**Songbird Telomere Length Reflects Prey Loss More Than Metal Exposure from Mine-Waste Contamination

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Mining contamination is a widespread ecological disturbance with disproportionate effects onriparian ecosystems that host diverse breeding songbird populations. Riparian songbirds rely heavily on insects to fuel energetically expensive breeding activities and emergent aquatic insects are superior fuel due to their high polyunsaturated fatty acid content. Elevated metals cause mortality during insect metamorphosis which can limit prey availability, especially aquaticinsects. However, surviving adult insects, larval terrestrial insects and spiders pose a threat of toxic metal exposure. Thus, in mine-waste contaminated habitats, birds are at risk of metal exposure and nutritional stress but the relative importance of these two stressors is not well understood. Telomeres (protective DNA capping chromosomes) can shorten in response to metals and nutritional stress and telomere length during development predicts lifespan in songbirds, making telomeres a good biomarker of health and fitness in nestling songbirds. We assessed body condition, telomere length (qPCR), diet (DNA metabarcoding), and blood metals (Pb, As, Cd, Cu, Zn, Se; ICP-MS) in nestlings from six songbird species in the heavily contaminated Upper Clark Fork watershed. We find significant elevation in blood concentrations of lead, arsenic, cadmium and selenium at the most contaminated sites, but dietis a much stronger predictor of body condition and telomere length than any direct relationships with metals. A higher proportion of aquatic insects in diet correlates with better body condition and longer telomeres, underscoring the critical importance of aquatic prey for breeding songbirds and the complex mechanisms by which songbirds are affected by mine- waste contamination.