Suburbanization and Sexual Development in Frog

Garden Club of American (GCA) Zone VI Award in Coastal Wetlands

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I am studying how suburban land use affects wildlife reproductive health. Previously, I found that sex ratios of green frog (*Rana clamitans*) metamorphs (i.e., baby frogs) become increasingly feminized as suburbanization intensifies around ponds. This summer, I looked at another species, the wood frog (*Rana sylvatica*). Wood frogs are more sensitive to forest loss than green frogs but still occur in low-density suburban neighborhoods. I sampled wood frog metamorphs along an urban gradient, choosing ponds surrounded entirely by forest cover and those surrounded by suburban households and yards. I also collected environmental data like water conductivity, which is useful for assessing urban pollution. I am using GPS units and geographic information systems (GIS) to map the small ponds wood frogs live in. Larger water bodies are already mapped in GIS but small, ephemeral ponds are not. I have created 2-dimensional polygons for each of my ponds and have used GIS to map high-resolution landscape features such as forest patches, houses, roads, and suburban yards so I can quantify the degree of suburbanization around ponds. I was assisted by Yale undergraduate Kristina Krebs who learned field sampling, animal anatomy, and mapping skills for this study. Next, we will assess any relationships between wood frog sex ratios and suburbanization. We also conducted an experiment and found that clover, a common yard weed, affects wood frog sex ratios by releasing hormonally-active chemicals into the environment. My research is yielding insight into the mechanisms by which suburbanization influences wetlands and wildlife.

This summer's funds were spent on a densiometer, waders, dip nets, a GPS unit, a water conductivity meter, gas to drive to field sites, as well as room and board at the Yale Myers Forest.