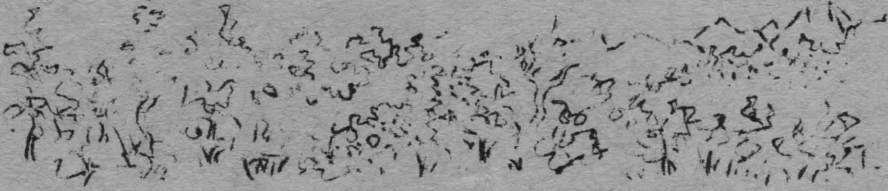


Shasta Blue

The Backbone Range Project

A PROGRESS REPORT



A Cooperative Study of the Economics
of Brushland Clearing Methods

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The Backbone Range Project is located in Shasta County near Bella Vista and consists of 320 acres leased from the U. S. Bureau of Reclamation. It is a cooperative project of the California Division of Forestry and the Farm Advisor's office.

The project was established to investigate the use of fire and machinery in the control of brush on range lands. Livestock are being used to measure returns from different treatments. Grass and legume reseeding, fertilization, and chemical brush control are also being investigated.

These investigations are being carried out on an area which originally had dense manzanita and live oak but very few native grasses and clovers. The area was chosen because it is fairly representative of medium elevation rangeland in poor condition due to brush encroachment. The soil is considered to be capable of producing fair grass.

Four 40-acre fields were laid out with treatments as follows: (1) brush crushed by a bulldozer and burned, (2) brush burned standing, (3) brush cleared and wind-rows, and (4) control field with no treatment. After treatment, all fields except the control were airplane seeded with the following mixture:

| | |
|---------------------------|---------------|
| Soft chess (Blando Brome) | 3 |
| Annual ryegrass | 1 |
| Rose clover | 2 |
| Crimson clover | 1 |
| Sub clover | $\frac{1}{2}$ |
| Hardinggrass | 1 |
| | <hr/> |
| | 8½ lbs./acre |

Costs of treatments and results of the first grazing season are shown in the tables on the following page.

Table of Costs

| Treatment | Crushed | Standing | Cleared | Control |
|------------------|----------------|----------------|----------------|---------------|
| | <u>\$/ac.</u> | <u>\$/ac.</u> | <u>\$/ac.</u> | <u>\$/ac.</u> |
| Crushing | 7.78 | - | - | - |
| Clearing | - | - | 24.19 | - |
| Burn preparation | 1.98 | 1.98 | - | - |
| Burning | 2.57 | 2.57 | - | - |
| Seed | 4.87 | 4.87 | 4.87 | - |
| Airplane seeding | 0.60 | 0.60 | 0.60 | - |
| Seed Covering | - | - | 2.99 | - |
| Total | <u>\$17.80</u> | <u>\$10.02</u> | <u>\$32.65</u> | <u>-</u> |

Summary of Weight Gains, Costs, and Returns

| | <u>Crushed</u> | <u>Standing</u> | <u>Cleared</u> | <u>Control</u> |
|--|------------------|-------------------|-------------------|------------------|
| | 43.6 ac. 12H. | 41.1 ac. 12 H. | 38.2 ac. 13 S. | 40.1 ac. 4 S. |
| Total in weight | 5770 | 5520 | 6190 | 2010 |
| Total out weight | 7245 | 6925 | 7785 | 2450 |
| Total gain | 1475 | 1405 | 1595 | 440 |
| No. days (Mar. 12-May 24) | 72 | 72 | 72 | 72 |
| Av. gain/animal | 123 | 128 | 123 | 110 |
| Av. daily gain/animal | 1.7 | 1.8 | 1.7 | 1.5 |
| Beef production/acre | 33.8 | 34.2 | 41.8 | 11.0 |
| Grazing income/acre (Beef @ \$0.20) | \$6.77 | \$6.84 | \$8.35 | \$2.19 |
| Increase/acre due to treatment | \$4.58 | \$4.65 | \$6.16 | - |
| Cost/acre for treatment | \$17.80 | \$10.02 | \$32.64 | - |
| Per cent recovery of cost | 26% | 46% | 19% | - |

The most common method of removing brush - by burning it standing - was the lowest in total cost per acre. Where the brush was crushed, the total cost was almost twice as much as this method. Where the brush was cleared and windrowed, the total cost was about three times as much.

The figures in the weight gain table show that the treatments have increased meat production per acre. This increase was greatest on the field mechanically cleared and the production here was almost four times that of the control. Although production was greatest on this field, the cost of treatment was also greatest resulting in the lowest per cent recovery of cost. Almost half of the cost was recovered the first grazing season from the standing treatment. An unusually good burn, partly due to intense heat from the adjacent mowed field, accounts for the good showing of this treatment. First season results suggest that the cost of the standing treatment may be recovered in two grazing seasons, the mowed treatment in four seasons, and the clearing in five seasons.

The average daily gain of the four animals on the 40-acre control field was not as great as the average daily gain on the treated fields which has three times the stocking. This might indicate a shortage of feed on the control field.

Final results will not be known for several grazing seasons because conditions of the fields will be changing due to brush regrowth.

*The cattle used this first grazing season were furnished by George Barnes, rancher.

BACKBONE PROJECT - COMPLETE SUMMARY - PRELIMINARY

| | <u>Gain/Acre</u> | | | | <u>Income/Acre @ 25¢/lb.</u> | | | | <u>Income over Control</u> | | | | <u>Total Income</u> | <u>Total Cost</u> | <u>Return over Cost</u> |
|-----------|------------------|-------------|------|-------------|------------------------------|------|------|------|----------------------------|-------|-------|-------|---------------------|-------------------|-------------------------|
| | 1957 | 1958 | 1960 | 1962 (1) | 1957 | 1958 | 1960 | 1962 | 1957 | 1958 | 1960 | 1962 | <u>over Control</u> | | |
| Control | 11.0 | 8.6 | 8.2 | 7.4 | 2.75 | 2.15 | 2.05 | 1.85 | - - - | - - - | - - - | - - - | - - - | 0 | - - - |
| Bulldozed | 41.8 | 34.8 (2) | 35.3 | 28.8 | 10.45 | 8.70 | 8.83 | 7.20 | 7.70 | 6.55 | 6.78 | 5.35 | 26.38 | 36.29 | -9.91 |
| Standing | 34.2 | 33.0 | 34.8 | 20.1 | 8.55 | 8.25 | 8.70 | 5.03 | 5.80 | 6.10 | 6.65 | 3.18 | 21.73 | 13.66 | +8.07 |
| Mashed | 33.8 | 33.0 | 29.8 | 32.9 | 8.45 | 8.25 | 7.45 | 8.23 | 5.70 | 6.10 | 5.40 | 6.38 | 23.58 | 21.44 | +2.14 |

(1) Many interpolations

(2) Figured on basis of same % of control as shown in average of 1957 and 1960 records

BACKBONE RANGE PROJECT - WEIGHT TRIALS

50 head of cattle weighed in March 19, 1958, 9:30 - 11:30 A. M. 15 head in corral field escaped April 1.

Cattle weighed off May 15, 1958, 10:30 - 12:00 noon. 57 days in trial period. Stock furnished by George Barnes.

| Weather Station Field (A) ** (Crushed & Burned) | | | Center Field (B) (Burned standing) | | | Corral Field (C) * (Mechanically cleared) | | | Control Field (D) (No treatment) | | |
|--|-----------|------------|---------------------------------------|-----------|------------|--|-----------|------------|-------------------------------------|-----------|------------|
| Tag No. | Weight In | Weight Out | Tag No. | Weight In | Weight Out | Tag No. | Weight In | Weight Out | Tag No. | Weight In | Weight Out |
| 1 | 425 | 520 | 97 | 470 | 555 | 71 | 445 | | 86 | 650 | 690 |
| 2 | 455 | 625 | 19 | 415 | 495 | 72 | 480 | | 87 | 455 | 535 |
| 3 | 470 | 625 | 20 | 645 | 730 | 73 | 470 | | 88 | 580 | 645 |
| 4 | 600 | 685 | 21 | 620 | 670 | 74 | 460 | | 89 | 520 | 625 |
| 98 | 650 | 680 | 22 | 460 | 530 | 75 | 475 | | 90 | 610 | 665 |
| 6 | 490 | 555 | 23 | 565 | 655 | 76 | 430 | | | | |
| 7 | 555 | 610 | 24 | 450 | 530 | 77 | 495 | | | | |
| 8 | 595 | 675 | 25 | 510 | 575 | 78 | 525 | | | | |
| 9 | 465 | 605 | 61 | 470 | 670 | 79 | 510 | | | | |
| 10 | 450 | 580 | 62 | 630 | 730 | 96 | 490 | | | | |
| 11 | 400 | 510 | 65 | 400 | 540 | 81 | 575 | | | | |
| 12 | 400 | 460 | 66 | 485 | 565 | 95 | 430 | | | | |
| 13 | 445 | 540 | 68 | 510 | 630 | 83 | 465 | | | | |
| 14 | 540 | 635 | 69 | 430 | 495 | 84 | 460 | | | | |
| 15 | 460 | 495 | 70 | 475 | 535 | 85 | 455 | | | | |
| Total weight in | | 7390 | Total weight in | | 7535 | Total weight in | | 7165 | Total weight in | | 2815 |
| Average | | 493 | Average | | 502 | Average | | 478 | Average | | 563 |
| Total weight out | | 8830 | Total weight out | | 8905 | * Total weight out - These 15 | | | Total weight out | | 3160 |
| Average | | 589 | Average | | 593 | head escaped April 1 due | | | Average | | 632 |
| Average lbs. gain/animal | | 96 | Average lbs. gain/animal | | 91 | to gate being broken by | | | Average lbs. gain/animal | | 69 |
| Average lbs. gain/day | | 1.7 | Average lbs. gain/day | | 1.6 | heavy storm. No data | | | Average lbs. gain/day | | 1.2 |

** 4 extra head for 10 days - not in totals

SUMMARY OF WEIGHT GAINS, COSTS AND RETURNS

| | Crushed 43.6 | Standing 41.1 | * Cleared 38.2 ac. | Control 40/Ac. |
|---|--------------------|---------------|--------------------|----------------|
| Total in weight | 7390 | 7535 | 7165 | 2615 |
| Total out weight | 8830 | 8905 | - | 3160 |
| Total gain | 1440 | 1370 | - | 345 |
| No. days - March 19-May 15 | 57 | 57 | - | 57 |
| Average gain per animal | 96 | 91 | - | 69 |
| Average daily gain per animal | 1.7 | 1.6 | 1.7 | 1.2 |
| Beef production per acre | 33 | 33 | - | 8.6 |
| Grazing income per acre Beef @ \$.25 | \$ 8.25 | \$ 8.25 | - | \$ 2.15 |
| Increase due to treatment | 8.25 - 2.15 = 6.10 | 6.10 | - | - |
| Cost per acre treatment | 17.50 | 10.02 | 32.64 | - |
| Percent recovery of cost | 60% | 9.5% Over. | (37.5%) | - |
| 1957 | 4.58 | 4.65 | 6.16 | - |
| 1958 | <u>6.10</u> | <u>6.10</u> | - (6.10) | - |
| | 10.68 | 10.75 | 6.16 (12.26) | |

* Gains used here in percent cost recovered are based on comparison of 1957 and 1958. Cattle escaped April 1 when heavy storm broke gate.