

State of California

The Resources Agency

M E M O R A N D U M

To: Marc Jameson, Manager
Jackson Demonstration State Forest

Date : Nov 30, 1998
Ref. : IMD 11 - 30

From: Department of Forestry and Fire Protection
Coast-Cascade Region

Subject: 1997 Water temperature studies on Jackson Demonstration
State Forest.

During 1997, I continued studies on water temperature dynamics on Jackson Demonstration State Forest. This memo is intended to provide descriptive information only. I have not yet analyzed in-depth what the 1997 data portrays about water temperature and stream side timber management. This will come in the future.

Station locations remained the same as in prior years, although fewer stations were equipped with gages. This was due to instrument malfunction that resulted when some units were exposed to free water during calibration tests. This resulted in many monitors being non-functional prior to deployment, and others experiencing failure during the evaluation period.

I launched each unit to record the maximal value it experienced during a 1 hour and 36 minute period, resulting in 15 readings per day. Units recorded data from June 15 to October 3.

When downloaded, graphical data was inspected. Obvious errors (e.g., recordings prior to deployment or subsequent to retrieval) were deleted. In addition, one station (2501, South Fork Noyo in-stream unit at the upstream boundary) was "vandalized;" i.e., twice found moved from the location of deployment to a partially exposed position and out of the water. Another unit (23 Gulch) was similarly "vandalized;" i.e., found on the bank. Another unit was apparently stolen as it was not found upon instrument collection, although its anchoring rocks were. Where there appeared to be problem data during a run, I deleted from analysis but it is graphed. For two other stations (SF Noyo downstream of Bear Gulch, Parlin Creek above confluence with the South Fork Noyo) where the unit was found partially exposed but there was no obvious change in the temperature trace to indicate when exposure occurred or that it had an affect, I considered the data representative and continued on with the evaluation.

As in prior years' reports, I computed several parameters for each station with an adequate temperature record (Table 1). These include the instantaneous peak temperature and the date upon which it was achieved, the maximal value of a running average equal to a 7-day period ($7 \times 15 = 105$ sequential readings) and the date upon which the maximum was calculated, and

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an identical value except calculated over a 28-day (28 x 15 = 420 readings) duration. I calculated a new value since the prior reports -- the maximum 7-day variance value -- the standard deviation of the data over a rolling 7-day (105 sequential readings) equivalent period.

Maximum instantaneous temperatures ranged from 21.39 °C (NF Big River upstream of the James Creek confluence) to 14.49 °C (Jughandle Creek). Among all the stations, the dates that peak instantaneous temperatures were recorded ranged from 25 June to 7 September.

Maximum values of 7-day average temperatures ranged from 18.69 °C (NF Big River upstream of the James Creek confluence) to 14.09 °C (Lower Russian Gulch Creek). Among all the stations, the dates when maximal values first were reached (if reached more than once) ranged from 23 July to 1 September.

Maximum values of the 28-day average temperature ranged from 18.24 °C (NF Big River upstream of the James Creek confluence) to 13.61 °C (Lower Russian Gulch Creek). Among all the stations, the dates when the 28-day maximal values first were reached (if reached more than once) ranged from 27 July to 3 September.

Maximum values of temperature variation ranged from 2.08 °C (NF Big River upstream of the James Creek confluence) to 0.53 °C (Lower Russian Gulch Creek). Among all the stations, the dates of the maximal temperature variations ranged from 20 June to 5 October.

Graphs for all stations are appended.

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By: Bradley@. Valentine
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Attachments: As stated

cc: Region River Files
P. Cafferata (CDF-Sacramento)

Table 1. Summary table for 1997 water temperature (°C) measurements on Jackson Demonstration State Forest. Station locations are as described in the 1996 report. Stations in **BOLD TYPE** are temperature recordings other than stream temperatures

Location Station #	Instant. Max. Temp	Date	Max. 7-day Mean Temp	Date	Max. 28-Day Mean Temp	Date	Max. 7-day Variance	Date	Notes
2403	16.38	29-Aug	15.71	31-Aug	14.97	29-Aug	1.01	5-Oct	Floater
24035	15.91	29-Aug	14.98	31-Aug	14.4	1-Sep	0.88	30-Jun	
2411	14.96	3-Sep	14.38	31-Aug	13.85	1-Sep	0.64	1-Jul	
2412	17.18	3-Sep	15.78	31-Aug	15.03	28-Aug	1.32	21-Jul	
2501	16.54	7-Aug	15.51	1-Sep	15.06	26-Aug	0.76	2-Jul	Short record (6/20-9/11), evidence of movement
2501	18.79	12-Jul							Very incomplete record(6/15-7/14), BUCKET
2502	20.08	25-Jul							Very incomplete record (6/15-7/29)
2503	17.82	1-Sep	16.38	1-Sep	15.74	1-Sep	1.19	5-Oct	
2504	17.5	1-Aug	16.78	1-Sep	16.21	21-Aug	0.96	21-Jun	
2506	19.43	25-Jul	17.33	1-Sep	16.67	21-Aug	1.43	4-Aug	Floater, no obvious change in pattern
25010	18.63	1-Sep	17.33	1-Sep	16.72	26-Aug	1.15	21-Jun	
25010	16.54	- 29 Aug	15.84	31-Aug	14.99	2-Sep	1.29	20-Jun	BUCKET
2531	15.43	25-Jul	14.53	1-Sep	14.31	21-Aug	0.66	5-Oct	
2532	16.86	25-Jul	15.58	1-Sep	15.25	2-Aug	1.12	2-Jul	
2534	10.79	7-Aug	17.1	1-Sep	16.47	21-Aug	1.19	2-Jul	Unit 1/3 exposed but well shaded
2541	14.49	7-Jul							Very incomplete record (6/15-7/18)
2551	16.38	3-Sep	15.42	1-Sep	14.81	2-Sep	0.83	21-Jun	
2551	24.26	12-Jul							Very incomplete record (6/15-7/14); AIR
2551	18.14	3-Sep							Very incomplete record (8/15-10/14); BUCKET
2561	15.59	3-Sep	15.08	1-Sep	14.63	1-Sep	0.72	5-Oct	
2571	16.54	25-Jul	15.16	26-Jul	14.91	2-Aug	0.98	2-Jul	
2572	17.5	25-Jun	15.96	1-Sep	15.47	21-Aug	1.1	21-Jul	
2573	18.47	3-Sep	16.73	1-Sep	16.15	26-Aug	1.1	21-Jul	
3202	21.39	7-Aug	18.69	23-Jul	18.24	27-Jul	2.08	19-Jul	
3204	21.06	25-Jul	18.47	23-Jul	18.02	27-Jul	1.64	2-Jul	
3206	19.92	25-Jul	18.11	26-Jul	17.77	1-Aug	1.37	20-Jun	

3206	31.1	7-Aug	18.82	5-Aug	17.97	1-Aug	6.38	4-Aug	AIR
3211	16.86	3-Sep	15.75	1-Sep	15.05	29-Aug	0.95	4-Sep	
3221	15.75	7-Aug	14.24	8-Aug	13.99	18-Aug	0.81	4-Aug	
3224	20.24	25-Jul	17.3	7-Aug	17.02	2-Aug	1.75	21-Jun	
3231	16.38	7-Sep	15.02	10-Aug	14.72	2-Aug	1.14	20-Jun	
3301	15.43	25-Jul	14.61	1-Sep	14.33	21-Aug	0.7	2-Jul	
3302	16.86	25-Jul	15.82	1-Sep	16.4	2-Aug	1.07	2-Jul	
3331	16.7	3-Sep	15.88	1-Sep	15.2	1-Sep	0.97	30-Sep	
3401	16.38	3-Sep	15.49	1-Sep	15	1-Sep	0.87	1-Sep	
3411	16.86	3-Sep	15.75	1-Sep	15.05	29-Aug	0.95	4-Sep	
3490	14.49	29-Aug	14.13	1-Sep	13.77	3-Sep	0.54	5-Oct	
3502	14.64	3-Sep	14.09	1-Sep	13.61	2-Sep	0.53	17-Sep	
3900	17.18	7-Aug	15.32	9-Aug	14.92	2-Aug	1.06	4-Aug	

Table 2. Location of 1997 temperature gages.

Station ID #	Unit #	Location	Comments
2403	5041	Hare Ck. At downstream end of SFHC97	Floater
24035	5100	Hare below Covington Gulch	
2411	5107	Headwaters Bunker Gulch	
2412	5082	Bunker Gulch	
2501	5112	BUCKET-SF Noyo Upstream limits	Replenished 7/11 14:30, 8/15 13:20
2501	5123	SF Noyo Upstream limits	Unit moved mid-channel, 1/3 exposed
25010	5096	BUCKET-SF Noyo downstream boundary	Replenished 8/15 12:20
25010	5110	SF Noyo downstream boundary	
2502	5109	SF Noyo above Rd. 320	Floater, obvious break @about 8/20
2503	5122	SF Noyo between 23 Gulch and Parlin Ck.	
2504	5120	SF Noyo below Parlin Ck.	
2506	5113	SF Noyo below Bear Gulch	Floater, no obvious pattern to change
2531	5156	Parlin Ck. above Frolic	
2532	5039	Parlin Ck. above Camp 7	Not deployed until about 6/26
2534	5099	Parlin Ck. above SF Noyo	Unit 1/3 exposed but well shaded
2541	5075	23 Gulch	Placed on Bank; change after about 7/13
2551	5111	BUCKET-Bear Gulch	Air>bckt 7/14 15:50: Tipped & Replenished 8/15 12:40
2551	5119	Bear Gulch 20m above culvert	
2561	5108	Peterson Gulch	
2571	5117	NF of SF Noyo, upstream end of road	
2572	5116	NF of SF Noyo, upstream of Brandon Gulch	Not deployed until about 6/26
2573	5118	NF of SF Noyo, at Caretakers	
3202	5086	NF of Big River above James Ck.	
3204	5084	NF Big River above Chamberlin Ck.	
3206	5097	AIR-NF Big River, Downstream limits of JDSF	
3206	5077	NF Big River, Downstream limits of JDSF	
3211	5090	NF James Creek @ Xing	
3221	5083	Chamberlin Ck. @ upper culvert	
3224	5079	Chamberlin Ck. above NF Big River	
3231	5080	WF Chambetiin below 16 Gulch	
3301	5095	Little NF Big River @ Wonder Xing	
3302	5094	Little NF Big River above Berry Gulch	
3331	5091	Railroad Gulch above marsh	
3401	5103	Main Caspar above SF	
3411	5101	SF Caspar Ck. above main Caspar	
3490	5142	Jughandle	
3502	5098	Lower Russian Gulch	
39xx	5 1 0 4	Montgomery Redwoods State Park	