1125-92-1826 **James Peirce*** (jpeirce@uwlax.edu), **Greg Sandland** (gsandland@uwlax.edu), **Kelly Buch** (kbuch@siue.edu) and **Rob Hendrickson** (hendr862@umn.edu). *Modeling the effects of varying treatment regimes on the control of an emerging disease in the Midwest of the United States.*

Swimmer's itch is an emerging disease caused by flatworm parasites that typically use water birds as definitive hosts. When parasite larvae mistakenly penetrate human skin they initiate localized inflammation that leads to intense discomfort. Concerns about this issue have been growing recently due to an apparent increase in the occurrence of swimmer's itch and its subsequent impacts on recreational activities and revenues. Past work has identified the common merganser as a key definitive host for these worms; a number of snail species serve as intermediate hosts. Although past attempts at controlling swimmer's itch have targeted snails, recent efforts have concentrated on treating water birds with the anti-parasitic drug, Praziquantel. In this talk, we will introduce a mathematical model that explores the effects of Praziquantel dose and treatment frequency on the occurrence of swimmer's itch in a typical Midwestern lake. We modeled susceptible and infected mergansers and snails using first order differential equations and introduced aspects of Praziquantel treatment into the system. Results from this model may help to identify treatment regimes that lower merganser infection rates and ultimately reduce the occurrence of swimmer's itch in water bodies around the Midwest. (Received September 19, 2016)