1135-92-651 **Azmy S Ackleh*** (ackleh@louisiana.edu), Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA 70504, and **Amy M Veprauskas**, **John E Banks** and **John D Stark**. *Changes in population outcomes resulting from evolutionary responses to a disturbance.* Preliminary report.

Prolonged exposure to a disturbance such as a toxicant has the potential to result in rapid evolution of toxicant resistance in many short-lived species. This evolution may allow a population to persist at higher levels of the toxicant than is possible without evolution. Here we apply evolutionary game theory to Leslie matrix models to obtain Darwinian equations that couple population and evolutionary dynamics. We consider two cases for which evolution of toxicant resistance may have important dynamic consequences. In the first case, we examine how persistence outcomes for surrogate Daphnia species may change when one species is able to persist by evolving toxicant resistance while another is not. In the second case, we consider how evolution of toxicant resistance may impact both predator and prey when a prey species evolves in response to a toxicant but the predator does not due to different time scales. We show that, under certain conditions, predator and prey may have opposite responses to prey evolution. This model is inspired by marine mammals which have significantly longer lifespans relative to their food sources. (Received September 11, 2017)