

Compute Biomass

```
source(here::here("load_pkgs.R"))
```

```
df <- read_csv(here::here("data/tree_data_full.csv"))
```

¿Qué especies tenemos en nuestros plots?

```
sps <- unique(df$sp)
```

Componentes de la biomasa

- Stem with bark (commercial volume, up to a top diameter of 7 cm)
- Thick branches (diameter greater than 7 cm)
- Medium branches (diameter between 2 and 7 cm)
- Thin branches (diameter smaller than 2 cm)
- Leaves

Seguimos la misma nomenclatura que Ruiz-Peinado Gertrudix, Montero, and Del Rio (2012).

- W_s : Biomass weight of the stem fraction (kg)
- W_{b7} : Biomass weight of the thick branches fraction (diameter larger than 7 cm) (kg)
- W_{b2-7} : Biomass weight of medium branches fraction (diameter between 2 and 7 cm) (kg)
- W_{b2-7} : Biomass weight of thin branches fraction (diameter smaller than 2 cm) with leaves (kg)
- W_r : Biomass weight of the belowground fraction (kg)

Quercus pyrenaica

Fuente: Ruiz-Peinado Gertrudix, Montero, and Del Rio (2012)

- Stem + Thick branches $W_s + W_{b7} = 0.0261 \cdot d^2 \cdot h$
- Medium branches $W_{b2-7} = -0.0260 \cdot d^2 + 0.536 \cdot h + 0.00538 \cdot d^2 \cdot h$
- Thin branches $W_{b2} = 0.898 \cdot d - 0.445 \cdot h$
- Roots $W_r = 0.143 \cdot d^2$

```
# Proposal function
biomassQpyr <- function(d, h, ...){
  if (d > 7) {
    w <- (0.0261* d^2 * h)
  } else if (d < 2) {
    w <- (0.898*d) - (0.445*h)
  } else {
    w <- (-0.0260 * d^2) + (0.536 * h) + (0.00538 * d^2 * h)
  }
}
```

References

```
mixed <- tree %>% + group_by(code, sp) %>% + count() %>% + rowid_to_column(.) %>% +  
group_by(code) %>% + count() %>% + filter(n > 1) %>% + dplyr::select(code)
```

Ruiz-Peinado Gertrudix, R., G. Montero, and M. Del Rio. 2012. “Biomass Models to Estimate Carbon Stocks for Hardwood Tree Species.” *Forest Systems* 21 (1): 42. <https://doi.org/10.5424/fs/2112211-02193>.