

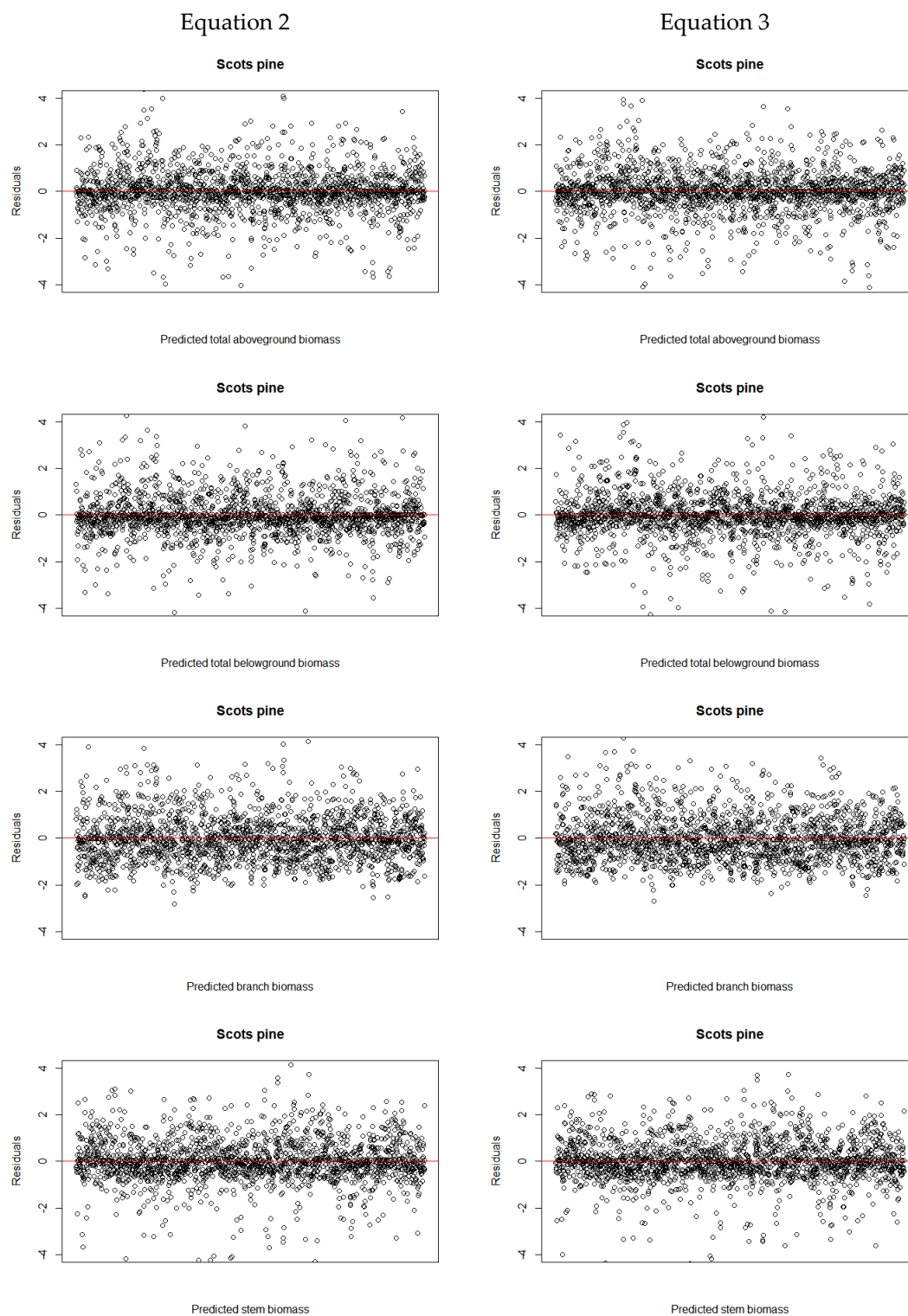
### Supplementary material

**Table S1.** The estimated allometric equations incorporating species composition index as random effect and fitting statistics for Equation 1.

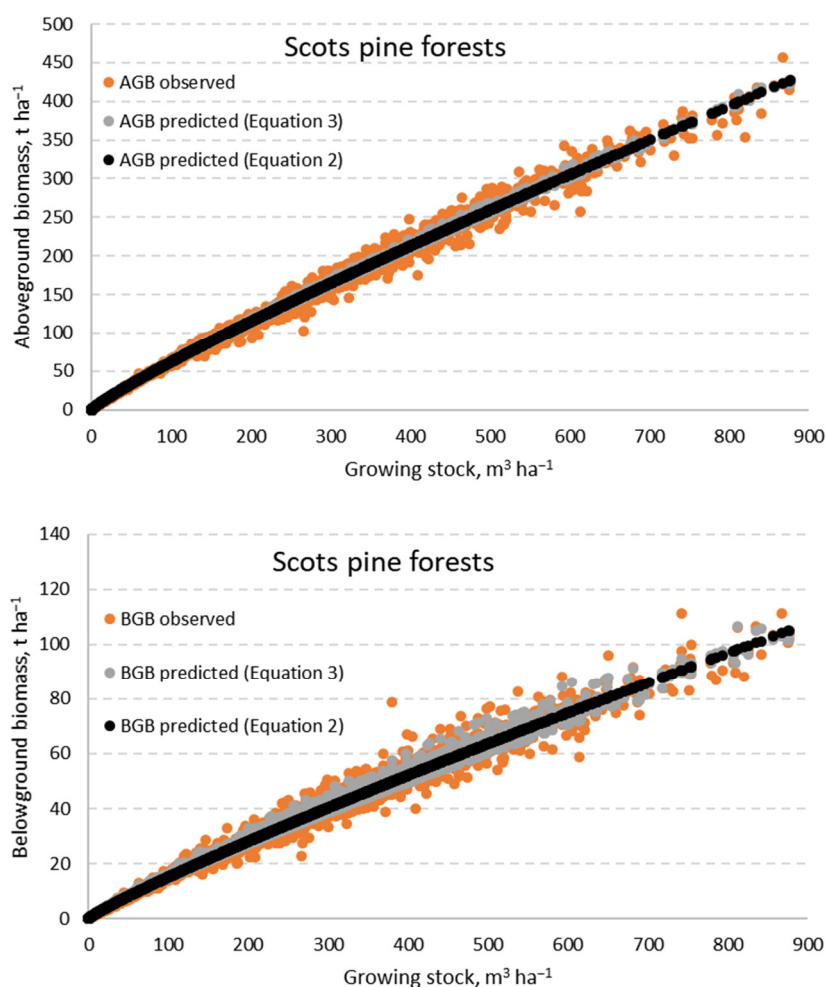
| Forest category | Component* | Parameter values $\pm$ standard errors |       |                |       | RndStd** | RMSE | MAPE | adjR <sup>2</sup> |
|-----------------|------------|--|-------|----------------|-------|----------|------|------|-------------------|
|                 |            | a                                      |       | b <sub>1</sub> |       |          |      |      |                   |
| Scots pine      | AGB        | 1.100                                  | 0.017 | 0.881          | 0.003 | 0.004    | 7.9  | 6.0  | 0.993             |
|                 | BGB        | 0.297                                  | 0.006 | 0.869          | 0.005 | 0.011    | 2.5  | 7.0  | 0.988             |
|                 | SB         | 0.375                                  | 0.008 | 1.021          | 0.003 | 0        | 8.3  | 8.9  | 0.989             |
|                 | BB         | 2.381                                  | 0.142 | 0.469          | 0.013 | 0.023    | 7.2  | 30.1 | 0.756             |
| Norway spruce   | AGB        | 1.428                                  | 0.031 | 0.840          | 0.004 | 0        | 8.5  | 9.4  | 0.991             |
|                 | BGB        | 0.553                                  | 0.018 | 0.782          | 0.006 | 0        | 3.7  | 17.1 | 0.977             |
|                 | SB         | 0.307                                  | 0.006 | 1.048          | 0.003 | 0.004    | 5.0  | 7.8  | 0.995             |
|                 | BB         | 2.721                                  | 0.150 | 0.486          | 0.011 | 0.013    | 7.2  | 25.1 | 0.863             |
| Birch           | AGB        | 0.741                                  | 0.011 | 0.955          | 0.003 | 0.003    | 6.1  | 10.3 | 0.995             |
|                 | BGB        | 0.322                                  | 0.009 | 0.871          | 0.005 | 0        | 3.4  | 19.7 | 0.977             |
|                 | SB         | 0.432                                  | 0.007 | 1.012          | 0.004 | 0.010    | 5.3  | 8.9  | 0.994             |
|                 | BB         | 0.705                                  | 0.052 | 0.672          | 0.015 | 0.022    | 7.0  | 36.9 | 0.820             |
| European aspen  | AGB        | 0.585                                  | 0.021 | 0.973          | 0.006 | 0.006    | 8.8  | 18.2 | 0.996             |
|                 | BGB        | 0.298                                  | 0.014 | 0.849          | 0.010 | 0.019    | 3.0  | 19.8 | 0.987             |
|                 | SB         | 0.489                                  | 0.024 | 0.964          | 0.008 | 0        | 9.8  | 16.2 | 0.988             |
|                 | BB         | 0.351                                  | 0.043 | 0.773          | 0.022 | 0.028    | 6.3  | 32.5 | 0.904             |
| Grey alder      | AGB        | 0.532                                  | 0.017 | 0.991          | 0.006 | 0.008    | 4.9  | 16.0 | 0.994             |
|                 | BGB        | 0.383                                  | 0.021 | 0.804          | 0.012 | 0.016    | 2.5  | 15.4 | 0.969             |
|                 | SB         | 0.334                                  | 0.010 | 1.037          | 0.005 | 0        | 3.6  | 16.6 | 0.994             |
|                 | BB         | 0.378                                  | 0.061 | 0.748          | 0.033 | 0.039    | 5.3  | 43.2 | 0.778             |
| Common alder    | AGB        | 0.597                                  | 0.017 | 0.977          | 0.005 | 0.007    | 5.4  | 9.7  | 0.993             |
|                 | BGB        | 0.552                                  | 0.037 | 0.752          | 0.013 | 0.014    | 3.6  | 16.4 | 0.965             |
|                 | SB         | 0.322                                  | 0.010 | 1.053          | 0.005 | 0        | 5.0  | 11.3 | 0.996             |
|                 | BB         | 0.747                                  | 0.147 | 0.613          | 0.037 | 0.042    | 6.7  | 39.0 | 0.725             |

\*Total aboveground biomass (AGB), belowground biomass (BGB), stem biomass (SB), and branch biomass (BB).

\*\*The standard deviation of the random variable (RndStd).



**Figure S1.** An example of how Pearson residuals are analyzed for the Equation 2 and Equation 3 by RMSE for above- and belowground biomass components of Scots pine forests category.



**Figure S2.** An example of relationship between stand level growing stock and above- and belowground dry biomass (AGB and BGB, respectively) for the Scots pine forest category. The predicted values were estimated with the AGB and BGB functions presented in Table 3 and Table 4.

**Table S2.** National level forest stand biomass (AGB + BGB) estimated by the NFI (reference) and Equations 2 and 3. The difference, % is expressed as absolute percent difference between the NFI reference value and the estimates obtained from equations presented in Table 4 and Table 5.

| Forest category | Biomass, t<br>NFI | Biomass, t<br>(Eq. 2) | Biomass, t<br>(Eq. 3) | Difference, %<br>(Eq. 2) | Difference, %<br>(Eq. 3) |
|-----------------|-------------------|-----------------------|-----------------------|--------------------------|--------------------------|
| Scots pine      | 129065.3          | 129207.94             | 129229.57             | 0.11                     | 0.13                     |
| Norway spruce   | 78990.89          | 79158.48              | 79153.33              | 0.21                     | 0.21                     |
| Birch           | 94751.49          | 94957.78              | 94918.17              | 0.22                     | 0.18                     |
| European aspen  | 28628.62          | 28719.86              | 28638.01              | 0.32                     | 0.03                     |
| Grey alder      | 17616.89          | 17600.42              | 17617.78              | 0.09                     | 0.01                     |
| Common alder    | 21229.77          | 21281.95              | 21232.86              | 0.25                     | 0.01                     |
| Total           | 370282.95         | 370926.43             | 370789.72             | 0.17                     | 0.14                     |