

EDUCATION

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

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

- 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

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

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/
- CostApp – A web-based app to estimate costs of marine-reserve implementation: innovacionazul.shinyapps.io/AppCosteo/
- The Marine Reserve Evaluation App (MAREA) – A web-based app to evaluate conservation interventions: innovacionazul.shinyapps.io/MAREA

DataScience leadership:

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

APPOINTMENTS

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

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

- 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)

- 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. *2nd 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 1st 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. *1st 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. *1st 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 1st 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

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

AFFILIATIONS TO ORGANIZATIONS

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

OTHER SKILLS

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