



GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
SOUTHEASTERN PLAINS ECOREGION (65)
Sand Hills - 65c Data

(65) SOUTHEASTERN PLAINS ECOREGION				
65c Sand Hills - reference streams				
Waterbody Name	Catchment Area (m2)	Basin Name	Major Basin Name	Collection Date
<i>Reference Site 1</i>	50850701.22	Kinchafoonee-Muckalee	Apalachicola	01/07/2001
<i>Reference Site 2</i>	24699749.94	Middle Chattahoochee-Walter F. George Reservoir	Apalachicola	12/22/2000
<i>Reference Site 3</i>	91902270.12	Upper Flint	Apalachicola	01/12/2001
<i>Reference Site 4</i>	71021427.08	Middle Chattahoochee-Walter F. George Reservoir	Apalachicola	12/07/2000
<i>Reference Site 5</i>	44405694.94	Middle Flint	Apalachicola	01/04/2001



GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
SOUTHEASTERN PLAINS ECOREGION (65)
Sand Hills - 65c Data

% Land use per Catchment Area for Reference Sites: 65c - Sand Hills						
Sample Number						
Land use	Year	Reference Site 1	Reference Site 2	Reference Site 3	Reference Site 4	Reference Site 5
% Forested	1998	60.7816	66.8511	51.2648	68.1979	59.7125
% Urban	1998	2.9714	7.3151	5.1540	4.5835	5.5593
% Agriculture Total	1998	9.5465	0.6633	16.1222	8.9000	21.1726
% Barren	1998	17.4302	15.2716	21.0784	13.4503	9.0446
% Wetland	1998	9.2702	9.8988	6.3807	4.8683	4.5111
% Forested	1994	80.7515	92.7154	70.7171	65.3214	70.2053
% Urban	1994	5.1182	0.9723	8.5386	0.7197	1.4329
% Agriculture Total	1994	9.6617	0.5533	14.4690	6.4516	23.0189
% Barren	1994	5.2834	5.4588	4.9392	27.6119	4.3445
% Wetland	1994	0.0744	0.3497	0.6480	0.2334	0.4152

Note: 1994 is MRLC data and 1998 is GLUT data (can not compare)



GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
SOUTHEASTERN PLAINS ECOREGION (65)
Sand Hills - 65c Data

Water Chemistry Values for Reference Sites: 65c - Sand Hills						
		Sample Number				
		Reference Site 1	Reference Site 2	Reference Site 3	Reference Site 4	Reference Site 5
Parameters	Chemical Units					
Air Temperature	°C	5	5	15	13	5
Conductivity	mS/cm	0.0489	0.0129	0.003	0.0193	0.0151
Dissolved Oxygen	%	86.9	93.3	92.4	91.4	89
Dissolved Oxygen	mg/l	11.66	12.49	10.3	10.26	11.88
pH	SU	6.16	5.29	5.08	4.34	4.5
Turbidity	NTU	3	6.9	0.4	0	1.1
Water Temperature	°C	6.16	3.15	9.97	9.81	3.3
Depth	m	0.2	0.3	0.4	0.5	0.2
Ammonia	mg/l as N	0.067	BD	0.044	0.054	0.049
Copper	mg/l	BD	BD	BD	BD	BD
Manganese	mg/l	BD	BD	BD	BD	BD
Nitrate-Nitrite	mg/l as N	0.107	0.066	0.470	0.171	0.083
Total Phosphorus	mg/l as P	BD	BD	BD	BD	BD
Zinc	mg/l	BD	BD	BD	BD	BD
Iron	mg/l	BD	0.156	0.917	BD	BD
Nitrite	mg/l as N	BD	BD	BD	BD	BD
Alkalinity	mg/L as CaCO ₃	8.22	0.99	0.0	0.0	0.0
Hardness	mg/L as CaCO ₃	17.99	4.26	5.52	10.34	10.82



GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
SOUTHEASTERN PLAINS ECOREGION (65)
Sand Hills - 65c Data

Pebble Count % for Reference Sites: 65c - Sand Hills					
	Sample Number				
Particle	<i>Reference Site 1</i>	<i>Reference Site 2</i>	<i>Reference Site 3</i>	<i>Reference Site 4</i>	<i>Reference Site 5</i>
Silt/Clay	22.77	0.00	0.00	0.00	37.00
Sand	77.23	100.00	89.00	99.00	63.00
Gravel	0.00	0.00	11.00	1.00	0.00
Cobble	0.00	0.00	0.00	0.00	0.00
Boulder	0.00	0.00	0.00	0.00	0.00
Bedrock	0.00	0.00	0.00	0.00	0.00



GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
SOUTHEASTERN PLAINS ECOREGION (65)
Sand Hills - 65c Data

Habitat Values for Reference Sites: 65c Sand Hills					
Habitat Parameters	Sample Number				
	Reference Site 1	Reference Site 2	Reference Site 3	Reference Site 4	Reference Site 5
Epifaunal Substrate/Available Cover	13.00	16.00	16.00	15.00	18.00
Embeddedness	N/A	N/A	N/A	N/A	N/A
Velocity/Depth Regime	N/A	N/A	N/A	N/A	N/A
Pool Substrate Characterization	9.00	15.00	16.00	16.00	13.00
Pool Variability	16.00	10.00	16.00	16.00	16.00
Sediment Deposition	16.00	17.00	16.00	18.00	18.00
Channel Flow Status	19.00	19.00	19.00	19.00	19.00
Channel Alteration	19.00	19.00	19.00	17.00	18.00
Frequency of Riffles (or bends)	N/A	N/A	N/A	N/A	N/A
Channel Sinuosity	13.00	9.00	13.00	15.00	9.00
Bank Stability (Left Bank)	9.00	8.00	9.00	9.00	9.00
Bank Stability (Right Bank)	9.00	8.00	9.00	10.00	10.00
Vegetative Protection (Left Bank)	8.00	9.00	8.00	8.00	9.00
Vegetative Protection (Right Bank)	8.00	9.00	9.00	8.00	8.00
Riparian Vegetative Zone Width (Left Bank)	10.00	10.00	10.00	9.00	8.00
Riparian Vegetative Zone Width (Right Bank)	10.00	10.00	10.00	10.00	9.00
Total Habitat Score	159.00	159.00	170.00	170.00	164.00



**GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
SOUTHEASTERN PLAINS ECOREGION (65)
Sand Hills - 65c Data**

**65c - Sand Hills - reference streams
Reference Site 1**

Order	Family	Final ID	Individuals	TCR	Stage
		Oligochaeta	5		X
		Nematoda	6		X
Amphipoda	Talitridae	<i>Hyalella azteca</i>	5		X
Architaenioglossa	Viviparidae	<i>Campeloma limum</i>	3		X
Coleoptera	Elmidae	<i>Ancyronyx variegatus</i>	2		L
		<i>Macronychus glabratus</i>	1		L
Decapoda	Cambaridae	Cambarinae	1		X
Diptera	Ceratopogonidae	<i>Bezzia complex</i>	2		X
	Chironomidae	<i>Ablabesmyia mallochi</i>	5		X
		<i>Apedilum sp.</i>	56		X
		<i>Hydrobaenus sp.</i>	2	TCR-2	X
		<i>Natarsia sp.</i>	1		X
		<i>Paramerina sp.</i>	1		X
		<i>Paratanytarsus sp.</i>	5		X
		<i>Phaenopsectra sp.</i>	17		X
		<i>Polypedilum aviceps</i>	4		X
		<i>Polypedilum tritum</i>	5		X
		<i>Procladius sp.</i>	2		X
		<i>Rheotanytarsus sp.</i>	5		X
		<i>Stenochironomus sp.</i>	2		X
		<i>Tanytarsus sp.</i>	10	TCR-2	X
		<i>Parametriocnemus sp.</i>	7		X
		<i>Polypedilum sp.</i>	2		X
		<i>Hudsonimyia sp.</i>	1	TCR-2	X
		<i>Larsia sp.</i>	1		X
		<i>Thienemannimyia group</i>	18		X
		Chironomidae	2		X
		<i>Ablabesmyia sp.</i>	3		X
		<i>Clinotanypus sp.</i>	4		X

* continued on next page

65c - Sand Hills - reference streams
Reference Site 1 Continued

Order	Family	Final ID	Individuals	TCR	Stage
Diptera	Chironomidae	<i>Xestochironomus sp.</i>	1		X
		<i>Polypedilum flavum</i>	13		X
		<i>Monopelopia boliekae</i>	1		X
		<i>Monopelopia tillandsia</i>	3		X
	Ephydriidae	<i>Hydrellia sp.</i>	1		X
Ephemeroptera	Ephemeridae	<i>Hexagenia limbata</i>	3		X
	Heptageniidae	<i>Stenonema femoratum</i>	3		X
Megaloptera	Sialidae	<i>Sialis mohri</i>	1		X
Neotaenioglossa	Pleuroceridae	<i>Elimia sp.</i>	1	TCR-2	X
	Pleuroceridae	<i>Pleurocera sp.</i>	1	TCR-2	X
Odonata	Coenagrionidae	Coenagrionidae	4		X
Plecoptera	Perlidae	<i>Acroneuria sp.</i>	2		X
	Taeniopterygidae	<i>Strophopteryx sp.</i>	2		X
Trichoptera	Calamoceratidae	<i>Anisocentropus pyraloides</i>	3		X
	Hydropsychidae	<i>Cheumatopsyche sp.</i>	1		X
		<i>Potamyia flava</i>	1		X
	Leptoceridae	<i>Leptocerus americanus</i>	1		X
	Limnephilidae	<i>Hydatophylax argus</i>	3		X
	Polycentropodidae	<i>Neureclipsis sp.</i>	4	2-TCR-2	X
		<i>Polycentropus sp.</i>	7		X
		<i>Nyctiophylax sp.</i>	1		X
Total Individuals			235		



GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
SOUTHEASTERN PLAINS ECOREGION (65)
Sand Hills - 65c Data

65c -Sand Hills - reference streams
Reference Site 2

Order	Family	Final ID	Individuals	TCR	Stage
		Oligochaeta	3		X
Coleoptera	Elmidae	<i>Ancyronyx variegatus</i>	1		A
		<i>Dubiraphia sp.</i>	1		L
		<i>Macronychus glabratus</i>	1		L
		<i>Stenelmis sp.</i>	3		L
Decapoda	Cambaridae	Cambarinae	5		X
Diptera	Ceratopogonidae	<i>Bezzia complex</i>	2		X
	Chironomidae	<i>Ablabesmyia rhamphe group</i>	2		X
		<i>Apedilum sp.</i>	16		X
		<i>Helopelopia sp.</i>	6		X
		<i>Labrundinia sp.</i>	2		X
		<i>Phaenopsectra sp.</i>	40		X
		<i>Rheotanytarsus sp.</i>	1		X
		<i>Stenochironomus sp.</i>	5		X
		<i>Tanytarsus sp.</i>	4		X
		<i>Xylotopus par</i>	1		X
		<i>Parametriocnemus sp.</i>	1		X
		<i>Larsia sp.</i>	1		X
		<i>Polypedilum fallax group</i>	1		X
		<i>Thienemannimyia group</i>	47		X
		Chironomidae	3		X
		<i>Ablabesmyia sp.</i>	7		X
		<i>Clinotanypus sp.</i>	1		X
		Tanypodinae	1		X
		<i>Xestochironomus sp.</i>	1		X
		<i>Conchapelopia sp.</i>	1		X
		<i>Stelechomyia perpulchra</i>	3		X
		<i>Georthocladius sp.</i>	3		X
		<i>Doithrix sp.</i>	1	TCR-2	X
	Simuliidae	<i>Simulium sp.</i>	2		X
	Tipulidae	<i>Tipula sp.</i>	1		X

* continued on next page

65c -Sand Hills - reference streams
Reference Site 2 Continued

Order	Family	Final ID	Individuals	TCR	Stage
Ephemeroptera	Heptageniidae	<i>Stenonema femoratum</i>	3		X
Megaloptera	Corydalidae	<i>Nigronia serricornis</i>	1		X
Odonata	Calopterygidae	<i>Calopteryx sp.</i>	2		X
	Coenagrionidae	Coenagrionidae	4		X
	Corduliidae	<i>Neurocordulia sp.</i>	3	TCR-2	X
	Gomphidae	<i>Dromogomphus spinosus</i>	1		X
Plecoptera	Perlidae	<i>Perlinella sp.</i>	2	TCR-2	X
		<i>Acroneuria lycorias</i>	2		X
Trichoptera	Calamoceratidae	<i>Anisocentropus pyraloides</i>	1		X
	Hydropsychidae	<i>Cheumatopsyche sp.</i>	1		X
		<i>Macrostemum sp.</i>	8		X
Total Individuals			195		



GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
SOUTHEASTERN PLAINS ECOREGION (65)
Sand Hills - 65c Data

65c - Sand Hills - reference streams
Reference Site 3

Order	Family	Final ID	Individuals	TCR	Stage
Coleoptera		Oligochaeta	3		X
	Elmidae	Elmidae	4	TCR-2	X
	Psephenidae	<i>Ectopria sp.</i>	2		X
Diptera	Chironomidae	<i>Ablabesmyia mallochi</i>	1		X
		<i>Apedilum sp.</i>	29		X
		<i>Helopelopia sp.</i>	1	TCR-2	X
		<i>Microtendipes rydalensis</i> group	4		X
		<i>Paratanytarsus sp.</i>	7		X
		<i>Phaenopsectra sp.</i>	6		X
		<i>Polypedilum aviceps</i>	6		X
		<i>Polypedilum halterale</i> group	1		X
		<i>Polypedilum scalaenum</i> group	1		X
		<i>Procladius sp.</i>	2		X
		<i>Rheotanytarsus sp.</i>	6		X
		<i>Tanytarsus sp.</i>	6		X
		<i>Parametriocnemus sp.</i>	2		X
		<i>Polypedilum sp.</i>	1		X
		<i>Thienemannimyia</i> group	11	1 TCR-2	X
		Chironomidae	3		X
		<i>Rheocricotopus sp.</i>	3		X
		<i>Ablabesmyia sp.</i>	1		X
		Tanypodinae	2		X
		<i>Harnischia Complex D</i>	1		X
		<i>Conchapelopia sp.</i>	14		X
		<i>Tanytarsus M</i>	2		X
		<i>Polypedilum flavum</i>	23		X
		<i>Heterotrissocladius C</i>	1		X
		<i>Zavrelia sp.</i>	1		X

* continued on next page

65c - Sand Hills - reference streams
Reference Site 3 Continued

Order	Family	Final ID	Individuals	TCR	Stage
Diptera	Chironomidae	<i>Rheocricotopus tuberculatus</i>	1		X
		<i>Telopelopia okoboji</i>	1		X
	Simuliidae	<i>Simulium sp.</i>	4		X
Ephemeroptera	Ephemerellidae	<i>Eurylophella bicolor</i>	1	TCR-2	X
	Ephemeridae	<i>Hexagenia limbata</i>	2		X
Megaloptera	Corydalidae	<i>Nigronia serricornis</i>	2		X
Odonata	Coenagrionidae	Coenagrionidae	1		X
	Corduliidae	Corduliidae	1		X
	Gomphidae	Gomphidae	1		X
Plecoptera	Perlidae	<i>Agnetina capitata</i>	2	TCR-2	X
		<i>Acroneuria sp.</i>	1		X
Trichoptera	Calamoceratidae	<i>Anisocentropus pyraloides</i>	1		X
	Hydropsychidae	<i>Cheumatopsyche sp.</i>	7		X
		<i>Hydropsyche sp.</i>	19		X
	Leptoceridae	<i>Triaienodes new sps. A?</i>	2		X
	Philopotamidae	<i>Chimarra sp.</i>	21		X
	Polycentropodidae	<i>Neureclipsis sp.</i>	6	TCR-2	X
		<i>Polycentropus sp.</i>	3	TCR-2	X
		Total Individuals	220		



GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
SOUTHEASTERN PLAINS ECOREGION (65)
Sand Hills - 65c Data

65c - Sand Hills - reference streams
Reference Site 4

Order	Family	Final ID	Individuals	TCR	Stage
Coleoptera	Elmidae	<i>Macronychus glabratus</i> sp.	5		L
		<i>Stenelmis</i> sp.	3		L
		<i>Promoresia tardella</i>	2		A
		<i>Gonielmis dietrichi</i>	2	TCR-2	X
	Gyrinidae	<i>Dineutus</i> sp.	1		A
	Psephenidae	<i>Ectopria</i> sp.	2		L
Decapoda	Cambaridae	Cambarinae	1		X
Diptera	Ceratopogonidae	<i>Bezzia complex</i>	3		X
	Chironomidae	<i>Ablabesmyia mallochi</i>	1		X
		<i>Ablabesmyia rhamphe</i> group	2		X
		<i>Apedilum</i> sp.	23		X
		<i>Cladotanytarsus</i> sp.	1		X
		<i>Paratanytarsus</i> sp.	15		X
		<i>Phaenopsectra</i> sp.	34		X
		<i>Polypedilum aviceps</i>	1		X
		<i>Stenochironomus</i> sp.	3		X
		<i>Thienemannimyia</i> group	1		X
		<i>Stelechomyia perpulchra</i>	2		X
		<i>Georthocladius</i> sp.	5		X
	Simuliidae	<i>Simulium</i> sp.	4		X
	Tipulidae	<i>Dicranota</i> sp.	1		X
Ephemeroptera	Heptageniidae	<i>Stenonema femoratum</i>	10		X
Megaloptera	Corydalidae	<i>Nigronia serricornis</i>	1		X
Odonata	Coenagrionidae	Coenagrionidae	2		X
	Cordulegastridae	<i>Epithea</i> sp.	7		X
Plecoptera	Perlidae	<i>Acroneuria</i> sp.	5		X
		Perlidae	1		X
	Taeniopterygidae	<i>Strophopteryx fasciata</i>	3		X
		<i>Strophopteryx limata</i>	17		X
Trichoptera	Brachycentridae	<i>Brachycentrus</i> sp.	3	TCR-2	X
	Calamoceratidae	<i>Anisocentropus pyraloides</i>	1		X

* continued on next page

65c - Sand Hills - reference streams
Reference Site 4

Order	Family	Final ID	Individuals	TCR	Stage
Trichoptera	Hydropsychidae	<i>Potamyia flava</i>	5		X
	Hydropsychidae	<i>Arctopsyche sp.</i>	2	TCR-3	X
	Leptoceridae	<i>Mystacides sepulchralis</i>	8	TCR-2	X
	Philopotamidae	<i>Chimarra sp.</i>	1		X
	Polycentropodidae	<i>Neureclipsis sp.</i>	5	TCR-2	X
Total Individuals			183		



GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
SOUTHEASTERN PLAINS ECOREGION (65)
Sand Hills - 65c Data

65c - Sand Hills - reference streams
Reference Site 5

Order	Family	Final ID	Individuals	TCR	Stage
		Oligochaeta	5		X
	Dytiscidae	<i>Liodessus sp.</i>	1		A
		<i>Macronychus glabratus</i>	5		L
		<i>Stenelmis sp.</i>	1		A
		<i>Stenelmis sp.</i>	2		L
		<i>Microcyloopus pusillus</i>	3		L
		<i>Optioservus sp.</i>	1		L
		<i>Promoresia elegans</i>	1		A
	Psephenidae	<i>Ectopria sp.</i>	1		L
Decapoda	Cambaridae	Cambarinae	4		X
		<i>Ablabesmyia mallochi</i>	7		X
		<i>Ablabesmyia rhamphe group</i>	1		X
		<i>Apedilum sp.</i>	39		X
		<i>Cryptochironomus sp.</i>	1		X
		<i>Helopelopia sp.</i>	7		X
		<i>Phaenopsectra sp.</i>	13		X
		<i>Polypedilum aviceps</i>	4		X
		<i>Procladius sp.</i>	12		X
		<i>Stenochironomus sp.</i>	5		X
		<i>Larsia sp.</i>	1		X
		<i>Thienemannimyia group</i>	11		X
		Chironomidae	1		X
		<i>Clinotanypus sp.</i>	3		X
		Tanypodinae	2		X
		<i>Harnischia Complex D</i>	4		X
		<i>Conchapelopia sp.</i>	13		X
		<i>Polypedilum flavum</i>	1		X
		<i>Polypedilum bergi</i>	1		X
		<i>Orthocladius luteipes</i>	1		X
		<i>Telopelopia okoboji</i>	2		X

* continued on next page

65c -Sand Hills - reference streams
Reference Site 5 Continued

Order	Family	Final ID	Individuals	TCR	Stage
Diptera	Simuliidae	<i>Simulium sp.</i>	2		X
Ephemeroptera	Heptageniidae	<i>Stenonema femoratum</i>	3		X
Megaloptera	Sialidae	<i>Sialis mohri</i>	4		X
Odonata	Calopterygidae	<i>Calopteryx angustipennis</i>	4		X
	Coenagrionidae	<i>Chromagrion sp.</i>	8	TCR-2	X
	Corduliidae	<i>Williamsonia sp.</i>	1	TCR-2	X
	Gomphidae	<i>Dromogomphus armatus</i>	1		X
Plecoptera	Taeniopterygidae	<i>Strophopteryx fasciata</i>	2		X
Trichoptera	Leptoceridae	<i>Oecetis sp.</i>	1	TCR-2	X
		<i>Leptocerus americanus</i>	1		X
	Limnephilidae	Limnephilidae	1		X
	Polycentropodidae	<i>Polycentropus sp.</i>	1		X
		<i>Nyctiophylax sp.</i>	4	TCR-2	X
		Total Individuals	186		