

Bren School of Environmental Science & Management
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Juan Carlos Villaseñor-Derbez
PhD Candidate, UC Santa Barbara

DEGREES

- 2022 Ph.D. Environmental Science and Management. University of California, Santa Barbara (Expected by June)
- 2017 Master of Environmental Science and Management. University of California, Santa Barbara
- 2015 B.Sc. Oceanography, *Honors*. Universidad Autónoma de Baja California, México

PEER-REVIEWED PUBLICATIONS

Published (*co-first authors)

- 2021 Millage K.D.*, **Villaseñor-Derbez, J.C.***, Bradley D., Burgess M., Lenihan H., Costello C. (2021). Self-Financed Marine Protected Areas. *Environmental Research Letters* DOI: [10.1088/1748-9326/ac3439](https://doi.org/10.1088/1748-9326/ac3439)
- Tuholske C., Halpern B., Blasco G., **Villaseñor-Derbez J.C.**, Frazier M., Caylor K.K. (2021). Mapping global inputs and impacts from human sewage in coastal ecosystems. *PLoS ONE* DOI: [10.1371/journal.pone.0258898](https://doi.org/10.1371/journal.pone.0258898)
- Ramírez-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. (2021) Asymmetry across international borders: Research, fishery and management trends and economic value of the giant sea bass (*Stereolepis gigas*). *Fish & Fisheries*. DOI: [10.1111/faf.12594](https://doi.org/10.1111/faf.12594)
- Lynham J., Nikolaev A., Rainor, J., Vilela T., **Villaseñor-Derbez J.C.** (2021). Reply to "Catch rate composition affects assessment of protected area impacts". *Nature Communications*. DOI: [10.1038/s41467-021-21608-3](https://doi.org/10.1038/s41467-021-21608-3)
- 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*. DOI: [10.1016/j.marpol.2020.104148](https://doi.org/10.1016/j.marpol.2020.104148)
- 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*. DOI: [10.1038/s41467-020-14588-3](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*. DOI: [10.1038/s41893-019-0459-z](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*. DOI: [10.1371/journal.pone.0221660](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*. DOI: [10.1111/conl.12651](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*. DOI: [10.7717/peerj.6667](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*. DOI: [10.1007/s10530-018-1720-5](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*. DOI: [10.1371/journal.pone.0191821](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*. DOI: [10.1186/s41200-016-0062-1](https://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*. DOI: [10.7773/cm.v41i2.2471](https://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

In Press, In Review, In Prep

- R&R Wintergalen E., Molina R., Oyanedel R., **Villaseñor-Derbez, J.C.**, Fulton S. Opportunities and challenges for livelihood resilience in urban and rural Mexican small-scale fisheries. (R&R). *Ecology and Society*.

In prep **Villaseñor-Derbez, J.C.** et al., The economic value of private marine reserves.

Villaseñor-Derbez, J.C. et al., 20 years of community-based marine conservation in Mexico: what do the numbers tell us?

Villaseñor-Derbez, J.C., et al., A global market for marine conservation.

Wilson M. W., Lawson J. M., Rivera-Hechem M. I., **Villaseñor-Derbez J. C.**, Gaines, S. D. Optimal conditions for sustainable MFAD fisheries in the Caribbean and Bermuda.

Arafah-Dalmau et al., Towards transboundary networks of climate-smart marine reserves in the Southern California Bight.

FUNDING

Research Grants

- 2020 Environmental Research Grant (\$20,000)
Schmidt Family Foundation
Incentives for Equitable and Cost-effective Marine Conservation
- H. William Kuni Research Award (\$14,950)
Economic and Ecological responses to global economic shutdowns in coral reef communities.
With Erin Winslow and Nathaniel Grimes
- 2019 Mohamed bin Zayed Species Conservation Fund (\$11,500)
Unveiling the Ecology of Giant Sea Bass (*Stereolepis gigas*).
With Arturo Ramírez-Valdez and Kyla Blincow
- 2018 H. William Kuni Research Award (\$15,000)
The proliferation of Fish Aggregating Devices (FADs) in the Caribbean Sea.
With Molly Wilson, Julia Lawson, and Ignacia Rivera
- 2017 PADI Foundation Research Grant.
Natural history of the giant sea bass (*Stereolepis gigas*) in Mexican waters.
With Arturo Ramírez-Valdez and Paula Sgarlatta. (\$6,600)

Fellowships and scholarships

- 2020 Dissertation Fellowship (\$25,000)
UC Institute on Global Conflict and Cooperation
Designing Conservation Markets for International Cooperation
- 2017 Doctoral Fellowship (\$61,194)
UC Mexus
Complimentary funding to complete a Ph.D in Environmental Sciences
- Latin American Fisheries Fellowship (\$57,400)
University of California, Santa Barbara
Funding to complete a Ph.D in Environmental Sciences
- CONACyT International Student's Doctoral Fellowship (\$146,619)
Mexican Government
Four years of funding to complete a 5-year Ph.D in Environmental Sciences
- 2015 Latin American Fisheries Fellowship (\$42,000)
University of California, Santa Barbara
Complimentary funding to complete a Master in Environmental Science and Management
- CONACyT International Student's Master's Fellowship (\$64,946)
Mexican Government
Funding to complete a Master in Environmental Science and Management

STUDENT MENTORING

Master's Group Theses Mentored (Client in parentheses)

- 2020 Peyton Moore, Ruben Sanchez-Ramirez, Dylan Glave, Elliott Matthews. Marine Extractive Reserve performance in Brazil (World Wildlife Fund Brazil)
- 2019 Caio Della Colleta Vianna, Eva Marrero, Kirby Bartlett, Anna Calle, Sandra Fogg. Assessing Brazil's Marine Aquaculture Potential (World Wildlife Fund Brazil)
- 2018 Edaysi Bucio, Seleni Cruz, Vienna Saccomanno, Juliette Verstaen, Valeria Tamayo. Economic quantification of delaying management in the Midriff Islands, Mexico (Comunidad y Biodiversidad)
- Mario Colon, Daniel Elkin, Lauren Kaapcke, Madison Meltzer, Casey Moorhead. Insurance instruments to leverage natural infrastructure for climate change resilience
- 2017 Fabio Castagnino, Roxanne Diaz, Denise Garcia, Sarah Salem, Camila Vargas. Creating Effective Marine Reserves (Fundación Claudia y Roberto Hernández)

UCSB Summer Research Mentorship Program for Higschool students (Placement)

- 2018 Alex Reulbach. Small-scale variation in the diet of invasive lionfish. (Marine Biology, UNC)
- Alisha Naidu. Ontogenetic habitat shifts in invasive lionfish. (Computer Science, Williams College)
- Joseph Sausville. Optimal marine reserve design to maximize economic and conservation benefits.

Other outreach activities

- Family Ultimate Science Exploration: <https://csep.cnsi.ucsb.edu/programs/fuse>
- Laguna Blanca high school: How economics can help conserve the environment?
- Colegio Puerto Aventuras (Mexico): Introduction to computer programming in R

TEACHING

Teaching Assistant for graduate-level courses

- 2020 ESM 206 – Introduction to Environmental Data Science & Statistics with Dr. Allison Horst (100+ students)
- ESM 201 – Ecology of Managed Ecosystems with Dr. David Tilman (86 students)
- 2019 ESM 201 – Ecology of Managed Ecosystems with Dr. David Tilman (82 students)

Guest Lecturer

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

Data Science Workshops ([link](#))

- 2021 EcoDataScience Workshop: GNU make and Makefiles for continuous development (and reproducibility)
- 2019 EcoDataScience Workshop : Collaborative workflows with git and GitHub

LAFF workshop: Advanced RMarkdown

LAFF workshop: Coding ecological models in R

2017 EcoDataScience Workshop: Introduction to R Markdown

Technical Workshops

2019 Evaluation and budgeting of Marine Reserves in Mexico

2018 Empirical valuation of Marine Reserves effectiveness

2017 A general approach and tool to evaluate the effectiveness of no-take marine reserves

Empirical valuation of Marine Reserves effectiveness

2015 REEFCheck California monitoring techniques

ACADEMIC APPOINTMENTS

2020 - current Graduate Student Researcher. Environmental Markets Lab, UCSB.

2019 - 2020 Graduate Student Researcher. National Center for Ecological Analysis and Synthesis, UCSB.

2015 - 2016 Data analyst. Mexican Tuna Purse Seine Fleet Research Trust

2013 - 2013 Research Intern. Fundación para el Estudio y Conservación de Condrictios, SQUALUS

2013 - 2013 On-board scientific observer. Fisheries Ecology Lab, CICESE

2012 - 2012 Oceanographic Cruise Research Intern. Oceanography Department, CICESE

2011 - 2015 Research Assistant. Kelp Forest Ecology Research Group, UABC

ACADEMIC SERVICE

Referee Activity

Ecological Modeling, Frontiers in Marine Science, Gulf and Caribbean Research, Bulletin of Marine Science, Nature Sustainability

Committees

2020 Faculty Search. Assistant Professor in Environmental Data Science. Bren School of Environmental Science & Management, UCSB

2019 Dean's Advisory Council. Bren School of Environmental Science & Management, UCSB

2018 PhD Symposium organization committee. Bren School of Environmental Science & Management, UCSB

2014 Student Conference Organizer. Facultad de Ciencias Marinas, UABC

2013 Student Council. Facultad de Ciencias Marinas, UABC

Working groups and panels

- 2021 Data Science communities in Santa Barbara. Master of Environmental Data Science Program, UCSB
- 2019 Palau's National Marine Sanctuary: Managing Ocean Change and Supporting Food Security. NCEAS
- 2017 Marine Spatial Planning in Baja California: Connecting MPA networks in a transboundary context. COBI
- 2017 Defining Ecological indicators for the evaluation of marine protected areas. COBI / TNC
- 2016 Defining Socioeconomic indicators for the evaluation of marine protected areas. COBI / TNC

DATA SCIENCE

DataScience leadership:

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

Software development

- startR: An 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/
- MAREA: The Marine Reserve Evaluation App; A web-based app to evaluate conservation interventions: innovacionazul.shinyapps.io/MAREA
- GPSelector: A web-based tool to optimize the allocation of students to group projects at the Bren School of Environmental Science & Management:

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 Platform

BigQuery (Standard SQL), ComputeEngine, CloudStorage

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. *72nd 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*.
- 2014 ***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*

SCIENCE COMMUNICATION

(Not all peer-reviewed; All written or available in Spanish)

- 2021 Sumaila U.R. et al. WTO must ban harmful fisheries subsidies. (2021) Letter to *Science*. 374(6567):544
[DOI: 10.1126/science.abm1680](https://doi.org/10.1126/science.abm1680)
- 2020 **Villasenñor-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. *Mediterraneanews*. 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*. <http://dx.doi.org/10.13022/M33K52>
- 2015 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*. <http://dx.doi.org/10.13022/M3BC7X>

OTHER SKILLS

Languages

- Spanish (Native)
- English (Fluent; TOEFL iBT: 102; graduate school completed in English)
- French (Basic; DELF A2 certification)

SCUBA certifications

- PADI Open Water Diver
- PADI Advanced Open Water Diver
- PADI Rescue Diver
- FCM-UABC Scientific Diver
- TDI Side mount Diver

NON-ACADEMIC APPOINTMENTS

- 2021 Independent Consultant
- 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
- 2018 Independent Consultant
- Web-app development to calculate operational costs of implementing community-based marine reserves.
- 2018 Independent Consultant
- Prepared materials and taught three courses on marine reserve evaluation methods to environmental managers and NGO members.

- 2017 Independent Consultant
- Performed a national evaluation of marine reserves in Mexico with case studies from the Gulf of California, Pacific and Caribbean.
- 2015 Field Assistant & Data Manager. Comunidad y Biodiversidad (COBI)
- Coordinated fieldwork to evaluate voluntarily established marine reserves along Baja California
 - Produced 3 brochures, 1 interactive visualization and a peer-reviewed article on occurrences of tropical fish in temperate regions