

Economic Aspects of Beef Cattle Production in Southwest Alaska¹

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Highlight

Although the demand of Alaska's increasing population for beef is largely met through inshipments, observations are made of the current and potential systems of range cattle production and marketing in Southwest Alaska necessary to capture a larger share of the State's beef market. While climate and vegetation in this area are favorable for large increases in beef cattle production, breakthroughs are needed in current systems of production, transportation, and marketing. Of particular importance is the need for rangeland development and management, an inexpensive source of feed concentrates, and the establishment of modern slaughtering and marketing facilities.

Alaska's major commodity industries in 1966 were fisheries, with a valued production of \$174.5 million; forest products valued at \$67.8 million; and oil and gas with production valued at \$50.2 million (Table 1). The value of agricultural production in 1966 amounted to only \$5.5 million. Among the major commodity industries, the average increase between 1960 and 1966 of the value of products sold annually has been substantial for all except agriculture, which experienced an average increase of only two percent.

The slow growth of Alaskan agriculture, the high cost of importing food to feed a growing population, and the possession of undeveloped land resources have focused the attention of public

agencies and others upon the possibilities for further agricultural development.

Alaska's population in 1968 numbered some 274,000, up 37 percent since 1960 (Bureau of the Census, 1968). The State today produces less of its food supply than any other State in the Union, and at no time has it produced more than 8 percent of the food products consumed by its people (Federal Field Committee for Development and Planning in Alaska, 1966). Expenditures for food takes 20 to 25 percent of the average family budget. At prices that average 25 percent higher than those in Seattle, local production of a significant portion of the State's food supply would permit the supply of dollars in Alaska to do more within its economy.

Range Livestock Potential

The factors responsible for limiting agricultural development are primarily economic and technical, not climatic, although some of the major obstacles to agricultural expansion include all three (Loll, 1967). Generally, the cost of production on Alaskan farms is high due in part to high labor costs. Although farm wage rates are higher in Alaska than in other States, the average rate is only one-third of the rate paid for seasonal construction labor (Loll, 1967). This situation leads to consideration of agricultural enterprises low in labor requirements such as range livestock.

Approximately 5 million acres of land in Alaska can be used for livestock grazing, excluding extensive rangelands which are suitable for use by reindeer and muskox (Loll, 1967). A large portion of this currently used or potential rangeland is in southwestern Alaska, including the Aleutian Islands, the Kodiak Island Group, and the Kenai Peninsula. Here, the maritime climate and vegetation combine to furnish a capacity for yearlong grazing of large cattle herds. Although lying further north than Moscow, Southwest Alaska has a much warmer climate than island groups of similar latitude. Brushed by the Japanese current as it sweeps northeastward along the coast of the Alaskan Peninsula into the Gulf of Alaska, the islands have experienced only a dozen or so years out of the past 70 when the temperature dropped below zero

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Table 1. Major Alaskan commodity industries by value of product, 1960–1966.¹

Industry	Millions of dollars							Percent change 1960–1966	Percent of total in each industry 1966
	1960	1961	1962	1963	1964	1965	1966		
Fisheries	96.7	128.7	131.9	109.0	140.9	166.6	174.5	+80	53
Forest products	47.3	48.0	52.3	54.1	61.0	57.5	67.8	+43	20
Minerals	20.6	17.0	22.5	34.1	30.6	47.6	34.6	+68	10
Oil and gas	1.3	17.8	31.7	33.8	35.5	35.6	50.2	+3762	15
Agriculture	5.4	5.7	5.8	5.4	5.8	5.4	5.5	+2	2
Total	171.3	217.2	244.2	236.4	273.8	312.7	332.6	+94	100

¹ Compiled from Loll, 1967.

in winter. According to a 14-year record at the Kodiak Naval Station, temperatures averaged no less than 24 F in winter and no higher than 60 F in summer. Precipitation, evenly distributed throughout the year, averages about 58 inches.

The Census of Agriculture reveals that, in 1964, 19 of the 27 Alaskan farms classified as livestock ranches were located in this area. The Alaska Crop and Livestock Reporting Service estimates that between 1950 and 1967 the number of cattle, including dairy cattle, increased from 2,236 head to 8,300 head. As of 1967, over 86 percent of the beef cows 2 years and older in Alaska and 70 percent of the steers 1 year and older were located in the Southwest.

Beef cattle are not new to Southwest Alaska; in 1784 Shelikof brought some of the first cattle to the area when he established the Three Saints Bay Colony on the southeastern coast of Kodiak Island (Chaffin, 1967). The Agricultural Experiment Station was established on Kodiak in 1906 to develop a cross that would be suitable for grazing in the area. Early trials with Galloway and Holstein, and with Galloway and Mongolian Yak gave way to Angus, Hereford, and Scottish Highland cattle and their crosses brought in by cattlemen in the 1920's and 1930's. Yet, derivations from the 1964 Census of Agriculture reveal an intensity of rangeland use on livestock ranches of 280 acres to each animal unit of livestock. Much of this land is steep, with mountains rising to over 3,000 feet. Grazing is inaccessible on the steeper slopes, with lesser proportions of the total land being covered by lakes and ungrazeable muskegs. Range surveys made in selected areas reveal that, except for localized winter ranges along the coasts, the sporadic and generally extensive use of range forage over the past 180 years has altered the natural vegetation of Southwest Alaska but very little (Rieger et al., 1960). Plants most valuable for forage, and that tend to decrease under heavy grazing, include bluejoint (*Calamagrostis* spp.), beach ryegrass (*Elymus mollis*), sedges (*Carex* spp.), fireweed (*Epilobium* spp.), horsetail (*Equisetum* spp.), and willow (*Salix* spp.).

Increasesers, or plants that thrive at the expense of other plants following grazing, include wild barley (*Hordeum* spp.), sweetgrass (*Hierochloa odorata*), tufted hair-grass (*Deschampsia* spp.), mountain alder (*Alnus* spp.), and various annuals.

Surveys of 306,980 acres of Kodiak Island ranges by the Bureau of Land Management during 1949 and 1956 in accordance with Interagency Committee guidelines (Johnson, 1961) recognized seven vegetative types important for livestock grazing. The proportions of acreages in each type to total acreage surveyed, and estimated acreages to support one animal unit (one cow or five mature sheep) for one month on a year-round basis are as follows:

Type	Estimated acres/AUM	Percent of total area
Waste or inaccessible	—	66.6
Wet-meadow	1.7	1.8
Tall-grass	1.4	6.0
Dry-meadow	—	.9
Perennial-forb	2.1	7.5
Browse	2.1	8.5
Forested areas	6.1	5.0
Deciduous timber	2.1	3.7
Total	—	100.0

Perhaps a fifth of the land classified as waste or inaccessible could be developed for summer grazing. The tall-grass type is capable of producing annual per-acre yields of 2 tons of hay or 4.5 tons of silage from unused areas.

Land Tenure and Grazing Fees

A few cattlemen in Southwest Alaska own some land. However, the bulk of the rangeland operated is leased from the Federal Government through the Bureau of Land Management, or from the State. Leases have generally run for 20 years. Grazing fees for use of Federal and State lands are nominal, because of the relative inaccessibility of island locations and the lack of competing uses for the land. The Bureau of Land Management lease on a Kodiak Island Group ranch in 1968 amounted to about \$.60 per animal unit, yearlong.

System of Production

The prevailing system of beef cattle production (Boykin and LeBrun, 1968) is to graze cattle on beach ryegrass near the beaches, and other grasses at the lower elevations during the winter. There the breeding herd is usually fed either locally produced grass or oat silage, or alfalfa cubes, and barley for about 60 days. Bluejoint, the principal forage species, greens up about the middle of May and grows rapidly, with cattle following the fresh growth up the hills. By August the cattle are grazing at the higher elevations, and remain there until September or early October when weather drives them down. In December the cattle move on to the beach ryegrass again. Kelp that washes up on the beaches with the tide furnishes salt and iodine in the cattle's diet during this time, and consequently few cattlemen feed salt and mineral supplements. However, phosphate deficiencies have been reported.

The cows are bred as two-year-olds to three-year-olds, usually in late summer. Most of the calving occurs during March and April. Weaning percentages vary between 70 and 80 percent. The cattle of Southwest Alaska have had little incidence of disease, and generally are said to be in good health. Death losses in cattle herds, except for years of severe depredations by the Kodiak bear on Kodiak Island, or when unusually high losses occur for reasons such as the tidal wave of 1964, average about 10 percent of mature cattle. This loss is comparable to death losses that occurred with herds in the Western States during the earlier days (Clawson, 1950).

Because of the abundance of inexpensive forage and the lack of a feeder calf market, few cattle are sold as calves. Cows are rarely culled, for forage is abundant and there is a chance of getting another calf, even in later years of a cow's life. The common practice is to hold over all calves, with the heifers eventually going into the breeding herd, and with the steers being held on grass until 2 to 3 years of age. This system of production is comparable to the mixed system of production practiced by ranchmen in the Western States during the earlier days of the range livestock industry (Clawson, 1950). As the steers come off grass in the late summer or early fall, they are usually placed on a complete ration of silage and barley for 60 to 90 days and slaughtered at weights varying between 1,000 and 1,400 pounds. According to meat market managers, this feeding tends to whiten the meat fat and add flavor, making it more acceptable to consumers.

System of Marketing

Most of the cattle are slaughtered at private plants on individual ranches; some cattlemen on

Kodiak Island own a cooperative slaughtering plant. Though improvements have been made, most of these facilities are said to be inadequate by modern sanitary and technological standards. The beef carcasses are sold directly to consumers, or to supermarkets in Kodiak or Anchorage. The beef, estimated by meat market managers as being equivalent to U.S. Grades Standard to Good, sells in competition with U.S. Grade Choice shipped in from the other states. In 1967 the average cost of shipping beef carcasses from Seattle to Anchorage and Kodiak was \$.06 per pound. A large part of these inshipments originated from the Northern Plains States, with total shipping cost from points of origin to Alaska averaging \$.09 to \$.10 per pound. Meat market managers in Kodiak and Anchorage say that by underselling imported beef they sell all the beef Alaskan cattlemen can produce. Stores run specials on local beef, and in some instances the beef is advertised as being produced by a particular cattleman. Last year locally produced beef carcasses brought cattlemen \$.46 per pound in Kodiak and \$.48 in Anchorage. However, increasing the volume of local beef offered for sale without extending the relatively short period during which the local beef is shipped to market, would make competition with inshipments increasingly difficult. At least 2 weeks notice is needed for meat market managers to prepare for the seasonal supply of local beef carcasses; apparently some cattlemen neglect to make these necessary arrangements, or they don't deliver as planned. Contracting for delivery between cattlemen and meat retailers is a possibility that would be beneficial in developing a more orderly marketing system.

Profitability of Cattle Ranching

Few estimates are available concerning the profitability of cattle ranching in Southwest Alaska. A study of cattle ranches on Kodiak Island revealed that in 1956 cattlemen netted approximately \$30 per head of beginning inventory over operating expenses, with about half of this net being attributable to inventory increase rather than to cash sales (Vrooman, 1956). U.S. Census of Agriculture figures for 1964, showing that 16 of the 27 livestock ranches had only 100 head of cattle or less, suggest that ranch income is still quite low for most cattlemen. Only one operator had more than 500 cattle. According to figures derived from the 1967 Alaska Crop and Livestock Reporting Service an average of 0.15 head of cattle were sold during the year per head in the inventory at the beginning of the year. Sales of dressed beef per cow 2 years of age and older in the inventory at the beginning of the year averaged only 190 pounds. Part of these low ratios is due to the all aged production system that has a low turnoff per mature animal. But the

low ratios mainly reflect the practice of holding over large numbers of heifers to increase breeding herd size.

The 1964 average size of livestock ranch being 42,830 acres, from which an average of only \$8,107 of livestock and livestock products were sold, further illustrates the relatively low ranch income received by cattlemen and the underdeveloped productive capacity of their ranges. Bureau of the Census figures show that in 1964 over half the members of ranch households had earnings from rent, interest, dividends and other sources that exceeded the value of livestock sales. In some cases non-ranch income fulfills a need for earning additional income, but there are instances where ranching takes on an aura of a status symbol, an adventure, or a hobby.

According to the 1964 Census of Agriculture specified expenditures on livestock ranches averaged \$0.74 per dollar of livestock sold, a figure comparable to livestock ranches in the Western States. Average expenditures amounted to \$1,915 for feed, \$1,231 for livestock purchases, \$219 for fertilizer, \$1,534 for hired labor, and \$672 for gas and oil. All ranches purchased feed and gas and oil, half of the operators used hired labor, and less than half of the operators purchased fertilizer and livestock. Transportation is one of the highest expenditures in ranching, and only a part of this is accounted for in the quoted average expenditure on gas and oil. Much of the transporting is done by local commercial firms. Estimates for transporting a barge load of cattle from Kodiak to Homer on the Kenai Peninsula, a distance of 150 miles, run about \$10 per mile or about \$12 per head. Shipping a cow from Seattle to Kodiak would cost a cattleman about \$125. Transporting beef carcasses by ship from Kodiak to Anchorage last year cost about \$.02 per pound. Estimates for shipping feed by boat from Seattle to Kodiak, not including wharfage, amounts to about \$1.98 per cwt. for hay and \$2.11 for grain and alfalfa pellets.

Future Prospects

From these observations it seems that the future of the beef cattle industry in Southwest Alaska depends on further rangeland development and a concurrent increase in cattle numbers per ranch, development of a source of inexpensive feed concentrates, and establishment of modern slaughtering and marketing facilities.

Much of the rangeland in Southwest Alaska could be grazed if individual pastures were fenced and large areas of similar topography were segregated for winter, spring-fall, and summer use. This would also relieve the tendency toward overuse of winter range, primarily the beach ryegrass areas. Roads are inadequate or nonexistent and periodic

checking on livestock is difficult. Construction of roads and trails would offer increased opportunities to improve range and cattle management. The Bureau of Land Management leases previously were subject to renewal after 20 years. Fifty-five year leases are now possible but not mandatory, and the incentive to make needed improvements may be enhanced by the longer-termed lease.

Although many cattlemen earn income from non-ranch sources, apparently little capital has been invested in rangeland development. Perhaps a program of government cost-sharing would foster increased private investment in development, which in time would result in increased returns to both cattlemen and public land agencies. A cost and returns analysis would provide a basis for evaluating such a program. Once stocked at the economically efficient capacity of the range the average cattleman would be marketing heifers and cull cows and more than the usual number of steers. Potentially, income from sales of cull cows and both heifer and steer yearlings could almost double the income from sales of steer yearlings alone. The magnitude of ranch income would increase again in proportion to the increased stocking rate on developed rangeland. While expenditures for feed, taxes, and grazing fees would remain fairly constant per animal in the herd, expenditures for labor and other overhead items per animal would decrease, resulting in economies of size.

Development of an inexpensive concentrate feed source seems remote. Lowering transportation rates some 2 years ago encouraged the feeding of barley and alfalfa pellets in preference to home-grown grass and oat silage. Opportunities exist for increased feeding of urea, and fish and fish soluble products from the fishing industry. Potatoes from the Matanuska Valley may be important sources of feed. Pelleting of the abundant native forage may have some potential if an economic means is devised.

Establishment of modern slaughtering and marketing facilities seems to be the link in the chain that now needs the most attention. Recent changes in Federal and State regulations concerning standards for these facilities and for meat inspection make this development even more critical. Unless capital comes in from the outside, cattlemen will have to bear this expense themselves. Government supported low interest rate loans for building the necessary facilities may be one solution to this problem.

Cattlemen in Southwest Alaska have an uphill pull in their attempt to efficiently produce and market the quantity and quality of beef necessary to successfully compete with inshipments for Alaska's beef market. Although these cattlemen have shown an amazing steadfastness in the past,

it would seem that they cannot do this individually. Much depends on public policies in regard to agricultural development, and the cattlemen's willingness and ability to work together in meeting their common developmental needs.

LITERATURE CITED

- ALASKA CROP AND LIVESTOCK REPORTING SERVICE. 1966. Alaska agricultural statistics. Statist. Rep. Serv., U.S. Dep. of Agr. in coop. with Alaska Div. of Agr. and Exp. Sta. 23 p.
- BOYKIN, CALVIN C., AND THOMAS Q. LEBRUN. 1968. Personal notes from interviews with Alaskan cattlemen, meat market managers and others. Unnumbered.
- BUREAU OF THE CENSUS. 1968. Population estimates. U.S. Dep. of Com., Series P-25, No. 414. 16 p.
- BUREAU OF THE CENSUS. 1964. United States census of agriculture—Alaska. U.S. Dep. of Com., vol. 1, part 49.
- CHAFFIN, YULE. 1967. Alaska's southwest, Kodiak to King Crab. Chaffin, Inc. 247 p.

- CLAWSON, MARION. 1950. The western range livestock industry. McGraw-Hill Book Co., New York. 401 p.
- FEDERAL FIELD COMMITTEE FOR DEVELOPMENT PLANNING IN ALASKA—A REPORT TO THE PRESIDENT. 1966. Economic development in Alaska. U.S. Dep. of Com., 42 p.
- JOHNSON, VON J. 1961. Range and livestock on Kodiak Island. J. Range Manage. 14:83–88.
- LOLL, LEO N. 1967. A study of technical and economic problems—State of Alaska. Inst. of Soc., Econ. and Government Res., Univ. of Alaska, SEG Rep. No. 13. 173 p.
- RIEGER, SAMUEL, ERNEST LUIK, AND ALBERT D. BACKER. 1960. Soil survey and vegetation of northeastern Kodiak Island Area, Alaska. Soil Cons. Serv., U.S. Dep. of Agr. and Bur. of Land Manage., U.S. Dep. of Interior, in coop. with Alaska Agr. Exp. Sta., Soil Serv. Series 1956, No. 17. 46 p.
- VROOMAN, C. W., AND ASSOCIATES. 1956. Some potentials and problems of cattle ranching on Kodiak Island, Alaska. Alaska Agr. Exp. Sta. 32 p.