Personal data

Surname, Firstname: Ángeles-González, Luis Enrique

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Current affilation:

- Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California (CICESE). Carretera Ensenada - Tijuana No. 3918, Zona Playitas, CP. 22860, Ensenada, B.C. México.

Educational Background:

(2017-2021) Doctorate in Marine Sciences and Limnology.

Universidad Nacional Autónoma de México (UNAM).

Department: Sciences faculty

Thesis title: "Aplicaciones de la teoría del nicho en recursos pesqueros: favorabilidad ambiental, cambio climático y monitoreo pesquero" (English: **"Applications of the niche theory in fisheries resources: environmental suitability, climate change and fisheries monitoring"**)

(2012-2014) Masters in Marine Ecology

Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California (CICESE)

Department: Marine Ecology Department

Thesis title: **"Caracterización del macrobentos en la franja costera de Bahía de los Ángeles, Baja California mediante métodos bayesianos"** (English: **"Characterization of the macrobenthos in the coastal strip of Bahía de los Ángeles, Baja California by Bayesian methods"**)

(2006-2010) Bachelor of Sciences in Marine Biology

Universidad Autónoma de Yucatán (UADY)

Department: Marine Biology Department

Thesis title: **“Evaluación del IGS y maduración sexual del *O. maya* a una escala espacio-temporal”** (English: **“Evaluation of the IGS and sexual maturation of *O. maya* on a spatio-temporal scale”**)

Laboral experience

(2022-2023) Posdoctoral fellow working in the project “Caracterización de las respuestas potenciales al calentamiento de los recursos marinos mexicanos en las regiones tropicales del Atlántico y el Pacífico con base en su nicho térmico” **(English: Characterization of the potential responses to warming of Mexican marine resources in the tropical regions of the Atlantic and Pacific based on their thermal niche)** in Centrode Investigación Científica y de Estudios Superiores de Ensenada (CICESE).

(2016). Technician at the project “Distribución, reproducción, biomasa y patrones de movimiento del pulpo común *Octopus vulgaris* Cuvier, 1979 en las Costas de Yucatán.” (English: “Distribution, reproduction, biomass and movement patterns of the common octopus *Octopus vulgaris* Cuvier, 1979 on the Coasts of Yucatan”) in Centro de Investigación y Estudios Avanzados del Instituto Politécnico Nacional (CINVESTAV).

(2015). Technician at the Project “Pasto marino Phyllospadix de la costa rocosa al norte de Ensenada” (**English: Phyllospadix seagrass on the rocky coast north of Ensenada**) in Centro de Investigación Científica y de Estudios Superiores de Ensenada (CICESE).

(2015). Adjunct professor of the subject "Multivariate Statistics" in Centro de Investigación Científica y de Estudios Superiores de Ensenada (CICESE).

(2015). Adjunct professor of the subject of "Statistics 2" in “Centro de Investigación Científica y de Estudios Superiores de Ensenada” (CICESE).

(2015). Collaborated with the collection of field samples, fixation, separation and processing of benthic samples in Bahía de los Ángeles. For a Project in “Centro de Investigación Científica y de

Estudios Superiores de Ensenada" (CICESE).

(2014). Adjunct professor of the subject "Statistics 1" in "Centro de Investigación Científica y de Estudios Superiores de Ensenada" (CICESE).

(2014). Adjunct professor of the subject " Bayesian Statistics" in Centro de Investigación Científica y de Estudios Superiores de Ensenada (CICESE).

(2013). Collaboration Technician at the project "Distribución espacio-temporal de la macrofauna bentónica en la franja costera de la Bahía de Los Ángeles, Golfo de California" **(English: "Spatiotemporal Distribution of Benthic Macrofauna in the Coastal Strip of Bahía de Los Ángeles, Gulf of California")** in Centro de Investigación Científica y de Estudios Superiores de Ensenada (CICESE).

NOTE: Among the activities carried out in CICESE I helped students of marine ecology, life sciences, and earth sciences with statistical analysis for their theses.

(2009). Field and laboratory work with the *Octopus maya* in the Yucatan Peninsula for the program Fondos Mixtos (FOMIX).

Publications

(2023) Loya-Cancino, K. F., **Ángeles-González, L. E.,** Yañez-Arenas, C., Ibarra-Cerdeña, C. N., Velázquez-Abunader, I., Aguilar-Perera, A., & Vidal-Martínez, V. M. (2023). Predictions of current and potential global invasion risk in populations of lionfish (*Pterois volitans* and *Pterois miles*) under climate change scenarios. Marine Biology, 170. https://doi.org/10.1007/s00227-023-04174-8

(2023) **Angeles-Gonzalez, L. E.,** Re-Araujo, A. D., Díaz, F., Caamal-Monsreal, C., Rodríguez-Fuentes, G., Galindo-Sánchez, C. E., Maité, M., Pascual C., & Rosas, C. (2023). Thermal optimality and physiological parameters inferred from experimental studies scale latitudinally with marine species occurrences. Journal of Thermal Biology. https://doi.org/10.1016/j.jtherbio.2023.103495

(2023) Lima, F. D., **Angeles-Gonzalez, L. E.,** Maia, H., Leite, T. S., Cahuich-López, M., Mariño-Tapia, I., Santana-Cisneros, M.L., Ardisson, P., & Lima, S. M. Molecular data, ecological niche, and dispersal models reveal a trans-Atlantic shallow-water octopus species. *Progress in Oceanography*, 213. https://doi.org/10.1016/j.pocean.2023.103019

(2021). **Ángeles-González, L. E**., Martínez-Meyer, E., Rosas, C., Guarneros-Narváez, P. V., López-Rocha, J. A., Escamilla-Aké, Á., Osorio-Olvera, L., Yáñez-Arenas, C. Long-term environmental data explain better the abundance of the red octopus (*Octopus maya*) when testing the niche centroid hypothesis. Journal of Experimental Marine Biology and Ecology, 544. https://doi.org/10.1016/j.jembe.2021.151609

(2021). **Ángeles-González, L. E**., Martínez-Meyer, E., Yañez-Arenas, C., Velázquez-Abunader, I., López-Rocha, J. A., Torrejón-Magallanes, J., Rosas, C. Climate change effect on *Octopus maya* (Voss and Solís-Ramírez, 1966) suitability and distribution in the Yucatan Peninsula, Gulf of Mexico: A correlative and mechanistic approach. Estuarine, Coastal and Shelf Science, 260. https://doi.org/10.1016/j.ecss.2021.107502

(2021). Santana-Cisneros, M. L., Ardisson, P. L., González, Á. F., Mariño-Tapia, I., Cahuich-López, M., **Ángeles-González, L. E**., Ordoñez-López, U., Velázquez-Abunader, I. Dispersal modeling of octopoda paralarvae in the Gulf of Mexico. Fisheries Oceanography, December 2020, 1–14. https://doi.org/10.1111/fog.12555

(2021). **Ángeles-Gonzalez, L. E**., Solana-Arellano, E., Díaz-Castañeda, V., Flores-Uzeta, O., Necoechea-Zamora, M. Soft-bottom macrofauna along the coast of Bahía de Los Ángeles, Gulf of California, during the summer and winter. Ciencias Marinas, 47(1), 49–59. https://doi.org/10.7773/cm.v47i1.3146

(2020). **Ángeles-González, L. E**., Lima, F. D., Caamal-Monsreal, C., Díaz, F., Rosas, C. Exploring the effects of warming seas by using the optimal and pejus temperatures of the embryo of three

Octopoda species in the Gulf of Mexico. Journal of Thermal Biology, 94. https://doi.org/10.1016/j.jtherbio.2020.102753

(2020). **Ángeles-González, L. E**., Martínez-Meyer, E., Yañez-Arenas, C., Velázquez-Abunader, I., Garcia-Rueda, A., Díaz, F., Tremblay, N., Antonio Flores-Rivero, M., Gebauer, P., Rosas, C. Using realized thermal niche to validate thermal preferences from laboratory studies. How do they stand? Ecological Indicators, 118. https://doi.org/10.1016/j.ecolind.2020.106741

(2020). Lima, F., **Ángeles-González, L**., Leite, T., Lima, S. Global climate changes over time shape the environmental niche distribution of *Octopus insularis* in the Atlantic Ocean. Marine Ecology Progress Series, 652, 111–121. https://doi.org/10.3354/meps13486

(2019). Avendaño, O., Velázquez–Abunader, I., Fernández–Jardón, C., **Ángeles–González, L. E**., Hernández-Flores, A., Guerra, Á. Biomass and distribution of the red octopus (*Octopus maya*) in the north-east of the Campeche Bank. Journal of the Marine Biological Association of the United Kingdom, 99(06), 1317–1323. https://doi.org/10.1017/S0025315419000419

(2017). **Angeles-Gonzalez, L. E**., Calva, R., Santos-Valencia, J., Avila-Poveda, O. H., Olivares, A., Diaz, F., Rosas, C. Temperature modulates spatio-temporal variability of the functional reproductive maturation of *Octopus maya* (Cephalopoda) on the shelf of the Yucatan Peninsula, Mexico. Journal of Molluscan Studies, 83(3), 280–288. https://doi.org/10.1093/mollus/eyx013

Conference papers

(2018). Avendaño, O., Velázquez-Abunader, I., Guarneros-Narváez, P., **Ángeles-González, L.,** Guerra, A., Fernández-Jardón, C. **Spatio-temporal variation and abundance of the red octopus (*Octopus maya*) in the northeast zone of e Campeche Bank.** Cephalopod International Advisory Council Conference 2018. Cephalopod Research Across Scales: From Molecules to Ecosystems At: St. Petersburg, Florida, USA.

(2012). Rosas, C., Santos-Valencia, J., Calva, R., **Ángeles-González, L. E.,** López-Rocha, J. A.,

Mascaró, M., Avila-Poveda, O. H. **Reproductive biology of *Octopus maya*: Rescuing Arkhipkins (1992) maturity scales.** Cephalopod International Advisory Council Symposium. At: Florianópoilis, SC, Brazil.

Oral presentations

(2019). **Ángeles-Gónzalez, L.E.** Predicción de la redistribución espacio-temporal de especies importancia pesquera del Golfo de México por cambio climático mediante modelos de nicho ecológico.(English: **"Prediction of the spatio-temporal distribution of species of fishing importance in the Gulf of Mexico due to climate change using ecological niche models"**). XV Aniversario de la UMDI-Sisal. Desafíos emergentes en el manejo de sistemas socio-ambientales costeros. At: Mérida, Yucatán, México.

(2015). **Ángeles-Gónzalez, L.E.,** Solana-Arellano, E., Flores-Uzeta, O., Necoeche-Zamora, M.Y., Rosales-Casián, J.A., Pardo., M Daesslé-Heuser, L.W. Diferencias estacionales en el macrobentos costero de Bahía de Los Ángeles Pacífico mexicano: Aproximación bayesiana (English: **"Seasonal differences in the coastal macrobenthos of Los Angeles Bay Mexican Pacific: Bayesian approach"**). V Congreso Mexicano de Ecología. San Luis Potosí, SLP.

(2012). Rosas, C., Santos-Valencia, J., Markaida, U., Enríquez, C., Mariño-Tapia, I., Calva, R., **Ángeles-González, L.E.,** López-Rocha, J., Mascaró, M. Evidencias que demuestran como las condiciones oceanográficas de la península de Yucatán modulan el ciclo reproductivo de *Octopus maya.* (English: ***"*Evidences that demonstrate how oceanographyc condition of Yucatan peninsula modulate the reproductive cycle of *Octopus maya"***). III Reunión Nacional de Innovación Acuícola y Pesquera. At: Querétaro, México.

(2012). Rosas, C., Santos-Valencia, J., Markaida, U., Calva, R., **Ángeles-González, L.E.,** López-Rocha,J., Mascaró, M. Cambios en la estructura histológica y la función del sistema reproductivo de *Octopus maya*: propuesta de una nueva escala de estadios de madurez sexual. (English:

“Histological changes in the structure and function of the *Octopus maya* reproductive system: proposal for a new scale of sexual maturit stages”). III Reunión Nacional de Innovación Acuícola y Pesquera. At: Querétaro, México.

(2011). **Ángeles-González L.E.,** Calva, R., Santos-Valencia, J., Rosas, C. Evaluación de la fertilidad y maduración espacio-temporal del *Octopus maya* (Voss y Solís, 1966) en la Península de Yucatán. (English: **“Evaluation of fertility and spatio-temporal maturation of *Octopus maya* (Voss and Solís, 1966) in the Yucatan Peninsula”**) XX Congreso Nacional de Zoología. At Cuernavaca, Morelos.

Posters

(2018). Guarneros-Narváez, P., López-Rocha, J., Velázquez-Abunader, I., Rosas, C., **Ángeles-González, L.E. Spatio-temporal variation of *Octopus maya* distribution and its relationship with environmental factors.** Cephalopod International Advisory Council Conference 2018. Cephalopod Research Across Scales: From Molecules to Ecosystems At: St. Petersburg, Florida, USA

(2018). **Ángeles-González, L.E;** Yáñez-Arenas, C., Rosas, C., López-Rocha, J., Guarneros-Narváez, P.V. **Relationship of relative abundance of *Octopus maya* and its environmental suitability in the Yucatan Peninsula, Mexico by a maximum entropy model.** Cephalopod International Advisory Council Conference 2018. Cephalopod Research Across Scales: From Molecules to Ecosystems At: St. Petersburg, Florida, USA.

(2018). Guarneros-Narváez, P.V., López-Rocha, J., Velázquez-Abunader, I., Rosas, C., **Ángeles-González, L.E. Spatio-temporal variation of *Octopus maya* distribution and its relationship with environmental factors.** Cephalopod International Advisory Council Conference 2018. Cephalopod Research Across Scales: From Molecules to Ecosystems At: St. Petersburg, Florida,

USA.

(2011). **Ángeles-González, L.E.,** Rosas, C., Calva, R. Indicadores reproductivos de la madurez sexual del *Octopus maya* en la Península de Yucatán. (English: **"Reproductive indicators of the sexual maturity of Octopus maya in the Yucatan Peninsula"**). III Congreso Mexicano de Ecología. At: Boca del Río, Veracruz, México.

Courses and workshops

(2019) **Advanced Ecological Niche Modeling.** Course organized by Dr. Andrés Lira Noriega at the Instituto Nacional de Ecología (INECOL)

(2018) **Modeling of ecological niches and distribution areas.** Course organized by Dr. Carlos Yañez Arenas at the Parque Cientifico Tecnológico de Yucatán (PCTY).

(2018) **Applied Ecophysiology.** Course organized by Dr. Carlos Rosas Vázquez at the Unidad Multidisciplinaria de Docencia e Investigación (UMDI) Sisal Yucatán.

(2017) **Modeling of ecological niches and distribution areas.** Course organized by Dr. Carlos Yañez Arenas at the Parque Cientifico Tecnológico de Yucatán (PCTY).

(2016) **Ecology and Fisheries of Cephalopods**. Course organized by Dr. Unai Markaida at the El Colegio Frontera Sur (ECOSUR).

Abilities

Statistical Data Analysis (ANOVA, T-Student, etc.)

Multivariate Analysis Data (MDS, PCA, etc.)

Bayesian Statistics (Basic)

Scientific Writing (Medium)

R programming language (Medium)

Ecological Niche Models and Species Distribution Model (High)

Diver accreditation by the National Association of Underwater Instructors (NAUI)

Diver accreditation by the Professional Association of Diving Instructors (PADI - Advance).

Language Proficiency

Spanish:

Native

English:

TOEFL IBT: Score 94 (Good user)

References about my work

Dr. Ma. Elena Solana Arellano. Full-time research profesor. SNI II. Centro de Investigación Científica y de Educación Superior de Ensenada (CICESE). Departamento de Ecología Marina (English: Marine Ecology Department). Carretera Ensenada-Tijuana No. 3918, Zona Playitas, C.P. 22860, Ensenada, Baja California, México. Teléfono: 01(646)175-05-00. E-mail: esolana@cicese.mx

Dr. José Iván Velazquéz Abunader. Research associate 2-C. SNI I. Centro de Investigación y Estudios Avanzados del Instituto Politécnico Investigador Asociado Nacional (CINVESTAV). Departamento de Recurso del Mar Km 6 Antigua carretera a Progreso, Mérida Yucatán, C.P 97310. Telephone: (999)942-94-00 Ext. 2524, Fax: (999)981-23-

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Dr. Carlos Rosas Vázquéz. Profesor de Carrera Titular C. Universidad Nacional Autónoma de México (UNAM). Unidad Multidisciplinaria de Docencia e Investigación, Facultad de Ciencias, Laboratorio de Ecofisiología Aplicada, Puerto de Abrigo, 97356 Sisal, Yucatán, México. Telephone: (988)931-10-00 Ext. 7120. Correo electrónico: crv@ciencias.unam.mx