

Carlos A. Serván

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Education

- 2008–2012 **Bachelor of Science**, *Biology, with mention in Hydrobiology & Fisheries*, National University of San Marcos, Lima, Perú.
Advisor: Walter Cabrera-Fébola
- 2013–2015 **Bachelor of Science candidate**, *Mathematics*, National University of San Marcos, Lima, Perú.
- 2016–2020 **PhD**, *Ecology & Evolution*, *University of Chicago*, Thesis: Assembling large ecological communities: A theoretical exploration.
Advisor: Stefano Allesina.
- 2020–Present **PhD candidate**, *Mathematics*, *University of Chicago*.
Advisor: Benson Farb.

Publications

- [1] Daniel S Maynard, **Serván, Carlos A**, Jose A Capitan, and Stefano Allesina. Phenotypic variability promotes diversity and stability in competitive communities. *Ecology letters*, 22(11):1776–1786, 2019.
- [2] George T Cantwell, Yanchen Liu, Benjamin F Maier, Alice C Schwarze, **Serván, Carlos A**, Jordan Snyder, and Guillaume St-Onge. Thresholding normally distributed data creates complex networks. *Physical Review E*, 101(6):062302, 2020.
- [3] Daniel S Maynard, J Timothy Wootton, **Serván, Carlos A**, and Stefano Allesina. Reconciling empirical interactions and species coexistence. *Ecology letters*, 22(6):1028–1037, 2019.
- [4] **Serván, Carlos A**, José A Capitán, Jacopo Grilli, Kent E Morrison, and Stefano Allesina. Coexistence of many species in random ecosystems. *Nature ecology & evolution*, 2(8):1237–1242, 2018.
- [5] Daniel S Maynard, **Serván, Carlos A**, and Stefano Allesina. Network spandrels reflect ecological assembly. *Ecology letters*, 21(3):324–334, 2018.
- [6] **Serván, Carlos A** and Stefano Allesina. Tractable models of ecological assembly. *Ecology Letters*, 24(5):1029–1037, 2021.
- [7] **Serván, Carlos A**, José A Capitán, Zachary R Miller, and Stefano Allesina. Effects of phylogeny on coexistence in model communities. *bioRxiv*, 2020.

- [8] Stefano Allesina, Zachary R Miller, and **Serván, Carlos A.** Intraspecific variation stabilizes classic predator-prey dynamics. *bioRxiv*, 2021.
- [9] Carlos A. Serván. On the uniqueness of the prym map. *arxiv*, 2022.

Presentations

Talks

- 12/21 *Prym Varieties*. Farb and Friends seminar. University of Chicago
- 12/19 *Trait dimensionality effects on model ecological communities*. Lotka-Volterra Models: when Random Matrix Theory meets theoretical Ecology Workshop. Paris, France. *Invited speaker*.
- 09/18 *Intersection graph models for networks*. Darwinian Cluster Retreat, University of Chicago. *Lightning talk*.
- 02/19 *Assembly of many-species ecosystems*. Computational and Applied Mathematics Student Seminar, University of Chicago. *Invited speaker*.
- 08/14 *Effects of predator-prey body mass ratios on food chain length*. XXIII ICBAR. Lima, Perú.
- 12/13 *Interaction networks and metabolic ecology: prospectus of a unified theory of ecology*. National University of San Marcos, Lima, Perú. *Invited speaker*.

Honors & Awards

Scholarships

- 2017-18 **International student fellowship (2nd year)**, *Biological Sciences Division, University of Chicago*.
- 2015 **Opportunity funds scholarship**, *EducationUSA*.

Academic Awards

- 2013–2015 **Top student**, *School of Mathematical Sciences, National University of San Marcos*.
- 2012 **Graduated as top student**, *School of Biological Sciences, National University of San Marcos*.
- 2012 **Academic recognition**, *For having ranked first in academic performance in the Professional Academic School of Biological Sciences, National University of San Marcos*.
- 2010 **Bronze medal, Diploma of Honor**, *First rank in grades of the Professional Academic School of Biological Sciences, National University of San Marcos*.

Teaching Experience

University of Chicago

- 2021–22 *College fellow*
- MATH 24400, Introduction to Algebraic geometry.

- MATH 26500, Introduction to Riemannian geometry.
 - MATH 27400, Introduction to Smooth manifolds and integration on manifolds.
- 2018 *Teaching assistant*, Networks in Ecology & Evolution (ECEV 44500)
- 2017 *Teaching assistant*, Ecology in the Anthropocene (BIOS 13132)

National University of San Marcos

- 2013–15 **Introduction to Biomathematics**, Undergraduate course
- Six lectures, *Ecological modeling: from single population to community models*
 - *Introduction to Island Biogeography theory* (twice)
 - *A primer on predator-prey models*
 - *Scaling predator-prey interactions: metabolic parameterizations of predator-prey models*
- 2013-15 **Community Ecology**, Undergraduate course
- *Mathematics in Ecology*
 - *Food webs: a short introduction* (twice)
- 2013 **Theoretical Ecology**, Undergraduate course
- *Food web theory: untangling Darwin's entangled bank*

Workshops and Schools

- 3/22 Braids in Symplectic and Algebraic geometry. ICERM, Brown University.
- 9/17 London StructInst Workshop: A synthesis of recent approaches to structural instability of ecological communities. Queen Mary University of London, England.
- 2/14 III Southern Summer School on Mathematical Biology. ICTP-SAIFR, São Paulo, Brazil.
- 6/13 Mini-course: Energetic approach to Food webs. ICTP-SAIFR, São Paulo, Brazil.
- 1/13 II Southern Summer School on Mathematical Biology. ICTP-SAIFR, São Paulo, Brazil.
- 8/11 Introduction to Delay Differential Equations. VII SEMBIOMAT. National University of San Marcos, Lima, Perú.

Memberships

American Mathematical Society

Computational Skills

Advanced \LaTeX , Python, R

Intermediate C, Emacs

Basic Bash, Git, Java, Mathematica

Languages

Native Spanish

Proficient English