

**José M. Maroto**

Associate Professor  
Department of Statistics and Operations Research II  
Faculty of Economics and Business Administration  
Complutense University of Madrid  
Office 227, Building 1  
Campus de Somosaguas  
28223 Pozuelo de Alarcón (Madrid)  
Tel. +34 913942898  
E-mail: [maroto@ccee.ucm.es](mailto:maroto@ccee.ucm.es)  
URL: <http://grupoecofractal.com/es/miembros/jmmaroto>

**EXPERIENCE****EDUCATION**

- 1990-94, BSc in Economics. Carlos III University of Madrid
- 1995-96, MSc in Economics and Business. Pompeu Fabra University, Barcelona
- June 2004, PhD in Economics. Complutense University of Madrid  
*Thesis supervisor:* Manuel Morán Cabré

**PROFESSIONAL**

- 1995, Teaching Assistant, Department of Economy, Carlos III University of Madrid.
- 1995-1996, Teaching Assistant, Department of Economy, Pompeu Fabra University, Barcelona.
- 1997-2000, Research Scholarship, Department of Economic Analysis I, Complutense University of Madrid.
- 2000-2001, Teaching Assistant, Department of Statistics and Operations Research II, Complutense University of Madrid.
- 2002-2008, Assistant Professor, Department of Statistics and Operations Research II, Complutense University of Madrid.
- 2008-Act, Associate Professor, Department of Statistics and Operations Research II, Complutense University of Madrid.
- 2014-Act, Member of the IMI-Institute of Interdisciplinary Mathematics, Complutense University of Madrid.

**RESEARCH STAYS**

- 2003 (one month), Visiting Research Fellow, Institute for Research in Economics and Business Administration (SNF), Bergen, Norway.
- 2004 (one month), Visiting Research Fellow, Institute for Research in Economics and Business Administration (SNF), Bergen, Norway.
- 2005 (three months), Visiting Research Fellow, Department of Economy, Southern Methodist University (SMU), Dallas, USA.
- 2013 (three months), Visiting Research Fellow, Department of Business and Management Science, Norwegian School of Economics (NHH), Bergen, Norway.
- 2014 (three weeks), Visiting Research Fellow, Department of Business and Management Science, Norwegian School of Economics (NHH), Bergen, Norway.

**TEACHING**

I have developed my teaching career at Carlos III, Pompeu Fabra, and Complutense Universities, by teaching fourteen different subjects, in the fields of Economy, Business, Mathematics, Statistics, and Operations Research, in different undergraduate and Master programs. At present, I am teaching:

- Statistics. Undergraduate degree in Economics (ECO)
- Statistical Inference. Undergraduate degree in Finance, Banking, and Insurance (FBS)
- Statistical Methods for Research II. Master degree in Business, Marketing, and Accounting (IDEMCON)
- Statistical Analysis. Master degree in Official Statistics, and Social-Economic Indicators (EOISE).

### PUBLICATIONS

- Maroto, J.M., Moran, M., 2014. Detecting the presence of depensation in collapsed fisheries: The case of the Northern cod stock. *Ecological Economics* 97, 101-109.
- Maroto, J.M., Moran, M., Sandal, L.K., Steinshamn, S.I., 2012. Potential Collapse in Fisheries with Increasing Returns and Stock-dependent Costs. *Marine Resource Economics* 27, 43-63.
- Maroto, J.M., 2009. Comment on the paper “The Evaluation of Fisheries Management: A Dynamic Stochastic Approach”, *Moneda y Crédito* 228, 139-144.
- Maroto, J.M., Moran, M., 2008. Increasing marginal returns and the danger of collapse of commercially valuable fish stocks. *Ecological Economics* 68, 422-428.
- Maroto, J.M., Moran, M., 2007. Lipschitz continuous dynamic programming with discount II. *Nonlinear Analysis* 67, 1999-2011.
- Maroto, J.M., Moran, M., 2005. Lipschitz continuous dynamic programming with discount. *Nonlinear Analysis* 62, 877-894.

### OTHER PUBLICATIONS

- Kvamsdal, S., Maroto, J.M., Morán, M., and Sandal, L.K., 2015. Continuous vs. discrete-time bioeconomic models: Seasonal fisheries. Working Paper (eprint) 34774. University Complutense of Madrid. <http://eprints.ucm.es/34774/>
- Maroto, J.M., Moran, M., 2013. Modeling the stochastic dynamics of the aggregate stock in collapsed fisheries: The case of the Northern cod stock. Working paper (eprint) 23024. University Complutense of Madrid. <http://eprints.ucm.es/23024/>
- Maroto, J.M., Moran, M., 2012. Deterministic Population Dynamics of Fish Stocks at Low Population Sizes: A Parametric Spline Approach. Proceedings of the Sixteenth Biennial Conference of the International Institute of Fisheries Economics and Trade, July 16-20, Dar es Salaam, Tanzania. Edited by Ann L. Shriver. International Institute of Fisheries Economics and Trade (IIFET), Corvallis, 2012. <https://ir.library.oregonstate.edu/xmlui/handle/1957/34927>
- Moran, M., Maroto, J.M., 2012. Equilibrio vs. colapso de especies marinas comerciales en modelos estructurados por edades. Working paper (eprint) 14925. University Complutense of Madrid. <http://eprints.ucm.es/14925/>
- Maroto, J.M., Moran, M., Sandal, L.K., Steinshamn, S.I., 2009. Continuous harvesting costs in sole-owner fisheries with increasing marginal returns. Norwegian School of Economics (NHH), Dept. of Business and Management Science, Discussion paper 6, ISSN: 1500-4066. <https://brage.bibsys.no/xmlui/bitstream/handle/11250/163977/1/dpfor2009-6.pdf>

### NATIONAL RESEARCH PROJECTS

**Title:** Optimality in age-structured bioeconomic models

**Funding agency:** Ministry of Science (MEC): MICINN 2012, ECO2012-39098-C06-00.

**Participating institutions:** Complutense University of Madrid (UCM), University of Vigo, University of the Basque Country, Norwegian University of Science and Technology, University of Helsinki.

**Project period:** 01/02/2013-01/02/2016

**Funding:** 19,500 Euros

**PI:** María José Gutiérrez Huerta

**Number of participants:** 7

---

**Title:** Stochastic calculus with applications to Social Sciences

**Funding agency:** MEC (MTM2009-12672)

**Participating institutions:** UCM

**Project period:** 01/01/2010-01/01/2013

**Funding:** 39,900 Euros

**PI:** Manuel Morán Cabré

**Number of participants:** 6

---

**Title:** Nonlinear stochastic equilibria: economic and environmental applications

**Funding agency:** MEC (MTM2006-02372)

**Participating institutions:** UCM

**Project period:** November 2006- November 2009

**Funding:** 54,752.59 Euros

**PI:** Manuel Morán Cabré

**Number of participants:** 7

---

**Title:** Dynamics and geometry of stochastic equilibria

**Funding agency:** MEC (BMF2003-08204)

**Participating institutions:** UCM

**Project period:** November 2003-November 2006

**Funding:** 39,600 Euros

**PI:** Manuel Morán Cabré

**Number of participants:** 6

---

**Title:** Separation of deterministic components in time series processing

**Funding agency:** MEC (BX2000-0639)

**Participating institutions:** UCM

**Project period:** November 2000- November 2003

**Funding:** 4,200,000 pesetas

**PI:** Manuel Morán Cabré

**Number of participants:** 4

---

**Title:** Analysis of spatial correlations in time series

**Funding agency:** MEC (DGES PB97-031)

**Participating institutions:** UCM

**Project period:** January 1999- November 2000

**Funding:** 2,225,000 pesetas

**PI:** Manuel Morán Cabré

**Number of participants:** 4

### INTERNATIONAL RESEARCH PROJECTS

**Title:** Ecosystem-Economic Interactions in the Norwegian Sea: Analysis and Management (EINSAM)

**Funding agency:** Research Council of Norway (NFR), project no. 234238/E40

**Participating institutions:** Norwegian School of Economics (NHH), Institute of Marine Research (Norway), University of Helsinki

**Project period:** 2014-2016

**Funding:** 3000000 NOK

**PI:** Sturla Kvamsdal

**Number of participants:** 8

---

**Title:** Stochastic Bioeconomic and Population Dynamics Modeling of Collapsed Fisheries.

**Funding agency:** NILS Science and Sustainability. European Project (ES07 – EEA Grants) (021-ABEL-CM-2013)

**Participating institutions:** UCM, Norwegian School of Economics (NHH)

**Project period:** 07/04/2014-30/11/2015

**Funding:** 65,300 Euros

**PI:** José María Maroto Fernández

**Number of participants:** 9

---

**Title:** Bioeconomic Multispecies Analysis of Marine Ecosystem (BMAME)

**Funding agency:** Research Council of Norway (NFR), project no. 196433/S40

**Participating institutions:** Norwegian School of Economics

**Project period:** 01/01/2010-31/12/2013

**Funding:** 8800000 NOK

**PI:** Leif Sandal

**Number of participants:** 6

---

**Title:** A General Age-structured Model for Ecosystem Management (AGAMEM)

**Funding agency:** Research Council of Norway (NFR), project no. 216571

**Participating institutions:** Norwegian School of Economics

**Project period:** 01/01/2012-01/01/2016

**Funding:** 8450000 NOK

**PI:** Stein Ivar Steinshamn

**Number of participants:** 8

---

### OTHER FUNDED RESEARCH ACTIVITIES

**International Seminar:** NILS Science and Sustainability International Seminar on Continuous vs. Discrete-Time Bioeconomic Models: Seasonal Fisheries

**Organizer:** José M. Maroto (PI), NILS Science and Sustainability. European Project (ES07 – EEA Grants) (021-ABEL-CM-2013)

**Funding agency:** Bilateral Relations, NILS Science and Sustainability (ES07 – EEA Grants) (009-2BBRR)

**Funding:** 6000 euros

**Place:** Complutense University of Madrid, 17/11/2015

---

## EDUCATIONAL INNOVATION PROJECTS

**Title:** Learning about decision making in a conflict environment

**Funding agency:** Complutense University of Madrid (PIE 2003/26)

**Project period:** 2003

**PI:** Josefina García Aguado

---

**Title:** Teaching mathematics to economic students: A methodological change

**Funding agency:** Complutense University of Madrid (No. 300)

**Project period:** 2013

**PI:** María Eugenia Mera Rivas

---

**Title:** Teaching mathematical software to economic students: A methodological change

**Funding agency:** Universidad Complutense de Madrid (No. 173)

**Project period:** 2014

**PI:** María Eugenia Mera Rivas

---

## COMUNICACION

### COMUNICACIONES in INTERNATIONAL CONFERENCES

**Title:** Lipschitz continuous dynamic programming with discount

*Organizing entity:* Asociación Española de Economía (SAEe)

*Conference:* XXVIII Simposio de Análisis Económico

*Place:* Sevilla (Spain), 13/12/2003

---

**Title:** Lipschitz continuous dynamic programming: Optimal exploitation of renewable resources with presence of increasing returns

*Organizing entity:* European Association of Environmental and Resource Economists (EAERE)

*Conference:* XIII Annual Conference of the EAERE

*Place:* Budapest, 28/06/2004

---

**Title:** Lipschitz continuous dynamic programming: Optimal exploitation of renewable resources

*Organizing entity:* University of Castilla la Mancha

*Conference:* NOLINEAL 2004

*Place:* Toledo (Spain), 01/06/2004

---

**Title:** Stochastic dynamic programming: optimal management of renewable resources with presence of increasing returns

*Organizing entity:* Spanish-Portuguese Association of Resource and Environmental Economics (AERNA)

*Conference:* I Congress of the AERNA

*Place:* Vigo (Spain), 19/06/2004

---

**Title:** Increasing marginal returns in the optimal management of renewable resources

*Organizing entity:* European Association of Environmental and Resource Economists (EAERE)

*Conference:* XIV Annual Conference of the EAERE

*Place:* Bremen, 23/06/2005

---

**Title:** Optimal management of fisheries with non-enforced regulation

*Organizing entity:* The International Society for Ecological Economics (ISEE)

*Conference:* Ninth Biennial Conference of the ISEE "Ecological Sustainability and Human Well-Being"

*Place:* New Delhi, 15/12/2006

---

**Title:** Optimal management of fisheries with non-enforced regulation based on the Precautionary Approach

*Organizing entity:* Spanish Economic Association (SAEe)

*Conference:* XXXII Symposium of Economic Analysis

*Place:* Granada (Spain), 13/12/2007

---

**Title:** Increasing marginal returns and the danger of collapse of commercially valuable fish stocks

*Organizing entity:* Spanish-Portuguese Association of Resource and Environmental Economics (AERNA)

*Conference:* III Congress of the AERNA

*Place:* Palma de Mallorca (Spain), 04/06/2008

---

**Title:** Optimal management of fisheries with non-enforced regulation based on the precautionary approach

*Organizing entity:* The International Society for Ecological Economics (ISEE)

*Conference:* Applying Ecological Economics for Social and Environmental Sustainability

*Place:* Nairobi (Kenya), 07/08/2008

---

**Title:** Potential collapse in fisheries with increasing returns and stock-dependent costs

*Organizing entity:* Spanish-Portuguese Association of Resource and Environmental Economics (AERNA)

*Conference:* IV Congress of the AERNA

*Place:* Las Palmas de Gran Canaria (Spain), 02/06/2010

---

**Title:** Potential collapse in fisheries with increasing returns and stock-dependent costs

*Organizing entity:* Spanish Economic Association (SAEe)

*Conference:* XXXVI Symposium of Economic Analysis

*Place:* Málaga (Spain), 14/12/2011

---

**Title:** Modeling the population dynamics of fish stocks at low population sizes: The case of the Northern cod

*Organizing entity:* The Fisheries Society of the British Isles (FBSI)

*Conference:* 6<sup>th</sup> World Fisheries Congress

*Place:* Edinburgh, 07/05/2012

---

**Title:** Modeling the population dynamics of fish stocks at low population sizes: The case of the Northern cod

*Organizing entity:* The International Society for Ecological Economics (ISEE)

*Conference:* Ecological Economics and Rio+20

*Place:* Rio de Janeiro (Brazil), 16/06/2012

---

**Title:** Modeling the population dynamics of fish stocks at low population sizes: The case of the Northern cod

*Organizing entity:* International Institute of Fisheries Economics and Trade (IIFET)

*Conference:* IIFET's 16th Biennial Conference

*Place:* Dar es Salaam (Tanzania), 16/07/2012

---

## INVITED CONFERENCES IN UNIVERSITIES, CONGRESSES, SEMINARS, AND INTERNATIONAL WORKSHOPS

**Title:** Lipschitz continuous dynamic programming with discount

*Organizing entity:* Institute for Research in Economics and Business Administration (SNF)

*Conference:* Research Seminar

*Place:* Bergen (Norway), Septiembre, 2003

---

**Title:** On the danger of collapse of schooling species

*Organizing entity:* The College of Economists of A coruña

*Conference:* VII National Congress on Economy

*Place:* A Coruña (Spain), 30/09/2005

---

**Title:** Non-concavities in some economic problems: a dynamic programming approach

*Organizing entity:* Department of Economy, Southern Methodist University (SMU)

*Conference:* Research Seminar

*Place:* Dallas (USA), December, 2005

---

**Title:** Optimal management of fisheries with non-enforced regulation

*Organizing entity:* Department of Economic Analysis I, University of the Basque Country (UPV)

*Conference:* Research Seminar

*Place:* Bilbao (Spain), 16/03/2007

---

**Title:** Invited Discussant

*Organizing entity:* Banco Santander Foundation

*Conference:* XXI Moneda y Crédito Symposium: Economic Policy Evaluation

*Place:* Madrid (Spain), 14/11/2008

---

**Title:** On the danger of collapse of species in presence of increasing marginal returns (non-concavities)

*Organizing entity:* Department of Quantitative Economics, Autónoma University of Madrid (UAM)

*Conference:* Research Seminar

*Place:* Madrid (Spain), 30/04/2009

---

**Title:** Invited Expert

*Organizing entity:* Technological Centre of the Sea (CETMAR)

*Conference:* Workshop on advances in integrated biological & economic models for fisheries assessment

*Place:* Vigo (Spain), 22/07/2011

---

**Title:** Invited Expert

*Organizing entity:* Research Group in Economic Analysis (RGEA)

*Conference:* II Workshop on Age-structured Models in Fishery Economics and Bioeconomic Modelling

*Place:* Vigo (Spain), 05/11/2011

---

**Title:** Equilibrium versus collapse in age-structured models: The case of the Northern cod

*Organizing entity:* Department of Business and Management Science, Norwegian School of Economics (NHH)

*Conference:* Workshop on Age-structured Models

*Place:* Bergen (Norway), 13/06/2012

---



**Title:** Some Problems in Natural Resources Economics; Analysis of collapsed species: The case of the Northern cod stock

*Organizing entity:* IMI-Institute of Interdisciplinary Mathematics, Complutense University of Madrid

*Conference:* Research Seminar

*Place:* Madrid (Spain), 05/02/2014

---

**Title:** Biodynamics and limit reference points in collapsed fisheries: The case of the Northern cod stock

*Organizing entity:* Department of Quantitative Economics, Autónoma University of Madrid (UAM)

*Conference:* Research Seminar

*Place:* Madrid (Spain), 07/02/2014

---

**Title:** Biological and economic weakness in both continuous and discrete-time bioeconomic models

*Organizing entity:* NILS Science and Sustainability. European Project (ES07 – EEA Grants) (021-ABEL-CM-2013)

*Conference:* Research Seminar

*Place:* Bergen (Norway), April, 2014

---

**Title:** The Runge-Kutta 4<sup>th</sup> order method in population dynamics models of fish stocks

*Organizing entity:* NILS Science and Sustainability. European Project (ES07 – EEA Grants) (021-ABEL-CM-2013)

*Conference:* Research Seminar

*Place:* Bergen (Norway), May, 2014

---

**Title:** Nonautonomous discrete time bioeconomic models with periodic solutions

*Organizing entity:* NILS Science and Sustainability. European Project (ES07 – EEA Grants) (021-ABEL-CM-2013)

*Conference:* Research Seminar

*Place:* Bergen (Norway), June, 2014

---

**Title:** A bridge between continuous and discrete-time bioeconomic models: Seasonal fisheries

*Organizing entity:* IMI-Institute of Interdisciplinary Mathematics, Complutense University of Madrid

*Conference:* Research Seminar

*Place:* Madrid (Spain), 26/06/2015

---

**Title:** A bridge between continuous and discrete-time bioeconomic models: Seasonal fisheries

*Organizing entity:* José M. Maroto (PI), NILS Science and Sustainability. European Project (ES07 – EEA Grants) (021-ABEL-CM-2013)

*Conference:* NILS Science and Sustainability International Seminar on Continuous vs. Discrete-Time Bioeconomic Models: Seasonal Fisheries

*Place:* Madrid (Spain), 17/11/2015

---

**Title:** Seasonality in fisheries: A bridge between continuous and discrete-time bioeconomic models

*Organizing entity:* ICMAT-Institute for Mathematical Sciences of CSIC, Autónoma University of Madrid (UAM)

*Conference:* Workshop Mathematical Perspectives in Biology

*Place:* Madrid (Spain), 05/02/2016

---

**Title:** Bioeconomic modeling of seasonal fisheries: A reinterpretation of the Equilibrium  
**Organizing entity:** ICMAT-Institute for Mathematical Sciences of CSIC, Autónoma  
University of Madrid (UAM)  
**Conference:** Research Seminar  
**Place:** Madrid (Spain), 03/06/2016

---

-

### ORGANIZATION OF INTERNACIONAL CONFERENCES

**Internacional Seminar:** NILS Science and Sustainability International Seminar on  
Continuous vs. Discrete-Time Bioeconomic Models: Seasonal Fisheries  
**Organizer:** José M. Maroto (PI), NILS Science and Sustainability. European Project  
(ES07 – EEA Grants) (021-ABEL-CM-2013)  
**Funding agency:** Bilateral Relations, NILS Science and Sustainability (ES07 – EEA  
Grants) (009-2BBRR)  
**Funding:** 6000 euros  
**Place:** Complutense University of Madrid, 17/11/2015

---