MIDDLE KUSKOKWIM FOOD SURVEY - II

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ABSTRACT

In February 1981 the Subsistence Section of the Alaska Department of Fish and Game conducted its second food survey in the Middle Kuskokwim River area. Eight villages from Lower Kalskag upriver to Stony River were included. The survey methodology used was conducted through interviews and visits, and the research goal was a sample of 100% in the small villages and 50% in the larger villages. Resource use data and basic demographic and socioeconomic characteristics data were gathered for each village. The interview format also facilitated the development of preliminary information about community systems underlying resource harvest, distribution, and use. The survey results indicate that despite the location of these villages in a relatively rich and diverse resource area, most households, at the time of survey, had limited supplies of wild resources. In an area of limited cash flow and few job opportunities, local resource utilization continues to provide the central economic focus for Middle Kuskokwim communities and acts as a buffer against a marginal cash economy. General conclusions are based on this year's survey efforts, and some current game proposals are examined.

Description of Problem

The Subsistence Section of the Alaska Department of Fish and Game (ADF&G) has been conducting basic survey research in the Middle Kuskokwim River area for the past two years. The result of last year's survey was summarized in a report to the Board of Game in March 1980. An evaluation of this research effort and the status of pending research was presented to the Board at its December 1980 meeting. Neither report need be repeated here. The report that follows summarizes the results of the survey conducted during February 1981.

The Section originally became involved in the Middle Kuskokwim area as a result of concerns expressed by the local Advisory Committee, Nunam Kitlutsisti, and local residents that competition for the moose resource in Game Management Unit (GMU) 19A was on the increase. Although the moose population in this GMU has been evaluated by ADFG biologists as being at a healthy level, the concern was that increased floatplane activity and boat traffic were affecting the local residents' ability to harvest moose during the open September season.

In January 1980 two proposals were submitted to the Board of Game in the name of the Middle Kuskokwim Advisory Committee. These proposals were to:

1) Make GMU 19A a subsistence hunting area, but restructure 19B to include the Kilbuck-Taylor Mountain foothills area. This proposal was not considered last March because it was not submitted to the Board 75 days before its Spring 1980 meeting as dictated by statute. This proposal was unanimously withdrawn by the Committee at their January 10, 1981 meeting.

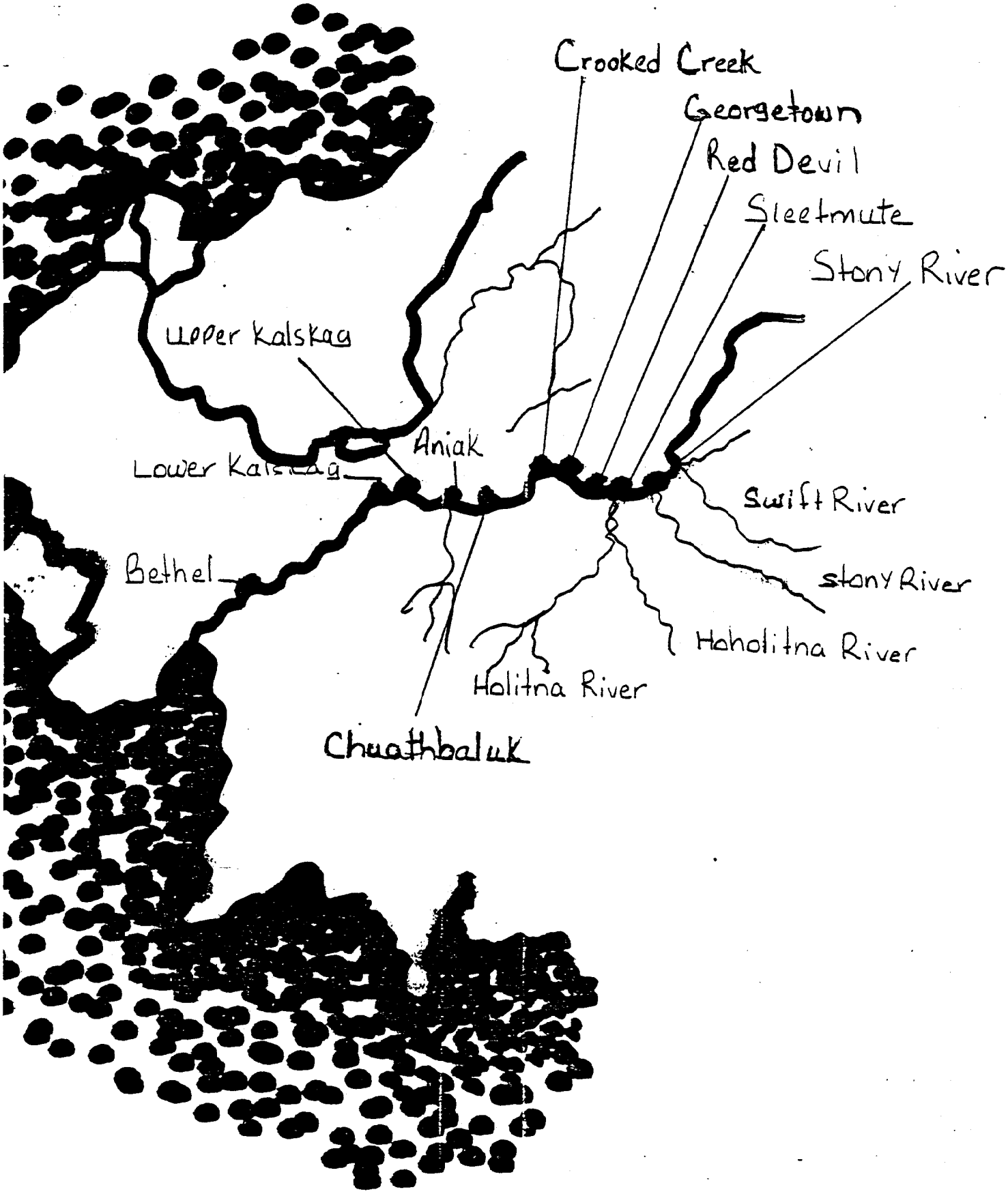
2) Change the methods and means section to permit moose hunting in 19A only with motors having less than 55 horsepower. This proposal was rejected by the Board and was not resubmitted by the Committee.

The Board decided in its December 1980 meeting that it was obligated to consider those subsistence hunting area proposals that were submitted the previous January. The Department was directed to set up the public hearings that are part of the process required by law. This report is part of data needed by the Board before it can act on any Subsistence Hunting Area proposals.

The Study Area

The Middle Kuskokwim River area has been defined as the area between and including Lower Kalskag, Stony River, and Lime Village on the Stony River. For purposes of this study, only the Kuskokwim River villages were included. These villages are Lower and Upper Kalskag, Aniak, Chuathbaluk, Crooked Creek, Red Devil, Sleetmute and Stony River (See Map 1). There are also numerous settlements (i.e., more than one household present, no village organization) and isolated cabin sites in addition to the villages. The villages are predominantly of Yup'ik (Eskimo) descent with the exception of Crooked Creek and Stony River which are predominantly Athabaskan and Aniak which is a large mixed Native (Yup'ik)/non-Native community.

Geographically, the Middle Kuskokwim villages are located on the river in the Kilbuck-Kuskokwim Mountain foothills. The villages are adapted to a riverine environment and are more dependent on terrestrial mammals than are the coastal villages of the Yukon-Kuskokwim Delta.



Map 1

Middle Kuskokwim River Villages

An overview of the demographic and socioeconomic characteristics of the area is presented in Table 1. The villages, with the exception of Aniak, are like most Alaskan rural riverine communities. There are few jobs available; this results in low cash flow within these communities. Most villages have none of the modern conveniences associated with more urban ways of life. Only Lower and Upper Kalskag and Aniak have village-wide electricity, and Aniak has the only water and sewer system, although not all homes are serviced by it. Only a few villages have local stores and those that exist are considered by villagers to be expensive and often inadequate in their offerings. Most villagers obtain store-purchased food through Aniak, McGrath or Anchorage, and the food must be shipped in by boat, plane or snowmachine, depending on the season. The villages are dependent on planes and snowmachine or dog team travel in the winter and it is possible for them to become isolated during extended periods of bad climatic conditions and during freezeup and breakup.

Most village homes are of log or frame construction with most having one to three rooms. Wood heat predominates, although many families use oil. In the smaller villages most jobs are seasonal, and CETA and the school district provide the major sources of funding for more permanent positions. With the relatively limited access to both cash and commercially produced products and with a relatively high degree of isolation, the small communities must balance a small wage economy against the more predominant subsistence economy.

Aniak is distinct from the others because it serves as a small sub-regional center and has more full-time employment and village services. The level of cash flow is higher, there are two large local stores, and access to both Bethel and Anchorage is direct. Because of the presence of employment opportunities, Aniak as a community may superficially appear to have a lesser

Table 1. Demographic and Socioeconomic Characteristics: Middle Kuskokwim Area

Community	Total Population	Average Household Size	Total Households	% Household Surveyed	# Full-time Jobs[d]	# Part-time or Seasonal Jobs[e]	Community electricity Yes/No	Water/ Sewer Yes/No	Ville Stor Yes/N
Stony River	85	4.04	21	81%[a]	3	10	No	No	Yes
Sleetmute	130	3.82	34	88%	4	11	No	No	Yes
Red Devil (includes data from 2 Georgetown households)	70	4.38	16	75%[a]	4	7	No	No	Yes
Crooked Creek	109	4.19	26	69%[b]	3	11	No	No	Yes
Chuathbaluk	109	4.36	25	79%[a]	7	16[f]	No	No	Yes
Aniak	341	3.12	109	24%[c]	NA	NA	Yes[g]	Yes[g]	Yes
Upper Kalskag	112	3.36	33	27%[a]	9	6	Yes	No	Yes
Lower Kalskag	237	4.62	51	35%[ac]	8	7	Yes	No	No
Area Totals	1193	3.99[h]	311	49%[i]					

a. Households not interviewed because of absence due to trapping/hunting, illness, visiting elsewhere; also time limitation.
b. Households not interviewed because of absence, etc.; some non-response (8%).
c. Sampling attempted for Aniak and Lower Kalskag was 33% and 50% respectively.
d. Some full-time jobs funded by CETA and Yukon Kuskokwim Health Cooperative.
e. Some seasonal jobs funded by Kuspuk school district.
f. Seasonal village sawmill work.
g. Not present in every household.
h. Average household size area
i. Area average percent households surveyed.

dependency on subsistence resource utilization than do smaller villages. In actuality there is only a different balance between cash and subsistence economies in Aniak and a primary dependency on the market economy is not indicative of all households. Use of subsistence resources in Aniak ranges along a continuum from households that minimally depend on subsistence resources to those with an almost total dependence on wild game and fish for their protein source. Most households fall somewhere between these two extremes. Subsistence, then, continues to play an important role in town life but tends to be masked by the more obvious presence of a market economy.

Objectives

In December 1979 the Subsistence Section conducted its first food survey in the Middle Kuskokwim River area. The intent was to gather information on subsistence resource utilization in an area where little subsistence data exist and where increasing competition for local resources is occurring. The survey contained many deficiencies in methodology and interpretation which were evaluated and presented to the Board in December. It did, however, represent an important first step in subsistence research in this area and provided the Section with a basis by which it could improve its survey methodology and thereby the amount and reliability of the data collected.

The objectives of this year's survey efforts included the following:

1) Identification of subsistence resources utilized by local residents, seasons of harvest, and relative significance of each resource in the village subsistence economy.

2) Determination of general timing and level of harvest and the appropriateness of both to the villages.

3) Determination of areas locally important for subsistence harvest of resources.

4) Notation of any conflicts, whether perceived or actual, in local resource utilization.

Methodology

This year's survey effort started in December 1980. At that time the village councils of the eight villages to be surveyed were contacted by letter. The letter served basically to inform them about the upcoming survey and request their cooperation, and a reminder letter was sent in January 1981. The following agencies were also notified: Nunam Kitlustisti, The Association of Village Council Presidents (AVCP) and the Kuskokwim Native Association (KNA). In addition, the proposed survey effort was discussed with members of the Middle Kuskokwim Fish and Game Advisory Committee (FGAC) at their January meeting in Aniak.

Because written communication such as a letter is an inadequate and often inappropriate way to notify and solicit cooperation from a rural village as a whole, local media services were also used. Just prior to the survey, a news announcement about the survey was printed in the Tundra Drums, the Yukon-Kuskokwim Delta newspaper. Radio announcements were carried on KYUK's "Tundra Drums" for a week. KYUK's TV and radio news also carried some coverage of the

survey, which would have reached all eight of the upriver villages during the week of data collection.

Although there are many isolated single family cabin sites and homesteads in the Middle Kuskokwim area in addition to the villages that are utilizing local natural resources, these smaller units were excluded for reasons of time and logistical difficulty. The intrinsic purpose of a survey is to gather the greatest amount of data possible in a limited time frame. Because the settlements and homesteads are widely scattered throughout the area, it was generally impractical to survey them. The two exceptions were the settlements of Napaimute and Georgetown whose inhabitants were visiting in or had radio contact with two villages while the researchers were present. It should be noted that despite the exclusion of most small settlements from this year's survey, the residents' use and dependence on subsistence resources is probably as great or perhaps greater than the villages in the area, in large part due to the isolation of their residents from most market economic networks.

The first year's (1979-1980) survey effort used a questionnaire format as its data collection method and only one to two days were spent in each village. Because of problems with this method (evaluated in the December 1980 report to the Board of Game), it was decided that an interview/visit format would be more appropriate for use in these villages. A survey method was again selected because of the demand for data and the limited time available to collect such data. An interview guide was drawn up to achieve consistency among different interviewers. In addition to gathering resource use information from each village, the survey personnel were to gather additional information about the villages. The information sought included an updated village census, an updated list of village households, village services and physical

plant, number and types of jobs available, and any other information that would shed more light on overall village socioeconomic conditions. The intent was to do a 100% survey in the smaller villages and a 33%-50% survey in the larger villages based on a random sampling technique. Because the survey was conducted in February, which is an important trapping month for all the villages, in most cases it was impossible to achieve a complete sample. As opposed to last year's survey effort, time proved to be the only limiting factor. Lack of cooperation and non-response occurred in only isolated incidences during this year's survey.

Originally it was intended that each interviewer would complete a seasonal calendar and map resource use areas for each household. This was attempted by all three interviewers and was collectively discarded after these activities proved too unwieldy and cumbersome in the survey process. These particular methodologies would be better suited to longer-term research efforts.

Because of problems with the State register system, it was impossible to secure a Bethel area Fish and Game Technician III to assist in the survey. The survey was initially conducted by three people:

1. A local resident of the Sleetmute area who is familiar with the four up-river villages that she surveyed and already known by most residents of these villages.

2. A CETA technician in training for a Tech II (ADF&G) position assisted with the survey in the downriver villages. This technician is fluent in Yup'ik and was able to overcome some of the resistance encountered last year.

3. The Subsistence Section Resource Specialist. All supervision of the data gathering and analysis of data was also the responsibility of this researcher.

At the end of the survey, due to unavoidable personnel health problems, it was necessary to utilize a local resident in the Upper Kalskag area to complete the survey in that village.

For the three major interviewers a one-day work session prior to the start of the survey was spent going over the details of the survey and interview format. The intent was to ensure consistency of results among the three individuals while still preserving the relative flexibility of the survey/interview method. The upriver survey started February 5 and the downriver survey on February 6. As expected, the interview methodology required more time than did the short questionnaire used previously, and it was impossible to complete the survey by the end of February. The survey was then extended to include the first week of March.

Each interviewer was instructed to take notes during all interviews and to write a village summary at the end of the survey effort. If the desired sampling in each village could not be achieved, the interviewer was instructed to note the reasons. As indicated before, time was the major limiting factor and many heads of households were out trapping, hunting, or elsewhere during the time of the survey. Their absence pursuing these activites is, of course, of importance here, since the documentation of such endeavors during the research period provides specific resource utilization data (i.e., when, doing what, which households, which hunters/trappers, where, etc.). All data and summaries were assessed by the principal researcher.

It is important to note here some of the problems inherent in survey methodology as a means for conducting research in an area such as the Middle Kuskokwim. A method that uses formal standard questions as the exclusive technique for data gathering tends to be culturally inappropriate in the smaller villages. Villagers confronted by an outsider asking direct questions will not give accurate information and all data gathered must not be accepted as definitive.

Because of the limited nature of the questions used in a survey format and the short time span involved, it is difficult to gather more than superficial information about a community. The use of an interview/visit format in this year's effort did permit the initial development of more data on community systems underlying the external activities of resource use.

The limited time usually devoted to a survey effort can create a critical deficiency in data if people are absent from the village. For most rural villages involved even partially in a subsistence economy, there would be no time period in which all village residents would be in the village. This means that surveys could tend to exclude the more active households by having access to a larger proportion of people remaining within the village by reason of age, disability, finances, job, etc.

Although a survey methodology was used in this research effort, it is important to note that it is not the most effective nor most reliable technique to use in data collection in rural Alaska. Future research by the Subsistence Section in this area would require a more lengthy field period, participant-observation, and both intensive and extensive interviews (as opposed to less flexible and closed-ended survey questions). It can be assumed that local

resource harvest, distribution, and utilization data and household participation in the research have been underestimated in this study because of time and related methodological constraints.

Discussion of Data

Table 2 presents data on local resource utilization which were gathered during the course of the survey. Figure 1 graphically indicates the seasonal nature of resource utilization in the Middle Kuskokwim area.

From examination of Table 2, it is apparent that the two most important food resources to the Middle Kuskokwim villages are moose and all available species of salmon. The figures presented in the table, however, indicate only household participation in the activity and do not show the level of accessiblity of wild resources and the availability of byproducts to the village as a whole. Those people who, for various reasons, cannot participate in the harvest of resources still have some access to these through kinship ties and community sharing modes. These will be discussed later.

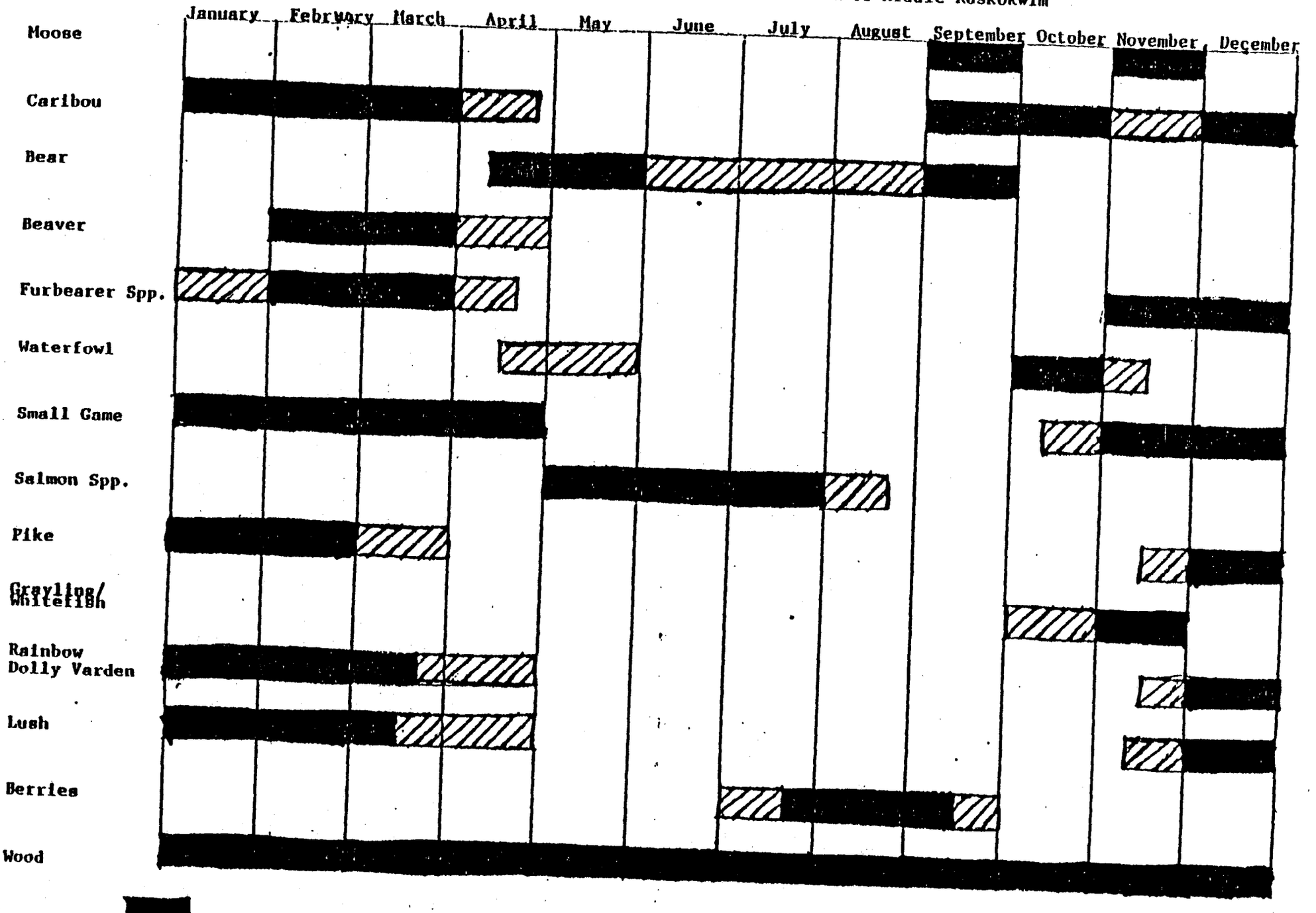
The figures presented in Table 2 also do not indicate any of the factors and constraints that bear on resource utilization in these villages. The high level of participation in moose hunting does not equate with hunter success — in fact, in most villages the level of moose harvest during the open seasons did not equate with effort. In Sleetmute 10 moose were harvested with 17 surveyed households participating; in Chuathbaluk 5 moose were harvested with 15 surveyed households participating. The reasons for unsuccessful hunts cited by villagers included the following:

Table 2. Local Resource Utilization by Percent of Household Response.

Community	No. of Households	Households Surveyed	Moose[a]	Caribou[a]	Bear[a]	Salmon Spp.[a]	Other Fish Spp.[ab]	Beaver[a]	Fur-bearer Spp.[ad]	Small Game	Water-fowl[a]	Berries	Wo
Stony River	21	17	14 (82%)	5 (29%)	11 (65%)	12 (71%)	9 (53%)	9 (53%)	7 (41%)	11 (65%)	10 (59%)	11 (65%)	10 (59
Sleetmute	34	30	17 (57%)	4 (13%)	13 (43%)	21 (70%)	23 (76%)	19 (63%)	14 (46%)	19 (63%)	10 (33%)	15 (50%)	19 (63%
Red Devil[e]	14	10	8 (80%)	4 (40%)	6 (60%)	10 (100%)	4 (40%)	5 (50%)	6 (60%)	10 (100%)	4 (40%)	4 (40%)	7 (7
Crooked Creek	26	18	15 (83%)	2 (11%)	7 (39%)	14 (78%)	12 (67%)	7 (39%)	10 (56%)	10 (56%)	4 (22%)	14 (78%)	13 (7
Chuathbaluk	24	19	15 (79%)	5 (26%)	1 (6%)	13 (68%)	8 (42%)	7 (37%)	4 (21%)	NA	3 (16%)	NA	19 (1
Aniak	109	26	24 (92%)	10 (38%)	16 (62%)	26 (100%)	19 (73%)	20 (77%)	9 (34%)	24 (92%)	10 (38%)	19 (73%)	18 (69
Lower Kalskag	51	18	13 (72%)	NA	2 (11%)	11 (61%)	11 (61%)	11 (61%)	15 (83%)	1 (6%)	5 (28%)	2 (11%)	18 (10
Upper Kalskag	33	9	6 (67%)	NA	4 (44%)	7 (78%)	3 (33%)	1 (11%)	6 (67%)	2 (22%)	3 (33%)	NA	6 (67
Total	309	149											

a. Number represents people who reponded as participants, does not represent harvest totals.
b. Includes whitefish, grayling, pike, Dolly Varden, rainbow trout, lush, char, eels, suckers. Does not reflect area differences.
c. Includes mink, marten, fox, lynx. Does not reflect area differences.
d. Includes rabbits, grouse, ptarmigan, porcupine, muskrat, etc. Does not reflect area differences.
e. Red Devil data includes two households from Georgetown.

Figure 1: General Seasonal Resource Utilization of Middle Kuskokwim



=resource harvest time reported for 1980-1981

=possible resource harvest time reported

1) Competition with downriver boat hunters during September. The complaints about this group include:

   - crowded campsites and area disruption
   - litter
   - partying, reckless shooting and consequent area disruption

2) September season is good because of the pre-rut quality of the meat but is risky in terms of meat preservation without the aid of a freezer.

3) The November season is not a safe time to travel because of its coincidence with freezeup.

Many villagers said hunting moose in either February or March is preferable because:

1) there are dwindling stores of meat in villages at that time;
2) resources are available in near proximity to the village enabling even people with less-than-reliable transportation to take part;
3) moose are easier to track at this time.

For those people who did not participate in moose hunting, the constraints involved include:

1) health (age and/or disability);
2) no transportation available;
3) insufficient funds to finance effort;
4) insufficient time due to jobs.

These people usually have access to wild meat through relatives, but this may place a greater demand on the successful hunters than their permitted harvest can supply.

Caribou and bear are important meat sources, but are not equally accessible to all villages. These resources are also shared within the community when harvested but are not stable resources for every village.

Salmon is the single most stable resource in the area. The summer salmon catch, in addition to the harvest of other fish species, is a central part of most households' food supply even if not prized as much as is moose meat. Variability in village salmon fishing effort ranges from the type of gear used (e.g. fishwheel, drift net, set net) to the location of fishing effort (e.g. fish camp, village). Salmon fishing can be affected by the same factors constraining moose hunting efforts including age and physical disabilities, available equipment, sufficient funding, and available time. Salmon is a source of both human and dog food in the villages and provides a dietary buffer against an inadequate wild game harvest.

Other fish species including lush, whitefish, grayling, rainbow trout, pike, and others provide fresh protein in the fall and winter months and add variety in an ordinarily limited diet. While several of these species are only harvested for daily consumption, others are obtained in greater quantities for storage.

Trapping is another important component in the socioeconomic cycle of Middle Kuskokwim villages. Major species trapped are mink, marten, fox, lynx and beaver, although each species is available to villages in differing degrees. Most trapped species provide a source of income to households in areas having low cash flow. Beaver and, to a lesser degree, lynx are important and valued sources of meat. In addition, many village women use furs and pelts to make crafts which provide another source of cash income.

Small game (e.g. rabbits, grouse, ptarmigan, muskrat, etc.) and waterfowl are dietary supplements that are harvested to a degree dependent on their relative availability by area, year, and season. Most of the Middle Kuskokwim area is a lower quality habitat for migrating ducks than are the downriver Delta areas. Some Kalskag households will go out to camps for ducks, but for other villages duck hunting efforts are based out of the village. The resident small game populations run in cycles; accordingly, the level of village harvest usually depends on the level of each species' availablility and the need for meat by household balanced against the energy and cash expenditures necessary to harvest the resource.

Berries and wood provide important non-animal resources for the villages. Most villagers heat with wood in the smaller villages and wood gathering occurs throughout the year. Berries provide variety in household diets and are essential for making prized foods like agutaq (commonly referred to as "Eskimo ice cream"). Many villagers make special trips to pick berries.

Seasonal Resource Utilization Patterns

As previously discussed, Figure 1 presents a graphic representation of a generalized seasonal round in the Middle Kuskokwim villages. Salmon fishing is the major summer resource activity and includes the use of a variety of gear. During fishing periods a few of the villages are virtually "abandoned" for fish camps, although many households carry on fishing efforts from their village base. Berry picking occurs in late summer. During the September moose season most villagers who are able to hunt will do so. The majority travel by boat up the main Kuskokwim or into adjacent sloughs and streams, although a few area residents do use planes. Bears and caribou are commonly taken at this time if they are encountered.

At freezeup whitefish and grayling are available to most villages. These are harvested by hook and line, spear, or rod and reel. Small game species are harvested from this period throughout the winter using snares and rifles. Trapping for some species usually starts in November and continues throughout the spring. Winter fishing for lush, pike, rainbows, etc. is accomplished by the use of fish traps, nets and hook and line, respectively. February is usually the start of the beaver season; beavers are important both for food and for pelts. Beavers are caught with snares and the success of the effort depends greatly on ice conditions. This is an important time for caribou hunting especially for those villages in proximity to a herd although caribou hunting also takes place in the fall.

Breakup signals the start of spring resource utilization. For those villages with access to muskrat this is the period of harvest. In some villages this activity is included with duck hunting for the households which move out to spring camp. Some villagers go out in early spring to hunt bear, making trips into the foothills while they are still in choice condition for meat. This is also an important time to gather wood, although wood gathering goes on year round.

This account of seasonal activities shows a general pattern for the Middle Kuskokwim. It does not include all species used nor does it indicate the range of individual variation for each village. It is included here to give the reader some concept of the annual cycle operative in this part of the Kuskokwim.

Description of Community Systems

Despite their location in an area of adequate resources, most Middle Kuskokwim villages are less affluent than urban communities. There are few full-time jobs and many are funded by public agencies (e.g. YKHC, CETA, Kuspuk School District, etc.). Public assistance is usually insufficient to cover the costs at village stores. The continuation of local resource utilization is a necessary buffer to offset a low cash flow/high cash outlay existence in a village. Availability of cash, in turn, is necessary to acquire and maintain the equipment supplies used in local wild resource harvest.

Within each village there is a varying percentage of households with little or no participation in the harvest of resources because of age and disability, lack of transportation and/or equipment, insufficient funds to support a venture, and/or insufficient time due to job requirements. These households usually have access to wild foods through kinship ties and community sharing. Most successful villagers will share their harvests with relatives and friends who were not successful in hunting or were not able to hunt, fish or trap. The level of sharing, however, depends on each household's success, since the household must take care of its needs before sharing. The sharing mode is one of the only means of ensuring that each household has access to necessary local resources and their byproducts regardless of the level of participation and success. Sharing is important to the continuity of life in the smaller villages. The age structure of the village and the relative health of its residents, as well as the cash opportunities available, are all factors that affect the level of sharing. Resource utilization in the Middle Kuskokwim cannot be totally understood without considering not only the underlying village systems affecting that utilization but also the individual characteristics of

each village. Further development of this kind of data would require more extensive study and information than this survey provides.

Conclusion

The Middle Kuskokwim villages are located in a relatively rich and diverse resource area. There is a great deal of access to many wild resources, although each village exhibits individual variation. This area supports a large resident population (1190+) and it is more accessible to both downriver and other residents of the state than is an area like the Upper Kuskokwim. This accessibility results in greater competition for certain game resources, especially moose.

Despite the area availability of natural resources, most of the villages surveyed had limited supplies of certain wild foods; this places stress on other more stable local food resources. Some of the factors affecting adequate local resource availability on the Middle Kuskokwim include:

1) seasons with high competition or unrealistic timing which limit the potential harvest; and bag limits that may not meet household needs, especially under circumstances requiring that harvests be shared;

2) the need for high cash expenditures for resource harvest equipment and equipment maintenance in an area of relatively low cash flow;

3) the dynamics of the demographic structure of each village which affects the percentage of active participants versus those who cannot participate;

4) the sharing mode of each community which ensures the flow of wild resource products throughout the community but places a burden on the success of individual hunters.

Moose and salmon are the two most important items in the food supply of most Middle Kuskokwim village households. Moose is a highly valued meat, which ensures dietary variety and enables salmon stores to last through the majority of winter. Without moose or other large game animals, those families without sufficient cash to purchase large quantities of store-bought meat must rely on salmon and other fish species; variety then can be added only by harvesting small game, beaver and waterfowl. Because of the low cash flow throughout most of these villages, most villagers believe that at least one to two moose are necessary to their family food supplies. Because of other socioeconomic factors present in the villages, local resource utilization must achieve a balance with the available cash economy. In order to achieve this balance, the villages operate on a resource harvest system that may not conform to the state regulatory system.

Proposals #207 and 208 (submitted by the area biologist and the local Fish and Game Advisory Committee) would improve the ability of local residents to meet their wild food needs. Either a February or March moose season would coincide with the period in which most villagers find their local resource supplies dwindling.