

# 2020 LAMBERSON ECOLOGY LECTURE SERIES



## Thursday, March 12

Please join us for lectures presented by:

### Dr. Trent McDonald

Senior Biometrician

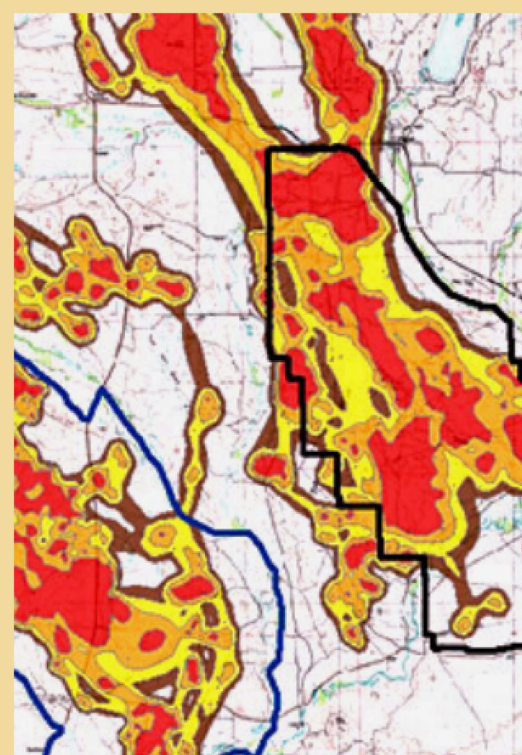
Western EcoSystems Technology, Inc. (WEST)  
Environmental & Statistical Consultants

### Advances in Spatially Balanced Sampling: The HIP and BAS Methods

The overriding purpose of ecological sampling is to produce data that satisfy a study's objectives. Robust and objective sampling designs are a prerequisites for successful environmental monitoring, powerful analyses, and science-based management. Many traditional sampling methods were formulated in disciplines that enjoy access to experimentally controlled study systems or clearly defined populations and sample units. Such textbook cases are uncommon in environmental science, particularly wildlife and fisheries, and practitioners are often compelled to use observational methods that necessitate alternative approaches. Spatially balanced sampling methods have proven useful in many situations because they evenly spread measurement locations over 1-D and 2-D space, allow locations to be omitted and added, are easily stratified, and can be used as omnibus master samples by several studies at once. In this talk, I introduce environmental sampling design by describing three study components: the spatial design, the temporal design, and the site design. I then go on a "deep dive" into two relatively recent algorithms. I describe both the mathematics and practical issues behind selecting Balanced Acceptance Samples (BAS) and Halton Iteratively Partitioned (HIP) Samples. It is my hope that audience members will add to their understanding of environmental monitoring design, the virtues of spatially balanced sampling, and modern methods for sampling space.

**BSS 166 4:00 pm:**

Afternoon technical talk



### Wind Power and Wildlife:

### How We Study Mortalities, What We Know, and Where We Are Going

Wind power generation capacity is increasing dramatically in the United States and worldwide. This emissions-free source of electricity is extremely beneficial to the war on carbon and global climate change. At the same time, we know wind power facilities can adversely effect the surrounding environment. Turbines can kill birds and bats through blade strike, and the presence of large turbines can visually pollute previously pristine vistas. While the population level effects of turbine-caused fatalities is unknown for both birds and bats, turbine-caused deaths should be reduced as far as economically feasible. Toward that end, mortality reduction measures are common at wind generation facilities. Mitigation of endangered species' deaths is a requirement for endangered species take permits under the federal Endangered Species Act.

This talk is about three things. First, how we study bird and bat mortality at wind power generation facilities. The science behind finding carcasses under turbines and adjusting for ones we do not find is deceptively complex. Second, what we have learned about wind fatalities over the course of three decades. We can now quantify the mortality of some species, and we have learned strategies for reducing the mortality of some species, but quick omnibus solutions are frustratingly elusive. Lastly, where research in wind and wildlife interactions is going over the next decade. Advanced technologies, in the form of cameras, vibration sensors, hypersonic sound emitters, and beagles are exciting developments in the study of wind power and wildlife interactions. It is my hope that audience members come away with a better understanding of commercial wind power production, its effects on wildlife, and the science behind these studies.

**SciB 135 6:30 pm:**

Evening public talk

Please join us for pre-lecture reception in the SciB lobby area beginning at 5:45PM

