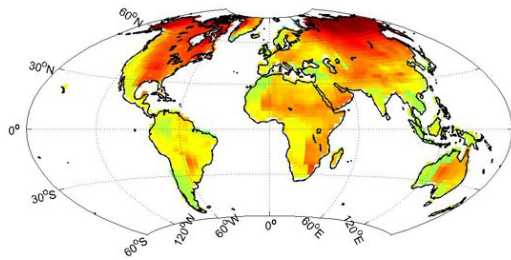


THE TEWKSBURY LAB



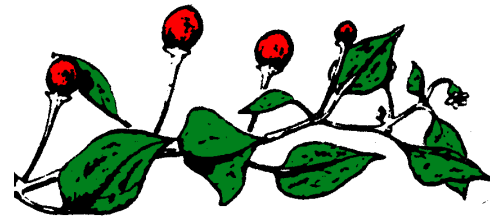
What is the fate of a silent forest? Birds disperse seeds and consume insects in virtually every terrestrial habitat on earth. But throughout the world bird populations are declining and local extinction may carry large consequences for forest health and agriculture. We are working on Guam – the *only* island on earth that has lost all of its birds – and nearby islands with intact bird communities to determine the ecological and economic costs of avian loss.



Climate change will profoundly impact biodiversity and society in the next 100 years. To understand how climate change will affect global biodiversity, my lab is using evolutionary theory to predict how populations, species, and communities will respond to changing temperatures. Recently, we showed that because tropical organisms have evolved in a historically stable environment, they have a low tolerance of temperature fluctuations and thus are much more susceptible to global warming than previously thought. Our work also shows that expanding insect populations in warming temperate regions will jeopardize agricultural productivity. We are now in the process of launching a center devoted to studying the connections between climate change, environmental health, and human health.



We live on a fragmented planet. Over 40% of the earth's landscape has been converted for human use and the resulting habitat loss and fragmentation are responsible for more species extinctions than any other human action. My lab is looking at whether using wildlife corridors to connect patches of similar habitat is an effective means of reducing the negative impacts of fragmentation on species health and biodiversity. We do this research in both experimentally-manipulated landscapes and in actively managed landscapes. Our results inform management at local, state, and federal levels.



Why are chilies hot? Plants use fruit to attract consumers that disperse their seeds. But because fruit is loaded with nutrients, it also attracts consumers that destroy, rather than disperse, seeds – an undesirable outcome for the plant. My lab is using wild chilies to ask why fruit looks, smells, and tastes the way it does. Specifically, how does the heat in chilies influence consumption by desirable consumers (birds) and undesirable consumers (mammals, insects, and microbes)? Using molecular biology, chemical ecology, and biogeography, we are studying the spicy evolution of chili biochemistry and how this biochemistry in turn affects the evolution of the chili's many consumers. Most of this work takes place in Bolivia, the center of chili diversity.



Natural history – the observational study and appreciation of organisms in nature – is declining worldwide. Yet knowledge of the natural world is critical for all of biology and conservation and has long been valued in art, literature, and history. My research and outreach are focused on restoring natural history to its rightful place in education, research, and society. I have formed an NGO called the Natural History Network that is dedicated to this mission.



More information about these projects is available on the Tewksbury Lab website:
<http://faculty.washington.edu/tewksjj/index.html>