <chr>
 1 AF        extant  Artiodactyla Bovidae Addax      nasomacul~ 7.00e4 60
 2 AF        extant  Artiodactyla Bovidae Aepyceros  melampus   5.25e4 63, 70
 3 AF        extant  Artiodactyla Bovidae Alcelaphus buselaphus 1.71e5 63, 70
 4 AF        extant  Artiodactyla Bovidae Ammodorcas clarkei    2.80e4 60
 5 AF        extant  Artiodactyla Bovidae Ammotragus lervia     4.80e4 75
 6 AF        extant  Artiodactyla Bovidae Antidorcas marsupial~ 3.90e4 60
 7 AF        extinct Artiodactyla Bovidae Antidorcas bondi      3.4 e4 1
 8 AF        extinct Artiodactyla Bovidae Antidorcas australis  4   e4 2
 9 AF        extant  Artiodactyla Bovidae Bos        taurus     9   e5 <NA>
10 AF        extant  Artiodactyla Bovidae Capra      walie      1   e5 <NA>
# i 5,721 more rows
```

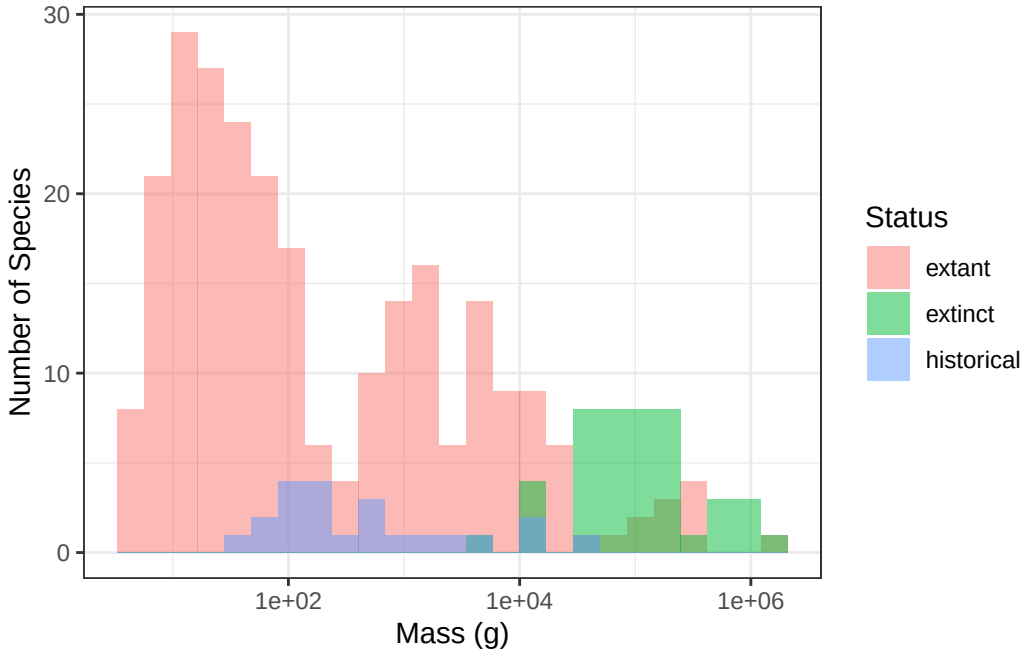
```
[1] "3b"
```


AF
AUS
NA
SA
Number of Species
100
50
0
1e+01
1e+03
1e+05
1e+07
Mass (g)
Status
extant
extinct

```
[1] "3c"
```


Carnivora
NA
SA
Xenarthra
Number of Species
10
5
0
1e+03
1e+05
1e+07
Mass (g)
Status
extant
extinct

```
[1] "3d"
```




```
[1] "3e, optional"
```

```
# A tibble: 5 x 1
  continent
  <chr>
1 AF
2 AUS
3 Insular
4 NA
5 SA
```

```
# A tibble: 3,091 x 8
   continent status  order        family  genus      species      mass reference
   <chr>     <chr>   <chr>        <chr>   <chr>      <chr>       <dbl> <chr>
 1 AF        extant  Artiodactyla Bovidae Addax      nasomacul~ 7.00e4 60
 2 AF        extant  Artiodactyla Bovidae Aepyceros  melampus   5.25e4 63, 70
 3 AF        extant  Artiodactyla Bovidae Alcelaphus buselaphus 1.71e5 63, 70
 4 AF        extant  Artiodactyla Bovidae Ammodorcas clarkei    2.80e4 60
 5 AF        extant  Artiodactyla Bovidae Ammotragus lervia     4.80e4 75
 6 AF        extant  Artiodactyla Bovidae Antidorcas marsupial~ 3.90e4 60
 7 AF        extinct Artiodactyla Bovidae Antidorcas bondi      3.4 e4 1
 8 AF        extinct Artiodactyla Bovidae Antidorcas australis  4   e4 2
 9 AF        extant  Artiodactyla Bovidae Bos        taurus     9   e5 <NA>
```

```
10 AF        extant  Artiodactyla Bovidae Capra      walie      1   e5 <NA>
# i 3,081 more rows
```

4. Palmer Penguins (35 points)

Note: you don't need to worry about data types for each column matching up exactly (e.g., the Species and Island columns can be character data and don't need to be converted to factors). As long as setdiff() comes back with 0 rows, you're good to go.

```
# A tibble: 6 x 8
  species island    bill_length_mm bill_depth_mm flipper_length_mm body_mass_g
  <fct>   <fct>              <dbl>         <dbl>             <int>       <int>
1 Adelie  Torgersen           39.1          18.7               181        3750
2 Adelie  Torgersen           39.5          17.4               186        3800
3 Adelie  Torgersen           40.3          18                 195        3250
4 Adelie  Torgersen           NA            NA                  NA          NA
5 Adelie  Torgersen           36.7          19.3               193        3450
6 Adelie  Torgersen           39.3          20.6               190        3650
# i 2 more variables: sex <fct>, year <int>
```

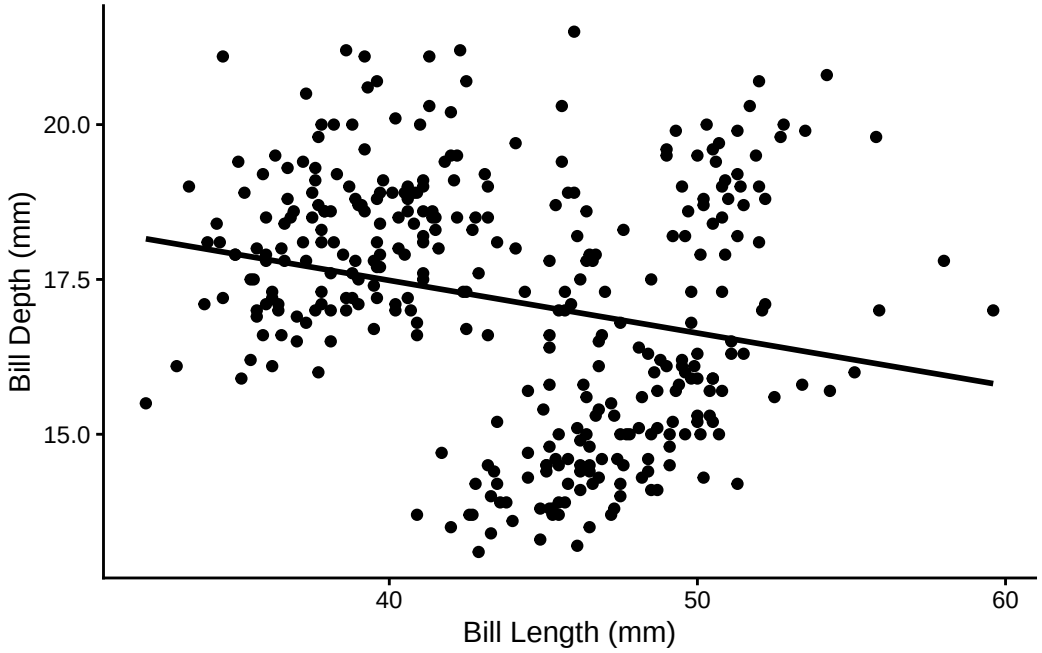
4c

```
# A tibble: 344 x 8
   species island    bill_length_mm bill_depth_mm flipper_length_mm body_mass_g
   <chr>   <chr>              <dbl>         <dbl>             <dbl>       <dbl>
 1 Adelie  Torgersen           39.1          18.7               181        3750
 2 Adelie  Torgersen           39.5          17.4               186        3800
 3 Adelie  Torgersen           40.3          18                 195        3250
 4 Adelie  Torgersen           NA            NA                  NA          NA
 5 Adelie  Torgersen           36.7          19.3               193        3450
 6 Adelie  Torgersen           39.3          20.6               190        3650
 7 Adelie  Torgersen           38.9          17.8               181        3625
 8 Adelie  Torgersen           39.2          19.6               195        4675
 9 Adelie  Torgersen           34.1          18.1               193        3475
10 Adelie  Torgersen           42            20.2               190        4250
# i 334 more rows
# i 2 more variables: sex <chr>, year <int>
```

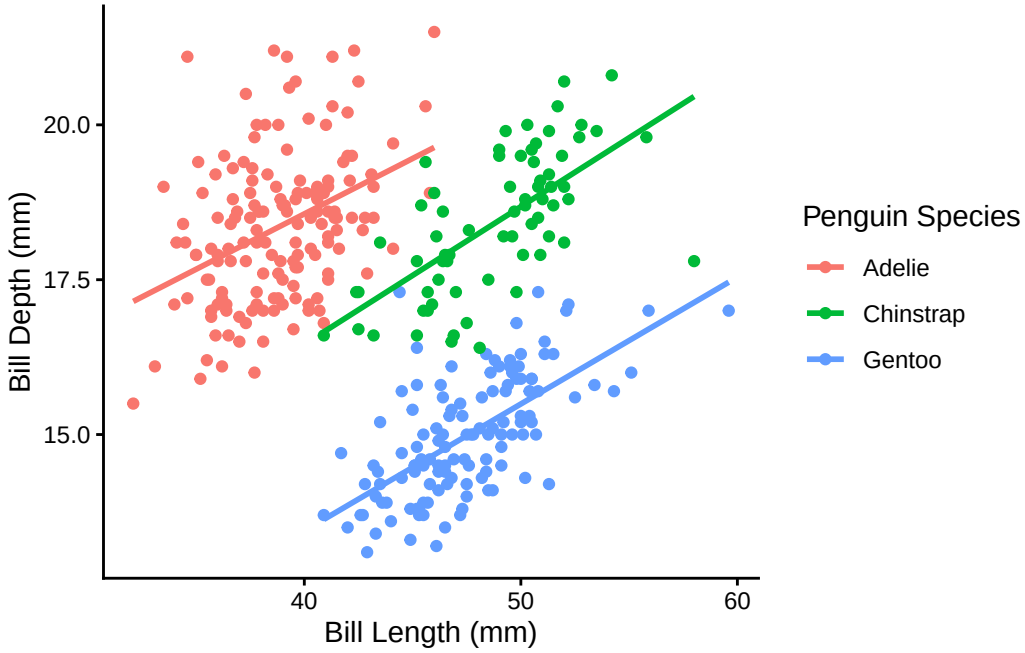
Result from the `setdiff()` function:

```
# A tibble: 0 x 8
# i 8 variables: species <chr>, island <chr>, bill_length_mm <dbl>,
#   bill_depth_mm <dbl>, flipper_length_mm <dbl>, body_mass_g <dbl>, sex <chr>,
#   year <int>
```

4d



4e


Bill Depth (mm)
20.0
17.5
15.0
40
50
60
Bill Length (mm)
Penguin Species
Adelie
Chinstrap
Gentoo