Kevin Emmanuel Scriber, II, M. Sc., Ph.D.

ACADEMIC QUALIFICATIONS

Ph. D 2014 - 2020 Evolutionary Biology, Howard University

M. Sc. 2011 - 2013 Chemical Ecology, University of Alabama at Birmingham

B. Sc. 2003 - 2010 General Biology, Norfolk State University

RESEARCH INTEREST SYNOPSIS

My research interests revolve around understanding the impact of climate change on trophic ecology of invasive species (particularly in freshwater habitats) in non-native habitats. This is accomplished by juxtaposing the diet, the trophic position, and life history traits of invasive species as they shift from native habitats to, and between, various non-native habitats. I also have interests in the role of invasive species as vectors for disease.

LONG TERM RESEARCH AGENDAS

I. Long Term Research Agenda

The impetus of my long-term research agenda is developing methodologies to define the mechanisms by which invasive (aquatic, terrestrial, and/or marine) species adversely impact non-native habitats thereby displacing species, reducing biodiversity (homogenization), and modifying and/or dismantling long-standing, and coevolved, trophic relationships therein.

By juxtaposing the diet, trophic position, and life history traits of invasives, in native habitats *versus* non-native habitats, it is possible to predict how non-native habitats would be modified post-invasion by:

a) Obtaining stable isotope analyses of Nitrogen and Carbon Isotope ratios from organic samples from (1) invasives of interest, (2) plant, fungi, and animal species, as well as detritus, zoo and phytoplankton, or any other available food resources, within respective native and non-native habitats alike.

b) Utilizing Bayesian analyses (such as SIAR, Stable Isotope Analysis in R) to glean posterior probabilities for species diets in (1) native habitats (2 & 3) and non-native habitats (before and post-invasion) respectively.

c) The resultant statistical models, utilizing stable isotopes, provide insights into the diet, trophic position, and trophic ecology of all species analyzed. However, the specific trophic mechanisms defining how invasives transition to, and between myriad, distinct non-native habitats, as biological invasion expand, are key to predicting the susceptibility of habitats to invasion; and life history traits that facilitate the success of invasives.

d) As more habitats transition from natural to dysfunctional states due to climate change, climate envelope models predict where changing abiotic conditions are to endanger non-native habitats globally.

e) Preemptive stable isotope sampling from plants, fungi, animals, and other species within vulnerable habitats, on the periphery of current biological invasions or habitats where abiotic conditions are predicted to change, can yield valuable data on the trophic ecology, natural biodiversity within, and the food web structure therein.

f) If these same, preemptively sampled, habitats subsequently were invaded, the differences between non-native habitats, both effected and not by invaders, would be of paramount importance.

g) These differences, in terms of food web structure, measures of biodiversity (*e.g.*: species evenness), and the specific amalgam of, and life-history traits possessed by, species therein may elucidate key factors suitable for the predict of the susceptibility of habitats to specific biological invaders; considering their life history traits, trophic ecology, as well as the life history traits of each habitats unique amalgam of species, corresponding measures of biodiversity, and food web structures therein.

These factors determine may predict the likelihood of either the influx of biological invaders (driving biodiversity loss or homogenization) or the resilience, and likely biotic resistance, of non-native habitats.

SUMMARY

Via long-term stable isotope studies I hope to coin broadly applicable methods to:

1) Predict changes to long-standing trophic relationships, disrupted by invasive species, with confidence based on differences in biodiversity (biotic resistance), resource availability, life history traits, and the food web structure of invaded habitats.

2) Predict the likelihood of trophic and ecological changes to habitats following biological invasions.

3) Prioritize the conservation of habitats, potentially at risk for biological invasions based on statistical models constructed from stable isotope data and (previously discussed) preemptive sampled stable isotope sampling.

4) Finally, in habitats where restoration attempts are underway, comparisons between previously sampled and current stable isotope sampling data can be utilized to conclusively demonstrate whether restoration efforts are effective.

   Juxtaposing these corresponding stable isotope mixing models can help evaluate, and prioritize, ecological restoration efforts.

PROFESSIONAL AFFILIATIONS

Society for Integrated and Comparative Biology (SICB)

Conchologist of America's (COA)

Sigma Xi Scientific Research Society

Delta Epsilon Iota Academic Honor Society

Research Associate @
The Smithsonian Institute's National Museum of Natural History

Researcher @
The Smithsonian Institute's MCI Stable Isotope Mass Spectrometry Facility

Research Affiliate of Dr. Leslie Ries
Department of Biology
Georgetown University

Research Affiliate of Dr . Fatimah Jackson
Department of Biology

Howard University

LINKS TO PROFILE

UNIVERSITY OF ARIZONA FACULTY PAGE

RESEARCHGATE