Pablo Cortés G.

Independent researcher

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PACortes

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About me

Chilean researcher and professor with extensive experience in ecology, evolutionary physiology, bibliometrics, sustainability, statistics, R, data management and visualization, and design-conduction-interpretation-communication of scientific research.

Career and Research Interests

Carrer

- Research.
- Data Analysis and Visualization.
- Educational Management.
- Undergraduate and postgraduate teaching.

Research

- Ecological and Evolutionary Physiology: My research focuses on cold acclimation, energy management strategies and reversible physiological compromises that allow natural populations to face environmental constraints. My work cover from the level of molecular organization to the population, to terrestrial and aquatic environments, as well as a wide diversity of taxa.
- Bibliometrics: My current work is also concerned with the application of analytic tools for for the understanding of qualitative and quantitative characteristics of scientific research. This work includes systematic reviews and meta-analyses, based on data mining, natural language processing and scrapping techniques, for monitoring, management and systematization of scientific information in the field of anthropic threats to ecosystems and natural populations (e.g. climate change).

Skills

Computing programming

- R (Advanced).
- Python (Basic).
- SQL (Basic).

Data Science

- Data processing.
- Data retrieval.
- Natural language processing.
- Molecular data.
- Statistical analysis.
- Advanced data visualization.
- Office automation (Word, Excel, PowerPoint).

Laboratory/research

- Animal care (Breed and maintain populations of drosophila, rodents and other species).
- General laboratory (Pipette, Weigh, Sterilize, Filtrate, Wash/Clean glassware).
- Biochemistry/Genetics (Enzyme assays, RNA determination).
- Laboratory/research instruments (Spectrophotometers, Bioanalyzer, ph meter, Centrifuges, Incubators, Light Microscope).

Education

2020-	M.S., Information Processing and Management Pontificia Universidad Católica de Chile	Santiago, Chile
2010-2014	Ph.D. in Sciences, mention in Ecology and Evolution Universidad Austral de Chile	Valdivia, Chile
2004-2008	B.S. Biological Sciences Universidad Austral de Chile	Valdivia, Chile

Profesional Experience

2018-2022 Assitant Professor — Santiago, Chile
Universidad Mayor

2017–2018 Assistant Researcher — Santiago, Chile
Pontificia Universidad Católica de Chile

2017 Assistant Professor — Santiago, Chile
Universidad Andrés Bello

2017 Assistant Professor — Santiago, Chile
Universidad Santo Tomás

2014-2019 Postdoctoral Researcher — Santiago, Chile
Pontificia Universidad Católica de Chile

Educational Management Experience

2019-2022 Program Coordinator — Universidad Mayor
Master's Degree in Environment and Sustainable Development

2021–2022 Program Director — Universidad Mayor
Diploma in disaster prevention and response

2019-2022 Coordinator of Educational Innovation — Universidad Mayor
School of Engineering in Environment and Sustainability

Research Experience

Publications

1. Cortes, P. A., Bozinovic, F., & Blier, P. U. (2018). Mitochondrial phenotype during torpor: Modulation of mitochondrial electron transport system in the Chilean mouse-opossum Thylamys elegans. *COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY A-MOLECULAR & INTEGRATIVE PHYSIOLOGY*, *221*, 7–14. https://doi.org/%7B10.1016/j.cbpa.2017.12.014%7D
2. Cortes, P. A., Bacigalupe, L., Mondaca, F., Desrosiers, V., & Blier, P. U. (2016). Mitochondrial phenotype of marsupial torpor: Fuel metabolic switch in the Chilean mouse-opossum Thylamys elegans. *JOURNAL OF EXPERIMENTAL ZOOLOGY PART A-ECOLOGICAL AND INTEGRATIVE PHYSIOLOGY*, *325*(1), 41–51. https://doi.org/%7B10.1002/jez.1994%7D
3. Cortes, P. A., Puschel, H., Acuna, P., Bartheld, J. L., & Bozinovic, F. (2016). Thermal ecological physiology of native and invasive frog species: do invaders perform better? *CONSERVATION PHYSIOLOGY*, *4*. https://doi.org/%7B10.1093/conphys/cow056%7D
4. Royer-Boutin, P., Cortes, P. A., Milbergue, M., Petit, M., & Vezina, F. (2015). Estimation of Muscle Mass by Ultrasonography Differs between Observers and Life States of Models in Small Birds. *PHYSIOLOGICAL AND BIOCHEMICAL ZOOLOGY*, *88*(3), 336–344. https://doi.org/%7B10.1086/680016%7D
5. Cortes, P. A., Petit, M., Lewden, A., Milbergue, M., & Vezina, F. (2015). Individual Inconsistencies in Basal and Summit Metabolic Rate Highlight Flexibility of Metabolic Performance in a Wintering Passerine. *JOURNAL OF EXPERIMENTAL ZOOLOGY PART A-ECOLOGICAL AND INTEGRATIVE PHYSIOLOGY*, *323*(3), 179–190. https://doi.org/%7B10.1002/jez.1908%7D
6. Cortes, P. A., Franco, M., Moreno-Gomez, F. N., Barrientos, K., & Nespolo, R. F. (2014). Thermoregulatory capacities and torpor in the South American marsupial, Dromiciops gliroides. *JOURNAL OF THERMAL BIOLOGY*, *45*, 1–8. https://doi.org/%7B10.1016/j.jtherbio.2014.07.003%7D
7. Franco, M., Contreras, C., Cortes, P., Chappell, M. A., Soto-Gamboa, M., & Nespolo, R. F. (2012). Aerobic power, huddling and the efficiency of torpor in the South American marsupial, Dromiciops gliroides. *BIOLOGY OPEN*, *1*(12), 1178–1184. https://doi.org/%7B10.1242/bio.20122790%7D
8. Cortes, P. A., Franco, M., Sabat, P., Quijano, S. A., & Nespolo, R. F. (2011). Bioenergetics and intestinal phenotypic flexibility in the microbiotherid marsupial (Dromiciops gliroides) from the temperate forest in South America. *COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY A-MOLECULAR & INTEGRATIVE PHYSIOLOGY*, *160*(2), 117–124. https://doi.org/%7B10.1016/j.cbpa.2011.05.014%7D

9. Castaneda, L. E., Barrientos, K., Cortes, P. A., Figueroa, C. C., Fuentes-Contreras, E., Luna-Rudloff, M., Silva, A. X., & Bacigalupe, L. D. (2011). Evaluating reproductive fitness and metabolic costs for insecticide resistance in Myzus persicae from Chile. *PHYSIOLOGICAL ENTOMOLOGY*, *36*(3), 253–260. https://doi.org/%7B10.1111/j.1365-3032.2011.00793.x%7D

10. Nespolo, R. F., Correa, L., Perez-Apablaza, C. X., Cortes, P., & Bartheld, J. L. (2011). Energy metabolism and the postprandial response of the Chilean tarantulas, Euathlus truculentus (Araneae: Theraphosidae). *COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY A-MOLECULAR & INTEGRATIVE PHYSIOLOGY*, *159*(4), 379–382. https://doi.org/%7B10.1016/j.cbpa.2011.04.003%7D

11. Artacho, P., Figueroa, C. C., Cortes, P. A., Simon, J.-C., & Nespolo, R. F. (2011). Short-term consequences of reproductive mode variation on the genetic architecture of energy metabolism and life-history traits in the pea aphid. *JOURNAL OF INSECT PHYSIOLOGY*, *57*(7), 986–994. https://doi.org/%7B10.1016/j.jinsphys.2011.04.013%7D

12. Nespolo, R. F., Verdugo, C., Cortes, P. A., & Bacigalupe, L. D. (2010). Bioenergetics of torpor in the Microbiotherid marsupial, Monito del Monte (Dromiciops gliroides): the role of temperature and food availability. *JOURNAL OF COMPARATIVE PHYSIOLOGY B-BIOCHEMICAL SYSTEMIC AND ENVIRONMENTAL PHYSIOLOGY*, *180*(5), 767–773. https://doi.org/%7B10.1007/s00360-010-0449-y%7D

13. Cortes, P., Quijano, S. A., & Nespolo, R. F. (2009). Bioenergetics and interindividual variation in physiological capacities in a relict mammal - the Monito del Monte (Dromiciops gliroides). *JOURNAL OF EXPERIMENTAL BIOLOGY*, *212*(2), 297–304. https://doi.org/%7B10.1242/jeb.021212%7D

In revision

Carter M.J., Cortes, P.A., & Rezende, E.L.
Temperature variability and metabolic adaptation in terrestrial and aquatic ectotherms. Submitted to Communications Biology.

Grants, Scholarships and Research Projects

2019-2020 FONDECYT research grant 1170017 — Co-Investigator
Forecasting the impact of climate change in Chilean drosophilids: physiological, ecological and evolutionary responses

2014-2019 FONDECYT research grant 3150215 — Postdoctoral Research Fellow
Modularirty and integration in amphibian hibernation: from genotype to phenotype

2014-2017 CAPES grant — Postdoctoral Research Fellow
Center of Applied Ecology and Sustainability (CAPES)

2013 SSE Travel Stipends
Travel Stipends for students to attend the XIV Congress of the European Society for Evolutionary Biology

2012 JEB Travelling Fellowship Awards
Travelling Fellowships to graduate students for International by The Company of Biologists' journals

2011 Canada-Chile Leadership Exchange Scholarship
Travelling Fellowships to research internships

2010-2013 CONICYT scholarship for doctoral students — PhD student
Comisión Nacional de investigación científica y tecnológica

Scientific Conferences

2019 CORTES P.A., RIVERA C. & MUNOZ M.
The rise of a precariat? Investment pattern in advanced human capital in Chile. Conferencia Latinoamericana sobre el uso de R en Investigación + Desarrollo. Santiago, Chile.

2019 VARGAS S., CORTES P.A. & MELIA-MARTI E.
Systematic review of agri-food cooperatives: 30 years of scientific research. XXIV Congreso Economistas Agrarios. Santiago, Chile.

2017 CORTES P.A., LARDIES M., BECKERMAN A.P., CARTER M.J. & BOZINOVIC F.
Ecophysiology of native and invasive frog species: is there phenotypic convergence after acclimatization to high temperatures?. XXIV Reunión Anual de la Sociedad Ecologia de Chile, Puerto Varas, Chile.

2013 CORTES P.A., BACIGALUPE L., CONTRERAS C.I., VARAS V., BLIER P.U & OPAZO J.C.
Discovering the genetic basis of torpor in a Chilean marsupial. XIV Congress of the European Society for Evolutionary Biology, Lisbon, Portugal.

2012 CORTES P.A., & OPAZO J.C.
A genome-wide analysis of a common biographic history. 1st Joint Congress on Evolutionary Biology, Ottawa, Canada.

2012 CORTES P.A., & OPAZO J.C.
Functional genomic analysis in mammals with a common biogeographic history. Sociedad de Bologia Evolutiva de Chile, Concepción, Chile.

2011 CORTES P.A., FRANCO L. M., CHAPPELL M.A & NESPOLO R.F
Thermorregulatory capacities and energy-saving strategies in the South American marsupial, *Dromiciops gliroides*. Societe quebeoise pour letude biologique du comportement (SQEBC), Sherbrooke, Canada.

2011 CORTES P.A., FRANCO L. M., CHAPPELL M.A & NESPOLO R.F
Thermorregulatory capacities and energy-saving strategies in the South American marsupial, *Dromiciops gliroides*. SThe society for integrative and comparative physiology. (SICB), Charleston, SC, USA.

2010 CORTES P.A., QUJANO S. & NESPOLO R.F.
Bioenergetics and inter-individual variation in physiological capacities in a relict mammal – the monito del monte (Dromiciops gliroides). IV Reunion Binacional de Ecologia. Buenos Aires, Argentina.

2009 CORTES P.A., SABAT P., QUIJANO S.A. & NESPOLO R.F.
Constrained energy budget and digestive phenotypic plasticity in the rare Monito del Monte (Dromiciops gliroides). The Xth International Congress of Mammalogy (IMC-10). Mendoza, Argentina.

2009 CORTES P.A., CALVO M., LITTLE C. & NESPOLO R.F.
Soil respiration in *Eucalyptus globulus* plantations and its relationship with environmental variables. XLI Reunión de la Sociedad de Ecologia de Chile. Valdivia, Chile.

2009 CORTES P.A., QUIJANO A. & NESPOLO R.F.
Bioenergetics and inter-individual variation in physiological capacities in a relict mammal – the Monito del Monte (Dromiciops gliroides). LII Reunion anual de la sociedad de Ecologia de Chile. Pucón, Chile.

2009 CORTES P.A., QUIJANO A. & NESPOLO R.F.
Bioenergetics of the last representative of the Microbioteria Order: Monito del Monte and torpor characterization. III Reunión Binacional de Ecología. Sociedad de Ecologia de Chile y Asociación de Ecología de Argentina. La Serena, Chile.

Research Internships

2017 University of Sheffield UK
Laboratory of Food Webs, Phenotypic Plasticity and Parrot Conservation via R4All. Andrew Beckerman. Duration: Three months. Aims: Statistical analysis of multivariate data using R software.

2014 University of Sheffield UK
Laboratory of Food Webs, Phenotypic Plasticity and Parrot Conservation via R4All. Andrew Beckerman. Duration: Three months. Aims: Ecological and Social network analysis using R software.

2013 Universite du Quebec a Rimouski Canada
Laboratoire de physiologie evolutive. Pierre Blier. Duration: One month. Aims: Training in chemical test methods to measure enzymatic activities.

2012 Universite du Quebec a Rimouski Canada
Laboratoire de physiologie evolutive. Pierre Blier. Duration: Five months. Aims: Training in chemical test methods to measure enzymatic activities.

2011 Universite du Quebec a Rimouski Canada
Laboratoire du Ecophysiologe. Francois Vezina. Duration: Six months. Aims: Training in field respirometry methods.

Teaching Experience

Bachelor programs

2021 Mitigation and Adaptation to Climate Change Instructor
School of Engineering in Environment and Sustainability, Universidad Mayor.

2021 Statistical Methods Instructor
School of Engineering in Environment and Sustainability, Universidad Mayor.

2021 Natural Resources Conservation Instructor
School of Engineering in Environment and Sustainability, Universidad Mayor.

2020 Mitigation and Adaptation to Climate Change Instructor
School of Engineering in Environment and Sustainability, Universidad Mayor.

2020 Statistical Methods Instructor
School of Engineering in Environment and Sustainability, Universidad Mayor.

2020 Natural Resources Conservation Instructor
School of Engineering in Environment and Sustainability, Universidad Mayor.

2019 Statistical Methods Instructor
School of Agronomy, Universidad Mayor.

2019 Animal Physiology Instructor
School of Agronomy, Universidad Mayor.

2019 Animal Physiology Instructor
School of Biotechnology, Universidad Mayor.

2018 Statistical Methods Instructor
School of Agronomy, Universidad Mayor.

2018 Animal Physiology Instructor
School of Agronomy, Universidad Mayor.

2017 Genetics Instructor
School of Biotechnology, Universidad Santo Tomás.

2017 Bioinformatics Instructor
School of Biotechnology, Universidad Santo Tomás.

2017 Quantitative methods in Natural Resources Teaching assistant
Department of Ecology and Biodiversity, Universidad Andrés Bello.

Master programs

2021 Management of Pollution and Environmental Liabilities Instructor
Master's Degree in Environment and Sustainable Development, Universidad Mayor.

2020 Management of Pollution and Environmental Liabilities Instructor
Master's Degree in Environment and Sustainable Development, Universidad Mayor.

Theses Supervision

2021 Research on SARS-CoV-2 in Chile: What do we know and where should we go?
Silvana Cavallieri. Master's Degree in Environment and Sustainable Development, Universidad Mayor.

2021 Anthropogenic threats to Chilean ecosystems: a systematic review of the literature
Sebastian Bouquillard & Jose Tomas Guzman. School of Engineering in Environment and Sustainability, Universidad Mayor.

2020 South American livestock and climate change: systematic review for mitigation and adaptation to livestock impact
Andres Rivera. School of Agronomy, Universidad Mayor.

2019 Diseases impacting Salmon industry in Chile: A systematic review of the scientific literature
Jose Barahona. School of Agronomy, Universidad Mayor.

2019 Bibliographic review on poultry production of Gallus gallus domestica: current situation and perspective in Chile
Tomas Munzenmayer. School of Agronomy, Universidad Mayor.

2019 Analysis of methane gas mitigation strategies applied to cattle: a review of the scientific literature
Camila Villanueva. School of Agronomy, Universidad Mayor.

2019 Effects of creep-feeding for cattle raising: a bibliographic review
Miguel Valdes. School of Agronomy, Universidad Mayor.

Invited Talks and Seminar Organization

2021 Data management and management of municipal household waste through project-based learning
Universidad Mayor, Santiago, Chile.

2021 Pollution and Climate Change: Being Better for the Sustainability of the Planet
Universidad Mayor, Santiago, Chile

2021 Impact of the new law on disaster prevention and response in municipal management
Chilean Association of Municipalities, Santiago, Chile.

2021 Sustainability Webinar Series III Organising Committee
School of Environmental and Sustainability Engineering.
Universidad Mayor, Santiago, Chile.

2020 Sustainability Webinar Series II Organising Committee
School of Environmental and Sustainability Engineering.
Universidad Mayor, Santiago, Chile.

2020 Sustainability Webinar Series II Organising Committee
School of Environmental and Sustainability Engineering.
Universidad Mayor, Santiago, Chile

2019 Climate change: definitions and evidence
Universidad Mayor, Temuco, Chile.

2019 Small-scale egg production: pros and cons of unconventional systems
Universidad Mayor, Temuco, Chile

Workshops

2019 Data management and reproducible research for biological and environmental sciences
Universidad Mayor, Santiago, Chile.

Other publications

2020 Denialism, an invisible threat to biodiversity
Opinion column in nantional press. El Desconcierto.

2019 Why I would raise Chickens?: A brief look at family poultry farming
MundoAgro Magazine.

Training Courses

2021 Machine Learning with Python: Zero to GBMs
Jovian

2021 Programming for Everybody (Getting Started with Python)
Coursera. University of Michigan.

2021 Python Data Structures
Coursera. University of Michigan.

2021 Introduction to Probability and Data with R
Coursera. Duke.

2021 Climate Change Mitigation in Developing Countries.
Coursera. University of Cape Town.

2020 Serious Gaming.
Coursera. Erasmus University Roterdam.

2019 Teaching Data Science.
LatinR 2019.

2019 Package development tutorial.
LatinR 2019.

2013 Food Webs - Topology, Dynamics and Traits
Universidad Austral de Chile.

Editorial Work

2022 Ecological and Evolutionary Relevance of Phenotypic Plasticity in a Changing World.
Topic Editor. Fontiers in Ecology and Evolution.

Reviewer for Funding Organizations

2019 Program PAI
Attraction and Insertion of Advanced Human Capital Program (PAI).

Reviewer for Journal

- I have reviewed manuscript for *Comparative Biochemistry and Physiology - part A*, *Journal of Ecology and Evolution*, *Zoologia* and *Scientific Reports*.

Honors and Awards

2009 R.A. Philippi Medal
Recognition for the best undergraduate thesis. Dirección de Investigación y Desarrollo, Universidad Austral de Chile.

References

- Pierre U. Blier.

Department de biologie, chimie et geographie, Universite du Quebec a Rimouski (Canada). `pierre_blier@uqar.ca`. +1 418 723-1986.

- Claudia Santibáñez.

Escuela de Ingeniería en Medio Ambiente y Sustentabilidad, Universidad Mayor (Chile). `claudia.santibanez@umayor.cl`. +56 2 2 5189210.

- Andrew Beckerman.

Department of Animal and Plant Sciences, The University of Sheffield (UK). `a.beckerman@sheffield.ac.uk`. +44 114 222 0026.

- Mauricio Carter.

Facultad de Ciencias de la Vida, Universidad Andrés Bello (Chile). mauricio.carter@unab.cl. +56 9 73209056.

- Leonardo Bacigalupe.

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