



Ecological connectivity forest ecology, and environmental stressors

Using a forest songbird to understand the ecological connectivity of Delaware's forests, Gulf coast barrier islands, and the Amazon River basin of South America

Ecological connectivity—the establishment of a direct biological link among various widespread natural areas—is a relatively new research focus for environmental and conservation scientists. Our natural systems are under continued and increasing threat from human activities. The protection and continued functioning of our natural ecosystems are essential for all life on earth. In the midst of a global extinction crisis, understanding how natural systems are linked ecologically becomes of dire importance before species disappear. We hope that the knowledge gained will generate the information needed to effectively protect ecosystems for current and future generations.

The pastime of bird watching is a billion dollar industry. Either directly or indirectly, bird enthusiasts generate tens of thousands of dollars annually for Delaware's economy. As an outdoor hobby, watching birds is second only to gardening in popularity. Therefore, in addition to the ecological benefit of monitoring birds, there is an economic benefit.

Using a forest songbird (Veery; *Catharus fuscescens*) as an ecological indicator species, my lab has confirmed the first direct ecological links among our northeastern forests, Florida's Gulf coast barrier islands, and the Brazilian Shield region of the Amazon

River basin. Twice a year, Veeries migrate between Delaware and South America stopping along the Florida coast to re-fuel. We are beginning to understand how environmental conditions in the Amazon basin and the Gulf coast barrier island ecosystems affect Delaware's forests. We use light archival technology (geolocator units) to track individual Veeries on migration and across South America. But this is just one of the tools we can use to understand the effects of tropical deforestation on Delaware's forests and the outdoor recreation industry. For example, we have found that the species spends several months of its annual cycle in the most threatened region of the southern Amazon Basin where deforestation is rampant and this may affect the physical condition of birds returning to Delaware to breed. We now know these ecosystems are functionally linked: What happens in Brazil happens in Delaware!

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