

TIAGO MORAIS DELGADO DOMINGOS

Short CV – July 2011

EDUCATION

- 1994 M.Sc. in Physical Engineering, at Instituto Superior Técnico (IST), with the grade of 17 (out of 20).
- 2001 Ph.D. in Environmental Engineering at Instituto Superior Técnico.

POSITIONS

- 1996 - 2001 Teaching Assistant at the Applied Thermodynamics Section, Department of Mechanical Engineering, Instituto Superior Técnico (IST).
- 1997 - 2001 Researcher at the Nonlinear Dynamics Group, Instituto Superior Técnico.
- 2002 - ... Assistant Professor at the Environment and Energy Section, Department of Mechanical Engineering, Instituto Superior Técnico.
- 2002 – 2006 Researcher at IDMEC – Institute of Mechanical Engineering, Instituto Superior Técnico.
- 2007 - ... Researcher at IN⁺, Centre for Studies in Technology, Innovation and Development Policies.
- 2009 - ... Member of the Scientific Council of Instituto Superior Técnico.

TEACHING AND SUPERVISION

Postdoctoral Students (selected, total number = 6)

Carmen Bessa Gomes, *Integrating behavioural ecology and population viability: Allee effects, sustainable harvesting and management of social species* (2004).

Ana Rodrigues, *The role of stochastic processes in driving macroecological biodiversity patterns* (2008).

Doctoral Students (selected, total number = 13)

[ending dates after 2010 are expected dates]

João Rodrigues, *Dynamics of self-organising systems: applications to ecological and economic systems* (2002-2007).

Rute Pinto, *Evaluation of ecological and socio-economic values of the Mondego estuary: An application of the ecosystem services and goods approach* (2008-12).

Graduate Courses (selected)

2001-2007 International Tele-Course on Dynamic Energy Budgets

Undergraduate Courses (selected)

- 1996-2006 Thermodynamics (B.Sc. in Mechanical Engineering, Aerospace Engineering, Naval Engineering and Environmental Engineering)
- 1996-2002 Environmental Modelling (M.Sc. in Environmental Engineering)
- 2006-2008 Energy and Environment (M.Sc. in Environmental Engineering)

PROJECT MANAGEMENT (SELECTED)

EcoForSITE – Formal and Substantive Integration of Thermodynamics, Ecology and Economics, and Application to Sustainability Theory, funded by the Portuguese Foundation for Science and Technology (2005-08) (funding: 74.552,00 €).

Life Engine – Development of Biological Realism in Computer Games, funded by the Portuguese Agency for Innovation (2008-11) (funding: 810.201,92 €).

Rural Value – Sustainable Development of Threatened Extensive Framing Systems, funded by EEA Grants (2008-11) (funding: 240.274,00 €).

BOOKS (SELECTED)

Domingos, J. J. D., T. Domingos, T. Sousa, A. Serrenho (2010). *Thermodynamics: Principles and Fundamental Concepts* [in Portuguese]. IST Press, Lisboa (accepted).

Rodrigues, J., A. Marques, T. Domingos (2010). *Carbon Responsibility and Embodied Emissions - Theory and Measurement*. Routledge Series in Ecological Economics, Taylor and Francis, London. ISBN 978-0-415-47020-9.

PAPERS IN PEER-REVIEWED INTERNATIONAL SCIENTIFIC JOURNALS (SELECTED)

Dilão, R., T. Domingos (2000). A general approach to the modeling of trophic chains. *Ecological Modeling* 132(3): 191-202.

Dilão, R., T. Domingos (2001). Periodic and quasi-periodic behavior in resource dependent age structured population models. *Bulletin of Mathematical Biology* 63(2): 207-230.

Dilão, R., T. Domingos, E. M. Shahverdiev (2004). Harvesting in a resource dependent age structured Leslie type population model. *Mathematical Biosciences* 189: 141-151.

Cegonho, N., T. Domingos (2005). New and old regimes for the endoreversible heat engine. *Journal of Non-Equilibrium Thermodynamics* 30(2): 113-127.

Sousa, T., R. Mota, T. Domingos, S. A. L. M. Kooijman (2006). The thermodynamics of life in the context of DEB theory. *Physical Review E* 74, 051901. Also available in *Virtual Journal of Biological Physics Research* 12(10).

Domingos, T. (2008). A discussion of the paper, Elshkaki et al., “Dynamic stock modeling: a method for the identification and estimation of future waste streams and emissions based on past production and product stock characteristics”, *Energy* 2005, 30: 1353–63.” *Energy* 33(5): 834.

Sousa, T., T. Domingos, S. A. L. M. Kooijman (2008). From empirical patterns to theory: A formal metabolic theory of life. *Philosophical Transactions of the Royal Society of London B* 363: 2453–2464.

Sousa, T., G. Marques, T. Domingos (2009). Comment on “Energy Uptake and Allocation During Ontogeny” (Comment on Hou et al), *Science* 325: 1206-b.

Vieira, R., A. Simões, P. Canaveira, T. Domingos (2010). Industrial hemp or eucalyptus paper? A comparison using Life Cycle Assessment, direct land use and ecological footprint. *International Journal of Life Cycle Assessment* 15: 368–375.

Paulo, A.C., M. Correia-Neves, T. Domingos, A.G. Murta, J. Pedrosa (2010). High mortality of influenza pandemic triggered by multiple contacts with infectious people, *PLOS One* 5(7): e11655.

Mota, R., T. Domingos, V. Martins (2010). Analysis of green net national income and genuine saving: Portugal 1991-2005, *Ecological Economics* 69: 1934-1942.

Sousa, T., T. Domingos, J. C. Poggiale, S.A.L.M Kooijman (2010). Formalized DEB theory restores coherence in core biology. *Philosophical Transactions of the Royal Society of London B* 365:3413-3428.

- Teixeira, R., T. Domingos, A.P.S.V. Costa, R. Oliveira, L. Farropas, F. Calouro, A.M. Barradas, J.P.B.G. Carneiro (2011). Soil organic matter dynamics in Portuguese natural and sown grasslands. *Ecological Modelling* 222: 993-1001.
- Pinto, R., J.M. Neto, T. Domingos, J.C. Marques, J. Patrício (2011). Towards a DPSIR driven integration of ecological value, water uses and ecosystem services for estuarine systems. *Ocean and Coastal Management* (accepted).

MAIN INVITED LECTURES (SELECTED)

- Sousa, T., R. Mota, T. Domingos, S. A. L. M. Kooijman (2004). Thermodynamic Formalism of Heterotrophic Organisms in the DEB Theory. *Theories and Methods in Nonlinear Population Dynamics*, 3-4 September, Free University of Amsterdam, Amsterdam.
- Domingos, T. (2008). DEB theory as a paradigm for the integration of Thermodynamics with the natural and the social sciences. *New Developments in DEB Theory and its Applications*. NTVB Symposium, Free University of Amsterdam, Amsterdam, The Netherlands, 24th January.
- Domingos, T. (2008). Dynamic Energy Budget Theory - A General Mathematical Theory in Biology, Empirically Tested for the Major Groups of Organisms. KDBIO Seminar INESC-ID Lisbon, Portugal, 3rd April.
- Domingos, T. (2009). DEB Theory: Reaching Consilience between the Physical and the Biological Sciences through an Axiomatic Theory for Metabolism, *Symposium DEB2009*, Brest, France, 19-22 April.

COMMUNICATIONS (SELECTED)

- Sousa, T., R. Mota, Domingos, T., S. A. L. M. Kooijman (2003). Thermodynamics of heterotrophic organisms in the DEB theory. Alcalá 2nd International Conference on Mathematical Ecology, Alcalá de Henares (Madrid), Espanha, 5-9 Setembro.
- Sousa, T., R. Mota, T. Domingos, S. A. L. M. Kooijman (2006). The use of the dynamic energy budget theory to quantify thermodynamic changes. 1st International Symposium on Biothermodynamics, 16-17 February, Frankfurt am Main, Germany.
- Sousa, T., J. Fernandes, S.A.L.M Kooijman, T.Domingos (2009). Metabolic Rates in a DEB context, Symposium DEB2009 – Brest, France – 19-22 April, 2009.
- Sousa, T., J. Fernandes, S.A.L.M Kooijman, T.Domingos (2009). Thermodynamic Measurements of Metabolic Rates: Do they provide insights into metabolic organization? Joint European Thermodynamics Conference, 22-24 Jun, Copenhagen, Denmark.