Fishing Optimization

The objective is to maximize the net revenue of fishing over a time interval of 10 by adjusting the value of *u*.

$$\max_{u} \int_{0}^{10} \left(E - \frac{c}{x}\right) u \, U_{max} \, dt$$

$$s.t. \quad \frac{dx(t)}{dt} = r \, x(t) \left(1 - \frac{x(t)}{k}\right) - u \, U_{max}$$

$$x(0) = 70$$

$$0 \leq u(t) \leq 1$$

$$E = 1, c = 17.5, r = 0.71, k = 80.5, U_{max} = 20$$