The Effects of Potassium Chloride and Experimental Temperature on Florida Apple Snail Development and Exhibition of Predatory Avoidance Behavior

Young, Jessica

One major issue facing the Florida Everglades is that of water quality. Poor water quality, including heightened concentrations of potassium chloride (KCl) in freshwater from fertilizers and saltwater intrusion, has potential to affect the entire ecosystem, including the endangered Everglades snail kite (Rostrhamus sociabilis), by affecting a primary consumer on which many organisms feed; the Florida apple snail (Pomacea paludosa). The effects of raising the snails in KCl levels mimicking the maximum amount of chlorides expected to be found in the Everglades ecosystem, and KCl levels above the expected maximums (mimicking intrusion), as well as the effects of rearing the snails in water temperature that varied from an average water temperature of 26.7°C, were examined. Specifically, how the variables affected development of the snails and their ability to respond to kairomones (chemicals indicating predation) was observed. Rearing snails in temperature below 26.7°C and KCl concentrations 15 parts per thousand (ppt) and above resulted in snails having stunted growth or even loss of mass, and reduced ability to respond to predatory cues in the water. Negative effects of the variant water conditions can alter the Everglades ecosystem, as the Florida apple snails are unable to grow properly and avoid predation.

Awards Won: