

Eloy Martínez
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Education

- 2013 Ph.D. (Biological Oceanography), College of Marine Sciences, University of South Florida, St. Petersburg, FL.
Dissertation: Biochemical aspects of the thermal sensitivity and energy balance of polar, tropical and subtropical teleosts (Advisors: Dr. Joseph J. Torres; Dr. Michael A. Menze)
- 2006 B.S. (Marine Biology), Department of Biology, University of Puerto Rico, Humacao, PR.

Professional Experience

- 2022 – current **Associate Professor**, Department of Biological Sciences, Eastern Illinois University, Charleston, IL
- 2018 – 2022 **Assistant Professor**, Department of Biological Sciences, Eastern Illinois University, Charleston, IL.
- 2015 – 2018 **Natural Resources Manager III**, Guánica Forest and Marine Reserve, Guánica, Puerto Rico. Puerto Rico Department of Natural and Environmental Resources.
- 2014 – 2015 **Postdoctoral Research Associate**, Center for Environmental Studies, Virginia Commonwealth University, Richmond, VA.
- 2013 – 2014 **Adjunct Instructor**, Department of Biology, University of South Florida, St. Petersburg, FL.
- 2012 – 2013 **Graduate Teaching Associate**, Department of Biology, University of South Florida, St. Petersburg, FL.
- 2008 – 2012 **Research Associate**, College of Marine Sciences, University of South Florida, St. Petersburg, FL.
- 2002 – 2004 **Laboratory Technician Assistant**, Department of Biology, University of Puerto Rico, Humacao, PR.

Grants and Awards

A. Extramural Grants (funded) and Donations

U.S. Fish and Wildlife Service, and the U.S. Geological Survey: Advancing climate change adaptation strategies for high elevation and endangered lowland amphibian species in the US Caribbean (10/2022-10/2025; Jaime Collazo (NC-State), PI, **Eloy Martínez, Co-PI**). Total amount awarded: **\$661,735**.

U.S. Fish and Wildlife Service, and the U.S. Geological Survey: Strategic Habitat Conservation and Adaptive Strategies for Recovery and Pre-listing Conservation of *Eleutherodactylus* (coqui) Amphibians in Puerto Rico (8/2019-8/2021; Jaime Collazo (NC-State), PI, **Eloy Martínez, Collaborating Faculty**). Total amount awarded: **\$120,000**.

US Fish and Wildlife Service, and Illinois Department of Natural Resources: A long-term monitoring program of fish populations in the Wabash River (6/2019-6/2020; Robert Colombo, PI, **Eloy Martínez, Co-PI**). Total amount awarded: **\$219,000**.

University of South Florida. Donation of two Hansatech high-resolution liquid phase respirometry systems and one Otago nanoliter osmometer (May 2014). Approximate value: **\$50,000**.

NSF Antarctic Expedition: Possible Climate Induced Changes in the Distribution of *Pleurogramma antarctica* on the Western Antarctic Peninsula Shelf" (03/10-05/10; Joseph Torres, PI, **Eloy Martinez, Research Staff, B-258-N**). To investigate the impact of temperature on mitochondrial function in *P. antarctica*.

B. Extramural Grants (pending and not funded)

NSF-IOS: Collaborative Research: Integrating sub-cellular and whole-organism thermal performance to explain ecological success of an invasive forest pest". (Salvatore Agosta, PI; **Eloy Martinez, Co-PI**; Michael Menze, Co-PI). Total amount requested, **\$600,000**.

NSF-IUSE:HR: Enhancing the Understanding of STEM Career Development with STEM Competition Workshops and Camps. (Isaac Slaven, PI; **Eloy Martinez, Co-PI**; Marietta Mayo, Co-PI; Wutthigrai Boonsuk, Co-PI). Total amount requested **\$506,459**.

NSF-Postdoctoral Fellowship: Assessing the bioenergetic advantages of symbiont-host interactions in a changing climate: an integrative, cell-to-population approach. (**Eloy Martinez, PI**). Total amount requested **\$124,000**.

C. Awards in Research and Grants

Achievement and Contribution Award, Eastern Illinois University, 2019.

United States Congress Antarctica Service Medal Recipient, 2010.

D. Intramural Teaching Enhancement Grants

Redden Fund Grant Award, Eastern Illinois University: Enhancing undergraduate educational experiences via improvements to the curated herpetological collection, preserved quality specimens and educational models (Fall 2019; Eloy Martinez, PI). Amount awarded: \$1,611.

E. Intramural Research Grants

Student Impact Grant for Faculty Mentors, Eastern Illinois University: Bioenergetic tradeoffs of freshwater systems in a changing climate (Fall 2019; Eloy Martinez, PI). Total amount awarded: \$1,500.

F. Research Fellowships

Alfred P. Sloan Foundation Recipient (2011). \$15,000.

USF/CMS Bridge to the Doctorate Endowed Fellowship (2011). \$15,000

Fish Florida Kaye Pearson Memorial Scholarship. (2010). \$3,500.

Barnes Endowed Fellowship, University of South Florida, College of Marine Science. (2009). \$4,000.

Bridge to Doctorate Program, Sponsored by the National Science Foundation, Florida-Georgia Louis Stokes Alliance for Minority Participation and the University of South Florida, College of Marine Science. (2007-2009). \$60,000

Teaching Experience

Effort allocation during 2018-2022 (EIU): ~75% teaching, ~10% research, ~15% service

Cell and Molecular Biology (BIO3120), four semester credit hours (Fall 2018, Spring 2019, Fall 2019, Fall 2020, Fall 2021, Spring 2022, Fall 2022).

Animal Physiology (BIO3520), four semester credit hours (Spring 2019, Fall 2020, Fall 2021, Fall 2022).

Herpetology (BIO4952), three semester credit hours (Fall 2018, Spring 2020).

Biochemical adaptation in a changing climate (BIO5150), one semester credit hour (Fall 2019).

Ecological Physiology (BIO5460), three semester credit hours (Summer 2021).

Comparative Vertebrate Physiology (BIO4830), three semester credit hours (Spring 2022).

Mitochondrial Bioenergetics (BIO5460L), three semester credit hours (Summer 2022).

Publications

A. Peer-Reviewed Manuscripts

- Lamprey D. I.*, Sparks R. W.*, Monte De Oca R., Skolik R.*, Menze M. A. and **Martinez E.** (2022). Seasonal changes in mitochondrial bioenergetics and physiological performance of the bluegill sunfish, *Lepomis macrochirus*, from a shallow, Midwest river. *Journal of Thermal Biology*, 104(1), 1-9.
- Ragsdale, A. K.*, Colombo, R. E., **Martinez, E.**, Menze, M. A., & Schrey, A. W. (2020). DNA Methylation Differs in Bluegill Among Temperate, Anthropogenically Warmed, and Tropical Lakes. *Georgia Journal of Science*, 78(2), 11.
- Martinez, E.**, Menze, M. A. and Agosta, S. J. (2019) The Hungry Caterpillar: Linking Mitochondrial Energetics and Life History Traits as a Function of Temperature in *Manduca sexta*, *In Integrative and Comparative Biology* 59, E366-E366.
- May, C.*, Hillerbrand, N., Thompson, L.M.*, Faske, T.M.*, **Martinez, E.**, Parry, D.E., Agosta, S.J. and Grayson, K.L. (2018) Geographic variation in larval metabolic rate between northern and southern populations of the invasive gypsy moth, *Journal of Insect Science* 18 (4), 1-7.
- Martinez E.**, Menze, M. A., and Agosta, S. J. (2017) Reduced Mitochondrial Efficiency Explains Mismatched Growth and Metabolic Rate at Supraoptimal Temperatures, *Physiological and Biochemical Zoology* 90, 294-298.
- Martinez E.** and S. J. Agosta (2016). Budget-wise thermal biology: design, construction and performance of a low-cost, scalable temperature-controlled chamber using a simplified, single-phase radiative heat exchanger. *Journal of Thermal Biology* 58, 29-34.
- Martinez, E.**, Porreca, A.* P., Colombo, R. E., and Menze, M. A. (2016) Tradeoffs of warm adaptation in aquatic ectotherms: Live fast, die young? *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology* 191, 209-215.
- Martinez, E.**, Hendricks, E., Menze, M. A., and Torres, J. J. (2016) Physiological performance of warm-adapted marine ectotherms: Thermal limits of mitochondrial energy transduction efficiency, *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology* 191, 216-225.
- Martinez, E.**, Vélez, S. M., Mayo*, M., and Sastre, M. P. (2015) Acute toxicity assessment of N, N-diethyl-m-toluamide (DEET) on the oxygen flux of the dinoflagellate *Gymnodinium instriatum*, *Ecotoxicology*, 1-5.
- Martinez, E.**, Menze, M., and Torres, J. (2013) Mitochondrial energetics of benthic and pelagic Antarctic teleosts, *Marine Biology* 160, 2813-2823.

B. Articles in progress:

- Wright, N., Morrison, R. and **Martinez, E.** Acclimation induce rapid changes in thermal thresholds and mitochondrial bioenergetics, without alterations to the energy transduction efficiency of the green sunfish, *Lepomis cyanellus*.

- Mummel, S., Olvera R., Prado, O. and **Martinez, E.** Integrating feeding and righting response of the northern leopard frog, *Lithobates pipiens*, to mitochondrial thermal performance.
- Alrashdi, E., Powers, S.D., Agosta, S.J., Grayson, K.L., Effert-Fanta, E. L., Oluoch A. O. and **Martinez, E.** Deciphering the role of mitochondrial physiology and thermal acclimation in shaping whole organismal performance of an invasive forest pest.

C. Book Chapters

- Martinez E.**, and Torres, J. J. (2017) Energetics of the Antarctic silverfish, *Pleuragramma antarctica*, from the Western Antarctic Peninsula, In *The Antarctic Silverfish: a Keystone Species in a Changing Ecosystem*, pp 149-171, Springer.

*graduate student researcher, undergraduate student researcher underlined.

Presentations

A. Posters Presented

- Mummel S., Olvera R., Prado O. and **Martinez E.** Evaluating the role of temperature on feeding performance and righting response of the northern leopard frog, *Litobathes pipiens*. Illinois State Academy of Sciences Annual Virtual Meeting, Charleston, IL. 2021.
- Rempe K.*, Moody-Carpenter C., Effert-Fanta E., Colombo R.E., and **Martinez E.** Differences in Growth and Bioenergetics between Black Crappie and Bluegill in a Midwestern Power Plant Lake. 80th Midwest Fish & Wildlife Conference, American Fisheries Society and The Wildlife Society, Virtual Meeting, 2020.
- Rempe, K.J.*, Moody-Carpenter, C.J., Effert-Fanta, E.L., Colombo, R.E., and E. Martinez. Differences in Growth and Bioenergetics for Black Crappie and Bluegill in a Midwestern Power Plant Lake - 2020 Midwest Fish and Wildlife Conference, Springfield, IL., 2020.
- Monte de Oca R., Sparks R.W.* and **Martinez E.** Seasonal physiology of the freshwater fish *Lepomis macrochirus* living in a shallow river system. Eastern Illinois University Celebration of Scholarship, Creativity and Engagement Virtual Symposium, Charleston, IL, 2020.
- Parola A., Parrish T., Maia A. and **Martinez E.** Development of skeletal elements in lake sturgeon. National Council for Undergraduate Research Meeting, Kennesaw, GA., 2019.
- Lamprey D.I.*, Colombo R., Menze M.A. and **Martinez E.** In the heat of the moment: physiological tradeoffs of fishes living in warm waters. Illinois State Academy of Sciences Annual Meeting, Bradley, IL. 2019
- Martinez E.**, Lamprey D.I.*, Colombo R., Menze M. Are fishes in power plant cooling reservoirs giving us a sneak peek to environmental warming? Association for the Sciences in Limnology and Oceanography Aquatic Sciences Meeting, San Juan, PR., 2019.
- Martinez E.**, Menze M.A., Agosta S.J. The hungry caterpillar: linking mitochondrial energetics to life history traits as a function temperature in *Manduca sexta*. Society of Integrative and Comparative Biology Annual Meeting, Tampa, Florida, January, 2019.
- Martinez E.** and Agosta S.J. Thermo-limit respirometry in rain forest and dry forest *Atta* soldiers: are tropical ectotherms really living close to their thermal limits? 2nd Dry Forest Symposium, Guánica, Puerto Rico, January, 2016.

- Agosta S.J. and **Martinez E.** Thermo-limit respirometry in rain forest and dry forest Atta soldiers: are tropical ectotherms really living close to their thermal limits? Society of Integrative and Comparative Biology Annual Meeting, Oregon, January, 2016.
- Martinez E.**, Menze M.A. and Torres J.J. Mitochondrial energetics of Antarctic teleosts. Association for the Sciences in Limnology and Oceanography Ocean Science winter meeting, New Orleans, Louisiana, February, 2013.
- Camp N., **Martinez E.**, Phillips C., Porreca A. *, Torres J.J., Colombo R. and Menze M.A. Life in hot waters: live fast and die young? Society of Integrative and Comparative Biology Annual Meeting, San Francisco, California, January, 2013.
- Martinez E.**, Menze M.A. and Torres J.J. Some like it cold: mitochondrial bioenergetics from Southern Ocean teleosts. American Society of Limnology and Oceanography Winter meeting, San Juan, Puerto Rico, February, 2011.
- Martinez E.** and Miller T. Assessing habitat quality in Chesapeake Bay: application of RNA:DNA indices to blue crab, *Callinectes sapidus* (with T. Miller). American Society of Limnology and Oceanography Winter meeting, Santa Fe, New Mexico, February, 2007.
- Martinez E.** and Sastre M.P. Can sunlight be a determinant in the distribution and abundance of *Ascidia nigra*? 21st annual Junior Technical meeting, Sponsored by PR-LSAMP, March 2006.
- Martinez E.** and Bingham B. Settlement and swimming behavior as a function of light intensity; tests with three solitary ascidian larvae. Estuarine Research Federation (ERF) Conference, Norfolk, Virginia, October 2005.
- Martinez E.** and Bingham B. Settlement and swimming behavior as a function of light intensity; tests with three solitary ascidian larvae. Sigma Xi Conference, Western Washington University, Washington, USA, May 2005.

**graduate student researcher, undergraduate student researcher underlined.*

B. Oral papers and invited seminars

- Martinez E. It is all about timing: exploring biological clocks in Animals. Live to Learn Seminar Series at Douglas Hart Nature Center, May 2022
- Powers, S.D.*; **Martinez, E.**; Parry, D.; Grayson, K.L.; Agosta, S.A. Mismatched patterns of mitochondrial and whole-organism thermal performance in wild populations of an invasive forest pest. Society of Integrative and Comparative Biology Annual Meeting, Tucson, Arizona, January, 2022.
- Rempe, K.J.*, Moody-Carpenter, C.J., Effert-Fanta, E.L., Colombo, R.E. and **Martinez E.** Differences in Growth and Bioenergetics between Centrarchids in a Midwestern Power Plant Lake. 2021 Virtual Annual Meeting of the Illinois Chapter of the American Fisheries Society, 2021.
- Martinez E.** Shifting baselines and the engines of life: is mitochondrial energetics a key constraint in thermal adaptation? Ball State University Biology Virtual Seminar, 2020.
- Rempe, K.J.*, Moody-Carpenter, C.J., Effert-Fanta, E.L., Colombo, R.E. and **Martinez E.** Differences in Growth and Bioenergetics between Centrarchid Fishes in a Midwestern Power Plant Lake. 2021 Virtual Midwest Fish and Wildlife Conference, 2021.
- Rempe, K.J.*, Moody-Carpenter, C.J., Effert-Fanta, E.L., Colombo, R.E. and **Martinez E.** Differences in Growth and Bioenergetics between Black Crappie and Bluegill in a Midwestern Power Plant Lake. 2020 American Fisheries Society Virtual Annual Meeting, 2020.
- Sparks R.W.*, Moody-Carpenter C., **Martinez E.** and Colombo R.E. Determining Thermal Refuge of Fish Populations in a Highly Polluted River. Illinois Chapter of the American Fisheries Society 57th Annual Conference, Oral Presentation, 2019.

- Powers S.D.*, Grayson K.L., **Martinez E.** and Agosta S.J. Ontogenic variation in metabolic rate-temperature relationships in larvae of an invasive ectotherm. Society of Integrative and Comparative Biology Annual Meeting, Tampa, Florida, January, 2019.
- Sparks, R.W.*, Moody-Carpenter C., **Martinez E.** and Colombo R.E. Fish Assemblages in an Effluent Dominated Stream in Central Illinois. 79th Annual Meeting of the Midwest Fish and Wildlife Conference, Oral Presentation, 2019
- Martinez E.** Climate change and the engines of life; evaluating ecological tradeoffs and mitochondrial function in ectotherms. University of Louisville Department of Biology Seminar, 2018.
- Martinez E.** The 'Winners' and 'Losers' of the Thermal Game; Integrating Physiology and Life History Traits to Predict Resilience in a Changing Climate. University of Puerto Rico Department of Biology Seminar, 2016.
- Martinez E.** Management and Importance of the Guánica Biosphere Reserve. Inter-American University Biology Seminar Series, 2016.
- Martinez E.** Energetics of the Antarctic silverfish; a keystone species in a changing ecosystem. Eastern Illinois University Biological Sciences Seminar Series, 2015.
- Martinez E.** Temperature dependent energetics in aquatic and terrestrial ectotherms: and integrative, multilevel approach, Virginia Commonwealth University Biology Seminar Series, 2014.
- Martinez E.** and Bingham B. Settlement behavior as a function of light intensity: tests with solitary ascidian larvae. Ocean Science winter meeting, Honolulu, Hawai'i, February 2006

graduate student researcher

Student Awards and Grants Mentored

A. Undergraduate Research, Scholarship, and Creative Activities (URSCA) Awards – EIU Honors College

- Noah Oakley (Summer 2022). Can MS-222, a Commonly Used Fish Analgesic, Negatively Impact the Bioenergetic Machinery of Bluegill Sunfish? (\$1,200)
- Noah Oakley (Spring 2022). Can MS-222, a Commonly Used Fish Analgesic, Negatively Impact the Bioenergetic Machinery of Bluegill Sunfish? (\$750)
- Noah Wright (Fall 2021). Changes in thermal thresholds and bioenergetics of the green sunfish, *Lepomis cyanellus*, in response to acclimation. (\$750)
- Sarah Mummel (Spring 2021). Evaluating the role of temperature on the feeding performance of the northern leopard frog, *Lithobates pipiens*. (\$750)
- Ashley Parola (Fall 2018). Evolutionary divergence in gene expression during early patterning of median fins in bony fishes. (\$750)
- Alexandra Seiple (Fall 2019). Coping with increasing losses: assessing the role of crop pest metabolism and energetics to predict crop yields in a changing climate. (\$750)

B. Biological Sciences Undergraduate Research Grants – EIU Biology Department

- Mario Lara (Spring 2019). Insect bioenergetics.
- Ashley Parola (Fall 2018). Evolutionary divergence in gene expression in teleost fin development.

C. Scholars in Undergraduate Research (SURE) Award - EIU College of Sciences

- Ashley Parola (Spring 2019). Development skeletal elements in lake sturgeon.

D. Graduate School Research and Creative Activity Grant

Kyle Rempe (Spring 2021). Growth and Bioenergetics in Centrarchid fishes.
Kyle Rempe (Fall 2020). Growth and Bioenergetics in Centrarchid fishes.
Derick Lamptey (Fall 2019). Seasonal variation in bluegill mitochondrial bioenergetics.
Derick Lamptey (Spring 2019). Seasonal variation in bluegill mitochondrial bioenergetics.
Derick Lamptey (Fall 2018). Physiological thresholds in fishes living in warming waters.

E. Williams Travel Award

Derick Lamptey (Fall 2018, Spring 2019), Kyle Rempe (Fall 2019, Fall 2020, Spring 2021).

F. Extramural Student Grants

Kyle Rempe (Spring 2021) - American Fisheries Society – Larimore Student Research Grant (\$500).

Kyle Rempe (Spring 2021) – Illinois Lakes Management Association Scholarship (\$1000).

Kyle Rempe (Spring 2021) – Illinois Chapter of the American Fisheries Society Student Travel Award.

Student Mentoring

A. Masters Students

Sarah Zoppa (2022 – Present), Noah Wright (2022 – Present), Mario Lara (2020-2021), Essa Alrashdi (2020-2022), Colton Loew (2019-present) Kyle Rempe (2019-2021), Derick Lamptey (2018-2020).

B. Undergraduate Students Mentored

Bella Duco (2022), Kierra Thomas (2021), Noah Oakley (2021-Present), Sarah Mummel (2019 - 2021), Noah Wright (2019 - 2021), Remington Morrison (2019 - 2020), Alexandra Seiple (2019 - 2020), Oscar Prado (2019 - 2020), Renata Olvera (2019 - 2020), Rolando Monte de Oca (2019 - 2020), Ashley Parola (2018 - 2019), Dexter Kimbrough (2018 - 2019), Kortney Lucius (2018 - 2019).

Service and Outreach

A. EIU - University Level

College of Health Sciences and Human Services Dean Search (2022).
Institutional Animal Care and Use Committee Member (2018 – present).
Institutional Animal Care and Use Committee Chair (2019 – present).
BETA BETA BETA Biology Honors Society Chapter Advisor (2019 – present).

B. EIU - College Level

iSTEM Program Advisory Board Member and Mentor (2018 – present).
iSTEM Program Co-Director (2022-Present).

C. EIU - Departmental Level

Honors Program Committee Member (2018 – present).
High School / College Recruitment Committee (2018 – present).
Herpetology Club Advisor (2018 – present).
Graduate Program Committee Member (2019-present).
Herpetological collection curator (2018 – present).
Budget Committee Member (2018 – present).
Equipment Committee Member (2018 – present).

D. Professional and Community Level

Member of Master's Thesis Committee: Rafael Chaparro, North Carolina State University, Raleigh, NC (2020-present).

Member of Ph.D. Dissertation Committee: Sean D. Powers, Virginia Commonwealth University, Integrative Life Sciences Doctoral Program, Richmond, VA (2019 – present).

Interpretive guide and Outreach coordinator. Coordinate outreach efforts and educational programs in the Guánica Forest and Marine Reserve (2015 – 2018).

Science mentor. Working in collaboration with the Oceanography Camp for Girls at the University of South Florida, College of Marine Science, leading research excursions and teaching marine science to young women entering high school (2009 – 2013).

Outreach specialist. Developed lessons and taught marine science in 4th grade classrooms of Anacortes School District, Anacortes, WA. (2005).

Sea Grant outreach specialist (Spanish). Taught Marine science to K-12 students, leading workshops and other activities for the students, including data collection during coastal field outings (2005 – 2006).

E. Reviewer for Manuscripts

Journal of Experimental Zoology, PLoS ONE, Journal of Economical Entomology, BIOS, National Council for Undergraduate Research Proceedings, International Journal of Biometeorology, Journal of Environmental Entomology.

F. Consulting Services

North Carolina State (2016, 2017; Dr. Jaime Collazo); University of Richmond (2016, 2018; Dr. Kristine Grayson); Virginia Commonwealth University (2016, 2018; Dr. Salvatore Agosta)

Professional Societies

Association for the Sciences of Limnology and Oceanography (ASLO), Society of Integrative and Comparative Biology (SICB), Beta Beta Beta, SigmaXi, Illinois State Academy of Sciences (ISAS), Estuarine Research Federation (ERF).

References**Professor Gary Bulla**

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