

# Trevor S Fristoe

Assistant Professor of Ecology  
Department of Biology  
University of Puerto Rico – Rio Piedras  
San Juan, Puerto Rico

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## Education

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**Doctor of Philosophy in Biology, with distinction** **2015**  
University of New Mexico  
Albuquerque, New Mexico, US  
Adviser: James H. Brown  
Dissertation: Constraints on the distributions  
and diversity of birds and mammals  
over variable environments

**Bachelor of Science in Biology, Cum Laude** **2008**  
University of Oregon  
Eugene, Oregon, US

## Professional Experience

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**Assistant Professor of Ecology** **2023 – Present**  
University of Puerto Rico – Rio Piedras  
San Juan, Puerto Rico

**Postdoctoral Research Associate** **2018 – 2023 \***  
University of Konstanz  
Konstanz, Germany  
Supervisor: Mark van Kleunen  
(\* 5.5 months family leave between 2021-2022)

**Postdoctoral Researcher** **2015 – 2018**  
Washington University in St. Louis  
St. Louis, Missouri, US  
Supervisor: Carlos A. Botero

## Publications

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**Fristoe, Trevor S**, Jonas Bleilevens, Nicole L. Kinlock, Qiang Yang, Zhijie Zhang, Wayne Dawson, Franz Essl, Holger Kreft, Jan Pergl, Petr Pyšek, Patrick Weigelt, Jean-Marc Dufour-Dror, Alexander N. Sennikov, Pawel Wasowicz, Kristine B Westergaard, and Mark van Kleunen. **2023**. Evolutionary imbalance, climate and human history jointly shape the global biogeography of alien plants. *Nature Ecology and Evolution*: 1-12

Fan, Shuya, Qiang Yang, Shao-peng Li, **Trevor S Fristoe**, Marc W Cadotte, Franz Essl, Holger Kreft, Jan Pergl, Petr Pyšek, Patrick Weigelt, John Kartesz, Misako Nishino, Jan J Wieringa, and Mark van Kleunen. **2023**. Reconciling Darwin's naturalization conundrum at the global scale. *Nature Communications*. In Press

Zhang, Zhijie, Qiang Yang, **Trevor S Fristoe**, Wayne Dawson, Franz Essl, Holger Kreft, Bernd Lenzner, Jan Pergl, Petr Pyšek, Patrick Weigelt, Marten Winter, Nicol Fuentes, John T Kartesz, Misako Nishino, and Mark van Kleunen. **2023**. The poleward expansion of intra-continental alien plants. *Science Advances*. In Press

**Fristoe, Trevor S**, Bruno Vilela, James H Brown, and Carlos A Botero. **2022**. Abundant-core thinking clarifies exceptions to the abundant-center distribution pattern. *Ecography*. 2: e-6365

Omer, Ali, **Trevor S Fristoe**, Qiang Yang, Mialy Razanajatovo, Patrick Weigelt, Holger Kreft, Wayne Dawson, Stefan Dullinger, Franz Essl, Jan Pergl, Petr Pyšek, and Mark van Kleunen. **2022**. The role of phylogenetic relatedness on alien plant success depends on the stage of invasion. *Nature Plants*. 8:906-914

**Fristoe, Trevor S**, Milan Chytrý, Wayne Dawson, Franz Essl, Ruben Heleno, Holger Kreft, Noëlie Maurel, Jan Pergl, Petr Pyšek, Hanno Seebens, Patrick Weigelt, Pablo Vargas, Qiang Yang, Fabio Attorre, Erwin Bergmeier, Markus Bernhardt-Römermann, Idoia Biurrun, Steffen Boch, Gianmaria Bonari, Zoltán Botta-Dukát, Hans Henrik Bruun, Chaeho Byun, Andraž Čarni, Maria Laura Carranza, Jane A Cafford, Bruno E. L. Cerabolini, Eduardo Chacón-Madrugal, Daniela Ciccarelli, Renata Čušterevska, Iris de Ronde, Jürgen Dengler, Valentin Golub, Rense Haveman, Nate Hough-Snee, Ute Jandt, Florian Jansen, Anna Kuzemko, Filip Kůžmič, Jonathan Lenoir, Armin Macanović, Corrado Marcenò, Adam Martin, Sean T Michaletz, Akira S Mori, Ülo Niinemets, Tomáš Peterka, Remigiusz Pielech, Valerijus Rašomavičius, Solvita Rūsiņa, Arildo S Dias, Mária Šibíková, Urban Šilc, Angela Stanisci, Steven Jansen, Jens-Christian Svenning, Grzegorz Swacha, Fons van der Plas, Kiril Vassilev, and Mark van Kleunen. **2021**. Dimensions of invasiveness: Links between local abundance, geographic range size, and habitat breadth in Europe's alien and native floras. *Proceedings of the National Academy of Sciences*. 18 (22), e2021173118

Yang, Qiang, Patrick Weigelt, **Trevor S Fristoe**, Zhijie Zhang, Holger Kreft, Anke Stein, Hanno Seebens, Wayne Dawson, Franz Essl, Christian König, Bernd Lenzner, Jan Pergl, Robin Pouteau, Petr Pyšek, Marten Winter, Aleksandr L. Ebel, Nicol Fuentes, Eduardo L. H. Giehl, John Kartesz, Pavel Krestov, Toomas Kukk, Nishino Misako, Kupriyanov Andrey Nikolaevich, Alla Verkhosina, Jose Luis Villaseñor, Jan J. Wieringa, Abida Zedam, Elena Zykova, and Mark van Kleunen. **2021**. The global loss of floristic uniqueness. *Nature Communications*. 12: 7290

Kalusová, Veronika, Josep Padullés Cubino, **Trevor S Fristoe**, Milan Chytrý, Wayne Dawson, Franz Essl, Mark van Kleunen, Holger Kreft, Ladislav Mucina, Jan Pergl, Petr Pyšek, Patrick Weigelt, Marten Winter, and Zdeňka Lososová. **2021**. Phylogenetic structure of alien plant species pools from European donor habitats. *Global Ecology and Biogeography*. DOI: 10.1111/geb.13387

Omer, Ali, **Trevor S Fristoe**, Qiang Yang, Noëlie Maurel, Patrick Weigelt, Holger Kreft, Jonas Bleilevens, Wayne Dawson, Franz Essl, Jan Pergl, Petr Pyšek, and Mark van Kleunen. **2021**. Characteristics of the naturalized flora of Southern Africa largely reflect the non-random introduction of species for cultivation. *Ecography*. 44:1-14

Pouteau, Robin, Wilfried Thuiller, Carsten Hobohm, Caroline Brunel, Barry J Conn, Wayne Dawson, Michele de Sá Dechoum, Aleksandr L Ebel, Franz Essl, Ori Fragman-Sapir, **Trevor S**

**Fristoe**, Nejc Jogan, Holger Kreft, Bernd Lenzner, Carsten Meyer, Jan Pergl, Petr Pyšek, Alla Verkhovzina, Patrick Weigelt, Qiang Yang, Elena Zykova, Svetlana Ačić, Emiliano Agrillo, Fabio Attorre, Ariel Bergamini, Christian Berg, Erwin Bergmeier, Idoia Biurrun, Steffen Boch, Gianmaria Bonari, Zoltán Botta-Dukát, Helge Bruehlheide, Juan Antonio Campos, Andraž Čarni, Laura Casella, Maria Laura Carranza, Milan Chytrý, Renata Čušterevska, Michele De Sanctis, Jürgen Dengler, Panayotis Dimopoulos, Rasmus Ejrnæs, Jörg Ewald, Giuliano Fanelli, Federico Fernández-González, Rosario G Gavilán, Jean-Claude Gegout, Rense Haveman, Maïke Isermann, Ute Jandt, Florian Jansen, Borja Jiménez-Alfaro, Ali Kavgacı, Larisa Khanina, Ilona Knollová, Anna Kuzemko, Maria Lebedeva, Jonathan Lenoir, Tatiana Lysenko, Corrado Marcenò, Vasiliy Martynenko, Jesper Erenskjold Moeslund, Ricarda Pätsch, Remigiusz Pielech, Valerijus Rašomavičius, Iris de Ronde, Eszter Ruprecht, Solvita Rūsiņa, Pavel Shirokikh, Jozef Šibík, Urban Šilc, Angela Stanisci, Zvezdana Stančić, Jens-Christian Svenning, Grzegorz Swacha, Pavel Dan Turtureanu, Milan Valachovič, Kiril Vassilev, Sergey Yamalov, and Mark van Kleunen. **2021**. Climate and socio-economic factors explain differences between observed and expected naturalization patterns of European plants around the world. *Global Ecology and Biogeography*. 30:1514–1531

Robin Pouteau, Idoia Biurrun, Caroline Brunel, Milan Chytrý, Wayne Dawson, Franz Essl, **Trevor S Fristoe**, Rense Haveman, Carsten Hobohm, Florian Jansen, Holger Kreft, Jonathan Lenoir, Bernd Lenzner, Carsten Meyer, Jesper Erenskjold Moeslund, Jan Pergl, Petr Pyšek, Jens-Christian Svenning, Wilfried Thuiller, Patrick Weigelt, Thomas Wohlgemuth, Qiang Yang, and Mark van Kleunen. **2021**. Potential alien ranges of European plants are predicted to shrink in the future, but less so for naturalized than for not yet naturalized species. *Diversity and Distributions*. DOI: 10.1111/ddi.13378

Vilela, Bruno, **Trevor S Fristoe**, Ty Tuff, Patrick H Kavanagh, Hannah J. Haynie, Russell D. Gray, Michael C Gavin, and Carlos A Botero. **2020**. Cultural transmission and ecological opportunity jointly shaped global patterns of reliance on agriculture. *Evolutionary Human Sciences*. 2, e53.

van Kleunen, Mark, Xinyi Xu, Qiang Yang, Noëlie Maurel, Zhijie Zhang, Wayne Dawson, Franz Essl, Holger Kreft, Jan Pergl, Petr Pyšek, Patrick Weigelt, Dietmar Moser, Bernd Lenzner, and **Trevor S Fristoe**. **2020**. Economic use of plants is key to their naturalization success. *Nature Communications*. 11, 3201.

Catano, Chris P, **Trevor S Fristoe**, Joseph A LaManna, and Jonathan A Myers. **2020**. Local species diversity,  $\beta$ -diversity and climate influence the regional stability of bird biomass across North America. *Proceedings of the Royal Society B*, 287 (1922), 20192520.

Burger, Joseph R, Robert P Anderson, Maghan A Balk, and **Trevor S Fristoe**. **2019**. A Constraint-based model of Dynamic Biogeography: environmental history and species traits predict hysteresis in populations and communities. *Frontiers of Biogeography*, 11.3, e44383

**Fristoe, Trevor S**, and Carlos A Botero. **2019**. Alternative ecological strategies lead to avian brain size bimodality in variable habitats. *Nature Communications*, 10 (1), 1-9.

Burger, Joseph R and **Trevor S Fristoe**. **2018**. Hunter-gatherer Populations Inform Modern Ecology. *Proceedings of the National Academy of Sciences*, 115 (6), 1137-1139.

**Fristoe, Trevor S**, Andrew N Iwaniuk, and Carlos A Botero. **2017**. Big brains stabilize populations and facilitate the colonization of variable climates in birds. *Nature Ecology and Evolution*, 1 (11), 1706.

Fois, Mauro, Alba Cuena-Lombraña, **Trevor S Fristoe**, Giuseppe Fenu, and Gianluigi Bacchetta. **2016**. Reconsidering alternative transportation systems to reach academic conferences and to convey an example to reduce greenhouse gas emissions. *History and Philosophy of the Life Sciences*, 3 (4), 25.

Murthy, Adeline C, **Trevor S Fristoe**, and Joseph R Burger. **2016**. Homogenizing effects of cities on North American winter bird diversity. *Ecosphere*, 7 (1), e01216.

**Fristoe, Trevor S**, Joseph R Burger, Meghan A Balk, Imran Khaliq, Christian Hof, and James H Brown. **2015**. Metabolic heat production and thermal conductance are mass-independent adaptations to thermal environment in birds and mammals. *Proceedings of the National Academy of Sciences*, 112 (52), 15934-15939.

Hammond, Sean T, James H Brown, Joseph R Burger, **Trevor S Fristoe**, Norman Mercado-Silva, Jeffrey C Nekola, and Jordan G Okie, and Tatiana Paz. **2015**. Food Spoilage, Storage and Transport: Implications for a Sustainable Future. *BioScience*, 65(8), 758-768.

**Fristoe, Trevor S**. **2014**. Energy use by migrants and residents in North American breeding bird communities. *Global Ecology and Biogeography*, 24: 406–415.

Brown, James H, Joseph R Burger, William R Burnside, Michael Chang, Ana D Davidson, **Trevor S Fristoe**, Marcus J Hamilton, Sean T Hammond, Astrid Kodric-Brown, Norman Mercado-Silva, Jeffrey C Nekola, and Jordan G Okie. **2014**. Macroecology meets macroeconomics: Resource scarcity and global sustainability. *Ecological Engineering*, 65: 24-32.

Nekola, Jeffrey C, James H Brown, Craig D Allen, Joseph R Burger, William R Burnside, Ana D Davidson, **Trevor S Fristoe**, Marcus J Hamilton, Sean T Hammond, Norman Mercado-Silva, and Jordan G Okie. **2013**. The Malthusian-Darwinian Dynamic and the Trajectory of Civilization. *Trends in Ecology and Evolution*, 28(3), 127-130.

Burger, Joseph R, James H Brown, Craig D Allen, William R Burnside, Ana D Davidson, **Trevor S Fristoe**, Marcus J Hamilton, Norman Mercado-Silva, Jeffrey C Nekola, Jordan G Okie, and Wenyun Zuo. **2012**. The Macroecology of Sustainability. *PLOS Bio* 10(6), e1001345

## Other Publications and Presentations

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### Book Reviews

Sean T Hammond, James H Brown, Joseph R Burger, Michael R Chang, Tatiana P Flanagan, **Trevor S Fristoe**, Astrid Kodric-Brown, and Jordan G Okie. **2013**. Bankrupting nature for the (temporary) wealth of nations. Book review in *Trends in Ecology and Evolution*, 28(10), 576-577.

### Invited Talks

**Fristoe, Trevor S**. Understanding the distribution of life on a dynamic Earth: from plant invaders to brainy birds.  
**2023** – Interview Talk, East Carolina University, Greenville, NC.

**Fristoe, Trevor S.** Understanding the distribution of life on a dynamic Earth: from plant invaders to brainy birds.

**2022** – Interview Talk, University of Puerto Rico – Río Piedras, San Juan, Puerto Rico.

**Fristoe, Trevor S.,** Iwankiuk, A.N., and Botero, C.A. Big brains stabilize populations and facilitate the colonization of variable climates in birds.

**2017** - Saint Louis Ecology Evolution and Conservation Retreat, St. Louis, MO.

*Conference Presentations – Oral*

**Fristoe, Trevor S., et al.** Evolutionary imbalance, human history, and the global biogeography of alien plants.

**2022** – Ecological Society of America annual meeting, Montreal, Quebec, Canada.

**2022** – Meeting of the International Biogeography Society, Vancouver, British Columbia, Canada (Online).

**Fristoe, Trevor S., et al.** Alien species and the shape of commonness and rarity in Europe's flora.

**2021** – Conference of the plant population biology section of the Ecological Society of Germany, Austria and Switzerland, Prague, Czech Republic (Online).

**Fristoe, Trevor S., et al.** Dimensions of invasiveness in Europe's alien flora: links between local abundance, geographic range size and habitat breadth.

**2020** - Ecological Society of America annual meeting, Salt Lake City, Utah (Online).

**2020** - Conference of the specialist group Macroecology of the Ecological Society of Germany, Austria and Switzerland, Konstanz, Germany.

**Fristoe, Trevor S.,** Botero, CA. Alternative strategies drive strong brain size bimodality in variable habitats.

**2019** – Meeting of the International Biogeography Society, Malaga, Spain.

**Fristoe, Trevor S.,** Iwankiuk, A.N., and Botero, C.A. Big brains stabilize populations and facilitate the colonization of variable climates in birds.

**2017** - Meeting of the International Biogeography Society, Tucson, AZ.

**2016** - Evolution Meeting, Austin, TX.

**Fristoe, Trevor S.,** Murthy, A.C., and Burger, J.R. Homogenizing effects of cities on North American winter bird Diversity.

**2014** - Meeting of the American Ornithologists' Union, Estes Park, CO.

*Conference Presentations - Poster*

**Fristoe, Trevor S.,** Burger, JR., Tallavaara, M., and Luoto, M. Energetic origins of the Anthropocene.

**2020** - Conference of the specialist group Macroecology of the Ecological Society of Germany, Austria and Switzerland, Konstanz, Germany.

**Fristoe, Trevor S.** and Botero, CA. Brains, Brawn, or Babies: Divergent trait syndromes enable persistence in Earth's most variable environments.

**2018** - Gordon Conference on Unifying Ecology Across Scales, Biddeford, ME.

**Fristoe, Trevor S.** The contribution of migrants to diversity and energy use in North American bird communities across the seasons.

**2015** - Meeting of the International Biogeography Society, Bayreuth, Germany.

**Fristoe, Trevor S.**, Burger, JR., and Balk, MA. BMR and conductance are body size-independent adaptations to thermal environment in mammals.

**2014** - Gordon Conference and Seminar on the Metabolic Basis of Ecology, Biddeford, ME.

**Fristoe, Trevor S.** Energy use in North American winter bird communities.

**2013** - Meeting of the American Ornithologists' Union, Chicago, IL.

**Fristoe, Trevor S.** Energy use by migrants in North American breeding bird communities.

**2012** - Gordon Conference and Seminar on the Metabolic Basis of Ecology, Biddeford, ME.

**2012** - Meeting of the American Ornithologists' Union, Vancouver, BC.

**2011** - Meeting of the International Biogeography Society, Heraklion, Crete, Greece.

## Teaching and Mentoring

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### Postdoc Research Associate

2018 – 2023

University of Konstanz  
Konstanz, Germany

Co-teaching intensive courses in **Plant Physiology** (for advanced undergraduates) and **Global Change Ecology** (for master's students), including leading R and statistics workshops. I also lead a discussion course (bio and non-bio students) on **Documentaries in Ecology** and provide lectures in masters courses on **Evolutionary Ecology** and **Methods in Biology**.

### Teaching Assistant

2009 – 2015

University of New Mexico  
Albuquerque, New Mexico, US

Independently taught labs and discussions for introductory classes in **ecology, evolution, physiology, and genetics** as well as advanced classes on the **Principles of Ecology, Macroecology, and the Biology of Toxins**.

### Student Research Mentoring

University of Konstanz  
Konstanz, Germany

2022. Valentina Zickenberg. **Undergraduate Thesis**: The global distribution of naturalized alien plant functional traits.

2021. Mina Eberlein. **Undergraduate Thesis**: Enemy release and invasion in a warming world – temperature dependence of plant-soil feedbacks.

2020 – 2022. Ali Omer. **PhD Thesis Advisory Committee** (International Max Plank Research School): The alien cultivated flora of Southern Africa.

2019 – 2020. Jonas Beilevins. **Master's Thesis**: Does origin matter to invasion success of plants? – a macroecological analysis and a competition experiment.

Washington University in St. Louis  
St. Louis, MO

2018. Savannah Fuqua. **Undergraduate Honors Thesis**: Are species' populations more stable at the center of their geographic range?

2017 - 2018. Lily Malcolm. **Undergraduate Honors Thesis:** Early springs cause population growth in North Temperate resident birds, population declines in migrants.

University of New Mexico  
Albuquerque, NM

2011 - 2013. Adeline Murthy. **Undergraduate Honors Thesis:** Homogenizing effects of cities on North American winter bird diversity.

## Grants and Awards

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2023	University of Konstanz Biology Department Best Paper Award (€300)
2021	University of Konstanz Biology Department Best Paper Award (€300)
2014	Program in Interdisciplinary Biological and Biomedical Sciences Student Enrichment Opportunity (\$1000)
2012, 2013	UNM Bealmer Graduate Scholarship (\$1000 total)
2012	UNM Research Project and Travel Grant (\$1000)
2012	Biology Society of New Mexico Outstanding TA Award (\$500)
2011, 2012, 2014	UNM GRAC Research Grant (\$1,500 total)
2011, 2012	UNM SRAC Research Grant (\$500 total)

## Professional Service and Outreach

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### Head conference organizer

2020

14th Conference of the specialist group  
Macroecology of the Ecological Society of  
Germany, Austria and Switzerland  
University of Konstanz, Konstanz, Germany  
Theme: Macroecology of the Anthropocene

### Invited public talk

2018

Joint meeting of the St. Louis Audubon Society and  
Webster Groves Nature Study Society  
Webster Groves, Missouri, US  
Title: How big (and small) brains help wild birds survive

**Instructor**

Birding Basics Course  
Forest Park Forever  
St. Louis, Missouri, US

**2018****Invited public talk**

Audubon Society Pelican Days Festival  
Audubon Center at Riverlands  
West Alton, Missouri, US

**2018**

Title: How big (and small) brains help wild birds survive

**Banding station volunteer**

Alaska Bird Observatory  
Fairbanks, Alaska, US

**2006 – 2009****Reviewer for:**

Biological Invasions  
Ecography  
Ecology  
Ecology and Evolution  
Ecology Letters  
Ecosphere  
European Journal of Ecology  
Forests  
Frontiers in Conservation  
Frontiers in Ecology and Evolution  
Functional Ecology  
Global Change Biology  
Global Ecology and Biogeography  
Journal of Biogeography  
Nature Communications  
Nature Ecology and Evolution  
Oikos  
Plant Diversity  
Proceeding of the National Academy of Sciences

**Press Coverage**

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2020

'The Ecology of Dumb' – 'Hot science' highlight in **Discover Magazine**  
(September/October 2020 issue)

**Society Membership**

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International Biogeography Society  
Ecological Society of America



## Art and Nature

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### Logo design and illustrations

2018 – current

Black Spruce Brewing Company  
Fairbanks, Alaska, US

Logo designs and label illustrations inspired by the natural history of Interior Alaska

### Illustrator

2017

Fossil and habitat reconstruction for the manuscript:

Gustafson, GT, Prokin, AA, Bukontaite, R, Bergsten, J, and Miller, KB. 2017. Tip-dated phylogeny of whirligig beetles reveals ancient lineage surviving on Madagascar. *Scientific Reports*, 7, 8619.

### Illustrator

2015 and 2021

Snowbright Studios  
Cleveland, Ohio, US  
Nothing Sacred Games  
Berkeley, California, US

Ornithology themed card game, Birds of a Feather