Janes Creek, McDaniel Slough, Thence Humboldt Bay
City of Arcata Property
October 2013-March 2014

Monthly fish and WQ sampling was conducted to determine if resident/anadromous juvenile salmonids and other fish species utilize the estuary and lower watershed for rearing and if water quality is adequate to support juvenile salmonids. The sampling sites are located as follows: Site 1, ~200 feet upstream of the mouth of McDaniel Slough; Site 2, the upstream side of the Samoa Blvd. bridge; Site 2.5, ~200 feet East of the bottom of the cul-de-sac on Villa Way; Site 3, the upstream side of the 11th Street crossing; Site 3.5, Cypress Grove near the corner of Q St and Zehndner Ave.; Site 4, on the downstream side of the railroad crossing adjacent to Foster Ave; Site 5, just upstream of the bike/pedestrian bridge entering Stewart Court; Site 5.5, Janes Creek Meadows about 230 feet Northwest of 2967 Janes Creek Drive, and Site 6, in the south fork of Janes Creek just upstream of the first culvert above the confluence with the north fork of Janes Creek (Figure 1). We collected information to establish baseline data about juvenile salmonids and other fish species before and after the opening of the levee at the mouth of McDaniel Slough. This information will help us to assess the success of estuarine habitat restoration measures in McDaniel Slough.

Table 0. Comparison of the number of juvenile cutthroat trout and juvenile coho salmon captured by month in Janes Creek, January 18, 2013 to March 28, 2014.

Date	Cutthroat Trout	Coho Salmon
1-18-2013	0	
2-14-2013	5	
3-29-2013	9	
4-26-2013	6	
5-17-2013	7	
6-28-2013	9	
8-2-2013	6	
8-29-2013	24	
9-23-2013	3	
10-21-13	2	
11-21-13	1	
12-16-13	0	
1-27-14	9	1
2-28-14	2	3
3-28-14	15	6

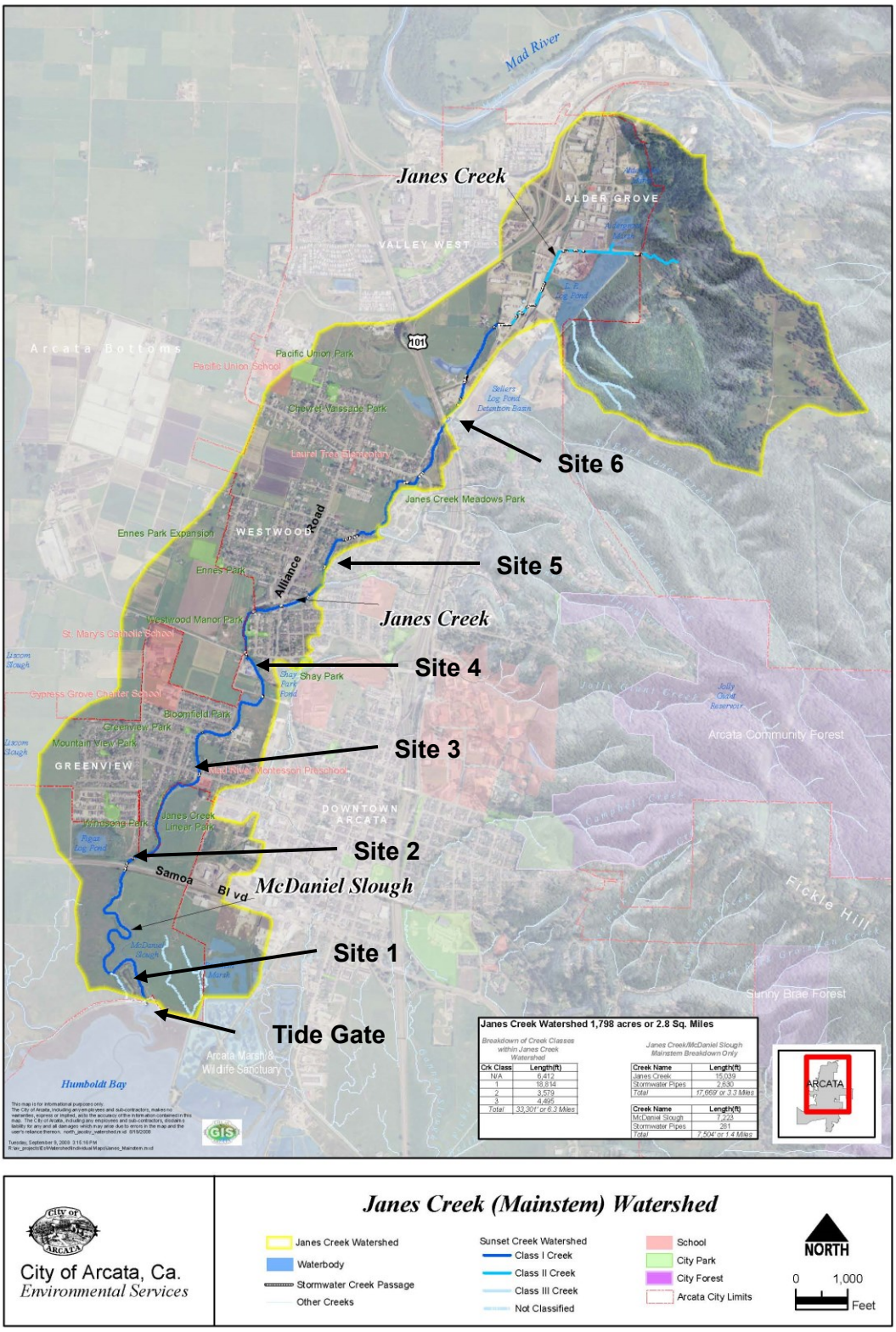

Figure 1. Approximate locations of fish and water quality sampling sites in Janes Creek basin.

October 21, 2013

Fish Sampling

We fished minnow traps baited with frozen salmon roe at eight sites in McDaniel Slough and Janes Creek (Figure 1). We did not conduct the McDaniel Slough Site 1 seine hauls due to a crew shortage. At Site 3 we fished a minnow trap for 90 minutes and captured one cutthroat trout. It was 119 mm FL and we applied a PIT tag to this fish. At Site 6 we fished a minnow trap for 90 minutes and captured one cutthroat trout. It was 125 mm FL and we applied a PIT tag to this fish. We fished minnow traps at Sites 1, 2, 3.5, 4, 5 and 5.5 for 40-95 minutes and captured no fish.

Water Quality Sampling

CDFG collected water quality samples at the same locations as the fish sampling sites in McDaniel Slough and Janes Creek using a Yellow Springs Instruments Professional Plus meter (Figure 1). Janes Creek was completely fresh water at Sites 2-6 (Table 1). Dissolved oxygen levels were low to marginal at Site 2, marginal at Site 1 and good at the remaining sites (Table 1). WQ conditions were adequate to support juvenile salmonids from upstream and including Site 3, but due to low DO in the Site 2 area they might not be able to reach the estuary area adjacent to the tide gates during parts of the year.

Table 1. Water temperature measurements collected in McDaniel Slough and Janes Creek, October 21, 2013.

Water Quality Site	Time	Depth (feet)	Water Temp (°C)	Salinity (ppt)	Conductivity (µS/cm)	Dissolved Oxygen (mg/l)
Site 1						
surface	1000	0.5	11.9	30.95	35735	3.47
bottom		2	11.9	30.93	35716	3.51
Site 2						
upstream of bridge	1015					
surface		0.5	10.1	1.26	1737	4.98
bottom		1.5	10.1	1.27	1756	1.17
downstream bridge	1015					
surface		0.5	10.1	1.38	1898	4.94
bottom		1.5	10.2	1.49	2044	4.65
Site 3						
surface	1025	0.5	9.7	0.07	107	8.18
bottom		2.5	9.7	0.07	105.9	8.01
Site 3.5	1040					
bottom		1	9.6	0.07	98.2	9.3
Site 4	1050					
bottom		1	9.5	0.06	91.2	9.4
Site 5	1055					
bottom		0.5	9.5	0.06	91.4	9.61
Site 5.5	1105					
bottom		1	9.6	0.06	87.4	9.73
Site 6	1115					
bottom		0.5	9.2	0.06	91.9	8.96

November 21, 2013

Fish Sampling

We fished minnow traps baited with frozen salmon roe at nine sites in McDaniel Slough and Janes Creek and conducted seine hauls with a 30 X 4 foot beach seine at Site 1 in McDaniel Slough (Figure 1). We made two seine hauls at Site 1 and captured no fish. At Site 5.5 we fished a minnow trap for 145 minutes and captured one cutthroat trout. It was 147 mm FL and we applied a PIT tag to this fish. We fished minnow traps at Sites 1, 2, 2.5, 3, 3.5, 4, 5 and 6 for 135-160 minutes and captured <10 threespine stickleback at Site 2.

Water Quality Sampling

CDFG collected water quality samples at the same locations as the fish sampling sites in McDaniel Slough and Janes Creek using a Yellow Springs Instruments Professional Plus meter (Figure 1). Janes Creek was completely fresh water at Sites 2-6 (Table 2). Dissolved oxygen levels were marginal at Site 1 and good at the remaining sites (Table 2). WQ conditions were adequate to support juvenile salmonids from upstream and including Site 2.

Table 2. Water temperature measurements collected in McDaniel Slough and Janes Creek, November 21, 2013.

Water Quality Site	Time	Depth (feet)	Water Temp (°C)	Salinity (ppt)	Conductivity (µS/cm)	Dissolved Oxygen (mg/l)
Site 1						
surface	1010	0.5	10	29.44	32580	4.7
middle		1.5	10	29.45	32573	4.83
bottom		3	9.9	29.46	32551	4.94
Site 2						
upstream of bridge	1045					
surface		0.5	9.4	0.29	420.6	6.68
bottom		2	9.4	0.29	421	6.55
downstream bridge	1050					
surface		0.5	9.3	0.31	442.9	6.09
bottom		1.5	9.1	0.31	438.9	6.18
Site 2.5	1105					
bottom		0.5	9.5	0.09	131.4	5.48
Site 3						
surface	1125	0.5	9.4	0.08	119.7	8.15
bottom		2.5	9.3	0.08	119.6	8.36
Site 3.5	1135					
bottom		1	9.2	0.08	112.2	9.45
Site 4	1140					
bottom		1	8.9	0.07	107.6	9.63
Site 5	1150					
bottom		0.5	9.4	0.07	105.7	9.27
Site 5.5	1200					
bottom		1	9.7	0.07	100.9	8.85
Site 6	1210					
bottom		0.5	8.6	0.07	94.7	9.71

December 16, 2013

Fish Sampling

We fished minnow traps baited with frozen salmon roe at nine sites in McDaniel Slough and Janes Creek and conducted seine hauls with a 30 X 4 foot beach seine at Site 1 in McDaniel Slough (Figure 1). We made two seine hauls at Site 1 and captured no fish. We fished minnow traps at Sites 1, 2, 2.5, 3, 3.5, 4, 5, 5.5 and 6 for 125-255 minutes and captured no fish.

Water Quality Sampling

CDFG collected water quality samples at the same locations as the fish sampling sites in McDaniel Slough and Janes Creek using a Yellow Springs Instruments Professional Plus meter (Figure 1). Site 2 had high salinity for the first time in our sampling. Janes Creek was completely fresh water at Sites 2.5-6 (Table 3). Dissolved oxygen levels were good at all sites (Table 3). WQ conditions were adequate to support juvenile salmonids from upstream and including Site 1.

Table 3. Water temperature measurements collected in McDaniel Slough and Janes Creek, December 16, 2013.

Water Quality Site	Time	Depth (feet)	Water Temp (°C)	Salinity (ppt)	Conductivity (µS/cm)	Dissolved Oxygen (mg/l)
Site 1						
surface	955	0.5	5.8	32.09	31638	9.15
middle		1.5	5.8	31.86	31426	9.24
bottom		3	5.8	31.5	31097	9.54
Site 2						
upstream of bridge	1030					
surface		0.5	4.7	23.85	23416	7.27
middle		1.5	4.7	25.57	24977	7.16
bottom		3	4.7	25.66	25064	7.22
downstream bridge	1040					
surface		0.5	4.8	24.77	24304	7.09
middle		1.5	4.9	27.2	26594	6.96
bottom		3	5	27.31	26698	7
Site 2.5	1055					
bottom		0.5	4.6	0.11	138.2	7.53
Site 3						
surface	1105	0.5	4.5	0.07	91.3	10.28
bottom		2.5	4.6	0.07	91.2	10.34
Site 3.5	1115					
bottom		1	4.4	0.07	86	11.12
Site 4	1125					
bottom		1	4	0.06	80.4	11.84
Site 5	1135					
bottom		0.5	4.4	0.06	82.3	11.57
Site 5.5	1145					
bottom		1	5.2	0.06	79.7	11.42
Site 6	1155					
bottom		0.5	5	0.06	81.3	11.07

January 27, 2014
The day we caught our first Coho!

Fish Sampling

We fished minnow traps baited with frozen salmon roe at eight sites in McDaniel Slough and Janes Creek and conducted seine hauls with a 30 X 4 foot beach seine at Site 1 in McDaniel Slough (Figure 1). We made two seine hauls at Site 1 and captured <50 Pacific staghorn sculpin and one dungeness crab. We fished a minnow trap at Site 3 for 120 minutes and captured three cutthroat trout with a mean FL of 128 mm (range 103-161). One of these cutthroat at 161 mm FL contained a PIT tag applied by our project at this site 178 days earlier (8/2/13). While at large it grew 20 mm (0.11 mm/day). We applied PIT tags to the other two cutthroat. We fished a minnow trap at Site 4 for 130 minutes and caught our first juvenile Coho salmon at 139 mm FL. We applied a PIT tag to this historic fish. We also captured two cutthroat trout with a mean FL of 98 mm (range 89-107). We applied PIT tags to both of these fish. We fished a minnow trap at Site 5.5 for 140 minutes and captured three cutthroat trout with a mean FL of 83 mm (range 75-95). We applied PIT tags to all three fish. We fished a minnow trap at Site 6 for 150 minutes and captured one cutthroat trout. It was 60 mm FL and we applied a PIT tag to this fish. We fished minnow traps at Sites 1, 2, 2.5, and 5 for 125-270 minutes and captured no fish.

Water Quality Sampling

CDFG collected water quality samples at the same locations as the fish sampling sites in McDaniel Slough and Janes Creek using a Yellow Springs Instruments Professional Plus meter (Figure 1). Site 2 once again had high salinity. Janes Creek was completely fresh water at Sites 2.5-6 (Table 4). Dissolved oxygen levels were good at all sites (Table 4). WQ conditions were adequate to support juvenile salmonids from upstream and including Site 1.

February 28, 2014

Fish Sampling

We fished minnow traps baited with frozen salmon roe at nine sites in McDaniel Slough and Janes Creek and conducted seine hauls with a 30 X 4 foot beach seine at Site 1 in McDaniel Slough (Figure 1). We made two seine hauls at Site 1 and captured <10 Pacific staghorn sculpin and one surf smelt. We fished a minnow trap at Site 2.5 for 150 minutes and captured two coho salmon with a mean FL of 76 mm (range 74-79). We applied a PIT tag to both fish. We also captured <10 threespine stickleback and one prickly sculpin. We fished a minnow trap at Site 3.5 for 160 minutes and captured one cutthroat trout at 125 mm FL. We applied a PIT tag to this fish. We fished a minnow trap at Site 5 for 165 minutes and captured one coho salmon at 73 mm FL. We applied a PIT tag to this fish. We fished a minnow trap at Site 5.5 for 170 minutes and captured one cutthroat trout at 79 mm FL. We applied a PIT tag to this fish. We fished minnow traps at Sites 1, 2, 3, 4 and 6 for 155-300 minutes and captured no salmonids. We did capture <10 threespine stickleback and one prickly sculpin at Site 2.

Water Quality Sampling

CDFG collected water quality samples at the same locations as the fish sampling sites in McDaniel Slough and Janes Creek using a Yellow Springs Instruments Professional Plus meter (Figure 1). Site 2 contained brackish water. Janes Creek was completely fresh water at Sites 2.5-6 (Table 5). Dissolved oxygen levels were good at all sites (Table 5). WQ conditions were adequate to support juvenile salmonids from upstream and including Site 1.

Table 4. Water temperature measurements collected in McDaniel Slough and Janes Creek, January 27, 2014.

Water Quality Site	Time	Depth (feet)	Water Temp (°C)	Salinity (ppt)	Conductivity (µS/cm)	Dissolved Oxygen (mg/l)
Site 1						
surface	950	0.5	9.4	32.22	34833	7.66
middle		2.5	9.4	32.22	34833	7.5
bottom		5	9.4	32.24	34872	7.83
Site 2						
upstream of bridge	1010					
surface		0.5	9	25.11	27518	6.11
middle		1.5	9.5	28.33	31126	5.93
bottom		3	9.7	29.96	32895	5.54
downstream bridge	1015					
surface		0.5	9.3	25.49	28113	6.18
middle		1.75	9.7	29.49	32398	5.92
bottom		3.5	9.7	30.52	33459	5.83
Site 2.5	1025					
bottom		0.5	6.3	0.1	130.5	6.84
Site 3						
surface	1035	0.5	6.7	0.07	100.2	10.15
bottom		2.5	6.7	0.07	100.4	10.11
Site 3.5	1045					
bottom		1	6.4	0.07	93.6	10.69
Site 4	1055					
bottom		1	6.1	0.07	88.5	11.1
Site 5	1100					
bottom		0.5	6.6	0.06	89.3	11.23
Site 5.5	1115					
bottom		1	6.8	0.06	86.3	11.08
Site 6	1120					
bottom		0.5	6.7	0.06	87.6	10.15

March 28, 2014

Fish Sampling

We fished minnow traps baited with frozen salmon roe at nine sites in McDaniel Slough and Janes Creek and conducted seine hauls with a 30 X 4 foot beach seine at Site 1 in McDaniel Slough (Figure 1). We made two seine hauls at Site 1 and captured <50 surf smelt. We fished a minnow trap at Site 2 for 140 minutes and captured one coho salmon at 96 mm FL. We applied a PIT tag to this fish. We also captured three cutthroat trout with a mean FL of 118 mm (range 105-126). We applied PIT tags to all three fish. We also captured <10 threespine stickleback. We fished a minnow trap at Site 2.5 for 155 minutes and captured three coho salmon with a mean FL of 97 (range 93-105). We applied PIT tags to all three fish. We also captured <10 threespine stickleback. We fished a minnow trap at Site 3 for 160 minutes and captured two cutthroat trout at 113 mm FL and 114 mm FL. We applied a PIT tag to both fish. We fished a minnow trap at Site 4 for 275 minutes and captured four cutthroat trout with a

Table 5. Water temperature measurements collected in McDaniel Slough and Janes Creek, February 28, 2014.

Water Quality Site	Time	Depth (feet)	Water Temp (°C)	Salinity (ppt)	Conductivity (µS/cm)	Dissolved Oxygen (mg/l)
Site 1						
surface	950	0.5	12.3	28.25	33191	7.45
middle		2.5	12.3	28.26	33201	7.39
bottom		5	12.3	28.27	33209	7.65
Site 2						
upstream of bridge	1005					
surface		0.5	11.3	9.66	12139	5.61
bottom		2	11.5	14.24	17432	5.44
Site 2.5	1020					
bottom		0.5	11.1	0.07	115.9	6.67
Site 3						
surface	1035	0.5	10.8	0.07	111.7	8.55
middle		1.5	10.8	0.07	111.8	8.52
bottom		3	10.8	0.07	112	8.41
Site 3.5						
surface	1045	0.5	10.6	0.07	106.2	9.33
bottom		1.5	10.6	0.07	106.1	9.09
Site 4						
surface	1055	0.5	10.5	0.07	100.9	9.08
bottom		1.5	10.5	0.07	100.8	9.23
Site 5	1105					
bottom		0.5	10.8	0.07	101.5	9.04
Site 5.5						
surface	1120	0.5	10.6	0.06	94.1	8.23
bottom		2	10.6	0.06	94	8.34
Site 6	1130					
bottom		0.5	10.3	0.07	105.9	9.45

mean FL of 105 mm (range 97-114). We applied a PIT tag to three of these fish. The fourth cutthroat at 114 mm FL contained a PIT tag applied by our project at this site 60 days earlier (1/27/14). While at large it grew 25 mm (0.42 mm/day). At Site 5 we fished a minnow trap for 305 minutes and captured two coho salmon with a mean FL of 97 mm (range 91-103). We applied a PIT tag to one of these coho. The other coho at 91 mm FL contained a PIT tag applied by our project at this site 28 days earlier (2/28/14). While at large it grew 18 mm (0.64 mm/day). We also captured <10 threespine stickleback. At Site 5.5 we fished a minnow trap for 200 minutes and captured four cutthroat trout with a mean FL of 107 mm (range 91-117). We applied PIT tags to all four fish. We also captured <10 threespine stickleback. At Site 6 we fished a minnow trap for 365 minutes and captured two cutthroat trout with a mean FL of 123 mm (range 96-150). We applied a PIT tag to both fish. We fished minnow traps at Sites 1 and 3.5 for 165-180 minutes and captured one Pacific staghorn sculpin at Site 1.

Water Quality Sampling

CDFG collected water quality samples at the same locations as the fish sampling sites in McDaniel Slough and Janes Creek using a Yellow Springs Instruments Professional Plus meter (Figure 1). Janes Creek was completely fresh water at Sites 2-6 (Table 6). Dissolved oxygen levels were good at all sites (Table 6). WQ conditions were adequate to support juvenile salmonids from upstream and including Site 1.

Table 6. Water temperature measurements collected in McDaniel Slough and Janes Creek, March 28, 2014.

Water Quality Site	Time	Depth (feet)	Water Temp (°C)	Salinity (ppt)	Conductivity (µS/cm)	Dissolved Oxygen (mg/l)
Site 1						
surface	925	0.5	12.7	25.63	30702	6.47
bottom		2	12.7	25.68	30753	6.27
Site 2						
upstream of bridge	1005					
surface		0.5	11.3	0.1	153.6	6.86
bottom		2	11.3	0.1	150.9	6.8
downstream bridge	1005					
surface		0.5	11.4	0.13	194.4	6.65
bottom		2.5	11.4	0.12	192.4	6.65
Site 2.5	1020					
bottom		1	11.4	0.07	107.2	6.95
Site 3						
surface	1040	0.5	11.1	0.07	104.2	8.61
middle		2	11.1	0.07	104.1	8.41
bottom		4	11.2	0.07	108	8.62
Site 3.5						
surface	1050	0.5	10.9	0.06	98.4	9.2
bottom		1.5	10.9	0.06	98.4	9.24
Site 4						
surface	900	0.5	10.6	0.06	93.3	9.34
bottom		2	10.6	0.06	93.2	9.31
Site 5	855					
bottom		0.5	10.6	0.06	93.4	8.98
Site 5.5						
surface	1105	0.5	10.6	0.06	87.6	8.48
bottom		2	10.6	0.06	87.6	8.41
Site 6	845					
bottom		1	9.9	0.06	88.9	10

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