

CURRICULUM VITAE

Name: Maria da Conceição Brálio de Brito Caldeira

Nationality: Portuguese

Institutional address: Centro de Estudos Florestais, Instituto Superior de Agronomia,
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Present position, institution, starting date

May 2007- Researcher at Centro de Estudos Florestais, Instituto Superior de Agronomia.

Academic degrees, fields of study, awarding institutions, dates

-PhD on Forest Sciences, Universidade Técnica de Lisboa, 2000

-MsC on Plant Production, Instituto Superior de Agronomia, 1995

-First Degree in Silviculture, Universidade Técnica de Lisboa, Instituto Superior de Agronomia, 1991

Main Scientific area of research

Biodiversity, ecophysiology, plant ecology, global change

Other Scientific area of interest

Stable isotopes, Plant/insect interactions

Post-Doctoral experience

- May 2004- Dec. 2007*: “Effect of canopy and herbaceous cover effects on the natural regeneration of oaks”, with J.S. Pereira, Department of Forestry, ISA, Technical University of Lisbon, Portugal;

-Jan. 2001-April 2004*: “Biodiversity and ecosystem functioning”, with J.S. Pereira, Department of Forestry, ISA, Technical University of Lisbon, Portugal;

-June 2003-Oct. 2003: “Variation in root vulnerability of 13 woody species to xylem cavitation”, with Robert Jackson, Dept. Biology and Nicholas School of Environment, Duke University, North Carolina, USA;

(*grant interruption during the following periods: Feb-May 2002, August-November 2004, Jan-April 2007 due to maternity leave)

Teaching experience

PhD courses

- 2009: Lecture on “Biodiversity” and evaluation of student works in “Programa de Doutoramento em Alterações climáticas e Políticas de Desenvolvimento Sustentável”, organized by Universidade Nova, Universidade de Lisboa e Universidade Técnica de Lisboa;

MSc:

- 2005: Lecture on “Biodiversity and Global Change” in the MSc Natural Resources, Forestry Department, ISA, Lisbon, Portugal;
- 2003: Lecture on “Species richness and Ecosystem Functioning” in the MSc Wildlife Management, Moderna University, Lisbon, Portugal;
- 1999: Lecture on “Stable Isotopes” and “Biodiversity” in the MSc “Fast-growing species”, ISA and University of Trás-os-Montes e Alto Douro, Portugal;
- 1997: Field lecture on “Gas Exchange measurements in plants”, MSc in Ecology, University of Coimbra, Portugal;

First Degree:

- 2000-2010: Invited lectures and evaluator at the subjects of Ecology and Forest Biology, Department of Forestry, ISA, Lisbon, Portugal;
- 2000-2010: Invited lectures and evaluator at the subjects of Forest Ecophysiology, Silviculture, Department of Forestry, ISA, Lisbon, Portugal;
- 2000–2007: Auxiliar Professor, Biology Department, University Lusófona de Humanidades e Tecnologias, Lisbon, Portugal;
- 2000: Invited lecture at the subject of Plant Ecophysiology, Forestry Department, Escola Superior Agrária de Coimbra, Coimbra, Portugal;
- 1999-2001: Invited Assistant Lecturer, Agrarian Sciences Department, Sciences Faculty, Porto University, Portugal.

Others

- 28.09.94-19.10.94: Lecture Forest Ecology, BsC in Agro-Forestry, ISA /INIDA, São Jorge dos Orgãos, Santiago, Cape Verde.

Honors and prizes

2006: one year of *Nature* personal subscription as prize for participating in the Nature Reader Panel.

2001: 1st prize for PhD in Biological Diversity of VII National Conference on Environmental Quality, Universidade de Aveiro, Portugal, April 2001.

2001: Finalist for Descartes prize of the European Union with the Project BIODEPTH.

Scientific reviewer

Acta Physiologiae plantarum

Global Change Biology

Tree Physiology

Oikos

Functional Ecology

New Forests

Plant Ecology

Ecology Letters

Acta Oecologica

Ecology Letters

“Millennium Ecosystem Assessment”, capítulo R.12 Climate Regulation

Scientific supervisor

Master thesis

Carla Nogueira (2006) “Cork and holm oak natural regeneration”, ISA, Lisbon, Portugal.

Final Degree thesis and initiation to research fellowships

Clara Pinto (co-supervisor, 2006) “Xylem embolism in cork and holm oak”, ISA, Lisbon, Portugal.

Marta López Ramos (co-supervisor, 2006) “Effect of cervids in the nutrient cycling on a montado system”, ISA, Lisbon, Portugal.

Patrícia Pécurto (co-supervisor, 2004) “Cork oak natural regeneration”, ISA, Lisbon, Portugal.

Xavier Lecomte (2004-2006) Research fellowship “Restoration of Mediterranean evergreen oak woodland – effect of herbaceous vegetation on tree establishment” (POCTI/AGG/48704/2002), ISA, Lisbon, Portugal.

Annalisa Belú (co-supervisor, 2000) “Biodiversity and invasibility in grassland systems”, ISA, Lisbon, Portugal.

Juri member

2008: Castro, Helena “Effects of land use change on plant composition and ecosystem functioning in an extensive agro-pastoral system: plant functional traits and ecosystems processes” PhD thesis. Universidade de Coimbra.

2008: Águas, Ana Sofia, “Dinâmica sazonal de nutrientes em *Quercus suber* L., em situações de vitalidade e de declínio da espécie” MsC, Universidade de Coimbra.

2008: Barbosa, Inês Catarina Ramos, “Reconstruction of alpine meadows ¹³C discrimination during the last century using the horns of *Capra ibex*”, MsC, Faculdade de Ciências de Lisboa.

2006: MSc thesis, Carla Nogueira, Forestry Department, ISA, Lisbon, Portugal.

2006: Grant in Research Project “Woody species in *montado*: surviving drought” Estação Florestal Nacional (EFN), Lisbon, Portugal.

2005: Final degree thesis, Patrícia Pécurto, Departamento de Engenharia Florestal, ISA, Lisbon, Portugal.

2005: Grant in Research Project “Limitation in carbon assimilation due to age in *Eucalyptus globulus* (Labill.) trees” e “Estudo das alterações climáticas a partir dos anéis de crescimento de árvores da região Mediterrânica-uma base dados para Portugal”, ISA, Lisbon, Portugal.

2005: Grant in Research Project “Climate change study using tree ring growth in the Mediterranean- a database for Portugal”, ISA, Lisbon, Portugal.

Research projects

2010-2013: Coordinator – “CARBOWATSHRUB - Shrub encroachment: effects on carbon, nitrogen and water cycling”. Funding by Portuguese Science Foundation (FCT) (PTDC/AGR-AAM/098790/2008), 156 401,00 €.

2005-2008: Member of team - “Mediterranean woody species of montados: surviving the drought”, coordinated by T. S. David (Estação Florestal Nacional, Portugal). Funding by Portuguese Science Foundation (FCT) (POCI/AGR/59152/2004), 85 500 €.

2005-2007: Member of team - “Effects of grazing on productivity and nutrient pools of a montado system”, coordinated by M. Bugalho (ISA, Portugal). Funded by FCT (POCTI/AGR/63322/2004), 43 800 €.

2004-2006: Coordinator - “Restoration of Mediterranean evergreen oak woodland – effect of herbaceous vegetation on tree establishment”. Funding by FCT (POCTI/AGG/48704/2002), 40 000 €.

2004-2007: Member of team - “Natural e artificial regeneration of cork oak and sustainable management of *montado*”, coordinated by J. S. Pereira (ISA, Portugal). Funding by INIAP, 58.292 €.

2002-2005: Member of team - “CREOAK - Conservation and Restoration of European cork OAK woodlands: a unique ecosystem in the balance”, coordinated by João S. Pereira (ISA, Portugal), funding by European Union (QLK5-CT-2002-01594), 277.988 €.

2001-2004: Member of the team - “Pastagens biodiversas ricas em leguminosa: uma alternativa sustentável para o uso de terras marginais”, coordinated by João Paulo Carneiro (Estação Nacional de Melhoramento de Plantas – ENMP, Portugal), funding by INIAP, 57350 €.

2000-2002: Consultant - Project “SIAM - Climate Change in Portugal – Scenarios, Impacts and Adaptation Measures”, coordinated by Filipe Duarte Santos (Faculdade de Ciências, Portugal), funding by Fundação Calouste Gulbenkian and FCT.

1996-1999: Coordination of field work - “Biodiversity and Ecological Processes in Terrestrial Herbaceous Ecosystems: (BIODEPTH)”, coordinated by John Lawton (Imperial College, UK) Portuguese coordination by J.S. Pereira. Funding by European Union.

1992-1994: Member of team - "A relação entre o *stress* hídrico em árvores de *Eucalyptus globulus* e o ataque pela *Phoracantha semipunctata*", coordinated by João Santos Pereira (ISA, Portugal). Funding by CELPA.

1990-1991: Member of team “Nitrogen Internal Cycling” (STEP-CT90-0037 (SMA)), coordinated by J. S. Pereira. Funding by European Union.

Publications

Science Citation index Journals

Hector, A., Y. Hautier, P. Saner, L. Wacker, R. Bagchi, J. Joshi, M. Scherer-Lorenzen, E. M. Spehn, E. Bazeley-White, M. Weilenmann, M. C. Caldeira, P. G. Dimitrakopoulos, J. A. Finn, K. Huss-Danell, A. Jumpponen, C. P. H. Mulder, C. Palmborg, J. S. Pereira, A. S. D. Siamantziouras, A. C. Terry, A. Y. Troumbis, B. Schmid, and M. Loreau. in press. General stabilizing effects of plant diversity on grassland productivity at multiple sites through population asynchrony and overyielding. *Ecology (in press)*

Bugalho, M.N., Barcia, P., Caldeira, M.C., Cerdeira, J.O. 2008. Stable isotopes as ecological tracers: an efficient method for assessing the contribution of multiple sources to mixtures. *Biogeosciences* 5: 1351-1359.

Hector A., Joshi J., Scherer-Lorenzen M., Schmid B., Spehn E.M., Wacker L., Bazeley-White E., Beierkuhnlein C., Caldeira M.C., Dimitrakopoulos P., Siaman G., Finn J.A., Huss-Danell K., Jumpponen A., Leadley P.W., Loreau M., Mulder C.P.H., Nebhover C., Palmborg C., Read D.J., Siamantziouras A-S. D., Terry A.C., Troumbis A.Y. (2007) Biodiversity and ecosystem functioning: reconciling the results of experimental and observational studies. *Functional Ecology* 21 (5), 998-1002.

Maherali H., Moura C.F., Caldeira M.C., Willson C.J., Jackson R.B. (2006) Functional coordination between leaf gas exchange and vulnerability to xylem cavitation in temperate forest trees. *Plant, Cell and Environment* 29, 571-583.

Spehn E.M., Hector A., Joshi J., Scherer-Lorenzen M., Schmid B., Bazeley-White E., Beierkuhnlein C., Caldeira M.C. et al. (2005) Ecosystem effects of biodiversity manipulations in European grasslands. *Ecological Monographs* 75 (1): 37-63 (IF= 7.102, NC= 30). (Highly cited paper according to Essential Science Indicators, updated on July 1, 2007).

Hector A., Spehn E. M., Joshi J., Scherer-Lorenzen M., Schmid B., Bazeley-White E., Beierkuhnlein C., Caldeira M. C., Diemer M., Dimitrakopoulos P. G., Finn J., Freitas H., Giller P. S., Good J., Harris R., Högberg P., Huss-Danell K., Jumpponen A., Körner C., Leadley P. W., Loreau M., Minns A., Mulder C. P. H., O'Donovan G., Otway S. J., Pereira J. S., Prinz A., Read D. J., Schulze E.-D., Siamantziouras A.-S. D., Terry A. C., Troumbis A. Y., Woodward F. I., Yachi S. & Lawton J. H. (2005) Ecosystem effects of the manipulation of plant diversity in European grasslands: data from the BIODEPTH project. *Ecological Archives* M075-001-S1.

Caldeira M.C., Hector A., Loreau M., Pereira J.S. (2005). Species richness, temporal variability and resistance of biomass production in a mediterranean grassland. *Oikos* 110: 115-123.

Spehn E.M., Scherer-Lorenzen M., Schmid B., Hector A., Caldeira M.C., Dimitrakopoulos P.G., Finn J.A., Jumpponen A., O'Donovan G., Pereira J.S., Schulze E.-D., Troumbis A.Y., Körner C. (2002). The role of legumes as a component of biodiversity in a cross-European study of grassland biomass nitrogen. *Oikos* 98, 205-218 (IF=3.381; NC= 28).

Caldeira M.C., Fernández V., Tomé J., Pereira J.S. (2002). Positive effect of drought on longicorn borer larval survival and growth on eucalyptus trunks. *Ann. For. Sci.* 59: 99-106.

Caldeira M.C., Ryel R.J., Lawton J.H., Pereira J.S. (2001). Mechanisms of positive biodiversity-production relationships: insights provided by $\delta^{13}\text{C}$ analysis in experimental mediterranean grassland plots. *Ecology Letters* 4: 439-443.

Minns A., Finn J., Hector A., Caldeira M., Joshi J., Palmberg C., Schmid B., Scherer-Lorenzen M., Spehn E., Troumbis A. and the BIODEPTH project. (2001). The functioning of European grassland ecosystems: potential benefits of biodiversity to agriculture. *Outlook on Agriculture* 30 (3), 179-185.

Joshi J., Schmid B., Caldeira M.C., Dimitrakopoulos P.G., Good J., Harris R., Hector A., Huss-Danell K., Jumpponen A., Minns A., Mulder C.P.H., Pereira J.S., Prinz A., Scherer-Lorenzen, M., Siamantziouras, A. -S.D., Terry A.C., Troumbis A.Y., Lawton J.H. (2001) Local adaptation enhances performance of common plant species. *Ecology Letters* 4: 536-544.

Hector A., Schmid B., Beierkuhnlein C., Caldeira M.C., Diemer M., Dimitrakopoulos P.G., Finn J., Freitas H., Giller P.S., Good J., Harris R., Högberg P., Huss-Danell K., Joshi J., Jumpponen A., Körner C., Leadley P.W., Loreau M., Minns A., Mulder C.P.H., O'Donovan G., Otway S.J., Pereira J.S., Prinz A., Read D.J., Scherer-Lorenzen M., Schulze E.-D., Siamantziouras A.-S.D., Spehn E.M., Terry A.C., Troumbis A.Y., Woodward F.I., Yachi S. & Lawton J.H. (1999) Plant diversity and

productivity experiments in European grasslands. *Science*, 286, 1123 - 1127. – (Highly cited paper according to Essential Science Indicators, updated on July 1, 2007).

Hector A., Schmid B., Beierkuhnlein C., Caldeira M.C., Diemer M., Dimitrakopoulos P.G., Finn J., Freitas H., Giller P.S., Good J., Harris R., Högberg P., Huss-Danell K., Joshi J., Jumpponen A., Körner C., Leadley P.W., Loreau M., Minns A., Mulder C.P.H., O'Donovan G., Otway S.J., Pereira J.S., Prinz A., Read D.J., Scherer-Lorenzen M., Schulze E.-D., Siamantziouras A.-S.D., Spehn E.M., Terry A.C., Troumbis A.Y., Woodward F.I., Yachi S. & Lawton J.H. (2000) No consistent effect of plant diversity on productivity? Response. *Science*, 289, www.sciencemag.org/cgi/content/full/289/5483/1255a

Chapters in books

Pausas J.G., Marañón T., Caldeira M. and Pons J. (2009) Natural Regeneration. In: J. Aronson, J.S. Pereira and J.G. Pausas (Eds) *Cork Oak Woodlands in Transition: Ecology, Biogeography, and Restoration of an Ancient Mediterranean Ecosystem*. Island Press (*in press*)

Pereira J.S., Chaves M.M., Caldeira M.C. and Correia A.V. (2006) Water availability and productivity. In: J.I.L. Morison and M. D. Morecroft (Eds.). *Plant growth and climate change*. Blackwell Publishers, London, pp. 118-145. ISBN10: 1405131926, ISBN: 9781405131926, 332 pages.

Pereira J.S., David J.S., David T.S., Caldeira M.C. and Chaves M.M. (2004) Carbon and Water Fluxes. Mediterranean-Type Ecosystems – Constraints and Adaptations. In: K. Esser, U. Lüttge, W. Beyschlag and J. Murata (Eds.). *Progress in Botany*, Vol. 65. Springer-Verlag, Berlin Heidelberg, pp. 467-498. ISBN-10: 3540407219, ISBN-13: 978-3540407218, 627 pages.

Pereira J.S., Correia A.V., Correia A.P., Branco M., Bugalho M., Caldeira M.C., Souto-Cruz C., Freitas H., Oliveira A.C., Pereira J.M.C., Reis R.M. & Vasconcelos M.J. (2002) Forests and Biodiversity. In: F.D. Santos, K. Forbes, R. Moita (Eds.). *Climate Change in Portugal. Scenarios, Impacts, and Adaptation Measures*. Gradiva, Lisbon. Portugal. ISBN: 972-662-843-1, Pp. 363-414.

Hector A., M. Loreau, B. Schmid and the BIODDEPTH project (2002). Biodiversity manipulation experiments: studies replicated at multiple sites. In: M. Loreau, S. Naeem, P. Inchausti (Eds.) *Biodiversity and Ecosystem Functioning. Synthesis and Perspectives*. Oxford University Press, Oxford. ISBN13: 978-0-19-851571-5, ISBN10: 0-19-851571-5. Pp. 36-46.

Pereira J.S., Chaves M.M., Carvalho P.O., Caldeira M.C. & Tomé J. (1994) Carbon assimilation, growth and nitrogen supply in *Eucalyptus globulus* plants. In: J. Roy and E. Granier (Eds.) *Whole-Plant Perspectives of Carbon-Nitrogen Interactions*. SPB Publish., The Hague, The Netherlands. ISBN: 90-5103-086-X. Pp.79-89.

Carvalho P.O., Caldeira M.C., Millard P. & Pereira J.S. (1993) Growth, nitrogen uptake and internal cycling in *Eucalyptus globulus* seedlings in relation to nitrogen supply. In M.A.C. Fragoso and M.L. van Beusichem (Eds.) *Optimization of Plant Nutrition*. Kluwer Academic Publishers. The Netherlands. ISBN-10: 0792325192, ISBN-13: 9780792325192. Pp. 629-634.

Papers published in meeting proceedings

Caldeira MC (2001) Biodiversidade e Processos Ecológicos em Comunidades de Herbáceas Mediterrânicas. VII Conferência Nacional sobre a Qualidade do Ambiente, Universidade de Aveiro, Portugal, 18-20 April 2001. Pp. 349-375.

Pereira J.S., Osório J., Caldeira M.C. (1995) Water-use efficiency, stable carbon isotope discrimination and water stress in *Eucalyptus globulus* Labill. In: Proceedings of the Second STRESSNET Conference. R.A. Leigh e M.M.A. Mechteld Blake-Kalff (ed.). Salsomaggiore, Italy; pp. 161-166.

National journals with referees

Caldeira MC, Bugalho MN, Pereira JS (2001) Biodiversidade e Funcionamento de Ecossistemas. *Revista das Ciências Agrárias* XXIII: 3-18.

Martins H, Alves R, Caldeira MC, Carvalho A, Pina J, Rato G (1997) Iniciativas internacionais para a gestão sustentável das florestas. *Silva Lusitana* 5(1):113-139.

Reports

Puumalainen J., Angelstam P., Banko G., Brandt, J., Caldeira M., Estreguil C., Folving S., Garcia del Barrio J.M., Keller M., Kennedy P., Köhl M., Marchetti M., Neville P., Olsson H., Parviainen J., Pretzsch H., Ravn H.P., Ståhl G., Tomppo E., Uuttera J., Watt A., Winkler B. & Wrбка T. (2002) *Forest Biodiversity – Assessment Approaches for Europe*. EUR Report 20423 EN.

Others

Pereira J. S., Bugalho M., Caldeira M.C. (2008) A cortiça e o Ambiente. Publicação APCOR, Dezembro 2008.

Pereira J.S., Bugalho M., Caldeira M.C. (2005) O sobreiro e o montado: história, situação actual e perspectivas futuras. *Revista e-science* (www.cienciapt.net), 7 July 2005: 27-29.

Caldeira M.C. & Bugalho M.N. (2000) “Biodiversidade e funcionamento dos ecossistemas”. www.naturlink.pt.

Thesis

Caldeira M.C. (2000) Biodiversity and Ecological Processes in Mediterranean Plant Communities. PhD Thesis. Instituto Superior de Agronomia, Lisbon, pp. 147.

Caldeira M.C. (1995) Relationship between water stress in *Eucalyptus globulus* Labill. trees and bark borer (*Phoracantha semipunctata* Fabr.) attacks. MSc Thesis. Instituto Superior de Agronomia, Lisbon, pp 142.

Caldeira M.C. (1991) Growth and gas Exchange of *Eucalyptus globulus* L. plants growing with two different nitrogen levels. Final Degree Thesis, Instituto Superior de Agronomia, Lisbon.

INVITED TALKS

Caldeira, M.C., Jongen, M., Pereira, J.S. 2008. Alterações climáticas, pastagens e biodiversidade. Invited oral presentation.in XXIX Reunião de Primavera da Sociedade Portuguesa de Pastagens e Forragens: Pastagens e Biodiversidade. Novas Oportunidades para a produção forrageira. Samora Correia, 7-9 Maio 2008.

Caldeira, M.C. 2008. Biodiversidade e funcionamento dos ecossistemas. Invited oral communication. VII Encontro Internacional ALFA- " 24-27 Junho Coimbra.

Pereira, JS (speaker), Chaves, MM, Caldeira, MC (2004) “Vanishing and unpredictable water supply, linking plant stress and ecosystem performance”, “Linking community and ecosystem ecology: Recent advances and future challenges”, 18-21 May 2004, Palma de Maiorca, Spain.

Caldeira MC (2003) “Vulnerability curves of 13 species of the Duke Forest” Duke University, Lab meeting at Robert Jackson’s lab, 16 October, North Carolina, USA.

Caldeira MC (2003) "Diversity and ecosystem function in a Mediterranean grassland." Duke University, “University Program in Ecology Seminars”, 12 September, North Carolina, USA.

Caldeira MC (2003) "Diversity and ecosystem function in a Mediterranean grassland." Duke University, Lab meeting at Robert Jackson’s lab, 23 June, North Carolina, USA.

Caldeira MC & Portuguese team of CreOak (2003) “The Portuguese participation in the european Project CREOAK”, 1st CREOAK meeting, 7 February, ISA, Lisbon, Portugal.

Caldeira MC (2003) “Species richness and ecosystem functioning”. Ecology seminars DEF/CEABN 5 February, Centro de Ecologia Aplicada “Prof. Baeta Neves”, ISA, Lisbon, Portugal.

Caldeira MC (2002) “Biodiversity: potential benefits for pastures”, Autumn Meeting of the Portuguese Grassland Society, 7 November, Coruche, Portugal.

Caldeira MC (2001) “Biodiversity and Ecological Processes in Mediterranean grasslands”, VII National Conference of Environmental Quality, 18 April, University of Aveiro, Portugal

ORGANIZING ACTIVITIES

2002- : Organization of Ecology Seminars of the Forestry Department and Center for Applied Ecology of ISA, Lisbon, Portugal. (organization of ca. 100 seminars). See list at <http://www.isa.utl.pt/def>.