



EcoSummary

Sebastian River, North Prong, at Wilden
Road, Sebastian
August 5, 1996



BioRecon: A rapid, cost-effective screening mechanism for identification of biological impairment.

Introduction

The Sebastian River (also known as Saint Sebastian River or Creek) partially forms the border between Brevard and Indian River counties. The north prong of the river flows in a southeast direction into the main stem of the river, which then enters the Indian River Lagoon west of Sebastian Inlet. For its last two miles, the North Prong is relatively unaltered hydrologically, but upstream from there, it is a meshwork of canals that drain citrus groves. The land on the west side of the North Prong is now a part of the Florida Department of Environmental Protection's St. Sebastian River State Buffer Preserve. Of the roughly 28.3 square miles making up this watershed, about 52% is undeveloped uplands and wetlands. Rangeland and agriculture (citrus) make up about 20% each. Less than 7% is urban development. The remainder consists of barren lands and public works. The North Prong of the Sebastian River was placed on the 303(d) list due to dissolved oxygen, copper, turbidity, and TSS violations, plus elevated nutrient levels. Waterbodies on the 303(d) list are required to undergo a Total Maximum Daily Load (TMDL) study. The purpose of the TMDL is to determine the amount of pollution reduction needed to restore the system to a condition suitable for its designated use. In this case, the designated use is for recreation and maintenance of a healthy, well-balance aquatic community. DEP's Central District Surface Water Monitoring staff was requested to assess the status of selected waterbodies on the TMDL list that were placed on the list with "limited data". "Limited data" waterbodies were those with less than 10 observations in the STORET database, with the most recent observations occurring prior to 1990, or those with qualitative, non-point source survey data only.

Results and Discussion

Benthic macroinvertebrate community sampling, physical/chemical parameter measurement, and habitat assessment were carried out on August 5, 1996. Nutrients, turbidity, total suspended solids, cadmium, copper, lead, and iron were sampled on April 26, 1999. (We attempted to sample physical/chemical parameters again on 4/26/99 also, but due to an equipment malfunction, this was not possible.) Macroinvertebrate communities were sampled from in-stream habitats using 4 discrete dipnet sweeps, field picked, and lab identified (the Biorecon procedure). Three metrics, consisting of total taxa richness, the Florida Index and total EPT taxa (Ephemeroptera, Plecoptera and Trichoptera), are calculated and compared to existing thresholds to determine the community's health. The North Prong passed two of the three assessment thresholds, giving it a marginal rating for biological health.

There were 21 macroinvertebrate taxa, seven Florida Index points were scored (threshold=10), and there were six EPT species present. Nutrient levels at the North Prong were very low to medium. None was above the 50th percentile compared to other Florida streams. There were no violations of metals standards found here. All metals measurements indicated levels in the very low to low range. Likewise, no violations in turbidity or total suspended solids were detected. Physical/chemical measurements taken on 8/5/96 showed a dissolved oxygen level of 4.85 mg/L, which is below the state standard, but common in many streams in central Florida in the summer months. The pH was 7.2. The specific conductance was 775, due to saltwater influence; the salinity was 0.4 ppt. Water clarity was good, with a Secchi depth of >1.2 m. The habitat assessment showed good results, the site scoring 124 out of a possible 145 points.

Conclusions

Because of the overall good results of the different physical and water chemistry measurements taken, and despite the marginal results seen in the biological assessment, we suggest that the North Prong of the Sebastian River might be a candidate for removal from the 303(d) list.

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Published by the Florida Department of Environmental Protection,
Tallahassee, FL.

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