

University of New Hampshire  
University of New Hampshire Scholars' Repository

---

Faculty Publications

---

5-1-2015

# BAAD: a Biomass And Allometry Database for woody plants

Daniel S. Falster  
*Macquarie University*

Remko A. Duursma

Masae I. Ishihara

Diego R. Barneche

Richard G. Fitzjohn

*See next page for additional authors*

Follow this and additional works at: [https://scholars.unh.edu/faculty\\_pubs](https://scholars.unh.edu/faculty_pubs)

---

## Recommended Citation

Falster DS, et al. (with 85 co-authors). 2015. BAAD: a biomass and allometry database for woody plants: Ecological Archives E096-128. Ecology, 96: 1445. doi:10.1890/14-1889.1

This Article is brought to you for free and open access by University of New Hampshire Scholars' Repository. It has been accepted for inclusion in Faculty Publications by an authorized administrator of University of New Hampshire Scholars' Repository. For more information, please contact [nicole.hentz@unh.edu](mailto:nicole.hentz@unh.edu).

---

**Authors**

Daniel S. Falster, Remko A. Duursma, Masae I. Ishihara, Diego R. Barneche, Richard G. Fitzjohn, Angelica Varhammar, Masahiro Aiba, Makoto Ando, Niels Anten, Michael J. Aspinwall, Jennifer L. Baltzer, Christopher Baraloto, Michael Battaglia, John J. Battles, Ben Bond-Lamberty, Michiel van Breugel, James Camac, Yves Claveau, Lluís Coll, Masako Dannoura, Sylvain Delagrangé, Jean-Christophe Domec, Farrah Fatemi, and Matthew A. Vadeboncoeur

## BAAD: a Biomass And Allometry Database for woody plants

*Ecological Archives* E096-128

DANIEL S. FALSTER,<sup>1</sup> REMKO A. DUURSMA, MASAE I. ISHIHARA, DIEGO R. BARNECHE, RICHARD G. FITZJOHN, ANGELICA VÁRHAMMAR, MASAHIRO AIBA, MAKOTO ANDO, NIELS ANTEN, MICHAEL J. ASPINWALL, JENNIFER L. BALTZER, CHRISTOPHER BARALOTO, MICHAEL BATTAGLIA, JOHN J. BATTLES, BEN BOND-LAMBERTY, MICHIEL VAN BREUGEL, JAMES CAMAC, YVES CLAVEAU, LLUÍS COLL, MASAKO DANNOURA, SYLVAIN DELAGRANGE, JEAN-CHRISTOPHE DOMEQ, FARRAH FATEMI, WANG FENG, VERONICA GARGAGLIONE, YOSHIKI GOTO, AKIO HAGIHARA, JEFFERSON S. HALL, STEVE HAMILTON, DEGI HARJA, TSUTOM HIURA, ROBERT HOLDAWAY, LINDSAY S. HUTLEY, TOMOAKI ICHIE, ERIC J. JOKELA, ANU KANTOLA, JEFF W. G. KELLY, TANAKA KENZO, DAVID KING, BRIAN D. KLOEPEL, TAKASHI KOHYAMA, AKIRA KOMIYAMA, JEAN-PAUL LACLAU, CHRISTOPHER H. LUSK, DOUGLAS A. MAGUIRE, GUERRIC LE MAIRE, ANNIKKI MÄKELÄ, LARS MARKESTEIJN, JOHN MARSHALL, KATHERINE MCCULLOH, ITSUO MIYATA, KAREL MOKANY, SHIGETA MORI, RANDALL W. MYSTER, MASAHIRO NAGANO, SHAWNA L. NAIDU, YANN NOUVELLON, ANTHONY P. O'GRADY, KEVIN L. O'HARA, TOSHIYUKI OHTSUKA, NORIYUKI OSADA, OLUSEGUN O. OSUNKOYA, PABLO LUIS PERI, ANY MARY PETRITAN, LOURENS POORTER, ANGELIKA PORTSMUTH, CATHERINE POTVIN, JOHANNES RANSIJN, DOUGLAS REID, SABINA C. RIBEIRO, SCOTT D. ROBERTS, ROLANDO RODRIGUEZ, ANGELA SALDAÑA-ACOSTA, IGNACIO SANTA-REGINA, KAICHIRO SASA, N. GALIA SELAYA, STEPHEN C. SILLETT, FRANK STERCK, KENTARO TAKAGI, TAKESHI TANGE, HIROYUKI TANOUCHI, DAVID TISSUE, TORU UMEHARA, HAJIME UTSUGI, MATTHEW A. VADEBONCOEUR, FERNANDO VALLADARES, PETTERI VANNINEN, JIAN R. WANG, ELIZABETH WENK, RICHARD WILLIAMS, FABIANO DE AQUINO XIMENES, ATSUSHI YAMABA, TOSHIHIRO YAMADA, TAKUO YAMAKURA, RUTH D. YANAI, AND ROBERT A. YORK

**Abstract.** Understanding how plants are constructed—i.e., how key size dimensions and the amount of mass invested in different tissues varies among individuals—is essential for modeling plant growth, carbon stocks, and energy fluxes in the terrestrial biosphere. Allocation patterns can differ through ontogeny, but also among coexisting species and among species adapted to different environments. While a variety of models dealing with biomass allocation exist, we lack a synthetic understanding of the underlying processes. This is partly due to the lack of suitable data sets for validating and parameterizing models. To that end, we present the Biomass And Allometry Database (BAAD) for woody plants. The BAAD contains 259 634 measurements collected in 176 different studies, from 21 084 individuals across 678 species. Most of these data come from existing publications. However, raw data were rarely made public at the time of publication. Thus, the BAAD contains data from different studies, transformed into standard units and variable names. The transformations were achieved using a common workflow for all raw data files. Other features that distinguish the BAAD are: (i) measurements were for individual plants rather than stand averages; (ii) individuals spanning a range of sizes were measured; (iii) plants from 0.01–100 m in height were included; and (iv) biomass was estimated directly, i.e., not indirectly via allometric equations (except in very large trees where biomass was estimated from detailed sub-sampling). We included both wild and artificially grown plants. The data set contains the following size metrics: total leaf area; area of stem cross-section including sapwood, heartwood, and bark; height of plant and crown base, crown area, and surface area; and the dry mass of leaf, stem, branches, sapwood, heartwood, bark, coarse roots, and fine root tissues. We also report other properties of individuals (age, leaf size, leaf mass per area, wood density, nitrogen content of leaves and wood), as well as information about the growing environment (location, light, experimental treatment, vegetation type) where available. It is our hope that making these data available will improve our ability to understand plant growth, ecosystem dynamics, and carbon cycling in the world's vegetation.

**Key words:** *allometric equations; biomass allocation; biomass partitioning; global carbon cycle; plant allometry; plant traits.*

The complete data sets corresponding to abstracts published in the Data Papers section of the journal are published electronically in *Ecological Archives* at <http://esapubs.org/archive> (the accession number for each Data Paper is given directly beneath the title).

Manuscript received 3 October 2014; revised 24 December 2014; accepted 7 January 2015. Corresponding Editor: W. K. Michener.  
<sup>1</sup> Corresponding author. Biological Sciences, Macquarie University, New South Wales 2109 Australia. E-mail: daniel.falster@mq.edu.au. See the full data paper in *Ecological Archives* for affiliations of other authors.