

ECOLOGICAL CHANGES IN FLORIDA SPRINGS OVER THE PAST SIX DECADES: EVALUATION OF THE EVIDENCE

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Florida's artesian springs have been the subject of intensive research and management attention for the past 30 years due to the physical, chemical and biological changes observed by professionals and the public. A substantial body of hydrologic and water quality data are available for springs which clearly document the physical and chemical changes that have occurred since the 1950s. However, it is the biological changes that the concerned public sees, including changes in submerged vegetation communities, fish populations, and wildlife use, and the biological data to document these changes are sparse to nonexistent.

This presentation will compare the historical and current biological data for selected springs and their spring-run streams and discuss trends exhibited. Differences in sampling method, number of stations, sampling location, etc. limit the conclusions that can be drawn from this exercise. Submerged vegetation data (macrophyte and/or algae - SAV) indicate some springs have exhibited little change in SAV abundance over the past six decades, while others have changed significantly. The Ichetucknee River has shown increases in SAV cover between the late 1970s and 2000s but apparent declines in SAV abundance (as g/m² dry weight). Fish population data exhibit a high degree of variability which makes interpretation difficult, but springs with comparable data indicate periods of high and low fish abundance. The upper reach of the Silver River has exhibited changes in fish community composition since the 1950s. Regular manatee population surveys at Volusia Blue Spring have shown substantial increases between the 1970s and current day.

This analysis indicates that sustained, consistent biological monitoring data must be collected concurrently with spring flow and water quality data to gain a wholistic understanding of trends in Florida springs and their responses to management and restoration efforts.

PRESENTER BIO: Mr. Mattson is a Sr. Environmental Scientist at SJRWMD. He has been involved in monitoring, research, and management of Florida springs, rivers, and estuaries for 35 years. Since joining SJRWMD in 2005, he has worked mainly on springs evaluating the drivers affecting spring ecology and applying that knowledge to management.