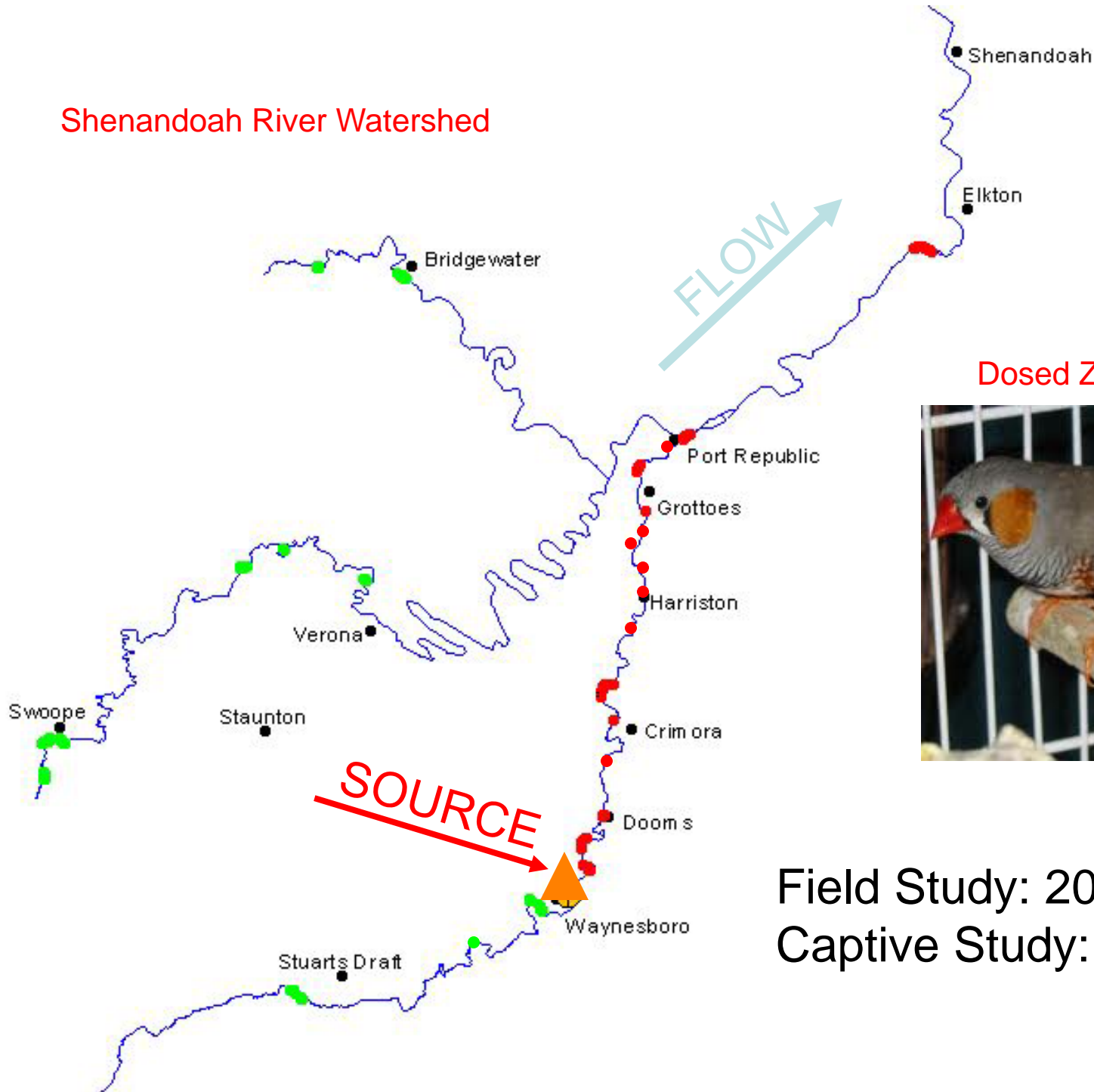


Shenandoah River Watershed



Dosed Zebra Finches



Field Study: 2005-2008
Captive Study: 2009-present

How are terrestrial spiders getting aquatic mercury?

Is proximate avian source river or floodplain?

Emerging aquatic invertebrates?



Terrestrial invertebrates?





Wild spider gut contents study

Digestion Time Trials

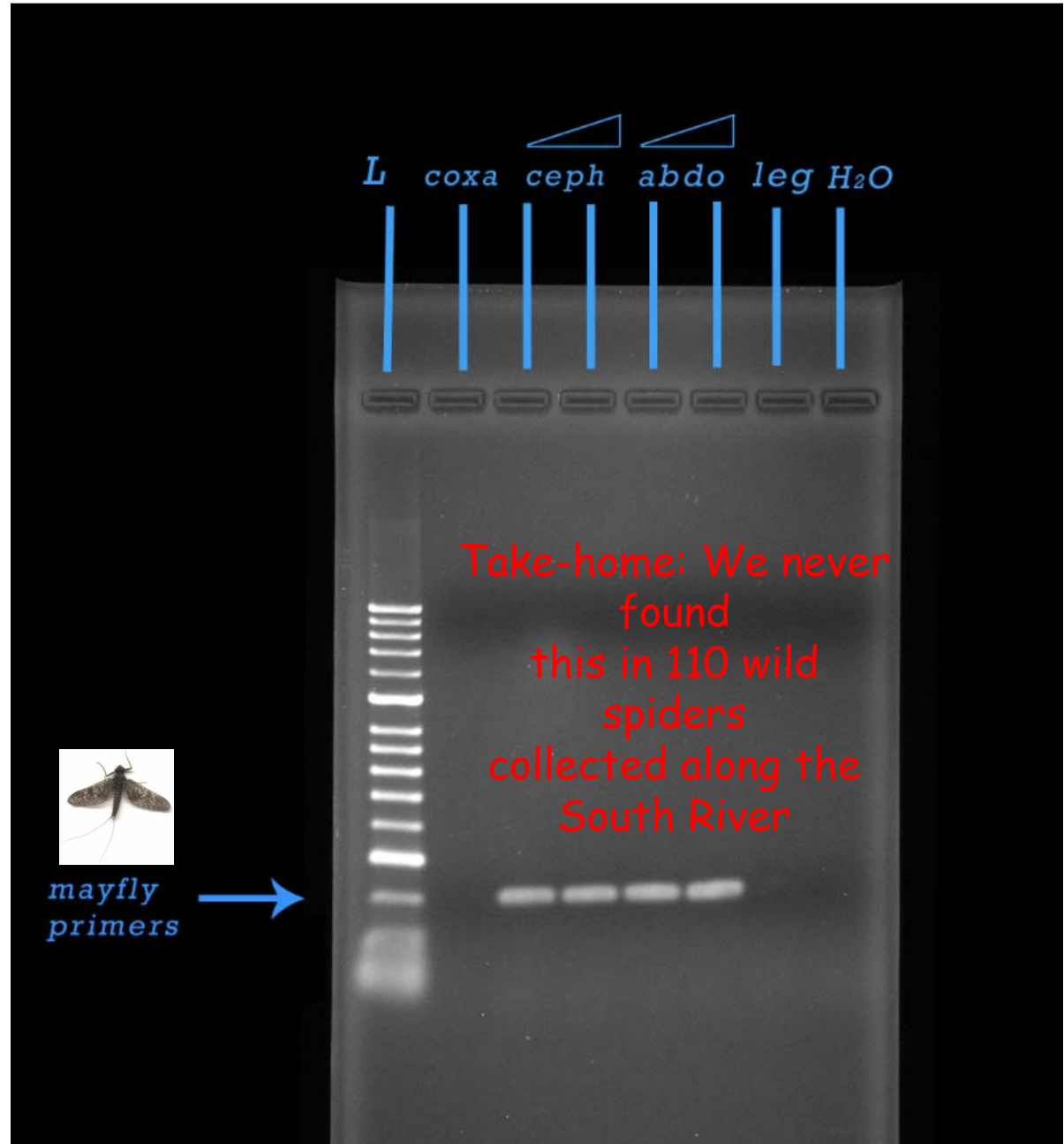
- 4 hrs ✓
- 12 hrs ✓
- 24 hrs ✓
- 48 hrs ✓
- 72 hrs ✓
- 96 hrs ✓
- 120 hrs ✓
- 144 hrs ✓
- 168 hrs ✓
- 192 hrs ✓
- 216 hrs ✗



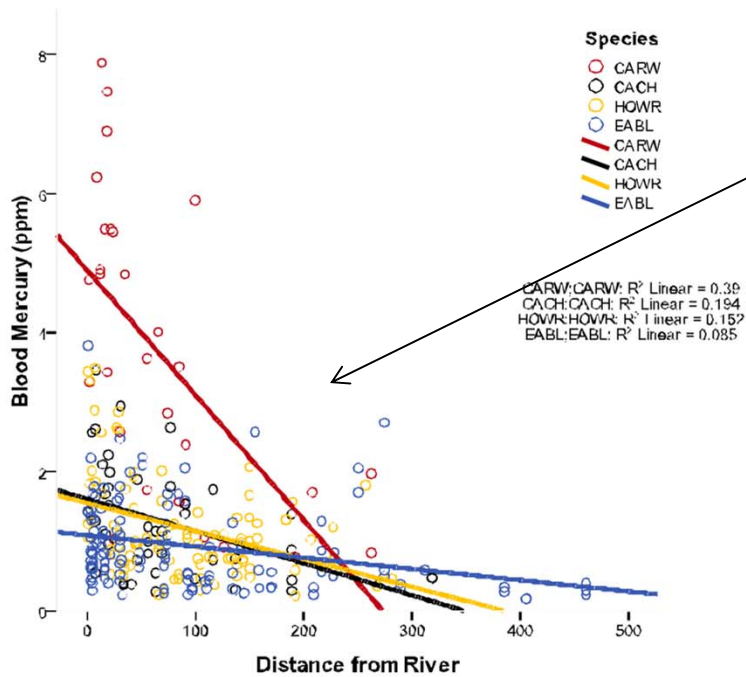
We can detect mayflies in spider guts



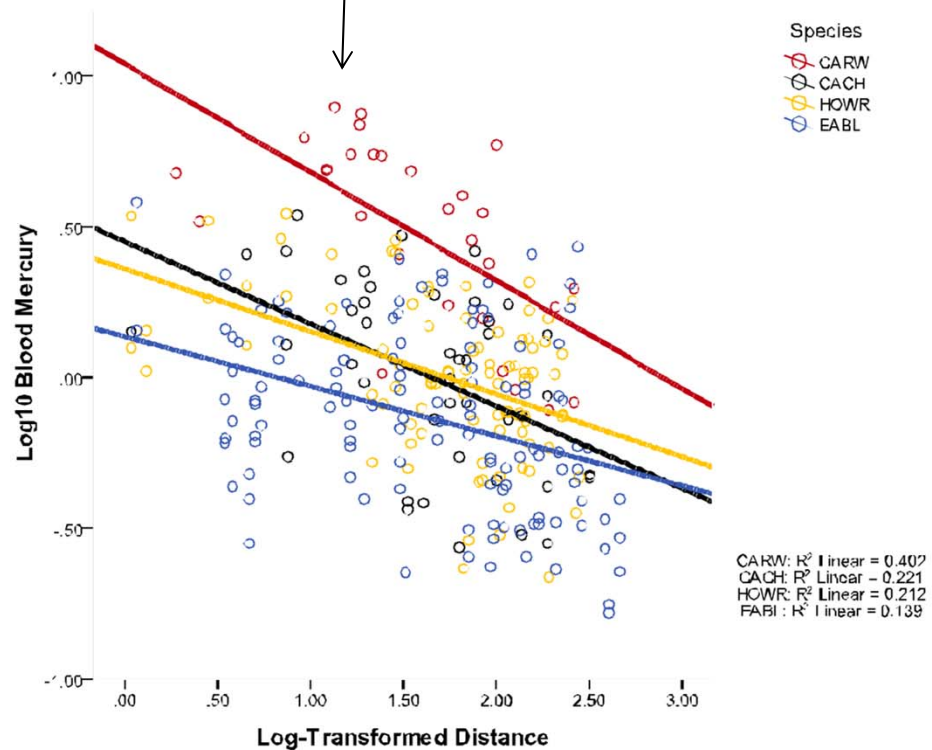
mayfly primers



Decline in total mercury with distance from river

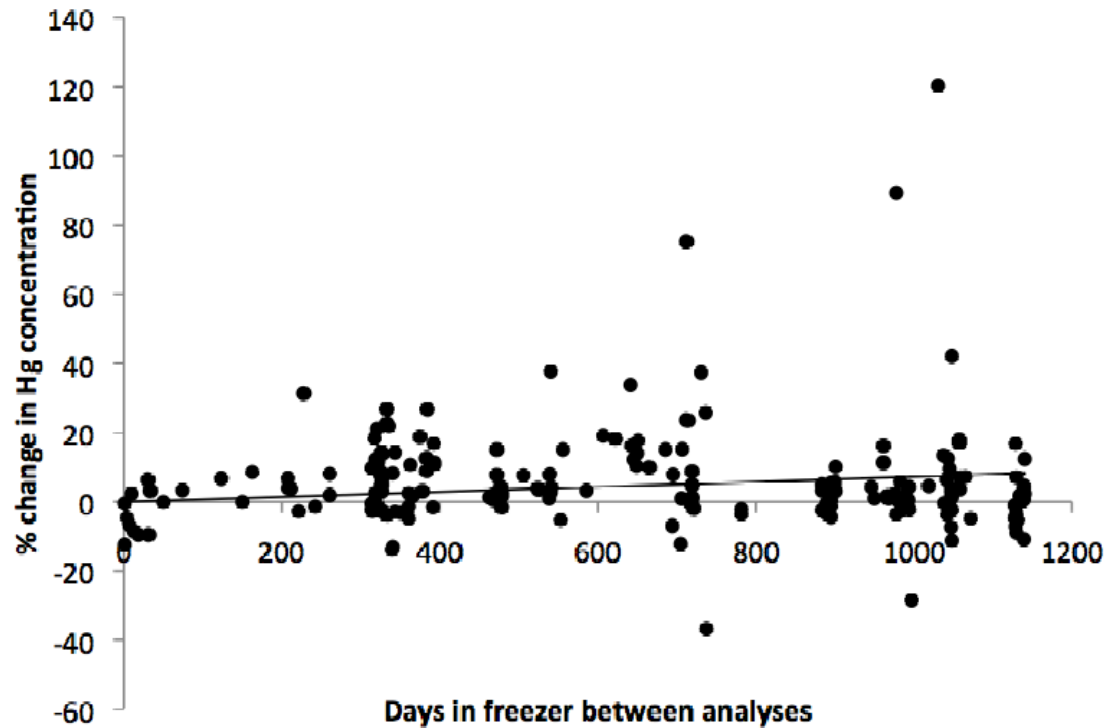


Untransformed
Log Transformed



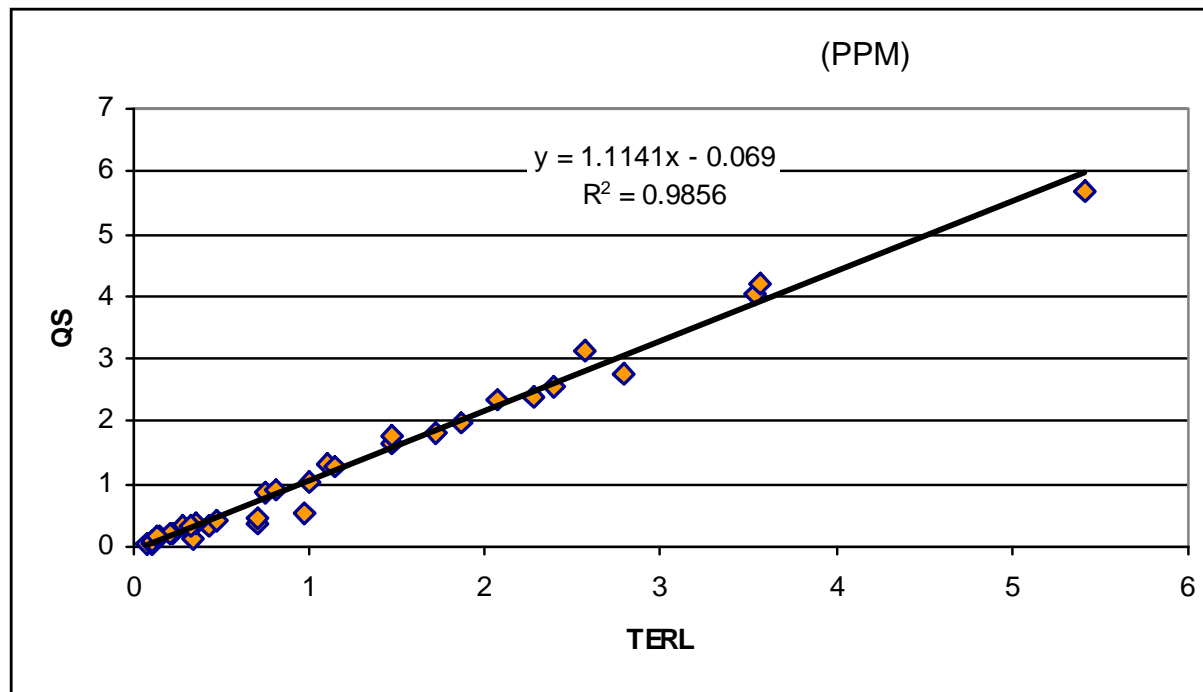
Take-Home: Elevated mercury persists for hundreds of m

Percent change between original and stored sample



Take-Home: It's OK to keep studying the samples from 2005-2008 fieldwork

Texas A&M TERL vs. Quicksilver: Methylmercury in bird egg

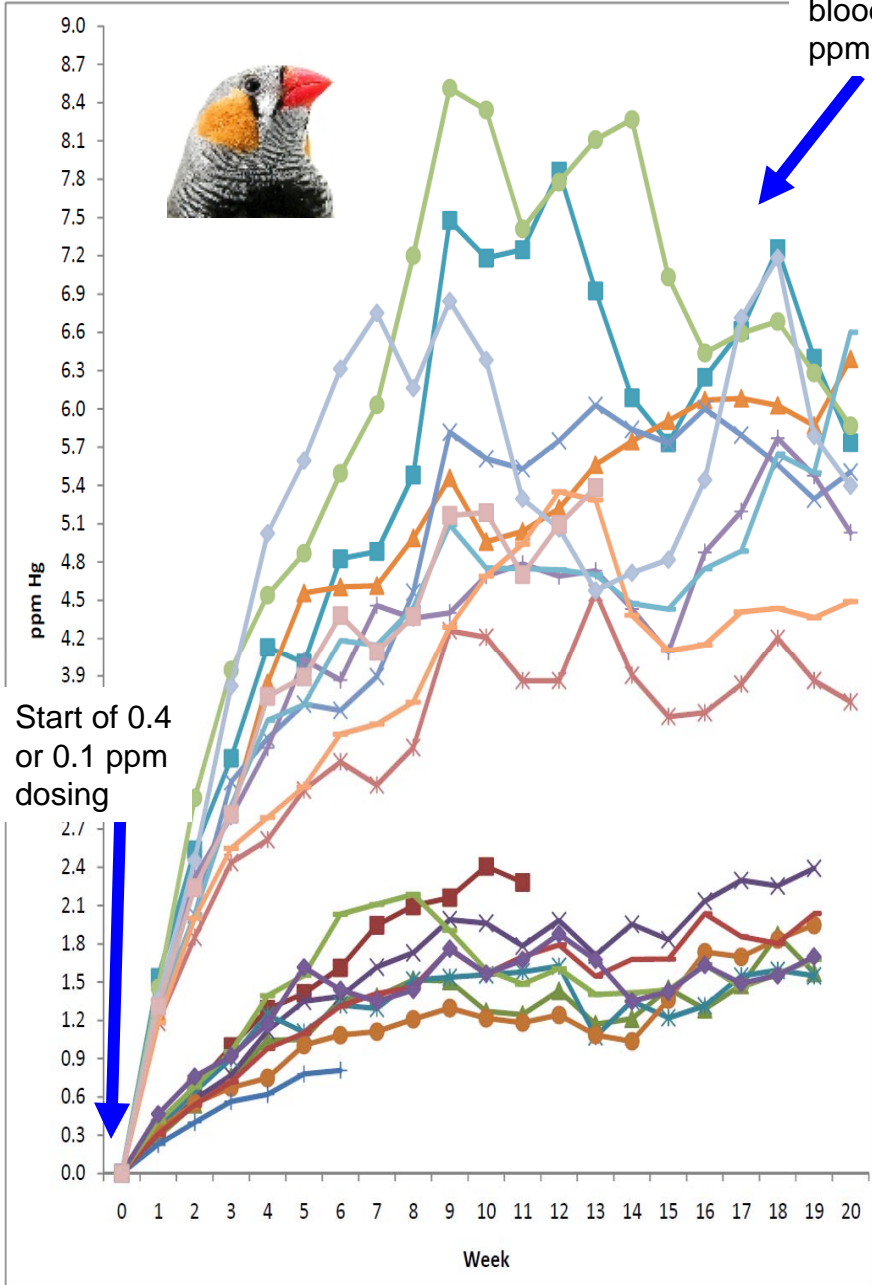


Take-Home: It's OK to keep using Quicksilver for MeHg

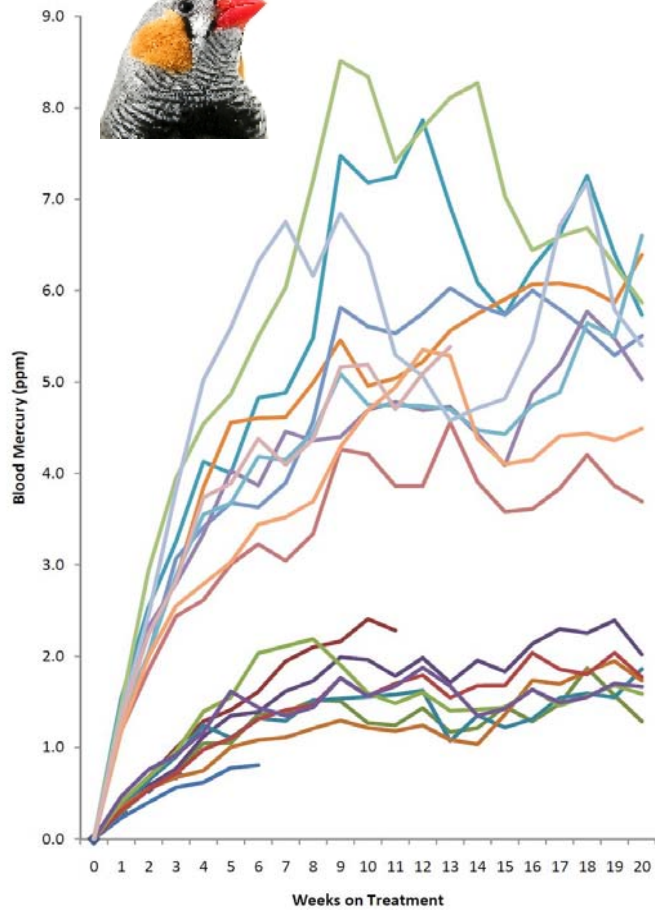
Preliminary Finch Dosing



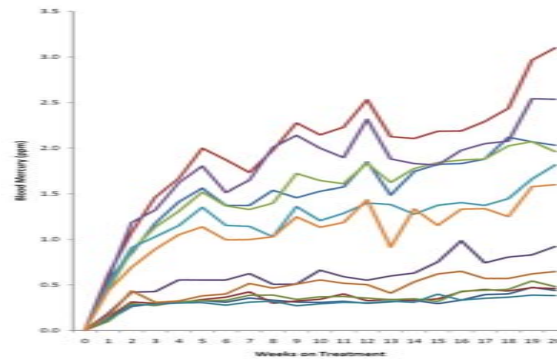
Resulting
blood level
ppm total Hg



Individuals vary in mercury accumulation even on identical diets

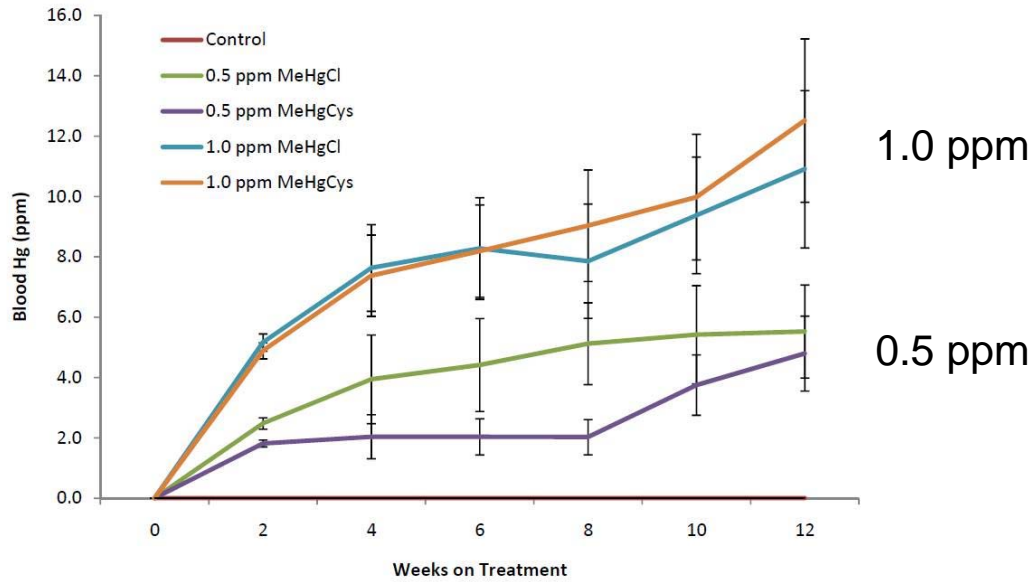


Species differ. Starlings fed same concentration of mercury had lower levels than zebra finches



0.4 ppm

0.1 ppm



Two forms of mercury result in similar levels in blood and eggs

