



## ISRAEL DEL TORO- CURRICULUM VITAE

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Biology Department  
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### Education

Ph.D. University of Massachusetts Amherst (2014)

M.Sc. University of Massachusetts Amherst (2012)

B.S. University of Texas El Paso (2008)

### Appointments

Lawrence University- Assistant Professor of Biology (2016-Current)

University of Michigan- Adjunct Assistant Professor of Ecology (Summer 2017)

NSF Postdoctoral Research Fellow- University of Copenhagen & The Jornada LTER (2014-2016)

Fulbright Research Fellow- CSIRO Tropical Ecosystems Research Center (2012-2013)

Instructor- University of Massachusetts Amherst (2013)

### Peer-Reviewed Publications

\* Undergraduate student co-author

#### 2020:

**I. Del Toro**, R. R. Ribbons. No Mow May lawns have higher pollinator richness and abundances: An engaged community provides floral resources for pollinators. PeerJ . <https://peerj.com/articles/10021/>

#### 2019:

**I. Del Toro**, R. R. Ribbons. Variation in ant-mediated seed dispersal along elevation gradients. PeerJ 7:e6686 <http://doi.org/10.7717/peerj.6686>

**I. Del Toro**, R. R. Ribbons, J. Hayward., A.N. Andersen. Are Stacked Species Distribution Models accurate at predicting multiple levels of diversity along a rainfall gradient? Austral Ecology. 44: 105-113.

#### 2018:

X. Arnan, A.N Andersen, H. Gibb... **I. Del Toro**...39 Others... Dominance-diversity relationships in ant communities differ with invasion. Global Change Biology. 24: 4613-4625

J. Ariega,...**I. Del Toro**.... (17 others). Research trends in ecosystem services provided by insects. Basic and Applied Ecology 26:(1) 8-23.

#### 2017:

**I. Del Toro**, R.R. Ribbons, G. Berberich, M. Berberich, N.J. Sanders, A.M. Ellison. Nests of Red Wood Ants are positive associated with tectonic faults. Peer J. <https://doi.org/10.7717/peerj.3903>



H.Gibb....**I. Del Toro**... 20 other authors. A global database of ant species abundances. Ecology Data Paper. 2017

**2015:**

Andersen, A.N, **I. Del Toro**, Parr K. Diversity of ants along a precipitation gradient in Northern Australia. Journal of Biogeography 42(12) 2313-2322.

H. Gibb, N.J. Sanders, R.R. Dunn,... **I. Del Toro**...39 Others...C.L. Parr. Climate regulates the effects of disturbance on ant assemblage structure. Proceedings of the Royal Society 282: 20150418  
<http://dx.doi.org/10.1098/rspb.2015.0418>.

**I. Del Toro**, R.R. Ribbons, A.M. Ellison. Ant-mediated ecosystem functions on a warmer planet: effects on soil movement, decomposition and nutrient cycling. Journal of Animal Ecology 84:5 (1233-1241).

**I. Del Toro**, R. Silva, A.M. Ellison. Predicting the impacts of climatic change on ant functional diversity and distributions in Eastern North American Forests. Diversity and Distributions 21:7 (781-791).

**2014:**

M. Marquis\*, **I. Del Toro**, S.L. Pelini. Insect Mutualisms Buffer Warming Effects on Multiple Trophic Levels. Ecology 95(1):9-13.

**2013:**

**I. Del Toro**. Diversity of eastern North American ant communities along environmental gradients. PLoS ONE 8(7): e67073

**I. Del Toro** \*, K. Towle\*, D. Morrison\*, S. Pelini. Community Structure, Ecological and Behavioral Traits of Ants in Massachusetts Open and Forested Habitats. Northeastern Naturalist 20(1):103-114.

C.M. Prather, S. Pelini, A. Laws, E. Rivest, M. Woltz, C. Bloch, **I. Del Toro**, C.K. Ho, J. Kominoski, T.A.S. Newbold. S. parsons. Invertebrates, ecosystem services and climate change. Biological Reviews 88(2): 327-348.

**2012:**

**I. Del Toro**, RR Ribbons, SL Pelini. The little things that run the world revisited: A review of ant-mediated ecosystem services. Myrmecological News 17:133-146.

Diamond SE, DM Sorger, J Hulcr, SL Pelini, **I. Del Toro**, C Hirsch, E Oberg\*, and RR Dunn. Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology 18(2)448-456.

Oberg E\*,**I. Del Toro**, SL Pelini. Thermal tolerance assays in New England Ants. Insectes Sociaux 59 (2): 167-174.

**2010:**

**I. Del Toro**. K.W. Floyd, D. Borrok. Heavy metal distribution and bioaccumulation in Chihuahuan Desert Harvester Ant populations. Journal of Environmental Pollution 158(5): 1281-1287.

**2009:**

**I. Del Toro**, J. Pacheco, W.P. Mackay. Revision of the Ant Genus *Liometopum* (Hymenoptera: Formicidae). Sociobiology 53 (2A) 299-369.

**I. Del Toro**, M. Vazquez\*, W.P. Mackay, P. Rojas, and R. Zapata-Mata. Las Hormigas de Tabasco (Hymenoptera: Formicidae): Explorando la diversidad de la mirmecofauna en las selvas tropicales de baja altitud. [The Ants of Tabasco (Hymenoptera: Formicidae)].Dugesiana 16:1-14.

**In Review:**



R. Silva, **I. Del Toro**. Morphological structure of ant assemblages in tropical and temperate zone forests. (Submitted)

R. R. Ribbons, **I. Del Toro**, M. McDonald, L. Vesterdal. Biomass, nutrient and soil microbial community responses to mixed forest stand cultivations. (Submitted).

**I. Del Toro**, M. Anderson\*, C. Greenslit\*, E. Stanislawski\*. The island biogeography of native bee communities in urban greenspaces. (Submitted Ecosphere).

Anderson, M\*. **I. Del Toro**. Forest succession and tree identity shape the richness and function of New England ant communities. Submitted (Northeastern Naturalist)

**I. Del Toro**., K. Dickson, A. Hakes, S. Newman. Early undergraduate biostatistics and data science introduction using R, R Studio and the Tidyverse. Submitted (The American Biology Teacher).

### Other Publications

#### 2013:

**I. Del Toro**. The Chihuahuan Desert. In: Biomes and Ecosystems: An Encyclopedia. Ed. R.W. Howarth, Salem Press, 1440 pp.

**I. Del Toro**. Mid-latitude Deserts. In: Biomes and Ecosystems: An Encyclopedia. Ed. R.W. Howarth, Salem Press, 1440 pp

#### 2008:

**I. Del Toro**. Penguins, Bugs and the Experience of a Lifetime. Society for the Advancement of Chicanos and Native Americans. SACNAS News, Feature article.

### Funding and Awards: Totaling >\$500,000 USD

#### Current:

Wisconsin NASA Space Grant. Use of UAVS to monitor landscape attributes. \$25,963 USD

Associated Colleges of the Midwest Supported: Exploring Solutions for High-Performance Computing at ACM Institutions; \$25,637

Support from the Fox Cities Community Foundation: Bee Hotels and Wildflower Gardens: Which supports greater diversity? \$2500

Support from Pheasants Unlimited. Funds for promoting native bee habitat construction in Wisconsin urban greenspaces as well as community outreach and education efforts. \$2500 USD

National Science Foundation Postdoctoral Research Fellowship in Biology. Forecasting the impact of climate change and political boundaries on biodiversity conservation and management along the US-Mexico border. \$269,000 USD (2014-Present).

#### Previous:

Fulbright Fellowship, Australian-American Postgraduate Research Scholarship. Invertebrate community assembly along Northern Australia's rainfall gradient. \$38,000 USD (2012-2013).

Sigma Xi Conference Travel Grant. \$300 USD (2012).



Organismic and Evolutionary Biology Research Grant. Experimental evaluation of warming impacts on ant-mediated ecosystem services and processes. \$1,000 USD (2012).

Lewis and Clark Expedition Grant, The American Philosophical Society for field work on exploring the biodiversity of ants in the Northeastern United States. \$3,500 USD (2010).

National Geographic Young Explorer's Grant for field work on exploring the biodiversity of ants in the Northeastern United States. \$5000 USD (2010).

University of Massachusetts Amherst, Natural History Collections Grant for field work and curatorial work at the UMass entomological collection. \$3,000 USD (2010).

American Museum of Natural History, Museum collections study grant for travel and curatorial work at the entomological collection of the AMNH. \$1,500 USD (2010).

Academy of Natural Sciences Jessup Fellowship. Museum collections study grant for travel and curatorial work at the entomological collection of the Academy of Natural Sciences. \$1,250 USD (2009).

NEAGEP Doctoral Student Fellowship. Awarded to underrepresented Ph.D. students conducting scientific research. Deferred until 2012. \$40,000 USD (2009).

National Science Foundation Graduate Research Fellowship. Fellowship for conducting research on the impacts of regional climate change on ant communities in forested ecosystems. \$90,000 USD (2009).

Society for the Advancement of Chicanos and Native Americans in Science, Award for best undergraduate poster presentation in the field of polar sciences. \$250 USD (2008).

Ecological Society of America. Best student poster award in the field of soil ecology. \$500 USD (2008).

Ecological Society of America (SEEDS) Special Project Grant. Evaluation of Heavy Metal Contaminants in the Northern Chihuahuan Desert: Research and Education Opportunities for Underrepresented Students in Desert Ecology. \$5,000 USD (2008).

Clark Hubbs Student Poster Award- Southwestern Association of Naturalists. \$600 USD (2008).

Best Poster Presentation -UTEP Geology/Environmental Science Annual Colloquium. \$150 USD (2008).

Forrest K. Jackson Endowment Memorial, University of Texas El Paso. \$1,265 USD (2007).

University of Texas at El Paso Study Abroad Scholarship. \$2,000 USD (2007).

University of Texas at El Paso Study Abroad Scholarship. \$2,500 USD (2006).

Appointed to Deans List, University of Texas El Paso. (2005-2008).

### **Invited Seminars and Professional Development Workshops**

**2019:** The Ohio State University Entomology Department Seminar Series. B.Y.O.Bees: A sneak peek at the urban diversity of wild bees and their ecosystem services.

#### **2018:**

Texas A&M Environmental Integration Symposium. Invited Speaker: Revisiting the little things that run the world. A focus on ecosystem services mediate by eusocial Hymenoptera.

NSF Biodiversity RCN. Quantifying resilience methods in biodiversity monitoring.

#### **2017:**

University of Wisconsin Madison: (Entomology Department Seminar Series) Invertebrate mediated ecosystem services; the ant and bee world in our backyards.



**2016:**

City University of New York: (Biology Department Seminar Series) Modeling the impacts of climate change on keystone terrestrial invertebrates.

University of Venda: (Biology Department Seminar Series): Ant biodiversity on Mountains: Evaluating the key roles of ecosystem engineers in light of predicted climate change.

**2015:**

New Mexico State University: The heat is on! Climate Change impacts on the biogeography and ecology of ecosystem engineers. (Biology Department Seminar Series).

**2013:**

Harvard University: Combining macroecological and species distribution models to predict community assembly along environmental gradients. (Harvard Forest Seminar Series).

CSIRO Tropical Ecosystems Research Centre: Using distribution models to project biodiversity patterns of ant communities in Australia's Northern Savannas.

**2012:**

Harvard University: Invited Seminar Warm Ants: Community and Thermal Ecology of ants of New England. (Summer REU research seminar series).

E-connect Media Science Communication Training Workshop- CSIRO TERC, Darwin

**2011:**

Species distribution modeling workshop- American Museum of Natural History Southwestern Research Station, Portal, AZ USA

**2009:**

Impacts of climate change on invertebrate mediated ecosystem services- LTER All Scientist Meeting

**Abstracts and Contributed Papers (number of contributed abstracts)**

Ecological Society of America Annual Meeting: 2009-2018 (8)

Society for the Advancement of Chicanos and Native Americans in Science Annual Meeting: 2006-2013 (3)

Southwestern Association of Naturalists Annual Meeting: 2005-2009 (2)

Association for Tropical Biology and Conservation: 2014 (1)

International Biogeography Society: 2013-2016(2)

Northeastern Naturalists Annual Conference: 2012 (1)

**Teaching**

**Courses Taught (Planned):**

2018-2020: Advanced Biological Statistics and Modeling.

2017-2018: The Geography of Life: Understanding global biogeographic patterns, drivers and mechanisms.

2016-2019: Biological Statistics: An introduction to study design, methods and analyses for general use in the biological sciences.

2016-2018: General Ecology: An introduction to species interactions with their environments.

2016-2017: Lawrence University- Freshmen studies- Introduction to education in the liberal arts.



2013: University of Massachusetts Amherst- Community Ecology and Conservation Biogeography (Natural Resources and Conservation 597) Developed and taught upper-division undergraduate and graduate level course focused on the principles of community ecology and biogeography with conservation implications.

2008-2009: University of Texas at El Paso-Teaching Assistant, Introduction to the Study of Life (Freshman Level Biology Laboratory)

2008: University of Texas at El Paso-Teaching Teaching Assistant, University of Texas at El Paso. Biology for non-majors (Freshman Level).

2008: University of Texas at El Paso-Teaching Assistant, University of Texas at El Paso Entomology Course. (Upper Division Level).

#### **Guest Lectures and Tutoring:**

2020: Howard University- Guest Lecture in Climate Change and Conservation Ecology

2016: Lawrence University- Guest lecture in Field Biology Course Topic: Nutritional ecology

Lawrence University- Guest lecture in biostatistics- A brief introduction to spatial models

2015: New Mexico State University- Developing field studies with ants. (Biology research course).

2012: University of Massachusetts Amherst- Invited Guest Lecture- Use of G.I.S. for modeling species distribution responses to regional climate change. (Natural Resources and Conservation course).

2010-2012: Harvard Forest -Graduate School Preparation Panelist, REU program.

2008-2009: El Paso Community College. Tutoring for introductory biology courses (Freshman and Sophomore level). Laboratory preparatory technician.

2007: Coronado High School Biology Class. Chihuahuan Desert Ecology: Introduction to basic ecological concepts.

2006: Universidad Juarez Autonoma de Tabasco Division Académica de Ciencias Biológicas- Insect Taxonomy Course- La importancia de Taxonomía de insectos y sus interacciones con ecosistemas terrestres. Raul Zapata Mata.

#### **Service on Student Committees**

##### **External Examiner for International Ph.D. Student:**

2015: C. Munyai. University of Venda, South Africa: Ant diversity and ecosystem processes across an elevation gradient: Functional vs. taxonomic perspective in the Soutspansberg Mountains, South Africa.

##### **Undergraduate Thesis Research:**

2018: Cady Greenslit. Lawrence University. The population genetics of *Bombus* in the Fox Cities.

2017: M. Paninagua. Lawrence University: The spatial pattern effects of an invasive weevil on a threatened plant species, Pitcher's Thistle.

2011: M. Marquis. Arizona State University: Climate Change Impacts on Ant Aphid Interactions

#### **Professional Service**

##### **Peer Review:**

Ecological Monographs, Ecology, Diversity and Distributions, Journal of Biogeography, Global Change Biology, Myrmecological News, Dugesiana, Ecological Management and Restoration, Ecological Applications, Journal of Thermal Biology, Southwestern Naturalist, PLoS ONE, Oikos, PeerJ



**Membership in Professional Societies:**

Ecological Society of America (ESA),  
Society for the Advancement of Chicanos and Native Americans in Science (SACNAS),  
Entomological Society of America (ENTSOC),  
International Biogeography Society (IBS),  
Association for Tropical Biology and Conservation (ATBC)

**Leadership Roles:**

2011: Organismic and Evolutionary Biology Graduate Student President  
2010-2011: Long Term Ecological Research (LTER) network. Harvard Forest LTER. Graduate Student Representative.

**Mentorship:**

Harvard Forest REU- Adam Clark, Erick Oberg, Margarete Romero, Natasha Manyak, Michael Marquis, Kate Davis, Matthew Combs

University of Massachusetts Amherst- Alex Gerasimchuck, Drew Morrison

CSIRO Fulbright: Lilian Carpena, Ariane Bouilly

University of Texas El Paso- Christian Rodriguez, Julie Schlicte, Sara Baqla

University of Copenhagen: Emillie Elten, Lukas Friederich.

Lawrence University: Peter Kim, Emily Stanislosky, Cady Greenslit Hailey Bomar, Maggie Anderson, Emily Hill, Heidi Kroth, Jessica Robyns, Luke Shimabukuru, Summer Kopitzke, Monica Paniagua, Sophia Driessen, Briza Oscalago, Glorielly Gonzales.

