

## EDUCATION

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

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

Thesis: Environmental markets in marine conservation

Advisors: Steven Gaines & Christopher Costello

### Master of Environmental Science and Management

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

Thesis: A general approach and tool to evaluate the effectiveness of no-take marine reserves

Advisor: Christopher Costello

### Bachelor of Science in Oceanography, Honors. 2015

*Facultad de Ciencias Marinas – Universidad Autónoma de Baja California*

Thesis: Latitudinal differences in size-structure of fish populations along the Pacific coast of Baja California

Advisor: Arturo Ramírez-Valdez

## FUNDING

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### Scholarships and Fellowships

2017 CONACyT International Student's Doctoral Fellowship (2017 – 2021) (\$146,619 USD)

UC Mexus-CONACyT Doctoral Fellowship (2017 – 2022)

Latin American Fisheries Fellowship Doctoral Fellowship (2017 – 2019) (\$14,352 USD)

2015 CONACyT International Student's Masters Fellowship. (\$64,946 USD)

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

### Grants and Awards

2020 H. William Kuni Bren Research Award: *Economic and Ecological responses to global economic shutdowns in coral reef communities* (\$14,950 USD)

2019 Mohamed bin Zayed Species Conservation Fund: *Unveiling the Ecology of Giant Sea Bass (Stereolepis gigas): Generating knowledge to inform management of a critically endangered fish species*. With Arturo Ramírez-Valdez and Kyla Blincow (\$11,500 USD)

2018 H. William Kuni Bren Research Award: *The proliferation of Fish Aggregating Devices (FADs) in the Caribbean Sea*. With Molly Wilson, Julia Lawson, and Ignacia Rivera (\$15,000 USD)

2017 PADI Foundation Research Grant. Natural history of the giant sea bass (*Stereolepis gigas*) in Mexican waters. With A. Ramírez-Valdez and P. Sgarlatta. (\$6,600 USD)

## PEER-REVIEWED PUBLICATIONS

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- In prep Millage K., **Villaseñor-Derbez J.C.**, Bradley D., Burgess M., Lenihan H., Costello C. (*in review*). Self-Financed Marine Protected Areas.
- Halpern B., Tuholske C., Blasco G., **Villaseñor-Derbez J.C.**, Frazier M., Caylor K.K. (*in review*). Mapping global inputs and impacts from human sewage in coastal ecosystem.
- Re&R Ramirez-Valdez, A; Rowell, T J; Dale, K ; Craig, M; Allen, L; **Villaseñor-Derbez, J.C.**; Cisneros-Montemayor, A; Hernández-Velasco, A; Torre, J; Hofmeister, J; Erisman, B. (Re&R) Asymmetry across international borders: research, fishery and management trends, and economic value of the giant sea bass (*Stereolepis gigas*). *Fish & Fisheries*
- 2020 Wilson, M. W., Lawson, J. M., Rivera-Hechem, M. I., **Villaseñor-Derbez, J. C.**, & Gaines, S. D. (2020). Status and trends of moored fish aggregating device (MFAD) fisheries in the Caribbean and Bermuda. *Marine Policy*, 121, 104148.
- Lynham J., Nikolaev A., Rainor, J., Vilela T., **Villaseñor-Derbez J.C.** (2020). Economic Impact of Two of the Largest Protected Areas on Earth. *Nature Communications*. <https://doi.org/10.1038/s41467-020-14588-3>
- Villaseñor-Derbez J.C.**, Lynham J., Costello C. (2020). Environmental Market Design for Large-Scale Marine Conservation. *Nature Sustainability*. <https://doi.org/10.1038/s41893-019-0459-z>
- 2019 **Villaseñor-Derbez, J.C.**, Aceves-Bueno E., Fulton, S., Suarez-Castillo, A., Hernández-Velasco, A., Torre, J., Micheli, F. (2019). An interdisciplinary evaluation of community-based TURF-reserves. *PLoS ONE*. <https://doi.org/10.1371/journal.pone.0221660>
- O'Hara, C. **Villaseñor-Derbez, J.C.** Ralph, G., Halpern, B. (2019). Mapping status and conservation of global at-risk marine biodiversity. *Conservation Letters*. <https://doi.org/10.1111/conl.12651>
- Villaseñor-Derbez, J.C.** Fitzgerald S. (2019). Spatial variation in allometric growth of invasive lionfish has management implications. *PeerJ*. <https://doi.org/10.7717/peerj.6667>
- 2018 Peake, J., Bogdanoff, A.K., Layman, C.A., Castillo, B., Chapman, J., Dahl, K., Patterson, W., Eddy, C., Ellis, R., Faletti, M., Higgs, N., Johnston, M., Muñoz, R., Sandel, V., **Villaseñor-Derbez, J.C.**, Morris Jr., J.A. (2018). Feeding ecology of invasive lionfish (*Pterois volitans* and *Pterois miles*) in the temperate and tropical western Atlantic. *Biological Invasions*. <https://doi.org/10.1007/s10530-018-1720-5>
- Villaseñor-Derbez, J.C.** Faro, C., Wright, M., Martínez, J., Fitzgerald, S., Fulton, S., Mancha-Cisneros, M.M., McDonald, G., Micheli, F., Suárez, A., Torre, J., Costello, C. (2018). A user-friendly tool to evaluate the effectiveness of no-take marine reserves. *PLoS ONE*. <https://doi.org/10.1371/journal.pone.0191821>
- 2016 Hernández-Velasco, A.J., Fernández-Rivera Melo, F.J., Melo-Merino, S.M., **Villaseñor-Derbez, J.C.** (2016). Occurrence of *Holacanthus clarionensis* (Pomacanthidae), *Stegastes leucurus*, and *S. acapulcoensis* (Pomacentridae) at Isla Magdalena B.C.S., Mexico. *Marine Biodiversity Records*. <http://dx.doi.org/10.1186/s41200-016-0062-1>
- 2015 Ramírez-Valdez, A., Dominguez-Guerrero, I., Palacios-Salgado, D.S., Cota-Nieto J.J., Hinojosa-Arango G., Correa-Sandoval, F., Reyes-Bonilla, H., **Villaseñor-Derbez, J.C.**, Hernandez, A., Aburto-Oropeza, O. (2015). The nearshore fishes of the Cedros archipelago and their biogeographic affinities, northeastern Pacific. *CalCOFI Reports*

Dreyfus M., Mejía-Trejo A., **Villaseñor-Derbez J.C.** (2015). Analysis of null sets (no catch) made by the Mexican tuna seine fleet (2000-2013). *Ciencias Marinas*. <http://dx.doi.org/10.7773/cm.v41i2.2471>

- 2014 **Villaseñor-Derbez J.C.** & Herrera-Pérez R. (2014). Brief description of prey selectivity and ontogenetic changes in the diet of the invasive lionfish *Pterois volitans* (Actinopterygii, Scorpaenidae) in the Mexican Caribbean. *Pan-American Journal of Aquatic Sciences*, 8(2):131-135

## DATA SCIENCE SKILLS

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**R and RStudio:** Numerical simulation, Spatial analyses (vector, raster), Machine learning (tidymodels), BigData (sparklyr, data.table), Package development, ShinyApp framework, R Markdown, Unit Testing, Continuous Development and Integration

**Git & GitHub:** <https://github.com/jcvdav/>

**Google Cloud:** BigQuery (Standard SQL), ComputeEngine, Google Suite Utilities

### Software development:

- startR – and R-package for internal workflow management: [emlab-ucsb.github.io/startR/](http://emlab-ucsb.github.io/startR/)
- CostApp – A web-based app to estimate costs of marine-reserve implementation: [innovacionazul.shinyapps.io/AppCosteo/](http://innovacionazul.shinyapps.io/AppCosteo/)
- The Marine Reserve Evaluation App (MAREA) – A web-based app to evaluate conservation interventions: [innovacionazul.shinyapps.io/MAREA](http://innovacionazul.shinyapps.io/MAREA)

### DataScience leadership:

- EcoDataScience: Organize workshops and maintain website; Group of 250+ members: [eco-data-science.github.io/](http://eco-data-science.github.io/)
- ERRE – A blog about “Rstats”, in Spanish: <https://www.erre-esp.org/>

## APPOINTMENTS

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Graduate Student Researcher. Environmental Markets Solutions Lab. UCSB.

Graduate Student Researcher. National Center for Ecological Analysis and Synthesis. UCSB.

Independent Consultan (01/2021)

- Bioeconomic estimation and simulation of costs and benefits of select community-based marine reserves
- Review of 20 year of community-based marine conservation in Mexico
- Evaluation of fisheries subsidies in small-scale fisheries

Independent Consultan (03/2018 – 06/2018)

- Web-app development to calculate operational costs of implementing community-based marine reserves.

Independent Consultan (11/2018 – 05/2019)

- Prepared materials and taught three courses on marine reserve evaluation methods to environmental managers and NGO members.

Independent Consultant (06/2017 – 03/2018)

- Performed a national evaluation of marine reserves in Mexico with case studies from the Gulf of California, Pacific and Caribbean.

Field Assistant & Data Manager – Comunidad y Biodiversidad (COBI), La Paz, Mexico (03/15 - 07/15)

- Deployment of oceanographic sensors to monitor dissolved oxygen, temperature, and salinity
- Data analysis of oceanographic sensor data
- Coordinated fieldwork to evaluate voluntarily established marine reserves along Baja California
- Maintained a database with fish, invertebrate, and algae abundances derived from the underwater ecological surveys performed in the marine reserves
- Enabled communication among fishing community leaders, NGOs, and universities
- Wrote a protocol on how to operate oceanographic instruments used by fishers and staff
- Produced 3 brochures, 1 interactive visualization and a peer-reviewed article on occurrences of tropical fish in temperate regions

Data analyst – Mexican Tuna Purse Seine Fleet Research Trust (02/2015 – 06/2015)

- Managed a database with information on tuna biometrics and landings from the Mexican tuna fleet between 1992 and 2014.
- Maintained accurate records for reference by decision makers using the data to regulate fishing quotas and inform policy and management decisions.

Research Intern – Kelp Forest Ecology Research Group, Ensenada, Mexico (12/2011 – 12/2014)

- Performed SCUBA dives for *in situ* fish community sampling and video-transects for in-lab processing
- Conducted algae sampling to determine habitat complexity and heterogeneity
- Supervised dive safety
- Created a MATLAB-based software to capture information from the ecological surveys
- Maintained a database with the group's ecological data of fish species, used in different analyses
- Communicated the group's results to audiences of 20-50 people at local, national, and international scientific conferences

Research Intern - Fundación para el Estudio y Conservación de Condrictios, SQUALUS (06/13 - 08/13)

- Performed studies on sexual maturity, reproduction, and trophic ecology of six elasmobranch species

On-board scientific observer – CICESE (9/13)

- Scientific observer on recreational vessels for white shark observation.
- Taking information on efforts of the activity, social perspective, and behavior

Intern - Facultad de Ciencias Marinas, Universidad Autónoma de Baja California (08/11 – 07/12)

- Field work on collecting water samples for Trace metals, Chlorophylls, Dissolved Organic Carbon, Salinity and Dissolved Oxygen
- Lab work analyzing water samples with spectrophotometers, oxygen titration (Winkler's Method) and preparing equipment for future sampling campaigns

Oceanographic Cruise Intern - CICESE (3/12)

- In charge of performing CTD/LADCP casts and keeping track of navigation logbook.
- Spent 28 days at sea

## TEACHING AND MENTORING

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### Teaching Assistant

2020 ESM 206 – Introduction to Environmental Data Science & Statistics (100+ students)

ESM 201 – Ecology of Managed Ecosystems with Professor David Tilman (86 students)

2019 ESM 201 – Ecology of Managed Ecosystems with Professor David Tilman (82 students)

### **Guest Lectures**

- 2020 EEMB 168 – Conservation Ecology – Marine Conservation in Practice (100+ students)  
ESM 206 – Data Analysis and Statistics – “Package-less” coding: Coding in base R (100+ students)
- 2018 ESM 244 – Adv. Data Analysis and Statistics – The development cycle of web-based apps (~70 students)

### **Data Science Workshop Instruction** ([link](#))

- 2021 GNU make and Makefiles for continuous development (and reproducibility) – EcoDataScience Workshop
- 2019 GitHub for Collaboration – EcoDataScience Workshop  
Advanced RMarkdown – LAFF workshop
- 2017 Introduction to R Markdown – EcoDataScience Workshop

### **Technical Workshop Instruction**

- 2019 Evaluation and budgeting of Marine Reserves in Mexico
- 2018 Evaluation of Marine Reserves in Mexico
- 2017 A general approach and tool to evaluate the effectiveness of no-take marine reserves (June, 2017)  
Evaluation of Marine Reserves in Mexico
- 2015 REEFCheck California monitoring techniques (July 2015)

### **Masters Group Theses Advised**

- 2020 Project: Marine Extractive Reserve performance in Brazil  
Students: Peyton Moore, Ruben Sanchez-Ramirez, Dylan Glave, Elliott Matthews
- 2019 Project: Assessing Brazil’s Marine Aquaculture Potential  
Students: Caio Della Colleta Vianna, Eva Marrero, Kirby Bartlett, Anna Calle, Sandra Fogg
- 2018 Project: Economic quantification of delaying management in the Midriff Islands, Mexico  
Students: Edaysi Bucio, Seleni Cruz, Vienna Saccomanno, Juliette Verstaen, Valeria Tamayo
- Project: Insurance instruments to leverage natural infrastructure for climate change resilience  
Students: Mario Colon, Daniel Elkin, Lauren Kaapcke, Madison Meltzer, Casey Moorhead

### **UCSB Summer Research Mentorship Program for High School students**

- 2018 Project: Small-scale variation in the diet of invasive lionfish  
Student: Alex Reulbach - Currently Marine Bio student at UNC Chapel Hill, John F Bruno Lab
- Project: Ontogenetic habitat shifts in invasive lionfish  
Student: Alisha Naidu
- Project: Optimal marine reserve design to maximize economic and conservation benefits  
Student: Joseph Sausville

## SCIENCE COMMUNICATION

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- 2020 **Villaseñor-Derbez, J.C.** El Pez León invasor en el Caribe Mexicano. (2020). *Biodiversitas* 149: 2- 6
- 2018 Hernández-Velasco A., Beas-Luna, R., **Villaseñor-Derbez, J.C.**, Domínguez-Guerrero I., Precoma de la Mora, M., Gómez, A. (2018). Los Bosques Sumergidos de México. *Biodiversitas* 137: 2 - 6
- 2017 Ramírez-Valdez A., Sgarlatta M.P., **Villaseñor-Derbez J.C.**, Rowell T.J., Erisman B., Hernández A. (2017). Buscando al gigante de los bosques de kelp en las aguas de Baja California: el mero gigante. *Mediterranews*. [DOI 10.13140/RG.2.2.17855.82082](https://doi.org/10.13140/RG.2.2.17855.82082)
- 2016 Dreyfus, M., Robles, H., **Villaseñor-Derbez, J.C.** (2016). Distribución espacial de tallas del atún aleta amarilla (*Thunnus albacares*) capturado por la flota atunera mexicana durante el 2001 y 2014. *El Vigía*, 20(43), 5:8.
- 2015 **Villaseñor-Derbez J.C.**, Hernández-Velasco, A., Erauskin, M., Fulton, S., Cota-Nieto, J.J., Torre-Cosío, J., Herzka-Llona, S., Aburto-Oropeza, A. (2015). Effects of short-term marine reserves on grouper and bass populations. *DataMares. Interactive Resource*. <http://dx.doi.org/10.13022/M33K52>
- Hernández-Velasco, A., **Villaseñor-Derbez, J.C.**, Suárez Castillo, A., Torre Cosío, A., Espinoza, A. (2015). Isla Natividad en la Reserva del Vizcaíno. *Espacio Profundo*, 136: 34-40.
- Robles H., Dreyfus M., **Villaseñor-Derbez J.C.** (2015). Descargas de la flota atunera mexicana en el Pacífico Oriental en 2014 y su comparación con el período 1992-2013. *El Vigía*, 19(42), 3:5.
- 2014 Ramírez Valdez A., Montaña Moctezuma G., Torres Moye G., **Villaseñor Derbez J.C.**, Aburto-Oropeza O. (2014). Counting fish in the Kelp forests of Baja California. *DataMares. Interactive Resource*. <http://dx.doi.org/10.13022/M3BC7X>

## INVITED TALKS AND CONFERENCE PRESENTATIONS (\*Indicates awarded)

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- 2019 **Villaseñor-Derbez J.C.**, Rivera-Hechem M.I., Wilson, M. W., Lawson, J. M. & Gaines, S. D. Status and trends of moored fish aggregating device (MFAD) fisheries in the Caribbean and Bermuda. *72th GCFI*
- \***Villaseñor-Derbez J.C.**, Lynham J., Costello C. Change in behavior and effort redistribution after implementation of Large Scale Marine Protected Areas. *Future Oceans2*
- 2018 **Villaseñor-Derbez, J.C.**, Aceves-Bueno E., Fulton, S., Suarez-Castillo, A., Hernández-Velasco, A., Torre, J., Micheli, F. Effectiveness of community-based marine reserves in small-scale fisheries. *3rd World Small-Scale Fisheries Conference*
- 2017 **J.C. Villaseñor-Derbez**, C. Faro, M. Wright, J. Martínez, C. Costello. A general approach and tool to evaluate the effectiveness of no take marine reserves. *28th International Congress for Conservation Biology*.
- 2014 **J.C. Villaseñor-Derbez**, A. Ramírez-Valdez, G. Montaña-Moctezuma, G. Torres-Moye. Because size matters: Differences in size structure of exploited and unexploited fish populations along the coasts of Baja California, Mexico. *XIV National Ichthyology Meeting and III Latin-American Ichthyology Symposium*.
- Ramírez-Valdez A., Montaña-Moctezuma G., Torres-Moye G., Aburto-Oropeza O., **Villaseñor-Derbez JC.** Biogeographic relationships of fish communities associated to Kelp Forests off the coasts of Baja California, Mexico. *XIV National Ichthyology Meeting and III Latin-American Ichthyology Symposium*.

- 2014     **\*J.C. Villaseñor-Derbez**, A. Ramírez-Valdez, G. Montaña-Moctezuma, G. Torres-Moye. Effects of recreational fisheries over sizes and biomasses of fish associated to Kelp Forests. *2<sup>nd</sup> State Meeting of Young Researchers*.
- \*J.C. Villaseñor-Derbez**, A. Ramírez-Valdez, G. Montaña-Moctezuma, G. Torres-Moye. Latitudinal distribution of sizes of fish associated to Kelp Forests off the coasts of Baja California, Mexico. *XVIII National Oceanography Conference*.
- \*J.C. Villaseñor-Derbez**, A. Ramírez-Valdez, G. Montaña-Moctezuma, G. Torres-Moye. Latitudinal distribution of sizes of fish associated to Kelp Forests off the coasts of Baja California, Mexico. *XXII Student Conference at the Marine Sciences School and 1<sup>st</sup> National Student Conference on Marine and Environmental Sciences*.
- J.C. Villaseñor-Derbez**. Description of feeding habits and ontogenetic changes in the invasive lionfish *Pterois volitans* (Linnaeus, 1758) diet off the coasts of Playa del Carmen, Quintana Roo. *1<sup>st</sup> Student Conference of Biological Sciences*.
- 2013     **J.C. Villaseñor-Derbez**, G. Montaña-Moctezuma, G. Torres-Moye y A. Ramírez-Valdez. Community relationships of fish associated to Kelp Forests off the coasts of Baja California, Mexico. *1<sup>st</sup> State Meeting of Young Researchers*
- J.C. Villaseñor-Derbez**, G. Montaña-Moctezuma, G. Torres-Moye y A. Ramírez-Valdez. Community relationships of fish associated to Kelp Forests off the coasts of Baja California, Mexico. *XXI Student Conference at the Marine Sciences School*
- 2012     **J.C. Villaseñor-Derbez**. Contribution to knowledge of diet and biometrics of the invasive lionfish [*Pterois volitans* (Linnaeus 1758)] off the coasts of Playa del Carmen, Quintana Roo, Mexico. *XIII National Ichthyology Meeting and 1<sup>st</sup> Latin-American Ichthyology Symposium*
- \*J.C. Villaseñor-Derbez**. Contribution to knowledge of diet and biometrics of the invasive lionfish [*Pterois volitans* (Linnaeus 1758)] off the coasts of Playa del Carmen, Quintana Roo, Mexico. *XX Student Conference at the Marine Sciences School*

## REFeree ACTIVITY

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Ecological Modelling, Frontiers in Marine Science, Gulf and Caribbean Research, Bulletin of Marine Science

## AFFILIATIONS TO ORGANIZATIONS

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Association of Environmental and Resource Economists, Society for Conservation Biology, Asociación de Oceanólogos de México, North American Association of Fisheries Economists.

## OTHER SKILLS

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### Languages

- **Spanish** (Native)
- **English** (Fluent; TOEFL iBT: 102)
- **French** (Basic; DELF A2 certification)

### SCUBA certifications

- PADI Open Water Diver – 2007
- PADI Advanced Open Water Diver – 2007
- PADI Rescue Diver – 2008
- TDI Sidemount Diver - 2016