

**Contributions of marine capture fisheries to the domestic livelihoods and seafood consumption of Brazil Chile and Peru.**

*Response to Oceana Request for Proposal: Most Important Fisheries for People Study*

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## **Goal**

Determine the contribution of specific fisheries to domestic fish consumption and domestic livelihoods throughout Brazil, Chile, and Peru.

## **Key objectives**

- Critical analysis highlighting important capture fisheries for domestic food security, in the context of vulnerable populations and regions.
- Determine most important capture fisheries for food provision, and domestic seafood consumption patterns through time and space.
- Determine most important capture fisheries and fisheries sectors for regional employment and income.
- Determine most important capture fisheries and fisheries sectors for domestic catch and landed value.

## **Deliverables**

- Final report including a critical analysis of domestic seafood consumption, related fisheries employment and income, and general fishery conditions of each nation included (Brazil, Chile and Peru).
- National datasets and associated R-script, properly documented for replicating analyses and results.
- Summary of key uncertainties, data gaps and priority areas for future research and policy.

## **Brief General Introduction**

Latin American nations include the main fisheries regions of the world in terms of landings and, with a high (51%) proportion of net seafood production traded locally<sup>1</sup>, domestic fisheries remain highly important for national food security. The UN Food and Agriculture Organization estimates that Latin American countries consumed around 6.2 million tons of fish in 2015, averaging a per capita food fish consumption of 9.8 kg/year. The contribution of fisheries' to food security and livelihoods is particularly pertinent given the ongoing World Trade Negotiations on fishery subsidies disciplines, as these are partially intended to avoid trade and operational distortions that may threaten local food security in maritime nations<sup>2</sup>.

In 2016, total fish landings in Chile and Peru, two of the world's top fishing nations, averaged 8 million tons per year (FAO 2015). In Peru, the seafood sector generates over US\$1.7 billion per year, supporting over 200 thousand jobs<sup>3</sup>. Moreover, Chile's aquaculture production is among the largest of the world<sup>1</sup> and fish meal and salmon exports generate over US\$2.2 billion per year<sup>4</sup>. Despite comparatively lower catches, Brazil's fisheries sustain thousands of local families in coastal areas<sup>5-6</sup>, and inland captures are among the largest of the world<sup>1</sup>. In Latin America size matters as 90% of Landings from small scale fisheries (SSF) are paramount in Latin America, as 90% of all motorized fishing vessels are under 12m length<sup>1</sup>. However, this sector is among the most marginalized groups in the region<sup>7</sup>, despite it being critical to achieving Sustainable Development Goal 1, "Eradicating hunger," as highlighted by the recent FAO small scale fisheries guidelines that explicitly links the sector with food security and poverty eradication (FAO 2015).

Given the increasing pressures on vulnerable populations, including climate change but also rapid policy and market shifts, it is imperative to highlight the critical importance of particular capture fisheries for meeting domestic seafood supply. This knowledge can help guide future policies to ensure economic development does not jeopardize health and livelihoods in (particularly coastal) communities.

## Research Team

The research team is composed entirely of researchers at top-level institutions who are Latin American and mostly specifically from Brazil, Chile and Peru. Mr. Palacios has participated in many projects related to food security and fisheries in different regions of Latin America. Dr. Cisneros-Montemayor has extensive experience and contacts working with fisheries throughout the region, and recently provided the first global estimate of seafood consumption by Indigenous Peoples, with clear linkages to both food security and sovereignty, as well as the maintenance of cultural practices. Ms. Vargas's professional career has focused on exploring social-ecological systems dynamics in small scale fisheries (SSF) in Chile. She has also worked with the Chilean Undersecretary of Fisheries evaluating fisheries outcomes under the Chilean Territorial Users Rights Fisheries system. Ms. Rivera's research has focused on understanding the role of formal and informal institutions in SSF and their socio-economic benefits for communities. Ms. Lopez has worked with Oceana Peru for over 2 years describing seafood consumption patterns in coastal Peru. Dr. Vianna has over 10 years of experience working with fisheries in Brazil, from collecting in-field data and managing databases to researching social dynamics within fisheries and fishing communities. Finally, Dr. De la Puente worked as fisheries advisor to the Vice-Minister of Fisheries at the Peruvian Ministry of Production, and has extensive knowledge of the sector. Please refer to the *Statement of qualifications* (below) for a short biography of each researcher; full CVs are attached with this proposal.

## Methods

### Overall approach

The objective of this project, for each nation considered, is to determine the domestic seafood consumption (regionally, as possible) and its relationship with local employment in wild capture fisheries. Given that seafood is a widely traded commodity and that aquaculture has steadily increased supply into markets, meeting this objective will involve using species-specific data on domestic catches, aquaculture, and seafood imports and exports in order to highlight the most important species and fisheries for contributing to local and national food security.

Figure 1 below is a conceptual diagram of the anticipated methods to be undertaken in each nation. These methods directly link to the objectives proposed in the project Terms of Reference. Given the nature of fisheries data and governance systems, we anticipate that each of the nations considered will present unique challenges. Nevertheless, the overall approach (as captured in Fig. 1) will be used to maintain consistency in methods and comparability of results across nations, of course acknowledging specific uncertainties as appropriate.

Based on the best available data in each country, total seafood supply will be estimated as the sum of per-species production of domestic catch and aquaculture (minus exports), plus the sum of species-specific net imports. Catch statistics will also be broken down by sectors whenever possible, including artisanal, industrial, and subsistence catches. In the case of domestic catch, inputs to aquaculture are subtracted from production (similar to exports); this is anticipated to be particularly relevant for large industrialized fisheries for small pelagics that are almost entirely reduced into fish feeds for aquaculture.

The distribution of consumption (demand) of this seafood supply will be based on regional (as available) estimates of seafood consumption per capita and regional populations. An important additional aspect for the critical analysis portion of the project will be to link these regions with available socio-economic and governance indicators, providing a basis for discussing relative vulnerabilities to potential changes in seafood supply.

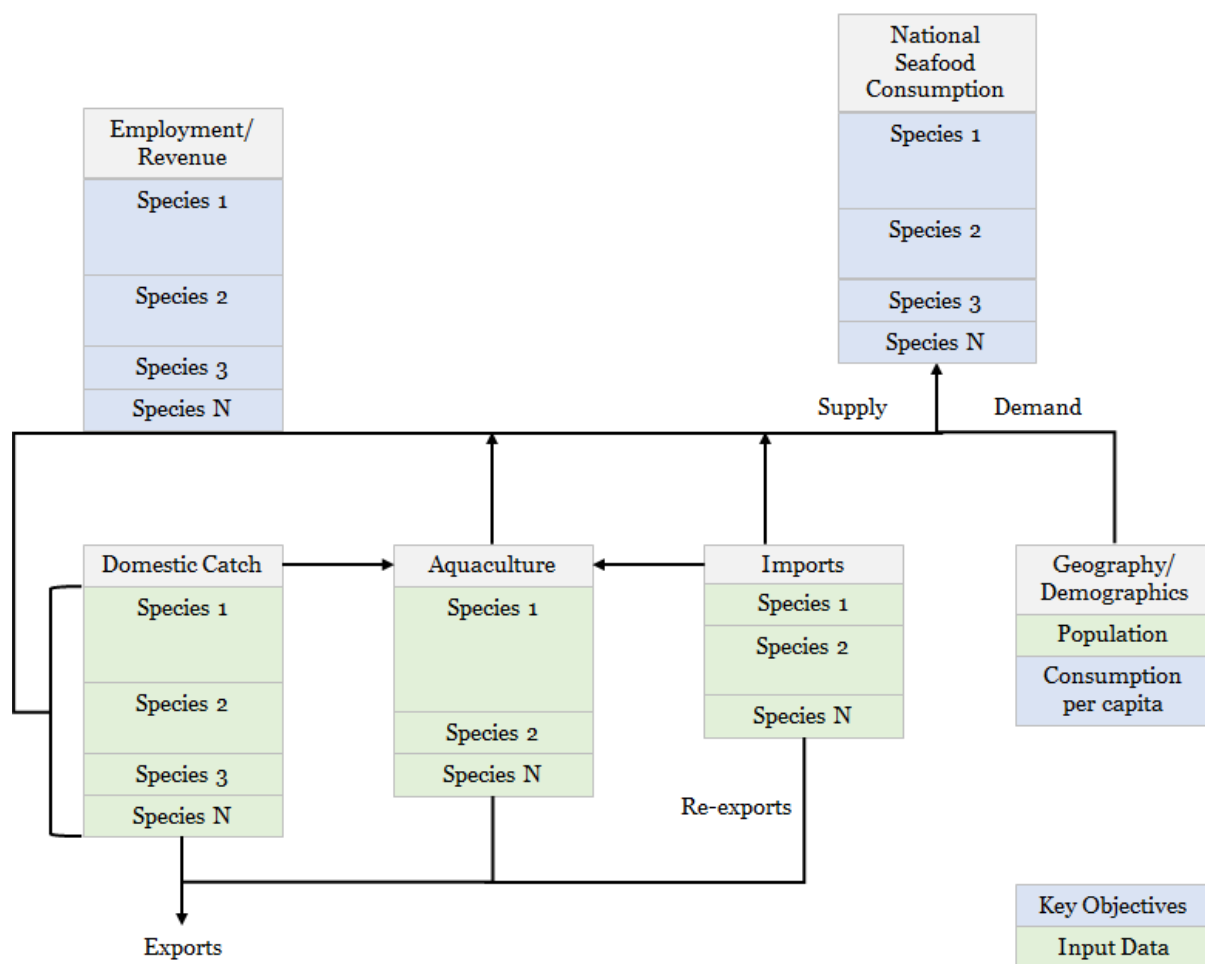


Figure 1. General methodology for evaluating domestic seafood consumption and key contributors (sectors, species, fisheries) to consumption and to local employment and revenue.

Information on employment and revenue will be collected for each supply source (fisheries, aquaculture, imports), but for capture fisheries in particular we will determine the relative importance of particular species for revenue and incomes. Species-specific employment can also be estimated for some industrial fisheries, but is more difficult for artisanal fisheries that are multi-specific by nature; nevertheless, all available information on relative regional or seasonal importance will be collected and analyzed as possible. Throughout all methods and research in all countries, the acknowledgement and explicit inclusion of uncertainty is vital for lending credibility to results and subsequent analyses, and will be a central part of our approach and discussion.

### Task division

The workload will be divided between the members of the team by country. Each of the sub-teams is composed by two members that have worked (and sometimes live) in the respective countries, speak the language and are familiar with national fisheries data and key personal contacts. Brazil will be analyzed by Dr. Daniel Viana and Juliano Palacios; Chile will be led by Camila Vargas and Maria Ignacia Rivera, and Peru by Rocío Lopez and Santiago de la Puente. Of course, the rich background and experience of the team is best leveraged through constant communication and collaboration to resolve any emergent issues. The overall coordination of the project will be led by Dr. Andrés Cisneros-Montemayor and Juliano Palacios,

including the development of the methodological framework and the integration of analyses and insights into a final report highlighting national and cross-national dynamics.

## **Country-specific information**

### *International sources*

There are several international projects dedicated to collecting and making fisheries data available. The University of British Columbia, through the Institute for the Oceans and Fisheries, maintains global datasets on fisheries landings (Sea Around Us<sup>8</sup>) and economics (Fisheries Economics Research Unit, FERU). These datasets allow for combined analyses of landings and profits at the national level, that can be used to direct further research and in-country data collection. Moreover, several researchers have done global analyses on seafood consumption and nutrition, of which stand out the indigenous fish consumption database<sup>9</sup>. Inter-governmental agencies also substantially contribute to data. The UN Fish and Agricultural Organization (FAO) has a comprehensive dataset on fisheries landings and related topics<sup>10</sup>.

Information related to nutritional values and seafood consumption is also available at the global level. The Global Expanded Nutrient Supply (GENuS) model estimates nutrient availabilities for 23 individual nutrients across 225 food categories for thirty-four age-sex groups in nearly all countries. The food estimate intake among demographic groups in each country and nutrient supplies provided by each diet is also available<sup>11</sup>. FAO has a dataset of consumption of fish and fishery products and the UN development program (UNDP) has country-level reports on seafood consumption and socio-economic indicators. Finally, world-wide socio-economic data is available through databases of the World Bank.

International databases are useful as the standardized information among nations. Moreover, they represent an already established effort of data collection and are often of open access. However, world-wide databases tend to not be able to go deep into each country often providing a rather superficial set of information. For this project we intend to use these datasets as a general approach to each nation. However, we will search and use local datasets for each component of the project (fisheries landings, fisheries socio-economic information, and consumption) to dive deeper on the details and provide a more fine-grain analysis.

### *Brazil*

In Brazil fisheries landings data exist at the federal level through the Institute of the Environment (IBAMA); however, there has been no fisheries monitoring in Brazil for over a decade<sup>12</sup>. We believe that this will play a major role in the current project creating a high level of uncertainty in the results. This challenge will have to be tackled by finding datasets at the local level, developed by federal universities and research centers. In Brazil, many federal states have public funding bodies (e.g. FAPESP in São Paulo) in charge of providing grants and funds to support research at the state level. As a consequence, much of the research carried by Federal Universities in Brazil is focus at the regional level, providing a rich source of information, although not always easy to access. We rely on our research network and local experience for contacting prominent researchers of different universities of the country where fisheries research is most important and engage with them in data exploration. However, it is likely that the most reliable fisheries landings available from Brazil are provided by SAU, with recent fisheries catch reconstruction work performed by local researcher Dr. Kátia Freire, know well by the research team.

Regarding socio-economic information from Brazil, data is collected at the federal level by the Institute of Geography and Statistics (IBGE). The institute collects diverse data ranging from socio-economic (e.g. employment, income, household information) to production data (e.g. imports, exports, aquaculture production). The last year of country-wide available data was the 2010 census dating back to 1872. Such census contains diverse household information regarding employment, income, level of education, and so on. In addition, the platform DataViva provides open access to more than 1 billion

visualizations of socioeconomic data from more than 5 thousand Brazilian cities. Finally, nutritional and seafood consumption data for Brazil can be found in local datasets and regional studies. In particular, the TBCA dataset provides information on nutritional components of diverse types of fish in diverse regions of the country. Supportive nutritional information and on food consumption will have to be extracted from papers on such topics.

Because of the potential lack of information available in Brazil regarding fisheries, it is possible that we will not find, or be able to access, all data needed to achieve the results with the same level of detail as the other countries. If so is the case, we will use the international datasets accessible and the team's local network to achieve the highest level of detail. In addition, we will provide a gap analysis of the information missing to carry these type of analysis, and suggest steps forward to fill in such gaps.

### *Chile*

In Chile, estimates of the contributions of fishing and aquaculture to labor, income and food security exist at the national and regional level. However, there is less understanding of the contribution of specific fisheries regarding these topics as well as the demographics of those involved in the production and consumption of fish products. We are not aware of single databases that can be used to address these questions. Nonetheless, we are confident that it is possible to produce reliable estimates by combining the available public databases with information contained in public and independent reports, employers' websites, and interviews with key informants (see Tables 1 and 2).

The main government agency in charge of keeping track of landings and other fisheries and aquaculture related data in Chile is SERNAPESCA. We anticipate it will be a major source of data particularly, regarding the identification of top fisheries in terms of volume. Information of landings from SERNAPESCA combined with price data from the main selling point of fish products in Chile (*Terminal Pesquero Metropolitano*) will provide insight about the domestic value of specific fisheries. Especially if complemented with data from other selling points in the Country.

The main sources of data in Chile to characterize the contribution to labor and income of different productive sectors are the National Socioeconomic Characterization Survey (CASEN), the National Employment Survey, and the New Income Supplementary Survey (NENE). These surveys also contain demographic and geographic data that allows characterizing the population involved in different labor activities. This information can be combined with SERNAPESCA's annual registers of artisanal and industrial fisheries and production facilities to generate estimates of the contribution of particular fisheries in different regions.

Probably, the most challenging task will be to evaluate the contribution of different fisheries to food consumption. Nonetheless, SERNAPESCA holds records of the contribution of different species to major categories of products such as fresh fish, frozen fish and fish meal, broken down in region and month. Combining this with data from the Chilean Customs (Aduanas Chile) that details products imported and exported for each region, we expect to be able to produce estimates of the domestic consumption of different species. Other sources of information regarding food consumption and demographics are surveys implemented by the Ministry of Health such as the National Survey of Food Consumption.

### *Peru*

Since 2017 Peru has a web portal (Datos Abiertos Peru) that makes publicly available diverse governmental information regarding many aspects of the country. The Ministry of Production of Peru (PRODUCE) is the institution responsible for collecting information regarding fisheries and aquaculture. Fisheries data in Peru is quite robust and includes industrial and artisanal landings, for both human consumption and fish meal and oil for the main fisheries in the Country. Our team already have access to

such dataset that will be an important source to identify main fisheries per sector in terms of volume.

Besides keeping track of landings, PRODUCE, has conducted census and surveys to characterize the population involved in the fishing activity. We anticipate that the Artisanal Fisheries Census carried on in 2012 will provide important insights regarding demographics and main fisheries sustaining the artisanal sector and their associated estimates of direct employment. They also count with an open register of fisheries production facilities, their location, and type of product that will be informative in terms of indirect employment. A valuable source of information regarding labor and value will be a rich dataset on fisheries employment and production generated, in part, by one of the members of our team (Santiago de la Puente) for the scientific publication: “Valuing seafood: The Peruvian fisheries sector”. This information can be complemented with data from the Institute of National Statistics and Informatics (INEI) that releases regular surveys on employment and market activity.

Given the importance of the sector, much research has focused on various aspects of Peruvian fisheries. The work done by Avady and Freón has vast information on direct human consumption products from both fisheries and aquaculture; as well as employment. We expect to inform our estimates with some of the literature they have produced. Data on domestic human consumption of different types of fish products has been collected in the National Household Survey which also allows for demographic characterization of the consumers. A broader estimate of domestic consumption of particular fisheries can be generated by combining export and import data on fisheries products, from the customs service (SUNAT), and the species used to generate them, from PRODUCE.

## Timeline and Planning

Oceana Task	Subtask	Aug 1-15	Aug 16-31	Sep 1-15	Sep 16-30	Oct 1-15	Oct 16-31	Nov 1-15	Nov 16-30	Dec
<b>Progress report phone call</b>	Develop project datasets for analysis									
	Identify and review all available literature and data on seafood consumption and related food security for each nation									
	Prepare preliminary reports of findings for each nation, highlighting existing data and limitations.									
	Discuss with Oceana specifics of analysis and potentially useful contacts through national offices.									
<b>Progress report phone call</b>	Data collection on previously identified sources									
	Data collection involving personal in-country meetings with individuals from ministries, universities and national Oceana offices.									
	Analysis of collected data									
	Highlight existing data gaps and qualitative issues.									
	Second preliminary reports of findings for each nation									
<b>First draft of deliverables</b>	First draft of report and joint dataset									
<b>Deliverables follow-up phone call</b>	Address comments on report									
<b>Final deliverable</b>										



## Quotation

Item	Estimated work hours (for all 3 countries)	Total fee (\$USD)
Develop project datasets for analysis	150	6,000
Identify and review all available literature and data on seafood consumption and related food security for each nation	72	2,880
Prepare preliminary reports of findings for each nation, highlighting existing data and limitations.	90	3,600
Discuss with Oceana specifics of analysis and potentially useful contacts through national offices.	6	240
Data collection on previously identified sources	90	3,600
Data collection involving personal in-country meetings	90	3,600
Analysis of collected data	150	6,000
Highlight existing data gaps and qualitative issues.	24	960
Second preliminary reports of findings for each nation	90	3,600
First draft of report and joint dataset	210	8,400
Revisions on final report	48	1,920
	<b>Labor Subtotal</b>	<b>40,800</b>

Item	Number of days	Total fee (\$USD)
Airfare within countries ( Number of Round Flights )	10	10, 000
Accommodation	30	1, 500
Food	30	600
Car rental/gas	30	3, 300
Miscellaneous		250
	<b>Travel Subtotal</b>	<b>15, 650</b>
	<b>Grand Total</b>	<b>56,450</b>

## Statement of qualifications

Juliano Palacios Abrantes is a PhD. Student at the Institute for the Oceans and Fisheries of the University of British Columbia. His projects and emerging professional directions look to understand how impacts of environmental change affect social structures, such as food security and local economies, how they can be measured, and how to create social adaptive capacity to such changes. He has worked as a consultant for organizations such as Environmental Defense Fund and The Nature Conservancy in diverse fisheries-related topics in Latin America. Juliano received a Master of Environmental Science and Management degree from the University of California, Santa Barbara, where he was awarded a Latin American Fisheries Fellowship.

Camila Vargas holds Master of Environmental Science & Management with a specialization on Coastal Marine Resources Management from the Bren School of Environmental Management and Science (University of California, Santa Barbara), where she was awarded the Latin American Fisheries Fellowship. She has experience in academic research in coastal resource management and raw data collection from scientific and gray literature. Camila has collaborated on a range of projects, from research to review

biodiversity offset's in the scientific literature, to an initiative with a PNUD project aimed to develop a credit system for marine biodiversity offsets for the central coast of Chile. She is currently a fellow at the National Center of Ecological Analysis and Synthesis (NCEAS) working with the Ocean Health Index (OHI) collecting and preparing data for the 2018 OHI assessment.

Dr. Daniel Viana holds a PhD from the Bren School of Environmental Science and Management. His broad interests are fisheries management, environmental tourism, and the design of marine protected areas (MPAs). Daniel has worked with the Brazilian Ministry of Fisheries, the Sustainable Fisheries Group at UCSB and as a fellow for RARE. He has been engaged in multiple research projects in Brazil related to artisanal fisheries management, data-poor stock assessments, reproductive biology and marine ecology. Daniel received his BS in Fishing Engineering from the Federal Rural University of Pernambuco in Brazil and his Master of Environmental Science and Management degree from the University of California, Santa Barbara.

Maria Ignacia Rivera is a PhD. Student and a Latin American Fisheries Fellow at the Bren School of Environmental Science & Management, University of California Santa Barbara. Using methods and theory from the social sciences, she is interested in the effect of environmental shocks on small-scale fishers behavior and its social and ecological implications. She holds a Master of Environmental Science and Management with a specialization on Coastal Marine Resources Management (UCSB) and a BSc in Marine Biology (Pontificia Universidad Católica de Chile). She worked for two years as a research assistant in The Research Center of Social Complexity, Universidad del Desarrollo, Chile. Ignacia has been involved in several small-scale fisheries related projects for which she has contributed collecting and analyzing data and producing literature reviews, especially in Chile, Peru and Costa Rica.

Rocio Lopez de la Lama is a PhD student at the Institute for Resources, Environment and Sustainability of the University of British Columbia. Her research explores people's motivations for setting up private conservation areas in Peru (her home country). Rocio's previous work in Peru has focused on sustainable seafood, small-scale fisheries, gender studies, and exploring people's relationship with nature. She has been a consultant for Oceana Peru for over 2 years describing seafood consumption patterns in coastal Peru. She designed (and implemented) a survey along the Peruvian coast (2000 surveys, 10 regions), analyzed the gathered data, and elaborated a report with the main findings. Rocio has an MPhil in Conservation Leadership from the University of Cambridge (UK), and a BSc in Biology from Universidad Peruana Cayetano Heredia (Peru).

Santiago de la Puente is a Peruvian scientist that has been studying the ecological and human dimensions of the Humboldt Current in Peru, with emphasis on fisheries economics and governance. His previous work experience includes *associate researcher* at Centre for Environmental Sustainability of the Cayetano Heredia University in Peru; *consultant* for OCEANA-Peru, the Peruvian Ministry of Production, the Peruvian Ministry of the Environment, and the Food and Agriculture Organization of the United Nations; and, *fisheries advisor* to the Vice-Minister of Fisheries at the Peruvian Ministry of Production. Currently, Santiago is pursuing a PhD in resource management at the Institute for the Oceans and Fisheries at the University of British Columbia, evaluating management strategies for Peruvian fisheries.

Dr. Andrés Cisneros-Montemayor is Program Manager of the Nippon Foundation Nereus Program and Research Associate at the University of British Columbia, and specializes in applied resource economics. Linking field and theoretic work, he has studied the economics of artisanal and industrial fishing sectors an ecotourism, Indigenous fisheries, adaptive management strategies and ecosystem approaches to policy in developing and developed regions including Belize, Canada, Central America, East Asia, Mexico, Patagonia, the USA and West Africa. Andrés holds a PhD and MSc in Resource Management and

Environmental Studies (University of British Columbia), and a BSc in Marine Biology (Universidad Autónoma de Baja California Sur).

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12. Barreto, R. R. *et al.* Rethinking use and trade of pelagic sharks from Brazil. *Marine Policy* **85**, 114–122 (2017).

## Supplemental Material

Table S1. Example of data sources previously identified for the current project

Country	Source/Institution	Access	Topic	Format
Brazil	Brazilian Institute of Geography and Statistics (IBGE)	Open Access	Fisheries Landings; Socio-economic data per region	Database
Brazil	Institute for Biodiversity Conservation (ICMBio)	Open Access	Conservation and Small Scale Fisheries	Database and reports
All	Sea Around Us	Open Access	Fisheries Landings and Economics	Database
All	Fisheries Economics Unit, UBC	ACM	Fisheries Economics	Database
All	Indigenous Food Security	ACM	Seafood Consumption	Database
All	Nutrition: Fall in fish catch threatens human health	Request	Seafood Consumption	Paper/Database

All	FAO FishStat	Open Access	Fisheries Landings	Database
All	FAO Seafood Consumption	Open Access	Seafood Consumption	Database
All	UNDP Development Reports	Open Access	Seafood Consumption; Socio-economic indicators	Database
All	Too Big to Ignore	Request	Small Scale Fisheries	Paper/Database
All	World Bank	Open Access	Socio-economic indicators	Database
Brazil	Data Viva	Open Access	Socio-economic data per city	Database
Chile	National Institute of Statistics (INE)	Open Access	Employment per region and sector	Database
Chile	Chile's Customs Office (ADUANAS)	Open Access	Exports and imports per region and product category	Database
Chile	National Service of Fisheries and Aquaculture (SERNAPESCA)	Open Access	Landings per sector (i.e. industrial artisanal) per region. Register of artisanal and industrial fishers and production facilities.  Species contribution to production of different product categories.	Database
Chile	National Service of Employment and Training (SENSE)- National Observatory of Labor	Open Access	Demographic statistics per employment sector and region.	Website information
Chile	National Office of Agrarian Studies and Policies (ODEPA).	Open Access	Time series of prices of different marine products	Database
Chile	Villena, M. (2012). Diagnóstico del Consumo Interno de Productos Pesqueros en Chile. SUBPESCA, Chile.	Open Access	Estimates of per capita consumption of different marine products in the country	Report
Chile	Muñoz, G. (2014). Informe aplicación encuesta sobre consumo de productos del mar. Centro Desarrollo y Pesca Sustentable, Chile.	Open Access	Estimates of main species being consumed for 2013 and 2014, based on a survey in main selling points.	Report
Chile	Reporte Laboral Sectorial: Pesca. (2016). Observatorio Laboral de Chile	Open Access	Characterization of employment in fisheries and aquaculture sector	Report
Chile	General Gov. Data from Chile	Open Access	Fisheries Landings; Socio-economic data per region	Database
Peru	General Gov. Data from Peru	Open Access	Fisheries Landings; Socio-economic data per region	Database
Peru	Direct human consumption products from Peruvian anchoveta fisheries and freshwater aquaculture	Open Access	Seafood Consumption	Paper

Peru	Valuing seafood: The Peruvian fisheries sector	Santiago de la Puente	Sea food landings; economics; Employment;	Database
Peru	PRODUCE	Open Access	Landings and seafood consumption	Database
All	GENuS	Open Access	Nutrient supply	Paper/Database
All	The Global Dietary Database	Request	Food and nutrient consumption levels in countries	Database
Brazil	Tabela Brasileira de Composição de Alimentos	Open Access	Nutritional value of seafood; consumption	Database
Brazil	PMAP-SP	Open Access	Fisheries data for São Paulo state	Database

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2018

## Education

- **PhD. In Zoology** (September 2016 – Expected, June 2020)  
Department of Zoology, University of British Columbia, Canada.
  - Management of Transboundary Fish Stocks in North America Under Climate Change: Impacts and Adaptation
- **Master of Environmental Science and Management** (September 2014 - June 2016)  
Bren School of Environmental Science & Management, University of California at Santa Barbara, USA.
  - A Citizen Science Monitoring Protocol for the Rocky Intertidal Habitat
- **Bachelor of Science in Biology** (September 2007 - December 2012)  
Universidad Autónoma Metropolitana campus Xochimilco, México City.
  - Sea Cucumber as a Source of Macronutrients for Low-Income Coastal Communities in Mexico.

## Publications

- Malin L. Pinsky, Reygondeau G., Caddell R., **Palacios-Abrantes J.**, Spijkers J. & Cheung W.L (2018) Preparing ocean governance for species on the move: Policy must anticipate conflict over geographic shifts. *Science*, Vol. 360, Issue 6394, pp. 1189-1191, DOI: 10.1126/science.aat2360
- **Palacios-Abrantes J.**, Melo-Ruiz V., Urbano B., Falcón-Gerónimo J. & Gazga-Urioste C. (2017). Nutritional Analysis of *Octopus hubbsorum* B (Cephalopoda: Octopodidae) from the Pacific Ocean, Acapulco, Guerrero, México. *Journal of Applied Life Sciences International*, 10(3), 1–6. <http://doi.org/10.9734/JALSI/2017/31031>
- **Palacios-Abrantes J.**, Melo-Ruiz V., Diaz-Garcia R., Gazga-Urioste C., & Urbano B. (2016). Iron Profile of *Octopus Hubbsorum* (Cephalopoda: Octopodidae) for Enrichment of the Mexican Diet. *Journal of Chemistry and Chemical Engineering*, 10(5), 1–4. <http://doi.org/10.17265/1934-7375/2016.05.008>

## Work in Progress

- **Palacios-Abrantes J.**, Herrera J., Molina R., Rodriguez S., Brunkow J. (NA) Evaluating a restoration plan for sustainable fishing: the case of the Callo de hacha (*Atrina spp.*) in La Paz, Mexico. *PlosOne* [In review]
- **Palacios-Abrantes J.**, Felins E., Handelman T., Liu R. O., Howard A., Melack J. (NA) Using citizen science to monitor the rocky intertidal: A tool for the Bureau of Ocean Energy Management in the US. *Bulletin of the Southern California Academy of Science* [In review]
- **Palacios-Abrantes J.** & Cisneros-Montemayor, A. (NA). Tendencias de la investigación pesquera en México: necesidades y oportunidades para la adaptación al cambio climático. In Pescadores en México retos y oportunidades ante el cambio climático. Ciudad de México. [In press]

## Conference Experience

- **Palacios-Abrantes J.**, Cheung W.L., Sumaila R. 2018. Current State and Future Scenarios for Transboundary Fisheries Management in Changing Oceans of California and the United States. The Effects of Climate Change of the World's Oceans, Washington D.C.
- **Palacios-Abrantes J.**, Arreguín-Sánchez F, Cheung W. W., Cisneros-Mata M.A, Cisneros-Montemayor A., Rodriguez L. 2017. Towards the creation of a metadata of marine research in Mexico: a case study of the Gulf of Mexico. State of the Gulf of Mexico, 2017. Houston, Texas
- Felins E., Handelsman T., Howard A., **Palacios-Abrantes J.**, Liu R. O., Melack J. 2016. A Citizen Science Monitoring Protocol for the Rocky Intertidal Habitat. Multi-Agency Rocky Intertidal Network Annual Meeting, Cabrillo National Monument, San Diego, California.
- **Palacios-Abrantes J.**, Melo V. y Urbano B. 2012. Análisis proximal de *Octopus hubbsorum* (Cephalopoda: Octopodidae) en Acapulco Guerrero (México). Congreso de la sociedad Mesoamericana para la Biología y la Conservación, Panama City, Panama.
- **Palacios-Abrantes J.**, Melo V., y Urbano B. 2012. Análisis nutricional de callo de hacha *Atrina* sp. (Mollusca: Pinnidae) en México. Congreso de la Sociedad Mesoamericana para la Biología y la Conservación, Panama City, Panama.
- **Palacios-Abrantes J.**, Melo V., Jiménez H, Rivero J. 2011. Estrella de mar, un rico complemento alimenticio para comunidades costeras de bajos recursos. XV Congreso de la sociedad Mesoamericana para la Biología y la Conservación, Mérida, Mexico.

## Profesional Research

- Cisneros-Montemayor A.M., **Palacios-Abrantes J.**, Abas M. 2018. Impactos potenciales del cambio climático en las pesquerías mexicanas: Consideraciones para su manejo. A report commissioned by Environmental Defense Fund de México, A.C. 60 pp.
- Herrera J., **Palacios-Abrantes J.**, Rodríguez S., Brunkow J., Molina R. 2016. Callo de hacha: restoration program and sustainable fishery in La Paz, BCS, Mexico. A report commissioned by Noroeste Sustentable, A.C. 33 pp.
- Palacios-Abrantes J. 2016. Status and management scenario for the mollusk fisheries of Altata Bay, Sinaloa, Mexico. Report was commissioned by Environmental Defense Fund-Mexico. Pp 37.
- Peruvian Anchovy Stock Assessment Tool (2016). Member of a team tasked to develop a tool for better manage the Anchovy fishery in Peru. A project in collaboration with The Nature Conservancy and the government of Peru.
- TURF Legal Framework Analysis (2015). Reviewed and analyzed the legal framework of Territorial Rights Use for Fisheries (TURFs) of Brazil, Chile and Spain. A report commissioned by Environmental Defense Fund, Mexico. 9 pp.
- Biological Assessment for Target Bivalves in Sinaloa, Mexico (October, 2015). A compilation of biological information of the target species of the Sinaloa project. A report commissioned by Environmental Defense Fund, Fisheries Solution Center. 6 pp.

## Awards

- Faculty of Science PhD. Tuition Award (September 2016 – To date). Awarded by the University of British Columbia to pursue a PhD. In Zoology

- International Tuition Award (September 2016 – To date). Awarded by the University of British Columbia to pursue a PhD. In Zoology
- Latin American Fisheries Fellow (LAFF) (August 2014- June 2016). Awarded by The Walton Foundation to pursue a Master of Environmental Science and Management.
- Mobility Program Award (January - December 2010). Awarded by the Universidad Autónoma Metropolitana to go to the Sao Paulo University, Brazil.

## Other Skills

- **Languages:** Spanish, Portuguese, and English (fluent in speaking, reading and writing)  
TOEFL IBT: 105, November 15, 2013.
- **Computer:** Microsoft Office, R-Studio (Advanced), MATLAB (basic), GitHub (intermediate). *Other:*



# CAMILA VARGAS POULSEN

+1 805 724 7754 | [cvargas@bren.ucsb.edu](mailto:cvargas@bren.ucsb.edu) | Santa Barbara CA

## EDUCATION

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**Master of Environmental Science and Management** (June 2018)

**Coastal Marine Resources Management Specialization**

Bren School of Environmental Science & Management – University of California, Santa Barbara (UCSB)

Awards/Fellowships: Latin American Fishery Fellowship; Becas Chile

**Degree in Natural Resources Management and Environment** (September 2014)

**Bachelor of Science in Biology with focus in Ecology** (August 2013)

Pontificia Universidad Católica de Chile (PUC), Santiago, Chile

## MARINE RESOURCE MANAGEMENT, FISHERIES & DATA EXPERIENCE

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**Ocean Health Index (OHI) Fellow** (01.18 – Present)

**National Center of Ecological Analysis and Synthesis (NCEAS)**

- Preparing data layers to calculate the 2018 Global OHI by updating and formatting the databases
- Revising R scripts with OHI methods to ensure that all the functions and data needed for the analysis work properly
- Documenting the process of assessing the OHI in a website created through RMarkdown

**Master's Thesis: Creating Effective No-take Marine Reserves** (04.17 – 05.18)

**Fundación Claudia y Roberto Hernández, The Summit Foundation, and UCSB Bren School**, Santa Barbara, CA

- Collaborated with 4 peers to develop a 70-page manual with guidelines and tools for creating and implementing NTZs
- Performed literature review on marine NTZs within reef systems to support the development of the manual
- Analyzed data about fishers' perception of NTZs in Quintana Roo; analysis was included as a case study in the manual

**Kanan Kay Alliance (KKA) Research Intern** (07.17 – 09.17)

**Fundación Claudia y Roberto Hernández, The Summit Foundation and KKA**, Quintana Roo, Mexico

- Assembled information from reports and documents provided by members of the KKA, about stakeholders' participation and roles in establishing no-take zones in Quintana Roo, Mexico
- Compiled ecological, geographical and socioeconomic data on region's 13 existing no-take zones
- Developed and conducted 39 surveys to evaluate fishers' perceptions of costs and benefits of no-take zones

**Research Assistant** (03.14 – 08.16)

**Marine Conservation Center, Dr. Stefan Gelcich Lab, PUC**, Santiago, Chile

- Conducted research on the role of gender in small-scale fisheries organizations on the central coast of Chile; collected data on how fishers perceive female participation in small-scale fisheries organizations
- Collaborated on a literature review of marine credit systems to inform a credit-system protocol design of biodiversity offsets in central coast of Chile for a project financed by United Nation Development Program (UNDP)
- Reviewed scientific literature on biodiversity offsets to assess biological, attitudinal, and financial potential of territorial user rights fisheries policies as ancillary conservation measures in Chile

**Fishery Intern** (10.13 – 01.14)

**Chilean Undersecretary of Fisheries – Benthic Resource Unit**, Valparaiso, Chile

- Analyzed size, abundance, and landing data using Excel solver to evaluate the state of benthic fisheries and determine a sustainable extraction quota within the Chilean Territorial User Right for Fishing (TURF)
- Evaluated ecological data on Kelp Management Plans for 3 administrative regions of Chile; verified accuracy and compliance with the law

## ADDITIONAL EXPERIENCE

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**Fieldwork Assistant—Chilean Antarctic Institute**, Cape Shirreff, Livingston Island, Antarctic (01.16 – 03.16)

Monitored, collected samples, and analyzed Antarctic fur seal (*Arctocephalus gazelle*) scat for NOAA's Pinniped Research Program. Awarded Antarctica Service Medal by National Science Foundation and U.S. Federal Government

**Fieldwork Assistant—Social-Ecological Studies Lab, PUC**, Central Coast, Chile (01.13 and 09.15)

Executed economic experiments assessing cooperative behavior in artisanal fishers' communities in central Chile (09.15); surveyed 150 fishers to evaluate perception on the TURF system in Chile (01.13)

## SKILLS, CERTIFICATIONS, & PUBLICATIONS

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**Computer**: Proficient in PC and Mac applications, Microsoft Office (Excel, Word, PowerPoint), RStudio and Github

**Language**: English (Fluent), Spanish (Native Speaker)

**Publications**: Co-authored [Achieving biodiversity benefits with offsets](#) (Ambio, 2016) and [Alternative strategies for scaling up marine coastal biodiversity conservation in Chile](#) (Maritime Studies, 2015)

# DANIEL FADIGAS VIANA

732 Elkus Walk apt 105, Goleta CA 93117. (805)453-7995. [danielf.vi@hotmail.com](mailto:danielf.vi@hotmail.com)

## EDUCATION

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### University of California Santa Barbara -UCSB

PhD at Bren School of Environmental Science and Management. Sept 2013 - present

Master's at Bren School of Environmental Science and Management. Sept 2011 – June 2013

- Relevant Coursework: Policy Analysis, Environmental Economics, Coastal Policy and Management, Econometrics, Environmental Law and Policy, Stock Assessment, Systems Thinking, Leadership Training, Environmental Negotiation, Statistics, Environmental Modeling, Writing, Cost-Benefit Analysis, Conservation Planning, GIS, Business and the Environment, Natural Resource Economics, Analytical Methods, Biological Oceanography, Physical Oceanography, Marine Ecology, Earth System Science.

### Universidade Federal Rural de Pernambuco - UFRPE

Bachelor of Science, in Fisheries Engineering. January 2007 – July 2011.

- Relevant Coursework: Fisheries Management, Stock Assessment, Aquaculture, Mathematics, Statistics, Physics, Chemistry, Population Dynamics, Oceanography, Microbiology, Fishing Techniques, Navigation, Limnology, Ecology, Fishing Extension, Aquatic Botanic, Fish Identification, Fish Reproduction.

## SCHOLARSHIPS RECEIVED

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- CAPES foundation, Scholarship support for the PhD in Environmental Science and Management at the Bren School – UCSB, Sept 2013 – August 2017.
- Latin American Fishery Fellow (LAFF), Fellowship support for the Master of Environmental Science and Management at the Bren School – UCSB, 2012-2013.
- National Council for Scientific and Technological Development (CNPq), Undergrad Research Program, 2009-2011.
- Fundação Apolonio Sales – FADURPE, Oceanic Sharks Project. 2008.

## JOURNAL PUBLICATIONS

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- Viana D.F., Halpern B, Gaines S.D. 2017. Accounting for tourism benefits in marine reserve design. **PLOS ONE**. 12(12): e0190187
- Viana D.F., Gornik K., McDonald G., Lin C., Ng N.S.R., Quigley C., Potoski M. 2017. Recreational boaters value biodiversity: The case of the California Channel Islands National Marine Sanctuary. **Marine Policy**. 81: 91-97.
- Ayres A, Degolia A, Fienup M, Kim Y, Sainz J, Urbisci L, Viana D, Wesolowski G, Plantinga AJ, Tague C. 2016. Social Science/Natural Science Perspectives on Wildfire and Climate Change. **Geography Compass**. 1;10(2):67-86.
- Viana D.F. Hazin F.H., Oliveira P.G. 2016. Reproductive Biology of the lane snapper, *Lutjanus synagris*, caught in the coast of Pernambuco, Northeastern Brazil. **Arquivos de Ciencias do Mar**, 48(2):67-73.

- Viana D.F., Hazin F.H., Andrade H. 2015. Fisheries in the St Peter and St Paul Archipelago: 13 years of monitoring, Brazil. **Instituto de Pesca**, 41: 239-248.
- Viana D.F., Camargo E., Dutra G. 2015. Avaliação econômica da pesca do camarão sete-barbas, *Xiphopenaeus kroyeri* (Keller, 1862), no município de Caravelas – BA, Brasil. **Instituto de Pesca**, 41(2): 419-428.
- Mendonça, S. A., Macena, B. C. L., Creio, E., Viana, D. L. & Hazin, F. H. 2012. Record of a pregnant *Mobula thurstoni* and occurrence of *Manta birostris* (Myliobatiformes: Mobulidae) in the vicinity of Saint Peter and Saint Paul Archipelago (Equatorial Atlantic). **Pan-American Journal of Aquatic Sciences**, 7(1): 21-26.

## WORKING PAPERS

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- Viana D.F., Gelcich S., Aceves E., Gaines S.D. Contrasting effects of TURF size on resource outcomes.
- Viana D.F., Gaines S.D., Costello C. Using market-based strategies to improve TURF network outcomes.
- Viana D.F. Problems and solutions of the Brazilian Extractive Reserves.
- Viana D.F. Evaluating management strategies for coastal shrimp fisheries: The case of the seabob fisheries in Caravelas – Brazil.

## CONFERENCE PUBLICATIONS

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- Viana D.F. 2015. Should we protect more if we account for tourism benefits in marine reserve design? International Congress on Coastal and Marine Tourism. Kona – Hawaii.
- Viana D.F., Hazin F.H., Mendonça S., Macena B. 2009. Aspects of the Population and Behavior of the Manta Ray *Mobula tarapacana* in the St Peter and St Pablo Archipelago. Congreso latinoamericano de Ciencias del Mar – COLACMAR. Havana – Cuba.
- Viana D.F., Hazin F.H., Oliveira P.G. 2009. Reproductive Biology of the lane snapper, *Lutjanus synagris*, caught in the coast of Pernambuco, Northeastern Brazil. Congreso latinoamericano de Ciencias del Mar – COLACMAR. Havana – Cuba.
- Viana D.F., Hazin F.H., Nunes D. 2010. Sobrevivência de peixes capturados com espinhel pelágico no Oceano Atlântico oeste tropical (Survival of fishes captured by the pelagic longline fishery in the West Tropical Atlantic Ocean). X Jornada de Ensino, Pesquisa e Extensão. Recife, Brazil.
- Viana D.F., Hazin F.H. 2010. Variação Sazonal das Capturas de barcos de pesca no entorno do Arquipélago de São Pedro e São Paulo (Seasonal variation of captures from fishing boats around the St Peter and St Pablo Archipelago). X Jornada de Ensino, Pesquisa e Extensão. Recife, Brazil.

- Viana D.F., Hazin F.H, Santos L. 2010. Dados preliminares acerca da Idade e Crescimento do Agulhão Redondo, *tetrapturus georgeii*, capturado no Oceano Atlântico Sul (Age and Growth of the spearfish, *tetrapturus georgei*, captured in the South Atlantic Ocean). X Jornada de Ensino, Pesquisa e Extensão. Recife, Brazil.

## Work experiences

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**Oceana in Brazil**, Brasilia – DF, Brazil.

**Consultant**, June 2017 – January 2018

- Responsible for organizing an international workshop to create guidelines for effective national fisheries laws.
- Conducted research comparing national fisheries laws from Latin America
- Wrote an article for Oceana website explaining why we should implement TURFs in Brazil.

**RARE Conservation**, Arlington – VA, United States.

**Brazil Coastal Fisheries Fellow**, June 2013 – September 2013

- Responsible for developing summaries from meetings with key stakeholders interested in partnering with Rare
- Conducted research on the social dynamics at play within fisheries and fishing communities in Brazil.

**Sustainable Fisheries Group (SFG) at Bren School of Environmental Science and Management– UCSB**, Santa Barbara – California, United States.

**Research Assistant**, November 2011 – August 2012.

- Research Group at the University focused on fisheries management.
- Collaborated as research assistant in the following projects: assessment of rockfishes from the coast of California; stock assessment of sea cucumber in Galapagos; and marine spatial planning of the Galapagos.

**Galapagos National Park/Conservation International**, Puerto Ayola - Galapagos, Ecuador.

**Internship**, June 2012 – July 2012.

- Worked on the marine spatial planning of Galapagos, collecting data and having meetings with stakeholders presenting the project and the tool used for planning.

**Laboratório de Oceanografia Pesqueira (Fisheries Oceanography Lab) at UFRPE**, Recife – Pernambuco, Brazil.

**Internship**, August 2007 – July 2011.

- Lab at the University specialized in fishery oceanography. Develops projects on reproductive biology, age and growth, artisanal fishery, animal behavior, and satellite and acoustic fish tagging.
- Conducted the following research projects: “Reproductive biology of the *Lutjanus synagris* caught in the Northeastern coast of Brazil”, “Movements and behavior of the manta ray, *Mobula tarapacana* in the St Peter and St Pablo Archipelago”, “Age and growth of the swordfish, *Tetrapturus georgeii*, caught in Northeastern Brazil”, and “Fisheries in the St Peter and St Pablo Archipelago – 13 years of monitoring”

**Ministry of Fisheries, Brasilia – DF, Brazil.**

**Internship, July 2010 - August 2010.**

- Worked on the Satellite-based Vessel Monitoring System, a real time monitoring to seek for vessels in prohibited fishing areas.
- Wrote reports on fishing activities from several vessels, a requirement for fishing license.
- Worked on data analyses, describing the longline fishing activity in Northeastern Brazil.

**Ocean Futures Society, Santa Barbara – California, United States.**

**Internship, October 2009.**

- Non-profit organization of environmental education and underwater documentation.

**Hydros Engenharia e Planejamento Ltda, Salvador – BA, Brazil.**

**Internship, February 2009 – March 2009.**

- Consulting company on engineering and planning focused on environmental issues.
- Worked on a project for Petrobras on the monitoring of fishing activities of several communities south from Salvador, Bahia.
- Visited all communities monitored for material collection, orientated staff that monitor communities, and selected new staff. I also worked in the office in Salvador managing the database.

**Pantanal Research Institute, Aquidauana – Mato Grosso do Sul, Brazil.**

**Internship, February 2008.**

- Collaborated in a research project on alligator management in the Pantanal region.

**Mamirauá Sustainable Reserve & Sustainable Development Institute (IDS), Fonte Boa – Amazonas, Brazil.**

**Internship, August 2007.**

- Government institution that develops sustainable development projects in the protected area.
- Worked on the traditional communities' management project of the Pirarucu fish. I participated on counting, capturing and selling process of the Pirarucu fish, as well as attended meetings with local communities.

## **OTHER ACTIVITIES**

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**Advanced Open Water Diver.** Certified by PADI in 2008, Recife – Brazil.

## **LANGUAGES**

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Portuguese (native), Spanish and English fluent speaking and writing.

## **SOFTWARES**

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ArcGIS (geoprocessing), Microsoft Office, R (statistic), Matlab, Python.

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Santa Barbara, CA 93106  
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## María Ignacia Rivera

PhD Student, University of California  
Santa Barbara, USA.  
Latin American Fisheries Fellow

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### EDUCATION

PhD in Environmental Science and Management (September 2017 – Current)

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

Advisor: Dr. Steven Gaines

Relevant coursework: Causal Inference, Field Experiments, Experimental economics, Comparative methods, Advanced Political Research Methods, Advanced fisheries modelling and assessment.

Master of Environmental Science and Management (2017)

Coastal Marine Resources Management Specialization

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

Thesis: Economic potential of small-scale fisheries through better management in the Gulf of Nicoya, Costa Rica.

Advisor: Dr. Andrew Plantinga

Relevant coursework: Advanced Data Analysis, Geographic Information Systems, Social Network Analysis, Applied Econometrics, Natural Resource Economics and Policy, Cost-Benefit Analysis and Nonmarket Valuation.

Bachelor of Science in Marine Biology (2013)

*Facultad de Ciencias Biológicas, Pontificia Universidad Católica de Chile*

Thesis: Geometric morphometrics applied to populations of *C. concholepas* and *P. purpuratus* in central Chile.

Advisor: Dr. Miriam Fernández

### FUNDING, GRANTS AND AWARDS

**2018** H William Kuni Bren Research Award: The proliferation of Fish Aggregating Devices in the Caribbean. With Molly Wilson, Julia Lawson, and Juan Carlos Villaseñor-Derbez (\$15,000 USD)

**2017** Becas Chile. International Student's Doctoral Chilean Scholarship (\$146,619 USD)

**2017** Latin American Fisheries Fellowship. Doctoral Fellowship (\$14,352 USD)

**2015** Becas Chile. International Student's Master Scholarship (\$64,946 USD)

**2015** Latin American Fisheries Fellowship. Masters Fellowship (\$42,000 USD)

**2011** Pontificia Universidad Católica de Chile. Honor Scholarship (50% tuition coverage)

## PUBLICATIONS

- In prep.** **Rivera, M. I.**, Guzmán, R., Rodríguez-Sickert, C and Gelcich, S. The interplay between access regimes and local rule internalization determines stewardship behavior in small-scale fishers.
- 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, arginine vasopressin receptor, and monoamine oxidase A genes' polymorphisms and cooperative strategy displayed in a Public Good Game.
- 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.

## WORK AND RESEARCH EXPERIENCE

Internship (June - November 2016)

*The Nature Conservancy Peru*

Contact: Matias Caillaux, Fisheries Specialist

Topic: Evaluation of self-governance experiences for managing marine resources in Peru.

Tasks: Developed a methodology to select a set of indicators, select indicators and methods to assess them.

Directed research (March - June 2016)

*Sustainable Fisheries Group (SFG), University of California Santa Barbara*

Contact: Gavin McDonald, Project Researcher

Topics: Impacts of Territorial Users Rights for Fishing (TURFs); Ecological impacts of dynamite fishing

Tasks: Compiled data on social and ecological impacts of TURFs implementation by reviewing academic and grey literature; reviewed literature on the ecological impacts of dynamite fishing to define model parameters.

Research assistant (April 2013 - April 2015)

*Research Center of Social Complexity, Universidad del Desarrollo, Santiago, Chile*

Contact: Dr. Carlos Rodriguez-Sickert, Director

Topics: Human cooperation in common pool resources, economic experiments in social dilemmas, evolutionary psychology, genetics of human social behavior

Tasks: Conducted ~20 sessions of economic experiments in the field with fishers and in the lab with students, data formatting and analysis experimental data, performed literature reviews for topics above and prepared manuscripts for publication.

Project Assistant (March 2013)

*Laboratory of Social-Ecological Systems, Pontifical Catholic University of Chile*

Contact: Dr. Stefan Gelcich, Head of Laboratory

Topics: Institutions, adaptation and socio-ecological change in Chilean coastal communities

Tasks: Conducted surveys targeting artisanal fishers in the central coast of Chile.

Undergraduate Student on board (March 2009 – April 2009)

*Humboldt Expedition. Hesperides, Multidisciplinary research vessel of the Spanish Navy UTM-CSIC*

Contact: Dr. Carlos Duarte, Head of expedition

Topics: Impacts of climate change in the Humboldt Current

Tasks: Performed water sampling, measurement of CO<sub>2</sub>, NH<sub>3</sub>, NH<sub>4</sub> and data analyses and results presentation on board.

## SKILLS AND INTERESTS

R and RStudio: R Markdown, data management and visualization, programing and statistical analysis

Stata: Advanced statistical analysis

MATLAB: Basic programming.

ArcGIS: Basic data visualization and analysis.

ZTree: Basic programing and experimental sessions implementation.

Microsoft Office: Advanced Word, Excel and Power Point.

Languages: Fluent in English (TOEFL: 100) and Spanish (native speaker).

Research Interests: Fisheries management, institutions, behavioral economics, evolutionary psychology.



# Rocio Maria Lopez de la Lama

**Day of birth:** September 19, 1990 | **Nationality:** Peruvian

**E-mails:** rocio.lopezdelalama@gmail.com

**Skype contact:** rocio.lopez51

## EDUCATION

- Since 2018      PhD Student  
Supervised by: Dr. Kai M. A. Chan  
Institute for Resources, Environment and Sustainability (IRES)  
University of British Columbia (UBC), Canada
- 2014- 2015      St Catharine's College, University of Cambridge (England)  
MPhil in Conservation Leadership  
Dissertation topic: What makes a future conservation leader? Exploring the potential for nurturing young professional conservationists in Nicaragua. In collaboration with Fauna and Flora International (FFI).
- 2008-2012      Cayetano Heredia University, Lima - Peru  
Graduate in Biology  
Dissertation topic: Knowledge, attitudes and behaviors from top chefs towards Sustainable Seafood in Lima, Peru

## WORK EXPERIENCE

- 2016 – 2017      Consultant  
Research objectives: i) Assessment of Peruvian's knowledge and attitudes towards the marine ecosystems and marine living resources of Peru, ii) Description of seafood consumption patterns in coastal Peru.  
Responsibilities: Design a survey and implement it along the Peruvian coast (2000 surveys, 10 regions). Analyze the gathered data and elaborate a report with the main findings.  
Client: [NGO Oceana Peru](#)
- 2016 –2017      Consultant  
Responsibilities: Edition of a book focusing on Peruvian marine ecosystems, their fisheries and the relationship between coastal Peruvians and the sea.  
Client: [NGO Oceana Peru](#)
- 2016      Associate Researcher at the Centre for Sustainable and Integral Development ([CIDIS](#)) of the Cayetano Heredia University (Lima, Peru).  
  
Research projects:
  - "An economic, productive and socioeconomic characterization of the scallop (*Argopecten purpuratus*) aquaculture in the Sechura Bay, Piura, Peru"
  - "Social, economic and labor characterization of artisanal compressed-air divers working at scallop (*Argopecten purpuratus*) aquaculture sites in the Sechura Bay, Piura, Peru"  
Responsibilities: To design and implement surveys and interviews to artisanal fishers and divers in the Sechura Bay of Peru. Analyze results and elaborate reports with the main findings.
- 2016      Principal Investigator  
Research project title: "Women at fieldwork: Challenges, contributions and opportunities Peruvian female scientists face when conducting research on the field".

	<p>Responsibilities: Design, implementation and analysis of the study in three different regions of Peru.</p> <p>Funding provided by: The National Council of Science and Technology <a href="#">CONCYTEC</a>, Peru</p>
2016	<p>Consultant</p> <p>Research project title: Financial Feasibility Study to Reduce the Peruvian Tourism Sector's Carbon Footprint</p> <p>Responsibilities: (i) Design a survey to assess the willingness to pay of Peruvian bus users for a potential carbon offset. (ii) Analyze results and elaborate a report summarizing the main findings.</p> <p>Clients: <a href="#">Conservamos por Naturaleza</a>, <a href="#">Sociedad Peruana de Derecho Ambiental</a> (SPDA) and Fondo de las Americas (FONDAM)</p>
2015	<p>Consultant</p> <p>Project: Training program for future conservation leaders</p> <p>Responsibility: Design and implement an intensive short-course for future conservation leaders of Peru.</p> <p>Client:, <a href="#">Sociedad Peruana de Derecho Ambiental</a> (SPDA)</p>
2014	<p>Interim Project Manager for the '<a href="#">Conservamos por Naturaleza</a>' initiative of the <a href="#">Sociedad Peruana de Derecho Ambiental</a> (SPDA)</p> <p>Responsibilities: scientific consultant, financial management and event coordinator.</p>
2014	<p>Facilitator</p> <p>Workshop: "Updating the Master Plan of the Reserva Paisajistica Nor-Yauyos Cochas (Natural Reserve) based on the Open Standards for Conservation Framework"</p> <p>Client: Patronato de la Reserva Nor-Yauyos Cochas</p>
2013 – 2014	<p>Associated Researcher at the <a href="#">Centre for Environmental Sustainability of the Cayetano Heredia University</a></p> <p>Project title: "Characterizing seafood commerce in Lima, Peru"</p> <p>Responsibilities: Literature review on, and data analysis of, seafood commerce in Lima, Peru.</p> <p>Project title: "Elaboration of guidelines and indicators for an Amazon Wellbeing Observatory"</p> <p>Responsibilities: Literature review and elaboration of a suite of proposals for well-being indicators for the Amazon communities of Peru.</p>
2013	<p>Technical Assistant</p> <p>Workshop: "InVEST, experiences in the decision-making: a case study approach from the Amazon"</p> <p>Responsibilities: Elaboration of key materials for the final report and workshop</p> <p>Client: <a href="#">WWF Peru</a></p>
2012 – 2013	<p>Technical Assistant at the <a href="#">Centre for Environmental Sustainability of the Cayetano Heredia University</a></p> <p>Responsibilities: (i) Assist in the design and management of postgraduate courses and communication campaigns, (ii) Research assistant for the Humboldt Current and Amazon Rainforest initiatives of the CSA-UPCH, (iii) social media community manager.</p>
2011 – 2012	<p>Volunteer at the <a href="#">Centre for Environmental Sustainability of the Cayetano Heredia University</a></p> <p>Responsibilities: (i) Elaboration of articles for <a href="#">Sustainable Gastronomy Initiative</a>. (ii) General assistance on the campaign "<a href="#">La Semana de la</a></p>

[Anchoveta](#)". (iii) Assistance in designing a training event for chefs on sustainable seafood.

## AWARDS / GRANTS

- 2017 National Council of Science and Technology (CONCYTEC), Peru.  
"Becas para Doctorados en el Extranjero"  
Full four-year scholarship for undertaking the PhD Program at the Institute for Resources, Environment and Sustainability (IRES) from The University of British Columbia (UBC).
- 2016 National Council of Science and Technology (CONCYTEC), Peru.  
"Mujeres en la Ciencia"  
Research fund for conducting a national evaluation of the challenges female scientists face when doing fieldwork in Peru.
- 2015 St Catharine's College, University of Cambridge  
Graduate Travel & Research Fund for conducting fieldwork for my MPhil's thesis research project in Nicaragua.
- 2014 Robert Sansom Scholarship  
Complete scholarship for undertaking the MPhil in Conservation Leadership, at the University of Cambridge (England).
- 2013 Student Conference on Conservation Science (SCCS), of the University of Cambridge (England).  
Complete scholarship for attending the conference.
- 2012 The Rufford Small Grants Foundation for Nature Conservation  
Research fund for conducting the project: A critical insight into Peruvian seafood cuisine preferences: what restaurants choose is relevant!

## CONFERENCES / CONGRESS

- 2017 **International Conference on Conservation Biology – ICCB 2017, Cartagena**  
Organized by the Society of Conservation Biology - SCB  
*Poster:* Challenges Peruvian female scientist face in while doing research on the field.
- 2015 **International Conference on Conservation Biology – ICCB 2015, Montpellier**  
Organized by the Society of Conservation Biology - SCB  
*Poster:* Are chefs up to the task? Bringing sustainable seafood to the table.
- Student Conference on Conservation Science – SCCS**  
University of Cambridge  
*Student Talk:* Unraveling Lima's Seafood Supply Chain
- 2013 **Student Conference on Conservation Science - SCCS**  
University of Cambridge  
*Student Talk:* A critical insight into Peruvian seafood cuisine preferences: what restaurants choose is relevant!  
Award: 3<sup>rd</sup> best Student Talk.

## PUBLICATIONS

- 2017 Espinosa, N., and Lopez de la Lama, R. Retos y contribuciones de las investigadoras en el trabajo de campo. Economía y Sociedad / 91. Available at: [http://www.cies.org.pe/sites/default/files/files/articulos/economiaysociedad/retos\\_y\\_contribuciones\\_de\\_las\\_investigaciones\\_en\\_el\\_trabajo\\_de\\_campo\\_-\\_n.\\_espinosa\\_r.\\_lopez\\_-\\_upch.pdf](http://www.cies.org.pe/sites/default/files/files/articulos/economiaysociedad/retos_y_contribuciones_de_las_investigaciones_en_el_trabajo_de_campo_-_n._espinosa_r._lopez_-_upch.pdf)
- 2017 Lopez de la Lama, R., De la Puente, S., and Valdes-Velasquez, A. (*in press*) Should sustainable seafood campaigns focus on chefs? Using KAP as a framework for understanding how to bring sustainability back to the table. Oryx (accepted 01.02.18).
- 2015 "What makes a future conservationist? Exploring the potential for nurturing young professionals' conservationists in Nicaragua". Master Thesis, University of Cambridge (England).
- 2014 "Characterizing seafood commerce in Lima, Peru"  
Juan Carlos Sueiro and Rocio Lopez de la Lama  
Report elaborated for Centre for Environmental Sustainability, Cayetano Heredia University.
- 2014 "Towards Sustainable Gastronomy: Top chefs' knowledge, attitudes and practices related to seafood consumption in Lima, Peru."  
Undergraduate Thesis, Cayetano Heredia University (Peru).
- 2013 Booklet: "Cocineros, cómo vamos"  
Product of the project: A critical insight into Peruvian seafood cuisine preferences: what restaurants choose is relevant!  
Available at: [http://www.rufford.org/rsg/projects/rocio\\_lopez\\_de\\_la\\_lama](http://www.rufford.org/rsg/projects/rocio_lopez_de_la_lama)  
Funded by Rufford Small Grants
- 2013 Booklet: 'A Guide for Healthy and Nutritional food'  
Product of the project: Improvement of the nutritional quality of the Supe Puerto Population, through the valuation and repositioning of local available foods, new and ancestral. Lima Region, Peru  
Founded by the AJINOMOTO Foundation  
Centre for Environment Sustainability, Cayetano Heredia University
- 2012 Centre for Environmental Sustainability from Cayetano Heredia University (2012). State of the Millennium Development Goals for the Peruvian Amazon. Report elaborated for Articulación Regional Amazónica (ARA) and AVINA.

## LANGUAGE SKILLS

**Spanish**

**Mother Tongue**

**English**

**Advanced Level**

IELTS Test Score: 8 points out of 9 points (2013)  
Writing: 6.5 points / Listening: 9 points / Speaking: 8 points / Reading: 8.5 points

## IT SKILLS

**Microsoft Office:** Power Point, Excel, Word.

**Atlas.ti**, software used for qualitative analysis

**MIRADI**, software design for the Open Standards for Conservation

**SPSS and STATA**, software used for quantitative analysis

# SANTIAGO DE LA PUENTE JERI

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## General Information

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Email: [s.delapuate@oceans.ubc.ca](mailto:s.delapuate@oceans.ubc.ca)

Telephone number: (+1) 604 500 9542 (Canada)

Address: 311-2730 Acadia Road, Vancouver, BC, V6T1R9. Canada.

Date of Birth: November 30<sup>th</sup>, 1984 (Lima, Peru)

National Document of Identity Number: DNI 42723742

Passport Number: 7134561 (Republic of Peru)

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## Professional profile

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Peruvian researcher and conservation practitioner, with 10 years of experience working in coastal and marine ecosystems off Peru. Research interests include: (i) ecosystem-based fisheries management, (ii) ecological economics, (iii) seafood value chains, (iv) marine conservation science, (v) sustainable development, among others.

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## Professional experience

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### 2016 | Fisheries consultant | OCEANA-Peru

Development of a report on Peruvian shark fisheries, highlighting the data requirements to improve fisheries management of local and transient shark stocks off Peru

### 2015-2010 | Research Associate | Centre for Environmental Sustainability of the Cayetano Heredia University (Peru)

Development of multiple studies regarding the human dimensions of the Peruvian fisheries sector.

Implementation of communication campaigns aimed at: (i) raising awareness of the conservation issues faced by the marine ecosystems off Peru, and (ii) promoting sustainable gastronomy.

### 2015-2014 | Research Associate | Inteligencia Financiera SAC

Development of a Strategic Action Plan to Secure the Financial Sustainability of the Marine Protected Area Network of the Guano Islands, Isles and Peninsulas off Peru.

Development of a socio-economic analysis of the Peruvian mahi-mahi fishery, focusing on the value chain it generates and its implications for product traceability.

Development of legal proposals based on the assessment of the Jumbo Squid regulations, fishery policies and the current fishers' behaviour to identify the main socio-economic drivers that generate informal and unsustainable fishing practices.

### 2015 | Consultant | GEF-UNDP Project: Towards the ecosystem based management of the Humboldt Current Large Marine Ecosystem

Development of an estimation of the Total Economic Value (TEV) of the ecosystem's services provided by the Humboldt Current Large Marine Ecosystem.

### 2014 | Fisheries consultant | Peruvian Ministry of Production

Development of reports and active participation in public and public-private round tables and workshops regarding: (i) The potential benefits of promoting eco-labelling in Peru and obtaining the Marine Stewardship Council's (MSC) certification for the main Peruvian fisheries (e.g., anchoveta, jumbo squid, and mahi-mahi); and (ii) the need to update and the way to improve the Peruvian Jumbo Squid fisheries' regulations and management plans.

### 2013 | Fisheries consultant | Peruvian Ministry of Environment

Development of reports assessing the conservation status, the fishery management schemes, the product traceability programs and the main problems faced by the hammerhead shark populations off Peru.

### 2013 | Consultant | GEF-UNDP Project: Towards the ecosystem based management of the Humboldt Current Large Marine Ecosystem

Development of two thematic reports regarding (i) the socio-economic dimensions of the Humboldt Current in Peru, and (ii) the governance and regulatory frameworks for the coastal and marine ecosystems off and the human activities developed within them.

### 2013 | External consultant for the Food and Agriculture Organization (FAO) of the United Nations

Development of a report regarding the main problems faced by the Peruvian artisanal fisheries in marine, Andean and Amazonian ecosystems.

Development of a Strategic Action Plan for FAO and the Ministry of Production aimed at: (i) fostering the implementation of ecosystem-based fishery management in Peru, and (ii) promoting the sustainable development of artisanal fisheries.

### 2012 | Fisheries Advisor to the Vice-Minister of Fisheries | Peruvian Ministry of Production

Analysis of current fishery policy and regulation, as well development and assessment of fishery management plans.

Crisis management in fishery-related conflicts.

Provision of science-based advice for fisheries policy design, modification and implementation to the Vice-Minister of Fisheries.

### 2009-2006 | Research Assistant | Centre for Environmental Sustainability of the Cayetano Heredia University (Peru)

Support ongoing research projects regarding Peruvian fisheries and Marine Protected Areas.

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## Publications

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De la Puente, S. 2017. Characterizing the knowledge and attitudes towards sharks and the domestic use of shark meat and fins in Peru. Thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Resource Management and Environmental Studies. University of British Columbia. Vancouver, 116p.

López de la Lama, De la Puente, S. & Valdés-Velásquez, A. (*in press*). Bringing sustainability back to the table: Exploring chef's knowledge, attitudes and practices about seafood in Peru. *Oryx* (Article submitted on the 17/04/2017).

Majluf, P., De la Puente, S. & Christensen, V. 2017. The little fish that can feed the world. *Fish and Fisheries (Early view)*: 1-6.

De la Puente, S. 2016. Peruvian shark fisheries: Data requirements to improve fisheries management of local and transient shark stocks off Peru. Report developed for OCEANA-Peru. Lima, Perú. 80p.

Bussalleu, A., Flores, D., De la Puente, S. & Paredes, C. 2015. Desarrollo de una estrategia financiera para sostener la implementación del Plan Maestro y el diseño de Planes de Manejo para usos específicos de los 33 sitios que componen a la Reserva Nacional Sistema de Islas, Islotes y Puntas Guaneras (RNSIIPG). Consultoría elaborada para el Proyecto GEF-PNUD. Hacia un manejo con enfoque ecosistémico del Gran Ecosistema Marino de la Corriente de Humboldt. Lima, Perú. 123p.

Salgado, H., De la Puente, S., González, C. & Sueiro, J.C. 2015. Estimación del Valor Económico Total (VET) de los Bienes y Servicios

Ecosistémicos del Gran Ecosistema Marino de la Corriente de Humboldt (GEMCH). Consultoría elaborada para el Proyecto GEF-PNUD. Hacia un manejo con enfoque ecosistémico del Gran Ecosistema Marino de la Corriente de Humboldt. Talca, Chile / Lima, Perú. 102p.

De la Puente, S., Flores D., Grillo J. & Paredes C. 2015. Caracterización y análisis de la cadena productiva de perico (*Coryphaena hippurus*) desembarcado en las principales regiones de la costa peruana. Consultoría elaborada para WWF-Perú por Inteligencia Financiera SAC. Lima, 120p.

De la Puente, S. 2014. El Decreto Legislativo No. 1084 y su impacto en el comportamiento de la flota industrial de cerco que captura anchoveta en la zona norte-centro del mar peruano. Tesis para optar por el título de Licenciado en Biología. Lima, Perú. 177p.

Majluf, P., Sueiro, J.C. & De la Puente, S. 2014. The marine fisheries of Peru: A feasibility study for OCEANA. Lima, Perú. 90p.

Paredes, C. & De la Puente, S. 2014. Beneficios potenciales de la certificación MSC para la pesquería de anchoveta en el Perú. Consultoría realizada para WWF-Perú. Lima, Perú. 42p.

Paredes, C. & De la Puente, S. 2014. Situación actual de la pesquería de Pota (*Dosidicus gigas*) en el Perú y recomendaciones para su mejoría. Investigación en desarrollo para el Consorcio de Investigación Económica y Social (CIES). Lima, Perú. 111p.

Trathan, P.N., García-Borboroglu, P., Boersma, P.D., Bost, C.A., Crawford, R.J.M., Crossin, G.T., Cuthbert, R.J., Dann, P., Davis, L.S., De la Puente, S., Ellenberg, U., Lynch, H.J., Mattern, T., Pütz, K., Seddon, P.J., Trivelpice, W. & Wienecke, B. (2014). Pollution, habitat loss, fishing and climate change as critical threats to penguins. *Conservation Biology*. doi: 10.1111/cobi.12349.

Majluf, P., Sueiro, J.C. & De la Puente, S. 2014. The marine fisheries of Peru: A scoping study for OCEANA. Lima, Perú. 66p.

Christensen, V., De la Puente, S., Sueiro, J.C. Steenbeek, J. & Majluf, P. 2014. Valuing the Peruvian fisheries sector. *Marine Policy*, 44: 302-311.

De la Puente, S. 2013. Diagnóstico Situacional del género *Sphyrna* en el Perú, con especial énfasis en el "Tiburón Martillo" *Sphyrna zygaena* (Linnaeus, 1758). Consultoría realizada para la Dirección General de Diversidad Biológica, Ministerio del Ambiente. Lima, Perú, 90p.

Sueiro, J.C. & De la Puente, S. 2013. La pesca artesanal en el Perú: Diagnóstico de la actividad pesquera artesanal peruana. Consultoría realizada para Organización de las Naciones Unidas para la Alimentación y la Agricultura (FAO) en el marco del proyecto TCP/PER/3041: Apoyo para la elaboración de la Estrategia Nacional para el Fortalecimiento de la Pesca Artesanal Sostenible. Lima, Perú. 132p.

De la Puente, S. & Sueiro, J.C. 2013. Reporte Temático: Módulo V. – Gobernanza. Consultoría realizada en el marco del proceso de ADT-PAE del proyecto GEF-PNUD: *Hacia un Manejo con Enfoque Ecosistémico del Gran Ecosistema Marino de la Corriente de Humboldt*. Lima, Perú. 141p.

De la Puente, S., Sueiro, J.C., Huaytalla, P., Paredes, C.E., & Cansino, K. 2013. Reporte Temático: Módulo IV. – Aspectos Socioeconómicos. Consultoría realizada en el marco del proceso de ADT-PAE del proyecto GEF-PNUD: *Hacia un Manejo con Enfoque Ecosistémico del Gran Ecosistema Marino de la Corriente de Humboldt*. Lima, Perú. 107p.

Sueiro, J.C. & De la Puente, S. 2013. Evaluación del sector pesquero peruano: Una actualización de los temas claves relacionados con las principales pesquerías a nivel nacional. Consultoría elaborada para el Banco Mundial. Lima, Perú, 41p.

De la Puente, S., Bussalleu, A., Cardeña, M., Valdés-Velásquez, A., Majluf, P., & Simeone, A. 2013. Humboldt Penguins. pp 265-284. In García Borboroglu, P.G & Boersma, P.D. (Eds.) *Penguins: Natural History and Conservation*. University of Washington Press, Seattle & London, 360p.

De la Puente, O., Sueiro, J. C., Heck, C., Soldi, G., De la Puente, S. 2011. La pesquería peruana de anchoveta: Evaluación de los

sistemas de manejo de la pesquería peruana de anchoveta en el marco de la certificación de sostenibilidad a cargo del MSC. Documentos de Trabajo del CSA No. 1, Centro para la Sostenibilidad Ambiental de la Universidad Peruana Cayetano Heredia (CSA-UPCH). ISBN: 978-9972-9024-9-9. Lima, Perú, 159p.

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## Education

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2017- (On- going) | PhD Student | Resources, Environment and Sustainability | University of British Columbia

2015-2017 | MSc | Resource Management and Environmental Studies | University of British Columbia

2014 | Licensed Biologist | Universidad Peruana Cayetano Heredia

2003-2007 | BSc Biology | Universidad Peruana Cayetano Heredia

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## Professional references

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Cárdenas, Susana (scardenas@csa-upch.org): Director of the Centre for Environmental Sustainability of the Cayetano Heredia University in Peru (CSA-UPCH).

Christensen, Villy (v.christensen@oceans.ubc.ca): Director of the Global Oceans Modelling laboratory at the Institute for the Oceans and Fisheries, and Professor at the University of British Columbia (UBC).

Majluf, Patricia (pmajluf@ocean.org): Vice-president of OCEANA and Director of the Peruvian Branch.

Mendo, Jaime (jmendo@lamolina.edu.pe): Senior Professor at the Faculty of Fisheries of the Universidad Nacional Agraria La Molina (UNALM).

Paredes, Carlos (cparedes@intelfin.com.pe): President the consulting firm Inteligencia Financiera SAC.

Valdés, Armando (armando@fosonline.org): Program Officer for Foundations of Success (FOS) in Peru and professor at the Cayetano Heredia University in Peru.



## Andrés Miguel Cisneros-Montemayor, PhD

### SUMMARY

Andrés Cisneros-Montemayor (PhD) is a resource economist specializing in marine ecosystems, and is currently Program Manager for the Nippon Foundation Nereus Program. Linking field and theoretical work, he studies the economics of ecotourism, fishing sectors, alternative management strategies, and ecosystem and social-ecological approaches to policy in multi-stakeholder contexts. All of these studies highlight applications of novel theoretical qualitative and quantitative models to real-world challenges, both in developing and developed regions. [PhD, Resource Management and Environmental Studies, The University of British Columbia.]



### SELECTED PEER-REVIEWED PUBLICATIONS

- Kittinger JN, Teh LCL, Allison EH, Bennett NJ, Crowder LB, Finkbeiner EM, Hicks C, Scarton CG, Nakamura K, Ota Y, Young J, Alifano A, Apel A, Arbib A, Bishop L, Boyle M, Cisneros-Montemayor AM et al. (2017). Committing to socially responsible seafood. *Science* 356 (6341): 912-913.
- Cisneros-Montemayor AM, Pauly D, Weatherdon LW, Ota Y (2016) A global estimate of seafood consumption by coastal Indigenous peoples. *PLoS One* 11 (1): e0166681
- Cisneros-Montemayor AM, Vincent ACJ (2016) Science, society, and flagship species: social and political history as keys to conservation outcomes in the Gulf of California. *Ecology and Society* 21 (2): 9
- Cisneros-Montemayor AM, Sanjurjo E, Munro GR, Hernández-Trejo V, Sumaila UR (2016) Strategies and rationale for fishery subsidy reform *Marine Policy* 69: 229-236
- De la Cruz-González FJ, Patiño-Valencia JL, Luna-Raya MC, Cisneros-Montemayor AM (2018) Self-empowerment and successful co-management in an artisanal fishing community: Santa Cruz de Miramar, Mexico. *Ocean and Coastal Management* 154: 96-102
- Cisneros-Montemayor AM, Singh GG, Cheung WWL (2017) A fuzzy logic expert system for evaluating policy progress towards sustainability goals. *Ambio*. <https://doi.org/10.1007/s13280-017-0998-3>
- Miller D, Ota Y, Sumaila UR, Cisneros-Montemayor AM, Cheung WWL (2018) Adaptation strategies to climate change in marine systems, *Global Change Biology* 24 (1): e1-e14
- Cisneros-Montemayor AM, Barnes-Mauthe M, Al-Abdulrazzak D, Navarro-Holm E, Sumaila UR (2013) Global economic value of shark ecotourism: implications for conservation. *Oryx* 47 (3): 381-388
- Cisneros-Montemayor AM, Sumaila UR (2010) A global estimate of benefits from ecosystem-based marine recreation: potential impacts and implications for management. *Journal of Bioeconomics* 12: 245-268