McDonald Branch

Methods

Study Area Analysis

The watershed containing the stream being assessed was analyzed using ESRI ArcGIS 10.2. Using this software with 2016 Hillsborough County aerial, 2011 Land Use/ Land Cover (LULC) and Watershed boundary (WBID) layers courtesy of the Florida Department of Environmental Protection. The Landscape Development Intensity Index (LDI) was calculated for the WBID containing the stream. From FDEP "The Landscape Development Intensity index (LDI) is an estimate of how much humans have altered an area of interest around a waterbody. Various land use types (low density residential, row crops, industrial and natural) are assigned coefficients of land use intensity based on estimates of the amount of human energy that is put into those land use types. The LDI is calculated by multiplying each land use coefficient by the percentage of the area of interest occupied by that land use, and then summing the results. The Florida Department of Environmental Protection (DEP) uses the LDI as a tool to estimate potential land use impacts on streams, lakes, and wetlands. LDI values less than two (≤ 2) can be considered minimally disturbed." In the Florida framework, the maximum LDI index score is approximately 42.

Habitat/Vegetation Assessment

For small streams that are not easily navigated by Jonboat for bathymetric mapping and vegetation analysis, Hillsborough County requested the implementation of the Florida Department of Environmental Protection methods for Stream and River Habitat Assessment (FT 3100) (http://www.dep.state.fl.us/water/sas/sop/sops.htm) using forms FD 9000-3, FD 9000-4 and FD 9000-5, Rapid Periphyton Survey (FS 7230) using form FD 9000-25 and Linear Stream Vegetation Survey (FS 7320) using form FD 9000-32. These methods were utilized on two sampling locations on each stream, typically near access points along roadways.

Stream and River Habitat Assessment per FT3100 receives a score calculated in Form FD 9000-5. This score results from the ranking of the primary habitat components (substrate diversity, substrate availability, water velocity and habitat smothering) and secondary habitat components (Artificial channelization, bank stability, riparian buffer zone width and riparian zone vegetation quality). The maximum score possible in this method is a 160.

Two metrics are utilized in the Linear Vegetation Survey. The Mean Coefficient of Conservatism (CoC) applies a score of 0-10 to each species based on its ecological tolerances and fidelity to presettlement conditions. Species with higher scores show a high fidelity to native, undisturbed habitats and are typically sensitive to alterations. Available CoC scores can be obtained from LT 7000 from the Florida Department of Environmental Protection at:

http://www.dep.state.fl.us/water/sas/sop/sops.htm. The Percent Florida Exotic Pest Plant Council (% FLEPPC) metric calculates the percent invasive exotics as the number of occurrences of FLEPPC Category

I or II in the 100 m reach divided by the total number of taxa occurrences in the 100 m reach. The FLEPPC list can be found at: http://www.fleppc.org/list/11list.html

Stream Condition Index

The Stream Condition Index (SCI) was sampled per DEP SOP FS7420 and calculated per DEP SOP LT7200. The SCI consists of collecting macroinvertebrates via 20 D-frame dipnet sweeps (0.5 m in length) in the most productive habitats in a 100 m reach of stream. The organisms are sub-sampled, and identified to the lowest practical taxonomic level. The SCI is composed of ten metrics, eight of which decrease in response to human disturbance, with two metrics (% very tolerant and % dominant) increasing in response to human disturbance. According to DEP SOP LT 7000, the SCI score ranges and categories are: (68-100) Exceptional; (35-67) Healthy; and (0-34) Impaired. Proposed biological health assessment criteria state that a site is considered to meet designated uses if the average of the two most recent SCI scores is 40 or higher and neither of those scores is less than 35.

Water Quality Assessment

Physical water quality samples were taken using a Eureka Manta Sub-2 multiprobe pre and post calibrated daily. Measurements taken with this device include: depth, conductivity, pH, Dissolved Oxygen (mg/l and % Saturation) and salinity. Chemical water parameters were collected and preserved on ice by USF Water Institute staff and analyzed at the Environmental Protection Commission of Hillsborough County Laboratory. Analysis include; Chlorophyll (a, b, c, t and corrected), Alkalinity, Color, Fecal Coliform, Enterococci, Ammonia, Nitrates/Nitrites, Total Phosphorous, Kjeldahl Nitrogen and Total Nitrogen.

Study Area

McDonald Branch, located in Hillsborough County, Florida was sampled on 3/20/2017 and is located approximately 500 meters west of Alderman's Ford Park off of Thompson Road in Tampa Florida at: N 27.864839, W 82.155314. McDonald Branch drains into the Alafia River and is located in FDEP WBID 1651 which contains 1,129 acres of land. The watershed surrounding McDonald Branch is dominated by Residential (31.60%), Field/Pasture (22.90%), Forest/Natural (20.30%), and Agricultural (14.90%) land use. The Landscape Development Intensity Index of the watershed is 4.18.

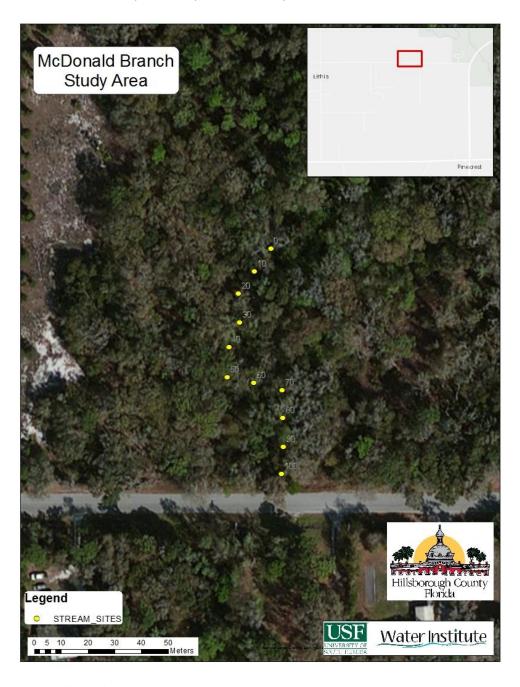


Figure 1. 2017 McDonald Branch Assessment Study Area Map

Habitat Assessment

McDonald Branch at Thompson Road



Figure 2 Overview photograph of McDonald Branch sample site

McDonald Branch received a Habitat Assessment score of 115 with no signs of artificial channelization. Primary habitat components received marginal scores for Substrate Diversity and Habitat Smothering, due to the presence of only two major productive habitats (7.3% Snags, 8.5% Roots/undercut banks) and an inadequate number of stable pools, and received suboptimal scores for Substrate Availability and Water Velocity. Secondary habitat components received optimal scores for Artificial Channelization, Bank Stability, and Riparian Buffer Zone Width. The right bank scored optimal Riparian Zone Vegetation Quality, while the left bank scored in the suboptimal range due to extensive wild hog damage along the buffer zone.

During the Rapid Periphyton Survey, periphyton was not observed in any of the 99 individual grab samples performed. The average canopy cover in the 100 meter region was 89.45%. The Secchi Disk Depth was measured as 0.40 meters visible on bottom at the 50 meter mark. The average water depth at the time of the assessment was 0.3 meters.

The Linear Vegetation Survey identified 12 species rooted in the water at the time of the assessment. Four of these species are non-native, invasive species shown in bold in Table 1. The remaining 8 species are native to this region. *Saururus cernuus* was the dominant species in Region 70-80 of the Linear Vegetation Survey. The vegetation community along this sample location showed evidence of infrequent disturbance. There were a total of 38 species observations in the 100 meter study area. The mean Coefficient of Conservatism (CoC) metric for the study area was 4.08 and the %

FLEPPC metric for the study area was 26%. The FDEP thresholds are > 2.5 for Mean CoC and < 25% for % FLEPPC.

Table 1 Linear Vegetation Survey Results – McDonald Branch

					9	Sampl	le Site)				
Plant Species	C of C Score	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	Observations / Species
Ardisia escallonioides	4.17							1				1
Boehmeria cylindrica	5				1							1
Cicuta maculata	4.54			1				1		1		3
Colocasia esculenta	0			1	1	1	1	1		1		6
Commelina diffusa	2.02				1		1				1	3
Crinum americanum	9			1								1
Hydrocotyle umbellata	1.92	1	1	1			1					4
Ipomoea carnea	0							1		1	1	3
Itea virginica	7.09	1	1	1	1	1	1	1			1	8
Orontium aquaticum	8.39	1	1						1		1	4
Saururus cernuus	6.5	1	1						D			3
Sphagneticola trilobata	0										1	1
Total Observations/ Station		4	4	5	4	2	4	5	2	3	5	38

Total Observations 38

 Mean CoC
 4.08

 % FLEPPC
 26%



Figure 3. Saururus cernuus was the dominant species in Region 70-80 of the Linear Vegetation Survey of McDonald Branch.

Stream Condition Index

The analysis of the SCI sample involves splitting the sample into 2 aliquots for analysis. The SCI metrics are then calculated on each separately. The final SCI score is an average of the two scores. The SCI score for McDonald Branch Creek was 70 out of a possible 100 points, corresponding with an "Exceptional" designation, with disruption to the expected community of a healthy stream.

The summary of the metric scores for aliquot A (top) and aliquot B (bottom) are shown in Table 2. Both samples were dominated by *Gammarus tigrinus*. Sample A contained 31 total taxa, including 4 sensitive taxa and 6.21% very tolerant individuals. Sample B contained 32 total taxa, including 5 sensitive taxa and 4.64% very tolerant individuals. Both samples contained a long-lived taxa *Palaemonetes spp.* and Sample A also contained the long-lived species *Corbicula spp.*

Table 2 SCI metric summaries for McDonald Branch Creek

	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	31.00	6.67	6.67
Total Ephemeroptera	2.00	4.00	
Total Trichoptera	4.00	5.71	5.71
% Filter Feeders	16.90	3.77	3.77
Total Clingers	7.00	10.00	10.00
Total Long-lived Taxa	2.00	6.67	6.67
% Dominance	22.07	8.39	8.39
% Tanytarsini	2.76	3.89	
Total Sensitive Taxa	4.00	5.71	5.71
% Very Tolerant Individuals	6.21	6.81	6.81

SCI Sum	61.62
Final SCI score	68.47

	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	32.00	7.08	7.08
Total Ephemeroptera	3.00	6.00	6.00
Total Trichoptera	4.00	5.71	5.71
% Filter Feeders	20.53	4.61	4.61
Total Clingers	7.00	10.00	10.00
Total Long-lived Taxa	1.00	3.33	3.33
% Dominance	24.50	7.90	7.90
% Tanytarsini	6.62	5.97	5.97
Total Sensitive Taxa	5.00	7.14	7.14
% Very Tolerant Individuals	4.64	7.43	7.43

SCI Sum	65.19
Final SCI score	72.43

The full results of the SCI sampling are shown in Table 3 (Sample A) and Table 4 (Sample B) for McDonald Branch Creek.

McDonald Branch SCIA Stream Condition Index (SCI) Samples Collected 03/20/2017 Project #: 6063170278

xt#. 6063170278

12	
ᆵ	
=	
ndition	
l≡	
ndex	
×	
x Results fo	
<u>26</u>	
틎	
8	
₫	
_	
2	
0	
≅	
<u>a</u>	
McDonald Branch SC	
2	
ᇹ	
-	
8	

Physical Clabe Clabe Clabe Clabe Clabe Really London London Colongoe Colong	Stream Co	ondition Index	Results for McD	Stream Condition Index Results for McDonald Branch SCIA														
Cibilde Cibilde Handride Abundance James (Isan) Tital MSF Riter ONF Riter Cloque (Isan) Cloque (Isan) </th <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Collapsed</th> <th></th> <th>Ephemeroptera Ti</th> <th>richoptera</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Very Tolerant</th>							Collapsed		Ephemeroptera Ti	richoptera								Very Tolerant
Citedia Tutinidada Masidade Zero Prifate Carticola spp. 1 1 1 1 1 1 1 1 1	Phylum	Class	Order	Family	Taxa	Abundance	Abundance	Taxa Presence			_	100% Filterer		Long-lived Taxa	Dominant Taxa	l	Sensitive Taxa	Individuals
Controllate Technical Alexandres Alexandres opp. 1 1 1	Annelida	Citellata	Tubificida	Naididae	Nais pardalis			_										ىي
Estempords Higgaphila Hargidise play	Annelida	Clitellata	Tubificida	Naididae	Dero trifida													
Scient/code Higgardina Placonticides spp. 1 1 1 1 1 1 1 1 1	Mollusca	Gastropoda			Ancylidae spp.		3) 1										
Bissival Internotation Controllations Controllation (sp.) 1 1 1 1 1 1 1 Midescentinal (pulpylocida Caminatoriana Caminatoriana (pulpylocida Caminatoriana (pulpylocida Caminatoriana	Mollusca	Gastropoda	Hygrophila	Planorbidae	Planorbidae spp.	1	1	1										_
Malacontrinol jopopola Assistates Chesistoria gap. 7 7 1 Malacontrial phorphoda Communicates Communicates gripus 21 32 1 1 1 Malacontrial phorphoda Palaemonidates Palaemonidates gripus 21 1 1 1 1 1 1 Malacontrial phorphoda Palaemonidates Palaemonidates gripus 2 1 1 1 1 1 1 Insectal Chorabit Cherapironidate Adjustations gripus 3 1 1 1 1 1 1 Insectal Chorabit Cherapironidate Adjustations gripus 3 3 1	Mollusca	Bivalvia	\eneroida \	Corbiculidae	Corbicula spp.		1	1				1		1				
Malaconstruci Implipodo Communication Communication Communication 11 Malaconstruci Impolipodo Communication 27 3.2 1 1 1 1 Malaconstruci Impolipodo Communication 20 1 1 1 1 1 1 Malaconstruci Impolipodo Charles Publicationale span 1	Arthropoda	n Malacostraca	a Isopoda	Asellidae	Caecidotea spp.		7	1									1	
Malacostano Implopoda Commandore Commandore Commandore Commandore 1	Arthropode	n Malacostrace			Gammarus spp.	1	1											
Malacostracal Decapoda Palaemonidae Palaemonidae Palaemonidae Palaemonidae Palaemonidae Palaemonidae Palaemonidae Palaemonidae Palaemonidae 1 1 1 1 Insecta Ephemeroplea Heptiagranidae Heptiagranidae Ephemeroplea Heptiagranidae Fanaligam zoecum 3 1 <	Arthropoda	n Malacostrace	a Amphipoda		Gammarus tigrinus	2		! 1							32			
Insectat Ephemerophera Beakidase Pseudocobean ephipopiatum 5 5 1 1 Insecta Ephemerophera Heptaganidase Heptaganidase spp. 1<	Arthropode	n Malacostraca		Palaemonidae	Palaemonetes spp.		1	1						1				
Insecta Ephemeropieral Heptagenildae Heptagenildae spp. 1 1 1 1 Insecta Odonata Coernagronidae Agaia zeolula 1 1 1 1 1 Insecta Odonata Coernagronidae Acentridae spp. 1 1 1 1 1 Insecta Tindoplera Polycorridae Acentridae spp. 1 1 1 1 1 Insecta Tindoplera Hydrogrinitae Chernifora spp. 3 3 1	Arthropode	nsecta	Ephemeroptera	Baetidae	Pseudocloeon ephippiatum		5) 1										
Insecta Odonata Coenagrionidae Argia sedula 1 1 1 1 1 1 1 1 1	Arthropode	nsecta	Ephemeroptera	Heptageniidae	Heptageniidae spp.		1	1					1				1	
Insecta Odonata Coenagrioridae Enalagama coecum 3 1 Insecta Odonata Aestinidae Aestinidae spp. 1 1 1 Insecta Trichoptera Polycentropodiae Camorina spp. 3 3 1 1 Insecta Trichoptera Hydropsychidae Cherunatropsyche spp. 2 2 1 1 1 Insecta Cheoptera Elmidae Micropilidae Mechrichia spp. 2 2 1 1 1 Insecta Objetera Elmidae Micropilidae vispp. 6 6 1 1 1 Insecta Optera Elmidae Micropilidae vispp. 1 1 1 1 Insecta Optera Elmidae Micropilidae vispp. 1 1 1 1 1 Insecta Optera Chronomidae Zinyfarus spp. 1 1 1 1 1 1 Insecta Optera Chrono	Arthropode		Odonata		Argia sedula		_	_										
Insecta Odonala Aeshnidae Aeshnidae opp. 1 1 1 Insecta Trichoplera Polycentropodidae Cemarina spp. 3 3 1 1 1 Insecta Trichoplera Hydropsychidae Cheumadopsyche spp. 2 2 1 1 1 Insecta Trichoplera Hydropsychidae Cheumadopsyche spp. 2 2 1 1 1 Insecta Coleoptera Elmidae Albrandravas spp. 6 6 1 1 1 Insecta Diplera Chironomidae Farylarsus spp. 1 1 1 1 Insecta Diplera Chironomidae Farylarsus exiguus group 1 1 1 1 Insecta Diplera Chironomidae Albrandravas exiguus group 1 1 1 1 Insecta Diplera Chironomidae Albrandravas spp. 1 1 1 1 Insecta Diplera Crimomidae	Arthropode		Odonata	Coenagrionidae	Enallagma coecum			_										w
Insecta Trichoptera Polycentropodidae Clematina spp. 3 3 1 1 Insecta Trichoptera Lepthocnidae Checatis aviana 4 4 1 1 1 Insecta Trichoptera Hydropsychidae Cheunatopsychia spp. 2 2 1 1 1 1 Insecta Cheloptera Elmidae Alectricophia spp. 6 6 1 1 1 1 Insecta Coleoptera Elmidae Alectricophia spp. 2 2 1 1 1 1 Insecta Objetera Chironomidae Alectrophia spp. 1 1 1 1 1 Insecta Objetera Chironomidae Alectrophia spp. 1	Arthropode		Odonata	Aeshnidae	Aeshnidae spp.		_	_										
Insectal Trichoplera L'eptoceridae Óecetis avans 4 4 1 1 Insectal Trichoplera Hydropsychidae Cheumatopsyche spp. 2 2 1 1 1 Insectal Trichoplera Hydropsychidae Aleotrichie spp. 6 6 1 1 1 Insectal Coleoptera Elmidae Aleotrichie spp. 2 2 1 1 1 Insectal Objetera Chironomidae Aleotrichie spp. 1 1 1 1 1 Insectal Objetera Chironomidae Aleotranylarusus spp. 1	Arthropode		Trichoptera	Polycentropodidae	Cemotina spp.		<u>د</u>	_		_			_					
Insectal Trichoptera Hydropsychiade Cheumatoposyche spp. 2 2 1 1 Insectal Trichoptera Hydropfilidae Alectrichia spp. 6 6 1 1 1 Insectal Coleoptera Elmidae Alectrichia spp. 2 2 1 1 1 Insectal Coleoptera Elmidae Alicooy/lospus spp. 1 1 1 1 1 Insectal Diptera Chironomidae Clarotanylassus spp. 1 1 1 1 1 Insecta Diptera Chironomidae Tanylassus spp. 1	Arthropoda		Trichoptera	Leptoceridae	Oecetis avara		4	_		_								
Insectal Trichoptera Hydropdildae Mechichia spp. 6 6 1 1 1 Insectal Coleoptera Elmidae Dubinaphia spp. 2 2 1 1 1 1 Insectal Coleoptera Elmidae Sternethnis spp. 1 1 1 1 1 Insectal Coleoptera Elmidae Microcyllioquus spp. 1 1 1 1 1 Insectal Diptera Chironomidae Cladofanylarsus spp. 1 1 1 1 1 1 1 Insectal Diptera Chironomidae Tanylarsus spp. 1 1 1 1 1 0.5 Insectal Diptera Chironomidae Polypeallum spp. 1 <t< td=""><td>Arthropode</td><td></td><td>Trichoptera</td><td>Hydropsychidae</td><td>Cheumatopsyche spp.</td><td></td><td>2</td><td>_</td><td></td><td>_</td><td></td><td>2</td><td>_</td><td></td><td></td><td></td><td></td><td></td></t<>	Arthropode		Trichoptera	Hydropsychidae	Cheumatopsyche spp.		2	_		_		2	_					
Insectal Coleoptera Elmidae Dubinaphia spp. 2 2 1 Insectal Coleoptera Elmidae Stenefinis spp. 1 1 1 1 Insectal Coleoptera Elmidae Microcyllospuis spp. 1 1 1 1 Insectal Diptera Chironomidae Cladatarylarsus spp. 1 1 1 1 1 Insectal Diptera Chironomidae Tanylarsus buckleyri 1 1 1 1 1 0.5 Insectal Diptera Chironomidae Polypeallum flavum 8 8 1 1 1 1 1 Insectal Diptera Chironomidae Polypeallum spp. 1	Arthropoda	Insecta	Trichoptera	Hydroptilidae	Neotrichia spp.			_		_			_					
Insecta Coleoptera Elmidae Stenelmis spp. 1 1 1 Insecta Coleoptera Elmidae Microcyllospus spp. 18 18 1 Insecta Diptera Chironomidae Chironomidae Tanylarsus spp. 1 1 1 1 Insecta Diptera Chironomidae Tanylarsus buckleyi 1 2 1 1 1 Insecta Diptera Chironomidae Polypedilum flavum 8 8 1 1 Insecta Diptera Chironomidae Stenochironomus spp. 1 1 1 1 Insecta Diptera Chironomidae Aperilum spp. 1 1 1 1 Insecta Diptera Chironomidae Aperilum spp. 9 9 1 1 Insecta Diptera Chironomidae Aprametriocnemus spp. 4 4 1 Insecta Diptera Chironomidae Africhopogon spp. 4 4 1 Insecta Diptera Chironomidae Africhopogon spp. 1 1 1 1 Insecta Diptera Chironomidae Africhopogon spp. 2 2 1	Arthropoda	Insecta	Coleoptera	Elmidae	Dubiraphia spp.		2 2											
Insectal Coleoptera Elmidae Microcylloepus spp. 18 1 1 Insectal Diplera Chironomidae Zanylarsus spp. 1 1 1 1 0.5 Insectal Diplera Chironomidae Zanylarsus buckleyi 1 2 1 1 1 Insectal Diplera Chironomidae Albeylanylarsus eviguus group 1 2 1 1 1 Insectal Diplera Chironomidae Albeylanylarsus eviguus group 1 1 1 1 1 Insectal Diplera Chironomidae Albeylanylarsus eviguus group 1 1 1 1 1 Insectal Diplera Chironomidae Alpeallum spp. 9 9 1 1 1 1 Insectal Diplera Chironomidae Alpeallum spp. 9 9 1 1 1 1 Insectal Diplera Chironomidae Alpeallum spp. 4 4 <td< td=""><td>Arthropode</td><td>Insecta</td><td>Coleoptera</td><td></td><td>Stenelmis spp.</td><td></td><td>_</td><td>_</td><td></td><td></td><td></td><td></td><td>_</td><td></td><td></td><td></td><td></td><td></td></td<>	Arthropode	Insecta	Coleoptera		Stenelmis spp.		_	_					_					
Insecta Diptera Chironomidae Cladolanylarosus spp. 1 1 1 1 1 0.5 Insecta Diptera Chironomidae Tanylarosus spp. 1 1 1 1 1 1 0.5 Insecta Diptera Chironomidae Tanylarosus buckleyi 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Arthropode	nsecta .	Coleoptera	Elmidae	Microcylloepus spp.			_										
Insecta Diptera Chironomidae Tanyláraus buckléyi 1 Insecta Diptera Chironomidae Polypeallum Barum 8 1 Insecta Diptera Chironomidae Abeadarytarsus exiguus group 1 1 1 Insecta Diptera Chironomidae Abeadlum spp. 1 1 1 Insecta Diptera Chironomidae Apeadlum spp. 1 1 1 Insecta Diptera Chironomidae Apeadlum spp. 4 4 1 Insecta Diptera Chironomidae Apeadlum spp. 4 4 1 Insecta Diptera Chironomidae Apeadlum spp. 4 4 1 Insecta Diptera Chironomidae Aprionopous or Orthoclarius 1 1 1 Insecta Diptera Chironomidae Aprionopous or Orthoclarius 1 1 1 Insecta Diptera Chironomidae Aprionopous or Orthoclarius 1 1 1 Insecta Diptera Chironomidae Aprionopous or Orthoclarius 1 1 1 Insecta Diptera Chironomidae Aprionopous orthoclarius 1 1 <	Arthropode	nsecta .	Diptera	Chironomidae	Cladotanytarsus spp.		_	_			0.5					_		
Insectal Diptera Chironomidae Polypealum Ravum 8 1 1 Insectal Diptera Chironomidae Polypealum Ravum 8 1 1 Insectal Diptera Chironomidae Rheadarydarcus exiguus group 1 1 1 Insectal Diptera Chironomidae Abeadlum spp. 1 1 1 Insectal Diptera Chironomidae Apeadlum spp. 9 9 1 Insectal Diptera Chironomidae Parametriocnemus spp. 4 4 1 Insectal Diptera Chironomidae Abrichopogon spp. 4 4 1 Insectal Diptera Chironomidae Abrichopogon spp. 2 2 1 Insectal Diptera Chironomidae Abrichopogon spp. 2 2 1 Insectal Diptera Chironomidae Abrichopogon spp. 2 2 1 Insectal Diptera Simulinae Abrichopogon spp. 1 1 1 Insectal Diptera Simulinae Abrichopogon spp. 1 1 1 Insectal Diptera Veliidae Abrichopogon spp. 1 <td< td=""><td>Arthropode</td><td>Insecta</td><td>Diptera</td><td>Chironomidae</td><td>Tanytarsus spp.</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Arthropode	Insecta	Diptera	Chironomidae	Tanytarsus spp.													
Insecta Diptera Chironomidae Polypedilum flauum 8 1 Insecta Diptera Chironomidae Afleeofanytarsus exiguus group 1 1 1 Insecta Diptera Chironomidae Stenochironomus spp. 1 1 1 Insecta Diptera Chironomidae Apedilum spp. 9 9 1 Insecta Diptera Chironomidae Parametriocremus spp. 4 4 1 Insecta Diptera Chironomidae Africhopogoni spp. 4 4 1 Insecta Diptera Chironomidae Africhopogon spp. 1 1 1 1 Insecta Diptera Ceratopogonidae Africhopogon spp. 2 2 1 Insecta Diptera Simulima spp. 19 1 1 Insecta Heteroptera Veliidae Africhopogon spp. 2 2 1	Arthropoda	nsecta .	Diptera	Chironomidae	Tanytarsus buckleyi		2	_			L					2		
Insectal Diptera Chironomidae Rheadanyfarsus exiguus group 1 1 1 Insectal Diptera Chironomidae Stenochironomus spp. 1 1 1 1 Insectal Diptera Chironomidae Aprametriocremus spp. 9 9 1 1 Insectal Diptera Chironomidae Parametriocremus spp. 4 4 1 1 Insectal Diptera Chironomidae Cricotopus or Orthocoladius 1 1 1 1 Insectal Diptera Ceratopogonidae Africhopogon spp. 2 2 1 1 Insectal Diptera Simulina spp. 19 1 1 1 Heteroptera Veliidae Africhopogorielia spp. 1 1 1 1 1	Arthropoda	Insecta	Diptera	Chironomidae	Polypedilum flavum			_										
Insecta Diptera Chironomidae Stenachironamus spp. 1 1 1 1 Insecta Diptera Chironomidae Apeallum spp. 9 9 1 Insecta Diptera Chironomidae Parametriocnemus spp. 4 4 1 Insecta Diptera Chironomidae Cricotiquus or Orthocialius 1 1 1 Insecta Diptera Ceratiopogonidae Africitopogon spp. 2 2 1 Insecta Diptera Simullidae Simullim spp. 19 1 1 Insecta Peteroptera Veliidae Africopovelia spp. 1 1 1 1	Arthropoda	nsecta	Diptera	Chironomidae	Rheotanytarsus exiguus group		_	_				_	_			_		
Insecta Diptera Chironomidae Apeallum spp. 9 1 Insecta Diptera Chironomidae Parametriocnemus spp. 4 4 1 Insecta Diptera Chironomidae Chicologues or Orthocoladius 1 1 1 1 Insecta Diptera Ceratopogonidae Africingogon spp. 2 2 1 Insecta Diptera Simulidae Simulim spp. 19 1 1 Insecta Heteroptera Veliidae Āflagovielis spp. 1 1 1 1	Arthropoda		Diptera	Chironomidae	Stenochironomus spp.		_	_										
Insecta Diptera Chironomidae Parametriocnemus spp. 4 4 1 Insecta Diptera Chironomidae Chironomidae 1 1 1 1 Insecta Diptera Ceratopogonidae Africhopogon spp. 2 2 1 Insecta Diptera Simulidae Simulium spp. 19 19 1 Insecta Heteroptera Veliidae Aflagovelia spp. 1 1 1 1	Arthropoda		Diptera	Chironomidae	Apedium spp.			_										
Insecta Diptera Chironomidae Cricotopus or Orthociadius 1 1 1 1 Insecta Diptera Ceratopogonidae Africhopogonispp. 2 2 1 Insecta Diptera Simulidae Simulium spp. 19 19 1 Insecta Heteroptera Velilidae Afragovielia spp. 1 1 1	Arthropode		Diptera	Chironomidae	Parametriocnemus spp.		4	_									_	
Insecta Diptera Ceratopogonidae Africhopogon spp. 2 2 1 Insecta Diptera Simulidae Simuliam spp. 19 19 1 Insecta Heteroptera Velindae Rhagovielia spp. 1 1 1 1	Arthropoda		Diptera	Chironomidae	Cricotopus or Orthocladius			_										
Insecta Diplera Simuliare Simuliare 19 19 1 Insecta Heteroptera Vellidae Rhagovelia spp. 1 1 1 1	Arthropoda		Diptera	Ceratopogonidae	Atrichopogon spp.		2	_										
Insecta Heteroptera Veliidae	Arthropode		Diptera	Simuliidae	Simulium spp.			_				19	_				_	
	Arthropoda	a Insecta	Heteroptera	Veliidae	Rhagovelia spp.			_										

McDonald Branch SCIB
Stream Condition Index (SCI)
Samples Collected 03/20/2017
Project #: 6063170278

Stream Condition Index Results for McDonald Branch SCIB

ON OWN TO MINIOR THE WORK TO MINIOR THE WORK TO THE OWN THE OW	-	- College Cianon			Collansed	Enhemeronte	Enhemerontera Trichontera							V	Very Tolerant
Phylum Class	Order	Family	Taxa	Abundance	Abundance	Taxa Presence Taxa	Taxa	50% Filterer	100% Filterer	Clinger Taxa	Long-lived Taxa I	Long-lived Taxa Dominant Taxa Tanytarsini		Sensitive Taxa In	Individuals
		Naididae	Tubificinae spp.	_	_				- 1						
Annelida Clitellata	Tubificida	Naididae	Aulodrilus pigueti	_	_										
	_	Naididae	Naidinae spp.	w	cu										
Annelida Clitellata	Tubificida	Naididae	Nais communis	_	_										
		Naididae	Nais pardalis	w	w										
			Ancylidae spp.	12	12										
			Planorbidae spp.	_	_	_									
ga	CO I	Asellidae	Caecidotea spp.	о	6	_									
Arthropoda Malacos	Malacostraca Amphipoda	Gammaridae		13											
Arthropoda Malacos	Malacostraca Amphipoda			24	37	1						37			
	Malacostraca Decapoda			_		1					_				
- 1	Ephemerop	Ephemeroptera Caenidae		_	1	1	_								
Arthropoda Insecta	Ephemerop	Ephemeroptera Baetidae	Baetidae spp.	1											
	Ephemerop	Ephemeroptera Baetidae	Pseudocloeon ephippiatum	3	4	1	1								
Arthropoda Insecta	Ephemerop	Ephemeroptera Heptageniidae	e Stenacron interpunctatum	1	1	1	1			1				1	
Arthropoda Insecta	Odonata	Coenagrionidae		1											
Arthropoda Insecta	Odonata	Coenagrionidae		1	1	1									
Arthropoda Insecta	Odonata	Coenagrionidae		1	2	1									
Arthropoda Insecta	Trichoptera	Leptoceridae		1											
Arthropoda Insecta	Trichoptera	Leptoceridae		3	4	1	_								
Arthropoda Insecta	Trichoptera	Hydropsychidae	tae Cheumatopsyche spp.	6	9	1	_		6	1					
Arthropoda Insecta	Trichoptera			1	1	1	_			1					
Arthropoda Insecta	Trichoptera			2	2	1	_			_					
Arthropoda Insecta	Coleoptera	Elmidae	Stenelmis spp.	3	3	1				_					
Arthropoda Insecta	Coleoptera		Microcylloepus spp.	19	19	1									
Arthropoda Insecta	Diptera	Chironomidae	e Chironomidae spp.	_											
Arthropoda Insecta	Diptera	Chironomidae	e Cladotanytarsus spp.	2	2			2					2		
Arthropoda Insecta	Diptera	Chironomidae		4											
Arthropoda Insecta	Diptera	Chironomidae	e Tanytarsus buckleyi	2	7	1		7					7		
Arthropoda Insecta	Diptera	Chironomidae	e Polypedilum scalaenum group	1	1	1									
Arthropoda Insecta	Diptera	Chironomidae		2	2	1									
Arthropoda Insecta	Diptera	Chironomidae	e Rheotanytarsus exiguus group	1	1	1			1	1			1		
	Diptera	Chironomidae		2	2	1									
Arthropoda Insecta	Diptera	Chironomidae		4	4	1									
Arthropoda Insecta	Diptera	Chironomidae	e Parametriocnemus spp.	3	3	1								1	
Arthropoda Insecta	Diptera	Ceratopogoni	Ceratopogonidae Atrichopogon spp.	3	3	1									
Arthropoda Insecta	Diptera	Simuliidae	Simulium spp.	15	15				15	_					
Arthropoda Insecta	Diptera	Empididae	Hemerodromia spp.	1	1	_								1	

Water Quality Assessment

Limited long-term water quality data is not available for McDonald Branch. The data that is available was collected by the USF Water Institute. Table 3 provides a summary of the Physical/Chemical conditions recorded.

Table 5 McDonald Branch Physical Water Quality (Field)

Dep (m		Temp (c)	рН	DO (mg/L)	DO (% Sat)	Cond (umho/cm)	Salinity (ppt)	TDS (mg/L)	Sample Site
									Thompson
C).19	19.74	8.875	6.535	70.8	209.65	0.1	113.9	Rd.

The chemical water quality analysis McDonald Branch is shown in Table 4. Total Phosphorous values were below the nutrient region threshold developed by FDEP of 0.49 mg/l. Total Nitrogen values were also below the nutrient region threshold developed by FDEP of 1.65 mg/l. Chlorophyll-a values fall within the site specific evaluation range of 3.2 μ g/l to 20 μ g/l.

Table 6 McDonald Branch Water Quality (Laboratory)

Parameter	Thompson Rd.	Units	
Alkalinity	84.0	mg/LCaCO3	
Nitrates/Nitrites	0.505	mg/L	
Fecal Coliform	20	#/100 ml	
Enterococci	440	#/100 ml	
Chlorophyll a	1.2	ug/L	
Chlorophyll b	2.6	ug/L	
Chlorophyll c	0.5	ug/L	
Chlorophyll t	1.7	ug/L	
Chlorophylla Corr	3.4	ug/L	
Chlorophyll-pheo	6.6	ug/L	
Ammonia	0.010	mg/L	
Kjeldahl Nitrogen	0.422	mg/L	
Total Nitrogen	0.927	mg/L	
Total Phosphorus	0.198	mg/L	
Color(345)F.45	13.1	Pt/Co	

Conclusion

The McDonald Branch region that was assessed during this study does not show impairment based on water quality from this single sample. More samples throughout the year in varying water levels and flows would be required to conduct any trend analysis on the water quality. The system does show impairment in the vegetation communities through the linear vegetation survey results with a high percentage of non-native invasive species. The habitat assessment performed on the sample site shows habitat is sufficient for biotic use with an optimal score of 115. The results of the SCI sampling classify McDonald Branch Creek as Exceptional based on the macroinvertebrate community.

Table 7 Summary of Water Quality, Floristic Surveys and Habitat Assessments

M	easure	Thompson Rd	Threshold
Total Phos	phorous (mg/l)	0.198	< 0.49
Total Ni	trogen (mg/l)	0.927	< 1.65
RPS (9	% Rank 4-6)	0	< 25%
LVS	Avg C of C	4.08	≥ 2.5
	FLEPPC %	26.00%	< 25%
Chloro	phyll (μg/l)	3.4	< 20 μg/l
Habitat	Assessment	115	> 34
	SCI	70	> 34