Appendix

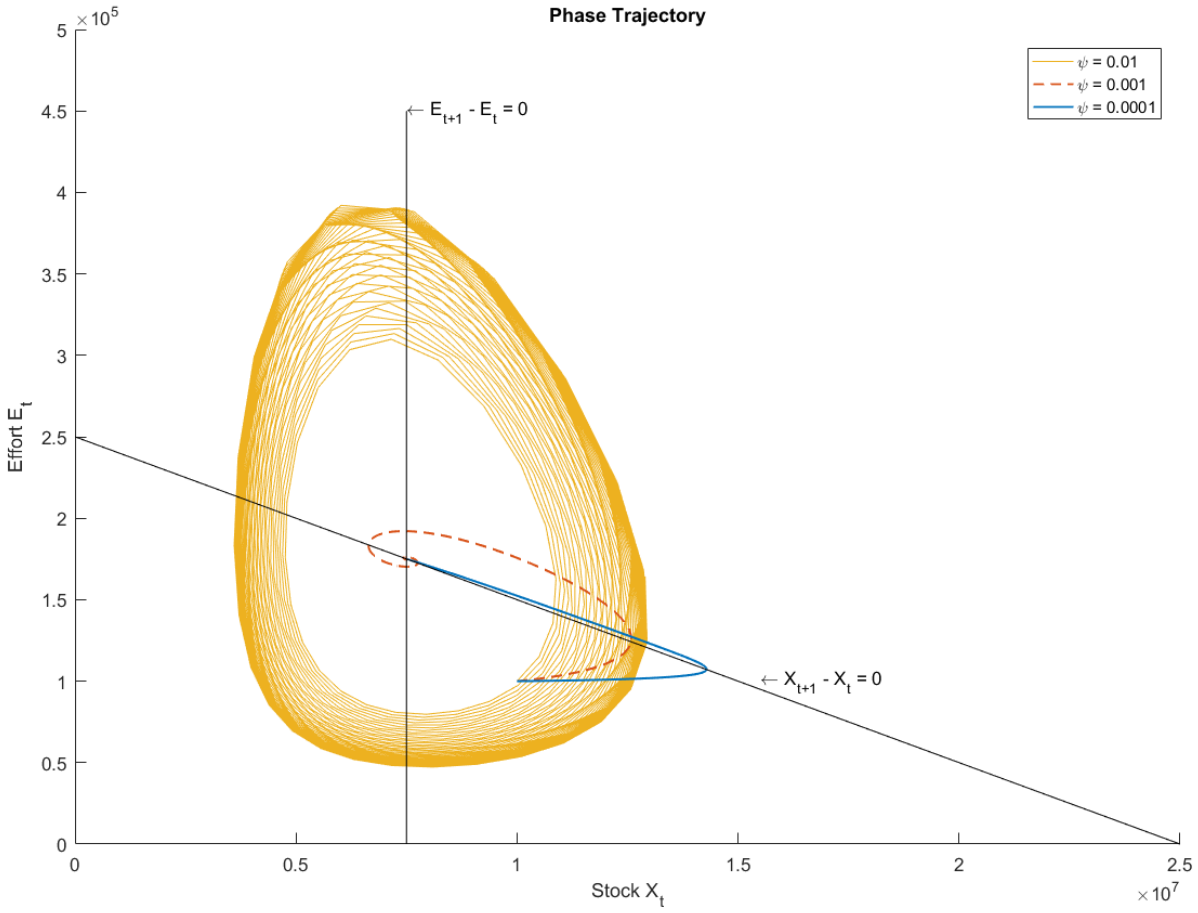

Figure A1. Co-movement of stock and effort as specified by the model presented in equations (1) and (2) (and $H(X_t, E_t) = qE_tX_t$ specified), with varying levels of proportionality, ψ. Other parameters include $q = 0.000001$, $r = 0.25$, $K = 25$ million, $I = 1$, $p = 6$, and $c = 45$, with starting levels of $X_0 = 10$ million fish and $E_0 = 100{,}000$ hours and a steady state of $\bar{X} = 2.5$ million fish and $\bar{E} = 225{,}000$ hours.

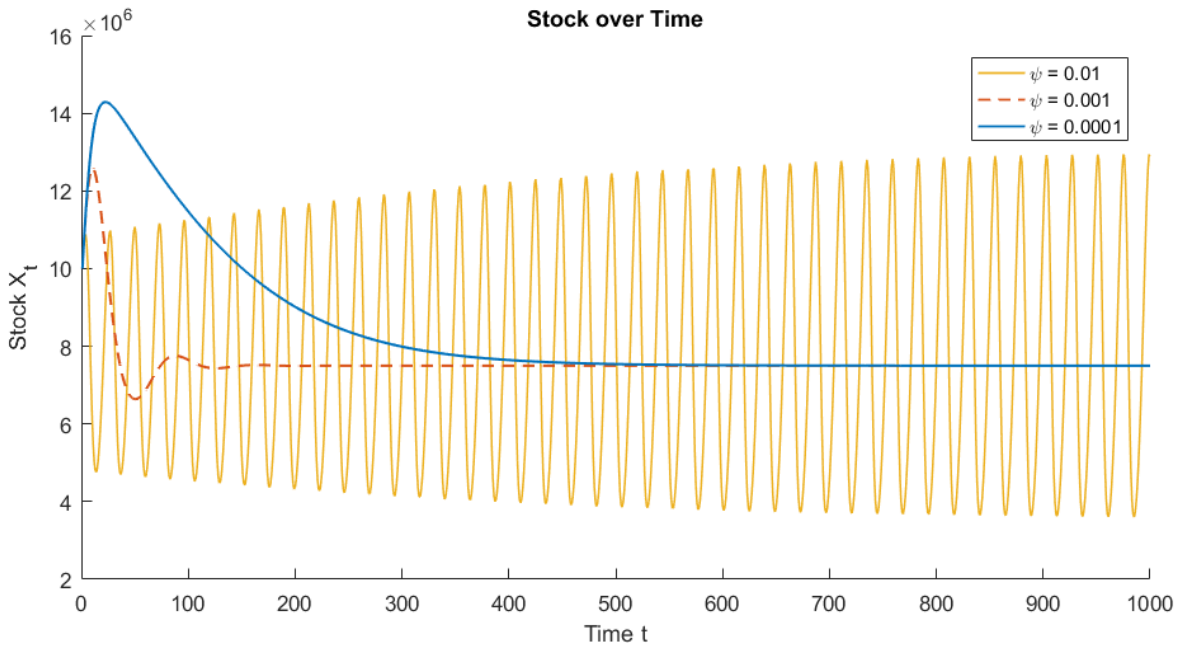

Figure A2. Fish stock over time under varying levels of proportionality, where relatively small levels of ψ lead to steady-state convergence while large ones give oscillation.

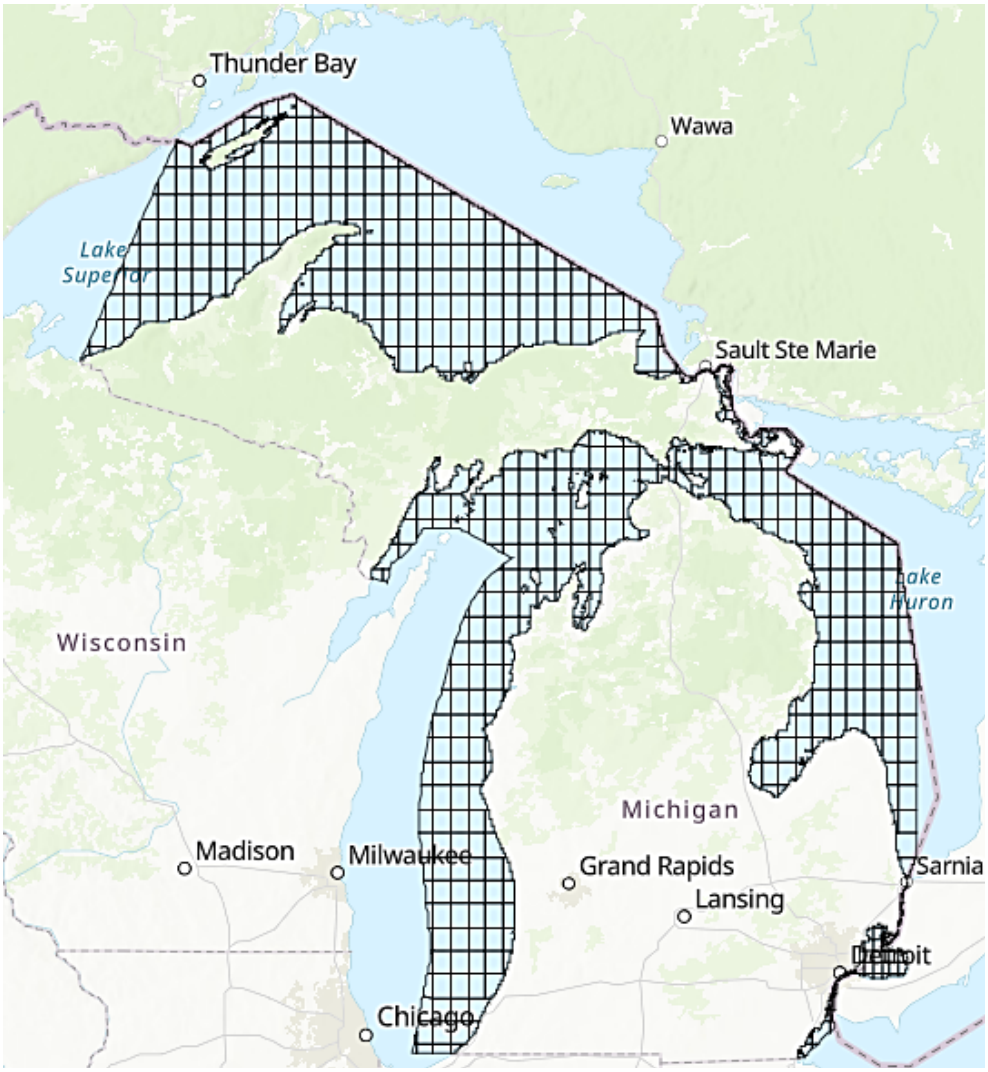

Figure A3. Michigan waters of the Great Lakes.

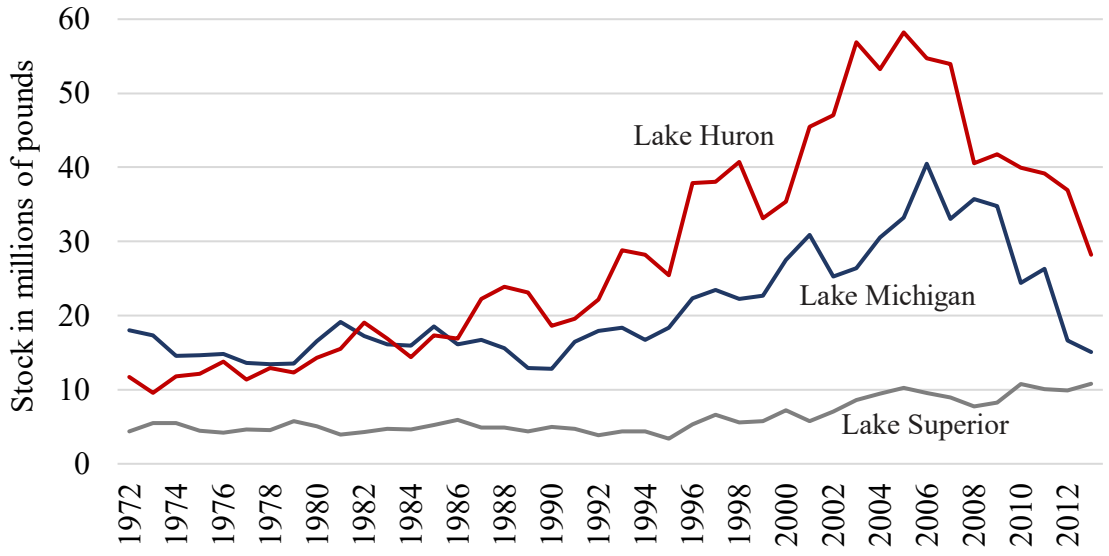

Figure A4. Estimated whitefish stock in Michigan waters of the upper Great Lakes when α_i is not constrained.

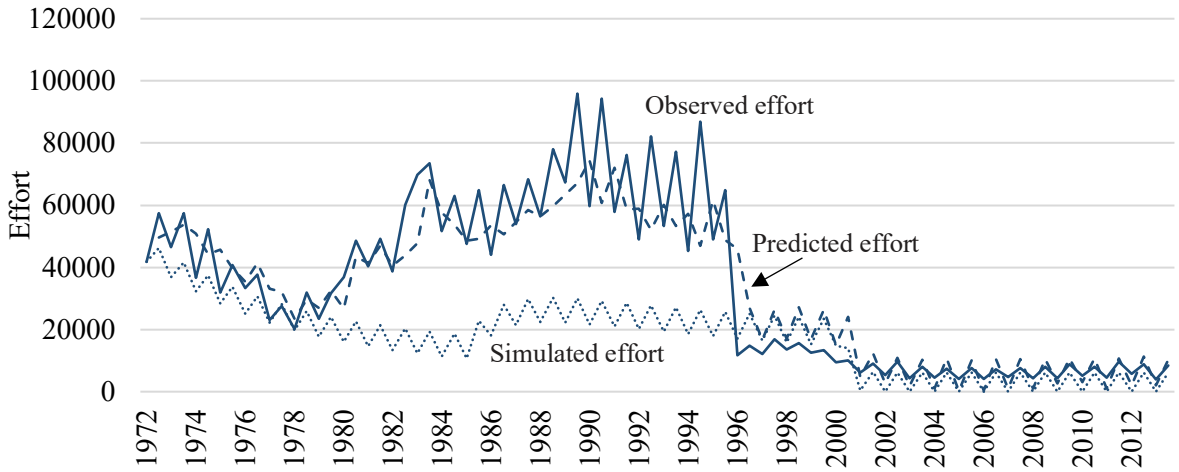

Figure A5. Observed, predicted and simulated effort in the whitefish fishery. The parameters used to generate predicted and simulated effort are based on the estimates reported in Table 4, column (3). Predicted effort is calculated using the regression formula and the observed effort and revenue data. Simulated effort is calculated using the coupled dynamics in the conceptual model.

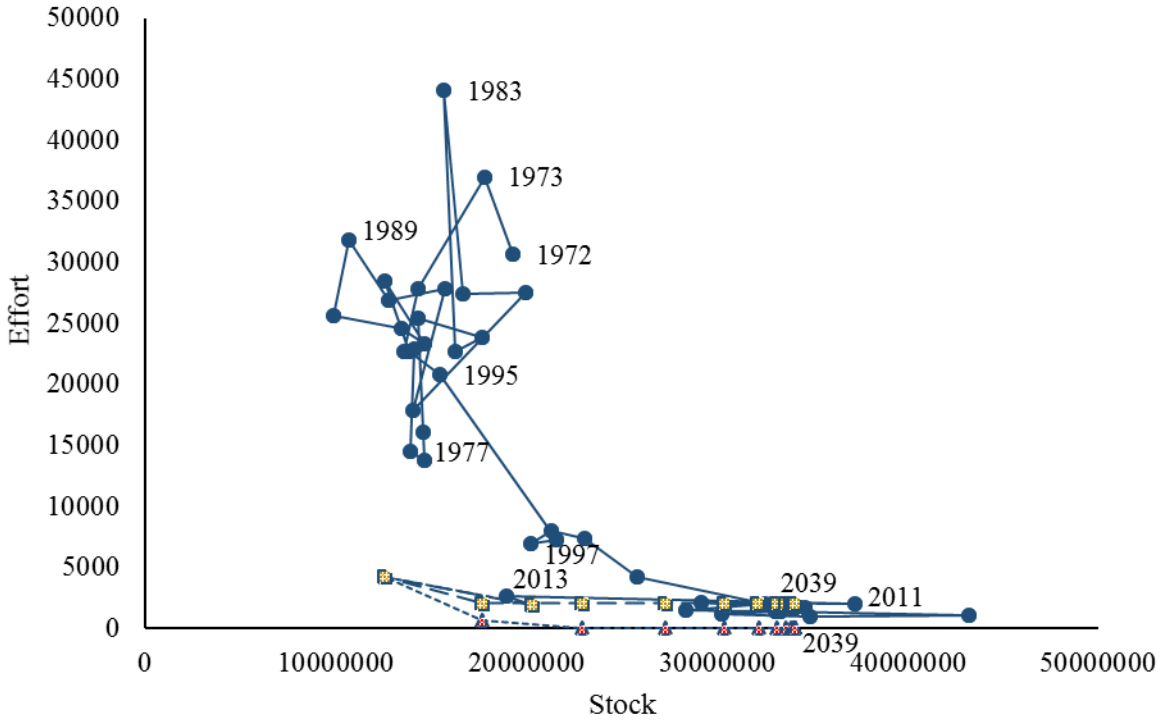

Figure A6. Fall stock size and industry effort in the Lake Michigan whitefish fishery. The triangles show the simulated trajectory between 2014 and 2039 using the estimates in Table 3, column (2), and the squares shows the simulated trajectory using the estimates in Table 4, column (3).