Juan A. Bonachela, CURRICULUM VITAE

PERSONAL INFORMATION:

Current Position: Assistant Professor

Current Address: Department of Ecology, Evolution and Natural Resources,
Rutgers University
14 College Farm Road,
New Brunswick, NJ 08901 (USA)

E-mail address: juan.bonachela@rutgers.edu

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Publication Statistics: http://scholar.google.com/citations?hl=en&user=pAS9jgYAAAAJ

PROFESSIONAL HISTORY:

2019-: Visiting Research Collaborator, Princeton University, USA.

2018-: Assistant Professor, Rutgers University, USA.

2018-20: Honorary Research Position, University of Strathclyde, UK.

2014-17: Lecturer (equivalent to Assistant Professor in USA), University of Strathclyde, UK.

2009-14: Postdoctoral Research Associate, Princeton University, USA.

EDUCATION:

2015: FHEA, Fellow of the Higher Education Academy, UK.

2008: Ph.D. Physics with European Degree (Doctor Europeus), Summa Cum Laude,
Thesis Committee: Romualdo Pastor-Satorras, Claudio Castellano, Albert Diaz-Guilera, Pedro L. Garrido. University of Granada (Spain).
English version available at: http://www.ugr.es/∼jabonachela/thesis/thesis.pdf

2005: M.Sc. Physics and Mathematics (Diploma de Estudios Avanzados, DEA), University of Granada (Spain).

2003: B.Sc. Physics, University of Granada (Spain).

GRANTS, FELLOWSHIPS, AND AWARDS:

2021-24: Simons Foundation Early Career Investigator in Marine Microbial Ecology and Evolution Award. Role: Principal Investigator.

2021-24: National Science Foundation (Division of Mathematical Sciences), *Characterizing ecological transitions in systems with regularity*. Role: Principal Investigator.

2020-22: FEDER/Junta de Andalucía-Consejería de Economía y Conocimiento, *Fluctuations: relevance and functionality in biological systems*. Role: Collaborator.

2019-23: National Geographic Society Grant, *The surales: from individual earthworms to landscape patterns in Colombian wetlands*. Role: Co-investigator.

2018-22: Gordon and Betty Moore Foundation Grant, *Self-organization across ecological scales*. Role: Co-supervisor.

2017-21: The Research Council of Norway. Role: Co-supervisor.

2016: MASTS Visiting Fellowship. Role: Supervisor.

2014: Extraordinary Doctorate Award, awarded by the University of Granada to the best PhD theses of the 2008-2009 academic year with Cum Laude qualification.

2010: Postdoctoral Fellowship, awarded by the Spanish Ministry of Science and Education. Department of Ecology and Evolutionary Biology, Princeton University (USA). Advisor: Simon A. Levin. Declined by applicant (administrative reasons, and alternative funding sources).

2009: Research Fellowship, awarded by the University of Granada. Institute Carlos I for Theoretical and Computational Physics and Department of Electromagnetism and Condensed Matter Physics, University of Granada (Spain). Advisor: Miguel Ángel Muñoz.

2005-09: Graduate Fellowship, awarded by the Spanish Ministry of Science and Education. Institute Carlos I for Theoretical and Computational Physics and Department of Electromagnetism and Condensed Matter Physics, University of Granada (Spain). Advisor: Miguel Ángel Muñoz.

2003: Research Fellowship, awarded by the Spanish Ministry of Science and Education. Department of Electromagnetism and Condensed Matter Physics, University of Granada (Spain). Advisor: Pedro L. Garrido.

2002: Research Fellowship, awarded by the University of Granada. Department of Electromagnetism and Condensed Matter Physics, University of Granada (Spain). Advisor: Pedro L. Garrido.

PAST FUNDING SOURCES (salary and/or travel):

- Marine Alliance for Science and Technology for Scotland (MASTS).
- Norwegian Government, Nordic Council of Ministers, NordForsk (GreenMAR project).
- John Templeton Foundation.
- Andrew W. Mellon Foundation.
- Defense Advanced Research Projects Agency (DARPA), Fundamental Laws of Biology (FunBio) Program.
- National Science Foundation (NSF), Dimensions of Biodiversity Program.
- Cooperative Institute for Climate Science (CICS) of Princeton University and the National Oceanographic and Atmospheric Administration's (NOAA) Geophysical Fluid Dynamics Laboratory (GFDL).
- Spanish Ministry of Science and Technology, National Plan of Research and Development Program.
- Andalucía Regional Government, Excellence Projects Program.

RESEARCH VISITS:

- Institute for Cross-Disciplinary Physics and Complex Systems, Universitat de les Illes Balears, Spain, 2017.

- Centre for Ecological and Evolutionary Synthesis, University of Oslo, Norway, 2013 (March and November), 2014, 2015 (May and September), 2016 (February and April, August).
- Department of Ecology and Evolutionary Biology, Princeton University, 2016.
- Institute Carlos I Theoretical and Computational Physics, University of Granada, Spain, 2014-17.
- Institute of Biodiversity, Animal Health and Comparative Medicine, University of Glasgow, UK, 2015, 2016, 2017.
- Earth System Science and Ecology and Evolutionary Biology Departments, University of California - Irvine, U.S.A. 2011, 2012, 2013, 2014.
- Department of Earth, Atmosphere and Planetary Sciences, Massachusetts Institute of Technology, U.S.A. 2010, 2013.
- Visiting researcher in the Department of Theoretical Physics III of the University of Würzburg, Germany. Advisor: Haye Hinrichsen. July-September 2007.
- Visiting researcher in the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy. Advisor: Matteo Marsili. July-September 2006.

PUBLICATIONS:

Review Articles:

52. H. Locke, K. D. Bidle, K. Thamatrakoln, C. Johns, **Juan A. Bonachela**, B. Ferrell, and K. E. Wommack, *Virioplankton, the carbon cycle, and our future ocean*, to appear in Advances in Virus Research (2022). (**Invited review**, **cover article**)
51. R. Martinez-García, C. Cabal, J. M. Calabrese, E. Hernández-García, C. López, C. E. Tarnita and , **Juan A. Bonachela**, *Spatial self-organization of vegetation in water-limited systems: mechanistic causes, empirical tests, and ecosystem-level consequences*, under review (2022).
50. R. Martinez-García, C. E. Tarnita, and **Juan A. Bonachela**, *Spatial patterns in ecological systems: from microbial colonies to landscapes*, Emerging Topics in Life Sciences, ETLS20210282 (2022).
49. V. Buendía, S. di Santo, **Juan A. Bonachela**, and M. A. Muñoz, *Feedback mechanisms for self-organization to the edge of a phase transition: a review*, Frontiers in Physics (Interdisciplinary Physics) **8**, 333 (2020).
48. **Juan A. Bonachela**, C. A. Klausmeier, K. F. Edwards, E. Litchman, and S. A. Levin, *The role of phytoplankton diversity in emergent oceanic stoichiometry*, J. Plankton Res. **38**, 1021 (2016).

Book Chapters:

47. S. M. Vallina, R. Martinez-García, S. L. Smith, **Juan A. Bonachela**, *Models in Microbial Ecology*, in "Encyclopedia of Microbiology, 4th Edition" Elsevier, USA (2019).
46. S. A. Levin, **Juan A. Bonachela**, and C. D. Nadell, *Mathematical and Computational Challenges in the Study of Complex Adaptive Microbial Systems*, in "The Social Biology of Microbial Communities" Institute of Medicine of the National Academies Workshop Summary Report, National Academies Press, USA (2012).

Book Review:

45. **Juan A. Bonachela**, *"Natural Complexity", by Paul Charbonneau*, The Quarterly Review of Biology **94**, 289 (2019).

Research Articles:

44. **Juan A. Bonachela**, *Viral plasticity enables diverse host-virus communities under challenging environmental conditions*, in preparation (2022).

43. E. Tekwa, **Juan A. Bonachela**, M. L. Pinsky, *Institutional strategy update speed affects extinction among harvested species*, to be submitted (2022).

42. G. Mukerjee, **Juan A. Bonachela**, M. A. Muñoz, and K. J. Wiese, *Depinning in the quenched Kardar-Parisi-Zhang class I: Mappings, simulations and algorithm*, under review (2022).

41. R. J. Almeida, **Juan A. Bonachela**, and J. L. Lockwood, *Assessing how the interplay of multiple socioecological drivers of overexploitation affects rare species extinction risk*, under review (2022).

40. A. G. Garcia, W. Mesquita-Filho, C. A. H. Flechtmann, J. L. Lockwood, and **Juan A. Bonachela**, *Alternative stable ecological states in a dung-beetle community arising from a human-caused biological invasion*, under review (2022).

39. B. Knowles*, **Juan A. Bonachela***, N. Cieslik*, et. al, *Partitioning density-dependent death vs. physiology-dependent growth processes using a miniaturized dilution assay*, under review (2022). (* Joint 1st authors).

38. **Juan A. Bonachela**, M. Choua, and M. R. Heath, *Unconstrained coevolution of bacterial size and the latent period of plastic phage*, PLoS One **17**, e0268596 (2022). (2022).

37. J. Castillo-Vardaro*, **Juan A. Bonachela***, C. C. M. Baker, M. L. Pinsky, D. F. Doak, R. Pringle, and C. Tarnita, *Resource availability and heterogeneity shape the self-organisation of regular spatial patterning*, Ecol. Lett. **24**, 1880 (2021). (* Joint 1st authors).

36. M. Choua, M. R. Heath, and **Juan A. Bonachela**, *Evolutionarily stable coevolution between a plastic lytic virus and its microbial host*, Frontiers Microbiol. **12**, 1031 (2021).

35. **Juan A. Bonachela**, M. Burrows, and M. L. Pinsky, *Shape of species climate performance curves affects community response to climate change*, Ecol. Lett. **24**, 708 (2021).

34. B. Knowles, **Juan A. Bonachela** et al., *Temperate infection in a canonically virulent host-virus system*, Nature Communications **11**, 4626 (2020).

33. J. Pourtois, C. Tarnita, and **Juan A. Bonachela**, *Impact of lytic phages on phosphorus- versus nitrogen-limited marine microbes*, Frontiers in Microbiology **11** 221 (2020). **Aquatic Microbiology Editor's Pick 2021**.

32. P. Villegas, M. A. Muñoz, and **Juan A. Bonachela**, *Evolution in the Debian GNU/Linux software network: analogies and differences with gene regulatory networks*, J. Roy. Soc. Interface **17** 20190845 (2020).

31. M. Choua, M. R. Heath, D. C. Speirs, and **Juan A. Bonachela**, *The effect of viral plasticity on the persistence of host-virus systems*, J. Theor. Biol. **498** 110263 (2020).

30. M. T. Wortel, H. Peters, **Juan A. Bonachela**, and N. C. Stenseth, *Coupled fast and slow feedbacks lead to continual evolution: a general modeling approach*, PNAS **117** 4234 (2020).

29. C. Caceres, S. Spatharis, E. Kaiserli, E. Smeti, H. Flowers, and **Juan A. Bonachela**, *Temporal phosphate gradients reveal diverse acclimation responses in phytoplanton phosphate uptake*, The ISME Journal **13** 2834 (2019).

28. M. Choua and **Juan A. Bonachela**, *Ecological and evolutionary consequences of viral plasticity*, Am. Nat. **193**, 346 (2019).

27. R. Martinez-Garcia, C.D. Nadell, R. Hartmann, K. Drescher, and **Juan A. Bonachela**, *Cell adhesion and fluid flow jointly initiate biofilm genetic structure*, PLoS Comp. Biol. **14**, e1006094 (2018).

26. **Juan A. Bonachela**, M.T. Wortel, and N.C. Stenseth, *Eco-evolutionary Red Queen dynamics regulate biodiversity in a metabolite-driven microbial system*, Scientific Reports **7**, 17655 (2017).

25. C.E. Tarnita*, **Juan A. Bonachela***, E. Sheffer, J.A. Guyton, T.C. Coverdale, R.A. Long, R.M. Pringle, *A theoretical foundation for multi-scale regular vegetation patterns*, Nature **541**, 398 (2017). (* Joint 1st authors). (**Cover article**)

24. N.S. Garcia, **Juan A. Bonachela**, and A.C. Martiny, *Interactions between growth-dependent cell size, nutrient supply and cellular elemental stoichiometry of marine Synechococcus*, ISME J. **10**, 2715 (2016).

23. **Juan A. Bonachela**, R. M. Pringle, E. Sheffer, T. C. Coverdale, J. A. Guyton, K. K. Caylor, S. A. Levin, and C. E. Tarnita, *Termite mounds can increase the robustness of dryland ecosystems to climatic change*, Science **345**, 651 (2015). (**Cover article**)

22. C. Mouginot, A. E. Zimmerman, **Juan A. Bonachela**, H. Fredricks, S. D. Allison, B. A. S. Van Mooy, and A. C. Martiny, *Resource allocation by the marine cyanobacterium Synechococcus WH8102 in response to different nutrient supply ratios*, Limnol.Oceanogr. **60**, 1634-1641 (2015).

21. P. Villa, **Juan A. Bonachela**, S. A. Levin, and M. A. Muñoz, *Eluding catastrophic shifts*, PNAS Plus **112**, E1828-E1836 (2015).

20. M. W. Lomas, **Juan A. Bonachela**, S. A. Levin, and A. C. Martiny, *Impact of ocean phytoplankton diversity on phosphate uptake*, PNAS **111**, 17540 (2014).

19. P. Villa, **Juan A. Bonachela**, and M. A. Muñoz, *Quenched disorder forbids discontinuous transitions in non-equilibrium low-dimensional systems*, Phys. Rev. E **89**, 012145 (2014).

18. **Juan A. Bonachela** and S. A. Levin, *Evolutionary Comparison Between Viral Lysis Rate and Latent Period*, J. Theor. Biol. **345**, 32 (2014).

17. **Juan A. Bonachela**, S. D. Allison, A. C. Martiny, and S. A. Levin, *A Model for Variable Phytoplankton Stoichiometry Based on Cell Protein Regulation*, Biogeosciences **10**, 4341 (2013).

16. **Juan A. Bonachela**, M. A. Muñoz, and S. A. Levin, *Patchiness and Demographic Noise in Three Ecological Examples*, J. Stat. Phys. **148**, 723-739 (2012).

15. **Juan A. Bonachela**, M. Raghib, and S. A. Levin, *Dynamic Model of Flexible Phytoplankton Nutrient Uptake*, PNAS **108**, 20633 (2011).

14. M. A. Fortuna, **Juan A. Bonachela**, and S. A. Levin, *The Evolution of a Modular Software Network*, PNAS **108**, 19985 (2011).

13. **Juan A. Bonachela**, C. D. Nadell, J. Xavier, and S. A. Levin, *Universality in Bacterial Colonies*, J. Stat. Phys. **144**, 303 (2011).

12. F. Vázquez, **Juan A. Bonachela**, C. López, and M. A. Muñoz, *Temporal Griffiths Phases*, Phys. Rev. Lett. **106**, 235702 (2011).

11. **Juan A. Bonachela**, S. de Franciscis, J. J. Torres, and M. A. Muñoz, *Self-Organization Without Conservation: Are Neuronal Avalanches Generically Critical?*, J. Stat. Mech. P02015 (2010).

10. **Juan A. Bonachela** and M. A. Muñoz, *Self-Organization Without Conservation: True or Just Apparent Scale-Invariance?*, J. Stat. Mech. P09009 (2009).

9. A. C. Barato, C. E. Fiore, **Juan A. Bonachela**, H. Hinrichsen, and M. A. Muñoz, *The Simplest Nonequilibrium Phase Transition into an Absorbing State*, Phys. Rev. E **79**, 041130 (2009).

8. **Juan A. Bonachela** and M. A. Muñoz, *Boundary-Induced Heterogeneous Absorbing States*, in *Modeling and Simulation of New Materials: Tenth Granada Lectures*, Eds. P. L. Garrido, J. Marro and P. I. Hurtado, American Institute of Physics Conference Proceedings **1091**, 204 (2009).

7. **Juan A. Bonachela**, M. Alava, and M. A. Muñoz, *Cusps, Self-Organization, and Absorbing States*, Phys. Rev. E **79**, R050106 (2009).
6. **Juan A. Bonachela** and M. A. Muñoz, *Confirming and Extending the Hypothesis of Universality in Sandpiles*, Phys. Rev. E **78**, 041102 (2008).
5. **Juan A. Bonachela**, H. Hinrichsen, and M. A. Muñoz, *Entropy Estimates of Small Data Sets*, J. Phys. A **41**, 202001 (2008).
4. **Juan A. Bonachela** and M. A. Muñoz, *How to Discriminate Easily Between Directed-Percolation and Manna Scaling*, Physica A **384**, 89 (2007).
3. **Juan A. Bonachela**, H. Chaté, I. Dornic, and M. A. Muñoz, *Absorbing States and Elastic Interfaces in Random Media: Two Equivalent Descriptions of Self-Organized Criticality*, Phys. Rev. Lett. **98**, 155702 (2007).
2. O. Al Hammal, **Juan A. Bonachela**, and M. A. Muñoz, *Absorbing State Phase Transitions with a Non-Accessible Vacuum*, J. Stat. Mech. P12007 (2006).
1. **Juan A. Bonachela**, J. J. Ramasco, H. Chaté, I. Dornic, and M. A. Muñoz, *Sticky Grains do not Change the Universality Class of Isotropic Sandpiles*, Phys. Rev. E **74**, 050102(R) (2006).

PRESENTATIONS AND CONTRIBUTIONS TO CONFERENCES:

- *Dimensional reduction and ecological transitions*, Stability and Fluctuations in Complex Ecological Systems Workshop, Lorentz Center, OortâLeiden, The Netherlands, 2022.
- *Characterizing ecosystem changes associated with desertification transitions*, mini symposium "Vegetation Modeling: nonlinear PDE approach", Mathematical Models in Ecology and Evolution conference, Reading, UK, 2022.
- *Dimensional Change in Complex Systems Dictates Regime Shifts*. Critical Transitions Workshop I (Earth Resilience and Sustainability Initiative), remote 2022.
- *Characterizing viral plasticity and its eco-evolutionary consequences*, Early Career Investigators in Marine Microbial Ecology and Evolution and Fellows in Marine Microbial Ecology Meeting, Simons Foundation, New York City, 2022.
- *Jack of many trades? Emergence of host immunity against a plastic virus*, Department of Biochemistry and Microbiology Seminar Series, Rutgers University, 2022.
- *Quantifying ecological transitions*, Ecology and Evolution Graduate Program Seminar, Rutgers University, 2018.
- *Catastrophic ecological transitions and management possibilities*, ESA Annual Meeting, New Orleans, 2018.
- *Emergent spatio-temporal patterns and ecological transitions*, Regular Patterns in Biology Workshop, Princeton University, 2018.
- *The ecological and evolutionary dynamics of viral plasticity*, Ocean Sciences Meeting, Portland, 2018.
- *The ecological and evolutionary dynamics of viral plasticity*, University of Glasgow, 2017.
- *Patrones emergentes en ecología: sistemas semi-áridos*, Viernes Científicos, Universidad de Almería, 2017.
- *Emergent patterns in ecology: semi-arid ecosystems*, Instituto de Física Interdisciplinar y Sistemas Complejos, Universitat de les Illes Balears, 2017.

- *Emergent patterns and ecological transitions*, Rutgers University, 2017.
- *Eluding catastrophic ecological transitions*, Imperial College London, 2017.
- *Large-scale emergent patterns in semi-arid ecosystems*, University of Edinburgh, 2016.
- *Emergent ecological patterns*, Granada, 2016.
- J. A. Bonachela, *Connecting scales in space and time*, GreenMar Annual Meeting, Iceland, 2016.
- J. A. Bonachela, *Emergent patterns and ecological interactions: the termite case*, Quantitative Laws Summer School: From physiology to ecology, from interaction structures to collective behavior, Como, 2016.
- J. A. Bonachela, *Catastrophic ecological transitions and how to avoid them*, Modeling and Predicting Ecological Transitions, Paris, 2016
- *Eluding catastrophic shifts*, CEES, University of Oslo, 2016.
- J. A. Bonachela, R. M. Pringle, E. Sheffer, T. C. Coverdale, J. A. Guyton, K. K. Caylor, S. A. Levin, and C. E. Tarnita, *Friend or foes: using physics to unravel the role of social insects in semi-arid ecosystems*, 13th Granada Seminar, Granada 2015.
- *Friends or foes: unraveling the role of termites in semi-arid ecosystems*, University of Glasgow, Glasgow, 2015.
- *Friends or foes: using physics to unravel the role of social insects in semi-arid ecosystems*, CEES, University of Oslo, 2015.
- *Microscopic Processes and Macroscopic Patterns in Marine Ecosystems*, Heriot-Watt University, Edinburgh, 2015.
- J. A. Bonachela, A. C. Martiny, S. D. Allison, M. W. Lomas, and S. A. Levin, *The Importance of Diversity in Phytoplankton Nutrient Uptake Strategies for Marine Biogeochemical Cycles*, Aquatic Sciences Meeting, Granada, 2015.
- J. A. Bonachela and S. A. Levin, *Microscopic Processes and Macroscopic Patterns*, Core Research for Evolutionary Science and Technology workshop, Tokyo University of Marine Science and Technology, 2014.
- J. A. Bonachela, A. C. Martiny, S. D. Allison, M. W. Lomas, and S. A. Levin, *The Importance of Phytoplankton Diversity on Marine Nitrogen and Phosphorus Cycles*, Marine Alliance for Science and Technology for Scotland: Annual Science Meeting, Edinburgh, 2014.
- J. A. Bonachela, S. D. Allison, A. C. Martiny, and S. A. Levin, *Dynamic Model For Phytoplankton Stoichiometry Based On Protein Regulation*, Ocean Sciences Meeting, Hawaii, 2014.
- *Evolutionary Comparison of Models for Viral Infection*, CEES, University of Oslo, 2013.
- *Improving the Predictability of Marine Ecosystem Models*, CEES, University of Oslo, 2013.
- *Linking Phytoplankton Nutrient Uptake and Stoichiometry*, Princeton University, 2012.
- *Acclimation or Starvation: A Dynamic Description of Phytoplankton Nutrient Uptake*, Lewis-Sigler Institute for Integrative Genomics (Princeton), 2012.
- *Universality in Bacterial Colonies*, Rutgers University, 2011.
- *Improving the Predictability of the New Generation of Models for Oceanic Biogeochemistry*, UC Irvine, 2011.
- *Self-Organized Criticality in Nature*, Princeton University, 2009.

- C. E. Fiore, J. A. Bonachela and M. A. Muñoz, *Bosonic and Fermionic Descriptions for a Simple Nonequilibrium Model*, in *Modeling Cooperative Behavior in Neural Systems: Ninth Granada Lectures*, Eds. P. L. Garrido, J. Marro, and J. J. Torres, American Institute of Physics (2007).
- J. A. Bonachela, H. Chaté, I. Dornic, and M. A. Muñoz, *Absorbing States and Pinned Interfaces in random media: Two descriptions of the same Phenomenon*, Congreso Nacional de Física Estadística FISES'06, Granada (Spain) (2006).
- J. A. Bonachela, J.J. Ramasco, H. Chaté, I. Dornic, and M. A. Muñoz, *Non all Conservation Laws Alter the Directed Percolation Universality Class*, in *Modeling Cooperative Behavior in the Social Sciences: Eighth Granada Lectures*, Eds. P. L. Garrido, J. Marro and M. A. Muñoz, American Institute of Physics (2005).

MENTORING EXPERIENCE:

Undergraduate supervision:

- Steven Rhein (Fall 2021)
- Hana Baldwin (Spring and Fall 2021, Spring 2022)
- Caitlin Nielsen (Spring 2021)

Undergraduate honors projects:

- Connor Anderson (2020-2021)
- Adam Yawdoszyn (2019-2020)
- Zhuoxue Chen (2019-2020)
- Kamil Szymkowski (2017-2018)
- Martin Lochery (2016-2017)
- Kirsty McAllister (2016-2017)
- Ningzhi Tang (2016-2017)
- Bin Wang (2015-2016)
- Laura Stormonth (2015-2016)
- Euan McRae (2014-2015)

Research internships:

- Rondi Nordal (summer 2019)
- Ningzhi Tang (summer 2016)
- Lizhi Zhang (summer 2015)

Masters supervision (current):

- Zhuoxue Chen (2020-present)

PhD supervision (current):

- Koustav Halder (2021-present)
- Jessica Kreinik (2021-present)

PhD supervision (former):

- Dr. Melinda Choua (2015-2020), currently at startup "Blue Remediation Ltd" (founder), and project manager at "E3D Environment".

Postdoctoral supervision (current):

- Dr. Eduardo Colombo (2020-present)
- Dr. William Cuello (2021-present)

Postdoctoral supervision (former):

- Dr. Carlos Caceres (2016-2018), currently postdoc at French National Centre for Scientific Research, Observatoire Océanologique de Banyuls sur Mer, France.
- Dr. Adriano Gomes Garcia (2019-2020), currently postdoc at São Paulo Advanced Research Center for Biological Control, Brazil.

TEACHING EXPERIENCE:

2019-: Mathematical and computational methods in theoretical biology (graduate level), Rutgers University (USA).
Syllabus: https://ecoevo.rutgers.edu/pdfs/600-02-Math-comp-methods-theor-biol.pdf

2019-: Fundamentals of Ecological and Environmental Modeling (undergraduate level), Rutgers University (USA). Required for graduation.
Syllabus: https://deenr.rutgers.edu/undergrad/syllabi/431FEEM-syllabus.pdf

2017: Mathematical Biology (half course, undergraduate level), University of Strathclyde (UK).

2016-17: Research-project supervision MSc. Quantitative Finance (masters level), University of Strathclyde (UK).

2015-17: Statistics and Data Presentation (half course, undergraduate level), University of Strathclyde (UK). Required for graduation.

2014-17: Research-project supervision in Communicating Mathematics and Statistics (undergraduate level); Linear Algebra and Differential Equations (tutorials, undergraduate level); Mathematics 2D (tutorials, undergraduate level), University of Strathclyde (UK). Required for graduation.

2011: Complex Systems (invited lecturer, postgraduate level). Center for Mathematical Sciences Research, Rutgers University (USA).

2004-08: Statistical Physics, Computational Physics, Non-linear Physics (various modules, undergraduate level). University of Granada (Spain).

SELECTED ACADEMIC SERVICE EXPERIENCE:

Peer-review:

Science, Nature Communications, Proceedings of the National Academy of Sciences USA, The American Naturalist, Proceedings Royal Society B, Ecology Letters, Evolution Letters, Nature Geosciences, Global Biogeosciences, Journal of Applied Ecology, International Society for Microbial Ecology Journal, Forests, PLoS Computational Biology, Frontiers Microbiology, Communications Biology, Scientific Reports, Theoretical Ecology, Ecological Complexity, Journal of

Theoretical Biology, Journal of Plankton Research, Journal Royal Society Interface, Applied and Environmental Microbiology, Ecography, Ecosystems, Ecological Indicators, Europhysics Letters, Journal of Statistical Mechanics, Limnology and Oceanography, Marine Ecology Progress Series, mBio, Mathematical Biosciences, Open Academic Press ("Self-Organized Critical Systems" book), Physica A, PLoS One.

Grant Reviewer:

National Science Foundation (ad-hoc reviewer and panelist), Division of Environmental Biology; Division of Ocean Sciences.

European Research Council, Advanced Grant Program (Life Sciences).

Human Frontier Science Program.

Israel Science Foundation.

Argentina's governmental Fund for Scientific and Technological Research

Other service:

Session chair, 2022 Earth Resilience and Sustainability Initiative workshop on Critical Transitions.

Session chair, 2015 Association for the Sciences of Limnology and Oceanography biennial meeting. Session: Impact of microbial biodiversity on aquatic ecosystem functioning and biogeochemistry (total 140 sessions).

Helped organize the 2005, 2006 and 2008 editions of the Granada Seminar/Lectures on Computational and Statistical Physics.

Helped launch an early version of the supercomputing cluster Proteus, University of Granada (2005) (webpage: http://proteus.ugr.es/index.php?id=1).

Committee membership:

Ecology and Evolution Graduate Program outreach event.

PhD committee member for: Ryan Almeida and Tyler Christiansen (Graduate Program in Ecology and Evolution); Austin Grubb (Graduate Program in Oceanography).

Rutgers School of Graduate Studies (SGS) Fulbright Faculty Committee.

Department of Ecology, Evolution, and Natural Resources Chair's executive committee.

Graduate Program in Ecology and Evolution executive committee.

Chair of committee to review the Graduate Program in Ecology and Evolution curriculum.

Committee to revise the Graduate Program in Ecology and Evolution bylaws.

Reviewer for SGS emergency fund nominations.

Department of Ecology, Evolution, and Natural Resources computational needs and capacities committee.

- Search Committee for DEENR faculty, IT support technician, Administrator Supervisor, 3 postdoctoral position and 2 research project assistant positions.

Panel member for PhD defense, Institute for Cross-Disciplinary Physics and Complex Systems (IFISC), Spain.

Panel member for 2 PhD defenses, University of Strathclyde, UK.

FURTHER PERSONAL DEVELOPMENT:

- Workshop "Creating and Supporting Inclusive Learning Environments", Rutgers Center for Teaching Advancement and Assessment Research and University Equity and Inclusion Office, Rutgers University (2021).
- Workshop "Creating and Supporting Inclusive Learning Environments", Rutgers Center for Teaching Advancement and Assessment Research and University Equity and Inclusion Office, Rutgers University (2021).
- Workshop "Classroom Inclusivity Through Self-Awareness", Rutgers Center for Teaching Advancement and Assessment Research and University Equity and Inclusion Office, Rutgers University (2021).
- Workshop "Identifying and Supporting Students in Distress", Rutgers Counseling, Alcohol and Other Drug Assistance Program, and Psychiatric Services, Rutgers University (2021).
- Workshop "Best Practices for Teaching STEM Online", Rutgers Office for Instructional Design, Rutgers University (2021).
- Workshop " Assessment Strategies That Support Teaching and Learning", Rutgers Office for Instructional Design, Rutgers University (2021).
- Workshop "Universal Design for Learning and Inclusive Teaching Strategies", Rutgers Office for Instructional Design, Rutgers University (2021).
- Workshop "Designing and Revising Courses for Learner-Centered Teaching (Fundamentals of Course Design)", Rutgers Office for Instructional Design, Rutgers University (2021).
- Workshop "Working with International Students", Rutgers Global Services, Rutgers University (2020).
- Seminar "Anti-Racism Seminar: Asian Students' Experiences", SEBS Office of International Programs, Rutgers University (2020).
- Workshop "Diversity and Inclusion in STEM", 4-H Science Program, Department of Marine and Coastal Science, Rutgers University (2020).
- Workshop "Teaching Remotely using Canvas", Rutgers Teaching and Learning with Technology, Rutgers University (2020).
- Webminar series: "Intro to Online Teaching", "Showcase: Canvas Tools for Student Engagement", "Alternative Assessment: Beyond Exams", "Synchronous vs. Asynchronous Teaching: Considerations and Best Practices", "Engaging Students Online Using BigBlueButton/Conferences", "Creating Accessible Content: Images, Documents, and Videos", "Utilizing Canvas Analytics to Support Student Success", "Using Proctortrack for Your Online Assessments", Rutgers Teaching and Learning with Technology, Rutgers University (2020).
- Workshop "Diversifying your funding mechanisms", Office of Grants Facilitation, Rutgers University (2018).
- Module "What about me.....supporting staff, supporting students" (2016).
- H2020 modules "Marie Sklodowska-Curie Individual Fellowship Scheme" and "MSCA - Innovative Training Networks: how to prepare a winning proposal" (2016).
- Module (PG Diploma, Advanced Academic Studies): "Course (Re)Design" (2015).
- Module (PG Diploma, Advanced Academic Studies): "Teaching, Learning and Assessment within the Disciplines" (2015).

- Module (PG Diploma, Advanced Academic Studies): "Supervising Postgraduate Research" (2015).
- Module (PG Diploma, Advanced Academic Studies): "Enhancing Learning, Teaching, and Assessment at Strathclyde" (2015).
- Grant writing and program modules ("Winter Fellowships Challenge", "Horizon 2020 Getting to know the programme", "European Research Council: Meet the Expert Session").
- Workshop: "Gateways to Emergent Behavior in Science and Society", Santa Fe Institute (2013).
- Workshop: "Writing an Effective Research Proposal", Princeton Writing Program, Princeton University (2013).
- Workshop: "Designing a Course", McGraw Center for Teaching and Learning, Princeton University (2012).
- Workshop: "Parallel Computing", Princeton Institute for Computational Science & Engineering (PICSciE), Princeton University (2012).
- Workshop/Symposium: "Microenvironments modulating biological interactions in the ocean", Aspen Center for Physics (2011).
- Workshop/School: "Complexity Science", Imperial College (Wye College) (2007).
- Workshop/School: "School and Conference on Fundamental Aspects of Complexity", the Abdus Salam International Centre for Theoretical Physics (ICTP) (2004).