Disease Vectors

Authors: Richards, Stephanie L., Ruiz, Marilyn O., Fryxell, Rebecca T. Trout, and Vitek, Christopher J.

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Disease Vectors

- Stephanie L. Richards
  Assistant Professor, Health Education and Promotion, Environmental Health Sciences Program, East Carolina University, Greenville, NC, USA.
- Marilyn O. Ruiz
  Director, Geographic Information Systems and Spatial Analysis laboratory, College of Veterinary Medicine, University of Illinois at Urbana-Champaign, Urbana, IL, USA.
- Rebecca T. Trout Fryxell
  Assistant Professor, Medical and Veterinary Entomology, University of Tennessee, Knoxville, TN, USA.
- Christopher J. Vitek
  Associate Professor, Department of Biology, University of Texas-Pan American, Edinburg, TX, USA.

Supplement Aims and Scope

This supplement is intended to focus on the identification and characterization of disease vector hazards and associated risks for human health and the environment and development, implementation and evaluation of prevention or intervention strategies to limit disease vector hazards and associated risks.

Environmental Health Insights aims to provide environmental health practitioners, researchers and the general public with online, open access to scholarly articles on environmental health hazards and associated risks. The journal aims to explore how these hazards and risks can be eliminated or limited or prevented to help protect human health and our environment.

In a field where the literature is ever-expanding, practitioners and researchers increasingly need to have ready access to up-to-date, high-quality scholarly articles on areas of on-going interest in environmental health. This supplement aims to address this need by presenting contemporary articles by leading scholars, allowing readers to distinguish the signal from noise. We hope that through this effort, practitioners and researchers will be aided in finding answers to some of the most complex and pressing issues of our time.

Part 1: Viral Agents
Part one of the Environmental Health Insights Disease Vectors supplement focuses on viral agents transmitted by insects, ticks, and other arthropods and mechanical vectors (vehicles). Also included within the scope of part one are the development, implementation and evaluation of intervention strategies to prevent, control or eliminate arthropod disease vector viral hazards and associated risks.

Part 2: Bacterial Agents
Part two of the Environmental Health Insights Disease Vectors supplement focuses on bacterial agents transmitted by insects, ticks, and other arthropods and mechanical vectors (vehicles). Also included within the scope of part two are the development, implementation and evaluation of intervention strategies to prevent, control or eliminate arthropod disease vector bacterial hazards and associated risks.

Part 3: Protozoal Agents
Part three of the Environmental Health Insights Disease Vectors supplement focuses on protozoal agents transmitted by insects, ticks, and other arthropods and mechanical vectors (vehicles). Also included within the scope of part three are the development, implementation and evaluation of intervention strategies to prevent, control or eliminate arthropod disease vector protozoal hazards and associated risks.

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Vector-borne diseases are a significant and growing human health risk that must be addressed at both local and global scales within the broad context of Environmental Health. The topic of this special Environmental Health Insights supplement, Disease Vectors, seeks to help environmental health practitioners, researchers, and the general public understand the broad public health impacts of vector-borne disease. It also facilitates learning about important factors that contribute to increased exposure to the vectors and the pathogens they carry. This supplement explores arthropods involved in enzootic, epizootic, and epidemic transmission cycles. Articles include discussions of vectors including, but not limited to, mosquito-borne viruses, triatomine-borne parasites, and tick-borne bacteria. We are thankful that supplement authors provided a diverse set of studies including laboratory analyses of vector competence, field studies of vector biology and control, and spatiotemporal analyses of vector-borne disease.

Vector-borne diseases affect >1 billion people and kill >1 million people annually[1], resulting in significant health and economic burdens throughout the world. Emerging vector-borne diseases are also important issues for public health as the geographic range of many of these diseases has increased in recent years.[2] Ideally, entomological surveillance and risk assessments should be conducted in disease-endemic areas, as well as areas at predicted risk of vector and/or pathogen introduction[3]; however, this rarely occurs. The most common reason surveillance and risk assessments are not conducted is due to budget reductions in some vector control programs. These reductions have inevitably resulted in a reactive rather than proactive approach, hence leaving the public at higher risk in regions where vector-borne disease is prevalent and potentially allowing an infected vector population to expand.[4,5]

Range expansion of potential vectors and emerging pathogens, climate change, pesticide resistance, human encroachment on vector habitat, and international travel have all contributed to increased vector-human interactions and the health burden from vector-borne diseases.[3,6] A major theme established in this supplement to improve health outcomes is the need for increased surveillance of current and emerging vector-borne diseases and enhanced communication between vector control programs, local environmental/public health departments, veterinarians, and physicians. This information provides a basis for future studies that will continue to improve risk assessment/prediction models and control methods to alleviate the health effects of vector-borne disease and improve public health response.

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Lead Guest Editor **Dr Stephanie L. Richards**

Dr. Stephanie L. Richards is an Assistant Professor of Health Education and Promotion in the Environmental Health Sciences Program at East Carolina University. She completed her PhD at North Carolina State University and has previously worked at the University of Florida, Florida Medical Entomology Laboratory, and Craven County Department of Public and Environmental Health. She studies biological and environmental factors affecting vector ecology, underlying mechanistic causes of differential vector competence for arboviruses, role of mosquitoes in the spread of emerging pathogens, spatial ecology of vectors and vector-borne disease, vector-borne disease and public health, and insects of forensic importance. Dr. Richards is the author or co-author of 32 published papers and has presented her research 88 times at conferences.

richardss@ecu.edu
http://www.ecu.edu/cs-hhp/hlth/richardsst.cfm

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Guest Editors

DR. MARILYN O'HARA RUIZ

Dr. Marilyn O'Hara Ruiz is the Director of the Geographic Information Systems and Spatial Analysis laboratory at College of Veterinary Medicine of the University of Illinois at Urbana-Champaign. She completed her PhD at University of Florida and has previously worked at Florida State University and the U.S. Army Corps of Engineers. She now works primarily in spatial epidemiology. Dr O'Hara Ruiz is the author or co-author of >50 published papers or book chapters and has presented at >50 conferences.

moruiz@illinois.edu
http://vetmed.illinois.edu/path/gissa/

DR. REBECCA T. TROUT FRYXELL

Dr. Rebecca T. Trout Fryxell is an Assistant Professor of Medical and Veterinary Entomology at the University of Tennessee. She completed her PhD at the University of Arkansas and has previously worked at the University of Kentucky and University of California Davis. As a medical and veterinary entomologist, her goals are to improve human and animal health and welfare, clarify the role(s) of arthropods in pathogen transmission and determine the underlying factors (from molecule to ecosystem) that contribute to the success of vectors by integrating applied and molecular entomology. Dr. Trout Fryxell is the author or co-author of 22 published papers and has presented at 50 conferences.

RFryxell@utk.edu
https://ag.tennessee.edu/EPP/Pages/Fryxell.aspx

DR. CHRISTOPHER VITEK

Dr. Christopher Vitek is an Associate Professor at the University of Texas-Pan American. He completed his PhD at Clark University and has previously worked at University of Florida. He now works primarily in ecology and medical entomology, with an emphasis on mosquito population ecology. Dr. Vitek is the author or co-author of 12 published papers and has presented at 37 conferences.

vitekc@utpa.edu
http://portal.utpa.edu/utpa_main/daa_home/cose_home/biology_home/biology_staff/faculty_vitek

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CORRESPONDENCE: richardss@ecu.edu

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