This paper presents data on carbon stocks of tropical tree species along a rainfall gradient. The data was generated from the Sesheke, Namwala, and Kabompo sites in Zambia. Though above-ground data was generated for all these three sites, we uprooted trees to determine below-ground biomass from the Sesheke site only. The vegetation was assessed in all three sites. The data includes tree diameter at breast height (DBH), total tree height, wood density, wood dry weight and root dry weight for large (≥ 5 cm DBH) and small (< 5 cm DBH) trees. We further presented Root-to-Shoot Ratios of uprooted trees. Data on the importance-value indices of various species for large and small trees are also determined. Below and above-ground carbon stocks of the surveyed tree species are presented per site. This data were used by Ngoma et al. (2018) [1] to develop above and below-ground biomass models.
and the reader is referred to this study for additional information, interpretation, and reflection on applying this data.

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### Specifications Table

| Subject area | Ecology                        |
|--------------|--------------------------------|
| More specific subject area | Carbon stocks of the Zambezi Teak Forests. |
| Type of data | Tables and Figures. |
| How data was acquired | We generated data to develop above-ground and below-ground biomass models by respectively cutting down trees and uprooting trees. We assessed vegetation characteristics by generating data to determine carbon stocks. We determined the carbon fractions in leaves, branches, stems, and roots from all cut and uprooted trees. These carbon fractions were measured in the laboratory using a Fisons EA1108 CHN-0 elemental analyser (See Ngoma et al. [1] for details). |
| Data format | Analyzed and Raw. |
| Experimental factors | Root and wood samples were immediately weighed whilst in the field. Samples taken to develop allometric models were then oven dried for 24 h at 105 °C to obtain their dry weight after determining their volume through the water-displacement approach in the ‘as received condition’ [1,2]. Stem, branches, roots, and leaves were ground into fine powder before analyzing them for their C fraction. Wood volume was not measured for the disk samples that were taken to determine their carbon fraction. |
| Data source location | We collected data from Kabompo (14°00.551S, 023°35.106E), Namwala (15°50.732S, 026°28.927E), and Sesheke (17°21.278S, 24°22.560E) in Zambia. |
| Data accessibility | Data are provided in this paper to improve data accessibility and further data at the tree-level are available online in excel format (Supplementary information 1 and 2. |

### Value of the data

- The data can be used to understand carbon-stock distributions for a tropical precipitation gradient. This gives insights on how climate change likely affects these distributions.
- The data provide information on the carbon-storage potential of various species, thereby giving insight on the carbon-sequestration potential of individual species.
- The average root-to-shoot ratio presented can be applied in similar forests to determine the below-ground biomass stocks from the above-ground biomass values; and
- The data can be used to develop allometric models of similar tropical forests types and species.

### 1. Data

We present data on various tree parameters (e.g. diameter at breast height (DBH), total tree height, wood density, and dry weight). The data presented in Section 1.1 were used to determine carbon fraction in leaves, stem, branches, and roots, and to develop above and below-ground biomass...
Table 1
Diameter (DBH), total tree height, wood density, and wood dry weight of sampled small trees (< 5 cm DBH).

| Species                  | Diameter (DBH, cm) | Total tree height (m) | Wood density (g/m³) | Wood dry weight (kg) |
|--------------------------|--------------------|-----------------------|---------------------|----------------------|
| Baphia massaiensis       | 2.30               | 3.00                  | 0.77                | 0.66                 |
| Baphia massaiensis       | 1.10               | 2.00                  | 0.56                | 0.24                 |
| Baphia massaiensis       | 3.50               | 3.95                  | 0.66                | 2.10                 |
| Baphia massaiensis       | 2.50               | 2.35                  | 0.67                | 0.69                 |
| Baphia massaiensis       | 1.80               | 3.20                  | 0.70                | 0.72                 |
| Baphia massaiensis       | 3.50               | 4.70                  | 0.70                | 3.04                 |
| Baphia massaiensis       | 4.50               | 7.00                  | 0.73                | 5.58                 |
| Baphia massaiensis       | 4.50               | 4.90                  | 0.70                | 4.10                 |
| Baphia massaiensis       | 1.10               | 2.50                  | 0.79                | 3.32                 |
| Baphia massaiensis       | 1.20               | 3.40                  | 0.93                | 3.01                 |
| Baphia massaiensis       | 2.50               | 4.40                  | 0.95                | 0.91                 |
| Baphia massaiensis       | 3.00               | 4.90                  | 0.93                | 0.36                 |
| Baphia massaiensis       | 3.70               | 5.50                  | 0.88                | 1.75                 |
| Baphia massaiensis       | 3.40               | 5.30                  | 0.76                | 2.12                 |
| Baphia massaiensis       | 4.60               | 4.00                  | 0.89                | 2.07                 |
| Baphia massaiensis       | 4.50               | 4.50                  | 0.94                | 0.60                 |
| Baphia massaiensis       | 1.80               | 3.70                  | 0.73                | 0.86                 |
| Baphia massaiensis       | 2.40               | 3.80                  | 1.07                | 0.33                 |
| Baphia massaiensis       | 1.50               | 3.70                  | 1.04                | 0.23                 |
| Baphia massaiensis       | 3.10               | 4.90                  | 0.72                | 4.79                 |
| Baphia massaiensis       | 2.80               | 4.00                  | 0.62                | 0.28                 |
| Baphia massaiensis       | 1.50               | 3.90                  | 0.86                | 0.35                 |
| Baphia massaiensis       | 2.00               | 3.50                  | 0.88                | 0.40                 |
| Baphia massaiensis       | 1.60               | 3.58                  | 0.73                | 0.26                 |
| Baphia massaiensis       | 2.40               | 3.80                  | 0.75                | 0.14                 |
| Baphia massaiensis       | 1.60               | 3.20                  | 1.01                | 0.35                 |
| Baphia massaiensis       | 1.10               | 2.50                  | 0.71                | 0.17                 |
| Combretum celastroides   | 2.20               | 2.10                  | 0.08                | 2.07                 |
| Combretum celastroides   | 2.00               | 3.85                  | 0.93                | 1.66                 |
| Combretum celastroides   | 1.30               | 3.10                  | 0.99                | 2.49                 |
| Combretum celastroides   | 3.10               | 4.40                  | 0.93                | 3.60                 |
| Combretum celastroides   | 4.50               | 5.00                  | 0.97                | 2.82                 |
| Combretum celastroides   | 4.20               | 4.70                  | 0.90                | 0.97                 |
| Combretum celastroides   | 2.80               | 3.30                  | 0.83                | 2.04                 |
| Combretum celastroides   | 3.80               | 8.40                  | 0.97                | 3.82                 |
| Diplorhynchus candylacarpon | 4.50             | 4.20                  | 0.53                | 0.91                 |
| Diplorhynchus candylacarpon | 4.70             | 5.30                  | 0.46                | 0.33                 |
| Diplorhynchus candylacarpon | 2.80             | 8.90                  | 0.47                | 2.04                 |
| Diplorhynchus candylacarpon | 1.40             | 4.15                  | 0.65                | 7.22                 |
| Diplorhynchus candylacarpon | 3.40             | 4.30                  | 0.76                | 6.16                 |
| Diplorhynchus candylacarpon | 3.50             | 5.70                  | 0.69                | 0.42                 |
| Diplorhynchus candylacarpon | 1.60             | 3.40                  | 0.70                | 0.58                 |
| Diplorhynchus candylacarpon | 2.80             | 5.40                  | 0.54                | 3.71                 |
| Friesodielsia obovata    | 1.60               | 3.10                  | 0.51                | 0.38                 |
| Friesodielsia obovata    | 1.20               | 2.80                  | 0.84                | 9.57                 |
| Friesodielsia obovata    | 4.80               | 8.80                  | 0.70                | 2.32                 |
| Friesodielsia obovata    | 3.20               | 4.00                  | 0.81                | 0.64                 |
| Friesodielsia obovata    | 2.70               | 4.00                  | 0.72                | 0.72                 |
| Friesodielsia obovata    | 2.70               | 3.00                  | 0.85                | 2.78                 |
| Friesodielsia obovata    | 4.00               | 3.60                  | 0.78                | 0.25                 |
| Friesodielsia obovata    | 1.20               | 3.40                  | 0.70                | 0.55                 |
| Friesodielsia obovata    | 2.40               | 4.70                  | 0.68                | 0.39                 |
| Friesodielsia obovata    | 2.60               | 5.01                  | 0.63                | 1.03                 |
| Friesodielsia obovata    | 3.10               | 5.05                  | 0.72                | 1.30                 |
| Friesodielsia obovata    | 3.10               | 4.10                  | 0.67                | 5.63                 |
| Friesodielsia obovata    | 1.60               | 4.04                  | 0.89                | 0.26                 |
| Friesodielsia obovata    | 4.90               | 6.90                  | 0.75                | 3.01                 |
| Pteleopsis anisoptera    | 3.20               | 6.10                  | 0.68                | 6.28                 |
| Pteleopsis anisoptera    | 2.60               | 5.20                  | 0.72                | 0.35                 |
### Table 1 (continued)

| Species                  | Diameter (DBH, cm) | Total tree height (m) | Wood density (g/m³) | Wood dry weight (kg) |
|--------------------------|--------------------|-----------------------|---------------------|----------------------|
| *Pteleopsis anisoptera*  | 2.40               | 2.90                  | 0.68                | 4.35                 |
| *Pteleopsis anisoptera*  | 1.20               | 3.20                  | 0.73                | 0.48                 |
| *Pteleopsis anisoptera*  | 1.10               | 3.40                  | 0.87                | 0.37                 |
| *Pteleopsis anisoptera*  | 4.90               | 5.60                  | 0.75                | 3.03                 |
| *Pteleopsis anisoptera*  | 3.10               | 5.80                  | 0.70                | 1.92                 |
| *Pteleopsis anisoptera*  | 4.70               | 6.50                  | 0.81                | 3.70                 |
| *Pterocarpus antunesii*  | 4.30               | 8.00                  | 0.79                | 0.40                 |
| *Pterocarpus antunesii*  | 4.40               | 7.00                  | 0.89                | 0.88                 |
| *Pterocarpus antunesii*  | 1.40               | 4.10                  | 0.50                | 0.39                 |
| *Pterocarpus antunesii*  | 3.80               | 5.80                  | 0.80                | 1.14                 |
| *Pterocarpus antunesii*  | 2.30               | 5.40                  | 1.19                | 0.49                 |
| *Pterocarpus antunesii*  | 1.70               | 5.20                  | 0.79                | 0.32                 |
| *Pterocarpus antunesii*  | 4.00               | 7.40                  | 0.69                | 0.77                 |
| *Pterocarpus antunesii*  | 3.80               | 7.25                  | 0.78                | 4.54                 |
| *Pterocarpus antunesii*  | 4.30               | 5.30                  | 0.73                | 5.97                 |

### Table 2

| Species                  | Diameter (DBH, cm) | Total height (m) | Wood density (g/m³) | Wood dry weight (kg) |
|--------------------------|--------------------|-----------------|---------------------|----------------------|
| *Baikiaea plurijuga*     | 32.50              | 12.44           | 0.83                | 459.99               |
| *Baikiaea plurijuga*     | 34.00              | 15.32           | 0.96                | 619.83               |
| *Baikiaea plurijuga*     | 21.00              | 11.95           | 0.78                | 129.50               |
| *Baikiaea plurijuga*     | 7.00               | 8.20            | 0.92                | 14.80                |
| *Baikiaea plurijuga*     | 26.70              | 14.90           | 1.00                | 271.89               |
| *Baikiaea plurijuga*     | 33.00              | 9.80            | 0.94                | 493.30               |
| *Baikiaea plurijuga*     | 48.70              | 17.55           | 0.88                | 1031.10              |
| *Baikiaea plurijuga*     | 43.70              | 16.90           | 0.91                | 944.59               |
| *Baikiaea plurijuga*     | 55.50              | 16.90           | 0.94                | 2043.49              |
| *Baikiaea plurijuga*     | 51.00              | 17.85           | 0.89                | 1020.93              |
| *Baikiaea plurijuga*     | 69.50              | 21.90           | 0.91                | 2355.53              |
| *Baikiaea plurijuga*     | 39.50              | 39.50           | 0.85                | 949.69               |
| *Baikiaea plurijuga*     | 22.20              | 11.95           | 0.80                | 264.77               |
| *Baikiaea plurijuga*     | 33.10              | 14.00           | 0.85                | 423.57               |
| *Baikiaea plurijuga*     | 41.00              | 15.19           | 1.01                | 744.65               |
| *Baikiaea plurijuga*     | 43.00              | 14.20           | 0.91                | 689.72               |
| *Baikiaea plurijuga*     | 8.50               | 6.70            | 0.92                | 13.30                |
| *Baikiaea plurijuga*     | 12.00              | 9.80            | 0.94                | 55.06                |
| *Baikiaea plurijuga*     | 12.00              | 10.05           | 0.85                | 54.89                |
| *Baikiaea plurijuga*     | 8.00               | 7.65            | 0.69                | 17.60                |
| *Baikiaea plurijuga*     | 50.00              | 15.37           | 0.83                | 1321.92              |
| *Baikiaea plurijuga*     | 25.00              | 10.80           | 0.98                | 310.46               |
| *Baikiaea plurijuga*     | 44.00              | 14.90           | 0.90                | 1201.18              |
| *Baikiaea plurijuga*     | 35.00              | 6.20            | 1.02                | 427.83               |
| *Baikiaea plurijuga*     | 21.20              | 10.30           | 0.75                | 181.39               |
| *Baikiaea plurijuga*     | 25.00              | 11.37           | 0.89                | 307.05               |
| *Baikiaea plurijuga*     | 26.00              | 12.40           | 1.15                | 489.81               |
| *Baikiaea plurijuga*     | 41.00              | 12.50           | 0.85                | 947.46               |
| *Baikiaea plurijuga*     | 29.00              | 10.30           | 0.73                | 169.89               |
| *Baikiaea plurijuga*     | 13.70              | 13.20           | 0.78                | 63.18                |
| *Baikiaea plurijuga*     | 42.20              | 12.12           | 0.88                | 892.87               |
| *Baikiaea plurijuga*     | 33.00              | 10.17           | 1.15                | 917.50               |
| *Baikiaea plurijuga*     | 23.70              | 12.10           | 0.83                | 232.91               |
| *Baikiaea plurijuga*     | 51.50              | 11.80           | 0.93                | 1294.72              |
| *Baikiaea plurijuga*     | 16.50              | 10.40           | 0.94                | 29.27                |
| *Baikiaea plurijuga*     | 46.30              | 10.42           | 0.97                | 961.39               |
| *Baikiaea plurijuga*     | 62.00              | 19.30           | 0.86                | 2659.55              |

*Table 1* Diameter (DBH), total tree height, wood density, and wood dry weight of sampled large trees (≥ 5 cm DBH).

*Table 2*
| Species                  | Diameter (DBH, cm) | Total height (m) | Wood density (g/m³) | Wood dry weight (kg) |
|--------------------------|--------------------|------------------|---------------------|----------------------|
| *Baphia massaensis*      | 10.00              | 7.85             | 0.77                | 17.80                |
| *Baphia massaensis*      | 16.00              | 9.05             | 0.89                | 64.46                |
| *Baphia massaensis*      | 13.00              | 9.25             | 0.78                | 65.57                |
| *Baphia massaensis*      | 35.00              | 12.70            | 0.86                | 467.63               |
| *Baphia massaensis*      | 7.50               | 8.60             | 0.98                | 16.79                |
| *Combretum hereroense*   | 24.00              | 18.40            | 0.88                | 201.16               |
| *Combretum hereroense*   | 25.00              | 6.62             | 0.67                | 212.95               |
| *Combretum hereroense*   | 41.50              | 12.22            | 0.79                | 805.12               |
| *Combretum hereroense*   | 11.00              | 34.50            | 0.65                | 25.63                |
| *Combretum hereroense*   | 16.00              | 9.08             | 0.70                | 36.96                |
| *Combretum hereroense*   | 5.00               | 6.60             | 0.62                | 6.52                 |
| *Combretum hereroense*   | 36.50              | 13.50            | 0.81                | 361.30               |
| *Combretum hereroense*   | 9.00               | 20.90            | 0.62                | 20.09                |
| *Diplorhynchus candyclocarpon* | 38.40             | 15.35            | 0.88                | 556.10               |
| *Diplorhynchus candyclocarpon* | 10.00             | 6.30             | 0.67                | 27.49                |
| *Diplorhynchus candyclocarpon* | 14.40             | 6.50             | 0.75                | 61.05                |
| *Diplorhynchus candyclocarpon* | 28.50             | 8.55             | 0.92                | 161.07               |
| *Diplorhynchus candyclocarpon* | 22.00             | 7.36             | 0.72                | 117.92               |
| *Diplorhynchus candyclocarpon* | 33.00             | 7.60             | 0.73                | 274.79               |
| *Diplorhynchus candyclocarpon* | 15.00             | 5.65             | 0.83                | 38.07                |
| *Diplorhynchus candyclocarpon* | 9.70              | 4.85             | 0.80                | 19.32                |
| *Diplorhynchus candyclocarpon* | 22.00             | 8.90             | 0.76                | 296.68               |
| *Diplorhynchus candyclocarpon* | 5.10              | 4.25             | 0.48                | 5.53                 |
| *Diplorhynchus candyclocarpon* | 5.50              | 4.70             | 0.63                | 3.27                 |
| *Entandrophragma caudatum* | 36.00             | 17.30            | 0.64                | 563.02               |
| *Entandrophragma caudatum* | 46.50             | 16.07            | 0.65                | 193.80               |
| *Ficus sycomorus*        | 17.00              | 7.75             | 0.70                | 95.26                |
| *Ficus sycomorus*        | 15.70              | 6.70             | 0.78                | 76.48                |
| *Ficus sycomorus*        | 23.00              | 5.65             | 0.56                | 193.80               |
| *Ficus sycomorus*        | 16.50              | 7.48             | 0.99                | 103.44               |
| *Ficus sycomorus*        | 17.00              | 5.56             | 0.68                | 56.30                |
| *Lonchocarpus nelsii*    | 9.50               | 6.40             | 0.99                | 19.54                |
| *Lonchocarpus nelsii*    | 29.00              | 11.30            | 1.11                | 300.64               |
| *Lonchocarpus nelsii*    | 16.00              | 8.75             | 0.80                | 75.21                |
| *Lonchocarpus nelsii*    | 16.20              | 6.60             | 0.69                | 59.37                |
| *Pteleopsis anisoptera*  | 5.00               | 7.50             | 0.99                | 61.57                |
| *Pteleopsis anisoptera*  | 10.00              | 9.00             | 0.86                | 37.04                |
| *Pteleopsis anisoptera*  | 9.00               | 9.20             | 0.83                | 16.57                |
| *Pteleopsis anisoptera*  | 15.20              | 11.30            | 0.66                | 57.46                |
| *Pteleopsis anisoptera*  | 27.00              | 14.75            | 0.95                | 315.11               |
| *Pteleopsis anisoptera*  | 28.00              | 16.45            | 0.97                | 543.42               |
| *Pteleopsis anisoptera*  | 31.70              | 13.60            | 0.98                | 365.56               |
| *Pteleopsis anisoptera*  | 34.00              | 16.63            | 0.85                | 590.86               |
| *Pteleopsis anisoptera*  | 33.00              | 18.30            | 1.13                | 422.99               |
| *Pterocarpus angolensis* | 19.00              | 8.09             | 0.56                | 66.13                |
| *Pterocarpus angolensis* | 6.30               | 4.85             | 0.42                | 6.16                 |
| *Pterocarpus angolensis* | 10.00              | 5.85             | 0.68                | 27.08                |
| *Pterocarpus angolensis* | 13.50              | 7.55             | 0.47                | 39.09                |
| *Pterocarpus angolensis* | 24.00              | 10.15            | 0.59                | 159.04               |
| *Pterocarpus angolensis* | 21.60              | 10.80            | 0.64                | 169.62               |
| *Pterocarpus angolensis* | 31.50              | 9.48             | 0.56                | 365.62               |
| *Pterocarpus angolensis* | 12.00              | 6.19             | 0.76                | 43.72                |
| *Pterocarpus angolensis* | 50.30              | 11.88            | 0.70                | 1488.17              |
| *Pterocarpus angolensis* | 32.50              | 11.75            | 0.62                | 199.30               |
| *Pterocarpus angolensis* | 43.00              | 14.44            | 0.65                | 803.22               |
| *Pterocarpus antunesii*  | 39.00              | 14.05            | 0.95                | 895.36               |
| *Pterocarpus antunesii*  | 19.00              | 16.55            | 0.72                | 182.70               |
| *Pterocarpus antunesii*  | 20.00              | 18.55            | 0.93                | 160.68               |
| *Pterocarpus antunesii*  | 10.00              | 11.50            | 0.76                | 28.62                |
models. Root-to-Shoot ratios of the uprooted trees were also calculated. Section 1.2 provides the species-importance-value (SIV) indices of all surveyed trees, which are categorized as large (\( \geq 5 \text{ cm DBH} \)) or small (\(< 5 \text{ cm DBH} \)) trees. In Section 1.3, data on carbon stocks of various surveyed tree species per study site are presented.

1.1. Parameters of trees used to develop allometric models

See Tables 1–3 here.

1.2. Species importance value indices of large (\( \geq 5 \text{ cm DBH} \)) and small (\(< 5 \text{ cm DBH} \)) trees

This section provides the SIV indices of all surveyed trees and tree species [1] (see Tables 4 and 5). Indices were calculated following the Cottam and Curtis [3] method. Supplementary information 1 (small trees) and 2 (large trees) provide a list of all trees and tree species surveyed. The information are excel files and available in electronic format.

1.3. Carbon stock per species per site

See Table 6 and Supplementary information 1 and 2.

2. Experimental design, materials and methods

Our sampling strategy and methods are fully described in Ngoma et al. [1] and its cited references. This section only presents the pictorial processes that we followed to collect our samples to develop below-ground (Section 2.1) and above-ground biomass (Section 2.2) models.

### Table 2 (continued)

| Species              | Diameter (DBH, cm) | Total height (m) | Wood density (g/m³) | Wood dry weight (kg) |
|----------------------|--------------------|------------------|---------------------|----------------------|
| *Pterocarpus antunesii* | 6.50               | 10.40            | 0.67                | 9.50                 |
| *Pterocarpus antunesii* | 32.00              | 11.87            | 0.69                | 630.64               |
| *Pterocarpus antunesii* | 23.00              | 12.23            | 0.80                | 401.37               |
| *Pterocarpus antunesii* | 44.00              | 18.81            | 0.83                | 651.66               |
| *Pterocarpus antunesii* | 41.00              | 15.26            | 0.83                | 1170.64              |
| *Pterocarpus antunesii* | 25.00              | 13.60            | 0.73                | 205.56               |

### Table 3

| Species                      | DBH (cm) | Total tree height (m) | Above-ground biomass (Kg) | Root density (g/m³) | Root biomass (Kg) | Root-to-Shoot ratio |
|------------------------------|----------|-----------------------|---------------------------|---------------------|-------------------|---------------------|
| *Baikiaea plurijuga*         | 25       | 11                    | 310                       | 0.89                | 56                | 0.18                |
| *Baikiaea plurijuga*         | 44       | 18                    | 1201                      | 0.85                | 295               | 0.25                |
| *Baikiaea plurijuga*         | 35       | 6                     | 428                       | 0.67                | 151               | 0.35                |
| *Ficus sycomorus*            | 17       | 8                     | 95                        | 0.53                | 27                | 0.28                |
| *Lonchocarpus nelsii*        | 10       | 6                     | 20                        | 0.76                | 9                 | 0.47                |
| *Lonchocarpus nelsii*        | 29       | 11                    | 301                       | 0.80                | 199               | 0.66                |
| *Ficus sycomorus*            | 16       | 7                     | 76                        | 0.48                | 35                | 0.46                |
| Average                      |          |                       |                           |                     |                   | 0.38                |
Table 4
Species Importance Value (SIV) Indices of small trees (< 5 cm DBH) per site. (Note: A dash means that a species was not found at the site).

| Species                          | Kabompo | Namwala | Sesheke | Language of the species name |
|---------------------------------|---------|---------|---------|-----------------------------|
| Acacia ataxacantha              | –       | –       | 11.01   | Botanical                   |
| Afzelia quanzensis              | 3.07    | –       | –       | Botanical                   |
| Baikiaea plurijuga              | –       | 4.82    | –       | Botanical                   |
| Baphia massaiensis              | 70.37   | 69.68   | 27.08   | Botanical                   |
| Bauhinia petersiana             | –       | –       | 0.00    | Botanical                   |
| Brachystegia speciformis        | 8.27    | –       | –       | Botanical                   |
| Cassia abbreviata               | –       | 4.90    | –       | Botanical                   |
| Combretum celastroides          | –       | 30.96   | 0.00    | Botanical                   |
| Combretum hereroense            | –       | –       | 15.51   | Botanical                   |
| Combretum molle                 | –       | 9.07    | –       | Botanical                   |
| Combretum zeyheri               | –       | 1.37    | –       | Botanical                   |
| Commiphora mollis              | –       | 3.57    | –       | Botanical                   |
| Croton gratissimus              | –       | –       | 0.00    | Botanical                   |
| Dichrostachys cinerea           | –       | 1.35    | –       | Botanical                   |
| Diplorhynchus candycloparpon    | 49.44   | 26.78   | 4.82    | Botanical                   |
| Eucalyptus (exotic species)     | –       | –       | 0.00    | Botanical                   |
| Friesodielsia obovata           | 3.01    | 45.03   | 42.71   | Botanical                   |
| Hippocratea africana            | –       | –       | 5.09    | Botanical                   |
| Hymenocardia acida              | –       | 1.37    | –       | Botanical                   |
| Ibu                             | –       | 1.32    | –       | Lila                        |
| Kapasa ka lyongono              | 1.54    | –       | –       | Luvale                      |
| Lonchocarpus nelsii             | –       | –       | 12.23   | Botanical                   |
| Mang’omba                       | –       | 3.19    | –       | Luvale                      |
| Markhamia obtusifolia           | 2.06    | 17.95   | –       | Botanical                   |
| Markhamia zanzibarica           | –       | –       | 12.47   | Botanical                   |
| Mbangeimo                       | –       | –       | 0.00    | Lozi                        |
| Mubangabanga                    | 6.64    | –       | –       | Luvale                      |
| Mubeba                          | 1.65    | –       | –       | Luvale                      |
| Mubwabwa                        | –       | 2.77    | –       | Luvale                      |
| Muhoho                          | 1.35    | –       | –       | Luvale                      |
| Muhuha                          | 12.67   | –       | –       | Luvale                      |
| Mukube                          | 5.56    | –       | –       | Luvale                      |
| Mumbukushu                      | 10.84   | –       | –       | Luvale                      |
| Mumbumelenge                    | –       | –       | 0.00    | Lozi                        |
| Mutangambabala                  | –       | 1.70    | –       | Tonga                       |
| Mwungili                        | –       | 1.34    | –       | Tonga                       |
| Namulomo                        | –       | –       | 25.73   | Lozi                        |
| Pseudolachnostylis maprouneifolia| –     | 3.22    | 43.67   | Botanical                   |
| Pteleopsis anisoptera           | 22.28   | –       | –       | Botanical                   |
| Pterocarpus angolensis          | –       | 1.34    | –       | Botanical                   |
| Pterocarpus angolensis          | –       | 40.17   | –       | Botanical                   |
| Pterocarpus antunesii           | –       | –       | 66.93   | Botanical                   |
| Rhus longipes                   | –       | 5.84    | –       | Botanical                   |
| Ricinodendron rautanenii        | 2.95    | 1.55    | –       | Botanical                   |
| Stantwasokwe                    | –       | 5.32    | –       | Tonga                       |
| Sterculia quinqueloba           | 12.03   | –       | –       | Botanical                   |
| Strychnos innocua               | –       | 2.79    | –       | Botanical                   |
| Terminalia sericea              | –       | 2.05    | 4.23    | Botanical                   |
| Uvariastrum hexaloboides        | 1.71    | –       | –       | Botanical                   |
| Vangueriopsis lanciflora        | 2.14    | –       | –       | Botanical                   |
| Ximenia americana               | –       | 2.59    | –       | Botanical                   |
| Zanha africana                  | 10.75   | 8.42    | –       | Botanical                   |
| ?1 (Not identified)             | –       | 1.33    | –       | Not identified              |
Table 5
Species importance value indices of large trees (≥ 5 cm DBH) per site. (Note: A dash means that a species was not found at the site.).

| Species                                      | Kabompo | Namwala | Sesheke | Language of the species name |
|----------------------------------------------|---------|---------|---------|-------------------------------|
| Acacia ataxacantha                          | –       | –       | –       | Botanical                     |
| Acacia erioloba                             | –       | –       | 5.30    | Botanical                     |
| Afzelia quanzensis                          | 1.97    | 1.00    | –       | Botanical                     |
| Albizia versicolor                          | 0.89    | 1.00    | –       | Botanical                     |
| Amblygonocarpus andongensis                 | 4.17    | –       | –       | Botanical                     |
| Bakiaera plurijuga                          | 48.39   | 163     | 149.33  | Botanical                     |
| Baphia massaenas                            | 33.09   | 16.00   | –       | Botanical                     |
| Bauhinia petersiana                         | –       | –       | 2.30    | Botanical                     |
| Brachystegia boehmii                        | –       | –       | –       | Botanical                     |
| Brachystegia longifolia                     | 8.31    | –       | –       | Botanical                     |
| Brachystegia speciformis                    | 18.98   | –       | –       | Botanical                     |
| Burkea africana                             | 8.98    | –       | 2.00    | Botanical                     |
| Cassia abbreviata                           | –       | 6.19    | –       | Botanical                     |
| Combretum celsatroide                       | –       | 13.00   | –       | Botanical                     |
| Combretum hereroense                        | –       | –       | 30.99   | Botanical                     |
| Combretum imberbe                           | –       | –       | 1.07    | Botanical                     |
| Combretum molle                             | –       | 6.54    | –       | Botanical                     |
| Commiphora mollis                          | –       | 7.63    | –       | Botanical                     |
| Dialium engleranum                          | 2.94    | –       | –       | Botanical                     |
| Dichrostachys cinerea                       | –       | –       | 2.55    | Botanical                     |
| Diospyras batocana                          | 3.99    | –       | –       | Botanical                     |
| Diplorhynchus candellocarpin                | 14.09   | 27.00   | 8.00    | Botanical                     |
| Erythrophleum africanum                     | –       | –       | 10.95   | Botanical                     |
| Eucalyptus (Exotic species)                 | –       | –       | –       | Botanical                     |
| Ficus sycomorus                             | –       | –       | 8.14    | Botanical                     |
| Guibourtia coleosperma                      | 3.00    | 2.00    | –       | Botanical                     |
| Hymenocardia acida                         | 0.63    | 2.00    | –       | Botanical                     |
| Khaya nyasica                               | –       | 1.65    | –       | Botanical                     |
| Lannea discolor                             | –       | –       | –       | Botanical                     |
| Lannea stuhlmannii                          | –       | 6.26    | –       | Botanical                     |
| Lasa                                         | –       | 0.91    | –       | Tonga                         |
| Lonchocarpus nelsii                         | –       | –       | 18.29   | Botanical                     |
| Magwiltini                                  | –       | 1.99    | –       | Chewa                         |
| Markhamia obtusifolia                      | 6.98    | –       | –       | Botanical                     |
| Markhamia obtusifolia                      | –       | 4.36    | –       | Botanical                     |
| Markhamia zanzibarica                       | –       | –       | –       | Botanical                     |
| Matu                                         | –       | –       | 2.21    | Tonga                         |
| Mubangabanga                                | –       | –       | 2.22    | Tonga                         |
| Mubeba                                      | 1.72    | –       | –       | Luvale                        |
| Muhaswa                                     | 4.46    | –       | –       | Luvale                        |
| Muhulu                                      | 24.65   | –       | –       | Luvale                        |
| Mukamba                                     | –       | 4.19    | –       | Tonga                         |
| Muckenge                                    | 12.80   | –       | –       | Luvale                        |
| Mukube                                      | 2.12    | –       | –       | Luvale                        |
| Muleyambezo                                 | –       | 3.04    | –       | Tonga                         |
| Mumbukashu                                  | 1.05    | –       | –       | Luvale                        |
| Musenene                                    | 0.70    | –       | –       | Luvale                        |
| Musungwa                                    | 0.83    | –       | –       | Luvale                        |
| Nankhala                                    | –       | –       | –       | Tonga                         |
| Ochna pulchra                               | –       | –       | 2.08    | Botanical                     |
| Pseudolachnostylis maprouneifolia           | 19.75   | 3.00    | 5.00    | Botanical                     |
| Pteleopsis anisoptera                       | 35.45   | –       | –       | Botanical                     |
| Pterocarpus angolensis                      | 4.42    | 22.00   | 5.00    | Botanical                     |
| Pterocarpus antunesii                       | –       | –       | 25.34   | Botanical                     |
| Ricinodendron rautanenii                   | 21.20   | 2.00    | 4.00    | Botanical                     |
| Sclerocarya caffra                          | –       | –       | –       | Botanical                     |
| Securidaca longependunculata                | 0.62    | –       | –       | Botanical                     |
| Sterculia quinqueloba                       | 1.92    | –       | –       | Botanical                     |
| Syrophantus welwitschii                     | –       | –       | 6.71    | Botanical                     |
### Table 5 (continued)

| Species                          | Kabompo | Namwala | Sesheke | Language of the species name |
|----------------------------------|---------|---------|---------|-----------------------------|
| Strychnos potatorum              | –       | 6.16    | –       | Botanical                   |
| Strychnos pungens                | 0.70    | –       | –       | Botanical                   |
| Terminalia sericea               | –       | –       | 8.42    | Botanical                   |
| Uvariastrum hexaloboides         | 4.29    | –       | –       | Botanical                   |
| Vangueriopsis lanciflora         | 0.78    | –       | –       | Botanical                   |
| Ximenia americana                | –       | –       | –       | Botanical                   |
| Zanha africana                   | 5.45    | 13.00   | –       | Botanical                   |
| ?1 (Not identified)              | 0.66    | –       | –       | Not identified              |
| ?2 (Not identified)              | –       | 2.73    | –       | Not identified              |
| ?3 (Not identified)              | –       | 7.65    | –       | Not identified              |
| ?4 (Not identified)              | –       | –       | 5.34    | Not identified              |

### Table 6

Carbon stock (t C ha\(^{-1}\)) per species per site.

| Site      | Species name                  | Above-ground carbon stock of standing trees (dead and live) | Below-ground carbon stock of standing trees (dead and live) trees | Number of trees recorded (%) | Language of the species name |
|-----------|--------------------------------|------------------------------------------------------------|------------------------------------------------------------------|-------------------------------|-----------------------------|
| Kabompo   | Afzelia quanzensis             | 0.031                                                      | 0.011                                                            | 0.29                          | Botanical                   |
| Kabompo   | Albizia versicolor             | 0.075                                                      | 0.025                                                            | 0.07                          | Botanical                   |
| Kabompo   | Anmbygonocarpus andongensis    | 0.485                                                      | 0.161                                                            | 0.72                          | Botanical                   |
| Kabompo   | Balitea pubijuga               | 7.928                                                      | 2.637                                                            | 10.96                         | Botanical                   |
| Kabompo   | Baphia massaiensis             | 0.923                                                      | 0.344                                                            | 21.27                         | Botanical                   |
| Kabompo   | Brachystegia longifolia        | 0.865                                                      | 0.291                                                            | 1.59                          | Botanical                   |
| Kabompo   | Brachystegia speciformis       | 2.861                                                      | 0.940                                                            | 4.33                          | Botanical                   |
| Kabompo   | Burkea africana                | 0.751                                                      | 0.254                                                            | 1.59                          | Botanical                   |
| Kabompo   | Dialium engleranum             | 0.203                                                      | 0.072                                                            | 0.94                          | Botanical                   |
| Kabompo   | Diospyros batocana             | 0.185                                                      | 0.066                                                            | 1.37                          | Botanical                   |
| Kabompo   | Diplorhynchus candyllocarpon   | 0.195                                                      | 0.075                                                            | 6.85                          | Botanical                   |
| Kabompo   | Friesodielsia obovata          | 0.001                                                      | 0.000                                                            | 0.14                          | Botanical                   |
| Kabompo   | Guibourtia coleosperma         | 0.094                                                      | 0.033                                                            | 0.43                          | Botanical                   |
| Kabompo   | Hymenocardia acida             | 0.003                                                      | 0.001                                                            | 0.07                          | Botanical                   |
| Kabompo   | Kabompo1? (Not identified)     | 0.010                                                      | 0.004                                                            | 0.07                          | Not identified              |
| Kabompo   | Kapasa ka lyongono             | 0.000                                                      | 0.000                                                            | 0.07                          | Luvale                      |
| Kabompo   | Markhamia obtsufolia           | 0.069                                                      | 0.026                                                            | 1.73                          | Botanical                   |
| Kabompo   | Mubangabanga                   | 0.001                                                      | 0.000                                                            | 0.36                          | Luvale                      |
| Kabompo   | Mubeba                         | 0.052                                                      | 0.019                                                            | 0.43                          | Luvale                      |
| Kabompo   | Muhaswa                        | 0.062                                                      | 0.023                                                            | 0.87                          | Luvale                      |
| Kabompo   | Muhoho                         | 0.000                                                      | 0.000                                                            | 0.07                          | Luvale                      |
| Kabompo   | Muhuhi                         | 1.832                                                      | 0.641                                                            | 9.08                          | Luvale                      |
| Kabompo   | Mukenge                        | 0.558                                                      | 0.201                                                            | 4.83                          | Lunda                       |
| Kabompo   | Mukabe                         | 0.019                                                      | 0.007                                                            | 0.43                          | Luvale                      |
| Kabompo   | Mumbukushi                      | 0.013                                                      | 0.005                                                            | 0.65                          | Luvale                      |
| Kabompo   | Musenene                       | 0.018                                                      | 0.007                                                            | 0.07                          | Luvale                      |
| Kabompo   | Musungwa                       | 0.032                                                      | 0.011                                                            | 0.14                          | Luvale                      |
| Kabompo   | Pseudolachnostylis maprouneifolia | 1.783                                             | 0.618                                                            | 5.62                          | Botanical                   |
| Kabompo   | Pteleopsis anisoptera          | 1.959                                                      | 0.697                                                            | 15.79                         | Botanical                   |
| Kabompo   | Pterocarpus angolensis         | 0.166                                                      | 0.057                                                            | 0.50                          | Botanical                   |
| Kabompo   |                                  | 2.654                                                      | 0.893                                                            | 5.55                          | Botanical                   |
| Site        | Species name                        | Above-ground carbon stock of standing trees (dead and live) | Below-ground carbon stock of standing trees (dead and live) trees | Number of trees recorded (%) | Language of the species name |
|------------|-------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------|-----------------------------|-----------------------------|
| Kabompo    | Ricinodendron rautanenii            | 0.001                                                       | 0.001                                                        | 0.07                         | Botanical                   |
| Kabompo    | Securidaca longipedunculata         | 0.024                                                       | 0.009                                                        | 0.58                         | Botanical                   |
| Kabompo    | Sterculia quinqueloba               | 0.003                                                       | 0.001                                                        | 0.14                         | Botanical                   |
| Kabompo    | Uvariastrum hexaloboides            | 0.029                                                       | 0.011                                                        | 0.94                         | Botanical                   |
| Kabompo    | Vangueriopsis lanciflora            | 0.003                                                       | 0.001                                                        | 0.29                         | Botanical                   |
| Kabompo    | Zanha africana                      | 0.038                                                       | 0.014                                                        | 1.08                         | Botanical                   |
| Namwala    | Afzelia quanzensis                  | 0.000                                                       | 0.000                                                        | 0.07                         | Botanical                   |
| Namwala    | Albizia versicolor                  | 0.019                                                       | 0.007                                                        | 0.07                         | Botanical                   |
| Namwala    | Baikiaea plurijuga                  | 12.835                                                      | 4.421                                                        | 32.60                        | Botanical                   |
| Namwala    | Baphia massaiensis                  | 0.203                                                       | 0.074                                                        | 13.55                        | Botanical                   |
| Namwala    | Cassia abbreviata                   | 0.055                                                       | 0.020                                                        | 0.86                         | Botanical                   |
| Namwala    | Combretum                           | 0.236                                                       | 0.084                                                        | 6.77                         | Botanical                   |
| Namwala    | Combretum imberbe                   | 0.007                                                       | 0.003                                                        | 0.13                         | Botanical                   |
| Namwala    | Combretum molle                     | 0.108                                                       | 0.039                                                        | 1.99                         | Botanical                   |
| Namwala    | Combretum zeyheri                   | 0.000                                                       | 0.000                                                        | 0.07                         | Botanical                   |
| Namwala    | Commiphora mollis                   | 0.149                                                       | 0.053                                                        | 1.20                         | Botanical                   |
| Namwala    | Dichrostachys cinerea               | 0.000                                                       | 0.000                                                        | 0.07                         | Botanical                   |
| Namwala    | Diplorhynchus candylocarpson        | 0.389                                                       | 0.147                                                        | 11.29                        | Botanical                   |
| Namwala    | Friesodielsia obovata               | 0.032                                                       | 0.011                                                        | 9.16                         | Botanical                   |
| Namwala    | Guibourtia celeosperma              | 0.067                                                       | 0.024                                                        | 0.40                         | Botanical                   |
| Namwala    | Hymenocardia acida                  | 0.018                                                       | 0.007                                                        | 0.33                         | Botanical                   |
| Namwala    | Ibu                                 | 0.000                                                       | 0.000                                                        | 0.07                         | Ila                         |
| Namwala    | Lannea stuhlmannii                  | 0.036                                                       | 0.013                                                        | 0.73                         | Botanical                   |
| Namwala    | Leza                                | 0.001                                                       | 0.001                                                        | 0.07                         | Tonga                       |
| Namwala    | Mang’omba                           | 0.001                                                       | 0.000                                                        | 0.07                         | Tonga                       |
| Namwala    | Markhumia                           | 0.023                                                       | 0.009                                                        | 2.32                         | Botanical                   |
| Namwala    | Matu                                | 0.022                                                       | 0.008                                                        | 0.40                         | Tonga                       |
| Namwala    | Moonze                              | 0.000                                                       | 0.000                                                        | 0.07                         | Tonga                       |
| Namwala    | Musbangabanga                       | 0.059                                                       | 0.020                                                        | 0.13                         | Tonga                       |
| Namwala    | Mugwirinti                          | 0.009                                                       | 0.003                                                        | 0.20                         | Tonga                       |
| Namwala    | Mukamba                             | 0.011                                                       | 0.004                                                        | 0.40                         | Tonga                       |
| Namwala    | Muleyambezo                         | 0.038                                                       | 0.013                                                        | 0.33                         | Tonga                       |
| Namwala    | Mung’omba                           | 0.000                                                       | 0.000                                                        | 0.07                         | Tonga                       |
| Namwala    | Mutungambabala                      | 0.000                                                       | 0.000                                                        | 0.13                         | Tonga                       |
| Namwala    | Mutwamaila                          | 0.000                                                       | 0.000                                                        | 0.07                         | Tonga                       |
| Namwala    | Mwingili                            | 0.000                                                       | 0.000                                                        | 0.07                         | Tonga                       |
| Namwala    | Namwala1? (Not identified)          | 0.139                                                       | 0.046                                                        | 0.20                         | Not identified              |
| Namwala    | Namwala2? (Not identified)          | 0.009                                                       | 0.003                                                        | 0.13                         | Not identified              |
| Namwala    | Pericopsis angolensis               | 0.065                                                       | 0.023                                                        | 0.20                         | Botanical                   |
| Namwala    | Pseudolachnostylos maprouneifolia   | 0.030                                                       | 0.011                                                        | 0.73                         | Botanical                   |
| Namwala    | Pterocarpus angolensis              | 0.429                                                       | 0.155                                                        | 9.63                         | Botanical                   |
| Namwala    | Rhus longipes                       | 0.002                                                       | 0.001                                                        | 0.53                         | Botanical                   |
| Namwala    | Ricinodendron rautanenii            | 0.040                                                       | 0.014                                                        | 0.27                         | Botanical                   |
| Namwala    | Stantwasokwe                        | 0.003                                                       | 0.001                                                        | 0.86                         | Tonga                       |
| Namwala    | Stychnos innocua                    | 0.002                                                       | 0.001                                                        | 0.13                         | Botanical                   |
### Table 6 (continued)

| Site    | Species name                  | Above-ground carbon stock of standing trees (dead and live) | Below-ground carbon stock of standing trees (dead and live) trees | Number of trees recorded (%) | Language of the species name |
|---------|--------------------------------|-------------------------------------------------------------|------------------------------------------------------------------|-----------------------------|-----------------------------|
| Namwala | Strychnos potatorum            | 0.195                                                       | 0.067                                                            | 0.93                        | Botanical                   |
| Namwala | Terminalia sericea             | 0.001                                                       | 0.000                                                            | 0.13                        | Botanical                   |
| Namwala | Ximenia americana              | 0.001                                                       | 0.000                                                            | 0.27                        | Botanical                   |
| Namwala | Zanthoxylum livanicum          | 0.205                                                       | 0.074                                                            | 2.32                        | Botanical                   |
| Seseke  | Acacia ataxacantha             | 0.001                                                       | 0.000                                                            | 0.75                        | Botanical                   |
| Seseke  | Acacia erioloba                | 0.074                                                       | 0.026                                                            | 0.60                        | Botanical                   |
| Seseke  | Baukiaea plurijuga             | 8.200                                                       | 2.784                                                            | 35.04                       | Botanical                   |
| Seseke  | Baphia massaiensis             | 0.005                                                       | 0.002                                                            | 3.16                        | Botanical                   |
| Seseke  | Bauhinia petersiana            | 0.002                                                       | 0.001                                                            | 0.30                        | Botanical                   |
| Seseke  | Burkea africana                | 0.046                                                       | 0.016                                                            | 0.15                        | Botanical                   |
| Seseke  | Combretum hereroense           | 0.510                                                       | 0.182                                                            | 10.38                       | Botanical                   |
| Seseke  | Dichrostachys cinerea          | 0.005                                                       | 0.002                                                            | 0.45                        | Botanical                   |
| Seseke  | Diplorhynchus candylodacron    | 0.039                                                       | 0.015                                                            | 2.86                        | Botanical                   |
| Seseke  | Erythrophleum africanum        | 0.316                                                       | 0.112                                                            | 2.71                        | Botanical                   |
| Seseke  | Ficus sycomorus                | 0.168                                                       | 0.058                                                            | 0.75                        | Botanical                   |
| Seseke  | Friesodielsia abovata          | 0.029                                                       | 0.010                                                            | 7.07                        | Botanical                   |
| Seseke  | Hippocratea africana           | 0.001                                                       | 0.000                                                            | 0.30                        | Botanical                   |
| Seseke  | Lonchocarpus nelsii            | 0.114                                                       | 0.042                                                            | 4.21                        | Botanical                   |
| Seseke  | Markhamia zanzibarica          | 0.007                                                       | 0.002                                                            | 1.05                        | Botanical                   |
| Seseke  | Namulomo                       | 0.010                                                       | 0.003                                                            | 2.71                        | Lozi                        |
| Seseke  | Ocina pulchra                  | 0.003                                                       | 0.001                                                            | 0.15                        | Botanical                   |
| Seseke  | Pseudolachnostylis maprouneifolia | 0.048                             | 0.017                                                            | 6.47                        | Botanical                   |
| Seseke  | Pterocarpus angolensis         | 0.050                                                       | 0.018                                                            | 0.60                        | Botanical                   |
| Seseke  | Pterocarpus antunesii          | 0.303                                                       | 0.112                                                            | 15.34                       | Botanical                   |
| Seseke  | Ricinodendron rautanenii       | 0.076                                                       | 0.027                                                            | 0.75                        | Botanical                   |
| Seseke  | Sesheke1 (Not identified)      | 0.031                                                       | 0.012                                                            | 0.90                        | Not identified              |
| Seseke  | Strophanthus welwitschi        | 0.016                                                       | 0.006                                                            | 0.45                        | Botanical                   |
| Seseke  | Terminalia sericea             | 0.060                                                       | 0.023                                                            | 2.86                        | Botanical                   |

**Fig. 1.** Below-ground sample collection process. Exposed roots are shown in (A) and (B), a taproot is followed in (C), the root’s mid-diameter and length are measured in (D) and the root is weighed in (E).
2.1. Sample collection process for developing below-ground biomass models

Before felling a tree, we first measured total tree height, bole height, DBH, and crown diameters. The uprooting process started by first exposing all roots connecting directly to the taproot (Fig. 1A and B). We followed both lateral and taproots till they tapered to ≤ 5 mm in diameter (Fig. 1C). We recorded rooting distance and depth for each recorded root. Big root mid-diameters (≥ 5 cm diameter) and their lengths were also measured (Fig. 1D). All roots were weighed immediately after excavation to get their green weight (Fig. 1E).

2.2. Sample collection process for developing above-ground biomass models

The felled tree was then cross cut (Fig. 2B) into small billets (Fig. 2C) to unable lifting (Fig. 2D) of the pieces for weighing. However, before weighing, the scale had to be calibrated (Fig. 2E). Large pieces (≥ 10 cm mid diameter) were weighed individually (Fig. 2F) while small pieces (< 10 cm mid-diameter) were weighed as batches together with their twigs and leaves (Fig. 2G).
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Transparency document. Supplementary material

Transparency document associated with this article can be found in the online version at doi:10.1016/j.dib.2018.02.057.

Appendix A. Supplementary material

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.dib.2018.02.057.

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