JDSF Newsletter
Jackson Demonstration State Forest
State of California Dept. of Forestry P.O. Box 1185 Fort Bragg, CA. 95437

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# THE NORTH FORK OF CASPAR CREEK: A COOPERATIVE VENTURE BETWEEN CDF AND USFS

PETE CAFFERATA[1]

The Caspar Creek Watershed Study on JDSF has taken a new direction in the last two years, as our work progresses towards full instrumentation of the North Fork phase. When most of the equipment has been installed by the end of the summer, this 1195-acre watershed will become the most intensively sampled drainage ever studied by hydrologists.

As has been the case since this paired watershed study was begun in 1962, the U.S. Forest Service continues to be an equal partner with the California Department of Forestry in this undertaking. In keeping with this dual agency affiliation, JDSF was recently visited by several U.S. Forest Service researchers. Dr. Roger Bay and Dr. Ronald Steward, Director and Assistant Director, respectively, of the Pacific Southwest Forest and Range Experiment Station (PSW), toured the North Fork with JDSF personnel. Also present was Dr. Raymond Rice, Research Hydrologist with the Redwood Sciences Laboratory in Arcata. Dr. Rice is the principal investigator for the Caspar Creek study.

On the tour they examined the Parshall flumes being installed in the headwaters of the drainage (Fig. 1). Some of these flumes are now fully operational, while others are in varying stages of construction. These wooden structures are specially designed, open-channel flow sections which easily allow accurate water discharge measurements to be made. Automatic pumping samplers, programmed to operate at predetermined flow levels, will provide suspended sediment data during storm events at these sites. Additionally, three operational rated control sections were visited along the main stem of the North Fork. These stretches confine the channel to a defined area. Current meters are then used to measure velocity and depth at varying flows and stage-discharge relationships are being determined for these sites. As with the Parshall flume sites, pumping samplers will provide corresponding sediment levels at the rated sections. When completed, there will be nine Parshall flume sites on small tributaries, and the three rated sections on the larger main stem.

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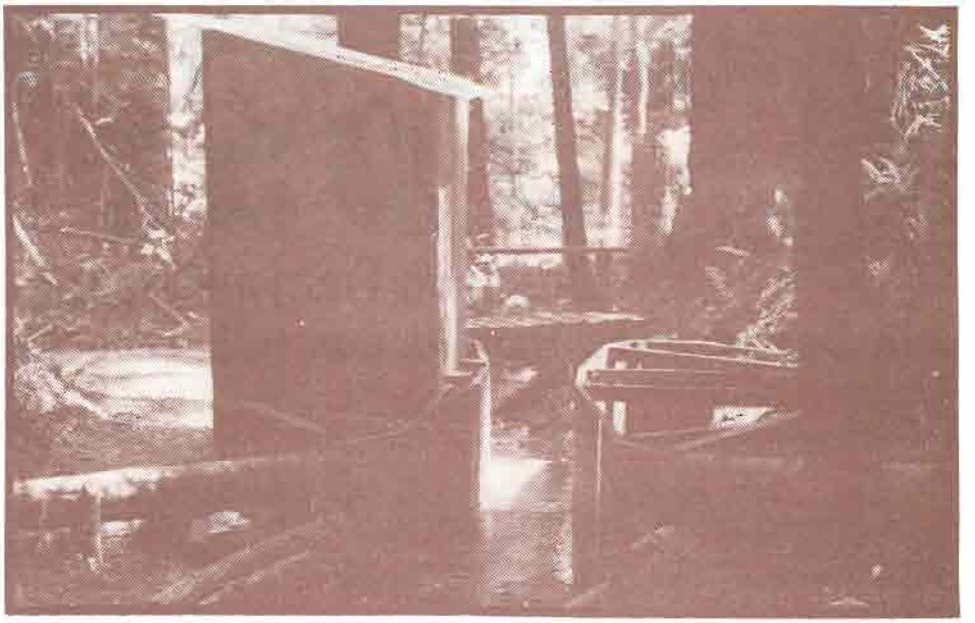

Fig.1. Parshall flume in operation at Subwatershed I.

Dr. Bay stated that he was "very impressed with the good, close-working relationships that have developed and been maintained for so many years between the Station and CDF." He went on to say, "Alone, we certainly could not have embarked on such an ambitious effort. Working together, I think we've got a really good chance of providing extremely important information to resource managers concerning watershed management throughout a key area of northern California."

Similarly, Dr. Stewart stated that "this is one of the best examples of a cooperative venture between two organizations that jointly perceive the importance of a problem."

Subjects to be addressed during the North Fork phase will be provisions applicable to some of the newer California Forest Practice Rules, including the sensitive issue of "cumulative impacts," and sediment transport mechanisms operting in small logged watersheds. To effectively study these concerns, CDF and U.S. Forest Service personnel are working as a team to complete several tasks.

In addition to completing the Parshall flume installations, an intensive stream survey of the main stem and all major tributaries is nearing completion. Soon, work will start on laying out road locations, sale boundaries, and conducting a final cruise on areas to be logged. When fall and winter storms arrive, calibration work will be done, as well as intensive sediment sampling. Water samples will be processed at our recently constructed laboratory in Fort Bragg.

A future California Forestry Note and newsletter articles will explain the harvesting plan to be implemented in the North Fork, and more specific details of the watershed sampling scheme which will be used.

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# REDWOOD REFORESTATION BY THE CASPAR LUMBER COMPANY

William H. Gibbs[1]

March, 1931

## Part II: Shade, Survival and Recommendations

The results given are based on survival counts on staked rows covering from one to two percent of the number of trees planted. Staked rows were run diagonally across the planting areas to compensate for the efficiency of different planters, and conditions of slope and cover. The data was segregated by species, age class, and exposure, north or south. The main drainage at Caspar is east and west, dividing the planting areas into north and south exposure on practically an equal basis. Checks of yearly summaries show that about 50% of the trees were planted on north and 50% on south slopes.

The writer has no definite figures available concerning growth, but in general would say the trees are growing from one to two feet per year in height.

The data have been analyzed to show the efect of age class, slope, and rainfall on survival percent. Table II shows the percent surviving for each age class, and for north and south slopes. It shows yearly averages for both slope and age class, and yearly average covering all slopes and age classes. A general average for the period 1924 to 1929 inclusive is shown seperated by age class and slope, and a flat average covering all conditions as to slope and age class. Total yearly rainfall is shown, and also total rainfall between April 30 and November 1, for each year, and the average for the period. These results show for 1-0 stock an average survival of 76% on north slopes and 54% on south slopes, and a general average of 64% survival. For 1-1 stock, 84% survival on north slopes and 62% on south slopes, with a general average of 71% was secured. 1-1 stock showed a flat gain of 7% survival over 1-0 stock. A detailed examination of the data showed the 1-1 stock to be the more thrifty and better able to meet brush competition.

The effect of rainfall during the period from April 30 to November 1 shows a tendency toward increased survival with more rainfall. The results for the year 1929 are out of line but can be partly explained by the fact that no 1-0 stock was planted.

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[1]William H. Gibbs was Company Forester for the Caspar Lumber Company from 1923 to 1930. The area described is now part of JDSF, which was created in 1947, when the State purchased Caspar Lumber Company lands.

Part I of this article, entitled "Purposes, Methods, and Costs," appeared in JDSF No. 14.

TABLE 1

SURVIVAL DATA

| 1-0 Redwood | | | | 1-1 Redwood | | | |
|---|---|---|---|---|---|---|---|
| Year | N. Slope | S. Slope | Ave. | Year | N. Slope | S. Slope | Ave. |
| 1924 | -- | 75% | 75% | 1924 | -- | 60% | 60% |
| 1925 | 85 | 69 | 77 | 1925 | 99 | 75 | 87 |
| 1926 | 75 | 30 | 48 | 1926 | 65 | 50 | 57 |
| 1927 | 71 | 47 | 59 | 1927 | 84 | 78 | 81 |
| 1928 | 75 | 50 | 63 | 1928 | 86 | 56 | 71 |
| 1929 | -- | -- | -- | 1929 | 86 | 54 | 70 |
| Ave. | 76 | 54 | 64 | Ave. | 84 | 62 | 71 |

| Year | Rainfall-Apr to Nov. | Annual Rainfall | General Average Survival: All Slopes and Age Classes |
|---|---|---|---|
| 1924 | 9.24 in. | 28.46 in. | 67 % |
| 1925 | 14.74 | 35.83 | 82 |
| 1926 | 7.61 | 36.75 | 52 |
| 1927 | 10.58 | 47.11 | 70 |
| 1928 | 12.41 | 33.04 | 67 |
| 1929 | 7.10 | 25.68 | 70 |
| Ave. | 10.28 | 34.48 | 68 |

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Table III (following page) shows the results of a shading experiment. An examination of the figures will show that shade has a decided effect on survival and especially on the thriftiness of the surviving trees. The stock used was 1-0 redwood from the Caspar nursery. It was planted by two experienced planters and was spaced four feet between to get the same ground conditions. No further work was done with them. They were examined one year later. The interesting thing is to note and compare the thrifty trees, which are in all probability established. The general planting survival average for all stock and all slopes and conditions for this season was 70 percent.

To sum up the results in average figures, the Company planted 1,387,961 trees during the period 1924-1929 inclusive. 922,188 of these trees survived, which gives a weighted average of approximately 66 2/3 percent. Using this percent of survival, average costs per surviving tree would be raised 33 1/3 percent, which would raise costs per thousand and costs per acre a like amount. Costs per thousand surviving trees would be $28 and costs per acre $13.

TABLE III

Shading Study--February 15, 1928

Percent Survival

| | No Shade | Shaded With Chunks | South Shade 4" | South Shade 8" | Shaded Two Sides S. & E. | Shaded Three Sides S., E. & W. | Shade All Sides |
|---|---|---|---|---|---|---|---|
| **Plot #1: Center of North Slope** | | | | | | | |
| Thrifty | 63 | 73 | 90 | 90 | 90 | 90 | 80 |
| Alive | 25 | 18 | 10 | 10 | 10 | 0 | 20 |
| Dead | 12 | 9 | 0 | 0 | 0 | 10 | 0 |
| **Plot #2: Bottom of South Slope** | | | | | | | |
| Thrifty | 0 | 0 | 33 | 10 | 60 | 90 | 100 |
| Alive | 50 | 80 | 22 | 60 | 30 | 0 | 0 |
| Dead | 50 | 20 | 44 | 30 | 10 | 10 | 0 |
| **Plot #3: Center South Slope** | | | | | | | |
| Thrifty | 10 | 22 | 60 | 45 | 70 | 78 | 56 |
| Alive | 80 | 56 | 0 | 36 | 20 | 12 | 11 |
| Dead | 0 | 22 | 20 | 19 | 10 | 10 | 22 |
| Doubtful | 10 | 0 | 20 | 0 | 0 | 0 | 11 |
| **Plot #4: Top South Slope** | | | | | | | |
| Thrifty | 22 | 56 | 22 | 60 | 67 | 70 | 100 |
| Alive | 0 | 0 | 78 | 30 | 33 | 20 | 0 |
| Dead | 78 | 44 | 0 | 10 | 0 | 10 | 0 |

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In 1929 a selective logging study was made of the Caspar property, and selective logging put in effect in the woods. The selection is purely economic, and leaves all white (grand) fir, all Douglas fir and sound Douglas fir under approximately 42 inches d.b.h., variations being made for individual trees. Redwood under 36" as a rule is left. Again, the individual tree is judged from an economic standpoint.

A survey of a marking area showed that this would result in leaving an average of ten redwood trees per acre with an average d.b.h. of 30 inches, and 32 white (grand) fir trees, average d.b.h. 34 inches. A survey after logging showed standing 51% of the redwoods, 83% of the Douglas fir, and 71% of the white (grand) fir in number of trees. The distribution of the trees will be found to be somewhat patchy. The surviving trees are found on ridge tops and upper slopes. The bottom of gulches and lines to spar trees are clean cut.

Such a scheme will result in trees of same kind being left on a greater part of the area, especially upper slopes and ridges. On good sites such as benches, and flats and bottoms of gulches, where the original stand is heavy, few trees of any kind will be left. In the poorer sites where the original stand is light, the selection takes out fewer trees and logging damage is less. On these sites we can expect to have enough remaining seed trees.

The planting plan will be greatly reduced under a selective logging system, but to what extent is not known. Future development of logging methods in connection with selective logging should tend to leave enough seed trees to reduce planting to a minimum and only on the best sites.

Some recommendations in regard to future reforestation on the property follow:

1. The nurseries should endeavor to raise good 1-1 redwood transplant at a cost not to exceed $7.50 per thousand.

2. If the 1-1 stock can be secured for this amount or less, it should be chosen for field planting, because it shows a slightly higher survival and the surviving trees are more thrifty.

3. Field planting costs should be reduced by putting larger crews in the field and reducing supervision and overhead costs. It is thought field planting costs can be reduced $2 per thousand.

4. Selective logging will have a tendency to reduce the planting program to a minimum. Efforts should be made to change logging methods in areas selectively logged to allow for the survival of the remaining trees. Preliminary burning should be reduced to a minimum and handled under specific control measures which will keep the fire from crowning.

5. Experimental studies should be made covering preliminary burning and its effect on logging costs and damage to surviving trees. Studies using special logging methods adapted to selective logging and the survival of remaining trees should be made and costs determined. Studies covering natural reproduction after logging selectivity should also be made.

END

NOTE:

Due to financial depression, planting was suspended after 1930. For more discussion of this planting, see Baker's Theory and Practice of Silviculture, First Edition (1934), pp. 455-456.

## STAFF NOTES

Our eighth staff profile features forester **Dana "Wrong-Way" Cole**, who lives in Mendocino with his wife Hazel, a registered nurse, and 4-year-old son, Justin. Though he wouldn't speak to us on the record, protesting the "obituarial nature" of our past profiles, our reporter was able to piece together the following information based on gossip, innuendo, and hearsay.

While most of his relatives still live in Minnesota, Dana left the Midwest for California shortly after graduating high school. He attended Laney Community College in Oakland for two years, then transferred to UC-Berkeley where he obtained a B.S. in conservation of natural resources and a M.S. in wildland resource science from the Department of Forestry. Before coming to JDSF, Dana had lived in cities all his life. From 1978 to 1980, while still a student, he combined his urban background with his interests in forestry by co-founding and directing urban forestry programs in Oakland.

Dana's interests include problem solving, history, and writing. As a graduate student he was able to combine all three in researching redwood fire ecology. He co-authored an article on the subject, along with Diana Jacobs of the State Lands Commission, and Dr. Joe McBride of the UC-Berkeley forestry faculty. Entitled "Fire History and the Perpetuation of Natural Coast Redwood Ecosystems," the article will be Dana's fourth to appear in the Journal of Forestry.

Dana came to JDSF in 1980 and hopes to continue in his present position as Demonstration and Experimental Forester for the forseeable future. His duties at JDSF have included managing several timber sales, acting as CDF liaison to a number of cooperating researchers, publishing several articles, and editing the JDSF Newsletter for the past three years.

In other related news, a paper was recently published by former JDSF Timber Sale Officer **Craig E. Anthony**. Although Craig is now Regional Administrative Officer for the North Coast Region of CDF, the paper was drafted while he worked at JDSF. Appearing as California Forestry Note No. 91 (8 p.), the paper is entitled "The Evaluation of Formula and Decimal C Scribner: Are Conversion Factors Necessary to Provide Accurate Mill Scale Volumes From Forest Stand Cruises?" The paper reviews the background of the Scribner Formula and Log Rules and presents a method of adjusting Scribner Formula timber cruise volumes to more closely reflect the Log Rule mill scale. Copies of this paper may be obtained by writing JDSF.

Finally, we would like to welcome our new Office Assistant II, **Lorraine Asher**, and our new seasonal Forestry Aides, **George McCaskill**, Lou **Lou Sciocchetti**, and **Adam Wyman**.

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