Pablo Cortés García

Personal info

Date of Birth : 21 December 1985

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LinkedIn: https://www.linkedin.com/in/pabcorgar

ResearchGate: https://www.researchgate.net/profile/Pablo_Cortes11

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Education

2020 – 2021. Magíster en Procesamiento y Gestión de la Información [M.S., Information Processing and Management]. Pontificia Universidad Católica de Chile. https://mpgi.uc.cl/

2010 – 2014. Doctorado en Ciencias, mención Ecología y Evolución [Ph.D. in Sciences, mention in Ecology and Evolution]. Universidad Austral de Chile. http://www.postgradociencias.uach.cl/doctorado-ecologia-evolucion/

2004 – 2008. Licenciatura en Ciencias Biológicas [B.S. Biological Sciences]. Universidad Austral de Chile. https://www.uach.cl/admision/principal/va1divia/licenciatura-en-ciencias-con-mencion

Professional Employment

2018- 2021. Assitant Professor, Escuela de Ingeniería en Medio Ambiente y Sustentabilidad, Facultad de Ciencias, Universidad Mayor.

2019 - 2021. Program Coordiantor, Magister en Medio Ambiente y Desarrollo Sustentable, Facultad de Ciencias, Universidad Mayor.

2021. Program Director, Diplomado en prevensión y respuesta ante desastres , Facultad de Ciencias, Universidad Mayor.

2017 – 2018. Assistant investigator, Facultad de Ciencias Biologicas, Pontificia Universidad Católica de Chile.

2017. Assistant professor, Facultad de Ciencias de la Vida, Universidad Andrés Bello.

2018. Assistant professor, Escuela de Biotecnología, Universidad Santo Tomás.

Languages

- Spanish (Mother tongue).
- English (Advanced: written and spoken).
- French: (Basic: spoken).

Computing programming

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

Data Science skills

- Data processing.
- Data retrieval.
- Natural language processing.
- Molecular data.
- Bioinformatics.
- Statistical analysis.

Laboratory/research skills

- 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)
- Relevant experience (Programming skills, Database skills, Computer languages, Design-conduct-interpret scientific research, Conduct statistical analysis, Communicate findings using charts and graphs, Scientific writing)

Research interest

- 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.
- Scientometrics – 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).

Publications

[13] **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 Part A: Molecular & Integrative Physiology, 221, 7-14.

[12] **Cortes, P. A.**, Bacigalupe, L. D., 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 Genetics and Physiology, 325(1), 41-51.

[11] **Cortes, P. A.**, Puschel, H., Acuña, P., Bartheld, J. L., & Bozinovic, F. (2016). Thermal ecological physiology of native and invasive frog species: do invaders perform better?. Conservation physiology, 4(1).

[10] **Cortes, P. A.**, Petit, M., Lewden, A., Milbergue, M., & Vézina, 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 Genetics and Physiology, 323(3), 179-190.0

[9] Royer-Boutin, P., **Cortes, P. A.**, Milbergue, M., Petit, M., & Vézina, 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.

[8] **Cortes, P. A.**, Franco, M., Moreno-Gómez, 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.

[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.

[6] Castaneda, L. E., Barrientos, K., **Cortes, P. A.,** Figueroa, C. C., FUENTES-CONTRERAS, E., LUNA-RUDLOFF, M., & Bacigalupe, L. D. (2011). Evaluating reproductive fitness and metabolic costs for insecticide resistance in *Myzus persicae* from Chile. Physiological Entomology, 36(3), 253-260.

[5] 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.

[4] Nespolo, R. F., Correa, L., Pérez-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 Part A: Molecular & Integrative Physiology, 159(4), 379-382.

[3] **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 Part A: Molecular & Integrative Physiology, 160(2), 117-124.

[2] 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, 180(5), 767-773.

[1] **Cortes, P.**, Quijano, S. A., & Nespolo, R. F. (2009). Bioenergetics and inter-individual variation in physiological capacities in a relict mammal–the Monito del Monte (*Dromiciops gliroides*). Journal of Experimental Biology, 212(2), 297-304.

In preparation and submitted:

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

[2] Cavallieri, S. & **Cortes, P.A**. Research on SARS-CoV-2 in Chile: What do we know and where should we go?.

[3] **Cortes, P.A.** & Beckerman A.P. The research landscape of Mammalian Torpor: A systematic review.

[4] Carter M.J., Villavicencio G. & Cortes, **P.A**. Effects of temperature and salinity on the phenotypic responses in a Mediterranean caddisfly (*Smicridea annulicornis*).

Research Grants and Funding

2019 – 2020. Co-Investigator, FONDECYT research grant 1170017, Pontificia Universidad Catolica de Chile. Proyecto titulado "Forecasting the impact of climate change in Chilean drosophilids: physiological, ecological and evolutionary responses".

2014 – 2019. Postdoctoral Research Fellow, Center of Applied Ecology and Sustainability (CAPES), Pontificia Universidad Catolica de Chile, Santiago, Chile. http://www.capes.cl/en/

2014 – 2017. Postdoctoral Research Fellow, FONDECYT research grant 3150215, Pontificia Universidad Catolica de Chile. Proyecto titulado "Modularirty and integration in amphibian hibernation: from genotype to phenotype".

Scientific conferences

[15] **CORTES P.A.**, RIVERA C. & MUNOZ M. (2019). ¿El auge de un "precariado"? Patrón de inversión en capital humano avanzado en Chile [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.

[14] VARGAS S., **CORTES P.A**. & MELIA-MARTI E. (2019). Revisión sistematica de las cooperativas agroalimentarias: 30 años de investigación científica [Systematic review of agri-food cooperatives: 30 years of scientific research]. XXIV Congreso Economistas Agrarios. Santiago, Chile.

[13] **CORTES P.A.**, LARDIES M., BECKERMAN A.P., CARTER M.J. & BOZINOVIC F. (2017). Ecofisiología de especies nativas e invasoras de ranas: ¿Existe convergencia fenotípica después de la aclimatación a altas temperaturas?[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.

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

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

[10] **CORTES P.A.** , & OPAZO J.C. (2012). Análisis gen´ímico functional en mamiferos con una historia biogeográfica común [Functional genomic analysis in mammals with a common biogeographic history]. Sociedad de Bologia Evolutiva de Chile, Concepción, Chile.

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

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

[7] **CORTES P.A.** , QUJANO S. & NESPOLO R.F. (2010). 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.

[6] **CORTES P.A.** , SABAT P., QUIJANO S.A. & NESPOLO R.F. (2009). 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.

[5] **CORTES P.A.** , CALVO M., LITTLE C. & NESPOLO R.F. (2009). Respiración de suelo en plantaciones de *Eucaliptus globulus* y su relación con variables ambientales [Soil respiration in *Eucalyptus globulus* plantations and its relationship with environmental variables]. XLI Reunión de la Sociedad de Ecologia de Chile. Valdivia, Chile.

[4] HERNANDEZ M.J., SILVA D., BRUNNING A., MONDACA F., GAITAN- ESPITIA J., **CORTES P.A.** & NESPOLO R.F. (2009). ¿Por qué el caracol de jardín ha invadido todo el mundo? Estudiando el potencial invasivo de *Helix aspersa* en su rango introducido en Chile [Why the garden snail has invaded the whole world? Studying the invasive potential of *Helix aspersa* in its introduced range in Chile]. 6 Congreso Escolar de Ciencia y Tecnología EXLORA CONICYT Región de Los Rios. Valdivia, Chile.

[3] **CORTES P.A.** , QUIJANO A. & NESPOLO R.F. (2009). 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.

[2] **CORTES P.A.** & NESPOLO RF. (2007). Bioenergética del último representante del Orden Microbioteria: El monito del monte y la caracterización del sopor [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.

[1] **CORTES P.A.** & NESPOLO RF. (2007). Bioenergetica del ultimo representante del Orden Microbioteria: caracterizacion del sopor en el monito del monte [Bioenergetics of the last representative of the Microbioteria Order: Monito del Monte and torpor characterization]. L Reunión Anual de la Sociedad de biología de Chile. Pucón, Chile

Research Internships

- •2017. University of Sheffield (UK). Laboratory of Food Webs, Phenotypic Plasticity and Parrot Conservation via R4All. Andrew Beckerman. https://andbeck.github.io/beckslab/. 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. https://andbeck.github.io/beckslab/. 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 months. Aims: Training in chemical test methods to measure enzymatic activities. https://www.uqar.ca/universite/a-propos-de-l-uqar/departements/departement-de- biologie-chimie-et-geographie/blier-pierre.
- •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. https://www.uqar.ca/universite/a-propos-de-l-uqar/departements/departement-de- biologie-chimie-et-geographie/blier-pierre.
- •2011. Universite du Quebec a Rimouski (Canada). Laboratoire du Ecophysiologe. Francois Vezina. Duration: Six months. Aims: Training in field respirometry methods. https://www.uqar.ca/universite/a-propos-de-l-uqar/departements/departement-de-biologie-chimie-et-geographie/vezina-francois.

Talks

[2] Cambio climatico: definiciones y evidencias [Climate change: definitions and evidence]. En seminario "Oportunidades y desafíos del desarrollo agropecuario de La Araucanía ante un escenario de cambio climático". Universidad Mayor, Temuco, Chile. 2019.

[1] Producción de huevos en pequena escala: pros y contras de los sistemas no convencionales [Small-scale egg production: pros and cons of unconventional systems]. En seminario "Oportunidades y desafíos del desarrollo agropecuario de La Araucanía ante un escenario de cambio climático". Universidad Mayor, Temuco, Chile. 2019.

Workshops

[1] International workshop: Data management and reproducible research for biological and environmental sciences. (2019). Universidad Mayor.

Other Publications

- •2020. Negacionismo, amenaza invisible para la biodiversidad [Denialism, an invisible threat to biodiversity]. Opinion column in nntional press https://www.eldesconcierto.cl/2020/09/07/negacionismo-amenaza-invisible-para-la-biodiversidad/

•2019. ¿Por qué criar pollos?: Una breve mirada a la avicultura familiar [Why I would raise Chickens?: A brief look at family poultry farming]. Revista MunodAgro.

Training courses

•2021. Machine Learning with Python: Zero to GBMs. Jovian. https://jovian.ai/certificate/MFQTMMBZG4

•2021. Programming for Everybody (Getting Started with Python). Coursera. University of Michigan. https://www.coursera.org/account/accomplishments/certificate/ED9YWJA9SAPH

•2021. Python Data Structures. Coursera. University of Michigan. https://www.coursera.org/account/accomplishments/certificate/N5CJFC6QNQE8

•2021. Introduction to Probability and Data with R. Coursera. Duke University. https://coursera.org/share/3ee930178653a7da65c5b6bb7745b770

•2021. Climate Change Mitigation in Developing Countries. Coursera. University of Cape Town. https://www.coursera.org/account/accomplishments/certificate/X5B885VY4HTF

•2020. Serious Gaming. Coursera. Erasmus University Roterdam. https://www.coursera.org/account/accomplishments/certificate/X5B885VY4HTF

•2019. Teaching Data Science. LatinR 2019. Dictado por Mine Çetinkaya-Rundel. https://rstudio-education.github.io/teach-ds-latinR/.

•2019. Package development tutorial for LatinR. LatinR 2019. Dictado por Hadley Wickham. https://github.com/hadley/pkg-dev.

•2013. Food Webs - Topology, Dynamics and Traits. Facultad de Ciencias, Instituto de Ciencias Ambientales y Evolutivas, Universidad Austral de Chile.

Teaching Experience

B.S.

•2021. Mitigación y Adaptación al Cambio Climatico [Mitigation and Adaptation to Climate Change] (IMSE1022). Escuela de Ingenieria en Medio Ambiente y Sustentabilidad, Universidad Mayor. Instructor.

•2021. Métodos Estadísticos [Statistical Methods] (MMAD109). Escuela de Ingenieria en Medio Ambiente y Sustentabilidad, Universidad Mayor. Instructor.

•2021. Conservación de Recursos Naturales [Natural Resources Conservation] (IMSE1019). Escuela de Ingenieria en Medio Ambiente y Sustentabilidad, Universidad Mayor. Instructor.

•2020. Mitigación y Adaptación al Cambio Climatico [Mitigation and Adaptation to Climate Change] (IMSE1022). Escuela de Ingenieria en Medio Ambiente y Sustentabilidad, Universidad Mayor. Instructor.

- •2020. Métodos Estadísticos [Statistical Methods] (MMAD109). Escuela de Ingenieria en Medio Ambiente y Sustentabilidad, Universidad Mayor. Instructor.
- •2020. Conservación de Recursos Naturales [Natural Resources Conservation] (IMSE1019). Escuela de Ingenieria en Medio Ambiente y Sustentabilidad, Universidad Mayor. Instructor.
- •2019. Métodos Estadísticos [Statistical Methods] (SILB1513). Escuela de Agronomia, Universidad Mayor. Instructor.
- •2019. Fisiología Animal [Animal Physiology] (AGRE1003). Escuela de Agronomia, Universidad Mayor. Instructor.
- •2019. Fisiología Animal [Animal Physiology] (BTEE1111). Escuela de Biotecnologia, Universidad Mayor. Instructor.
- •2018. Fisiología Animal [Animal Physiology] (AGRE1003). Escuela de Agronomia, Universidad Mayor. Instructor.
- •2018. Métodos Estadísticos [Statistical Methods]. Escuela de Agronomia, Universidad Mayor. Instructor.
- •2017. Genetica [Genetics]. Escuela de Biotecnologia, Universidad Santo Tomas. Instructor.
- •2017. Bioinformatica [Bioinformatics]. Escuela de Biotecnologia, Universidad Santo Tomas. Instructor.
- •2017. Métodos Cuantitativos en Recursos Naturales [Quantitative methods in Natural Resources]. Departamento de Ecologia y Biodiversidad, Facultad de Ecologia y Recursos Naturales, Universidad Andres Bello. Teaching assistant.

M.S.

- •2021. Gestión de la Contaminación y Pasivos Ambientales [Management of Pollution and Environmental Liabilities] (MMAD109). Magister en Medio Ambiente y Desarrollo Sustentable, Universidad Mayor. Instructor.
- •2020. Gestión de la Contaminación y Pasivos Ambientales [Management of Pollution and Environmental Liabilities] (MMAD109). Magister en Medio Ambiente y Desarrollo Sustentable, Universidad Mayor. Instructor.

Student supervision

M.S. student

- •2021. Investigación en SARS-CoV-2 en Chile: ¿Que sabemos y adonde debemos ir? [Research on SARS-CoV-2 in Chile: What do we know and where should we go?]. Silvana Cavallieri. Magiter en Medio Ambiente y Desarrollo Sustentable, Universidad Mayor.

B.S. student

- •2021. Amenazas antropogénicas a los ecosistemas chilenos: una revisión sistemática a la literatura [Anthropogenic threats to Chilean ecosystems: a systematic review of the

literature]. (2021). Sebastian Bouquillard & Jose Tomas Guzman, Escuela de Ingenieria en Medio Ambiente y Sustentabilidad, Universidad Mayor.

- •2020. Ganadería sudamericana y cambio climático: revisión sistemática para mitigación y adaptación al impacto ganadero [South American livestock and climate change: systematic review for mitigation and adaptation to livestock impact]. (2020). Andres Rivera, Escuela de Agronomía, Universidad Mayor.
- •2019. Enfermedades a ver en la industria del salmón en Chile: una revisión sistemática de la literatura científica [Diseases impacting Salmon industry in Chile: A systematic review of the scientific literature]. (2019). Jose Barahona, Escuela de Agronomía, Universidad Mayor.
- •2019. Revisión bibliográfica sobre la produccion avicola de Gallus gallus domestica: situacion actual y perspectiva en Chile [Bibliographic review on poultry production of Gallus gallus domestica: current situation and perspective in Chile]. (2019). Tomas Munzenmayer Echegaray, Escuela de Agronomía, Universidad Mayor.
- •2019. Analisis de estrategias de mitigacion de gas metano aplicadas a ganado bovino: una revision de la literatura cientifica [Analysis of methane gas mitigation strategies applied to cattle: a review of the scientific literature]. (2019). Camila Ignacia Villanueva Soto, Escuela de Agronomía, Universidad Mayor.
- •2019. Factibilidad tecnica de establecimiento de un huerto de nogales (Juglans regia) en la comuna de Paredones, Región del libertador general Bernardo OHiggins[Technical feasibility of establishing a walnut orchard (Juglans regia) in Paredones]. (2019). Jose Marcial Rodriguez Arteaga, Escuela de Agronomía, Universidad Mayor.
- •2019. Efectos del creep-feeding para la cria de ganado bovino: una revisión bibliografica [Effects of creep-feeding for cattle raising: a bibliographic review]. (2019). Miguel Valdes Zehender, Escuela de Agronomía, Universidad Mayor.

References

- 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.
- Pierre U. Blier. Department de biologie, chimie et geographie, Universite du Quebec a Rimouski (Canada). pierre_blier@uqar.ca. +1 418 723-1986.
- Leonardo Bacigalupe. Pierre U. Blier. Instituto de Ciencias Ambientales y Evolutivas, Universidad Austral de Chile (Chile). lbacigal@gmail.com. +56 9 78788983.