

MARIA IGNACIA RIVERA HECHEM

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EDUCATION

Master of Environmental Science and Management (Expected June 2017)

Bren School of Environmental Science & Management, University of California, Santa Barbara, USA

Specialization: Coastal Marine Resource Management

Honors: Latin American Fisheries Fellowship; Becas Chile International Graduate Student's Fellowship-Government scholarship

Relevant Coursework: Advanced Data Analysis for Environmental Science and Management, Geographic Information Systems, Social Network Analysis, Applied Econometrics, Natural Resource Economics and Policy, Cost-Benefit Analysis and Nonmarket Valuation, Systems Thinking

Professional Degree in Marine Biology (March 2014)

Biological Sciences Department, Pontifical Catholic University of Chile, Santiago, Chile

Bachelor of Sciences in Marine Biology (January 2013)

Biological Sciences Department, Pontifical Catholic University of Chile, Santiago, Chile

Honors: Honor Scholarship; 50% tuition discount for best academic performance in cohort (2011)

RESEARCH EXPERIENCE IN HUMAN BEHAVIOR

2015 **Research Assistant.** Research Center of Social Complexity (CICS), Government Department, Universidad del Desarrollo, Santiago, Chile. (4/2013 – 4/2015)

- Reviewed literature in 3 topics: social norms in natural resources exploitation, economic experiments in social dilemmas and genetics of human social behavior.
- Participated in the elaboration of a published review about the role of genetic variations in Oxytocin and Vasopressin receptors in social and psychiatric traits.
- Implemented more than 10 sessions of economic experiments in the field to assess variations in cooperative behavior of artisanal fishers in a common pool resource game when engaging a co-managed vs. a top-down regulated resource.
- Implemented economic experiments to 200 undergraduate students to study association of cooperative strategies in a public good game and variants of 3 candidate genes.
- Analyzed and interpreted data of previous mentioned experiments. Currently working on getting results published in scientific journals.
- Took courses in microeconomic theory, game theory, formal political economy, institutions and evolutionary psychology.

2015 **Intern.** Center of Evolutionary Psychology (CEP), University of California, Santa Barbara, USA. (2/2015)

- Reviewed literature for 2 potential research projects developed between CICS and CEP which involved topics on cooperative behavior, friendship and the development of a more intuitive experimental platform for the study of revealed preferences. Both guided by PhD. Leda Cosmides.
- Participated in the laboratory discussions held by the research team at CEP.

RESEARCH EXPERIENCE IN SMALL-SCALE FISHERIES

In Progress **Master's Thesis Group Project: Turning the tide on small-scale fisheries in the Gulf of Nicoya.** Bren School of Environmental Science & Management, University of California, Santa Barbara. (4/2016 – Present)

- Performed approximately 20 surveys with artisanal fishers in the Gulf of Nicoya, Costa Rica, to assess their perceptions regarding potential outcomes of different management interventions for the multispecies small-scale fishery there.
- Conducted 6 interviews with different stakeholders involved in the management of the fisheries in the Gulf of Nicoya.
- Helped develop an age-structured-single-species model to explore the potential biological and economic outcomes of different management interventions in the main small-scale fishery in the Gulf of Nicoya.

- In Progress **Directed Research: Evaluation of self-governance experiences for managing marine resources.** The Nature Conservancy (TNC), Peru. (6/2016 – Present)
- Developed methodology for selection of a set of indicators that will evaluate the performance of self-governance experiences in small-scale fisheries. TNC identified specific fisheries along the Peru coast for management purposes.
 - Defined the appropriate set of indicators to easily assess the level of progress that the observed self-governance initiatives are making relative to the government goals in small-scale fisheries management.
- 2016 **Directed Research: Literature review and database updates on TURF and dynamite fishing impacts.** Sustainable Fisheries Group (SFG), University of California, Santa Barbara. (3/2016 – 6/2016)
- Complemented a database generated by a previous research project that compiled different case studies of TURFs implementation and their effects around the world.
 - Synthesized the changes in fishing behavior, management rules and, biological and economic results attributed to TURF implementation to inform a model being developed by SFG.
 - Reviewed literature on the impacts of dynamite fishing to find values such as habitat recovery rates to parametrize a model being developed by SFG.
- 2013 **Fieldwork.** Laboratory of Social-Ecological Systems (PhD. Stefan Gelcich), Pontifical Catholic University of Chile, Santiago, Chile. (3/2013)
- Conducted surveys targeting artisanal fishers in the central coast of Chile to collect data for the PhD Thesis titled “Institutions, adaptation and socio-ecological change in Chilean coastal communities” by Jordan Tam, PhD Candidate of Resources Management and Environmental Studies, University of British Columbia, Vancouver, Canada.

MARINE RESEARCH EXPERIENCE

- 2012 **Bachelor’s Research Seminar: Geometric morphometric applied to *C. concholepas* and *P. purpuratus*.** PhD. Miriam Fernandez Laboratory, Coastal Station of Marine Research, Pontifical Catholic University of Chile, Las Cruces, Chile. (6/2012 – 12/2012)
- Applied geometric morphometric techniques, a technique that uses shapes in 2D and 3D to study the effect of abiotic environmental factors like upwelling and salinity along with management regimes on shell shape variation of gastropods *Choncholepas concholepas* and mussels *Perumytilus purpuratus* from the central Coast of Chile.
 - Analyzed and presented results in a scientific format to show that there is an effect of abiotic factors over the morphometry of both species but no significant differences between different management regimes.
- 2009 **Undergraduate student on board: Humboldt Expedition.** Hesperides, Multidisciplinary research vessel of the Spanish Navy operated by the UTM-CSIC. (3/2009 – 4/2009)
- Selected because of academic merit.
 - Performed water sampling and CO₂ measurements along the Humboldt current at different depths to determine the presence of anammox process in the low oxygen portion of the water column.
 - Analyzed data and presented results on board to group of lead researchers, crew and technicians.

PUBLICATIONS AND CONFERENCES

- In prep. **Rivera, M. I.,** Rodríguez-Sickert, C., Guzmán, R. A., Benavides, F., Ramírez, T., Landaeta, V., Alcaíno, V., Chagra, F., Feldman, D., Miranda, C., & Repetto, G. No association between oxytocin receptor (*OXTTR*), arginine vasopressin receptor (*AVPR1*) and monoamine oxidase A (*MAOA*) genes’ polymorphisms and cooperative strategy displayed in a Public Good Game. In progress (Writing stage)
- In prep. **Rivera, M. I.,** Guzmán, R., Rodríguez-Sickert, C and Gelcich, S. The role of territorial users’ rights in shaping cooperative behavior within fishing communities: Evidence from economic experiments with small-scale fishers in Chile. In progress (Writing stage)
- 2015 Aspé Sánchez, M., Moreno, M., **Rivera, M. I.,** Rossi, A., & Ewer, J. Oxytocin and vasopressin receptor gene polymorphisms: role in social and psychiatric traits. *Frontiers in Neuroscience*, 9, 510. (2015).

- 2015 **Conference on Morality:** Cognitive and Evolutionary Origins. Santiago, Chile
Participated as organization staff and attendant (6/2015)
- 2014 **Poster presentation.** Human Behavior and Evolution Society. Natal, Brazil. Poster
addressing the association between three genetic polymorphisms *AVPR1* RS3, *OXTR*
rs53756 and *MAOA* u-VNTR and cooperative behavior in a public good game with
strategic method. (8/2014)
- 2014 **The City.** XII Summer School of Complex Systems. Valparaiso, Chile.
Workshop attendant. (1/2014)

ADDITIONAL EXPERIENCE

- 2012-2013 **Tutor.** Claseduc, Santiago, Chile. Taught biology, chemistry and physics to high school
students. (4/2012 – 12/2013)
- 2010 **Volunteer.** Un Techo Para Chile, Curacaví, Chile. Built emergency housing in an
underprivileged community after 2010 earthquake. (3/2010)
- 2006-2007 **Volunteer.** Coanil, Santiago, Chile. Visited and making recreation activities for disable
children once a week with a group of volunteers from high school. (3/2006 – 3/2007)

SKILLS & RESEARCH INTERESTS

Computer: Programming skills in R, Matlab and ZTree (interface for implementing economic experiments), data analysis skills in R and Stata, Geographic Information Systems (GIS), Microsoft Office (Excel, PowerPoint, Word).

Languages: Fluent in English and Spanish (native speaker).

Research Interests: Small-scale fisheries management in undeveloped and developing countries, human cooperative behavior in common pool resources, monetary and non-monetary incentives influencing fishing behavior.