Introduction to R for Ecologists

Example datasets

Collection of datasets used during the class for exercise

0. Data for import

- Description
- data-for-import.xlsx
- data-for-import.txt
- data-for-import.csv
- data-for-import.rdata

1. Temperature measurements

- Description
- temperatures.xls
- temperatures.txt

2. Vltava river valley measurements

- Description
- vltava.xlsx - Excel file (*.xlsx format)

3. Communities of mollusks on spring fens of West Carpathian Mountains, Europe

- Description
- Direct import into R:

```
moll <- read.delim
('https://raw.githubusercontent.com/zdealveindy/recol/main/data/molluscs-fens.txt',
row.names = 1)
env <- read.delim
('https://raw.githubusercontent.com/zdealveindy/recol/main/data/env-fens.txt',
row.names = 1)
```

4. Latin names

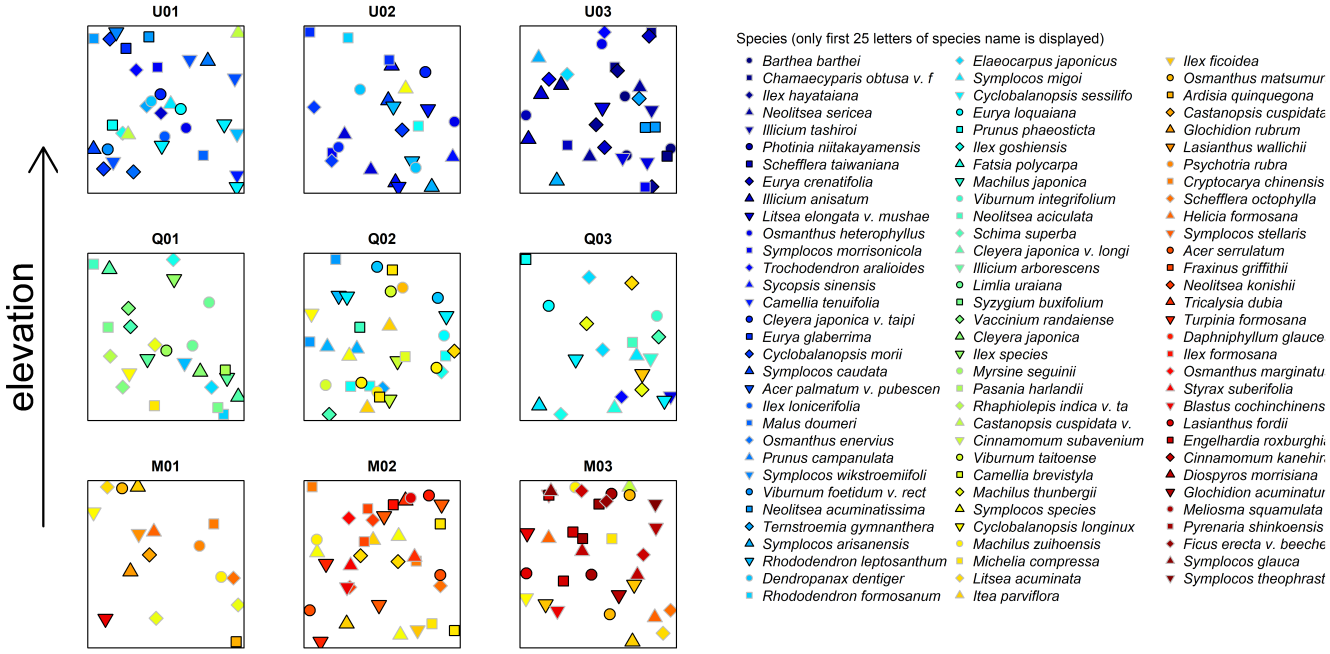
```
x <- c('Chamaecyparis formosensis', 'Abies kawakamii', 'Picea morrisonicola')
```

5. Changes of plant functional traits along elevation in Taiwan

```
traits <- readr::read_delim
('https://raw.githubusercontent.com/zdealveindy/recol/main/data/traits_MQU.txt',
delim = '\t')
```

```
localities <- readr::read_delim
('https://raw.githubusercontent.com/zdealveindy/recol/main/data/localities_MQU.txt'
, delim = '\t')
```

Dataset: At nine forest localities distributed along an elevation gradient in the Northern part of Taiwan, we established vegetation plots (20×20 m), and in each plot, we selected several dominant tree species. For each individual of the selected species, we collected three leaves and measured several leaf functional traits (SLA, LA, LDMC, and thickness). The average of each trait for a given tree individual (mean of three measured leaves) is in the table 'traits'. Note that at each locality, there are several species, and some of the species are represented by more than one individual (some have only one individual).



6. Papers published in Journal of Vegetation Science (1990-2016)

Data downloaded from www.scopus.com and stored in a Gist on GitHub.com.

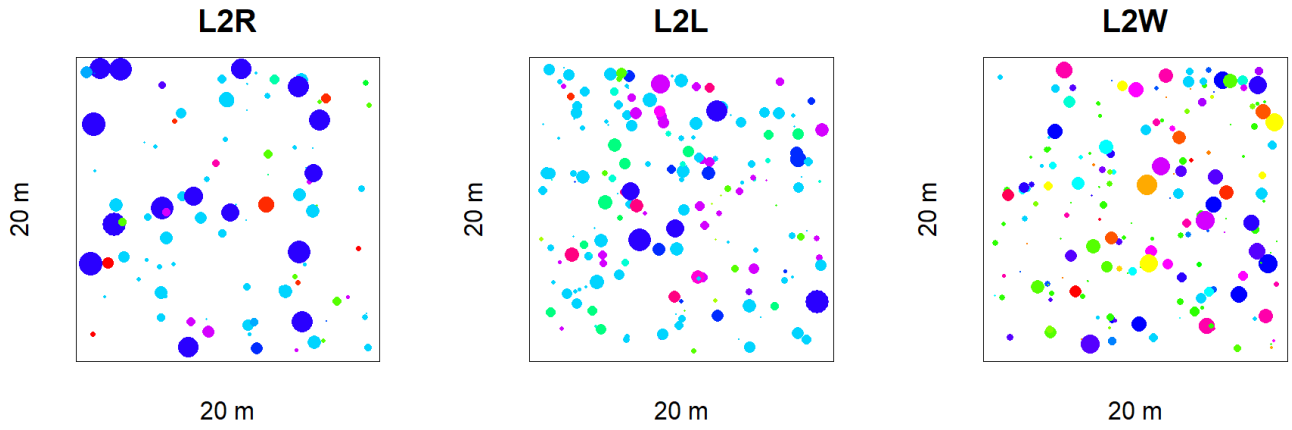
```
jvs <- readr::read_delim
('https://gist.githubusercontent.com/zdealveindy/570edaff4e8e776e02d4277980bad842/r
aw/182132abfbb1042ae4d515dae5d762b00510c59d/scopus-jvs-1990-2016.txt', delim =
'\t')
```

7. Tree census on three plots sampled in cloud forest (Tamanshan, Taiwan)

Data sampled by Vegetation Ecology lab. Three 20×20 m plots were sampled at an elevation of around 1850 m in Tamanshan. In each plot, we measured DBH (diameter at breast height) of each tree individual with DBH > 1 cm and determined its species. Some individuals have more than one stem; in that case, we measured each stem separately, and in the record, the same individual number occurs on multiple rows, each with a different DBH measurement. Plot codes are L2R, L2L and L2W. The figure below illustrates the situation (each box = one plot, 20×20 m; each point = one tree individual; size of the symbol = proportional to the individual's DBH; different colour = different species; spatial distribution does not reflect reality; the script creating the figure is here).

```
tamanshan <- readr::read_delim
```

```
('https://gist.githubusercontent.com/zdealveindy/901dc3b30997a2378e5421aa1390c926/raw/50480004df7d774a62e51b2afed0b0104df0988a/tamanshan_tree_census.txt', delim = '\t')
```



8. Long data

From Manipulating big data in R for vegetation scientists (Viktoria Wagner) Chapter 7.2

```
plot.vec <- c("P1", "P2", "P3", "P4", "P5", "P6", "P7", "P8",
              "P9", "P10", "P1", "P2", "P3", "P4", "P5", "P6",
              "P7", "P8", "P9", "P10", "P1", "P2", "P3", "P4",
              "P5", "P6", "P7", "P8", "P9", "P10", "P1", "P2",
              "P3", "P4", "P5", "P6", "P7", "P8", "P9", "P10")
lat.vec <-c(-25.628, 22.504, -3.515, 1.400, -11.661, 16.936, -2.787, -11.767,
            10.209, -5.747, -25.628, 22.504, -3.515,  1.400, -11.661, 16.936,
            -2.787, 2-11.767, 10.209, -5.747, -25.628, 22.504, -3.515, 1.400,
            -11.661, 16.936, -2.787, -11.767, 10.209, -5.747, -25.628, 22.504,
            -3.515, 1.400, -11.661, 16.936, -2.787, -11.767, 10.209, -5.747)
long.vec <- c(27.501, -21.998, -48.671, 17.081, 7.165, -0.839, -6.539, -0.644,
              17.802, NA, -27.501,  -21.998, -48.671, 17.081, 7.165, -0.839,
-6.539,
              -0.644, 17.802, NA, -27.501, -21.998, -48.671, 17.081, 7.165, -0.839,
              -6.539, -0.644, 17.802, NA, -27.501, -21.998, -48.671, 17.081, 7.165,
              -0.839, -6.539, -0.644, 17.802, NA)
spec.vec <- c("spec1", "spec1", "spec1", "spec1", "spec1", "spec1", "spec1",
              "spec1", "spec1",  "spec1", "spec2", "spec2", "spec2", "spec2",
              "spec2", "spec2", "spec2", "spec2", "spec2", "spec2", "spec3",
              "spec3", "spec3", "spec3", "spec3", "spec3", "spec3", "spec3",
              "spec3", "spec3", "spec4", "spec4", "spec4", "spec4", "spec4",
              "spec4", "spec4", "spec4", "spec4", "spec4")
abund.vec <-c(20, 5, 20, 1, 0, 0, 0, 20, 5, 10, 0, 0, 40, 1, 0, 0, 0, 5, 0, 5,
              10, 50, 0, 5, 10, 0, 1, 0, 5, 10, 5, 0, 10, 10, 30, 5, 0, 0,
              50, 30)
long.data <- data.frame(plot = plot.vec,
                        lat = lat.vec,
                        long = long.vec,
                        spec = spec.vec,
                        abund = abund.vec)
```

9. Wide data

From Manipulating big data in R for vegetation scientists (Viktoria Wagner) Chapter 7.1

```
lat.vec.w <- c(-25.628, 22.504, -3.515,
               1.400, -11.661, 16.936,
               -2.787, -11.767, 10.209,
               -5.747)
long.vec.w <- c(-27.501, -21.998, -48.671,
                17.081, 7.165, -0.839, -6.539, -0.644,
                17.802, NA)
wide.data <- data.frame(plot = c(paste("P", 1:10, sep="")),
                        spec1 = c(20,5,20,1,0,0,0,20,5,10),
                        spec2 = c(0,0,40,1,0,0,0,5,0,5),
                        spec3 = c(10,50,0,5,10,0,1,0,5,10),
                        spec4 = c(5,0,10,10,30,5,0,0,50,30),
                        lat = lat.vec.w,
                        long = long.vec.w)
```