

Effect of stress and methylmercury exposure on song sparrows (*Melospiza melodia*) energy balance

Mercury is an endocrine disruptor well known for its deleterious impacts on wildlife and humans but its effects on songbirds' populations still require more investigation. In their natural habitat, birds face multiple stressors (e.g. predation, food unpredictability, inclement weather) in addition to pollutants. However the accumulated effects of both stress and pollutants are rarely studied. Such co-occurring pressures may synergistically increase risk for birds as both stress and mercury exposure may disrupt energy acquisition and/or allocation. My project aims to determine the interactive effects of stress and mercury exposure on songbird energy balance. Adults' song sparrows (*Melospiza melodia*) were captured and assigned to one of four environmentally relevant treatments: control, stressed only, mercury exposed only, and both stress with mercury exposure. The exposure lasted three months with an additional three months of post-exposure monitoring. I monitored the birds' minimal energy expenditure (BMR) and maximum metabolic rate (MMR). The preliminary results show that birds only stressed had a lower BMR than others, but the effect disappear after 3 months post-exposure, while birds under both MeHg and stress tend to have a higher MMR than control birds. A reduced BMR may imply a lower energy supply for daily needs while a higher MMR could indicate an uncontrolled energy loss during activities, reducing the possibility to put this energy elsewhere (e.g. growth, immunity, reproduction). Thus because BMR or MMR disruption could affect bird survival, more studies are necessary to understand the effects of co-occurring stressor and contaminant when assessing potential hazard for wildlife.

Keywords: Songbird, Methylmercury, Stress, Metabolism, energy, *Melospiza melodia*