

SEASONAL FOOD QUEST ACTIVITIES

During the course of collecting food intake records for the Alaskan dietary study, we acquired considerable information concerning variations in food gathering activities in the different villages. These activities have been subject to drastic changes over the years. Natural phenomena such as severe storms or prolonged winters have been chiefly responsible for past changes at the local level. In more recent years the rapid increase in inter-cultural contacts has played an important part in changing food gathering patterns.

NATURAL FEATURES

Kroeber⁽⁵⁶⁾ gives Steensby the credit for being the first to "outline for the whole Eskimo territory the importance of shore line, seasonal open water, drift and shore ice, driftwood and timber, and other natural features as they determine the presence or accessibility of various animal species and their habitual movements." Steensby noted that "here seals are the important food; there whales or walruses or caribou or birds or salmon while others are as good as unavailable." Because of these differences from one village site to another in Alaska—as well as throughout the rest of Eskimo and Indian territory across arctic and subarctic America—each village has developed its own individual yearly food quest cycle and has its own peculiar problems in relation to it.

Recent archeological investigations in Alaska are yielding evidence that ancient living sites in northern Alaska were more numerous than they were formerly thought to be. There is, of course, no single answer as to why various sites have been abandoned or why hunting activities have been modified. Irving⁽⁵⁷⁾ found evidence in the western Brooks Range area of "intensive occupation—indicating the area was once relatively rich in food resources—principally caribou." Today, only a small group of Eskimos live in this general area at Anaktuvuk Pass and they still depend primarily on caribou for their sustenance.

Giddings⁽⁴⁸⁾ recently excavated 300 sites on a series of 114 parallel beaches extending $1\frac{3}{4}$ miles inland and 200 feet vertically from the present beach at Cape Krusenstern. Carbon 14 dating indicates that the sites on the farthest inland beach—the probable location of the beach at the end of the Ice Age—was occupied about 5000 to 7000 years ago. It is thought that the succession of beaches was built up by “the combined effect of wave action and small cyclic changes in the sea level.”

The only sites in use from late spring to late summer on the present beach at Cape Krusenstern are at Sealing Point and Sheshaulik from which vantage point Noatak Eskimos traditionally hunt seal, ugruk or beluga whale. Sheshaulik literally means ‘the place of many beluga’. Incidental foods obtained in the general area are rabbits, wildfowl and their eggs, sourdock, berries and fish (trout and whitefish).

At Shishmaref (southwest of Cape Krusenstern) on the northwest shore of Seward Peninsula, the older people tell stories, handed down to them, describing the hunting of the baleen whale in the lagoon located in back of the present village site. They also say that whale bones can still be found at an old village site on the banks of the Arctic River which flows into this lagoon. The lagoon extends about 18 miles from the village to mouths of the Arctic and Serpentine Rivers. Evidence of whale hunting in this area is attested to by the fact that whale hunting spear heads have been excavated from an old village ruin located near the present village. Apparently, neither present day inhabitants of Shishmaref nor their immediate ancestors hunted this animal. Today, the ocean entrance to the lagoon is too narrow for the passage of these large whales.

The low gravel spit on which Point Hope is located has undergone rather drastic shore changes too, necessitating several local movings of the village site. A village was at one time located at the very point of the spit, called Tigara, which means ‘points like a finger into the sea.’ Most of the old dwellings at this site have long since been covered by the ocean. The few remaining have either been diligently excavated for artifacts—a source of income to the Point Hope people—or they are used as year-round cold storage caches for whale meat and other food products. In 1963 severe storms caused much damage along this end of the spit and many more of these old dwellings were completely destroyed.

According to Larsen and Rainey⁽¹⁰⁾ Point Hope hunters used to take 15 to 18 whales a year, but this was before the concentrated hunting of the American whalers during the period 1850–1910. Today one to five whales constitute the usual yearly catch.

Van Stone^(11,12) feels that fewer whales are now taken because of two important factors: first, there is a changed hunting attitude, particularly among the younger men who apparently are not as willing as the older hunters were to devote the time to it, and secondly, the careless handling of the powder used in their dart guns—the weapon that has replaced the spear in whale hunting—has definitely lowered the yearly take of this animal.

A VARIABLE FOOD SUPPLY

A hunting and fishing economy is at best unpredictable. One year there may be a superabundance of food; the next year the population may be reduced to starvation rations. Simpson⁽⁶⁹⁾ in reporting his observations and study of the Western Eskimos living along the north Arctic coast of Alaska tells of the extreme variability in the baleen whale catch there from year to year and the hardships resulting therefrom. In 1852–53, the year he was in residence, baleen whale were very scarce. He states that only seven small ones were caught at Nuwuk and that before the end of the winter the village was so short of food the people had to resort to eating the decayed flesh and blubber of a whale which had been beach-stranded two years previously about 25 miles distant from the village. Even this was apparently not sufficient for survival that year as he reports there were only four births in the village as compared to twenty-seven deaths, most of which were attributed to famine. During this same year at Cape Smyth—now called Barrow—about ten miles distant, he reports an additional forty people died of starvation, many of them while out actively hunting for food. On further inquiry Simpson found baleen whale were scarce in 1843–44, 1848–49 and 1850–51. The year, 1851–52 was one of plenty. Seventeen large baleen whales were caught and caribou was also plentiful. The following year, 1852–53, whales were again scarce as were most other food resources. This same pattern of alternating plenty and scarcity of whales persists today at Barrow. The 1958 Barrow whale catch was 15, but the three previous years none was caught.

In almost all the villages one hears stories which have been handed down describing starvation experiences. Present day Eskimos and Indians are as much concerned about this problem as were their ancestors. This is aptly illustrated by the welcome I received on my first visit to Shungnak in the fall of 1958. The people having learned via the radio that I was coming directly to their village from Noatak, greeted me at the plane with questions about the presence of caribou in the Noatak area. There was an

audible sigh of relief when I told them that the caribou were already showing up in goodly numbers. This animal usually appears in the Noatak valley first—and then a short time later in the Kobuk and Selawik drainage areas.

Shungnak people depend primarily on salmon fishing in the summer and caribou hunting in late fall and winter to provide food for both themselves and their work dogs. Most of their caribou hunting is now done within a few miles of the village since their families stay in the village from September through May in order that the children may attend school. Formerly, family groups followed the caribou over a much more extensive area—up to or beyond a 50 mile radius from the present village site. If the caribou do not winter in the immediate village environs—as occasionally happens—the villagers are apt to go hungry during the winter months. Under such conditions the loss of dogs from starvation may be disastrous, for the dried salmon ordinarily set aside for their winter feed must be used instead for the family. Therefore, the very poor salmon run in the Kobuk River in the summer of 1958, added to their concern as to the whereabouts of the caribou.

THE FACTOR OF WEATHER

It sometimes happens that although a particular food may be abundantly available other factors prevent its proper utilization. The 1958 herring run in the Nelson Island area was exceptionally good, and in 1961 most of the salmon runs throughout Alaska were good to excellent. Unfortunately, both years, large quantities of these fish catches were spoiled by excessively wet summer weather. The Newtok people (Nelson Island area) lost about 50 percent of their herring catch, which is usually one of their chief winter dietary items. Undoubtedly, the resulting food shortage was the cause of the marginal nutrition found among the Newtok people by the ICNIRD group in the later winter of 1958⁽²³⁾.

Eventually improved preservation and storage techniques may be devised to minimize these excessive food losses. For the time being, however, weather is still the most important factor in determining whether or not the proper drying of many local game and fish products is possible.

An old time practice in the Kuskokwim delta area, seldom seen today, was the use of grass mats to help protect the fish on rainy days. It is not known how effective this was, but it should be noted that most of the grass now collected is used to make baskets and mats to sell.

SOME EFFECTS OF ACCULTURATION ON FOOD QUEST ACTIVITIES

IMPROVED TRANSPORTATION SERVICES

One of the basic factors in bringing about the acculturation of Alaskan Eskimo and Indians in recent years, has been the establishment of regular transportation services to the remote villages.

In the days when transportation to the villages was relatively slow—primarily by dog team—acculturation proceeded at a fairly leisurely pace except, of course, in some of the coastal fishing and whaling areas and in certain interior mining and trapping areas. But since World War II the phenomenal development and expansion of air transportation throughout Alaska has brought a tremendous increase in inter-cultural contacts.

Previous to World War II, air service to most of Alaska's towns and villages was sporadic and used most frequently on a charter basis. As late as the mid 1940's, dog team travel to remote villages by nurses, educators and others was far from uncommon. Since then, however, there is hardly a village in Alaska, no matter how remote, that cannot be reached by scheduled plane service. The village airstrip is a permanent part of Alaska's transportation system, a part of an air highway system which takes the place of the surface routes common in the rest of the United States. Improvements in air service are constantly taking place.

Whenever they can afford it Eskimos and Indians like to travel by plane. Women like to have their babies at the hospital and many families will save money to provide for the necessary air transportation. In 1958 one Napaskiak family chartered a small plane to take them to their spring camp out on the tundra.

The airplane has made possible increased medical and public health services at the village level, transport of the sick to the hospitals, the children to boarding schools and the men to seasonal wage labor jobs more quickly. By the same token "outsiders" can get to the villages more quickly; hence, the increase in tourism to the villages, and the increase in arctic hunting activities by sportsmen.

One of the major results of these varied experiences and contacts both at the village level and away from the village has been an increasingly rapid modification of the aboriginal ways of life.

THE EFFECT OF THE BOARDING SCHOOL

Before village schools were established, a great many children were sent out to boarding schools where they often stayed the year round. Because of this, these children did not have an

opportunity to learn from their families and village elders about the terrain and the ecological environment of the area in which their homes were located, the techniques required to wrest a living from it, nor the seasonal rhythm of the basic food quest activities. In times past children were customarily given many responsible tasks. At Hooper Bay, for example, they helped in the yearly wild-fowl roundups, helped hunt and gather wildfowl eggs, and girls, particularly, helped gather greens and berries or cared for the smaller children while their mothers were engaged in these activities. The young boy's toys were often smaller editions of the hunting gear used by their fathers. In some areas, pre-teen age boys accompanied their fathers on hunting expeditions. There were many customs in relation to the boy's first kill some of which are still observed. At Shishmaref, for example, a boy's first seal kill must be given to the oldest man in camp.

In recent years improvements in air transportation have made it possible for the boarding school children to return home for the summer. While this has ameliorated the situation somewhat, many children are away from the village for about 9 months of the year and thus still miss participating in many of the seasonal activities.

Children sent away to school and hospital were the medium for introducing many dietary changes. They quickly became accustomed to new food tastes and textures. Those particularly relished soon became commonplace on the family dietary after they returned to their homes.

THE EFFECT OF A MONEY ECONOMY

A money economy of sorts was introduced early to many of these people, but it was quite limited and enjoyed primarily by those who lived in mining and trapping areas, or where commercial fishing was profitable and canneries were located. Since World War II, seasonal wage work at canneries and on construction jobs has been extended to many more Alaskan Eskimos and Indians. As already pointed out increased air service to the villages has made this possible.

Rainey⁽⁶⁰⁾ in his description of Point Hope in the 1930's stated that the village culture was "neither Eskimo nor yet western but a peculiar blend of both . . . that it was no longer a self-sufficient culture since it depended upon some products from the outside world." Most of this change he attributed to long association with the American whalers in the late 1800's and early 1900's.

Today, thirty or more years later, the same thing can be said of all Eskimos and Indians still living in their "native" areas. Every year they become more dependent upon an increasing number of imported products. The great diversity of products desired—such as specific kinds of lumber for home, boat, sled and snowshoe construction; material for fish nets; guns, ammunition, sun glasses, washing machines, outboard motors, gasoline camp stoves, lamps, radios, ready-made clothing and boots, coupled with their limited money economy, has restricted purchase of imported food items. For this reason local food products, chiefly meat and fish, are still the most important foods in their diets.

The desire for purchasable goods is the primary motive which prompts increasing numbers of these people to seek seasonal wage work. This results in a continuing modification of many of the seasonal food gathering activities, especially those normally occurring from late spring to about mid-fall.

Sometimes the desire for purchasable goods is so strong that the importance of maintaining the basic spring, summer and fall food quest activities is temporarily forgotten, and frequently these activities are abandoned altogether. Entire families are moving to more urban areas like Nome, Kotzebue and Bethel. Each year a few more families stay on at these centers permanently, while others may stay for a year or two struggling with intermittent and unpredictable work opportunities, eventually returning to their native villages.

COOPERATIVE EFFORTS TO SECURE LOCAL FOOD SUPPLIES

The majority of Alaskan Eskimos and Athapascans, however, make some sort of adjustment between these two means of earning a living at the village level, often displaying the adaptability for which they have frequently been commended. Several of the young men from Shishmaref, for example, have learned from experience that they cannot make enough money during the summer months to purchase both the goods they desire and food equivalent in amount and kind to that usually obtained from their traditional hunting and fishing activities. They have now returned to a more active spring (late May and early June) ugruk hunt, as was the custom in the past, for this animal, caught at this time of the year, is one of the chief sources of their winter meat and oil supply.

It is now the practice for those accepting summer jobs to leave the village at the last possible minute. If necessary the older men and the women are left at the village or nearby hunting camps

to complete the food preservation and storage activities. The family may join the wage earner later if his summer job is not too distant from the village or they may stay in the village area throughout the summer to fish and hunt, to gather edible greens, roots and berries. Some men take their families to the place of employment but the majority have found transportation and living costs prohibitive.

EFFECT OF SUMMER WAGE WORK ON SEASONAL CAMP ACTIVITIES

In some areas the establishment of traditional summer and fall camps is no longer possible for many "partial" families left at the village. Transportation to their camps is sometimes quite hazardous, demanding the physical prowess and the guidance of experienced, able-bodied men. Occasionally, related families enter into agreements whereby the head of one family goes off to work for wages and the other stays at the village or camp to hunt or fish, each sharing with the other through mutual arrangements. The wage earner may "loan" his boat, outboard motor or other hunting gear or furnish gasoline in exchange for a designated portion of the fish catch or the hunt. Actually, many such arrangements are really an extension into modern times of cooperative family and village practices of the past.

Wage work, however, is more frequently obtained by the most vigorous and enterprising individuals who are usually also the most proficient and successful hunters. Hence, in spite of the above-mentioned mutual arrangements, the food quest activities normally engaged in at this time are the very ones that have been most drastically curtailed or modified. In years when wage work is not generally available, there may be an increase in local hunting and fishing activities, but in most villages there is a continuing decrease in the number of families who follow traditional food quest patterns. The following examples will serve to illustrate this situation:

At Point Hope, for instance, most families customarily spent the better part of the summer and fall along the coast or inland in the vicinity of Cape Thompson and Cape Lisbourne. There they obtained ugruk, brown bear, walrus, parka squirrels, caribou, wildfowl and other birds; gathered eggs from the neighboring cliffs; fished for salmon, trout and grayling and gathered berries. Today most families remain at the village throughout the summer. A few families may still camp along the coast near Jabbertown or inland on the banks of the Kukpuk River but the few active hunters remaining in the village often find it more expedi-

ent to make relatively short hunting and fishing trips inland. These activities no longer make as significant a contribution to local food procurement as they did formerly.

Hooper Bay is another example where many families are now "village-bound" practically the year round. No longer do the majority of them go to traditional coastal and tundra campsites.

EFFECT OF FISH AND GAME LAWS

Fish and game laws have also affected some of the major food quest activities of the people. In the Wade Hampton district in southwest Alaska certain wildfowl hunting practices, particularly the "rounding-up" of immature birds, have been discouraged by game regulations. These birds were not only a major source of food for these people, but in certain areas the skins were their most important and sometimes only source of material for parkas and bedding.

The enforcement of game and trapping laws has had other important effects on the food resources of these people. The most immediate is a reduction in the take of some animals, especially moose and beaver. In the long run these laws undoubtedly help to assure a more continuous supply of these animals throughout the years.

VILLAGE POPULATION TRENDS

Teachers, traders, missionaries, medical and public health personnel and others have also had an active part in bringing about some of the food quest changes. They have often discouraged widespread seasonal wanderings and encouraged stabilized village living in order to bring to the people formal education, public health services, medical care and local church, post office, modern transportation (mostly plane) and trade facilities. As a consequence, many small villages, settlements and seasonal campsites marked on early Alaska maps and mentioned in early census reports no longer exist. The tendency today appears to be for the number of villages to decrease and for those remaining to become larger. For example, between the 1950 and 1960 censuses in the Wade Hampton election district, seven villages were abandoned while only one new village was established. The total population of this district increased by 551 persons^(61,14).

The population trend from U. S. Census Reports for the eleven study villages since 1920 is presented in Table 81. In seven of the villages there was a significant increase while four showed

a decrease in total population. Increases occurred mostly in the southwest villages.

Population decreases in the northern Eskimo villages of Noatak and Shishmaref were due primarily to the fact that a significant number of the families moved to Kotzebue and Nome. At Shungnak, the decrease was due mostly to shifting population movements between the villages of Kobuk, Shungnak and Ambler (Table 82). These three villages are in close proximity and most of the inhabitants are interrelated in varying degrees. Ambler, formerly a seasonal fish campsite, has only recently become a permanent settlement again. It was established primarily to protect ancient fishing and hunting rights in the area.

Akiak was the only southwest Eskimo village showing a population loss between 1950-1960, but this was probably of a temporary nature. Three or four families had recently moved to a nearby mining community where they had obtained year round employment. These families still have "homes" at Akiak and may

TABLE 81.—COMPARISON TOTAL POPULATION
CENSUS REPORT YEARS 1920-60^(61-64,14)
AND PERCENT POPULATION CHANGE 1940-60
(11 Study Villages)

Village	Total Village Population by Census Year					Percent Population Change 1940-60
	1920	1930	1940	1950	1960	
<i>N. Central Athapascan:</i>						
Allakaket.....	NA	NA	105	79	115	+9%
Huslia.....	NA	NA	NA	65	168	+158%*
<i>Northern Eskimo:</i>						
Noatak.....	164	212	336	326	275	-18%
Point Hope.....	141	139	257	264	324	+26%
Shishmaref.....	131	223	257	194	217	-16%
Shungnak.....	95	145	193	141	135	-30%
<i>Southwestern Eskimo:</i>						
Akiak.....	150	228	209	168	187	-11%
Hooper Bay.....	NA	209	299	307	460	+54%
Kasigluk.....	NA	32 [†]	66	111	244	+270%
Napaskiak.....	NA	NA	67	121	154	+130%*
Newtok.....	NA	NA	NA	69*	129	+87%

NOTE: * Percent increase 1950 to 1960.

Figure for Nunachuk, the old village for many present day Kasigluk people.

* Figure for Keyaluviuk, the old village site of the Newtok people.

..... Figures unavailable

NA. Figures unavailable

well return to the village when employment at the mine is no longer available.

The trend toward urbanization among these people is attested to by the more or less permanent increase in the Eskimo population at the urban centers of Kotzebue, Nome and Bethel (Table 83). Kotzebue was the site of an ancient trading center for the northern Eskimos. A small group of Eskimos lived in the area permanently but during the summer months Eskimos from as far away as Cape Prince of Wales to the south, from Noatak and Point Hope, and on occasion from Barrow to the north as well as the peoples from the upper Kobuk River area, assembled here for trade purposes. According to Shungnak elders, their ancestors went purposely to trade furs—obtained either by trapping or by

**TABLE 82.—A COMPARISON OF TOTAL POPULATION
THREE UPPER KOBUK RIVER VILLAGES
1940-60
U.S. Census Data^(14,61,64)**

Village	Total Village Population By Census Year		
	1940	1950	1960
Ambler.....			70
Kobuk.....	31	38	54
Shungnak.....	193	141	135
Total Population.....	224	179	259

**TABLE 83.—A COMPARISON OF POPULATION CHANGE
THREE ALASKAN COMMUNITIES
1920-1960^(14,61-64)**

City	Population (U.S. Census)				Percent Population Change 1940-60	Percent Eskimo Population in District* 1960
	1920	1940	1950	1960		
Kotzebue.....	221	278	376	1258	+353	91
Nome.....	852	1213	1559	2316	+91	75
Bethel.....	230	291	372	1290	+343	91

* Based on the population for the entire election district in which the town is located.

trade from the Koyukuk Indians—for hunting gear, ugruk rawhide, seal oil, oil lamps and a variety of other goods. Very few Kobuk Eskimos now go to Kotzebue in the summer.

While Kotzebue is still a trading center for a large part of the same area it is now primarily a reshipping center where groceries and other supplies are reshipped by plane, river barge or "cat" * to Noatak and the villages along the Kobuk River.

Part of the population increase in the villages is due to the decreased death rate among these people. The infant death rate among Alaskan Eskimos, for example, decreased from 87/1000 live births in 1950 to 72/1000 in the three year period 1959–1961⁽⁶⁵⁾. The population characteristics of the eleven study villages are presented in Table 84.

Many of the early observers noted that Eskimo families were generally small. Ray⁽⁴⁴⁾ states that he "seldom met a family with more than three children—though upon inquiry they may have some that 'sleep on the ground'." And Petroff⁽¹⁵⁾ noted that "one or two was the common number of children to a family—that four was quite rare."

In the largest of the study villages, Hooper Bay, there were 77 households. The median number of children born to the household head and living at home was four. There were, however, 15 families with five, 10 families with six, 3 with seven, 4 with eight and 1 with 10 children. There were in addition, 13 adopted children and five being temporarily cared for by others in the village. An occasional family had as many as three adopted children.

Under present conditions of local food supply and monetary income opportunities, the population of this village is probably reaching a critical size. According to the residents some degree of local food shortage during spring and early summer occurs almost yearly; this was true even in times past, when the village was less than half the size it is today.

Wage earning opportunities are both limited and unpredictable in this area. Based on the 1958 Bureau of Indian Affairs economic report of earned income, the average yearly family income in Hooper Bay was estimated at approximately \$940.00⁽¹³⁾. Monetary help of some kind is required in most years to help tide families over until the wildfowl return to the area and the summer fish runs appear.

Two other Eskimo villages are located near Hooper Bay. Scammon Bay (1960 population 115) is about 20 miles to the north, and Chevak (1960 population 315) is about 20 miles to the south-

* Heavy duty caterpillar.

**TABLE 85.—TOTAL AND PERCENT POPULATION CHANGE:
HOOPER BAY, CHEVAK AND SCAMMON BAY
U.S. Census Data^(14, 63, 64, 61)**

Village	Total Population and Census Year				Percent Population Increase 1940-1960
	1930	1940	1950	1960	
Hooper Bay.....	209	299	307	460	54
Chevak.....*		43	230	315	633
Scammon Bay.....*		88	103	115	31
Total Population.....		430	640	890	107

* Not Reported

east. According to the 1960 census data presented in Table 85, all three of these villages have had significant increases in their total population in the past twenty years. Part of this increase is due to the above-mentioned decrease in the infant death rate, and in part to the elimination of many small hamlets and camp sites in the general area.

In the 1880 census report⁽¹⁵⁾ the population of Hooper Bay under the name *Askinuk* was 175, while that of *Kashunuk*, a neighboring village to the south, was over 200. *Kashunuk* no longer exists. Many of the residents moved to either Hooper Bay or Chevak.

Nelson⁽¹⁶⁾ in his account of a dog sled trip to this general area (late 1870's) mentioned stopping at scattered small habitations composed of only two to three families. This is not the general pattern today, although occasionally one meets a family, such as the parents of one resident in Hooper Bay, who still prefers to live according to the old ways. Most of the year they live in the Black River area to the north of Hooper Bay making only occasional short visits to their son's family.

SEASONAL FOOD QUEST ACTIVITIES

In the large territory in which Alaskan Eskimo and Indian villages are scattered, terrain, climatic conditions and wildlife potential vary enormously. For this reason each village has developed an individual seasonal food quest pattern. Unless one is able to live in a village and follow the day to day activities over the

TABLE 86.—NUTRIENT CONTRIBUTION FROM FOOD SOURCE
858 ADULT MALE DIETS
All Areas and Villages, All Seasons

Food Source	Nutrients										
	Cal- ories	Protein gm.	Fat gm.	Carbo- hydrate gm.	Cal- cium mg.	Iron mg.	Vita- min A I.U.	Thia- mine mg.	Ribo- flavin mg.	Niacin mg.	Ascorbic Acid mg.
Local Foods.....	1160	170.0	47.3	3.9	168	18.3	5387	0.716	2.116	31.9	16
Imported Foods.....	1327	21.9	54.2	195.4	380	4.8	1106	0.813	0.696	7.2	6
Mixed Food Preparations*.....	111	7.2	6.6	5.3	8	1.0	263	0.054	0.116	1.2	7
Mean Daily Intake.....	2598	199.1	108.1	204.6	556	24.1	6756	1.583	2.928	40.3	29
NRC Allowances**.....	2200- 2900	70.0	800	10.0	5000	0.9- 1.1	1.3- 1.7	15- 19	70

* A combination of local and imported foods.

**NRC allowances, revised 1964 (10).

entire year, it is impossible to obtain an exact account of all the activities involved and their relative importance. After repeated visits to a village, however, it is possible to make a broad outline of them. A seasonal food quest outline is presented in chart form for each of the 11 study villages (Appendix V).

There is no question that the game, wildfowl, fish and wild edible vegetative products obtained by hunting, fishing and gathering activities are an important source of nutrients in the diet of the present day Alaskan Eskimo and Indian. In the overall diet of the adult male, for example, these foods are the major source of protein, iron, vitamin A, riboflavin, niacin and ascorbic acid and in addition provide slightly less than half the calories, fat and thiamine. Imported foods, on the other hand, are the major source of carbohydrate and calcium and provide slightly more than half the fat, thiamine and calories (Table 86).

SUMMARY

Between 1956-61, over 5000 food intake records of 3 to 7 days each for both sexes and all age levels were collected at 11 Alaskan villages; two Athapascan Indian, nine Eskimo. An analysis of these records showed that:

1. The most outstanding characteristic of these diets was the wide range in the mean daily intakes of all the major nutrients—from extremely low to extremely high—a clear indication that family and village food supplies fluctuate enormously throughout the year.

2. When mean daily intakes were compared with National Research Council recommendations, protein and niacin intakes were generally high; 75 percent or more of the diets were low in calories, calcium and ascorbic acid; one-third were low in vitamin A and thiamine; one-fourth were low in riboflavin. Although the mean daily intake of iron was adequate to high for all age levels, one-third or more of the diets for adolescents of both sexes, for pregnant and lactating women, for women over 60 years of age and for preschool children in the southwestern area were deficient by these standards.

3. Extremely high mean daily intakes of iron were common at all age levels except infancy, for those living in coastal areas where sea mammal meat was a staple in the diet.

4. No specific dietary adjustments were being made to help meet the increased metabolic need of pregnant and lactating women for calcium, iron and other important nutrients.

5. In general, vitamin preparations were important only for Eskimo school children who received them as part of the school lunch program.

6. There were significant seasonal variations in the intake levels of ascorbic acid and vitamin A which were, in general, highest in summer and fall. An exception was the higher ascorbic acid values found on the school child's diet in winter, due primarily to the afore-mentioned vitamin preparations given them at school.

7. The fat content of Eskimo and Indian diets was not excessively high. This nutrient supplied slightly more than one-third of the total calories on adult diets.

8. The breast feeding of infants was common up to two months of age. Formula feeding was the more common practice thereafter. A significant number of infants, some over 12 months of age, were being breast or formula fed without supplementation by other foods.

9. Analysis of the formula-fed infant's diet revealed that average daily intakes below the recommended levels were prevalent for calories, iron, thiamine, niacin and ascorbic acid. A significant number of mean daily calcium intakes below that recommended were found at the 6 to 11 month age level, increasing to over 50 percent for those 18 to 23 months of age. In general, average daily intakes of protein and vitamin A were adequate during the first 11 months of life but between 12 and 23 months one-fourth were low in protein and about one-fifth low in vitamin A. Imported foods, mostly milk and grain products, furnished the major portion of 9 of the 11 nutrients for which these diets were analyzed. Vitamin preparations and local food products were infrequently used.

10. Present day Alaskan Eskimo and Indian diets were found to be composed of a combination of imported and locally available foods. The kinds of local foods used and their nutritive importance in the diet depended primarily on the geographic location of the village. In the overall per capita diet, local foods supplied one-half or more of the protein, iron, vitamin A, riboflavin, niacin and ascorbic acid while imported foods supplied most of the carbohydrates and calcium plus one-half or more of the thiamine, calories and fat.

11. There were significant village and regional differences in the relative importance of local versus imported foods as sources of nutrients in these diets. For example: sea mammal fats were almost equally as important as imported fats in coastal Eskimo diets; in general, meat was the important protein source in the North, fish in the Southwest; meat was the major source of iron in the North, and certain whole fish in the Southwest; Indians obtained most of their vitamin A from imported foods, whereas Eskimos depended on local foods for this nutrient. Mean daily intakes of vitamin A were highest at villages where sea mammal oils and local greens were abundant. In general, grains were the major thiamine source at Indian and southwest Eskimo villages but local meats were equally important sources at the northern Eskimo villages. Northern Eskimos obtained about twice as much riboflavin from local foods as did southwestern Eskimos and Indians who obtained more than one-half of their intake from im-

ported foods. Most of the ascorbic acid in Indian diets came from imported sources while at certain Eskimo villages—north and southwest—local greens and berries were the major source.

12. Seasonal food quest activities of former times have been greatly modified in recent years because of the increased tempo in intercultural contacts, the change from a nomadic way of life to more permanent village living and the increase in seasonal (mostly summer) wage employment of many of the able-bodied men.

13. The money economy of Alaskan Eskimos and Indians is marginal by general U. S. standards. Most of their earnings are used for goods other than food. This fact, plus the high freight costs to the remote areas in which the villages are located, limits the use of imported food products primarily to milk, grains, sugars and fats.

14. The major changes in Eskimo and Indian diets since aboriginal times include: (a) an increase in the carbohydrate content of the diet which formerly was a source of no more than about one-tenth of the total calories but now furnishes about one-third of the total; (b) increased use of saturated fats, largely imported, particularly by the coastal and tundra Eskimos; (c) an increase in the calcium content of the diet primarily because of the use of milk; (d) a more limited use of local foods as nutrient sources in their diets for the reasons stated above.

15. The acculturation of the Eskimo and Indian peoples of Alaska has resulted in many changes in their infant feeding practices, the most notable being:

a. A drastic reduction in the number of infants being breast fed.

b. The curtailed use of local food resources to supplement the infant diet and the more frequent substitution of bread and cereal products for them.

16. Analysis of the formula-fed infant's diet has shown that a significant proportion of these diets are inadequate in calories, iron, thiamine, niacin and ascorbic acid when judged by NRC recommended allowances. The primary causes of these inadequacies are:

a. The abandonment of many former infant feeding practices.

b. The limited use of suitable local food products in season.

- c. The low cash income among the majority of Eskimos and Indians.
- d. Inadequate instruction in sound infant feeding practices especially the supplemental use of both suitable and nutritionally desirable local and imported foods.

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