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ABSTRACT

While individuals from outside Alaska are recruited at premium pay, attracted with various monetary incentives, the Alaska Native experiences an extremely high rate of population increase which constitutes a virtually wasted labor reservoir. This study is intended as a benchmark approach against which the rate of progress of the Alaska Native might be measured and evaluated as he is involved in the development of Alaska. Discussed are: (1) rising trends in population; (2) change in living patterns from nomadic to sedentary; (3) uneven economic patterns; (4) cultural and educational attitudes; and (5) land uses and potentialities. It is anticipated that this study will provide a basis for further work and that the material will be available for comparison with information from the 1970 census. (Author/CJ)

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June 1970

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INTRODUCTION

The late Senator E. L. Bartlett (Dem. Alaska) in 1967 inaugurated a series of Senate Hearings to consider federal agency hiring practices in Alaska. A major purpose of the effort was to encourage federal agencies to recruit and train Alaska Natives for jobs in Alaska. After the 1969 Hearing Senator Stevens (Rep. Alaska) observed staffing federal vacancies during 1967-69 (fiscal years 1968-69) with applicants from "outside" cost the government four million dollars for transportation including one million dollars in annual leave transportation expenses.

Individuals from outside the state are recruited at premium pay, attracted with various monetary incentives, such as moving expenses, etc. As this situation exists, the Alaska Native experiencing an extremely high rate of population increase, constitutes a virtually wasted labor reservoir.

Alaska is not unique in this situation. Competition for jobs exists everywhere. Individuals best qualified have the mobility to move to places with high unemployment rates and obtain positions for which the Native, of Appalachia, or Northern Wisconsin, cannot qualify.

This study is intended as a benchmark approach against which the rate of progress of the Alaska Native, in the development of Alaska, might be measured and evaluated.

Field work for this study involved several visits to village Alaska for a total of ten months during 1967-1969. A study proposal submitted to the U. S. Office of Education was approved in May 1968 but without supporting funds because of fiscal retrenchment. Funds for the study became available following completion of the 1968 Alaskan field work.

The 1968 Alaskan field study then was restricted as it was undertaken with no expectation of re-imbursement. If funded as originally proposed, the Grant would have provided unlimited use of a light aircraft and permitted unrestricted access to Village Alaska during the 1968 summer.

Basic to the study was the personal visit to the villages and the opportunity to obtain sincere responses from people in their own environment. Without the assistance of village people, too numerous to cite individually, this study would have been without significant input. In the course of informal individual contacts with local residents a skilled interrogator may obtain valuable information otherwise unavailable.

Although this study was conceived as a benchmark-type approach, confirmation, in 1969, of the magnitude of the fossil fuel deposit at Prudhoe Bay on the Beaufort Sea, significantly altered both the cultural as well as the physical environment of Alaska. However, the economic situation of Alaskan Natives may not be improved and could experience unfavorable pressures. Regrettably a substantial segment of Alaska's non-native population, most of whom are temporary Alaskans, seem to prefer economic development regardless of undesirable effects experienced by the Native population. A quote to this effect, from a spontaneous interview, triggered a vitriolic editorial in Alaska's highest circulation newspaper.[1]

In 1969 Professor Haglund pointed to the difficulties astronomers, climatologists, botanists, engineers, and others, encounter in an attempt to establish uniform criteria for the

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[1] "Natives Will Benefit," Anchorage Daily Times, August 20, 1969; a response to "Professor Says Oil Won't Help Natives," Anchorage Daily Times, August 19, 1969.

determination of the boundaries of the Arctic and of the Subarctic.[2] Further, statistics are usually gathered according to cultural units which do not coincide with physical boundaries.

This study does not exclude Natives of any part of Alaska on the basis of physical boundaries, however less emphasis is directed to Natives in Southeastern Alaska (Map One). Natives in Southeastern Alaska have had highly-developed tribal organizations for a relatively long time, their level of education attainment is not significantly different from the national average, and their situation, in general, is not comparable to that of Natives in most other Alaskan areas.

Climatic variation from place to place in Alaska is as great as that of the "inferior" forty eight. Southeastern Panhandle villages rarely experience winter snow although enough snow is received in nearby mountains to support tidewater glaciers. Most extreme low temperatures are experienced in subarctic-not arctic-areas. Arctic areas receive little precipitation, including snow. Eskimos never needed, or were aware of, Indian snowshoes.

Social and economic problems of a population are complicated when large segments of that population exhibit significant variation in their levels of educational achievement. Substantial rates of illiteracy exist in Village Alaska, approximately 25% in some Northwestern areas.[3] Lowest levels of educational achievement are noted in areas with high ratios of Native to total population.

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[2]Donn K. Haglund, "The Population of Northern North America," Geography of Population, 1970 Yearbook of the National Council for Geographic Education, Paul F. Griffin, Ed. Fearon Publishers, Palo Alto, California, 1969, pp. 271-290.

[3]George W. Rogers and Richard A. Cooley, Alaska's Population and Economy, Vol. 1. University of Alaska, College, 1963, pp. 88.

Poverty is the result of cultural, i.e., social, psychological, and political factors. Physical conditions of the environment are much less important. Places with substantial percentages of the population at poverty levels directly reflect the inferior education received by that population.

Paternalistic governing authority has developed in some, through time, a feeling of dependence and lack of responsibility. Many Natives prefer to remain in villages without job opportunities. A similar situation may be observed in Appalachia and elsewhere.

There is a particular need to study the spatial aspect at this time because of the anticipated increase in educational activities at all levels in the United States.[4] The spatial aspect involves the relative location of places with respect to areas situated more favorably for the attraction of income-producing activities. Maintenance of income proposals, otherwise known as reverse-income-tax, could produce an undesirable effect by causing people to remain in economically marginal or economically unattractive villages thus creating a parasite class.

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[4]Projections of Educational Statistics to 1976-77, Office of Education, U. S. Department of Health, Education, and Welfare. Superintendent of Documents, Washington, D. C., March, 1968.

SEQUENT OCCUPANCE SHIFT

The two decades from 1950 to 1970 have been a period of rapid change of settlement pattern for the village people. Prior to 1950 few Alaska Natives lived at places with more than a few hundred people. In 1970, few Natives live in villages with less than several hundred population. Such villages, even with a population of more than one thousand, are not urban places. Without urban-type functions they remain simply large villages. None meets the U. S. Census definition of "urban."

Inertia, the factor inhibiting change of place for people in many areas, is not as important for the Alaska Native whose way of life is oriented to frequent change of village site. In addition to the attractions of large villages and cities is the fact that physical factors of the environment, often culturally altered, frequently cause the village site to be moved.

Village sites are moved in response to patterns of subsistence gathering, hunting, fishing, or trapping opportunities. These become exhausted from place to place, in time, along with the fuel supply, usually willow bushes. Villages are destroyed by forest/tundra/muskeg fires, storms and high tides, rising river levels, and an occasional earthquake.

The unique aspects of the Alaskan economy are of significance to this study because after more than two centuries of contact with whites and over 100 years since Alaska became part of the United States, many Natives remain outside the market economy and with little improvement in their way of life. The pattern of sequent occupance changed rapidly from a frontier to a sophisticated stage of settlement with specialization, without the usual agricultural settlement stage. Paradoxically, the largest state (of the U. S.) has the smallest agricultural acreage, excluding large areas suitable for grazing reindeer or sheep.

Most of Alaska's economic development is dependent upon its strategic situation. Virtually all job opportunities are directly or indirectly supported by governmental activities. Although the military aspect is most significant in the economy, location along the Great Circle Route between North America and Asia attracts civilian air traffic.

A very high proportion of the developmental activity, one hundred percent in some places, directly reflects the defense factor considered essential to the security of the North American Continent and perhaps, by extension, the entire "Free World." Alaska's strategic location has caused the investment of billions of dollars for defense, intelligence, and air-transportation-oriented sites. Such airfields, communications, and associated facilities profoundly affect the distribution of population.[5]

Alaska's location is favorable for a supplier of wood products for Pacific-Rim Asiatic nations and the demand is increasing rapidly. However, although fish and forest products are exported to Japan, lumber and canned salmon sold in Anchorage and Fairbanks, is imported from Seattle. Japanese capital is invested in a wide range of Alaskan enterprises, from salmon to minerals and liquified natural gas, and Japan receives most Alaskan exports.

Alaska's industries, with potential for growth, include those in the extractive sector, plus tourism. Only fishing, however, has a significant impact for Natives whose income from canneries is often as little as $500.00 annually. Most Natives live in isolated villages and do not benefit from tourism. Because of the absence of roads (Map Seven) most tourists do not visit the villages.

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[5]Ralph C. Brown, "Changing Rural Settlement Patterns in Arctic Alaska," The Professional Geographer, Vol, XXI, No. 5, September 1969, pp. 324-327.

Economic development is extremely unevenly distributed, and isolated villagers do not have an opportunity to participate. It is generally recognized that even the high rate of joblessness reported for villagers is underestimated by the Department of Labor and jobs that are available there are low paid and seasonal.

The Alaskan Frontier, in 1969-70, is an economic "boom" area but not for the Native. Alaska's extremely high cost of living increases the level of poverty in the villages and as the cost of living continues to increase the level of poverty in the villages is intensified. Programs designed to stimulate the economy are in operation but the Native wonders, "whose economy?" Such programs are not visibly reducing poverty levels in the villages and villagers cite examples not in their best interests.

Responding to the increased North slope traffic, the State, in 1968, lengthened the gravel runway at the Anaktuvuk Pass airstrip. To accomplish this the channel of a stream carrying meltwater from a nearby glacier, the village water supply, was relocated. A footbridge crossing the stream, constructed by the villagers in 1967, as a Vista Volunteer Project, was replaced by a temporary structure. In 1969, the relocated stream left the "new" channel, flooded the village, destroyed the temporary footbridge, and washed out the north end of the extended runway. The village then had lost its footbridge, was temporarily flooded, and the condition of its airstrip had declined.

Funds allocated for programs proposed to benefit Alaskan Natives should be expended to improve their educational preparation. Special attention should be directed to the quality of village schools and to the establishment of regional high schools.

The problem is no longer a simple matter of survival in the villages but the ability to make a living in a market economy. The problem is not unemployment but imbalance resulting from a surplus of unskilled workers while skilled and semi-skilled jobs cannot be filled. The Native, even with only the average (for the U. S.) education, has an advantage. He does not require additional incentives to reside in Alaska, relocation bonuses, or extremely expensive moving allowances.

Because of almost total dependence on federal-government and military-type activity, the primary sector of Alaska's economy has not developed. As a result of this unique aspect the economy will not be self-sustaining if military or political considerations, or technological change, constrict the narrow economic base.

Shifts in the precarious economy may cause massive dislocations which only those best educationally prepared will be able to survive. Extra effort is needed at places where the Native population is increasing at "explosive" rates, illiteracy is at a high rate, unemployment rates are high, and available jobs are only seasonal.

Changing locations of job opportunities, reinforced by improvements in transportation will accelerate population mobility. Village people will be increasingly attracted to larger villages and to urban places where they may expect a higher standard of living. Access to anticipated benefits derived from tourism might be greatest at such places.

With its vast area, resource potential, and strategic location, Alaska is vital to the economy of the United States and to the defense of the North American Continent. Therefore, federal funds at least of the magnitude being provided emerging countries on other continents, should be invested in Alaska. The most rudimentary activities essential to development, such as mapping and benchmark-type inventory of cultural and physical resources, have yet to be accomplished for Alaska.

ALASKA NATIVE POPULATION

Contact with another culture usually results in a population decline for one of the peoples involved. From an estimated population of 75 thousand, when originally contacted by non-natives, the Alaska Native population quickly declined to an estimated 20 thousand and remained at that level for approximately 200 years.

With births and deaths roughly in balance the Native population approximated 30,000 at the beginning of World War II. Improvements in sanitary and health conditions have increased the survival rate of a people whose crude birth rate is among the world's highest. The Native population is expected to regain the 75,000 level during the 1970's.

Prior to World War II, Natives constituted a majority of the resident population in Alaska. The flow of people from the "outside" which rapidly accelerated during the 1940's has continued. It is expected that 1970 census figures will indicate that Eskimos, Aleuts, and Indians are outnumbered four to one. Of the non-native population, however, few remain permanently in Alaska.

With a crude birth rate rivalling the highest rates observed in other emerging areas of the world, Alaska's Native population has the potential for very rapid growth. The Native population pyramid has a very wide base, that is, the population has a large percentage of children because of a short life span and recent developments in sanitation and health factors which significantly improved the infant mortality ratio. However, continued growth of the Native population is not assured as observers presently note a tendency for Planned Parenthood principles to be quite readily accepted in the villages.

ISOLATION OF VILLAGE ALASKA

Among the most serious problems are the poor communications and transportation services available to the village people who are not able to participate in the general economic activity of the nation as they are not connected to the continental land transportation network. Roads do not exist in most parts of Alaska and of the approximately 3,500 existing miles many are surfaced with gravel and/or not well maintained. (Map Seven) The Federal Field Committee for Developmental Planning in Alaska reported as follows:

> Alaska may well have more settlements not on any road system than the rest of the states combined, for fewer than a dozen Native villages are on the state's limited road network. Two are on the route of the 540 mile Alaska Railroad. Access to the other 170 or so is only by air, or seasonally, by boat or snowmobile or dog team.[6]

Except for the Winter Ice Highway to the North Slope and a few hundred isolated miles, there are no roads in Alaska beyond the Tree Line. (Map Seven) In most places the highway network ends hundreds of miles from the Tree Line. It is not uncommon to encounter village people who have become accustomed to flying in light aircraft but have never been a passenger in an automobile.

Most of Alaska is included in Professor Kirk Stone's "Outermost Fringe Zone" of settlement. Stone describes it as "the most isolated of the inhabited world with no inter-regional transport and little or none of the local kinds."[7] Light aircraft alleviates but does not entirely compensate for such conditions (Map Six).

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[6]Alaska Natives and the Land, Federal Field Committee for Developmental Planning in Alaska, Anchorage, October 1968, p. 42.

See also-Transportation and Economic Development in Alaska, Federal Field Committee for Developmental Planning in Alaska, Anchorage, 1968.

[7]Kirk H. Stone, "Geographical Characteristics of Alaskan Fringe of Settlement Zones," Proceedings, 16th Alaska Science Conference, AAAS, 1965, p. 259.

At first glance one may question the rationale of utilizing what appears as very costly air transport, even considering the fact that barge shipments may be received only once or twice per year. Closer examination, however, reveals that the cost of transporting an automobile, for instance, by air from Anchorage or Fairbanks to a village is approximately the same as the cost of barge transportation from Seattle because the charge to lighter the goods from ship to shore is as much as the cost of transportation from Seattle. Lack of port facilities doubles the cost for coastal villages and if additional river transport is required the cost is greater.

If perishable goods are to be available, they must be flown. An astonishing variety of articles, fluid milk, carbonated beverages, whiskey, sides of meat, cut flowers, snowmobile fuel, are observed as air cargo.

A detrimental effect of the petroleum development has been a serious disruption of scheduled air service to the villages even though schedules in Alaska generally are viewed by all concerned as no more than guidelines. It is not merely a matter of the aircraft perhaps not arriving at the scheduled time; it might not arrive until the following week. This fact is accepted with what the uninitiated would consider a remarkably fatalistic resignation, even though passengers and mail, as well as general cargo, frequently are delayed for days or weeks.

Places for which there is the greatest amount of traffic, especially passengers, or places which generate cargo other than mail, receive priority when aircraft operators schedule flights. Flights are postponed until traffic or cargo has accumulated for several places in the same vicinity. Passengers complicate the situation, however, they object to delay therefore because they generate more revenue than freight and mail, passengers are flown while lower priority cargo is delayed.

Passenger traffic was at an all-time peak and village leaders complained, in 1968 and 1969, about difficulties encountered in obtaining supplies. Village leaders occasionally resorted to the expensive expedient of flying to the place from which supplies were ordered, to personally shepherd the cargo. Such attempts did not guarantee success as the supplies, which they had observed being loaded into the aircraft, might be unloaded before departure to accomodate late-arriving passengers. Curiously, the "emergency" orders frequently consist of items such as candy bars, potato chips, and Coca Cola.

Transportation is the most important factor to be considered when restructuring of the type of land use or settlement pattern of an area is envisioned. This is not uniquely an Arctic problem but one common to undeveloped areas everywhere. Whether deserts or rainy tropics, there is a need for the establishment of the entire social overhead beginning with basic inventories and shelter, which must be transported at high cost to an area from which the cost of exporting material is correspondingly high.

Lack of an adequate transportation network is the reason for the failure of the Alaskan economy to develop a primary sector which is not military or government-related. High transportation costs inhibit the establishment of new businesses and industries.

The high cost of living in Alaska is a direct reflection of the cost of transportation. Prices in the villages are often double those in Alaska's large cities. Government employees (mostly non-native) receive their supplies at government expense as an inducement to work in Alaska. The supplies are purchased in Seattle, Anchorage, or Fairbanks, at discount store prices. Natives not eligible for such advantages pay the higher village prices plus the cost of transport, usually by air.

Subsidizing transportation in isolated areas such as village Alaska would be more effective than an income maintenance scheme. This is not a recommendation for a subsidy to public, bus or train, transportation to the Central Business District.

Public transportation subsidy programs receive government support because they are relatively simple to administer but they have not been successful because they lack the flexibility of the private automobile required by residents of the North American Continent.

Private automobiles as a form of transportation are more difficult to directly subsidize although taxation of private automobiles has been regarded by governments as the panacea for fiscal support. Sales taxes, excise taxes, state and municipal license fees, personal property taxes, taxes on fuel, tires, etc., are all used to generate revenue. Taxes and fees are higher on the newest, and therefore more reliable and less costly to operate vehicles. (Perhaps private automobiles should be placarded with the amount of fees paid annually to own and operate the vehicle, as are large over-the-road trucks.)

This is a most serious problem as fees and taxes levied on transportation are not expended solely for the improvement of transport but distributed as part of the general fund. Government policies of this type are inhibiting the occupance of isolated areas and are in opposition to programs for development of the same areas.

Second to transportation in the social overhead structure is communication and individuals accustomed to the routine overseas transmission, via satellite, of live pictures and sound are surprised to learn that many Alaskan villages have no telephone service. Where available, radio transmitters are invariably government operated and intended only for official business or emergency messages.

Visitors to the villages learn to carry Fairbanks, Anchorage, or Seattle newspapers. Village people consider newspapers, even those a week or more old, to be very desirable items.

Satellite broadcasting is the key to vastly improved communications everywhere but especially in places such as Alaska where large capital investments have not been committed to establish an extensive terrestrial network. Regrettably, the true Direct-Broadcasting-Satellite, transmitting with a signal strength capable of reception by the individual television set, is not yet economically feasible. A simple and small type antenna must also be developed but it is anticipated that the resolution of such problems will not be difficult.

Underdeveloped areas with constantly expanding student populations have more difficulty than developed areas in supplying best-qualified educational instruction and the level of quality of televised programming could not be duplicated in any other manner. Adult illiteracy, as well as the "second language" problem may also be best attacked via television programs, especially if received into the home.

As government now provides educational services to the villages in the form of schools and teachers, government should develop and provide inexpensive and reliable television facilities to the villages. Television receivers should be provided for each dwelling, certainly for those in which children reside. Village people could be trained to repair and maintain the television receivers and antennae. Development of suitable television programming for broadcast has already begun.

In August, 1967 President Lyndon B. Johnson informed Congress that the United States considered satellite communications essential to the developing nations and that United States assistance in such efforts would be appropriate. The National Aeronautics and Space Administration (NASA) is prepared, in 1970, to demonstrate such a program over India with an Experimental Satellite (ATS-F).[8] The United States government should provide a direct broadcast satellite network, with associated facilites, for its citizens in Alaska.

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[8]Paul Laskin, Communicating by Satellite, Twentieth Century Fund, New York, 1969, p. 75.

VILLAGE SCHOOLS

Most federal funds expended for Natives in Alaska are allotted for education and health services. The comparatively low educational levels, general poor health, and short lives of Natives indicate that the amount expended is inadequate. An important part of the total cash income of most villages is received as public assistance or welfare. However, monies from such sources are a surprisingly low percentage of the total, considering the poverty levels prevailing in the Villages.[9]

Schools are categorized according to the four types of operating organization; Bureau of Indian Affairs (BIA), State of Alaska, Individual Borough (Alaska has no counties), and Private (denominational).

Intended primarily for Natives, the first schools were operated by missionaries. The Territorial School System, established in 1915, was intended for non-natives although a few "civilized" Natives attended. Natives were expected to attend BIA schools and federal subsidies to denominational schools were withdrawn as the federal school system slowly developed.

An increasing, but still very small, number of Natives have graduated from high school (mostly at Mt. Edgecumbe) and the University of Alaska. However, there has been no attempt to determine how many Native graduates returned to their villages.

There is competition between the four school systems and a general belief among the village people that such competition has sharply improved the quality of education available in

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[9]Robert Arnold, Native Affairs Officer, Federal Field Committee for Development Planning in Alaska, Personal Interview, June 1969.

the villages. As this is a relatively recent development, there has not been time to raise the educational level to that of the rest of the nation or to bridge the great gap between that of the Native and the non-native. For example, by 1960 38.6 percent of the Natives had achieved less than five years of school compared to 1.2 percent of non-natives.[10]

The quality of the education available is also a factor and complaints are voiced concerning the quality of the education Natives, who are now adults, had received. The most frequent criticism is that the education formerly was not academically oriented. Students were taught to play games during the few hours they spent at school each day. Another complaint concerned the vocational orientation of the curriculum, that is, Native children were taught skills thought to be appropriate to their way of life.

Similar complaints have been made concerning rural school programs in other areas of the United States where students are trained for jobs that will never exist, as farmers for instance. The basic question is, of course, for what way of life are the Natives to be educationally prepared?

Although teachers in Alaska presently have a level of preparation that is higher than the national average their mobility is greater than that of teachers in other states. Teachers routinely are moved from village to village every few years. Involvement in village feuds or village politics after a few years in one village is almost inevitable for an individual with the prestige and influence of a teacher. Village leaders prefer to have teachers rotated to prevent the possibility they may become too influential.

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[10]M. Lantis, "The Administration of Northern Peoples: Canada and Alaska," The Arctic Frontier, R. St. J. Macdonald, ed., Canadian Institute of International Affairs and the Arctic Institute of North America, University of Toronto Press, 1966, p. 99.

Teachers also tend to remain in the state for only a few years. As do other non-natives, teachers often go to Alaska to improve their finances. One standard rule-of-thumb is to the effect that a husband-wife teacher combination expects to be able, after five years, to leave with $50,000.00 in savings from their salaries. Queries about this often-quoted statement evoked no surprise in the villages nor from educational administrators.

Diamond Jenness, formerly Chief of the Division of Anthropology, National Museum of Canada, citing problems involved in retaining well qualified teachers in the Canadian Arctic writes:

> More than a third of the teachers in Northwest Territories schools resign at the end of their first year and another third at the end of their second year.[11]

To be effective, teachers must develop a special relationship with students and, in a village environment, with parents. Such relationships involving mutual trust and respect are established only through time. When it is mutually understood that the teacher's presence is only temporary, attempts to generate those special relationships may not occur. Attitudinal differences of a temporary, in contrast to a permanent, teachers corps (perhaps unconsciously) will affect the quality of education in the villages. Dr. Charles K. Ray, Professor of Education, University of Alaska, believes the quality of the education is more important to Native than to non-native children.[12]

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[11]Diamond Jenness, "Eskimo Administration: II. Canada," AINA Technical Paper, No. 14, p. 129.

[12]Charles K. Ray, "Promising Practices and Programs for the Culturally Disadvantaged and Their Relevance for Northern Native People," Science in Alaska, Proceedings of the Alaskan Science Conferences, 20th Conference, College, August 24-27, 1969 (Pub. 1970), pp. 194-205.

Village school libraries often are grossly inadequate. A series of "readers" has been produced in response to criticism concerning the "relevance" of available books. However, this might also be a questionable approach since books designed especially for the Native's way of life may retard progress in terms of acquiring knowledge about the non-native culture. Again, the basic question--for what way of life are the Natives to be educated?

Jenness reported use by the Canadian Department of Northern Affairs of a syllabic writing in its publications for Natives reinforced differences, even between groups of Eskimos.[13] Although the Danes attempted to use the Eskimo language in school as a means of maintaining and reinforcing Native culture in Greenland, they were criticized by the Greenlanders who concluded their education would be inferior if the preparation was not to be in one of the major languages.

Eskimos are usually confined to the use of one of the several types of written Eskimo in existence around the Arctic. They cannot read or write each others material although they are able to communicate orally. Transistorized, battery-pwered tape recorders are observed in Eskimo villages with no community electric service and tapes are regularly exchanged between Eskimo groups.

Improvement in the level of educational achievement of the Alaska Native will not easily be accomplished but after 100 years of virtually no progress it is possible now, in a generation, to accomplish much. Expenditures for this purpose should be considered as investment, not cost. In the long run, and perhaps in the immediate future, such programs would be less expensive than the present system.

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[13]Diamond Jenness, op cit, p. 137.

NATIVE LAND CLAIMS

An Alaska Native is defined as one who is regarded as such. The definition leaves much to be desired but no alternative has been generally acceptable. Census reports must be used with realization that the determination of status as Native may have been made by the enumerator or by the individual being enumerated.

Estimates of the future Native population of Alaska range from 60,900 to 83,000 in 1980; and from 77,000 to 141,000 by 2000.[14] Although predictions at the extreme ends of the ranges tend to be discounted it must be noted that by 1970 the highest figures were attained earlier than anticipated even by those whose estimates were considered to be most extreme. As the number of Alaskan Villages continues to decline the population growth and associated problems of the remaing villages must rapidly accelerate (Map Two).

Census definition of the terms rural, and urban, are regularly revised, and in 1970 virtually no self-sufficient rural communities exist in the United States. The exception is village Alaska where most of the population exists largely on the return from subsistence type activities.

No Native village in Alaska meets the census definition of urban or exhibits the agricultural function of other rural places in the United States. Alaska Natives in the villages however are much more homogenous than the rural population elsewhere in the United States where rural non-farmers outnumber farmers and the dormitory function establishes the pattern of settlement.

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[14]George W. Rogers, Alaska's Native Population and Poverty, University of Alaska, College, 1965, p. 100.

In a subsistence type way of life the isolated family was recognized by Natives as more likely to be successful in extreme conditions of the physical environment. A consequence of increased community population was increased mobility. Game and fuel in the immediate vicinity would be more quickly exhausted.

Although the villages are distributed widely over the state and occupy sites with a variety of physical environmental conditions, their occupants have much in common. They occupy crowded dilapidated substandard dwellings with primitive unhealthy conditions and rarely have access to community sewer, water, or electric facilities. Village sites are usually isolated, not on a road network, and with poor communications.

They have higher levels of unemployment, only seasonal jobs, lower incomes, less educational achievement, and much less opportunity for progress than other Americans. A substantial part of their activity involves hunting and gathering. Curiously, the Federal Field Committee reports the probability that in 1968 more Alaska Natives were involved in subsistence type activities than over 100 years earlier when Alaska was Russian.[15]

Federal Government programs for Natives benefit Natives living in the villages to a greater extent than those living in cities. Elegibility for such programs however, does not guarantee that assistance in the form of education, health, or even welfare, will be available. It is difficult to reconcile the paradox of Natives supposedly receiving free medical and dental aid but exhibiting health problems involving a very wide range from almost universal hearing loss to mental problems related to the conflict of cultures.

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[15]Alaska Natives and the Land, op cit, p. 50.

Village health problems include the dumping of raw sewage into the source from which the water supply is obtained. Permafrost conditions inhibit, or prohibit, the use of wells and latrines in many areas. Where wells and latrines are used, flooding contaminates the general area including the wells.

Educational achievement and skill levels are high for non-native Alaskans as compared to the United States average. To be competitive in Alaska then, the Native must achieve educational levels and skills that are exceptionally high. It is difficult to determine the percentage of federal government jobs in Alaska held by Natives as jobs obtained by Natives tend to be of a low skill level and intermittent type. However, an estimate of 10% is often quoted with no attempt to justify the figure.

Attempts to assist individuals with low levels of education by preparing them for low-skill requirement jobs have been unsuccessful elsewhere in the United States and are not likely to be more successful in Alaska. The equivalent of a high school education will continue to be a minimum entry requirement for most jobs, certainly the better opportunities. Further, additional lower-level jobs have not been created anywhere in the nation for more than two decades. Achievement of a high school level of education presently represents the opportunity for Alaska Natives to leave their village for urban Alaska, or to leave the state to obtain good jobs.

Increased local control of village affairs, especially educational policy, is a basic requirement for improvement. Obviously, the benevolent paternalism of government is not satisfactory. Certain Alaska Native tribes have achieved substantial local control and are providing an enviable example for all Alaska Natives.

The Tyonek Indians, on the west side of Cook Inlet, for example, have constructed a model village and invested monies derived from subsurface resources. However, they have not

solved the problem of attracting to the village, job opportunities in the form of industry. And, although the Tyoneks are making a valiant effort to improve the quality of education their children receive, greater effort is needed. Establishing an exceptional collection of books for the presently inadequate school library would be a wise investment.

Alaska Natives should, of course, have fee simple title to lands they occupy and need to maintain their traditional activities. Merely restoring hunting, trapping, and fishing rights to land and water areas will be meaningless if activities by non-natives destroy or remove their subsistence base. For instance, siltation of salmon spawning streams because of erosion, or diversion of the natural route of migrating Caribou, have occurred.

Disregard of Alaska Native's Land Claims has been as disgraceful as the treatment accorded aboriginal people in other areas of the United States. Upon achieving statehood, in 1958, the process of resolving the status of Alaska Natives, who claim most of the state but have title to only a few hundred acres, was only slightly accelerated. A few Native organizations undertook legal action and applied political pressure. Previous attempts, for over 100 years, were ineffective because the Native realized they were actually intended for the benefit of non-natives.

The basis of the problem is land ownership, as it has been for aboriginal Natives since Europeans arrived on the North American Continent. Congressional action is generally accepted to be the only reasonable resolution. In 1967 the University of Wisconsin received a United States Public Land Law Review Commission Contract to consider, among other items, the unique fact that 95% of Alaska's land area is composed of Federal Public Lands. With statehood, Alaska acquired jurisdiction over natural resources including wildlife and fisheries and Natives believe the state will favor commercial interests and disregard Native subsistence requirements. The State of Alaska immediately selected almost all the available cropland with the remainder acquired by non-natives.

Village Natives often reside at subsistence sites for the greater part of the year. Their claims include lands from which a large proportion of minerals recovered in Alaska were removed and probably still contain more than has been recovered. Lands claimed by Natives might not be managed in the national interest by Natives, or Native organizations, at their present level of acculturation. However, the revenues from such lands should be used to improve conditions of life for Village Natives even though much controversy is generated by that concept. Certainly such monies should be distributed or administered by Natives, or Native organizations, and not be considered as a form of Public Assistance. Intelligently administered, such funds could eliminate the traditional problems of Alaska Natives.

It is difficult to over-emphasize the importance of the Native Land Claims issue. This study was initiated because of recognition of the rapid change occurring in the pattern of settlement; a transition to a new stage in the sequent occupance of Alaska. Congressional action at this decisive time could provide the funds for planned and zoned villages. The general cultural improvement could include flood-plain zoning and water-shed protection as well as vastly improved educational opportunity such as regional high schools.

Most Alaskan villages are sited on the banks of large rivers or on their tributaries not far from the master stream. Floods are a regular occurrence and occasionally destroy the dwellings. It is most desirable that the village be re-built at a new site as flooding allows sewage from latrines to contaminate the water supply as well as the ground surface. With few exceptions, the larger Alaskan rivers have low gradients and meander across their floodplains destroying the sites of former villages by erosion and deposition. Locating the sites of abandoned villages is therefore often impossible.

Small business ventures and new housing may be financed through low-interest mortgages. Education to as high a level possible for the individual, or to attain the professional degree or technical skill required, including family allowances, should be completely government subsidized in addition to any Land Claims Settlement.

Such programs could be administered in a manner similar to that of the "GI Bill" and for as long as the individual maintains satisfactory progress.

Justification for an educational opportunity program is related to the fact that the Native has been denied the education he deserved, as well as many other rights including that of land ownership. The Federal Field Committee report included the following:

> . . . since present funds made available from the Congress for post-high school education always fall short of meeting the increasing needs of Alaska Natives, an educational scholarship fund might be established. Such a fund might be used, not only for college students, but for high schoolers who are unable to attend secondary schools appropriate to their needs and wants and for high school graduates who wish to attend trade schools or college preparatory schools. In none of these areas is government now providing adequate opportunity for Alaska Natives.[16]

It would be desirable to have some local control of educational policy in an effort to achieve educational equality.

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[16] Alaska Natives and the Land, op cit, p. 544.

Attempts to approach the problems of Alaska Natives, particularly those residing in the villages, have been difficult because of the lack of available data. The very comprehensive Alaska Natives and the Land, by the Federal Field Committee for Development Planning in Alaska, was prepared to provide information and assist the Congress in settlement of the Native Land Claims issue.

ECONOMIC DEVELOPMENT

The general atmosphere of rapid economic development stimulated by the North Slope petroleum discovery indirectly provided a modest income to the Natives. For years, many forest/tundra/muskeg fires had been allowed to burn until extinguished by winter snow. In 1968-69 an unparalleled amount of money was spent by government agencies for fire fighting activities which afforded Natives the opportunity to augment their income.

The usual employment restrictions concerning age and physical fitness were relaxed and the increased Native employment had a noticeable pump-priming effect in the villages. However, analysis of the cost-benefit ratio would reveal the wages were soon spent and neglect of usual summer subsistence activities caused village leaders to express concern for next winter's food and fuel supply.

Alaska Natives in the villages do not have the requirements in terms of education or skills to obtain jobs generated by the petroleum discovery.[17] Their cultural organization is not oriented to an economic development that challenges the imagination and ability of the most sophisticated Alaskan. Combined with a fatalistic philosophy the Native has a "right now" mental attitude

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[17]For a presentation oriented to the concept that Alaska Natives are not likely to share in the benefits of petroleum discoveries see William H. Jacobs, "Imperatives for Structural Change in Alaska," Science in Alaska, Proceedings of the Alaskan Science Conferences, 20th Conference, College, August 24-27, 1969 (Pub. 1970), pp. 89-98. Mr. Jacobs is Executive Director, Alaska Legal Services Corporation, Anchorage.

in which the concept of relative time is not highly developed. Unscheduled activities include eating and sleeping; working regularly-scheduled hours is an unfamiliar pattern.

ACCULTURATION

Inevitably one is confronted with the serious question of the attitude of the Alaska Native regarding acculturation. Do Natives prefer to leave their villages to routinely perform possibly unpopular types of work during regular hours? Do they wish to leave their distinctive way of life to enter a capitalistic, money economy? These questions have repeatedly been answered, and they continue to be answered, in the affirmative.

Alaska Natives will, and do, leave their village homes for education and training when they believe the amount and type of acculturation will be productive (for themselves) and not primarily to benefit non-natives. When the quality of the education and training obtained has been adequate Natives have remained away from the villages.

Basic functional literacy in English is a minimum requirement for entry into the lowest levels of the market economy. Natives who experience the most difficulty in transition are those whose knowledge of the English language is inadequate and adult Natives who have not achieved this level must remain in the village.

Village children must achieve functional literacy in English in the primary grades if they are to expect genuine improvement in their opportunities. Children in school often return to homes where no English is spoken or read, and pre-school children may hear no English at home. Schemes for teaching school children in Native dialects or languages, with English as a second language, are not the answer. Qualified teachers with command of the local language and dialect are seldom available and the use of local "teacher's helpers" is a cumbersome and unwieldy procedure.

Again, the way of life for which the Alaska Native is to be educated is the determining factor. Should the preparation be oriented to a cultural environment in which English is a second language?

To obtain an answer to the question of whether or not the Alaska Native wishes to participate in a market economy one needs only to visit even the most remote villages and observe there the mail-order catalogs, transistor radios and tape recorders, Hondas and snowmobiles. The list is endless.

Alaska Natives participate in the market economy to the fullest extent of their ability. They work to earn money with which to obtain desirable items and they move to locations with job opportunities. Without adequate preparation however they often become problems merely shifted from small to large village or city where some frequent taverns and neglect their children.

Ideally, the Alaska Native is to be prepared to compete successfully for jobs and this can be accomplished only through an improved system of education. Emphasis should be shifted to education and from programs designed to generate job opportunities in the villages. Attempts to attract jobs to rural areas will be no more successful in Alaska than in other economically depressed areas.

The acculturation process too has its hazards. Extension of highways to villages is recognized by Native leaders as increased exposure to undesirable influences such as alcohol, sex, etc., and their consequences. The younger element is, of course, generally eager for increased contact with the "outside."

The occupants of one village of 120 Eskimos, in 1969, possessed 22 snowmobiles and one Honda. The owner of the Honda broke a leg attempting to drive the machine. At this village, the annual fuel supply is inadequate and each spring emergency supplies of fuel oil must be flown in by B.I.A. Although the dogs are less efficient the Native could feed them by hunting and fishing. Cash is required for snowmobile fuel, repairs, and parts.

Karl Francis has identified as a further effect of acculturation an increase in the gap between the "have" and "have-not" Natives in the villages.

> Natives adapt readily to new techniques and equipment and become potentially more successful as family providers. Their ability to acquire expensive equipment, snowmobile fuel, etc., is determined by the amount of cash income already produced. The result is an even greater diversity between the two groups of village Natives--the successful and the unsuccessful.[18]

Professor Francis also noted the danger to people in villages, especially young children, from summer-starved dogs. Even prior to being displaced by snowmobiles dogs traditionally were fed only while working and at other times left to fend for themselves.

SETTLEMENT PATTERN FACTORS

Prior to World War II Native villages in Alaska were sited in response to physical conditions of the environment. Most villages were located along the coastline or major rivers and were relatively permanently occupied until the nearby resource base was exhausted. Natives also spent a considerable amount of time at seasonal camps.

Village sites in Southeastern Alaska tend to be permanent however, another factor distinguishing southeastern Natives with higher rates of educational achievement, literacy in English, and job opportunities.

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[18]Karl E. Francis, "Decline of the Dogsled in Villages of Arctic Alaska: A Preliminary Discussion," Association of Pacific Coast Geographers Yearbook, Vol. 31, 1969, pp. 69-78. Professor Francis is on the staff of the Department of Geography, University of Toronto.

Rivers have been used by Natives as transportation routes since time immemorial, by water in summer and utilizing the frozen surfaces in winter. There has been a tendency to site the larger villages at the head, or foot, of navigation, i.e., for ocean going vessels, and for large or small river craft.

Indian villages in Alaska extend along the rivers as far downstream as the Tree Line (Map One). Again, the exception is Southeastern Alaska where the Tree Line extends to the coast. Sites of Eskimo villages are usually coastal, extending up the rivers only as far as the Tree Line. Oswalt notes "Alaskan Eskimos did not permanently inhabit the inland side of any mountain range." He also stresses the fact that variations in population density cannot be related to location farther north or south, merely "scattered pockets with high densities."[19]

Settlement patterns since World War II, especially during the decade of the 1960's, have been oriented more to situation, or cultural, than physical conditions at a particular site. Rivers, of course, continue to be attractive locational factors. Their transportation utility is important and they are a source of food (Map One). Further, commercial fisheries are likely to be concentrated near river mouths. Financial arrangements between canneries and fishermen are on an annual basis and resulting debts to a particular cannery inhibit the mobility of individual fishermen.

Although predictions of a significant increase in tourism in Alaska are generally considered valid there is no evidence that Natives as a group will raise their standard of living as a result. Mass produced carvings and other items of Native crafts are imported, restricting the earnings of Alaskan craftsmen whose single, or greatest, opportunity for cash income is the sale of Native-made objects to tourists.

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[19]Wendell H. Oswalt, Alaskan Eskimos, Chandler Publishing Company, San Francisco, 1967, p. 115. Professor Oswalt is an anthropologist at the University of California, Los Angeles.

Opportunity to benefit from tourism is limited by the fact that tourist access to most villages is limited to small boats or light aircraft, often a combination of the two. Exceptions are large Native villages, such as Nome, Kotzebue, Barrow, and Fort Yukon, which have regularly scheduled passenger service via large aircraft and are on the "tourist shuttle."

Even at places like these tourism may not be entirely beneficial. Natives from Diomede and King Island seasonally moved to Nome for several years and finally moved permanently. The attraction was the opportunity to sell their ivory carvings to tourists. The permanent move was not to the city of Nome however. The Natives constructed on the outskirts of Nome a village of tar paper and flattened-oil-drum shacks.

Enterprising tourists who trek from the airport to the Native village are appalled at the dilapidated dwellings and primitive living conditions. A few of the Natives have decided the move was a mistake and left, not for their former homes but north to Teller, linked to Nome by road.

The location of schools has become the primary locational factor since most school-age children now regularly attend school. Secondary but important attractions as locational factors are hospitals and retail stores. Alaska Natives are dependent upon retail stores usually owned and operated by non-natives. ANIAC, a Native cooperative, exists but has difficulty becoming competitive in villages with, for instance, a Northern Commercial store.

It is evident then that differential locational factors have changed the attractions of various sites and this process is expected to continue (See Maps). The Federal Field Committee reported:

> 37 Native places existing in 1950 had declined to one or two families or had been abandoned by 1967 but 21 additional places had become established as villages by 1967. 80% of the 178 villages are larger than they were in 1950.[20]

Therefore there presently exists the opportunity, and demand, not only for controls such as flood-plain zoning but village planning. For instance, the high cost of fuel oil or coal and the extremely low cash income of the Native means village areas beyond the Tree Line are virtually denuded of the attractive appearing, but slow growing bush, which is burned for fuel. Certainly the basic utilities, water and sewage, electricity and communications, have higher priorities but the amenities of life should also be considered.

The Native population is well-committed to the process of exchanging a nomadic for a sedentary way of life. Sites of Native villages in the increased-size category (Map Four) will be occupied for a very long period of time. The existing opportunity to establish well-planned village development should not be lost.

CONCLUSION

Although relatively few non-native residents have remained permanently in Alaska the Natives resist leaving the state. The Native population is increasing very rapidly and 1970 census results may reveal it has approximately doubled in size during the previous twenty years.

Coinciding with the explosive population increase is a change from a nomadic to a sedentary pattern of living and a change from survival in a subsistence way of life to participation in a market economy. This is reflected in a change of stage in the sequent occupance of Alaska and a very rapid change in the pattern of settlement.

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[20] Alaska Natives and the Land, op cit, p. 537.

Where the physical conditions of the environment are most extreme the isolated family was most likely to succeed in a subsistence type endeavor. Fluctuations in population density from place to place were common and the cultural response to higher community population at a place was increased mobility.

Adaptation to a market economy however and acculturations in terms of further dependence upon schools, medical services including hospitals, etc., as well as jobs, restricted mobility. The trend toward abandonment of isolated family sites and smaller villages began during the 1940's and has constantly accelerated. (Map Two) Within the space of a generation the vast majority of Natives have attempted to change completely their way of life.

The transition has not been completed and the Native has not achieved success in the attempt. At this stage most Natives reside in relatively large villages. It is a rapid and unplanned transition, the consequences of which have not been adequately examined or evaluated and presents the opportunity for a benchmark type study. Basic to the study were the visits to village Alaska and the informal interviews with Natives on their own ground.

Villages in Alaska are dispersed and generally isolated yet their Native inhabitants have much in common. There has been little improvement in their way of life or their standard of living when compared to that of other Americans whose benefits they do not share.

The amount of public assistance received by villagers is low relative to their low standard of living. They share similarly unique social and productivity problems complicated by low levels of educational achievement and high rates of illiteracy.

It must be emphasized that poverty is the result of cultural factors. The circumstances of the Alaska Native have not been determined by physical conditions of the environment. Improved education and transportation are basic requirements for changing the status and reinforcing, for the Native, the advantage of living and working in Alaska.

The changing locations of job opportunities in Alaska cause the distribution of economic activity to become more uneven. From the spatial aspect it is not difficult to identify potential sites for increased concentrations of poverty because the jobs are not generated in the villages. Rapid change in the pattern of settlement then results in rapid acceleration of the problems of those villages which remain in existence and particularly those expanding at a rate faster than the average. (Map Four)

Equality of social and economic opportunity is presumed to be higher in the United States than elsewhere in the world. Although social and economic status is everywhere complicated by a myriad of cultural factors education is most important if the individual is to obtain higher occupational status. Family advantage may be transmitted to the next generation through improved access to education and disadvantaged groups perpetuate that condition for their children as a result of less educational opportunity.

Alaska Natives formerly tended to assign to education a low priority. Rural people in other states have had similar attitudes often preferring vocationally oriented programs designed to keep their offspring at home or on the farm.

Additionally, the fatalistic philosophy of Alaska Natives, especially Eskimos, helped in their former struggle to survive but inhibits success in the non-native culture. Another Native trait, egalitarianism, the concept that one should not strive to be better than his fellows, has an undesirable influence upon attitudes relating to educational achievement.

Alaska Natives will be able to participate in the development of the state only if the full range of available educational and acculturation resources are concentrated for their benefit. The educational aspect should involve the total range from pre-school activities to graduate and professional schools, plus family allowances. Vocational education is not excluded but training for non-existing jobs must be avoided if at all possible.

The Native must be educated for competition in a changing world, for change will continue. Education should improve the mobility of the individual as locations of places with job opportunities will change. The educational effort should be oriented to the concept that the Native must be well-prepared to communicate in the English language if he is to be competitive.

Jobs in isolated areas such as Alaska tend to be specialized, and the pay is high, for the specialty and to compensate for the higher cost of living. To be competitive in isolated areas the Native must achieve exceptionally high educational and skill levels. Improving crafts and skills to enable the Native to sell ivory carvings to tourists is not a satisfactory approach.

Development of a Direct-Broadcast-Satellite Television system is a requirement for improved education at all levels. By 1971 Canada expects to be providing television (not Direct Broadcast) via the satellite Telesat for its northern frontier population.[21] The Alaska Native, at all ages, will benefit from programs depicting various types of life "outside" to stimulate interest, awareness, and incentive for a better life. The system should not be confined to "educational TV" programs.

Pre-schoolers, parents, and the elderly, would all have the opportunity to improve their language competence. Concepts of cleanliness, health, and privacy, might become more familiar and desirable. Community television receivers, installed in a meeting hall, are not satisfactory. Television receivers should be in the individual dwelling for maximum benefit.

In villages where the per-capita annual income may be only a few hundred dollars the financing of television receivers would be difficult and repairs must be anticipated. As part of its educational

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[21]Edward Cowan, "Canada to Widen TV for the North," The New York Times, May 4, 1969, p. 31.

effort government might supply television receivers, at least to dwellings where children reside. A black and white television receiver would cost less than one hundred dollars, a small investment considering the amount formerly, and presently, expended for education compared to the results (one might wish it could be color TV). Although in 1970 many villages do not have community electrical service, by 1980 few Alaska Natives will reside at places without electricity.

There is no doubt concerning the attitude of the Native toward acculturation. Acculturation is considered acceptable and desirable if accompanied by a determined and effective effort to avoid any undesirable aspects. Varying rates of acculturation by individuals or families increases the distinction between occupationally successful, and unsuccessful, Natives.

On a per-capita-per area basis the population of Alaska will not in the forseeable future equal that of the remainder of the United States. Therefore it is more expensive to provide Alaskans with the same level of reasonable government services provided for the entire country.[22] Federal funds for special programs must be allocated for the problems of cultural transition as the sequent occupance pattern of Alaska rapidly changes.

Fee simple titles to land and revenue from the Native Land Claims Settlement and the petroleum development would provide funds for planned and zoned village sites at the time when such activity is urgently needed.

Finally, it is anticipated that this study will provide a basis for further work and the maps will be available for comparison with those to be prepared from 1970 census material.

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[22]Dwight A. Nesmith, "The Small Rural Town", A Place To Live, U. S. Department of Agriculture Yearbook, U. S. Government Printing Office, Washington, D. C., 1963, pp. 177-184. For a discussion of the population required to support reasonable services, i.e., schools, etc.

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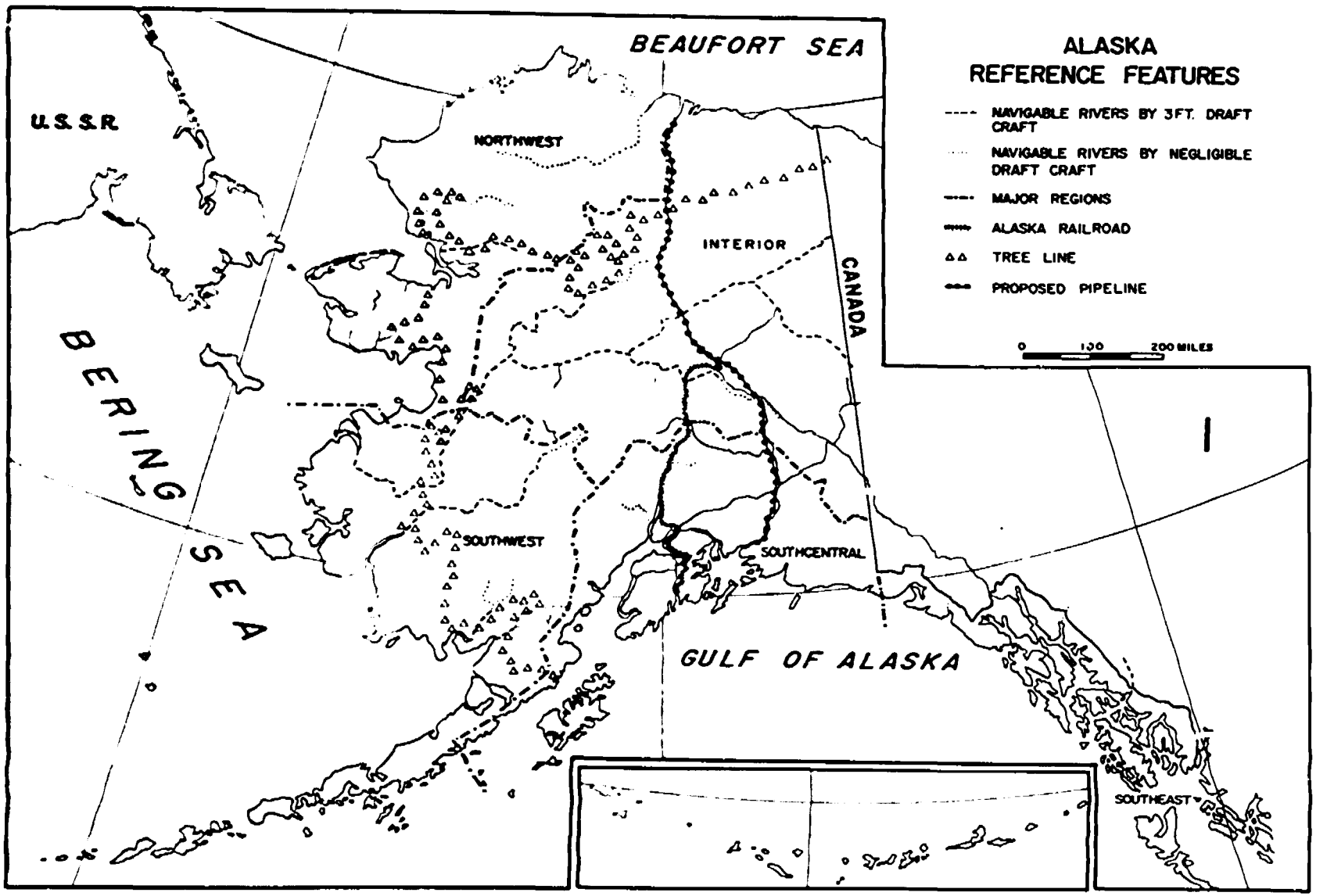
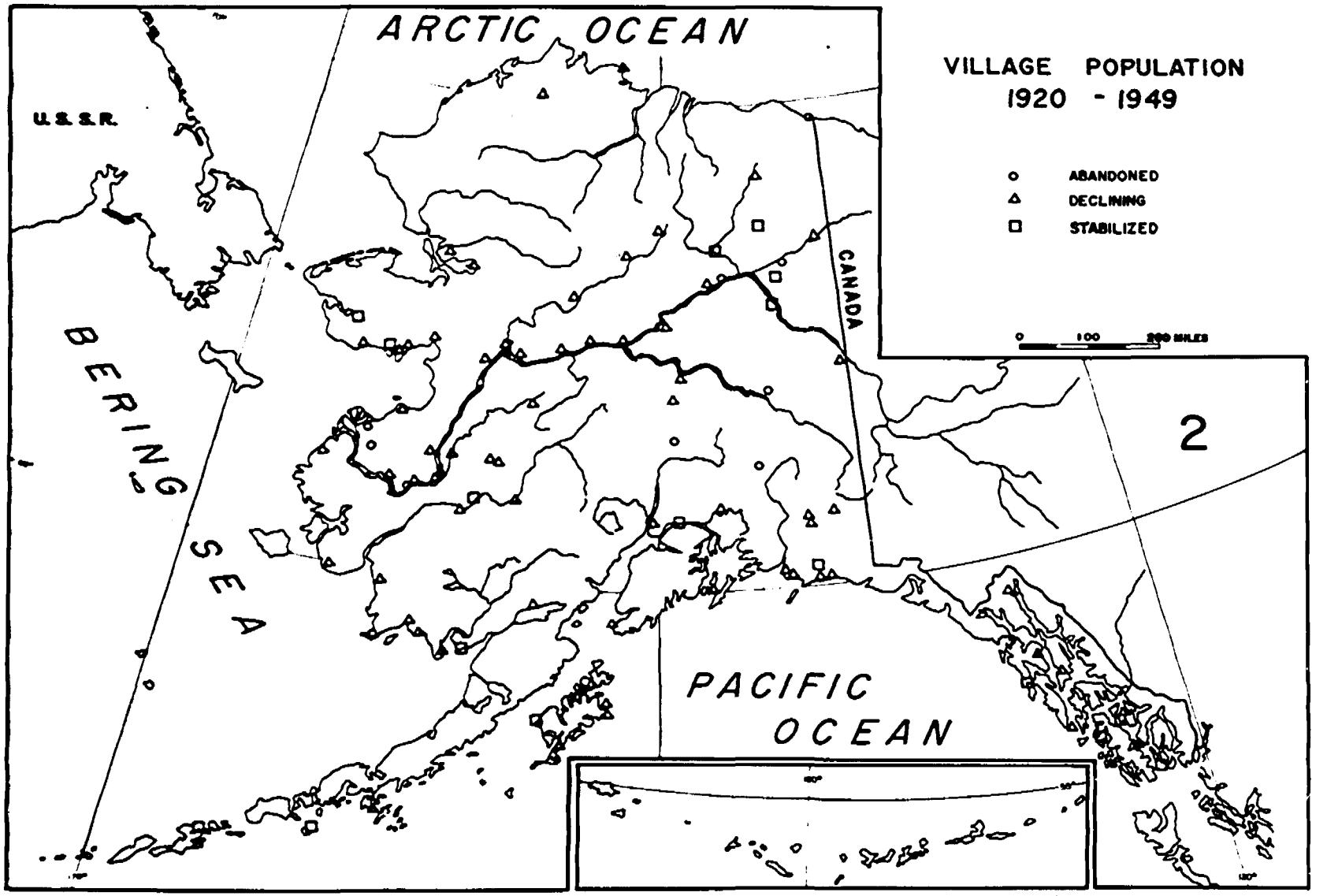
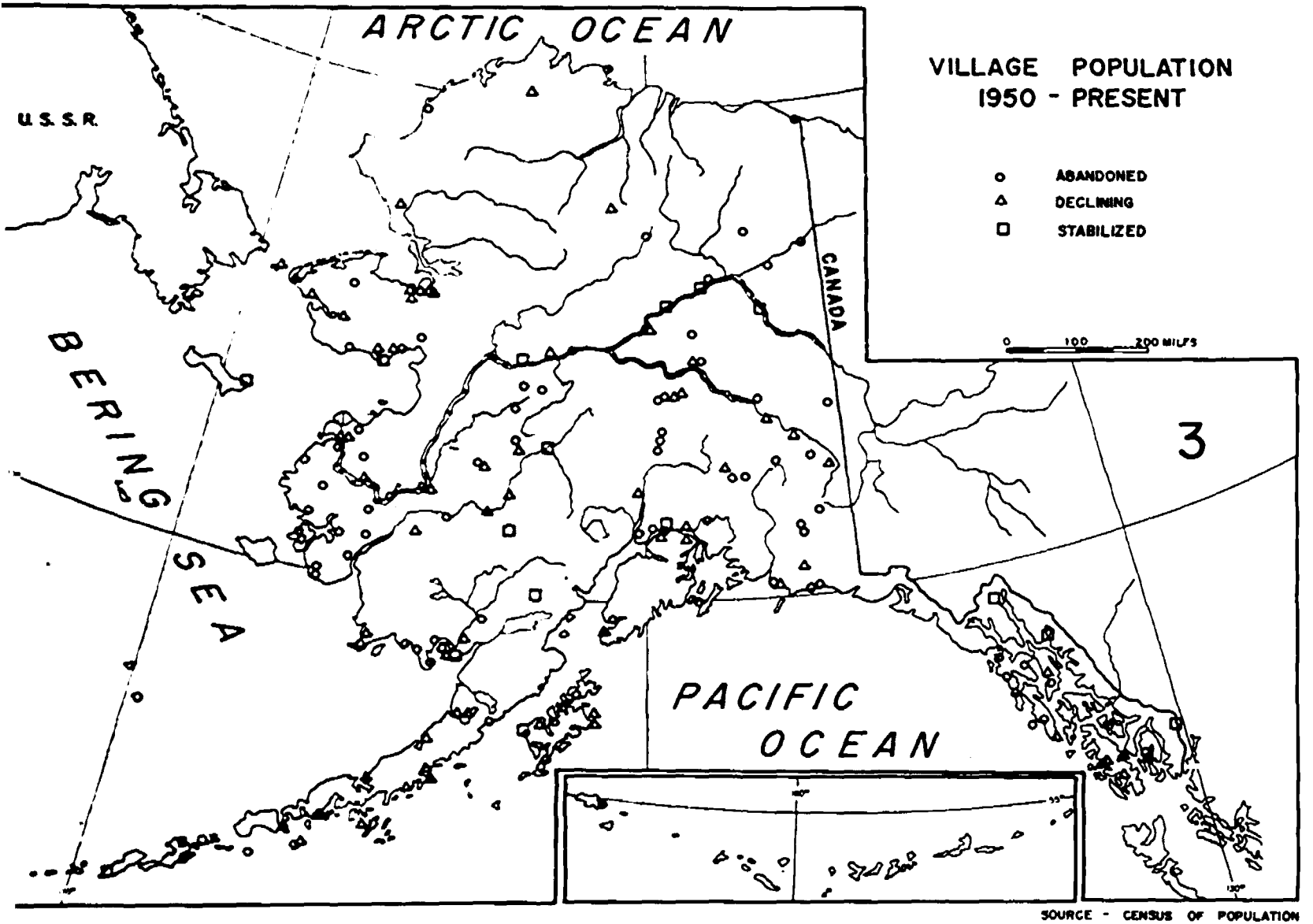
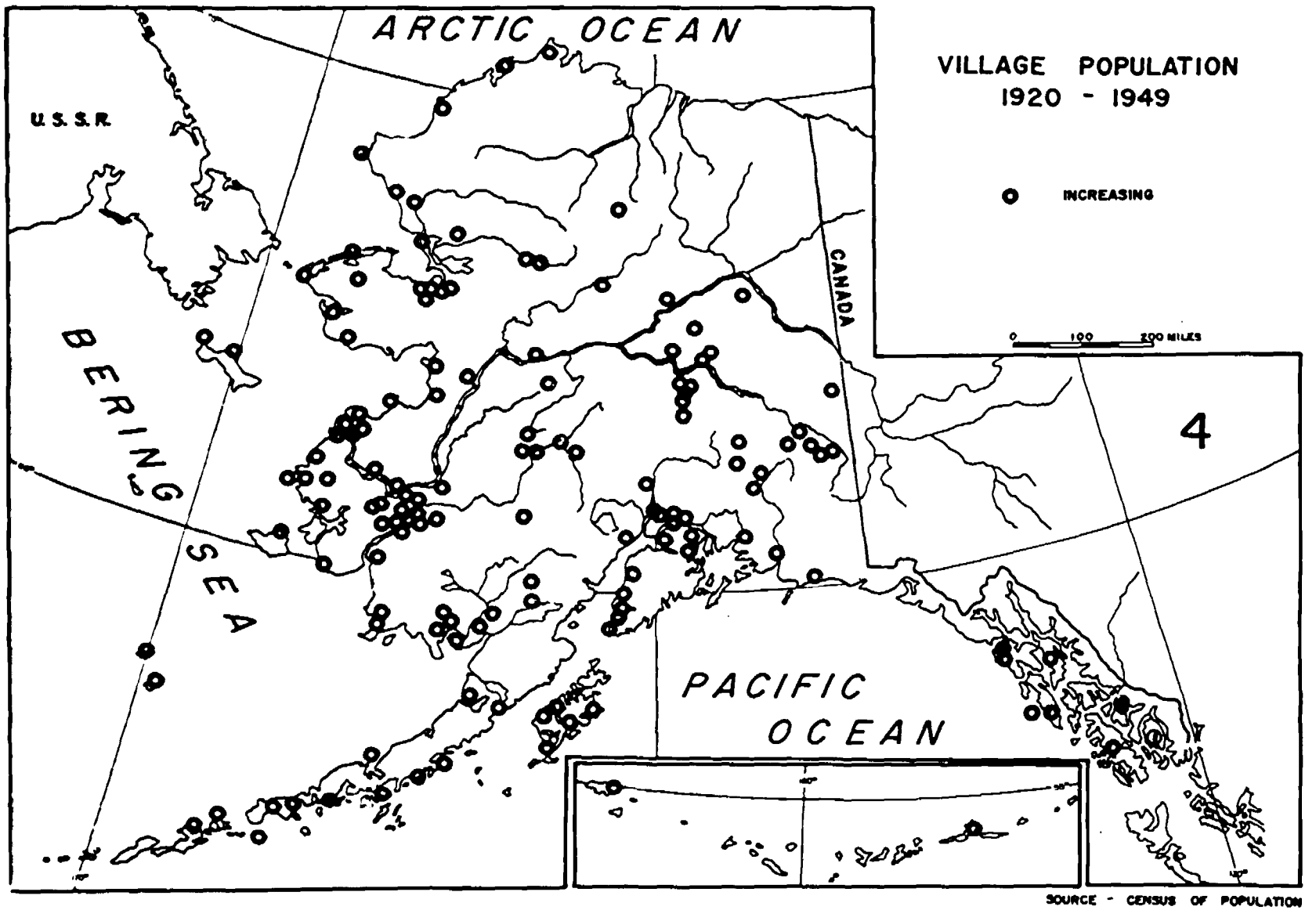
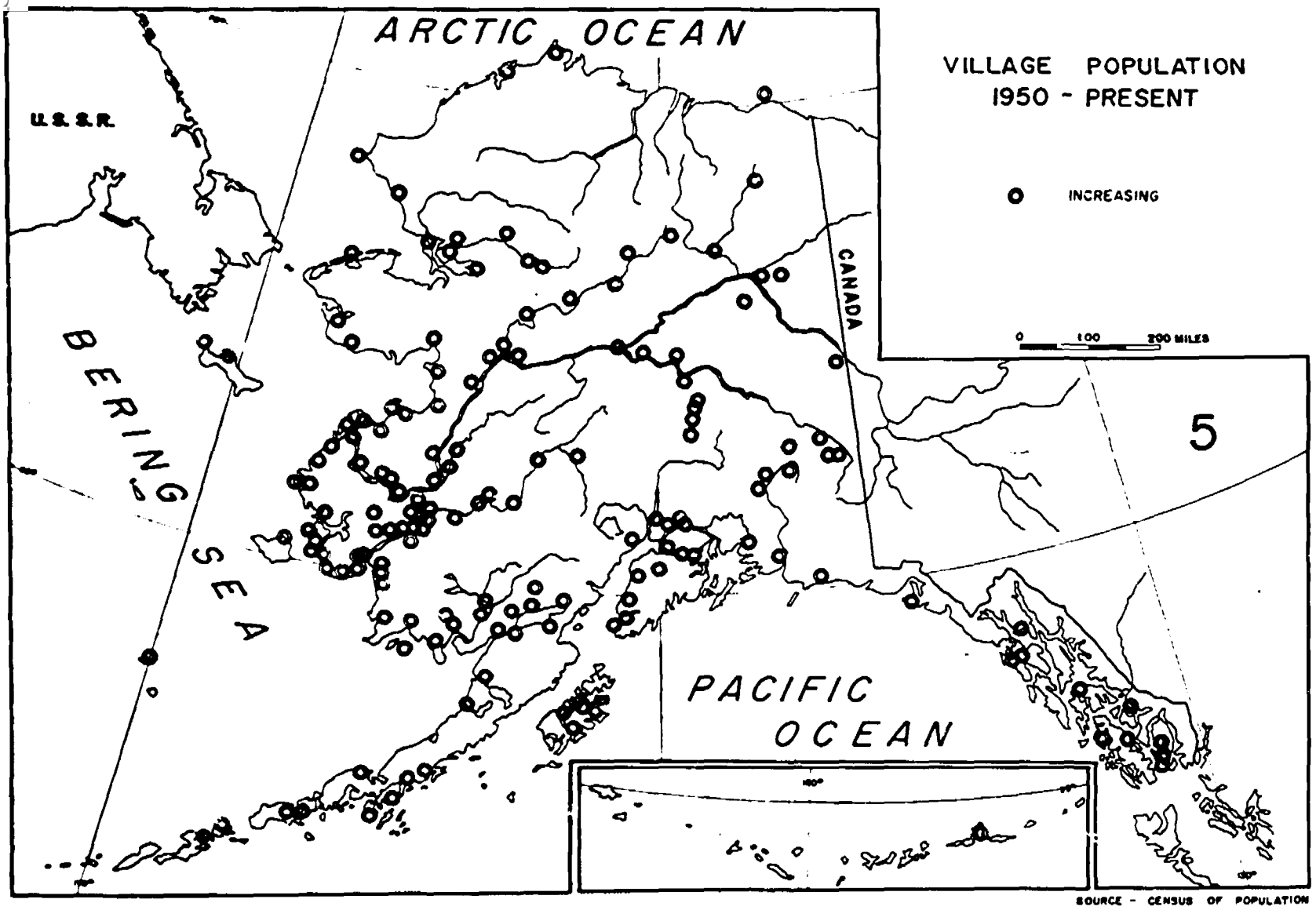
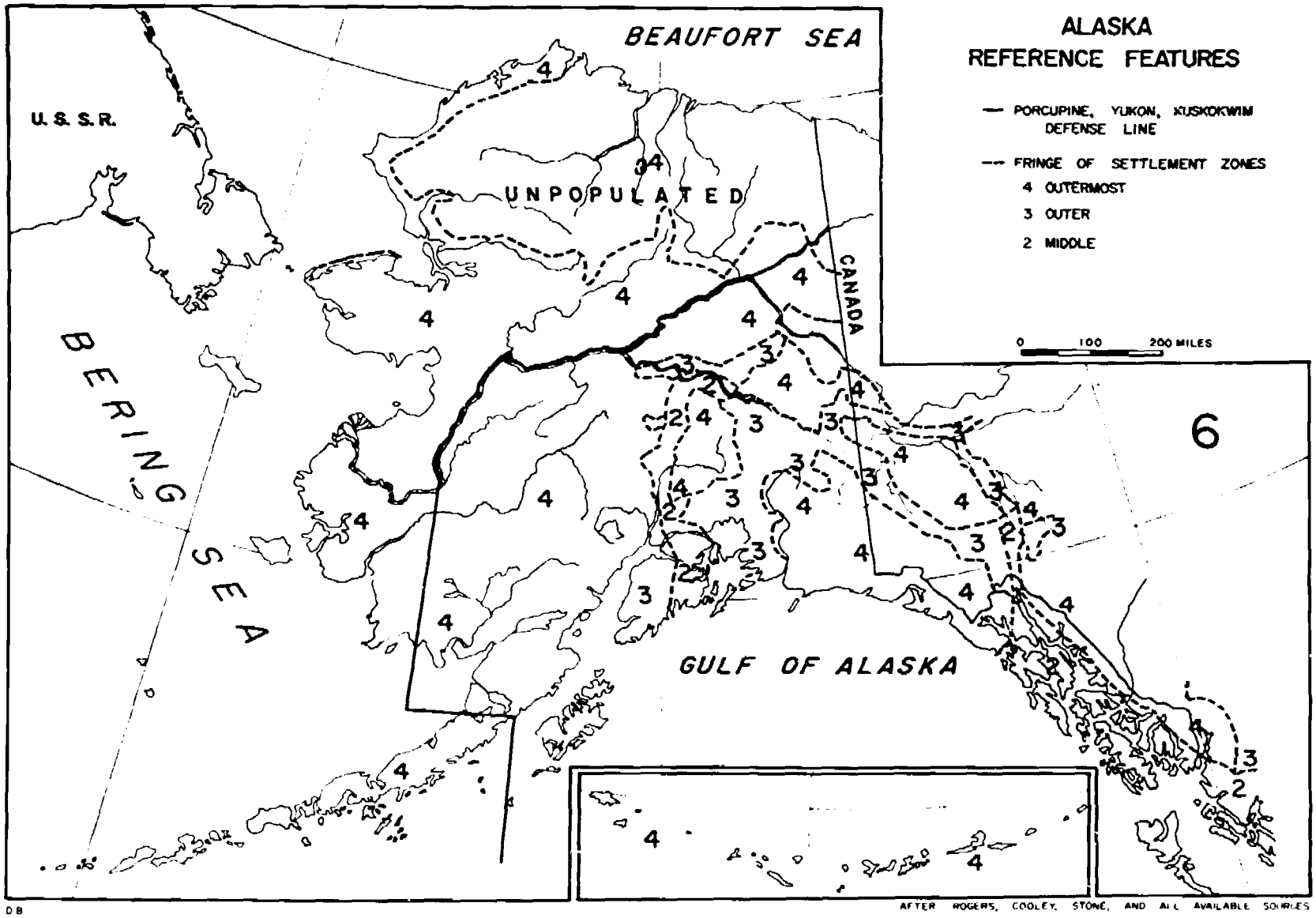

BEAUFORT SEA
U.S.S.R.
NORTHWEST
INTERIOR
CANADA
BERING SEA
SOUTHWEST
SOUTHCENTRAL
GULF OF ALASKA
SOUTHEAST
ALASKA
REFERENCE FEATURES
NAVIGABLE RIVERS BY 3FT. DRAFT CRAFT
NAVIGABLE RIVERS BY NEGLIGIBLE DRAFT CRAFT
MAJOR REGIONS
ALASKA RAILROAD
TREE LINE
PROPOSED PIPELINE
0 100 200 MILES
DB
AFTER ROGERS, COOLEY, STONE, AND ALL AVAILABLE SOURCES

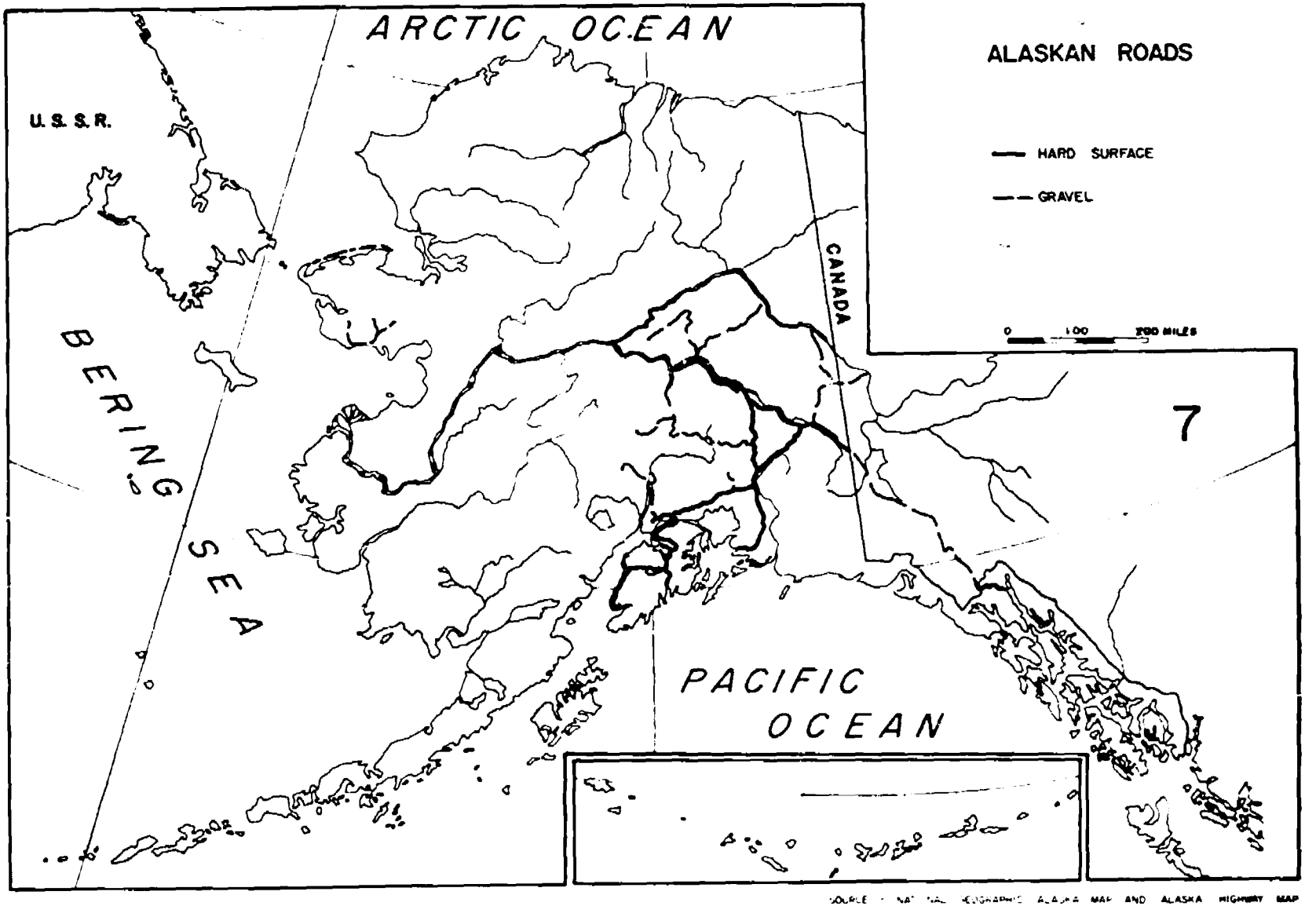

ARCTIC OCEAN
U.S.S.R.
BERING SEA
CANADA
PACIFIC OCEAN
VILLAGE POPULATION
1920 - 1949
ABANDONED
DECLINING
STABILIZED
0 100 200 MILES
2
SOURCE - CENSUS OF POPULATION


ARCTIC OCEAN
U.S.S.R.
BERING SEA
CANADA
PACIFIC OCEAN
VILLAGE POPULATION
1950 - PRESENT
ABANDONED
DECLINING
STABILIZED
0 100 200 MILES
3
SOURCE - CENSUS OF POPULATION


ARCTIC OCEAN
U.S.S.R.
BERING SEA
CANADA
PACIFIC OCEAN
VILLAGE POPULATION
1920 - 1949
INCREASING
0 100 200 MILES
4
SOURCE - CENSUS OF POPULATION


ARCTIC OCEAN
U.S.S.R.
BERING SEA
CANADA
PACIFIC OCEAN
VILLAGE POPULATION
1950 - PRESENT
INCREASING
0 100 200 MILES
5
SOURCE - CENSUS OF POPULATION


ALASKA
REFERENCE FEATURES
— PORCUPINE, YUKON, KUSKOKWIM DEFENSE LINE
--- FRINGE OF SETTLEMENT ZONES
4 OUTERMOST
3 OUTER
2 MIDDLE
0 100 200 MILES
BEAUFORT SEA
U.S.S.R.
UNPOPULATED
CANADA
BERING SEA
GULF OF ALASKA
6
D B
AFTER ROGERS, COOLEY, STONE, AND ALL AVAILABLE SOURCES



SOURCE: NATIONAL GEOGRAPHIC ALASKA MAP AND ALASKA HIGHWAY MAP