1165-39-248 **Elliott Bertrand*** (`bertrande@sacredheart.edu`), Fairfield, CT 06825, and **Mustafa Kulenovic**. *Convergence Behavior of a Class of Generalized Difference Equations.*

The first-order Beverton–Holt equation is a classical example used in the study of population dynamics. We consider a higher-order generalization of this model:

$$x_{n+1} = \frac{af(x_n, x_{n-1}, \ldots, x_{n+1-k})}{1 + f(x_n, x_{n-1}, \ldots, x_{n+1-k})}, \quad n = 0, 1, \ldots.$$

Here k is a fixed positive integer, f is a function that is nondecreasing in all of its variables, a is a positive constant, and $x_0, x_{-1}, \ldots, x_{1-k}$ are nonnegative initial conditions in the domain of f. Several examples of such equations have been considered, particularly in the case when $k = 2$ and f is a low-degree multivariate polynomial. We will review some of the global dynamic scenarios that have been established for a variety of choices of functions f under certain conditions. Particular attention will be given to the scenario in which there is a globally attracting equilibrium, and we will attempt to quantify the rate of convergence. We will also explore reasonable modifications to the above generalization. (Received January 18, 2021)