

LBA-ECO CD-08 Tree Inventory Data, Ducke Reserve, Manaus, Brazil: 1999

Summary:

This data set includes in one data file the common names, diameters, and calculated tree masses for almost 3,000 trees on a 5-hectare plot (20 x 2,500 m) located in the Ducke Reserve near Manaus, Brazil in the central Amazon. Measurements were taken during October-December 1999. All diameter measurements were taken at 1.3 meters in height (DBH), or above the buttresses or other stem anomalies. Forest structure characteristics such as biomass density, stem density, diameter class distribution, and taxonomic information at the family and perhaps genus level, can be derived from these data.

Data Citation:

Cite this data set as follows:

Chambers, J.Q., J. dos Santos, R.J. Ribeiro, and N. Higuchi. 2009. LBA-ECO CD-08 Tree Inventory Data, Ducke Reserve, Manaus, Brazil: 1999. Data set. Available on-line [<http://daac.ornl.gov>] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A. doi:10.3334/ORNLDAAC/910.

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The LBA Data and Publication Policy [http://daac.ornl.gov/LBA/lba_data_policy.html] is in effect for a period of five (5) years from the date of archiving and should be followed by data users who have obtained LBA data sets from the ORNL DAAC. Users who download LBA data in the five years after data have been archived must contact the investigators who collected the data, per provisions 6 and 7 in the Policy.

This data set was archived in January of 2009. Users who download the data between January 2009 and December 2013 must comply with the LBA Data and Publication Policy.

Data users should use the Investigator contact information in this document to communicate with the data provider. Alternatively, the LBA Web Site [<http://lba.inpa.gov.br/lba/>] in Brazil will have current contact information.

Data users should use the Data Set Citation and other applicable references provided in this document to acknowledge use of the data.

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1. Data Set Overview:

Project: LBA (Large-Scale Biosphere-Atmosphere Experiment in the Amazon)

Activity: LBA-ECO

LBA Science Component: Land Use and Land Cover

Team ID: CD-08 (Trumbore / Camargo)

The investigators were Chambers, Jeffrey Q.; Trumbore, Susan E.; dos Santos, Joaquim and Higuchi, Niro . You may contact Chambers, Jeffrey Q. (jqchambers@gmail.com)

LBA Data Set Inventory ID: CD08_Tree_Inventory_Ducke

This data set includes common names, base diameters, and calculated tree masses for a 5-hectare plot (20 x 2,500 m) located in the Ducke Reserve near Manaus, Brazil in the central Amazon. Measurements were taken during October-December 1999.

Please note that these standard forest inventory of stem size distribution data were not specifically a deliverable of our LBA project, and are being provided in addition to our other data requirements for those researchers who may find them useful.

2. Data Characteristics:

Data are provided as a comma-delimited ASCII (.csv) file.

Filename: **CD08_Brazil_Manauas_Ducke_5_ha_forest_inventory_plot_1999.csv**

**An individual tree is identified by both its "Quad" and "Tree_num".
"Tree_num" is not unique.**

Column Number	Column Heading	Units	Variable Description
1	Location	character	Location of plot with reference to the Ducke observation tower.
2	Quad	character	Indication of the 20 x 20 m quad where the tree was located. The entire plot (east and west) is 20 x 2,500 m or 5 ha. Valid values range from 1 to 64.
3	Tree_num	character	This is the tag number on the tree -- values range from 1-1000. Values are not unique.
4	Common_name	character	Species common names used by forest workers in the Brazilian Amazon
5	Diameter	cm	Diameter (cm) was taken at 1.3 m height, unless noted in Measurement_height column
6	Measurement_ht	m	Measurement height (m) -- For trees with buttresses or other obstructions, diameter was measured above the standard 1.3 meter height, as noted.

7	Tree_mass	kg	Tree mass (kg) -- Equation from: Chambers, J. Q., J. Santos, R. J. Ribeiro, and N. Higuchi. 2001. Tree damage, allometric relationships, and above-ground net primary production in a tropical forest. Forest Ecology and Management 152:73-84. Tree mass (kg) =EXP(-0.37 + 0.333*LN(Diameter) + 0.933*LN(Diameter)^2 - 0.122*LN(Diameter)^3) -- where Diameter is from column (5).
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Sample Data Records:

Filename: CD08_Brazil_Manauas_Ducke_5_ha_forest_inventory_plot_1999.csv,,,,,

Related LBA Data Set ID: CD08_Tree_Inventory_Ducke,,,,,

Column Number,Column Heading,Units,Variable Description,,,

1,Location,-,Location: Location of plot with reference to the Ducke observation tower ,,,

2,Quad,-,"Quad: Indication of the 20 x 20 m quad where the tree was located.The entire plot (east and west) is 20 x 2,500 m or 5 ha . Valid values range from from 1 to 64" ,,,

3,Tree_num,-,Tree_num: This is the tag number on the tree -- values range from 1-1000 ,,,

4,Common_name,-,Common_name: Species common names used by forest workers in the Brazilian Amazon,,,

5,Diameter,cm,"Diameter: Diameter (cm) was taken at 1.3 m height, unless noted in Measurement_height column" ,,,

6,Measurement_ht,m,"Measurement_ht: Measurement Height (m) -- For trees with buttresses or other obstructions, diameter was measured above the standard 1.3 meter height, as noted " ,,,

7,Tree_mass,kg,"Tree_mass: Tree Mass (kg) -- Equation from: Chambers, J. Q., J. Santos, R. J. Ribeiro, and N. Higuchi. 2001. Tree damage, allometric relationships, and above-ground net primary production in a tropical forest.

Forest Ecology and Management 152:73-84. $Tree_mass,kg = EXP(-0.37 + 0.333*LN(Diameter) + 0.933*LN(Diameter)^2 - 0.122*LN(Diameter)^3)$ -- where Diameter is from column (5).", ,,,

Location,Quad,Tree_num,Common_name,Diameter,Measurement_ht,Tree_mass

east_of_tower,1,2, falsa rainha ,17.7,1.3,220.6

east_of_tower,1,3, cumarurana ,52.2,1.3,2962.4

east_of_tower,1,4, tauari ,11.8,1.3,73.8

east_of_tower,1,5, breu vermelho ,18,1.3,230.7

east_of_tower,1,6, castanha de galinha ,21.6,1.3,373.4

...

west_of_tower,64,917, jito vermelho ,15,1.3,141.3

west_of_tower,64,918, acariquara roxa ,20,1.3,305.1

west_of_tower,64,919, mari bravo ,17.2,1.3,204.3

west_of_tower,64,920, acariquara roxa ,35.5,1.3,1284.1

west_of_tower,64,921, breu vermelho ,10,1.3,47.2

west_of_tower,64,922, jito mirim ,19.5,1.3,285.4

Site boundaries: (All latitude and longitude given in degrees and fractions)

Site (Region)	Westernmost Longitude	Easternmost Longitude	Northernmost Latitude	Southernmost Latitude	Geodetic Datum
Amazonas (Manaus) - Reserva Ducke (Amazonas (Manaus))	-59.95000	-59.95000	-2.95000	-2.95000	World Geodetic System, 1984 (WGS-84)

Time period:

- The data set covers the period 1999/10/01 to 1999/12/01.

Platform/Sensor/Parameters measured include:

- FIELD SURVEY / HUMAN OBSERVER / FOREST COMPOSITION/VEGETATION STRUCTURE
- FIELD SURVEY / HUMAN OBSERVER / VEGETATION SPECIES
- FIELD SURVEY / STEEL MEASURING TAPE / BIOMASS
- FIELD SURVEY / ANALYSIS / BIOMASS

3. Data Application and Derivation:

Forest structure characteristics such as biomass density, stem density, diameter class distribution, and taxonomic information at the family and perhaps genus level, can be derived from these data.

4. Quality Assessment:

Errors include standard issues using DBH tapes. Also, only common names are provided, which can be cross-referenced in some cases to provide genus and species level information.

5. Data Acquisition Materials and Methods:

Description: Reserva Ducke is an area of protected primary forest, 25 km north-east of Manaus at 80 m above mean sea level. The experimental site was also the location of the Amazon Regional Micrometeorological Experiment in the early 1980s, and was re-established for ABRACOS in late 1990. The mean forest canopy is 35 m high, but some trees reach up to 40 m. The forest in Reserva Ducke, in common with the other two forest sites studied, is made up of a large variety of tree species. The tallest species in the area around the tower are *Piptadenia suaveolens* Miq., *Licania micrantha* Miq., *Bocoa viridiflora* (Ducke) Cowan, *Naucleopsis glabra* Spruce ex Baill, and *Enterolobium schomburgkii* Benth. The site is surrounded by undisturbed forest for at least 5 km.

Measurements were made using standard DBH tapes on permanently tagged trees in the reserve. Tree mass was calculated using an equation derived by Chambers et al., 2001.

Sensors used include:

- HUMAN OBSERVER
- STEEL MEASURING TAPE
- ANALYSIS

6. Data Access:

This data is available through the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC).

Data Archive Center:

Contact for Data Center Access Information:

E-mail: uso@daac.ornl.gov

Telephone: +1 (865) 241-3952

7. References:

Chambers, J. Q., J. Santos, R. J. Ribeiro, and N. Higuchi. 2001. Tree damage, allometric relationships, and above-ground net primary production in a tropical forest. *Forest Ecology and Management* 152:73-84. [doi:10.1016/S0378-1127\(00\)00591-0](https://doi.org/10.1016/S0378-1127(00)00591-0)

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