1163-39-467 **Danielle Burton*** (dlburton@wisc.edu), **Suzanne Lenhart**, **Frank Hilker** and **Daniel Franco**. *Optimal control of harvest timing in difference equations.*

Harvest plays an important role in management decisions. Discrete models enable us to explore the importance of timing of management decisions including the order of events of particular actions. We derive novel mechanistic models featuring explicit within season harvest timing and level. Our models feature explicit discrete density independent birth pulses, continuous density dependent mortality, and density independent harvest level at a within season harvest time. We explore optimization of within-season harvest level and timing through optimal control of these population models. We maximize an objective functional which includes management goals of maximizing yield, maximizing stock, and minimizing costs associated with both harvest intensity and harvest timing. (Received September 07, 2020)