

Summary of 2008 South River Biota Proposals

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Proposals Currently Under Review

- Amphibians & Reptiles (3)
 - Hopkins
- Avians (6)
 - Cristol, Hopkins, Stahl/Evers (BRI)
- Fur-bearing mammals (2)
 - Yates/Evers (BRI)
- Trophic Modeling (1)
 - Newman

Amphibians & Reptiles

(Hopkins, VA Tech)

- I. Effects of maternal Transfer of Mercury in Amphibians Along the South River
 - What are the effects of maternal-derived mercury on larval development and metamorphosis of American toads?
- II. Individual and Interactive Effects of Maternally- and Trophically-Derived Mercury on Development of Amphibian Larvae
 - How do the effects of Maternally- and trophically- derived mercury compare in American toad larvae?
 - Are the effects of maternally- and trophically- derived mercury interactive?
- III. Effects of Mercury on Reproduction of Turtles in the South River
 - What is the relationship between maternal-derived mercury, egg mercury, and hatching success?

Avians

(Cristol, College of William & Mary;
Hopkins, VA Tech; Stahl/Evers, BRI)

- I. Completion of Swallow Lifetime Reproductive Success Study (Cristol)
 - What is the effect of three years of exposure to mercury on the fitness of tree swallows?
- II. Endocrine and Immune Disruption as Potential mechanistic Links Between Mercury Exposure and Reduced Survival in Tree Swallows Along the River (Hopkins, Cristol)
 - Is exposure to mercury in swallows manifested by distinct changes in the endocrine and immune systems?
 - Do the endocrine and immune systems of mercury exposed birds respond predictably when reproductive stress is controlled?
- III. Mercury Dosing Study on Captive Wrens and Sparrow to Determine Sub-Lethal Effects of Relevant Dietary Levels of Mercury (Cristol)
 - What are the sub-lethal effects in birds fed controlled low doses of mercury?

Avians – *continued*

(Cristol, College of William & Mary;
Hopkins, VA Tech; Stahl/Evers, BRI)

- IV. Study to Identify the Source of Dietary Mercury: River or Floodplain? (Cristol)
 - Is the source of mercury to floodplain spiders (an important prey source) predominantly aquatic or terrestrial?
- V. Modeling Study to Determine the role of Foraging Behavior and Habitat Structure on Exposure Risk (Cristol)
 - Given known foraging behavior for an avian species, what effect would habitat have on changing risk scenarios?
- VI. Mallard Mercury Assessment (Stahl/Evers)
 - What is the mercury exposure of the mallard population on the South River?
 - What levels of mercury are found in mallard eggs on the South River?

Fur-Bearing Mammals (Yates/Evers, BRI)

- I. Bat Mercury Assessment
 - What bats are found in the South River system?
 - What is the mercury exposure of bats found in the South River system?
 - How does mercury exposure correlate to sub-lethal effects?
- II. Fur-Bearer Mercury Assessment
 - What is the mercury exposure of fur-bearers found in the South River System?

Trophic Modeling (Newman, VIMS)

- South River Mercury Trophic Transfer: Aquatic and Floodplain Webs.
 - What is the relationship between mercury in suspended/ settleable solids and periphyton mercury concentrations?
 - What is the probabilistic risk from mercury posed to selected piscivorous species of birds?
 - What does a preliminary trophic model for mercury in the floodplain ecosystem look like?