From Martyrdom to Resurrection for St. Lucie: Revival of a Meiofauna

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ABSTRACT

St. Lucie, the southernmost inlet of the Indian River Lagoon (Florida), has been monitored through replicate sampling for its meiofaunal (foraminiferal) density as well as, species richness and evenness. The baseline study was in 1975/1976, and 2005 resampling showed that the mean foraminiferal density declined 83% from 1975/1976 levels (from 280 foraminifers per 20 ml of sediment to 46 in 2005). Similarly, the number of species declined by 79% (from 62 to 13 species in 2005). Additionally, a dramatic increase in the dominance of Ammonia was observed (increasing from 42% of the total fauna in 1975/1976 to 76% in 2005). Based upon this 2005 data, a three-stage evaluation system of ecosystem decline over time was proposed within the St. Lucie area nearing the beginning of Stage 3 (local extinction). Stage 1 is associated with increased foraminiferal density and species richness, and Stage 2 is marked by their decreasing values.

Here we present a new 2007-08 dataset from the same area. In 2007, we observed a mean foraminiferal density of 98 per 20 ml, an increase of 113% from 2005 levels; and, in 2008, we observed a mean density of 114, an increase of 16% from 2007 levels. Additionally, in 2007, we observed 26 species, an increase of 100% from 2005 levels; and observed 57 species in 2008, an increase of 119% from 2007 levels. Similarly, the most abundant species decreased from a high of 76% in 2005 to 71% and 64% in 2007 and 2008 respectively. Thus, these preliminary data suggest that by summer of 2008, the St. Lucie area had improved considerably and reverted to Stage 1 of the three-stage evaluation system, approaching 1975-76 levels.

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