Briefing for the South River Science Team Meeting, October 21-22, Harrisonburg, VA

Mercury in Mallard Ducks from the South River, Virginia

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Objectives:

1) Increase sample size of Mallard blood, feather, and egg samples from the South River to achieve statistically significant data in comparing to published LOAELs and complete gaps in sampling locations;

2) Expand egg collection timeline to acquire two or more clutches from hens to investigate the increase in Hg from first to second clutches observed in 2007;

3) Analyze 2007 archived eggs and eggs collected in 2008 for stable isotopes in order to differentiate the origin of Hg deposited into eggs by the females;

4) Analyze archived 2007 blood and blood collected in 2008 for stable isotopes in order to determine trophic positioning of Mallards on the South River.

From late March to mid May, Mallard Ducks (*Anas platyrhynchos*) were live-captured from seven sites along the South River to collect blood and feather samples for Hg analysis. We captured and collected a blood and feather sample from 61 Mallards. Twenty-eight Mallards were passively recaptured and blood was re-sampled, feather was not. In addition, captured female Mallards were equipped with a radio transmitter in order to track them to their nests and collect eggs for Hg analysis. Twelve hens were equipped with transmitters. A total of 176 Mallard eggs from 17 clutches were collected from the South River. First and second clutches were collected from five hens.

Mercury levels in eggs from the South River ranged from 0.46 to 1.79 µg/g ww, and had a mean level of 0.85 ± 0.32 µg/g ww.

Blood Hg levels in Mallards from the South River ranged from 0.09 to 3.12 µg/g ww and had a mean Hg level of 1.02 ± 0.70 µg/g ww. Feather Hg levels ranged from 0.29 to 17.77 µg/g fw and had a mean 3.33 ± 4.02 µg/g fw.

Preliminary analysis has determined that some eggs and feathers collected from Mallards breeding on the South River contained Hg levels exceeding levels associated with adverse effect levels in laboratory based Mallard studies.