**The Challenge:** The list of endocrine active chemicals being released into the environment and found in wildlife tissues is increasing. The effects of these compounds in wildlife are often not rapidly or readily apparent and can require exposure over multiple generations to adequately detect critical changes in reproductive and physiological responses. The U.S. EPA has proposed a 2-generation protocol for determining endocrine disrupting effects on birds using Japanese quail (*Coturnix japonica*; JQ). However, little information is available on the sensitivity of JQ to endocrine disrupting chemicals relative to wild avian species.

**The Science:** To make these cross-species comparisons in a timely and cost-effective manner, we will use a validated egg-injection protocol that accurately and rapidly evaluates the relative risks from exposure to various endocrine active chemicals. Initially, an array of North American avian species and JQ will be exposed during critical time periods to the androgenic beef cattle implant trenbolone and the flame retardant HBCD (hexabromocyclododecane). Their effects have been previously studied at PWRC across multiple generations of JQ. Physiological, biochemical and genomic endpoints used in these previous JQ studies will be monitored during significant stages of embryo development in the egg-injected species. Comparison of global gene expression profiles across species will provide insight into fundamental cellular processes that may be responsible for enhanced tolerance to the class of endocrine disruptor.

**The Future:** Endocrine disruption during embryonic development affects the activation of normal endocrine and behavioral responses in the sexually maturing adult. Our studies will generate a ranking of the sensitivities of various wild bird embryos relative to Japanese quail, and provide crucial information for natural resource managers in light of the potential risk to our nation’s bird species. Additional chemicals will be screened in future studies to establish a database of embryonic endpoints and responses tailored for each hormonal class of chemicals.

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