Table A.1. The choice of model parameters between log-linear and nonlinear regression.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Species | No. of trees | Nonlinear AICc | Log-linear AICc | ΔAICc | Error type | Proposed method |
| *Aglaia cucullata* | 19 | 88.45 | 82.1 | 6.35 | Multiplicative log-normal error | Loglinear |
| *Avicennia* sp. | 42 | 444.13 | 380.01 | 64.12 | Multiplicative log-normal error | Loglinear |
| *Bruguiera* sp. | 31 | 309.35 | 254.73 | 54.62 | Multiplicative log-normal error | Loglinear |
| *Excoecaria agallocha* | 35 | 201.08 | 141.22 | 59.86 | Multiplicative log-normal error | Loglinear |
| *Heritiera fomes* | 97 | 941.98 | 742.45 | 199.53 | Multiplicative log-normal error | Loglinear |
| *Lumnitzera racemosa* | 13 | 71.56 | 58.66 | 12.9 | Multiplicative log-normal error | Loglinear |
| *Rhizophora* sp. | 18 | 160.29 | 158.19 | 2.1 | Multiplicative log-normal error | Loglinear |
| *Sonneratia apetala* | 20 | 259.73 | 192.52 | 67.21 | Multiplicative log-normal error | Loglinear |
| *Xylocarpus* sp. | 51 | 504.67 | 431.99 | 72.68 | Multiplicative log-normal error | Loglinear |
| **AICc: Second variant of AIC that corrects small sample size, ΔAICc: the difference between AIC of two models.** |

Table A.2: Eligibility test results for six log-linear regression models for each species.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Species** | **Model****no.** | **Shapiro-wilk normality test** | **BP test for heteroscedasticity** | **Percent relative standard error (PRSE)** | **Variance inflation factor (VIF)** |
| **a** | **b** | **c** |
| ***Aglaia cucullata*** | E1 | W = 0.96, *p* = 0.61 | BP = 1.68, *p* = 0.20 | 5.74 | 2.24 |  |  |
| E2 | W = 0.95, *p* = 0.45 | BP = 0.62, *p* = 0.43 | 16.32 | 9.97 |  |  |
| **E3** | W = 0.94, *p* = 0.24 | **BP = 4.55, *p* = 0.03** | 6.59 | 3.44 |  |  |
| **E4** | W = 0.97, *p* = 0.78 | **BP = 5.21, *p* = 0.02** | 4.93 | 2.37 |  |  |
| E5 | W = 0.92, *p* = 0.17 | BP = 3.03, *p* = 0.08 | 9.04 | 5.04 |  |  |
| **E6** | W = 0.94, *p* = 0.28 | BP = 5.18, *p* = 0.07 | 9.10 | 5.49 | **47.87** | b = **5.89,** c = **5.89** |
| ***Avicennia* sp.** | E1 | W = 0.95, *p* = 0.06 | BP = 3.37, *p* = 0.07 | 9.37 | 2.37 |  |  |
| **E2** | **W = 0.87, *p* = 0.00** | BP = 0.24, *p* = 0.63 | 22.47 | 12.14 |  |  |
| **E3** | **W = 0.92, *p* = 0.01** | BP = 0.09, *p* = 0.76 | 6.95 | 3.19 |  |  |
| E4 | W = 0.95, *p* = 0.07 | BP = 0.05, *p* = 0.83 | 6.51 | 2.45 |  |  |
| **E5** | **W = 0.93, *p* = 0.01** | BP = 2.07, *p* = 0.14 | 9.53 | 4.72 |  |  |
| **E6** | **W = 0.93, *p* = 0.02** | BP = 2.36, *p* = 0.31 | 14.45 | 3.84 | **49.87** | b = 2.76, c = 2.76 |
| ***Bruguiera* sp.** | E1 | W = 0.94, *p* = 0.11 | BP = 0.00, *p* = 0.98 | 9.34 | 2.29 |  |  |
| **E2** | **W = 0.93, *p* = 0.03** | BP = 0.39, *p* = 0.53 | **29.07** | 12.11 |  |  |
| E3 | W = 0.97, *p* = 0.47 | BP = 1.07, *p* = 0.30 | 8.98 | 3.48 |  |  |
| **E4** | **W = 0.91, *p* = 0.01** | BP = 0.87, *p* = 0.35 | 6.46 | 2.23 |  |  |
| E5 | W = 0.96, *p* = 0.29 | BP = 0.77, *p* = 0.38 | 13.00 | 5.46 |  |  |
| **E6** | **W = 0.93, *p* = 0.04** | BP = 0.75, *p* = 0.69 | 8.99 | 3.53 | **27.04** | b = 2.80, c = 2.80 |
| ***Excoecaria agallocha*** | **E1** | W = 0.98, *p* = 0.74 | **BP = 8.16, *p* = 0.00** | 3.45 | 1.40 |  |  |
| E2 | W = 0.95, *p* = 0.08 | BP = 0.00, *p* = 0.97 | 11.81 | 7.03 |  |  |
| E3 | W = 0.95, *p* = 0.11 | BP = 0.00, *p* = 0.99 | 4.78 | 2.44 |  |  |
| E4 | W = 0.96, *p* = 0.22 | BP = 1.40, *p* = 0.24 | 3.56 | 1.71 |  |  |
| E5 | W = 0.94, *p* = 0.06 | BP = 0.14, *p* = 0.71 | 6.50 | 3.54 |  |  |
| **E6** | W = 0.99, *p* = 0.95 | **BP = 9.03, *p* = 0.01** | 5.61 | 3.68 | **53.18** | **b = 6.54, c = 6.54** |
| ***Heritiera fomes*** | E1 | W = 0.99, *p* = 0.89 | BP = 2.42, *p* = 0.12 | 2.79 | 0.85 |  |  |
| **E2** | W = 0.98, *p* = 0.20 | **BP = 24.46, *p* = 0.00** | 8.85 | 4.64 |  |  |
| **E3** | W = 0.98, *p* = 0.18 | **BP = 15.80, *p* = 0.00** | 3.91 | 1.70 |  |  |
| **E4** | W = 0.97, *p* = 0.05 | **BP = 9.67, *p* = 0.00** | 3.02 | 1.18 |  |  |
| **E5** | W = 0.99, = 0.43 | **BP = 21.55, *p* = 0.00** | 5.12 | 2.41 |  |  |
| **E6** | W = 0.99, *p* = 0.84 | **BP = 7.80, *p* = 0.02** | 4.88 | 2.08 | **63.82** | **b = 5.74, c = 5.74** |
| ***Lumnitzera racemosa*** | E1 | W = 0.90, *p* = 0.15 | BP = 0.59, *p* = 0.44 | 7.89 | 3.46 |  |  |
| **E2** | W = 0.92, *p* = 0.28 | BP = 0.33, *p* = 0.57 | **40.57** | **27.69** |  |  |
| E3 | W = 0.93, *p* = 0.32 | BP = 0.14, *p* = 0.71 | 10.30 | 6.20 |  |  |
| E4 | W = 0.88, *p* = 0.07 | BP = 0.02, *p* = 0.88 | 7.85 | 4.30 |  |  |
| E5 | W = 0.93, *p* = 0.33 | BP = 0.02, *p* = 0.90 | 14.76 | 9.61 |  |  |
| **E6** | W = 0.93, *p* = 0.34 | BP = 3.25, *p* = 0.20 | 18.70 | 5.32 | **180.93** | b = 2.13, c = 2.13 |
| ***Rhizophora* sp.** | **E1** | W = 0.96, *p* = 0.58 | **BP = 6.73, *p* = 0.01** | 24.47 | 6.13 |  |  |
| **E2** | W = 0.89, *p* = 0.05 | BP = 0.02, *p* = 0.90 | **31.41** | 14.99 |  |  |
| E3 | W = 0.93, *p* = 0.18 | BP = 0.15, *p* = 0.69 | 16.55 | 6.53 |  |  |
| E4 | W = 0.94, *p* = 0.37 | BP = 3.31, *p* = 0.07 | 17.01 | 5.92 |  |  |
| E5 | W = 0.96, *p* = 0.71 | BP = 0.42, *p* = 0.52 | 18.35 | 8.00 |  |  |
| **E6** | W = 0.96, *p* = 0.65 | BP = 5.42, *p* = 0.07 | **30.21** | 13.08 | **86.45** | **b = 3.65, c = 3.65** |
| ***Sonneratia apetala*** | **E1** | W = 0.96, *p* = 0.49 | **BP = 5.48, *p* = 0.02** | 10.40 | 2.63 |  |  |
| E2 | W = 0.95, *p* = 0.44 | BP = 0.70, *p* = 0.40 | 22.94 | 12.36 |  |  |
| E3 | W = 0.98, *p* = 0.91 | BP = 1.26, *p* = 0.26 | 6.60 | 2.80 |  |  |
| E4 | W = 0.97, *p* = 0.68 | BP = 0.12, *p* = 0.73 | 4.91 | 1.81 |  |  |
| E5 | W = 0.97, *p* = 0.72 | BP = 2.32, *p* = 0.13 | 10.07 | 4.79 |  |  |
| E6 | W = 0.99, *p* = 1.00 | BP = 0.35, *p* = 0.84 | 9.09 | 3.91 | 21.62 | b = 3.53, c = 3.53 |
| ***Xylocarpus* sp.** | E1 | W = 0.98, *p* = 0.52 | BP = 0.27, *p* = 0.60 | 8.02 | 2.40 |  |  |
| **E2** | W = 0.96, *p* = 0.13 | **BP = 4.95, *p* = 0.03** | **71.04** | 17.49 |  |  |
| **E3** | W = 0.95, *p* = 0.05 | **BP = 8.68, *p* = 0.00** | 9.68 | 4.17 |  |  |
| **E4** | W = 0.98, *p* = 0.54 | **BP = 5.79, *p* = 0.02** | 7.02 | 2.77 |  |  |
| **E5** | W = 0.96, *p* = 0.11 | **BP = 12.43, *p* = 0.00** | 14.85 | 6.58 |  |  |
| **E6** | W = 0.99, *p* = 0.97 | BP = 0.32, *p* = 0.85 | 9.09 | 2.95 | **38.74** | b = 1.55, c = 1.55 |
| N.B: Bold and light shaded grey models are not eligible due to results from one or more test.  |

Table A.3: Detailed validation results for all allometric equation.

|  |  |  |  |
| --- | --- | --- | --- |
| Species | Model | RMSE(Ln Kg Tree-1) | MAE(Ln Kg Tree-1) |
| ***Aglaia cucullata*** | Species-specific | 0.09 | 0.08 |
| Mahmood\_2019\_DHW | 0.12 | 0.11 |
| Mahmood\_2019\_DH | 0.09 | 0.08 |
| Mahmood\_2019\_D | 0.12 | 0.11 |
| Chave\_2014\_DHW | 0.36 | 0.33 |
| Chave\_2005\_DW | 0.17 | 0.15 |
| Chave\_2005\_DHW | 0.22 | 0.19 |
| Komiyama\_2005\_DW | 0.58 | 0.57 |
| ***Avicennia* sp.** | Species-specific | 0.16 | 0.13 |
| Mahmood\_2019\_D | 0.22 | 0.17 |
| Mahmood\_2019\_DH | 0.22 | 0.17 |
| Mahmood\_2019\_DHW | 0.24 | 0.19 |
| Chave\_2014\_DHW | 0.40 | 0.34 |
| Chave\_2005\_DW | 0.26 | 0.19 |
| Chave\_2005\_DHW | 0.31 | 0.26 |
| Komiyama\_2005\_DW | 0.39 | 0.32 |
| ***Bruguiera* sp.** | Species-specific | 0.19 | 0.18 |
| Mahmood\_2019\_DHW | 0.26 | 0.21 |
| Mahmood\_2019\_DH | 0.35 | 0.31 |
| Mahmood\_2019\_D | 0.37 | 0.32 |
| Chave\_2014\_DHW | 0.44 | 0.39 |
| Chave\_2005\_DW | 0.24 | 0.20 |
| Chave\_2005\_DHW | 0.33 | 0.28 |
| Komiyama\_2005\_DW | 0.27 | 0.22 |
| ***Excoecaria agallocha*** | Species-specific | 0.14 | 0.12 |
| Mahmood\_2019\_DHW | 0.18 | 0.14 |
| Mahmood\_2019\_DH | 0.38 | 0.36 |
| Mahmood\_2019\_D | 0.43 | 0.40 |
| Chave\_2014\_DHW | 0.56 | 0.49 |
| Chave\_2005\_DW | 0.22 | 0.17 |
| Chave\_2005\_DHW | 0.41 | 0.34 |
| Komiyama\_2005\_DW | 1.08 | 1.06 |
| ***Heritiera fomes*** | Species-specific | 0.14 | 0.12 |
| Mahmood\_2019\_DHW | 0.16 | 0.12 |
| Mahmood\_2019\_DH | 0.20 | 0.16 |
| Mahmood\_2019\_D | 0.27 | 0.23 |
| Chave\_2014\_DHW | 0.21 | 0.16 |
| Chave\_2005\_DW | 0.17 | 0.13 |
| Chave\_2005\_DHW | 0.21 | 0.16 |
| Komiyama\_2005\_DW | 0.17 | 0.13 |
| ***Lumnitzera racemosa*** | Species-specific | 0.20 | 0.20 |
| Mahmood\_2019\_DHW | 0.15 | 0.12 |
| Mahmood\_2019\_DH | 0.16 | 0.13 |
| Mahmood\_2019\_D | 0.14 | 0.11 |
| Chave\_2014\_DHW | 0.44 | 0.41 |
| Chave\_2005\_DW | 0.20 | 0.16 |
| Chave\_2005\_DHW | 0.31 | 0.26 |
| Komiyama\_2005\_DW | 0.13 | 0.10 |
| ***Rhizophora* sp.** | Species-specific | 0.22 | 0.21 |
| Mahmood\_2019\_DHW | 0.28 | 0.25 |
| Mahmood\_2019\_DH | 0.22 | 0.18 |
| Mahmood\_2019\_D | 0.23 | 0.19 |
| Chave\_2014\_DHW | 0.23 | 0.19 |
| Chave\_2005\_DW | 0.45 | 0.41 |
| Chave\_2005\_DHW | 0.25 | 0.21 |
| Komiyama\_2005\_DW | 0.49 | 0.44 |
| ***Sonneratia apetala*** | Species-specific | 0.24 | 0.21 |
| Mahmood\_2019\_DHW | 0.23 | 0.18 |
| Mahmood\_2019\_DH | 0.35 | 0.30 |
| Mahmood\_2019\_D | 0.34 | 0.25 |
| Chave\_2014\_DHW | 0.24 | 0.20 |
| Chave\_2005\_DW | 0.33 | 0.26 |
| Chave\_2005\_DHW | 0.21 | 0.17 |
| Komiyama\_2005\_DW | 0.59 | 0.50 |
| ***Xylocarpus* sp.** | Species-specific | 0.19 | 0.16 |
| Mahmood\_2019\_DHW | 0.17 | 0.13 |
| Mahmood\_2019\_DH | 0.19 | 0.15 |
| Mahmood\_2019\_D | 0.22 | 0.18 |
| Chave\_2014\_DHW | 0.46 | 0.41 |
| Chave\_2005\_DW | 0.30 | 0.26 |
| Chave\_2005\_DHW | 0.36 | 0.31 |
| Komiyama\_2005\_DW | 0.36 | 0.29 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model comparison | Mean difference MAE (Ln Kg tree-1) | Mean absolute difference MAE (Ln Kg tree-1) | Mean relative absolute difference MAE (%) | Paired t-test (t), *p*-value |
| Species-specific - Mahmood\_2019\_DHW | -00.0004 | 0.034 | 21.85 | t = -0.03, *p* = 0.98 |
| Species-specific - Chave\_2005\_DW | -0.05 | 0.06 | 39.89 | t= -2.46, *p* <0.05 |
| Species-specific - Mahmood\_2019\_DH | -0.04 | 0.07 | 44.61 | t = -1.40, *p* =0.20 |
| Species-specific - Mahmood\_2019\_D | -0.06 | 0.09 | 54.04 | t = -1.71, *p* = 0.13 |
| Species-specific - Chave\_2014\_DHW | -0.08 | 0.10 | 61.07 | t= -3.03, *p* <0.05 |
| Species-specific - Chave\_2005\_DHW | -0.17 | 0.18 | 110.93 | t= -3.62, *p* <0.05 |
| Species-specific – Komiyama\_2005\_DW | -0.24 | 0.27 | 167.43 | t = -2.37, *p* <0.05 |
|  | N.B: (-) negative signs indicates higher MAE than Species-specific model |

Table A.4: Pair-wise comparison test for mean absolute error (MAE) between species-specific and other allometric equations.

Table A.5: Summary of individual tree aboveground biomass differences between different allometric equations. Differences are shown for all sizes (All) and by diameter at breast height (DBH) classes. The negative difference indicates higher biomass than the species-specific equations. In all cases, the denominators for calculating relative differences are the species-specific biomass estimates. The bold percentages show mean relative difference of biomass greater than 50%.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Species** | **Diameter range (cm)** | **Species-specific- Chave\_2005\_DW** | **Species-specific- Komiyama\_2005\_DW** | **Species-specific- Mahmood\_2019\_D** | **Species-specific- Mahmood\_2019\_DH** | **Species-specific- Mahmood\_2019\_DHW** | **Species-specific- Chave\_2014\_DHW** | **Species-specific-** **Chave\_2005\_DHW** |
| **Mean Difference (Kg)** | **Mean Relative Difference (%)** | **Mean Difference (Kg)** | **Mean Relative Difference (%)** | **Mean Difference (Kg)** | **Mean Relative Difference (%)** | **Mean Difference (Kg)** | **Mean Relative Difference (%)** | **Mean Difference (Kg)** | **Mean Relative Difference (%)** | **Mean Difference (Kg)** | **Mean Relative Difference (%)** | **Mean Difference (Kg)** | **Mean Relative Difference (%)** |
| ***Aegialitis rotundifolia*** | 2.5 - 15 | -21.22 | **-874.23** | -21.35 | **-879.65** | -11.35 | **-467.86** | -14.86 | **-612.12** | -12.09 | **-498.37** | -7.27 | **-299.54** | -5.95 | **-245.28** |
| ***Aegiceras corniculatum*** | 2.5 - 15 | -11.40 | **-137.20** | -12.69 | **-152.64** | -3.92 | -47.16 | -3.78 | -45.41 | -6.16 | **-74.14** | -5.36 | **-64.44** | -3.62 | **-43.51** |
| ***Aglaia cucullata*** | 2.5 - 15 | 0.85 | 23.25 | 0.18 | 5.04 | 0.16 | 4.27 | 0.08 | 2.14 | 0.70 | 19.21 | 1.39 | 37.98 | 1.77 | 48.39 |
| ***Avicennia alba*** | 2.5 - 15 | -78.18 | **-104.71** | -48.61 | **-65.10** | 0.15 | 0.20 | -2.21 | -2.96 | -4.37 | -5.86 | 5.38 | 7.20 | 12.51 | 16.76 |
| ***Avicennia marina*** | 2.5 - 15 | -21.09 | -45.38 | -10.31 | -22.18 | -12.70 | -27.32 | -0.76 | -1.63 | -2.57 | -5.53 | -7.67 | -16.50 | -2.20 | -4.74 |
| ***Avicennia officinalis*** | All | -1320.16 | **-465.52** | -224.80 | **-79.27** | -70.74 | -24.94 | -50.93 | -17.96 | -39.53 | -13.94 | -37.86 | -13.35 | -22.04 | -7.77 |
| 2.5 - 15 | -17.67 | -49.92 | -10.90 | -30.80 | -0.38 | -1.06 | -0.05 | -0.15 | 2.35 | 6.64 | 6.07 | 17.16 | 9.34 | 26.40 |
| 15.1 - 30 | -310.15 | **-168.26** | -100.36 | **-54.45** | -34.29 | -18.61 | -18.11 | -9.83 | -13.14 | -7.13 | -11.15 | -6.05 | 3.85 | 2.09 |
| 30.1 - 45 | -2732.23 | **-419.62** | -529.94 | **-81.39** | -168.14 | -25.82 | -123.55 | -18.98 | -95.24 | -14.63 | -91.94 | -14.12 | -56.66 | -8.70 |
| > 45.1 | -11010.72 | **-760.81** | -1472.09 | **-101.72** | -458.73 | -31.70 | -366.50 | -25.32 | -301.18 | -20.81 | -312.66 | -21.60 | -263.86 | -18.23 |
| ***Bruguiera gymnorrhiza*** | 2.5 - 15 | 2.84 | 12.18 | 0.56 | 2.42 | 7.73 | 33.15 | 6.47 | 27.78 | 7.38 | 31.67 | 10.91 | 46.84 | 12.65 | **54.29** |
| ***Bruguiera sexangula*** | All | -144.98 | **-91.39** | -35.72 | -22.52 | 9.72 | 6.13 | 36.81 | 23.21 | 13.44 | 8.48 | -12.88 | -8.12 | 0.28 | 0.18 |
| 2.5 - 15 | -19.09 | -38.09 | -6.72 | -13.41 | 5.54 | 11.06 | 12.55 | 25.04 | 6.37 | 12.71 | 0.81 | 1.61 | 5.56 | 11.09 |
| 15.1 - 30 | -197.99 | **-96.90** | -47.93 | -23.46 | 11.48 | 5.62 | 47.03 | 23.02 | 16.42 | 8.04 | -18.64 | -9.12 | -1.94 | -0.95 |
| ***Cerbera manghas*** | All | -6.47 | -29.27 | -2.56 | -11.57 | -10.52 | -47.60 | -10.80 | -48.82 | 1.24 | 5.62 | 6.80 | 30.76 | 8.73 | 39.47 |
| 2.5 - 15 | 1.25 | 10.09 | 0.24 | 1.93 | -4.09 | -32.99 | -4.42 | -35.64 | 1.67 | 13.44 | 4.60 | 37.07 | 5.73 | 46.21 |
| 15.1 - 30 | -37.37 | **-61.33** | -13.74 | -22.55 | -36.25 | **-59.49** | -36.29 | **-59.56** | -0.46 | -0.75 | 15.62 | 25.63 | 20.71 | 33.98 |
| ***Ceriops decandra*** | 2.5 - 15 | -1.29 | **-71.65** | -2.09 | **-115.82** | -0.74 | -41.20 | -0.98 | **-54.37** | -1.05 | **-58.28** | -0.41 | -22.61 | -0.03 | -1.66 |
| ***Cynometra ramiflora*** | 2.5 - 15 | -1.24 | -24.78 | -2.28 | -45.40 | -0.22 | -4.38 | -0.58 | -11.47 | -0.33 | -6.55 | 0.78 | 15.60 | 1.44 | 28.78 |
| ***Excoecaria agallocha*** | All | -9.07 | -54.75 | -4.84 | -29.19 | -7.01 | -42.32 | -6.25 | -37.70 | -0.77 | -4.65 | 2.30 | 13.89 | 4.01 | 24.17 |
| 2.5 - 15 | -2.76 | -23.52 | -2.48 | -21.15 | -4.01 | -34.24 | -3.62 | -30.89 | -0.08 | -0.69 | 2.19 | 18.67 | 3.46 | 29.49 |
| 15.1 - 30 | -95.27 | **-110.96** | -37.79 | -44.01 | -49.50 | **-57.65** | -43.48 | **-50.65** | -10.24 | -11.93 | 4.39 | 5.11 | 12.34 | 14.37 |
|  | 30.1 - 45 | -864.88 | **-303.91** | -225.91 | **-79.38** | -222.07 | **-78.03** | -187.75 | **-65.97** | -87.04 | -30.58 | -50.51 | -17.75 | -27.94 | -9.82 |
| ***Excoecaria indica*** | 2.5 - 15 | 1.20 | 11.52 | -0.22 | -2.15 | -2.75 | -26.29 | -2.40 | -23.00 | 0.94 | 8.98 | 3.17 | 30.33 | 4.27 | 40.87 |
| ***Heritiera fomes***  | All | -69.83 | **-117.23** | -21.46 | -36.02 | 6.28 | 10.54 | 11.45 | 19.22 | 4.14 | 6.95 | -0.27 | -0.46 | 4.62 | 7.76 |
| 2.5 - 15 | -7.20 | -43.61 | -6.21 | -37.64 | 1.17 | 7.09 | 2.18 | 13.21 | 0.04 | 0.26 | -0.00 | -0.03 | 1.93 | 11.70 |
| 15.1 - 30 | -255.85 | **-121.43** | -75.63 | -35.90 | 20.90 | 9.92 | 42.85 | 20.34 | 15.02 | 7.13 | -6.83 | -3.24 | 9.37 | 4.45 |
| 30.1 - 45 | -2064.05 | **-249.34** | -275.88 | -33.33 | 183.38 | 22.15 | 205.81 | 24.86 | 167.98 | 20.29 | 140.68 | 16.99 | 174.62 | 21.09 |
| ***Hibiscus tiliaceus*** | 2.5 - 15 | -0.43 | -13.27 | -1.47 | -45.33 | -0.45 | -13.97 | -0.49 | -15.29 | -0.53 | -16.39 | 0.17 | 5.16 | 0.69 | 21.21 |
| ***Intsia bijuga*** | 2.5 - 15 | -1.13 | -27.44 | -2.46 | **-59.73** | -0.89 | -21.65 | -1.01 | -24.55 | -0.99 | -24.10 | -0.03 | -0.84 | 0.64 | 15.48 |
| ***Kandelia candel*** | All | -75.41 | **-226.29** | -49.03 | **-147.15** | -21.15 | **-63.46** | -27.99 | **-84.00** | -18.74 | **-56.23** | -5.87 | -17.60 | -1.50 | -4.50 |
| 2.5 - 15 | -13.14 | -77.15 | -13.92 | **-81.75** | -11.28 | **-66.21** | -9.51 | **-55.86** | -7.72 | **-45.36** | -4.97 | -29.19 | -2.16 | -12.69 |
| 15.1 - 30 | -199.95 | **-303.36** | -119.26 | **-180.94** | -40.89 | **-62.04** | -64.95 | **-98.54** | -40.76 | **-61.84** | -7.65 | -11.61 | -0.17 | -0.26 |
| ***Lumnitzera racemosa*** | 2.5 - 15 | -4.97 | **-61.62** | -6.83 | **-84.78** | -0.63 | -7.83 | -0.83 | -10.32 | -2.27 | -28.18 | -1.19 | -14.82 | 0.12 | 1.50 |
| ***Millettia pinnata*** | 2.5 - 15 | -0.74 | -9.76 | -2.43 | -32.04 | -1.70 | -22.37 | -1.51 | -19.89 | -0.67 | -8.85 | 0.80 | 10.59 | 1.84 | 24.25 |
| ***Rhizophora apiculata*** | 2.5 - 15 | -58.83 | **-79.90** | -42.78 | **-58.10** | 10.08 | 13.69 | 18.03 | 24.49 | -5.79 | -7.86 | -17.83 | -24.22 | -8.97 | -12.19 |
| ***Rhizophora mucronata*** | All | -212.15 | **-178.00** | -110.80 | **-92.97** | 4.05 | 3.40 | 10.78 | 9.05 | -23.69 | -19.88 | -34.55 | -28.99 | -22.13 | -18.56 |
| 2.5 - 15 | -89.31 | **-139.08** | -65.59 | **-102.14** | 2.29 | 3.57 | 2.07 | 3.22 | -15.22 | -23.70 | -14.76 | -22.98 | -6.96 | -10.84 |
| 15.1 - 30 | -335.00 | **-192.36** | -156.01 | **-89.58** | 5.81 | 3.33 | 19.50 | 11.20 | -32.16 | -18.47 | -54.35 | -31.21 | -37.29 | -21.41 |
| ***Sonneratia apetala*** | All | -1858.13 | **-366.88** | -248.60 | -49.09 | -171.56 | -33.88 | -55.58 | -10.97 | -41.08 | -8.11 | -108.42 | -21.41 | -81.82 | -16.16 |
| 2.5 - 15 | -32.52 | **-101.39** | -21.72 | **-67.73** | -10.60 | -33.06 | -14.62 | -45.57 | -4.22 | -13.15 | 0.24 | 0.75 | 3.68 | 11.47 |
| 15.1 - 30 | -266.56 | **-118.05** | -49.31 | -21.83 | -51.65 | -22.87 | 1.26 | 0.56 | 6.43 | 2.85 | -19.21 | -8.51 | -1.62 | -0.72 |
| 30.1 - 45 | -2425.31 | **-333.93** | -371.56 | **-51.16** | -243.66 | -33.55 | -72.99 | -10.05 | -68.84 | -9.48 | -176.00 | -24.23 | -136.99 | -18.86 |
| > 45.1 | -8305.17 | **-571.50** | -932.80 | **-64.19** | -602.35 | -41.45 | -277.95 | -19.13 | -197.52 | -13.59 | -389.51 | -26.80 | -340.32 | -23.42 |
| ***Xylocarpus granatum*** | All | -675.34 | **-339.03** | -187.10 | **-93.92** | 1.52 | 0.76 | -33.12 | -16.62 | -8.94 | -4.49 | 37.90 | 19.03 | 49.72 | 24.96 |
| 2.5 - 15 | -4.58 | -41.25 | -6.23 | **-56.20** | 0.12 | 1.12 | -1.12 | -10.05 | -0.62 | -5.56 | 2.17 | 19.58 | 3.45 | 31.11 |
| 15.1 - 30 | -411.34 | **-226.70** | -157.56 | **-86.83** | -5.24 | -2.89 | -28.02 | -15.44 | -13.94 | -7.68 | 22.11 | 12.19 | 35.50 | 19.57 |
| 30.1 - 45 | -2808.89 | **-446.79** | -637.44 | **-101.39** | 24.62 | 3.92 | -112.42 | -17.88 | -10.58 | -1.68 | 156.71 | 24.93 | 184.88 | 29.41 |
| ***Xylocarpus mekongensis*** | All | -486.22 | **-326.97** | -124.10 | **-83.45** | -22.86 | -15.37 | -24.57 | -16.52 | -18.80 | -12.64 | -6.27 | -4.22 | 4.00 | 2.69 |
| 2.5 - 15 | -16.39 | **-72.14** | -12.97 | **-57.08** | -4.78 | -21.02 | -2.71 | -11.93 | -3.91 | -17.23 | -3.55 | -15.62 | -0.62 | -2.74 |
| 15.1 - 30 | -382.37 | **-210.66** | -135.76 | **-74.80** | -25.55 | -14.08 | -28.13 | -15.50 | -19.85 | -10.93 | -2.78 | -1.53 | 11.58 | 6.38 |
| 30.1 - 45 | -2669.08 | **-430.48** | -565.32 | **-91.18** | -104.26 | -16.82 | -111.10 | -17.92 | -83.47 | -13.46 | -36.65 | -5.91 | -3.54 | -0.57 |
| >45.1 | -9261.24 | **-759.12** | -1615.71 | **-132.43** | 40.68 | 3.33 | -235.47 | -19.30 | -110.35 | -9.04 | 201.17 | 16.49 | 243.67 | 19.97 |



Figure A.1: The nested circular plot and different measured components of vegetation in each segment.



Figure A.2: Relationship between DBH and GCH of *Ceriops decandra*.



Figure A.3: Histogram of DBH of all trees from tree inventory in the Sundarbans.



 Figure A.4: Histogram of H of all trees from tree inventory in the Sundarbans.