



Brandy Branch, Desoto County
February 25, 1998
Charlotte Harbor EMA

Purpose *Biorecon: A rapid, cost-effective screening method for identification of biological impairment.*

A Biorecon was performed on Brandy Branch in order to gain further information on the biological health of the watershed for use in the administration Florida's Ecosystem Management and TMDL programs. Macroinvertebrate samples were also collected for the calculation of the Stream Condition Index¹. Surface water samples were collected for analysis of parameters of concern.

Methods

Biorecons are based on three measurements of the aquatic invertebrates present in the stream: the total number of different species (Total Taxa), the number of 'good water quality' indicator species (Florida Index) and the total number of Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies) species present. A stream scoring above the threshold value for all three of these measurements is considered healthy. If two of the values are reached, the stream's health may be considered ecologically suspect. If one or none of the thresholds are reached, an impaired condition is concluded.

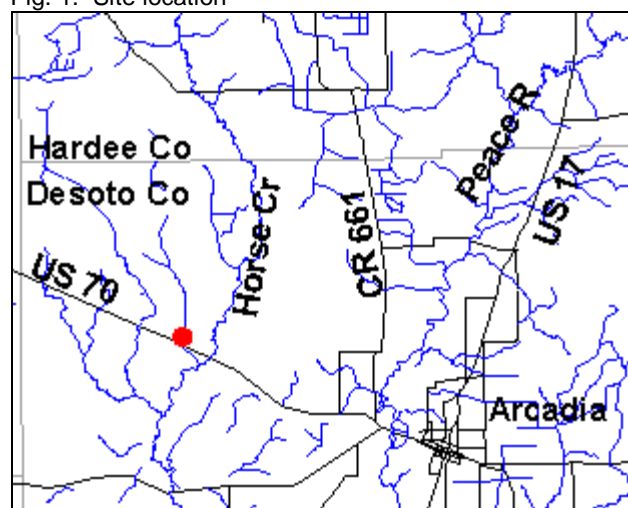
Basin Characteristics

Brandy Branch is located in northeastern Desoto County, on US 70 near the town of Pine Level. It is a small stream that flows into Horse Creek, which in turn flows into the Peace River. The sampling site is shown in Figure 1. It is a sandy-bottom, meandering stream with a natural, undisturbed riparian zone. Although it is evident that cattle use the stream, there has been no clearing for that purpose. Water velocity is fairly rapid, there are numerous pools and plentiful instream habitat. Snags and roots are abundant. There is no aquatic vegetation due to the stream's closed canopy. Agriculture is the dominant land use in the basin, primarily cattle range with a small amount of citrus. No permitted domestic or industrial waste discharges occur in the watershed.

Results

The stream was clear and its velocity ranged from 0.25 m/s to 0.33 m/s. Dissolved oxygen was 8.06 mg/l. Conductivity was 178 umho/cm. pH was 6.29 SU and

Fig. 1. Site location



temperature was 16.68 ° C. The habitat assessment score, 123, was in the mid-optimal range (Fig. 2). Water chemistry results are shown in Figure 3. Total nitrogen was moderately elevated, particularly nitrate-nitrite, as compared to typical values statewide². Orthophosphate was also elevated, but this may be typical due to the naturally occurring phosphatic deposits in the area. Coliforms were moderately high, but within state standards. Turbidity and total suspended solids were relatively low.

This site on Brandy Branch exceeded the thresholds for all three measurements of the biorecon (Fig 3). The Stream Condition Index rating was 25, in the 'good' range. This indicates that the stream supported a healthy macroinvertebrate community and met its designated use at the time of sampling.

Suggestions

The chemical parameters analyzed indicate that some nutrients were being introduced into the stream at the time of sampling, most likely due to agricultural activities, particularly local cattle pastures. These levels did not result in a degraded macroinvertebrate community at the time of sampling. Brandy Branch flows into Horse Creek, which flows into the Peace River, and ultimately into Charlotte Harbor, where accumulated nutrients may result in degraded water quality, including algal blooms and associated oxygen depletion. The development of best management practices for cattle ranges, citrus groves and other agricultural activities, in all the tributaries of the Peace River, is important when managing the ecological integrity of the Charlotte Harbor ecosystem.

For more information, contact Peggy Morgan, FDEP Southwest District, 3804 Coconut Palm Dr., Tampa, FL 33619; (813) 744 - 6100

Figure 2. Habitat Score

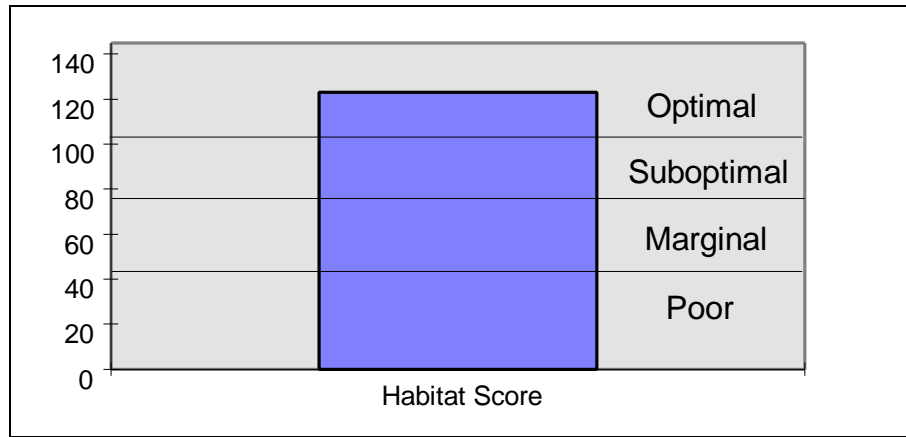
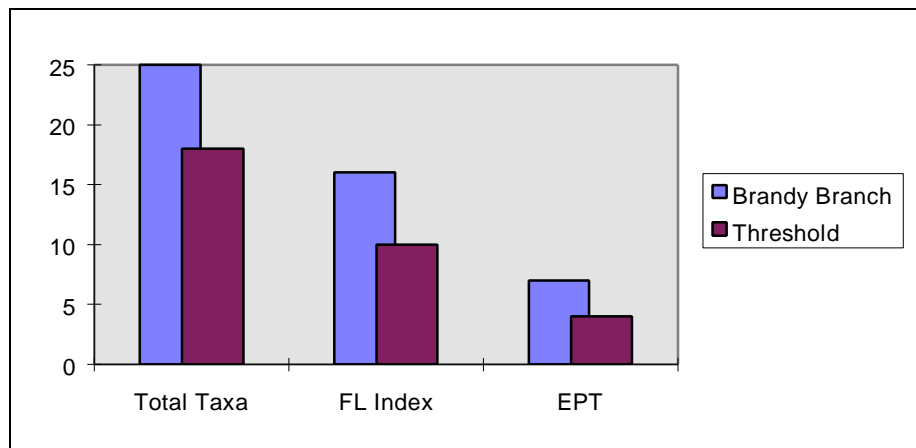


Figure 3. Water Chemistry results

Chloro- phyll-a	Chloride	Sulfate	Ammonia- N	Nitrate- Nitrite	Kjeldahl Nitrogen	Total Phos- phorus	Ortho- phosphate	Total Organic Carbon
Tg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
1.12	13	44	0.033	0.39	0.73	0.29	0.23	15

Turbidity	Total Suspended Solids	Total Coliforms	Fecal Coliforms
NTU	mg/l	#colonies/100 ml	#colonies/100 ml
3.2	4	900	172

Figure 4. Biorecon results



¹State of Florida Department of Environmental Protection. 1993. Standard Operating Procedures Manual (Draft). Benthic Macroinvertebrate Sampling and Habitat Assessment Methods: 1. Freshwater Streams and Rivers. FDEP Contract No. WM385. EA Engineering, Science and Technology, Inc., Carrollton, Texas.

²State of Florida Department of Environmental Protection. 1989. Friedemann, M. and J. Hand. Typical water quality values for Florida's lakes, streams and Estuaries. Standards and Monitoring Section. Bureau of Surface Water Management.