

# Curriculum Vitae

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## Business Address:

Instituto de Conservación, Biodiversidad y Territorio  
Facultad de Ciencias Forestales & Recursos Naturales  
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## RESEARCH

I am interested in understanding urban systems as complex adaptive systems. I use geodata to describe and provide a deeper understanding of urban dynamics and I am particularly interested in bridging the gap between science, policy and practice for the protection of our environment and for ensuring human well-being. To this end, I focus on the role that space plays in the organization of complex adaptive systems such as socio-technological and socio-ecological systems.

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## CURRENT & PREVIOUS POSITIONS

- 2014 – Associate Professor. Biodiversity, Conservation and Territory Institute, Facultad de Ciencias Forestales Forestales & Recursos Naturales, Universidad Austral de Chile, Valdivia Chile.
- 2018 – Vice-dean. Faculty of Forestry and Natural Resources. Universidad Austral de Chile, Valdivia.
- 2017 – Research Associate. Instituto de Ecología y Biodiversidad, Chile. [ieb-chile.cl](http://ieb-chile.cl)
- 2015 – 2016 Undergraduate Program Director. Engineering in Conservation of Natural Resources. School of Forestry and Natural Resources. Universidad Austral de Chile.
- 2013 – 2014 Research Associate. Instituto de Sistemas Complejos de Valparaíso, Valparaíso, Chile. [www.sistemascomplejos.cl](http://www.sistemascomplejos.cl)
- 2013 – 2014 Research Associate. Centro de Investigación en Complejidad Social. Proyecto Anillo, Universidad del Desarrollo, Santiago de Chile. [www.complejidadsocial.cl](http://www.complejidadsocial.cl)
- 2011 – 2012 Postdoctoral Research Associate. Center for Nonlinear Studies. Los Alamos National Laboratory. Los Alamos, NM, USA. <http://cnls.lanl.gov>
- 2008 – 2013 Assistant Professor. Biodiversity, Conservation and Territory Institute, Facultad de Ciencias Forestales Forestales & Recursos Naturales, Universidad Austral de Chile, Valdivia Chile.
- 2007 Postdoctoral Fellow, Dept. Computer Sciences, The University of New Mexico, USA (Moses-lab)

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## EDUCATION

- 2001 – 2007 Ph.D. Biology University of New Mexico, NM. Dissertation title: “*Dynamical Partitioning of Spatiotemporal Variation within Species Ranges*” (advisor: Bruce T. Milne)
- 1994 – 1999 BSc. (Licenciatura) in Biological Sciences P. Catholic University of Chile. Graduation seminar title: “*Distribución geográfica y diversidad de mamíferos no-voladores en Chile*” (Translation: Diversity and geographic distribution of non-volant mammals in Chile)
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## PUBLICATIONS

### Published

1. Sotomayor-Gómez B & **Samaniego H**. 2020. City Limits in the Age of Smartphones and Urban Scaling. *Computers, Environment and Urban Systems*. 79: 101423 doi: 10.1016/j.compenvurbsys.2019.101423
2. Lenormand M, **Samaniego H**, Chaves JC, Vieira V, Silva M, Evsukoff AG. 2020. Diversity of Visitors as a Measure of Economic Activity and Segregation in Rio de Janeiro Metropolitan Area. *Entropy*. 22, 368. doi: 10.3390/e22030368
3. Alò D, Castillo A, Marín VP & **Samaniego H**. 2020. Low-cost emerging technologies as a tool to support informal environmental education in children from vulnerable public schools of southern Chile. *International Journal of Science Education*. 42:635–655 doi: 10.1080/09500693.2020.1723036
4. Seguel, M & **Samaniego, H**. 2020. Observación espacial y análisis de la relación entre las emisiones atmosféricas de CO2 y el tamaño de las ciudades en Chile. *Cuadernos Geográficos*. 59 (2): 73–92. doi:10.30827/cuadgeo.v59i2.9519
5. **Samaniego, H**, Franco-Cisterna, M & Sotomayor-Gómez, B. 2020. The Topology of Communicating according to City Size. In: Pumain, D (ed.) *Theories and Models of Urbanization*. Springer Series. ISBN 978-3-030-36655-1. doi: 10.1007/978-3-030-36656-8\_6
6. Maass A, **Samaniego H**, Amaya L, Chávez RO, Corcoran D, Fonturbel FE, García N, Pérez MF, Poulin E, Salas-Eljatib C, Scherson R, Tevy F, Travisany D, Vergara G. Datos en biodiversidad: Un informe para COP25 (2020). In: *Mesa Biodiversidad. Comité Científico COP25 Chile* (eds). <https://tinyurl.com/u77vads>
7. Marquet PA, Fernández M, Pliscoff P, Smith-Ramírez C, Arellano E, Armesto J, Bustamante R, Camus P, Durán AP, Echeverría C, Fuentes-Castillo T, Gaxiola A, Gaymer C, Gelcich S, Hucke-Gaete R, Manuschevich D, Martínez-Harms MJ, Naretto J, Quirici V, Ramírez de Arellano P, **H Samaniego** & Tironi M. 2020. Áreas protegidas y restauración en el contexto del cambio climático en Chile. In: *Mesa Biodiversidad. Comité Científico COP25 Chile* (eds). <https://tinyurl.com/tycq7jx>
8. Ortega-Solís G, Díaz I, Mellado-Mansilla D, Moreno R, Godoy J, **Samaniego H**. 2020 Importance of tree species and size for the epiphytic bromeliad *Fascicularia bicolor* (Ruiz & Pav.) Mez. in a South-American temperate rainforest (Chile). *iForest - Biogeosciences and Forestry*, 13, 2, Pp. 92-97. doi: 10.3832/ifer2710-013.
9. Alò D, Correa C, **Samaniego H**, Krabbenhoft CA, Turner TF. 2019. Otolith microchemistry and diadromy in Patagonian river fishes. *PeerJ* 7:e6149 doi: 10.7717/peerj.6149
10. Muñoz D, Zumelzu A, **Samaniego H** & González G. 2019. Metodología para determinar localizaciones más sostenibles para conjuntos de vivienda social en Valdivia, Chile. XIII CTV 2019 Proceedings: XIII International Conference on Virtual City and Territory: “*Challenges and paradigms of the contemporary city*”: UPC, Barcelona, October 2-4. Barcelona: CPSV, 2019, p. 8665. E-ISSN 2604-6512. doi: 10.5821/ctv.8665

11. Dannemann, T., Sotomayor-Gómez, B., **Samaniego, H.** 2018. The time geography of segregation during working hours *Royal Society Open Science*, 5. doi: 10.1098/rsos.180749
12. Castillo, A.G., Alò, D., González, B., **Samaniego, H.** (2018) Change of niche in guanaco (*Lama guanicoe*): The effects of climate change on habitat suitability and lineage conservatism in Chile. *PeerJ* 6:e4907 doi: 10.7717/peerj.4907
13. Molina, C., Castillo, C.C., **Samaniego, H.** 2018. Evaluación del nicho ambiental de *Lycalopex fulvipes* (zorro de Darwin) y la incidencia del cambio climático sobre su distribución geográfica. *Gayana* 82(1), 82(1), 65-78. doi: 10.4067/S0717-65382018000100065
14. Meynard, C; **H Samaniego** & PA Marquet. 2018. Biogeografía de Rapaces en Chile. In: Aves Rapaces de Chile, 2nd edition. A Muñoz-Pedreros, J Rau & J Yañez (eds), CEA. Valdivia Chile. <https://tinyurl.com/w4w2b2b>
15. Youn, H; Bettencourt, LMA; Lobo, J; Strumsky, D; **Samaniego, H**; West, G. 2016. Scaling and universality in urban economic diversification *Journal of the Royal Society Interface*, 13 , pp. 20150937 doi: 10.1098/rsif.2015.0937
16. Kelt, DA; Cofre, H; Cornelius, C; Engilis Jr., A; Gutierrez, JR; Marquet, PA; Medel, R; Meserve, P; Quirici, V; **Samaniego, H**; Vasquez, RA. 2016. The avifauna of bosque Fray Jorge national park and Chile's norte chico. *Journal of Arid Environments* 26 , pp. 23–36 doi: 10.1016/j.jaridenv.2015.06.018
17. Bettencourt, LMA; **Samaniego, H** & Youn, H. Professional diversity and the productivity of cities. 2014. *Scientific Reports* 4:5393 doi: 10.1038/srep05393
18. Cárdenas, JP; Cabrera, F; Olivares, G; Alfaro, R; Goya, D; Gibert, J; **Samaniego, H**; Palacios, AG. 2014. Redes Complejas: Un caso de estudio sobre la colaboración científica. In: Las Rutas Complejidad. Ediciones Instituto de Sistemas Complejo de Valparaíso. Valparaíso, Chile.
19. González, BA, **Samaniego H**, Marín J C, Estades CF. 2013. Unveiling Guanaco Distribution in Chile Based upon Niche Structure of Phylogeographic Lineages: Andean Puna to Subpolar Forests *PLoS One* 8 (11):e78894 doi: 10.1371/journal.pone.0078894
20. Correa, LA, Zapata, B, **Samaniego, H** and Soto-Gamboa. 2013 Social Structure in a Family Group of Guanaco (*Lama guanicoe*, Ungulate): Females Hierarchy Mediated by Dominance. *Behavioural Processes* 98:92–97 doi: 10.1016/j.beproc.2013.05.003
21. **Samaniego, H** & PA Marquet. 2013 Range Structure Analysis: Unveiling the Internal Structure of Species' ranges. *Theoretical Ecology* 6:419–426 doi:10.1007/s12080-013-0177-5
22. Vergara, PM; Rivera, A; Farías, A; Cofré H, **Samaniego, H**; Hahn I. 2014. Aves y mamíferos de bosque. Ecología Forestal: Bases para el Manejo Sustentable (Eds: Donoso C , González ME., Lara A., Donoso P.) Marisa Cuneo Ediciones, Chile.
23. Vergara, PM; Rivera, A; Farías, A; Cofré H, **Samaniego, H**; Hahn I. 2014. ¿Cómo responden los animales del bosque a las perturbaciones antropogénicas? Ecología Forestal: Bases para el Manejo Sustentable (Eds: Donoso C., González ME., Lara A., Donoso P.) Marisa Cuneo Ediciones, Chile.
24. Silva, AX; Jander, G; **Samaniego, H**; Ramsey, JS; Figueroa, ChC. 2012. Insecticide resistance mechanisms in the green peach aphid *Myzus persicae* (Hemiptera: Aphididae): a transcriptomic survey *PLoS One* 7: e36366. doi: 10.1371/journal.pone.0036366
25. **Samaniego, H**; Sérandour, G & BT. 2012. Imprint of Behavior and Population Dynamics on Taylor's Power Law in Two Corvid Species. *Population Ecology* 54:213-223 doi: 10.1007/s10144-011-0287-0

26. **Samaniego, H** & PA Marquet. 2009. Mammals and butterflies in Chile: Taxonomic Covariation and History. *Revista Chilena de Historia Natural* 82:135-151 doi: 10.4067/S0716-078X2009000100009
27. **Samaniego, H** & Moses, ME. 2008. Cities as Organisms: Allometric Scaling as an Optimization Model to Assess Road Networks in the USA. *Journal of Transportation and Land Use* 1:1 <https://www.jtlu.org/index.php/jtlu/article/view/29>.
28. Cofré, HL; **H Samaniego** & PA Marquet. 2007. Rarity and richness patterns of small mammals in Mediterranean and Temperate Chile. In: The quintessential naturalist: honoring the life and legacy of Oliver P. Pearson (Kelt, D. A., E. Lessa, J. A. Salazar-Bravo, and J. L. Patton, eds.). University of California Publications in Zoology. Vol 134. Pp. 275–302 doi: 10.1525/california/9780520098596.003.0011. PDF.
29. Smith-Ramírez, C; I Díaz; P Pliscoff; Valdovinos, C; Mendez, M; Larraín J & **H Samaniego**. 2007. Distribution patterns of flora and fauna in the coastal range of southern Chile: Integrating natural history and GIS. *Biodiversity and conservation*. doi:10.1007/s10531-006-9073-2
30. Marquet, PA; F Bozinovic; GA Bradshaw; CC Cornelius; H Gonzalez; JR Gutierrez; ER Hajek; JA Lagos; F Lopez-Cortez; L Nuñez; EF Rosello; C Santoro; **H Samaniego**; VG Standen; JC Torres-Murúa & FM Jaksic. 1998. Los Ecosistemas del desierto de atacama y area andina adyacente en el norte de Chile. *Revista Chilena de Historia Natural*. 71,4 593-617pp.

### Preprints / in press

Alò D, Lacy SN, Castillo A, **Samaniego H**, Marquet PA (in press) The macroecology of fish migration. *Global Ecology & Biogeography*. doi:10.1111/geb.13199

Lenormand M, **Samaniego H**, Chaves JC, Vieira V, Silva M, Esukoff AG. Diversity of Visitors as a Measure of Economic Activity and Segregation in Rio de Janeiro Metropolitan Area. Available in the arXiv: 2003.10340v1 <https://arxiv.org/abs/2003.10340>

Dannemann, T., Sotomayor, B., **Samaniego, H** The time geography of segregation during working hours. Available in the arXiv: 1802.00117 <https://arxiv.org/abs/1802.00117>

Humeres, F; **Samaniego, H** Dissecting the Spatial Structure of Cities from Human Mobility Patterns to Define Functional Urban Boundaries. Available in the arXiv: 1709.06713 <https://arxiv.org/abs/1709.06713>

Alò, A; Correa, C; **Samaniego, H**, Krabbenhoft C. A.; Turner, T.F. Otolith microchemistry identifies diadromous populations of Patagonian river fishes. Available in the bioRxiv: 174656 doi:10.1101/174656

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### GRANTS, AWARDS & SCHOLARSHIPS

- |             |  |
|-------------|--|
| 2020 –      | Climate Change Vulnerability Assessment – Los Lagos Region National Parks, Chile. Conservation International Grant RFP # 1001748 BHP-001   |
| 2016 – 2019 | PI. FONDECYT Regular Grant, National Research Council (CONICYT), Chile # 1161280. Scaling, Urban Policy and Management for Sustainability: A View from Complexity Science. Associated Institutions: P. Catholic University of Chile, U. Academia Humanismo Cristiano |
| 2016 – 2018 | PI. FONDEF Idea Grant for Applied Research, National Research Council (CONICYT), Chile # ID15I10313. Developing socio-spatial clustering algorithms to unveil urban dynamics from  |

near real-time non-conventional data sources for urban planning, management, and monitoring of cities. Involved Institutions: Catholic University of Chile, INRIA Chile, Smart Cities Unit, Ministry of Transportation and Communications, Telefonica R & D, Centre for Advanced Spatial Analysis, University College of London

- 2017 PI. EXPLORA-CONICYT (CREXIV-14-28) Grant for Outreach, National Research Council (CONICYT). Abramos unuestrs laboratorios. Colegio Laico, Valdivia & Laboratorio de Ecoinformática, UACH.
- 2015 PI. EXPLORA-CONICYT # ED190018. Ecoinformática para jóvenes: Capturando información ambiental para comprender nuestro entorno. Proyecto Explora de valoración y divulgación de las ciencias. Grant for Outreach National Research Council (CONICYT), Chile.
- 2012 – 2015 CoPI. FONDEF Grant for Applied Research, National Research Council (CONICYT), Chile # D10I1038. Red de información en biodiversidad para orientar las prioridades de investigación científica en apoyo a las políticas Una herramienta táctico-estratégica de gestión y planificación públicas ambientales. Involved institutions: U. Católica del Norte, U. de La Frontera, U. Metrop. de Ciencias de la Educación, REUNA Consortium, Univeridad Austral de Chile. (3 years) <http://ecoinformatica.cl/proyecto/analizador-biodiversidad/> <http://www.redbiodiversidad.cl>
- 2009 CoPI. DID Grant Universidad Austral de Chile. Prototipo de plataforma de simulación multi-agente para el análisis de la gestión productiva del recurso forestal. Una aplicación para la nueva industria de biomasa y energía.

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#### PUBLIC TALKS & SELECTED PRESENTATIONS

- 2019 **Samaniego, H.** The Topology of Communicating Across Cities of Increasing Sizes, or the Complex Task of “Reaching Out” in Larger Cities. LANET 2.0 Latin American Conference on Complex Networks. Universidad de los Andes. Cartagena, Colombia August 05-09. <https://lanet2019.uniandes.edu.co/>
- 2019 Dannemann, T; Sotomayor-Gómez, B & **Samaniego, H.** The time geography of segregation during working hours. NetSciX 2019 January 3-5, Santiago, Chile. <https://welcu.com/netscix/netscix>
- 2019 Sotomayor-Gómez, B & **Samaniego, H.** Defining urban boundaries from ICT data: Merging spectral network analysis and urban scaling laws to unveil urban dynamics. NetSciX 2019 January 3-5, Santiago, Chile. <https://welcu.com/netscix/netscix>
- 2018 **Samaniego, H.** Ciudades y escalamiento urbano en Chile. Una mirada exploratoria a partir de la Planificación Territorial Local. Sociedad Chilena de Geografía. SOCHIGEO 22-25 Octubre U. Concepcion
- 2018 **Samaniego, H.** Eigencities. VISDATOS. 1<sup>er</sup> Seminario de visualización de datos, Santiago, Chile. P. Universidad Católica de Chile. 11 & 12 January, Campus Lo Contador. <http://www.visdatos.cl>
- 2017 **Samaniego, H;** Franco, M & Sotomayor, B. The structure of voice communication networks in Chile. International Workshop. ERC Geo-Diversity, Paris, Octubre 12<sup>th</sup>-13<sup>th</sup>. <http://geodiversity.parisgeo.cnrs.fr/blog/international-workshop/>

- 2017 Maturana, F; **Samaniego, H.** Urban scaling and deviations. Exploratory analysis based on functional elements and spatial planning of Chile. International Workshop. ERC Geo-Diversity, Paris, Octubre 12<sup>th</sup>-13<sup>th</sup>. <http://geodiversity.parisgeo.cnrs.fr/blog/international-workshop/>
- 2017 **Samaniego, H.** The topology of communication networks across cities of increasing sizes: The problem of “reaching out” in larger cities. European Colloquium of Theoretical Geography, York, UK. Septiembre 7<sup>th</sup>-11<sup>th</sup>. <http://www.geog.leeds.ac.uk/ectqg17/home.html>
- 2017 **Samaniego, H.** Mirada Global para Planificar la Ciudad. Conversatorio Ciudadano Valdivia: Ciudades Inteligentes, Resilientes y Sustentables. Congreso del Futuro, Comisión de Ciencia y Tecnología Senado de la República de Chile, Valdivia. August 31<sup>st</sup>.
- 2017 Franco,M, Sotomayor, B & **Samaniego, H.** Patterns of Mobile Phone Usage in Chile: A Description of Communication Networks Across Cities of Increasing Sizes. URBANICS 3. Pucón, Chile. March 13<sup>th</sup>.
- 2016 **Samaniego, H** Dinámicas Urbanas y complejidad ¿Qué nos enseñan los datos?. Congreso del Futuro, Comisión de Ciencia y Tecnología Senado de la República de Chile, Valdivia. November 7<sup>th</sup>. <https://welcu.com/congreso-del-futuro-los-rios/futurolosrios2017>
- 2015 **Samaniego, H** Una Seminario Internacional Ciencia y Ciudad. Universidad Austral de Chile, Valdivia. November 7<sup>th</sup>. <http://www.ciencia-ciudad.ecoinformatica.cl>
- 2013 Javiera Molina, Inao Vásquez, José Villalón & **Horacio Samaniego** Ecoinformática: Una frontera clave para ecología y conservación biológica en Chile. II Seminario Regional de Biodiversidad, Región de la Araucanía, Chile. May 22-23, 2013
- 2012 **Samaniego, H.** Ecoinformática para la sustentabilidad en Chile. XIX Reunión anual de la Sociedad de Ecología de Chile. Universidad de Concepción. October 6-9, 2012
- 2012 **Samaniego, H** & Bettencourt LMA. The artifact of saturating diversity in larger cities. URBANICS II Chillan, Chile.
- 2011 Bravo, A; **Samaniego, H** Morfología de la hoja de los árboles de Chile y su relación con el clima. Ecoclima 2011, Valdivia, Chile
- 2010 Gómez, K; **Samaniego, H** & P Ramirez de Arellano. Análisis de vacíos e identificación de sitios prioritarios de flora y fauna para la XIV región de los ríos. Congreso Chileno de Cs. Forestales. Temuco, Chile.
- 2010 Christie, DA; Barichivich, J; Morales, MS; Cook, ER; LeQuesne, C; Villalba, R; Alvarez,CA; Silva,JS; Muñoz,A; Melvin,TM; Briffa,KR; Pacajes, J & **Samaniego, H.** Drought variability across the andes during the last millennia and its linkages to Pacific ocean climate variability. II International PAGES Meeting “Reconstructing Climate Variations in South America and the Antarctic Peninsula over the last 2000 years”, Valdivia, Chile.

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## PROFESSIONAL & COMMUNITY SERVICES

- Students Supervised and graduated ten undergraduate students at Universidad Austral de Chile as Engineer of Natural Resources (10), Agronomist (1), Geographer (3), Computer Sciences (3).  
Graduate Advisor for 4 MSc. at Universidad Austral de Chile. Design of Sustainable Environments (Architecture), Forestry, Applied Ecology and Computer Sciences

Advisor Committee for 7 Ph.D. Students in different programs, Ecology @ Universidad Catolica de Chile (3); Forestry @ U Concepcion; Ecology and Systematics @ Universidad Austral de Chile (2) and Forestry @ Universidad Austral de Chile (1)

#### Reviewer

Grant reviewer service at CONICYT (3), CONICET Uruguay (3) and NSF (1)

Journal reviewer service includes: Journal of the Royal Society Interface; Plos One; Environment and Planning B: Urban Analytics and City Science; Scientific Reports; Systematics and Biodiversity; The American Naturalist; Theoretical Ecology; Urban Studies; Conservation Ecology; Population and Environment; Revista Chilena de Historia Natural; Diversity & Distribution; Revista Bosque; Gayana.

Most reviewer history profile is available from Publons: <https://publons.com/author/1318378/horacio-samaniego>

#### LANGUAGE SKILLS

##### human languages

native Spanish, French  
 excellent English, Italian  
 fair Dutch

##### computer languages

Data Analysis R, Python (pandas)  
 Programming Bash, Python, SQL (solid knowledge)  
 GIS / RS GRASS, QGIS, R (sf and geo libraries)

#### ORCID QR



Google Scholar Profile available at: <https://scholar.google.cl/citations?user=VeJEo1AAAAAJ>

#### References available from

Pablo A. Marquet (Research collaborator) – [pmarquet@bio.puc.cl](mailto:pmarquet@bio.puc.cl)

Professor @ Biology Department Pontificia Universidad Católica de Chile, Santiago Chile  
<http://www.bio.puc.cl/profs/marquet/>  
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Luis M. Bettencourt (Postdoc advisor) – [bettencourt@uchicago.edu](mailto:bettencourt@uchicago.edu) / [ehlee@uchicago.edu](mailto:ehlee@uchicago.edu)

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<https://voices.uchicago.edu/luisbettencourt/>  
 +1 (773) 834-4676 [voice]

Elsa Arcaute (Research collaborator) – [e.arcaute@ucl.ac.uk](mailto:e.arcaute@ucl.ac.uk)

Lecturer @ Centre for Advanced Spatial Analysis, Faculty of the Built Environment, University College of London, UK  
<https://www.ucl.ac.uk/bartlett/casa/dr-elsa-arcaute>  
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Professor @ University Paris I Pantheon Sorbonne, France  
<https://www.parisgeo.cnrs.fr/spip.php?article164>  
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