Hellbender Education

LESSON PLAN 1: GENERAL ECOLOGICAL CONCEPTS

MIDDLE SCHOOL STANDARDS ADDRESSED:

Virginia	**LS.6: The student will investigate and understand that organisms within an ecosystem are dependent on one another and on non-living components of the environment.** Key concepts include a) the carbon, water, and nitrogen cycles; b) interactions resulting in a flow of energy and matter throughout the system; c) complex relationships within terrestrial, freshwater, and marine ecosystems; and d) energy flow in food webs and energy pyramids. **LS.7: The student will investigate and understand that interactions exist among members of a population.** Key concepts include a) competition, cooperation, social hierarchy, territorial imperative; and b) influence of behavior on a population. **LS.8: The student will investigate and understand interactions among populations in a biological community.** Key concepts include a) the relationships among producers, consumers, and decomposers in food webs; b) the relationship between predators and prey; c) competition and cooperation; d) symbiotic relationships; and e) niches.

HIGH SCHOOL STANDARDS ADDRESSED:

Virginia	**BIO.8: The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems.** Key concepts include a) interactions within and among populations including carrying capacities, limiting factors, and growth curves; b) nutrient cycling with energy flow through ecosystems; c) succession patterns in ecosystems; d) the effects of natural events and human activities on ecosystems; and e) analysis of the flora, fauna, and microorganisms of Virginia ecosystems.